FOI #16093

Olivencia, Mildred

From: scott.ryan@tutorperini.com
Sent: Tuesday, June 16, 2015 1:38 PM
To: Olivencia, Mildred
Cc: Torres-Rojas, Genara; Van Duyne, Sheree; Ng, Danny
Subject: Freedom of Information Online Request Form

Information:

First Name: Scott
Last Name: Ryan
Company: Tutor Perini Building Group
Mailing Address 1: 5055 East Washington
Mailing Address 2: Suite 210
City: Phoenix
State: AZ
Zip Code: 85034
Email Address: scott.ryan@tutorperini.com
Phone: 6022566777
Required copies of the records: Yes

List of specific record(s):
1. All construction and design drawings including shop drawings, specifications, as-built drawings for the George Washington Bridge Bus Stations original construction, circa 1960s. 2. A copy of the lease agreement between the Port Authority and the George Washington Bridge Bus Station Development Venture, LLC

THE PORT AUTHORITY OF NY & NJ

FOI Administrator

April 13, 2016

Mr. Scott Ryan
Tutor Perini Building Group
5055 East Washington, Suite 201
Phoenix, AZ 85034

Re: Freedom of Information Reference No. 16093

Dear Mr. Ryan:

This is in response to your June 16, 2015 request, which has been processed under the Port Authority's Freedom of Information Code, copy enclosed, for copies of the following records: 1. All construction and design drawings including shop drawings, specifications, as-built drawings for the George Washington Bridge Bus Stations original construction, circa 1960s. 2. A copy of the lease agreement between the Port Authority and the George Washington Bridge Bus Station Development Venture, LLC.

Material responsive to item 2 of the request can be found on the Port Authority's website at http://corpinfo.panynj.gov/documents/16093-C/. Paper copies of the available records are available upon request.

Certain portions of the material responsive to your request are exempt from disclosure as, among other classifications, privacy and security.

Please be advised that we have searched our files and found no documents responsive item 1 of the request. The records that may have been responsive to the request, to the extent that they existed, were likely destroyed at The World Trade Center on September 11, 2001.

Please refer to the above FOI reference number in any future correspondence relating to your request.

Very truly yours,

Danny Ng
FOI Administrator

Enclosure

4 World Trade Center, 18th Floor
150 Greenwich Street
New York, NY 10007
T: 212 435 3642 F: 212 435 7555

Port Authority
Lease No.LBF 500

AGREEMENT OF LEASE

between

THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY

and

GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC

Dated as of: July 21, 2011

ARTICLE 1	DEFINITIONS	2
ARTICLE 2	LEASED PREMISES; RESERVED PREMISES; COMMON AREAS; RECIPROCAL EASEMENTS	15
ARTICLE 3	TERM OF LETTING, PERMITTED USE, SERVICES AND UTILITIES	21
ARTICLE 4	RENTAL	24
ARTICLE 5	PROJECT CONSTRUCTION	31
ARTICLE 5A	LABOR HARMONY, AFFIRMATIVE ACTION	66
ARTICLE 6	ALTERATIONS AND IMPROVEMENTS	71
ARTICLE 7	COMPLIANCE WITH REQUIREMENTS FOLLOWING PROJECT COMPLETION	73
ARTICLE 8	OPERATIONS; RULES AND REGULATIONS	74
ARTICLE 9	MAINTENANCE AND REPAIR FOLLOWING PROJECT COMPLETION	79
ARTICLE 10	INSURANCE FOLLOWING PROJECT COMPLETION DATE	83
ARTICLE 11	DAMAGE OR DESTRUCTION FOLLOWING PROJECT COMPLETION	88
ARTICLE 12	INDEMNITY	91
ARTICLE 13	RIGHT TO PERFORM LESSEE'S COVENANTS	93
ARTICLE 14	ASSIGNMENT, TRANSFER, MORTGAGE AND SUBLETTING	94
ARTICLE 14A	PERMITTED MORTGAGES	110
ARTICLE 15	LANDLORD'S PARTICIPATION IN PROCEEDS	118
ARTICLE 16	RIGHTS OF ENTRY	122
ARTICLE 17	EVENTS OF DEFAULT AND TERMINATION	122
ARTICLE 18	SURRENDER	128
ARTICLE 19	CONDEMNATION	129
ARTICLE 20	LESSEE'S REPRESENTATIONS	134
ARTICLE 21	PAYMENTS	134
ARTICLE 22	SECURITY FOR PERFORMANCE BY LESSEE	137
ARTICLE 23	NOTICES	137
ARTICLE 24	PRIVATIZATION	139
ARTICLE 24A	RIGHTS OF FIRST OFFER	141
ARTICLE 25	MISCELLANEOUS	14

List of Exhibits and Schedules

EXHIBITS:

Exhibit A	Legal Description of the Land
Exhibit AA	Space Allocation Diagrams
Exhibit B	GWBBS Manual
(i)	Design Criteria
(ii)	Tenant Construction Review Manual
(iii)	Tenant Construction Plan and Specification Guidelines (with Tenant Construction or Alteration Application)
(iv)	GWBBS Common Area Rules and Regulations
(v)	Port Authority Structural and Systems Integrity Requirements
(vi)	Retail Branding Program
Exhibit C	Index of Conformed Stage I Documents
Exhibit D	Form of Sales Tax Exemption Letter
Exhibit E	Form of Temporary Permit to Occupy or Use
Exhibit F	Form of Permit to Occupy or Use
Exhibit FF	Form of PA-Cost Work Construction Completion Notice
Exhibit G	Form of Assignment and Assumption of Net Lease
Exhibit H	Form of Payment and Performance Bond
Exhibit I	Lessee Organizational Chart
Exhibit J	Form of Irrevocable Standby Letter of Credit
Exhibit K	Form of Lessor Estoppel Certificate
Exhibit L	Permitted Encumbrances
Exhibit M	Intentionally Deleted
Exhibit N-1	Form of Waiver of Right of First Offer (Reserved Premises)

Exhibit N-2	Form of Waiver of Right of First Offer (Leased Premises)
Exhibit O-1	Form of Subordination, Non-Disturbance and Attornment Agreement (Standard)
Exhibit O-2	Form of Subordination, Non-Disturbance and Attornment Agreement (Qualifying)

SCHEDULES:

Schedule 2.1(a)	Preliminary Leased Premises Floor Area
Schedule 5.1.2A	Process for Advancement of Stage I Conformed Documents to Approved Stage III Documents (Approved Construction Documents)
Schedule 5.4.3	Form of Application for Payment and Schedule of Values
Schedule 5.6.3	Review by Appointment
Schedule 5.21.1(a)(i)	GWBBS Hours of Work and Construction Staging
Schedule 9.1AA	GWBBS Gas, Domestic Water, Sanitary and Storm Systems Maintenance, Testing & Repair
Schedule 9.3.1	Common Area Operation and Maintenance Services

AGREEMENT OF LEASE

THIS AGREEMENT OF LEASE (this "**Agreement**" or this "**Lease**") made as of the July 21, 2011 by and between THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY (hereinafter referred to as the "**Port Authority**") a body corporate and politic, created by Compact between the States of New York and New Jersey, with the consent of the Congress of the United States of America, and having an office at 225 Park Avenue South, New York, New York 10003, and GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC (hereinafter referred to as the "**Developer**"), a limited liability company organized and existing under and by virtue of the laws of the State of Delaware and having an office and place of business at c/o SJM Partners, 9001 Congressional Court, Potomac, Maryland 20854.

WHEREAS, pursuant to legislation of the State of New York and the State of New Jersey set forth at Chapter 47 of the Laws of New York of 1931, as amended by Chapter 807 of the Laws of New York of 1955, and by Chapter 156 of the Laws of New York of 1956 (McKinney's Unconsolidated Laws §§6502, 6505, 6512, 6514, 6516, 6517 and 6522) and Chapter 4 of the Laws of New Jersey of 1931, as amended by Chapter 11 of the Laws of New Jersey of 1954 and by Chapter 156 of the Laws of New Jersey of 1956 (N.J.S.A.32:1-83.1, 32 :1-119, 32:1-128, 32:1-130, 32:1-132, 32:1-133, 32:1-133.1, 32:1-137), the Port Authority acquired and owns in fee property located in the Borough of Manhattan, City, County and State of New York on either side of Broadway between 178th and 179th Streets (designated on the tax map of the City of New York as Block 2163 Lot 1 and Block 2176 Lot 17), which land ("**Land**") is more particularly described in "**Exhibit A**" attached hereto, and the Port Authority has heretofore constructed thereon as part of the interstate transportation network's George Washington Bridge improvement plan, a bus passenger facility, which was placed in operation in 1963;

WHEREAS, such passenger bus facility is comprised of (a) the existing three (3) level building (the levels of which are referred to herein as "**Level 1**", "**Level 2**" and "**Level 3**"), housing among other things operations for the bus station and retail businesses providing consumer goods and services, that occupies the entire city block bounded by Broadway, Fort Washington Avenue, 178th Street and 179th Street, including the below-grade structural elements on which such building is supported (as it shall hereafter be altered from time to time, the "**West Building**"), (b) the existing three (3) level structure that occupies the entire city block bounded by Broadway, Wadsworth Avenue, 178th Street and 179th Street, including the below-grade structural elements on which such structure is supported (as it shall hereafter be altered from time to time, the "**East Building**"), (c) two bridges over Broadway that connect the East Building and the West Building (such bridges, as they may hereafter be altered from time to time, the "**Broadway Bridges**"), (d) the existing ramps that connect Level 3 of the West Building to the George Washington Bridge (as they may be altered from time to time, the "**Ramps**") and (e) insofar as it is controlled by the Port Authority, the

existing pedestrian underpass that connects Level 1 of the West Building to the New York City Transit Authority subway station below Fort Washington Avenue (as it may hereafter be altered from time to time, the "**Pedestrian Underpass**"); and

WHEREAS, the West Building, the East Building, the Ramps, the Pedestrian Underpass and the Broadway Bridges (including all fixtures and improvements therein as they shall be modified in accordance with this Agreement) are collectively referred to herein as the "**Facility**"; and

WHEREAS, the Port Authority desires to provide for the redevelopment of the Facility, which, consistent with enabling legislation, the Port Authority shall continue to own and (subject to the terms of this Agreement) control as fee owner thereof, and the Developer desires to undertake such redevelopment (the "Project", as such term is hereinafter defined); and

WHEREAS, as authorized by the Port Authority's Board of Commissioners, the Developer and the Port Authority have heretofore entered into an "Interim Agreement" dated as of April 5, 2010 as amended by the "First Amendment to Interim Agreement" dated as of the date hereof (the "Interim Agreement"), pursuant to which the Developer and the Port Authority agreed that, upon the satisfaction of certain conditions set forth in the Interim Agreement, they would enter into this long-term net lease, demising to the Developer the portions of the Facility that constitute the Leased Premises as such term is hereinafter defined; and

WHEREAS, said conditions set forth in the Interim Agreement have heretofore been satisfied; and

WHEREAS, as hereinafter provided, since the Leased Premises and the Reserved Premises (as such term is hereinafter defined) are linked structurally and integrated functionally and architecturally, the Developer and the Port Authority have agreed that, in addition to making improvements to the Leased Premises at the cost of the Developer, the Developer shall concurrently make certain improvements to the Reserved Premises, on behalf of and at the cost of the Port Authority; and

WHEREAS, the conditions set forth in the Interim Agreement have been satisfied, and the Developer and the Port Authority are therefore now executing and delivering this Agreement;

NOW, THEREFORE, for good and valuable consideration, the receipt and adequacy of which are hereby acknowledged, and in consideration of the covenants and mutual agreements of the parties hereto, and the foregoing recitals that are hereby incorporated and made a part of this Agreement, the Port Authority and the Developer hereby covenant and agree as follows:

ARTICLE 1

DEFINITIONS

Any and all capitalized terms used and not otherwise defined in this Lease Interim shall have the meanings that are ascribed to them in the Interim Agreement.

"**Access Rights**" shall have the meaning provided in Subsection 2.4.3 hereof.

"**Accounting Principles**" shall mean generally accepted accounting principles (GAAP) consistently applied.

"**Additional Information**" shall have the meaning provided in Subsection 5.23.2(1) hereof.

"**Affiliate**" shall mean any Person which, directly or indirectly, controls, is controlled by or is under common control with any other Person. "**Control**" shall be deemed to exist where any Person has (i) ownership of fifty percent (50%) or more of all of the voting stock of a corporation or more than fifty percent (50%) of all of the legal or equitable interests in any other business entity or (ii) possession of the power, directly or indirectly, to cause the direction of management and policies of a corporation, partnership, trust or other business entity, whether through voting securities, by contract, by common directors, officers or trustees or otherwise; and the terms "**Controlled By**", "**Controlling**", "**Controls**", and "**Under Common Control With**" shall have the meanings correlative to the meaning of Control. Affiliate shall also mean any individual who is a member of the immediate family (whether by birth or marriage) of a Person who is an individual, which includes for purposes of this definition a spouse, a brother or a sister of the whole or half blood of such Person, the spouse of any such brother or sister, a lineal descendant or ancestor (including an individual related by or through legal adoption) of such Person or any of the foregoing or a trust for the benefit of such Person or any of the foregoing.

"**Agreement**" shall have the meaning provided in the Recitals.

"**Air Rights Development**" shall have the meaning provided in Subsection 6.2.4 hereof.

"**All or Substantially All of the Leased Premises**" shall have the meaning provided in Section 19.1 hereof.

"**Alteration Application**" shall mean a TCA/TAA submitted to the Port Authority pursuant to Article 6 hereof.

"**AAA**" shall mean the American Arbitration Association or any successor entity.

"**Application for Payment**" shall have the meaning provided in Subsection 5.4.3(a) hereof.

"**Appointment Date**" shall have the meaning set forth in Section 5.23.1(a) hereof.

"**Approved Alteration Application**" shall mean a TCA/TAA approved by the Port Authority pursuant to Article 6 hereof.

"**Approved Construction Application**" shall have the meaning provided in Section 5.2 hereof.

"**Approved Construction Documents**" shall have the meaning provided in Section 5.2 hereof.

"**Arbitration Notice**" shall have the meaning set forth in Section 5.23.1(a).

"**Arbitrators**" shall have the meaning set forth in Section 5.23.1(a).

"**Assignee**" shall have the meaning provided in Section 14.1 hereof.

"**Assignment**" shall have the meaning provided in Section 14.1 hereof.

"**Assignment and Assumption Agreement**" shall have the meaning provided in Section 14.6 hereof.

"**Assignor**" shall have the meaning provided in Section 14.1 hereof.

"**Audit Findings**" shall have the meaning provided in Subsection 21.5.2 hereof.

"**Basic Rent**" shall mean the rental provided for in Section 4.2 hereof.

"**Broadway Bridges**" shall have the meaning provided in the Recitals.

"**Business Day**" shall mean any day which is not a Saturday, Sunday or a day observed as a holiday by the State of New Jersey, the State of New York or the Federal government.

"**Certificate of Partial Completion**" shall have the meaning provided in Subsection 5.17.4(b) hereof.

"**Chief Engineer**" shall mean the chief engineer of the Port Authority at the time in question, acting in his or her official capacity and not personally.

"**Chief Engineer Contest**" shall have the meaning provided in Subsection 5.23.2 hereof.

"**Chief Engineer Hearing**" shall have the meaning provided in Subsection 5.23.2(1) hereof.

"**Code Compliance Office**" shall mean the Port Authority personnel responsible for interacting and coordinating with the Lessee in the Port Authority's role as a "governmental entity" performing regulatory functions under this Agreement.

"**Code Update**" shall mean any addition, supplement or modification to Requirements, made by any Governmental Authority, that shall cause the Port Authority to modify in a similar manner the GWBBS Manual, taking into account any "grandfathering" provisions negating the applicability of such addition, supplement or modification to previously existing structures or improvements.

"**Common Area Rules and Regulations**" shall mean the rules and regulations that are part of the GWBBS Manual (see **Exhibit B(iv)** annexed hereto).

"**Common Areas**" shall have the meaning provided in Section 2.3(a) hereof.

"**Common Area Charge**" shall have the meaning provided in Section 9.3.1 hereof.

"**Common Vertical Circulation Facilities**" shall have the meaning provided in Section 2.3(a) hereof.

"Conformed Design Criteria" – see "Design Criteria".

"**Conformed Stage I Documents**" or "**Stage I Conformed Documents**" shall mean the list of documents (including the "Milestone Review Chart") comprising **Exhibit C** annexed hereto.

"**Construction Loan**" shall have the meaning provided in Section 14A.1 hereof.

"**Construction Mortgage**" shall have the meaning provided in Section 14A.1 hereof.

"**Construction Review Timetable**" shall mean the review time period, measured from the date the Port Authority receives a Modification Proposal or Alteration Application from the Lessee within which the Port Authority shall be required to deliver to Lessee, any comments (including a comment that additional information is required to complete a submitted application):

Cost	Initial Review Time	Subsequent Review Time
$0 - $500,000	Ten (10) Business Days	Ten (10) Business Days
$500,001 - $5,000,000	Fifteen (15) Business Days	Fifteen (15) Business Days
$5,000,001 - $15,000,000	Twenty (20) Business Days	Fourteen (14) Business Days
Over $15,000,000	Thirty (30) Business Days	Eighteen (18) Business Days

provided, however, that (a) nothing contained in this definition shall limit the right of the Lessee to expedited review under the process set forth in "Schedule 5.6.3" attached hereto entitled "Review by Appointment" and (b) the Port Authority shall make every reasonable effort in any event to expedite its review of Modification Proposals necessitated by unforeseen field conditions encountered during the course of construction.

"**Construction Work**" shall have the meaning provided in Subsection 5.1.2(b) hereof.

"**Contest Information**" shall have the meaning provided in Subsection 5.23.2(3) hereof.

"**Contest Notice**" shall have the meaning provided in Subsection 5.23.2(1) hereof.

"**Control**" shall have the meaning provided in the definition of "Affiliate" above in this Article 1.

"**Court**" shall mean the Appellate Division of the Supreme Court of the State of New York, First Department.

"**CPI**" or "**Index**" shall have the meaning provided in Section 14.1 hereof.

"**Depository**" shall mean the Senior Recognized Mortgagee, if any, and otherwise the Port Authority, in either case acting as trustee hereunder.

"**Design Criteria**" or "**Conformed Design Criteria**" shall mean the "George Washington Bridge Bus Station Redevelopment Design Criteria Report", prepared by The Port Authority of New York and New Jersey Engineering Department and dated the same date as the Interim Agreement as may have heretofore been modified by agreement of the parties, which sets forth the Port Authority standards and requirements for the Design Criteria Project Elements.

"**Design Criteria Project Elements**" shall mean the elements of the Facility and Project to which the Design Criteria relate, consisting of (a) the Reserved Premises, (b) the Common Areas, (c) all exterior and structural elements of the Facility, (d) the portions of the Leased Premises that immediately touch, adjoin, attach to or interface with the Reserved Premises or the Common Areas, and (e) the Staging and Phasing Plan.

"**Developer**" shall have the meaning provided in the Preamble.

"**Discovery Materials**" shall have the meaning provided in Subsection 5.23.2(1) hereof.

"**East Building**" shall have the meaning provided in the Recitals.

"**Environmental Damages**" shall mean any damages arising out of one or more of the following: (i) the presence in the Leased Premises of any Hazardous Substance and/or (ii) the disposal, release or threatened release of any Hazardous Substance from the Leased Premises, and/or (iii) any personal injury (including wrongful death), property damage, deed/use restriction or natural resources damages arising out of or related to Hazardous Substances in the Leased Premises or disposed of or released from the Leased Premises, and/or (iv) the violation of any Environmental Requirements pertaining any such to Hazardous Substances.

"**Environmental Requirement(s)**" shall mean all applicable present and future laws, statutes, enactments, resolutions, regulations, rules, ordinances, codes, licenses, permits, orders, approvals, plans, authorizations, requirements and similar items, of Governmental Authorities and all applicable judicial, administrative, and regulatory decrees, judgments, and orders relating to the protection of human health or the environment, and in the event that there shall be more than one applicable compliance standard, the standard for any of the foregoing to be that which requires the lowest level of a Hazardous Substance, the foregoing to include without limitation:

(i) All Requirements pertaining to reporting, licensing, permitting, investigation, and remediation of emissions, discharges, releases, or threatened releases of Hazardous Substances into the air, surface water, groundwater, or land, or relating to the manufacture, processing, distribution, use, treatment, storage, disposal, transport, or handling of Hazardous Substances; and

(ii) All Requirements pertaining to the protection of the health and safety of employees, the public or the environment.

"**Equal Employment Opportunity**" or "**EEO**" shall have the meaning provided in Section 5A.12 hereof.

"**Event of Default**" shall have the meaning provided in Section 17.1 hereof.

"**Existing Substation**" shall have the meaning provided in Section 8(a) of Schedule 5.1.2A attached hereto.

"**Exoskeleton**" shall mean the concrete exoskeleton of the Facility, exclusive of the Nervi Roof and the Ramps. The Exoskelton does not include any panels, windscreens, soffits, or other elements attached to such concrete exoskeleton. The Exoskeleton is identified as such on "Exhibit AA" attached hereto.

"**Expiration Date**" shall have the meaning provided in Section 3.1 hereof.

"**Extension Period**" shall mean the First Extension Period, the Second Extension Period, the Third Extension Period, the Fourth Extension Period or the Fifth Extension Period.

"**Facility**" shall have the meaning provided in the Recitals.

"**Fifth Extension Period**" shall have the meaning provided in Section 3.1.1(5) hereof.

"**First Class**" or "**Class A**" shall mean first class and exemplary for a retail shopping center of its kind.

"**Final Drawings/Descriptions**" shall have the meaning provided in Section 2.5 hereof.

"**Final Payment**" shall have the meaning provided in Section 5.4.3(c) hereof.

"**First Extension Period**" shall have the meaning provided in Section 3.1.1(1) hereof.

"**Fourth Extension Period**" shall have the meaning provided in Section 3.1.1(4) hereof.

"**Governing Statute**" shall have the meaning provided in Section 4.4.6(a) hereof.

"**Governmental Authority(ies)**" shall mean the United States of America, the State of New York, the City of New York and any agency, department, corporation, commission, board, bureau, instrumentality or political subdivision of any of the foregoing (excluding the Port Authority) now existing or hereafter created, having or exercising jurisdiction over the Leased Premises or any portion thereof including, without limitation, jurisdiction over the administration or enforcement of any Environmental Requirements.

"**Gross Revenues**" shall mean any and all gross rentals, receipts, finders fees and all other fees, brokerage commissions and all other commissions, proceeds and amounts of any kind (and anything else of value) received by or for the account of the Lessee or any Affiliate thereof from Subtenants for the use and occupancy of the Leased Premises or any part thereof, or from the proceeds of any rental or business interruption insurance or any Temporary Taking award (except to the extent that any Temporary Taking award shall be attributable to restoration costs), in all cases calculated using a cash method of accounting consistently applied, and including, without limitation, the following: (A) fixed rental, minimum rental, rental computed on the basis of sales or other criteria, additional rental, escalation rental and security deposits applied in payment of any rental; and (B) charges for the providing of goods or services of any kind (including without limitation, construction-related payments and common area charges) by the Lessee or any Affiliate thereof to any Subtenant; provided, however, that "Gross Revenues" shall in all events include (without duplication) all rental and

other fees paid by the occupant(s) of all portions of the Leased Premises that shall be demised under any Master Sublease; and provided, further, that if the Lessee or any Affiliate thereof occupies any space within the Premises, whether or not pursuant to a Sublease, then the fair

market rental value of such space (including all additional rentals, charges and other payments, as broadly described above) shall be included in "Gross Revenues". Notwithstanding the foregoing, Gross Revenues shall not include (1) any amounts paid by Subtenants with respect to actual Impositions or in lieu thereof which are paid by Lessee directly to the third party imposing any such Imposition, (2) any amounts paid by the Port Authority to the Lessee or (3) any amounts paid by Subtenants with respect to tort claims.

"**Gross Square Footage**" with respect to any building shall mean the aggregate amount of the gross square footage of horizontal areas (excluding mechanical areas), of all ground and above ground floors of such building. For purposes of determining Gross Square Footage, all dimensions shall be measured from and between the exterior faces of the perimeter walls.

"**GWBBS Manual**" mean collectively, (i) the Design Criteria (insofar as the Design Criteria Project Elements are concerned), (ii) the Tenant Construction Review Manual, (iii) the Tenant Construction Plan and Specification Guidelines (which are part of the Tenant Construction or Alteration Application), (iv) the GWBBS Common Area Rules and Regulations, (v) the Port Authority Structural and Systems Integrity Requirements, and (vi) the Retail Branding Program, in each case (other than in the case of the Retail Branding Program) as the same may be amended, modified and/or supplemented or promulgated from time to time by the Port Authority to reflect Code Updates or other requirements that shall be applied by the Port Authority to all Port Authority facilities in a non-discriminatory manner. In no event shall compliance by Lessee with the GWBBS Manual relieve Lessee of the obligation to comply with Requirements.

"**Hazardous Substance(s)**" shall mean and include any pollutant, contaminant, toxic or hazardous waste, dangerous substance, potentially dangerous substance, noxious substance, toxic substance, flammable, explosive or radioactive material, urea formaldehyde foam insulation, asbestos, polychlorinated biphenyls (PCBs), chemicals known to cause cancer or reproductive toxicity, petroleum and petroleum products and other substances which have been or in the future shall be declared to be hazardous or toxic, or the removal of which have been or in the future shall be required, or the manufacture, preparation, production, generation, use, maintenance, treatment, storage, transfer, handling or ownership of which have been or in the future shall be restricted, prohibited, regulated or penalized by any Environmental Requirement.

"**Impositions**" shall have the meaning provided in Section 4.4.1 hereof.

"**Independent Director/Manager**" shall have the meaning provided in Section 14.1 hereof.

"**Initial Subtenant Fit-Out Work**" shall mean, with respect to any subleased portion of the Leased Premises, fit-out (as opposed to core and shell) work to be performed (whether by the Lessee or by Subtenants) to prepare such portion of the Leased Premises for initial

occupancy by the initial occupant thereof.

"Initial Term" shall have the meaning set forth in Section 3.1 hereof.

"**Institutional Investor**" shall have the meaning provided in Section 14.1 hereof.

"**Interim Agreement**" shall have the meaning provided in the Recitals.

"**Interim Period**" shall mean the period during which the Interim Agreement was in full force and effect.

"**ISO**" shall have the meaning provided in Subsection 5.21.1(a)(vii) hereof.

"**Landlord**" shall mean the Port Authority or any successor Landlord.

"**Land**" shall have the meaning provided in the Recitals.

"**Lease**" shall have the meaning provided in the Recitals.

"**Lease Commencement Date**" shall have the meaning provided in Section 3.1 hereof.

"**Lease Memorandum**" shall have the meaning provided in Section 2.5 hereof.

"**Lease Year**" shall mean a consecutive period of three hundred sixty-five (365) days (or three hundred sixty-six (366) days to the extent that such period includes a February 29th) occurring during the Term; provided, however, that the first Lease Year shall commence on the Lease Commencement Date and end on June 30, 2012, and the last Lease Year shall end on the last day of the Term.

"**Leased Premises**" shall have the meaning provided in Section 2.1 hereof.

"**Leased Premises Redevelopment Work**" shall have the meaning provided in Subsection 5.1.2(a) hereof.

"**Lessee**" shall mean the Developer or any permitted successor to its leasehold interest hereunder.

"**Lessee Completion Certificate**" shall have the meaning provided in Subsection 5.17.1 hereof.

"**Lessee Indemnified Parties**" shall mean the Lessee, the Lessee's mortgagees and

Subtenants and their respective members, officers, directors, employees and agents.

"**Lessee Interest**" shall have the meaning provided in Section 15.2.1(b) hereof.

"**Lessee Organizational Documents**" shall mean the Lessee Organizational Chart attached as Exhibit I.

"**Lessee Substantial Completion Certificate**" shall have the meaning provided in Subsection 5.17.4(a) hereof.

"**Lessor**" shall mean the Port Authority or any successor Lessor.

"**Level 1**" shall have the meaning provided in the Recitals.

"**Level 2**" shall have the meaning provided in the Recitals.

"**Level 3**" shall have the meaning provided in the Recitals.

"**Management Oversight Committee**" shall mean the Management Oversight Committee referenced in Exhibit G attached to the Interim Agreement.

"**Master Sublease**" shall have the meaning provided in Section 14.1 hereof.

"**Maximum Construction Mortgage Loan Amount**" shall have the meaning provided in Section 14A.1 hereof.

"**Maximum Mortgage Amount**" shall have the meaning provided in Section 14A.1 hereof.

"**Maximum Permanent Mortgage Loan Amount**" shall have the meaning provided in Section 14A.1 hereof.

"**Maximum Refinancing Mortgage Loan Amount**" shall have the meaning provided in Section 14A.1 hereof.

"**Meaningful participation**" shall have the meaning provided in Section 5A.3 hereof.

"**Mezzanine Financing**" shall have the meaning provided in Section 14A.1 hereof.

"**Mezzanine Lender**" shall have the meaning provided in Section 14A.1 hereof.

"**Milestone Review Chart**" – see Conformed Stage I Documents.

"**Minority Business Enterprise**" or "**MBE**" shall have the meaning provided in

Section 5A.3 hereof.

"**Modification Application**" shall have the meaning provided in Subsection 5.6.1 hereof.

"**Mortgage**" shall have the meaning provided in Section 14.1 hereof.

"**Nervi Roof**" shall mean the roof of the West Building as shown on "**Exhibit AA**" attached hereto.

"**New Lease**" shall have the meaning provided in Subsection 14A.5.5(a) hereof.

"**NFPA**" shall have the meaning provided in Subsection 5.21.1(a) hereof.

"**Non-Consolidation Opinion**" shall have the meaning provided in Section 14.1 hereof.

"**Notices**" shall have the meaning provided in Section 23.1 hereof.

"**OSHA**" shall mean the Occupational Safety and Health Act of 1970 and any supplement, modification, amendment or successor legislation thereto.

"**PA-Cost Work**" shall have the meaning provided in Section 5.4.1 hereof.

"**PA-Cost Work Fixed Price**" shall have the meaning provided in Section 5.4.1 hereof.

"**PA-Cost Work A&E Reimbursement Amount**" shall have the meaning set forth in Section 4 of Schedule 5.1.2A attached hereto.

"**PA-Cost Work Substantial Completion Certificate**" shall have the meaning provided in Section 5.17.5(a).

"**Parent**" shall mean any Person which owns, directly or indirectly, the majority beneficial interest in and otherwise Controls the Lessee.

"**PA-Representative**" shall have the meaning provided in Section 5.10.2(a) and Section 6.1.1 hereof, as applicable.

"**Partial Occupancy Request**" shall have the meaning provided in Subsection 5.17.4(a) hereof.

"**Parties**" shall mean the Landlord and the Lessee.

"**Payment Period**" shall mean each quarter of each Lease Year commencing with the sixth (6th) Lease Year and continuing throughout the remainder of the Term.

"**Pedestrian Underpass**" shall mean the pedestrian underpass that connects the West Building to the New York City Transit Authority's nearby 175th Street subway station. The Pedestrian Underpass is identified as such on "Exhibit AA" attached hereto.

"**Percentage Rent**" shall have the meaning provided in Section 4.3 hereof.

"**Permanent Interest in the Leased Premises**" shall have the meaning provided in Section 19.1 hereof.

"**Permanent Loan**" shall have the meaning provided in Section 14A.1 hereof.

"**Permanent Mortgage**" shall have the meaning provided in Section 14A.1 hereof.

"**Permanent Taking**" shall have the meaning provided in Section 19.1 hereof.

"**Permitted Encumbrances**" shall mean those exceptions, liens, encumbrances, easements, restrictions, reservations, covenants, agreements, and record matters of title shown on "**Exhibit L**" attached hereto and hereby made a part hereof.

"**Person**" shall mean and include an individual, company (including a limited liability company), corporation, partnership, joint venture, estate, trust, unincorporated association; any Federal, state, county or municipal government, bureau, department or agency thereof, and any other entity.

"**Project A/E Agreement**" shall have the meaning set forth in Section 4 of Schedule 5.1.2A attached hereto.

"**Port Authority Indemnified Parties**" shall mean the Port Authority, each Commissioner of the Port Authority and each officer, director, agent, elected official, attorney for, employee and representative of the Port Authority, as appropriate.

"**PPB**" shall have the meaning provided in Section 5.1.3.

"**Present Value**" shall mean the value as of the date in question of a sum or sums to be paid or collected in the future, to be calculated at a rate equal to the prime rate published in The Wall Street Journal (WSJ Prime Rate) in effect as of the date in question; provided, however, that if the WSJ Prime Rate is no longer available, a successor index shall be used, or, in the absence thereof, the rate to be used for calculating Present Value shall be a discount rate certified by the Port Authority's Chief Financial Officer, as of the date in question, as appropriate for such calculation.

"**Privatization**" shall have the meaning provided in Section 24.1 hereof.

"**Privatization Costs**" shall have the meaning provided in Section 24.2 hereof.

"**Proceeds Payment**" shall have the meaning provided in Section 15.2.1(b) hereof.

"**Prohibited Person**" shall have the meaning provided in Section 14.1 hereof.

"**Project**" shall have the meaning set forth in Section 5.1.2 hereof.

"**Project A/E**" shall mean STV Incorporated, or such other New York State licensed professional architect/ engineer as the Lessee may hereafter retain with the approval of the Port Authority, not to be unreasonably withheld, who (i) shall serve as the architect/engineer of record for the Project, and (ii) shall be responsible for the Approved Construction Documents, and after the **Project Completion Date**, shall have the meaning set forth in Section 6.1.1 hereof.

"**Project CM**" means Skanska USA Building Inc. or such other construction manager and/or general contractor as shall be retained by Lessee with the approval of the Port Authority, such approval not to be unreasonably withheld.

"**Project Completion Date**" shall have the meaning provided in Subsection 5.17.3 hereof.

"**Proposed Alteration**" shall mean an alteration proposed pursuant to Article 6 hereof.

"**Proposed Determination**" shall have the meaning set forth in Section 5.23.1(b)(ii) hereof.

"**Proposed Modification**" shall have the meaning provided in Subsection 5.6.1 hereof.

"**Punchlist Items**" shall have the meaning provided in Subsection 5.17.5(a) hereof.

"**Ramps**" shall have the meaning provided in the Recitals.

"**Recitals**" shall mean the "Whereas" clauses of this Agreement.

"**Recognized Mortgagee**" shall have the meaning provided in Section 14A.1 hereof.

"**Refinancing Loan**" shall have the meaning provided in Section 14A.1 hereof.

"Refinancing Mortgage" shall have the meaning provided in Section 14A.1 hereof.

"Rental" shall have the meaning provided in Section 4.1 hereof.

"**Replaced Substation**" shall have the meaning provided in Section 8(a) of Schedule 5.1.2A attached hereto.

"**Required Leased Premises Seismic Upgrade**" shall have the meaning set forth in Section 7(b) of Schedule 5.1.2A attached hereto.

"**Required Reserved Premises Seismic Upgrade**" shall have the meaning set forth in Section 7(b) of Schedule 5.1.2A attached hereto.

"**Requirements**" shall mean all present and future laws, rules, orders, enactments, ordinances, resolutions, regulations, statutes, requirements, codes, directions and executive orders of any Governmental Authority that shall apply to the Leased Premises and shall also mean all present and future conditions imposed in connection with the issuance of any permit or license applicable to the Leased Premises by any Governmental Authority.

"**Reserved Premises**" shall have the meaning provided in Section 2.2 hereof.

"**Reserved Premises Redevelopment Work**" shall have the meaning provided in Subsection 5.1.2(a) hereof.

"**Restoration Work**" shall have the meaning provided in Section 5.22(b) or Section 11.1(b) hereof, as applicable.

"**Retail Branding Program**" shall mean the retail branding program that is part of the GWBBS Manual and is annexed hereto as **Exhibit B(vi)**, as such retail branding program may be changed from time to time by the Lessee with the Port Authority's approval, not to be unreasonably withheld.

"**Retail Rules and Regulations**" shall have the meaning provided in Section 8.2.1 hereof.

"**Retainage**" shall have the meaning provided in Subsection 5.4.3(a)(3)(i) hereof.

"**Right of First Offer**" shall have the meaning provided in Section 24A.1(b) hereof.

"**ROFO Notice**" shall have the meaning provided in Section 24A.1(a) hereof.

"**ROFO Waiver**" shall have the meaning provided in Section 24A.1(b) hereof.

"**Rules and Regulations**" shall have the meaning provided in Section 8.2.1 hereof.

"**Second Extension Period**" shall have the meaning provided in Subsection 3.1.1(2) hereof.

"**Senior Recognized Mortgagee**" shall have the meaning provided in Section 14.1 hereof.

"**Single Purpose Entity**" shall have the meaning provided in Section 14.1 hereof.

"**Stage I Conformed Documents**" - see Conformed Stage I Documents.

"**Stage III Documents**" shall mean final construction documents, consisting of drawings, specifications, calculations, product cuts and samples and any and all other design documents required in order for trade contractors to submit final bids.

"**Staging and Phasing Plan**" shall have the meaning provided in Section 1(b) of Schedule 5.1.2A.

"**Structural and Systems Integrity Requirements**" shall mean the requirements set forth as part of the GWBBS Manual, annexed hereto as **Exhibit B(v).**

"**Sublease**" shall have the meaning provided in Section 14.1 hereof.

"Submission Date" shall have the meaning set forth in Section 5.23.1(b)(iii) hereof.

"**Subordination, Non-Disturbance and Attornment Agreement**" shall have the meanings provided in Subsection 14.9.7(a) hereof.

"**Substantial Completion**" or "**Substantially Completed**" shall have the meaning provided in Subsection 5.17.4(a) hereof.

"**Subtenant**" shall have the meaning provided in Section 14.1 hereof.

"**Successor Landlord**" shall have the meaning provided in Section 24.1 hereof.

"**Sustainability Guidelines**" shall mean the Port Authority of New York and New Jersey Sustainable Design Project Manual dated August 15, 2007, which is part of the GWBBS Manual and is incorporated into the Design Criteria annexed hereto as **Exhibit B(i).**

"**Taxes**" shall have the meaning provided in Subsection 4.4.6(b) hereof.

"**Tax Challenge**" shall have the meaning provided in Subsection 4.4.6(d) hereof.

"**TCA/TAA**" - see "**Tenant Construction Application/Tenant Alteration Application**".

"**TCRM**" – see "**Tenant Construction Review Manual**".

"**Temporary Interest in the Leased Premises**" shall have the meaning provided in Section 19.1 hereof.

"**Temporary Taking**" shall have the meaning provided in Section 19.1 hereof.

"**Tenant Construction Application/Tenant Alteration Application**" or "**TCA/TAA**" shall mean form "PA 531" or any successor form.

"Tenant Construction Plan and Specification Guidelines (with Tenant Construction or Alteration Application)". The Tenant Construction Plan and Specification Guidelines (with Tenant Construction or Alteration Application) are part of the GWBBS Manual and are annexed hereto as **Exhibit B(iii)**.

"**Tenant Construction Review Manual**" or "**TCRM**" shall mean the document of that name promulgated in December 2008 by the Code Compliance Office (as the same may be amended from time to time to comply with Code Updates), to the extent that such document sets forth standards and requirements that apply to construction at all Port Authority facilities, it being understood that standards and requirements set forth in such document that relate solely to the Port Authority Bus Terminal at 42nd Street or other specific facilities shall not apply with respect to the Facility, except (insofar as the Design Criteria Project Elements are concerned) to the extent, if any, expressly incorporated in the Design Criteria. The TCRM is part of the GWBBS Manual and is annexed hereto as **Exhibit B(ii)**.

"**Term**" shall have the meaning provided in Section 3.1 hereof.

"**Termination Notice**" shall have the meaning provided in Subsection 14A.5.2(a) hereof.

"**Termination Notice Period**" shall have the meaning provided in Section 14A.5.2(b) hereof.

"**Third Extension Period**" shall have the meaning provided in Section 3.1.1(3) hereof.

"**TME**" or the "**Trans Manhattan Expressway**" shall have the meaning provided in Section 2.2 hereof.

"**Transaction Expenses**" shall have the meaning provided in Section 15.1 hereof.

"**Transfer**" shall have the meaning provided in Section 14.1 hereof.

"**Unavoidable Delay**" or "**Force Majeure**" or "**causes or conditions beyond its control**" shall have the meaning provided in Section 25.4 hereof.

"**Violations Notice**" shall mean a notice, issued by the Code Compliance Office to the Lessee, in connection with a violation of the rules and/or regulations set forth in the GWBBS Manual or the Requirements, which notice shall set forth, in reasonable detail, the particular rule and/or regulation or Requirement which was violated and the period of time within which the repair, modification, addition, improvement and/or alteration described in such notice shall be completed.

"**Voluntary Packages**" shall have the meaning set forth in Section 3(d) of Schedule 5.1.2A attached hereto.

"**West Building**" shall have the meaning provided in the Recitals.

"**Women-owned Business Enterprise**" or "**WBE**" shall have the meaning provided in Section 5A.3 hereof.

ARTICLE 2

LEASED PREMISES; RESERVED PREMISES; COMMON AREAS; RECIPROCAL EASEMENTS

Section 2.1 Leased Premises.

The Port Authority hereby rents and lets to the Lessee and the Lessee hereby hires and takes from the Port Authority, the Facility, exclusive of the "Reserved Premises" that are described in Section 2.2 hereof (the "**Leased Premises**"). Prior to the Project Completion Date, the Leased Premises shall be as delineated in the Staging and Phasing Plan. Upon completion of the Project, subject to Section 2.5, it is contemplated that the Leased Premises will comprise approximately 131,950 square feet of floor area as shown on **Schedule 2.1(a)** annexed hereto and as shown on "**Exhibit AA**" attached hereto, and will also include:

(a) the entire Exoskeleton;

(b) all storefronts, windows and other exterior elements that adjoin space that is included in the Leased Premises;

(c) the soffits under the Broadway Bridges;

(d) the soffits under the Ramps insofar as they overlie the sidewalk adjoining the West Building;

(e) [a] conduit[s] and related supports for wiring and/or pipes connecting portions of the Leased Premises in the East Building and portions of the Leased Premises in the West Building, as shown on the Approved Construction Documents;

(f) certain structural columns (directly under or supporting the Leased Premises) at the level of the TME, as shown on such "**Exhibit AA**";

(g) subject to Section 2.3(e) hereof, the Pedestrian Underpass; and

(h) the concrete slab at Level 3, exclusive of the waterproof membrane and roadway surfaces and other building elements above the top of such concrete slab except as shown on "**Exhibit AA**".

Section 2.2 Reserved Premises.

Excluded from the Leased Premises are the Reserved Premises, which shall be retained by the Port Authority. The Lessee acknowledges that the bus services operating in the Facility are ongoing and shall continue to operate during and after completion of the Project. For purposes of this Lease, it is contemplated that the "**Reserved Premises**" shall mean:

(a) during the performance of the Construction Work, the portions of the Facility occupied by the Port Authority in connection with and in support of bus service operations from time to time consistent with the Staging and Phasing Plan; and

(b) upon completion of the Construction Work, the following portions of the Facility as shown on "**Exhibit AA**" attached hereto, subject to Section 2.5 hereof:

(i) all elements of the Broadway Bridges, exclusive of (1) soffits under the Broadway Bridges, (2) the portions of the Broadway Bridges that are included in the Exoskeleton and (3) [a] conduit[s] and related supports for wiring and/or pipes connecting portions of the Leased Premises in the East Building and portions of the Leased Premises in the West Building, as shown on the Approved Construction Documents;

(ii) the entire East Building including the subgrade cable room, exclusive of, (1) the retail space, fronting on Broadway and constituting part of the Leased Premises, that is shown on such "**Exhibit AA**" and the storefronts, windows and other exterior elements that adjoin such space, (2) the entire Exoskeleton of the East Building, and (3) the structural columns that are referred to in clause (g) of Section 2.1 hereof;

(iii) in the West Building, (1) all elements (whether structural or non-structural but not any portion of the Exoskeleton) above the top of the Level 3 reinforced

concrete floor slab (or underside of the waterproof membrane on top of such Level 3 floor slab), including all enclosed and unenclosed space, and all roadway surfaces, on such Level 3 and including the Nervi Roof (but excluding Lessee utility rooms, if any, under the Nervi roof as shown on the Approved Construction Documents) and excluding the Exoskeleton (2) on Level 1 at the Fort Washington Avenue side, approximately 500 square feet, and (3) at the Broadway side, certain vertical circulation space for two dedicated elevators serving Levels 1 and Level 3, including the entry alcove, the exterior wall, doors, windows and canopy adjoining such space, as shown on such "**Exhibit AA**";

(iv) the retaining walls below grade on either side of the Trans-Manhattan Expressway (the "**TME**") and the structural columns at the TME level except for the structural columns referred to in Section 2.1(f) that are directly under or support the Leased Premises, as shown on such "**Exhibit AA**";

(v) all mechanical, electrical, plumbing and/or other equipment, wherever located, that shall exclusively serve the Reserved Premises, including without limitation all vertical transportation equipment in the area described in the foregoing sub-paragraph (iii)(3);

(vi) the Ramps, exclusive of the soffits under the Ramps insofar as they overlie the sidewalk adjoining the West Building;

(vii) the existing blue windwall panels and supporting structures at Level 3; and

(viii) the Land, any and all airspace, air rights and development rights attributable to the Land that shall be unused as of the Project Completion Date, and any and all improvements that the Port Authority may develop in such air space over the East Building following the Project Completion Date in accordance with Section 6.2 hereof.

Section 2.3 Common Areas.

(a) For purposes of this Agreement, "**Common Areas**" shall mean, subject to Section 2.5 hereof, the portions of the Leased Premises identified as such on "**Exhibit AA**" attached hereto, which shall (following completion of the Project) be available to pedestrian traffic and other uses for the benefit and enjoyment of all portions of the Facility by all the Facility's occupants, their permittees, visitors and the general public, and shall include without limitation the following portions of the Leased Premises:

(i) the common lobbies on Level 1 and Level 2 on the Fort Washington side of the West Building;

(ii) the common vertical circulation facilities (i.e. stairways, railings, escalators, elevators and elevator shafts), on the Fort Washington Avenue side of the West Building, that will connect the Leased Premises and the Reserved Premises from Level

1 through Level 3 (as shown on "**Exhibit AA**"), and the mechanical and electrical equipment serving such facilities (the "**Common Vertical Circulation Facilities**"); and

(iii) any and all shared fire stairs (i.e. fire stairs serving both the Reserved Premises and the Leased Premises); and

(iv) subject to Section 2.3(c) hereof, the Pedestrian Underpass.

(b) During construction of the Project, the Lessee shall make access to the Reserved Premises available to the public as provided in the Staging and Phasing Plan. Following completion of the Project, the Lessee shall make available to the public, through the Common Areas, access to and from the Reserved Premises at all times when the Reserved Premises shall be open to the public. Advance notice regulating the times (days and hours) the public will have access to the Reserved Premises will be provided by the Port Authority to the Lessee. The foregoing access to and from the Reserved Premises shall be subject to Unavoidable Delays, and may be interrupted in emergencies and/or to the extent that temporary closures shall be required in order periodically to make improvements to the Common Areas; provided however, that alternative access sufficient for bus station passenger loads to the Reserved Premises shall be made available at all times during the performance of any such improvements.

(c) The Lessee acknowledges that, although the Pedestrian Underpass has historically been maintained by the Port Authority, the Pedestrian Underpass may or may not be owned by the Port Authority. To the extent that the Pedestrian Underpass continues to be controlled by the Port Authority, it shall be deemed to be a part of the Facility, the Leased Premises and the Common Areas for all purposes of this Agreement. To the extent that it is not controlled by the Port Authority, it shall be excluded from the Facility, the Leased Premises and the Common Areas for all such purposes, notwithstanding any other provision of this Agreement.

Section 2.4 Reciprocal Access Rights.

2.4.1 *General Access Rights.* During the Term, the Port Authority and the Lessee hereby grant, each to the other, non-exclusive access rights for use in common with all others entitled to the same, for pedestrian access to, ingress to, egress from and passage through and over, subject to the security and other similar access restrictions maintained from time to time by the Port Authority, the Lessee or any Governmental Authority in connection with the Facility, (i) the Common Areas, (ii) the public portions of the Leased Premises or the public portions of the Reserved Premises, as applicable, and (iii) such stairwells and stairways as may be necessary for emergency egress from any portion of the Leased Premises or the Reserved Premises.

2.4.2 *Limited Access Rights.* During the Term, the Port Authority and the Lessee hereby grant each to the other, non-exclusive access rights for use in common with all others entitled to the same, (i) for access to, ingress to and egress from and passage through and over

the Leased Premises or the Reserved Premises, as applicable, as may be necessary and/or desirable in order for the Lessee or the Port Authority, as applicable, to perform its obligations and exercise and enjoy its rights under this Agreement, including without limitation, with respect to the construction, maintenance, servicing, repair, restoration, replacement and inspection of the Leased Premises or the Reserved Premises as applicable, which access rights include, without limitation, rights for access to, ingress to, egress from and passage of construction and other vehicles, personnel, equipment and materials, through and over all portions of the Leased Premises or the Reserved Premises, as applicable, and (ii) in, to, over and with respect to the Common Areas. In connection with this subsection 2.4.2, Lessee hereby agrees that access to the catwalks in the West Building "skin-areas" as shown on the Space Allocation Diagrams attached to this Lease as Exhibit AA, shall be available to the Port Authority at all times, and such areas shall not be obstructed or otherwise be reconfigured to prevent such access.

2.4.3 *Provisions Applicable to All Access Rights.* The foregoing general and limited access rights (collectively, the "**Access Rights**") are subject to the GWBBS Manual and the Requirements. The Access Rights granted hereunder are for the benefit of and run to the respective successors and assigns of the Lessee or the Port Authority, as applicable. The benefits of any Access Rights shall be enjoyed by the beneficiaries thereof in a manner so as not to unreasonably interfere with the ownership, construction, development, use, operation, maintenance, repair, restoration or alteration by the Lessee or the Port Authority, as applicable, subject to advance notice by one Party to the other as appropriate; provided however, that such Access Rights shall at all times and in all respects be subject to the Port Authority's rights of entry reserved under Article 16 hereof.

Section 2.5 Final Drawings/Descriptions.

The Port Authority and the Lessee acknowledge that Schedule 2.1(a) and "**Exhibit AA**" attached hereto shall hereafter be modified as necessary to reflect any agreed upon changes to the Approved Construction Documents and in any event are attached to this Agreement as an interim measure pending the preparation of final legal descriptions and drawings of the Leased Premises, the Common Areas, the Common Vertical Circulation Facilities, the Exoskeleton and the Reserved Premises based on "as-built" drawings (collectively, the "**Final Drawings/Descriptions**"), which will be substituted for the aforesaid interim descriptions and drawings in accordance with this Section 2.5. The Lessee shall complete the Final Drawings/Descriptions as soon as possible after the completion of the Project, and the Port Authority and the Lessee shall thereupon execute an amendment to this Agreement and the memorandum of this Agreement recorded contemporaneously with the execution of this Agreement (the "**Lease Memorandum**"), amending the interim descriptions of the Leased Premises and the Reserved Premises to substitute the Final Drawings/ Descriptions for such interim descriptions.

Section 2.6 Limitations of Rights and Privileges.

The Leased Premises are let to the Lessee and the Lessee takes the same subject to all the following: (i) the Permitted Encumbrances, (ii) rights of the public in and to any public street, (iii) subject to Section 2.4.3 hereof, rights, if any, of any enterprise, public or private, which is engaged in furnishing power, electric, gas, water, telecommunication, steam or other utility services to the Facility, (iv) the GWBBS Manual and (v) the Requirements. No greater rights or privileges with respect to the use of the Leased Premises, or any part thereof, are granted or intended to be granted to the Lessee by this Agreement, or any provision hereof, than the rights and privileges expressly granted herein.

Section 2.7 Condition of Facility and Leased Premises and Delivery of Possession.

2.7.1 *Condition of Facility and Leased Premises.* The Lessee acknowledges that the Lessee is fully familiar with the Facility, the physical condition thereof and the Permitted Encumbrances. The Lessee acknowledges and agrees that except as otherwise expressly set forth in this Agreement, no representations, statements, or warranties, express or implied, have been made by or on behalf of the Port Authority in respect of the Facility, the status of title thereof, the physical condition thereof, including without limitation, the zoning or other laws, regulations, rules and orders applicable thereto, taxes, or the use that may be made of the Leased Premises, that the Lessee has relied on no such representations, statements or warranties, and that the Port Authority shall not in any event whatsoever be liable for any latent or patent defects in the Leased Premises. The Lessee hereby agrees to take the Leased Premises in the condition they are in as of the Lease Commencement Date, to assume all responsibility for any and all risks, costs and expenses of any kind whatsoever caused by, arising out of or in connection with the condition of the Leased Premises whether any aspect of such condition existed prior to, on or after the Lease Commencement Date, including without limitation responsibility for all Environmental Requirements and Environmental Damages, and to indemnify and hold harmless the Port Authority for all such risks, responsibilities, costs and expenses, except with respect to claims where the alleged damage or injury was sustained prior to the Lease Commencement Date. (For example: if a construction worker is exposed to a Hazardous Substance while working at the Leased Premises after the Lease Commencement Date and thereafter makes a claim for damage to his health resulting from such exposure, the Lessee's foregoing indemnification obligation would apply, irrespective of the fact that the Hazardous Substance already existed at the Leased Premises prior to the Lease Commencement Date; if, however, a construction worker working at the Leased Premises in 1985 was exposed to a Hazardous Substance present at the Leased Premises at that time, and made a claim subsequent to the Lease Commencement Date for damage to his health resulting from that exposure, the Lessee's indemnification obligation would not apply and the Lessee would be entitled to indemnification from the Port Authority). The Lessee's foregoing obligations with respect to the responsibilities, risks, costs and expenses assumed by the Lessee and arising during the Term shall survive the expiration or termination of this Agreement.

2.7.2 *Delivery of Possession.* The Port Authority shall deliver possession of the Leased Premises on the Lease Commencement Date vacant and free of occupants and

tenancies, unless otherwise heretofore agreed between the Parties. Upon taking delivery of possession, Lessee agrees that no portion of the Leased Premises will be used initially or at any time during the letting which is in a condition unsafe or improper for the conduct of the Lessee's operations hereunder so that there is undue risk of injury or damage to life or property.

Section 2.8 Title to Improvements.

Without limiting any provision of this Agreement, all improvements, fixtures, machinery, apparatus, and fittings hereafter affixed to the Leased Premises and whether or not by operation of law are considered real property shall be a part of the Leased Premises and shall be, or become, the property of the Port Authority upon the installation thereof, as the case may be, without the doing of any other act or thing (provided, however that Lessee shall execute and deliver such documents confirming passage of title as the Port Authority may require), and title thereto shall be and remain in the Port Authority, subject to the terms and provisions of this Agreement. The foregoing is not intended to preclude the Lessee from claiming depreciation or other tax-related benefits by reason of its ownership of a long-term leasehold interest in such property.

ARTICLE 3

TERM OF LETTING, PERMITTED USE, SERVICES AND UTILITIES

Section 3.1 Term.

The term of the letting under this Agreement (the "**Term**") shall commence as of the date this Agreement is fully executed by the Parties, which date shall be set forth on the first page of this Agreement (the "**Lease Commencement Date**"), and shall expire, unless sooner terminated in accordance with any other provisions of this Agreement, at 11:59 o'clock P.M. on the last day of the forty-ninth (49th) Lease Year (such date, as it may be extended as hereinafter provided, or the effective date of any earlier termination of the Term, being hereunder called the "**Expiration Date**"). The period between the Lease Commencement Date and the last day of the forty-ninth Lease Year is hereinafter referred to as the **"Initial Term"**.

3.1.1 *Extension Periods.*

(1) *First Extension Period.* The Lessee shall have the right to extend the Term with respect to the entire Leased Premises for a ten (10) year period commencing effective upon the expiration date of the initial term of the letting under this Agreement, as set forth in paragraph Section 3.1 above (the "**First Extension Period**"), provided, however, that the Lessee shall give unconditional written notice to the Port Authority of its election so to do, subscribed by an executive officer of the Lessee no later than the Business Day immediately preceding the first (1st) Business Day of the twenty-four (24) month period preceding the end of the forty-ninth (49th) Lease Year, and provided, further, that any such election shall be

voided if either on the date of such election or on the first day of such extension period (i) an Event of Default shall have occurred and be continuing and (ii) either (1) there shall be no Recognized Mortgagee or (2) the rights that are afforded to Recognized Mortgagees by Section 14A.5 hereof shall have expired. All of the terms, covenants, conditions and provisions of this Agreement shall apply during the First Extension Period.

(2) *Second Extension Period.* In the event the Lessee exercises its right to extend the Term to include the First Extension Period, the Lessee shall have the further right to extend the Term with respect to the entire Leased Premises for an additional ten (10) year period (the "**Second Extension Period**") commencing effective upon the expiration date of the First Extension Period, provided, however, that the Lessee shall give unconditional written notice to the Port Authority of its election so to do, subscribed by an executive officer of the Lessee no later than the Business Day immediately preceding the first (1st) Business Day of the twenty-four (24) month period preceding the expiration date of the First Extension Period, and provided, further, that any such election shall be voided if either on the date of such election or on the first day of such extension period (i) an Event of Default shall have occurred and be continuing and (ii) either (1) there shall be no Recognized Mortgagee or (2) the rights that are afforded to Recognized Mortgagees by Section 14A.5 - hereof shall have expired. All of the terms, covenants, conditions and provisions of this Agreement shall apply during the Second Extension Period.

(3) *Third Extension Period.* In the event the Lessee exercises its right to extend the Term to include the Second Extension Period, the Lessee shall have the further right to extend the Term with respect to the entire Leased Premises for an additional ten (10) year period (the "**Third Extension Period**") effective upon the expiration date of the Second Extension Period, provided, however, that the Lessee shall give unconditional written notice to the Port Authority of its election so to do, subscribed by an executive officer of the Lessee no later than the Business Day immediately preceding the first (1st) Business Day of the twenty-four (24) month year period preceding the expiration date of the Second Extension Period, and provided, further, that any such election shall be voided if either on the date of such election or on the first day of such extension period (i) an Event of Default shall have occurred and be continuing and (ii) either (1) there shall be no Recognized Mortgagee or (2) the rights that are afforded to Recognized Mortgagees by Section 14A.5 hereof shall have expired. All of the terms, covenants, conditions and provisions of this Agreement shall apply during the Third Extension Period.

(4) *Fourth Extension Period.* In the event the Lessee exercises its right to extend the Term to include the Third Extension Period, the Lessee shall have the further right to extend the Term with respect to the entire Leased Premises for an additional ten (10) year period (the "**Fourth Extension Period**") commencing effective upon the expiration date of the Third Extension Period, provided, however, that the Lessee shall give unconditional written notice to the Port Authority of its election so to do, subscribed by an executive officer of the Lessee no later than the Business Day immediately preceding the first (1st) Business Day of the twenty-four (24) month period preceding the expiration date of the Third

Extension Period, and provided, further, that any such election shall be voided if either on the date of such election or on the first day of such extension period (i) an Event of Default shall have occurred and be continuing and (ii) either (1) there shall be no Recognized Mortgagee or (2) the rights that are afforded to Recognized Mortgagees by Section 14A.5 hereof shall have expired. All of the terms, covenants, conditions and provisions of this Agreement shall apply during the Fourth Extension Period.

(5) *Fifth Extension Period.* In the event the Lessee exercises its right to extend the Term to include the Fourth Extension Period, the Lessee shall have the further right to extend the Term with respect to the entire Leased Premises for an additional ten (10) year period (the "**Fifth Extension Period**") commencing effective upon the expiration date of the Fourth Extension Period, provided, however, that the Lessee shall give unconditional written notice to the Port Authority of its election so to do, subscribed by an executive officer of the Lessee no later than the Business Day immediately preceding the first (1st) Business Day of the twenty-four (24) month period preceding the expiration date of the Fourth Extension Period, and provided, further, that any such election shall be voided if either on the date of such election or on the first day of such extension period (i) an Event of Default shall have occurred and be continuing and (ii) either (1) there shall be no Recognized Mortgagee or (2) the rights that are afforded to Recognized Mortgagees by Section 14A.5 hereof shall have expired. All of the terms, covenants, conditions and provisions of this Agreement shall apply during the Fifth Extension Period, except that the Lessee shall have no further right to extend the letting under this Agreement.

3.1.2 *Failure by Lessee to Exercise Extension Right.* In the event no unconditional written notice from Lessee is timely delivered to the Port Authority, as provided above in Subsection 3.1.1, then Lessee shall not be deemed to have waived its extension rights with respect to such Extension Period until and unless (i) the Port Authority shall have notified the Senior Recognized Mortgagee of Lessee's failure to exercise its right to extend the Term to include such Extension Period and (ii) such Senior Recognized Mortgagee shall have failed to elect on behalf of the Lessee to extend the Term to include such Extension Period within ten (10) Business Days of receipt of the notice given by the Port Authority.

Section 3.2 Permitted Use.

The Leased Premises may be used solely for the redevelopment, construction, use, maintenance, repair and operation of the Leased Premises as a First Class retail facility selling or providing consumer goods and/or services (including, without limitation, professional services) customarily found in retail shopping centers, and/or for use by community-based not-for-profit organizations. The Lessee shall not use the Leased Premises for any other purpose whatsoever without the prior written consent and approval of the Port Authority. The Lessee shall not, in any event, use the Leased Premises for any residential or industrial purposes, or for any purposes which are in violation of law, or which reasonable Persons would deem to be pornographic or similarly offensive, or in a manner inconsistent with this

Section 3.2 including without limitation, a massage parlor, funeral home, flea market, billiard or bingo parlor, gambling parlor, facility for the sale of paraphernalia for use with illicit drugs, facility for the sale or display of pornographic material, arcade, pinball or computer game room or any other facility operated solely for entertainment purposes (other than for a restaurant or first-run cinema or catering operation) or central laundry, dry cleaning plant or laundromat except for nominal supportive facilities for on-site service oriented to pick-up and delivery by the ultimate consumer as the same may be customarily found in retail shopping centers.

Lessee and the Port Authority acknowledge that the Port Authority is retaining the Reserved Premises solely for use in connection with or in support of the operation of passenger bus services in connection with the George Washington Bridge consistent with applicable legislation therefor and the use of the Leased Premises as a First Class retail facility by the Lessee.

Section 3.3 Services and Utilities.

The Port Authority shall have no obligations or responsibility with respect to the performance of any services or providing, supplying or furnishing to the Lessee of any utilities or services whatsoever in the Leased Premises, except for electrical power to supply power for elevators, escalators, lighting, outlets and HVAC in the Common Areas as contemplated by the Approved Construction Documents for which the Lessee shall compensate the Port Authority pursuant to Section 9.3 hereof. Upon the request of Lessee, the Port Authority shall reasonably cooperate with Lessee in obtaining any utilities required for operation of the Leased Premises or the Common Areas. All utilities used in the Reserved Premises shall be separately metered and shall be paid for directly by the Port Authority.

ARTICLE 4

RENTAL

Section 4.1 Rental.

Rental obligations of Lessee shall include all payments to be made by the Lessee to the Port Authority pursuant to any provision of this Agreement, including without limitation, Basic Rent, Percentage Rent, Impositions, fees payable pursuant to Article 5 and Article 6, audit fees and late charges ("**Rental**").

From the Lease Commencement Date (whether or not construction of the Project has commenced) and throughout the Term, the Lessee shall pay to the Port Authority, without notice or demand, the Basic Rent and Percentage Rent set forth below. If the last Lease Year does not constitute a full calendar year, then the Basic Rent for such Lease Year shall be prorated.

Section 4.2 Basic Rent.

(a) As and for Basic Rent for Lease Years one (1) through ten (10), the Lessee shall pay in advance to the Port Authority a total of Six Million Four Hundred Forty Thousand Dollars ($6,440,000) (in addition to the amounts payable pursuant to Subsection 5.1.1), as follows:

(i) on the Lease Commencement Date, One Million, Eight Hundred Forty Thousand Dollars ($1,840,000) less the amount of the One Million Dollars ($1,000,000) "Advance Payment" that the Lessee paid to the Port Authority on signing and delivery of the Interim Agreement to the Port Authority (so that the remaining Advance Payment of Eight Hundred Forty Thousand Dollars ($840,000) shall be paid to the Port Authority on the Lease Commencement Date);

(ii) on or before the date that shall be six (6) months after the Lease Commencement Date, Two Million Seventy Thousand Dollars ($2,070,000);

(iii) on or before the date that shall be eighteen (18) months after the Lease Commencement Date, an additional Two Million Seventy Thousand Dollars ($2,070,000);

(iv) within three (3) Business Days after the Certificate of Completion is issued, the remaining Four Hundred Sixty Thousand Dollars ($460,000).

(b) Commencing with the first (1st) day of the eleventh (11th) Lease Year through the last day of the Initial Term, the Lessee shall pay to the Port Authority, in equal monthly installments in advance on the first (1st) Business Day of each calendar month, the amount of One Million Dollars ($1,000,000) per annum, which amount shall be increased (on a compounded basis) by five percent (5%) on each fifth (5th) anniversary of the first day of the eleventh (11th) Lease Year. Thereafter, in the event the Lessee elects to extend the Term in accordance with Section 3.1 hereof, the Basic Rent payable to the Port Authority for each Extension Period shall be (x) an amount equal to the higher of (i) the Basic Rent in effect immediately preceding the start of such Extension Period or (ii) the average of the highest three (3) years of the sum of (A) Basic Rent plus (B) Percentage Rent (as defined in Section 4.3) paid to the Port Authority during the relevant period (i.e. the Initial Term or an Extension Period) immediately preceding the start of such Extension Period, and (y) the amount determined in (x) shall be increased (on a compounded basis) by five percent (5%) on each fifth (5th) anniversary of the first (1st) day of such Extension Period. During each Extension Period, the Basic Rent shall continue to be paid to the Port Authority in equal monthly installments in advance on the first (1st) Business Day of each calendar month.

Section 4.3 <u>Percentage Rent.</u>

For each of Lease Years six (6) through ten (10), the Lessee shall pay to the Port Authority, as additional rent, eight percent (8%) of the amount, if any, by which the Gross Revenues for such Lease Year shall exceed Twelve Million Dollars ($12,000,000). Thereafter (i.e., commencing with the eleventh (11th) Lease Year), the Lessee shall pay to the

Port Authority, as additional rent, the amount, if any, by which eight percent (8%) of the Gross Revenues for any Payment Period shall exceed the Basic Rent for such Payment Period. The additional rent payable pursuant to this Section 4.3 is referred to herein as "**Percentage Rent**". The Lessee shall, at its own cost and expense, furnish to the Port Authority no later than fifteen (15) days after the end of each Payment Period (and fifteen (15) days following the expiration or termination of the Term), a statement, in such detail as the Port Authority may reasonably require, of all Gross Revenues received by the Lessee during the Payment Period then just ended. Each such statement shall be certified as complete and correct in all material respects by the Chief Financial Officer of the Lessee (if a corporation) or, if the Lessee is a partnership, the managing general partner of the Lessee, or by a member or manager of the Lessee, if the Lessee is a limited liability company. The Lessee shall send to the Port Authority as required by this Section 4.3 the payment of the Percentage Rent, if any, due for each Payment Period, accompanied by a copy of the statement on which the payment is calculated, to the address provided in Section 21.2. The original of each such statement shall be sent to: The Port Authority of New York and New Jersey, Attention: Manager, Revenue Accounting, One Path Plaza, 6th Floor, Jersey City, New Jersey 07030, and an additional copy of each such statement shall be sent to The Port Authority of New York & New Jersey, Real Estate and Development Department, Attn: General Manager, Financial Services, 225 Park Avenue South, New York, NY 10003, or to such other address as may be substituted therefor from time to time by written notice from the Port Authority to the Lessee.

4.3.1 *Recordkeeping.* The Lessee shall (for a period of at least six (6) years following the end of each Lease Year) keep and maintain at an office located in the State of New York complete and accurate books and records of account reflecting all Gross Revenues from which the Port Authority may verify the amounts reported on each statement furnished by the Lessee to the Port Authority pursuant to the Lessee's obligation to pay Percentage Rent.

4.3.2 *Inspection of Records.* The Port Authority or its designated agent shall have the right at any time and from time to time during regular business hours, upon at least five (5) Business Days' notice to the Lessee, to inspect and audit the Lessee's books and records of account for any Payment Period or Payment Periods for the purpose of verifying the amount due as Percentage Rent for such Payment Period or Payment Periods. Each such inspection and audit shall be conducted at the place where the Lessee then regularly maintains its books and records in accordance with the record keeping obligations hereinabove set forth. The Port Authority will, to the extent it is lawfully able to do so, use reasonable efforts to keep confidential and not disclose to others any information it obtains as a result of any inspection or audit conducted by the Port Authority pursuant to this subsection.

4.3.3 *Underpayment; Overpayment.* Should any audit performed by the Port Authority or its designated agent disclose that the payment of Percentage Rent for any Payment Period or Payment Periods has been understated, then, the understated amount shall be payable to the Port Authority in accordance with Section 21.4 entitled "Late Charges" and Section 21.5 entitled "Right to Audit; Audit Findings" hereof. In the event an audit discloses

an overpayment, a credit in the amount of the overpayment will be given against the next installment(s) of Rental due.

Section 4.4 Impositions.

4.4.1 *Lessee's Obligation to Pay Impositions.* It is understood and agreed that the Lessee's obligations hereunder shall include an obligation to pay or cause Subtenants to pay any and all applicable Impositions. "**Impositions**" shall mean any of the following which at any time during the Term shall, notwithstanding the Port Authority's status as a governmental entity and its fee ownership of the Leased Premises, lawfully be levied, confirmed, imposed upon or become due and payable to, any Governmental Authority in respect of the Leased Premises:

(a) any applicable real property special assessments (including, without limitation, any special assessments for business improvements or imposed by any special assessment district);

(b) personal property and general intangibles taxes, gross receipts, use and occupancy and rent taxes, water, water meter and sewer rents, rates and charges, excises, levies and license and permit fees, and sales and use taxes (except where purchases of certain building materials for incorporation into the Facility are exempt from New York State sales taxes for so long as the Port Authority continues to be a tax exempt entity under Section 1116(a) of New York's Tax Law and (i) if the purchasing contractors are duly registered as vendors with the New York State Department of Taxation and Finance and (ii) if such contractors present each of their own suppliers with a properly completed Contractor Exempt Purchase Certificate, Form ST-120.1 (4/06); with respect to such sales taxes, the Port Authority shall cooperate with the Lessee in Lessee's application for such exemptions by providing the Lessee, upon its request to the Port Authority, with a copy of the "Sales Tax Exemption" letter attached hereto as "**Exhibit D**");

(c) any fines, penalties and other similar governmental charges applicable to the foregoing, together with any interest or costs with respect to the foregoing; and

(d) except as otherwise expressly provided in this Agreement, any other governmental levies, fees, rents, assessments or taxes and charges, general and special, ordinary and extraordinary, foreseen or unforeseen, of any kind whatsoever, together with any fines and penalties and any interest or cost with respect thereto.

4.4.2 *Allocation of Impositions Between the Leased Premises and the Reserved Premises.* If the Government Authority imposing any Imposition does not segregate the amount thereof attributable to the Reserved Premises from the amount thereof attributable to the Leased Premises then the Port Authority shall allocate the same on the basis of the proportion between the total number of rentable square feet in the Leased Premises subject to such Impositions and the total number of rentable square feet used in the Reserved Premises. The Lessee shall timely pay the allocable portion thereof as directed by the Port Authority

either to the Port Authority or to the taxing Governmental Authority, and the Port Authority shall timely pay any Impositions attributable to the Reserved Premises such that neither the Lessee nor the Port Authority shall be adversely affected by any non-payment of any such Imposition. The Lessee shall file all applications and furnish all information required in connection therewith and shall pay any penalties or interest thereon other than on any amounts directly payable by the Port Authority as to which the Lessee has made prompt and timely payments to the Port Authority as required hereunder.

4.4.3 *Right to Pay in Installments.* The Lessee shall have the right, without the consent of the Port Authority, to exercise any option granted to a taxpayer by law to pay any special assessments or other Impositions in installments, notwithstanding the fact that interest may accrue on the unpaid installments, and if the Lessee exercises any such option it shall pay, as and when they become due, all installments which fall due during the Term, together with all interest payable thereon.

4.4.4 *Right to Contest.*

(a) The Lessee shall have the right at its sole cost and expense to challenge, contest or review by appropriate legal proceedings, or in such other manner as may be provided by law, the validity, applicability or amount of any Imposition that it may be required to pay pursuant to the provisions hereof, and the Lessee shall indemnify the Port Authority against any claims, damages or losses that may arise or result therefrom.

(b) Any such challenge, contest or review shall not, unless required by applicable law to prosecute such challenge, contest or review, be in the name of the Port Authority but in the event such challenge, contest or review would be unavailable to the Lessee without the participation of the lessor of the Leased Premises, the Port Authority will join in such challenge, contest or review to the extent required for the Lessee to maintain such challenge or contest or obtain such review. The Lessee shall reimburse the Port Authority for all reasonable expenses including customary, fair and reasonable costs of Port Authority in-house and outside legal counsel, incurred by the Port Authority as a result of its participation in such challenge, contest or review, except to the extent, if any, that it shall constitute a Tax Challenge.

(c) In connection with any such challenge, contest or review, the Lessee shall in no event raise any defense or claim involving in any way the immunity of the Port Authority, its governmental nature or the provisions of any statutes respecting the Port Authority without first obtaining in each instance the express advance consent of the General Counsel of the Port Authority.

(d) In connection with any such challenge, contest or review, the Lessee shall not defer or suspend payment of any Imposition unless by law it is permissible to suspend or defer such payment and in such event the Lessee shall provide the Port Authority with such security (if any) as the Port Authority shall determine is reasonably necessary to protect the Port Authority against losses or penalties which may be imposed as a result of the

Lessee's actions. Except as herein provided, no alleged or purported immunity or exemption from any Impositions available to the Port Authority shall be grounds for or excuse non-payment thereof by the Lessee.

(e) Any refunds of Impositions previously paid by the Lessee shall be the property of the Lessee, and shall be promptly paid over to the Lessee if received by the Port Authority.

4.4.5 *Nature of Lessee's Obligation to Pay Impositions.*

Lessee's obligation to pay all Impositions shall be deemed a Rental obligation of the Lessee, and from time to time upon the written request of the Port Authority the Lessee shall furnish to the Port Authority evidence of the payment of any Imposition for which such evidence is requested.

4.4.6 *Special Credit Against Taxes.*

(a) The Parties acknowledge that, as of the date hereof, the Port Authority is a bi-state agency, created by Compact between the States of New York and New Jersey with the consent of the Congress of the United States of America, and that specific legislation of the State of New York and the State of New Jersey (McKinney's Unconsolidated Laws Section 6515 and Section 7210, and N.J.S.A. Section 32:1-90 and Section 32:2-23.36 collectively, the "**Governing Statute**") provides that the Port Authority shall be required to pay no taxes or assessments upon the Facility, as well as other properties of the Port Authority.

(b) In the event that the Port Authority conveys its interest in the Leased Premises and in direct consequence thereof the Leased Premises become subject to the payment of ad valorem real property taxes ("**Taxes**"), the Landlord shall pay such Taxes (as well as any Taxes payable with respect to the Reserved Premises), failing which the Lessee shall pay the same and shall be entitled to a credit against the Rental hereunder equal to the full amount of any such Taxes actually paid by the Lessee.

(c) In the event that, in consequence of a statutory change, the real property of the Port Authority and/or lessees of the Port Authority (but of no other public agency) becomes subject to the payment of Taxes or any payment in lieu thereof, the Landlord shall pay such Taxes or payment in lieu thereof (as well as any Taxes or payment in lieu thereof payable with respect to the Reserved Premises), failing which the Lessee may pay the same and shall be entitled to a credit against the Rental hereunder equal to the full amount of any such Taxes or payment in lieu thereof actually paid by the Lessee. Notwithstanding the foregoing, and for the avoidance of doubt, it is understood that in the event that, in consequence of a statutory change, the real property of any other public agencies as well as of the Port Authority or of lessees of any other public agencies as well as the Port Authority, becomes subject to the payment of Taxes or any payment in lieu thereof, the Lessee shall be liable for the payment of all Taxes and any payment in lieu thereof payable with respect to the

Leased Premises, and shall not be entitled to any rent credit by reason of the payment of such Taxes.

(d) In the event that, notwithstanding the continuing effectiveness of the Governing Statute, the tax exempt status of the Leased Premises is challenged through legal action (the "**Tax Challenge**"), then:

(1) if (x) the Port Authority fails to defend, or cooperate in the defense of, such action by asserting (or permitting the assertion of) the Port Authority's immunity or governmental nature or the provisions of any statutes respecting the Port Authority, and (y) the Leased Premises become subject to the payment of Taxes as a result of the Tax Challenge, the Lessee shall be entitled to a credit, equal to the full amount of Taxes actually paid by the Lessee with respect to the Leased Premises, against the Rental that would otherwise be payable by the Lessee hereunder; and

(2) if (x) the Port Authority defends, or cooperates in the defense of, such action by asserting (or permitting the assertion of) the Port Authority's immunity or governmental nature or the provisions of any statutes respecting the Port Authority, but (y) the Leased Premises nonetheless become subject to the payment of Taxes as a result of the Tax Challenge, the Lessee shall be entitled to a credit, equal to one-half (1/2) of the amount of Taxes actually paid by the Lessee with respect to the Leased Premises, against the Rental that would otherwise be payable by the Lessee hereunder.

ARTICLE 5

PROJECT CONSTRUCTION

Section 5.1 Administrative Fees; Construction Obligations; Performance Bonds.

5.1.1 *Administrative Fees to the Port Authority.* In lieu of any fees that would otherwise be payable to the Port Authority pursuant to the Tenant Construction Review Manual (excluding fees due to Governmental Authorities) or otherwise in connection with the Leased Premises Redevelopment Work including the Initial Subtenant Fit-Out Work, the Lessee shall pay to the Port Authority administrative fees totaling Five Hundred Sixty Thousand Dollars ($560,000) of which (i) Five Hundred Twenty Thousand Dollars ($520,000) was paid by Lessee and received by the Port Authority during the Interim Period prior to the Lease Commencement Date, and (ii) the balance of Forty Thousand Dollars ($40,000) shall be paid within three (3) Business Days after the issuance by the Port Authority of the Certificate of Completion. After completion of the Project, administrative fees payable to the Port Authority in connection with any alterations or construction to be performed in accordance with Article 6, other than Initial Subtenant Fit-Out Work, shall be paid as required in Section 6.1.4 hereof.

5.1.2 *Lessee's Construction Obligations.*

(a) The Lessee and the Port Authority acknowledge and agree that the process for advancement of the Stage I Conformed Documents, heretofore approved by the Port Authority, to approved Stage III Documents (sometimes referred to as the "Approved Construction Documents" as further defined in Section 5.2 hereof), is set forth in Schedule 5.1.2A attached to and made a part of this Lease. For purposes of this Agreement, "**Project**" shall mean the redevelopment of the Facility in compliance with the Approved Construction Documents (as defined in Section 5.2 hereof), the GWBBS Manual and the Requirements, which redevelopment shall consist of the "Reserved Premises Redevelopment Work" and "Leased Premises Redevelopment Work". For purposes of this Agreement, "**Reserved Premises Redevelopment Work**" shall mean and include all work required to redevelop the Reserved Premises that the Lessee shall perform on behalf of the Port Authority in compliance with the Approved Construction Documents, the GWBBS Manual and the Requirements. For purposes of this Agreement, "**Leased Premises Redevelopment Work**" shall mean and include (i) all work required to construct the public areas of the Leased Premises, including without limitation all Common Areas, (ii) all required work relating to the core and shell of the entire Leased Premises and (iii) so much, if any, of the Initial Subtenant Fit-Out Work as the Lessee shall elect to treat and complete as part of the Project, in each case in compliance with the Approved Construction Documents, the GWBBS Manual and the Requirements; provided, however, that the Lessee may elect to defer or omit work on the core and shell of the retail space in the East Building so long as the Leased Premises Redevelopment Work includes the ground floor and the exterior elements of such core and shell. Any portions of the Initial Subtenant Fit-Out Work that the Lessee does not elect to treat as part of the Project shall be deemed to be alterations governed by Article 6 hereof.

(b) The Lessee hereby agrees to perform all work necessary to properly complete the entire Project as contemplated by and in compliance with the Approved Construction Documents (collectively, the "**Construction Work**"), including all site work, demolition work, staging and phasing, construction work, utility relocation (including relocation and replication of the existing electrical substation to provide the same electrical capacity as existing before the redevelopment project, to exclusively serve the Reserved Premises), and equipment procurement and installation. The Reserved Premises Redevelopment Work and the Leased Premises Redevelopment Work may be performed simultaneously by the Lessee, subject to Subsection 5.21.1(c). All such Construction Work shall be performed at the Lessee's sole cost and expense, subject to Section 5.4 hereof. Subject to Unavoidable Delays and delays caused by the Port Authority, the Lessee shall proceed with the Construction Work expeditiously and diligently, shall Substantially Complete the Reserved Premises Redevelopment Work and all Leased Premises Redevelopment Work relating to the Common Areas and the other Design Criteria Project Elements by no later than March 31, 2015 and shall Substantially Complete the remainder of the Leased Premises Redevelopment Work by no later than March 31, 2016 both of which dates shall be subject to extension, on a day-for-day basis, for any extensions arising pursuant to Section 3(b) of Schedule 5.1.2A. Neither the Port Authority's approval of or consent to the amount of the Lessee's financing nor the amount of the Lessee's anticipated equity investment shall relieve the Lessee of its obligation to undertake and complete the Project in

accordance with the Approved Construction Documents, regardless of the final cost thereof and whether or not such cost exceeds the PA-Cost Work Fixed Price.

Without limiting the generality of the foregoing, the Lessee shall be responsible for paying the Project A/E and causing the Project A/E to perform the duties of the Project A/E that are set forth in this Article 5 including without limitation, Subsection 5.10.1 and Section 5.17 hereof. Notwithstanding anything to the contrary in this Lease or the Interim Agreement, in the event of a conflict between the Project A/E Agreement (as defined in Section 4 of Schedule 5.1.2A) and the Lease, the provisions of this Lease shall prevail and be controlling.

5.1.3 *Payment and Performance Bonds.* Developer shall deliver to the Port Authority a payment and performance bond in the form attached as Exhibit H to this Lease (the "PPB") for review no later than September 20, 2011, and subject to Developer or Port Authority delay, as the case may be, whether or not the Developer is commencing any construction, demolition or environmental condition abatement work. If the Port Authority has neither signed-off on the PPB nor raised objections to the form of the PPB by 5:00 p.m. on the second Business Day after receipt of the PPB from the Developer, then the Developer shall have the right to send written notice to the Port Authority requesting sign-off or comments by no later than the second Business Day after the date of such notice, and provided that such notice is delivered on or prior to September 26, 2011 (which delivery may be effected by overnight or hand courier to the Port Authority to the attention of (1) Carrol Bennett (Real Estate Dept., 19th Floor), (2) Doris Lum-Mazur, Esq. (Law Department, 14th Floor), both c/o The Port Authority of New York and New Jersey, 225 Park Avenue South, New York, NY 10003, and (3) Brian Emch (Tunnel, Bridges and Terminals.), c/o The Port Authority of New York and New Jersey, One Madison Ave, 5th Floor, New York, NY 10010, and contains the following text in ALL CAPS bold text: "**FAILURE TO RESPOND TO THIS NOTICE WITHIN TWO BUSINESS DAYS OF THE DATE HEREOF SHALL CONSTITUTE THE PORT AUTHORITY'S SIGN-OFF ON THE PPB.**" the Port Authority's failure to sign-off on or raise an objection to the PPB within said two Business Day period shall constitute a waiver by the Port Authority to raise any objection thereto. To facilitate (x) the Developer's timely delivery of said PPB and (y) the effective date of the PPB being no later than September 29, 2011, the Port Authority shall, within not more than seven (7) Business Days after receipt from the Developer of a requisition for payment of the portion of the bond related to the Reserved Premises Redevelopment Work, make such payment on such requisition to the Developer, which requisition (i) shall not be delivered by the Developer prior to the thirtieth (30th) day after the Lease Commencement Date and (ii) shall be supported by an invoice (unpaid or paid) from the bonding company or the party procuring the PPB on behalf of Developer or other reasonable supporting documentation therefor. The failure to timely provide the said PPB shall be cause for Lease termination as provided in Section 17.1(15) of this Lease. The Lessee shall cause each such bond to remain in effect at all times prior to the final completion and approval by the Port Authority of the work to which it relates. The existence of the bond described in this Section shall not limit or alter any other remedies of the Port Authority under this Agreement, and the Port Authority may from time to time and at any time elect to pursue (or not to pursue) its rights under such bond without

thereby limiting, voiding or relinquishing any of its other rights or remedies under this Agreement.

Section 5.2 Approved Construction Documents.

Pursuant to the Interim Agreement, the Lessee has heretofore caused the Project A/E to prepare and submit to the Port Authority for approval, and the Port Authority has heretofore approved the Stage I Conformed Documents, and the Stage I Leased Premises drawings. The Stage I Conformed Documents and the Stage I Leased Premises drawings, as they exist as of the date hereof are identified more particularly in the George Washington Bridge Bus Station Redevelopment Project Leased Premises Revised Stage One for PANYNJ/DV Lease July 15, 2011 Drawing List and the George Washington Bridge Bus Station Redevelopment Project Leased Premises Revised Stage One for PANYNJ/DV Lease July 15, 2011 Drawing List attached hereto as "**Exhibit C.**" The Project A/E shall advance such Stage I Conformed Documents and the Design Criteria Project Elements of the Stage I Leased Premises drawings to a Stage III Documents level, in conformance with the Design Criteria and the design intent of such Stage I Documents and drawings. Upon approval of said Stage III Documents, (including additional Stage III submissions as required by the TCRM and the Design Criteria, as applicable) by the Port Authority for both the Leased Premises and the Reserved Premises, said PA approved Stage III Documents shall thereafter be the approved Lessee's Tenant Construction Application/Alteration Application (TCA/TAA), number GWBS-0901 dated June 12, 2009. Such approved TCA/TAA (together with and as modified by any approved Modification Application relating thereto) is referred to hereinafter as the "**Approved Construction Application**". The working drawings, specifications, calculations, product samples and other design materials that are included and/or referenced in the Approved Construction Application are hereinafter referred to as the "**Approved Construction Documents**". Such Approved Construction Documents are incorporated herein by reference and made a part hereof, subject to Subsection 5.6 hereof. The Construction Work shall be performed in accordance with the Approved Construction Documents; provided, however, that in the event of any inconsistency between the terms of the Approved Construction Documents and the terms of this Agreement, the more stringent terms shall prevail and control.

Section 5.3 Intentionally Omitted.

Section 5.4 PA-Cost Work.

5.4.1 *Fixed Price.* (a) In consideration of the performance by the Lessee of the Reserved Premises Redevelopment Work (including any environmental remediation in the West Building necessitated by such Reserved Premises Redevelopment Work) and portions of the Leased Premises Redevelopment Work that relate to Common Areas (which include the Common Vertical Circulation Facilities) in accordance with the Approved Construction Documents therefor (collectively, the "**PA-Cost Work**"), the Port Authority shall pay to the Lessee a fixed price (the "**PA-Cost Work Fixed Price**") equal to Fifty-Two Million Six

Hundred Fifty Thousand Five Hundred Fifty-Eight Dollars ($52,650,558.00), subject to adjustment as (but only as) described in Subsection 5.6.4 and Subsection 5.22 hereof.

(b) The Parties acknowledge that included as part of the PA-Cost Work Fixed Price is the Lessee's out-of-pocket cost for design work relating to the PA-Cost Work, and that the Port Authority shall, within (30) days after the Lease Commencement Date, reimburse the Lessee, for the Lessee's documented out-of-pocket cost of such work during the Interim Period, i.e. the "PA-Cost Work A&E Reimbursement Amount" as defined in the Section 4.3 of the Interim Agreement.

5.4.2 The Parties hereby acknowledge and agree that the PA-Cost Work Fixed Price was heretofore unconditionally established and agreed upon in accordance with the Interim Agreement and is a fixed price and shall not be subject to adjustment (up or down) for any reason whatsoever except as provided in Subsection 5.6.4 or Section 5.22 hereof. Without limitation of the foregoing, the Port Authority acknowledges that the Lessee has undertaken to perform the PA-Cost Work on a fixed, as opposed to a cost-plus basis, that the Lessee intends to enter into a single general construction contract for the entire Project and the Project CM intends to competitively bid out subcontracts for the entire Project (not award separate subcontracts with respect to the various elements of the Project), and to award such subcontracts to subcontractors, from the Port Authority's approved list of subcontractors shown on the Port Authority website, www.panynj.gov, or any successor thereto, who are determined, in the Lessee's sole discretion, to be most qualified to perform the Construction Work. However, the Lessee shall, upon request, provide the Port Authority with an accounting of all contracts entered into by the Lessee and/or its Project CM in connection with the Project, so as to allow the Port Authority to ascertain the actual cost of the Project to the Lessee.

5.4.3 *Progress Payments.*

(a) Monthly Progress Payments. The Lessee shall submit an itemized application for monthly progress payments ("**Application for Payment**") substantially in the form included in "**Schedule 5.4.3**" attached hereto, or such other form as may be acceptable to the Port Authority, accompanied by documentation and certifications to evidence to the reasonable satisfaction of the Port Authority that, during the immediately preceding thirty (30) day period, on account of the PA-Cost Work Fixed Price, (i) the work identified in such application was performed by the Lessee, and/or (ii) the materials and equipment identified in such application were delivered and properly stored at the Facility (subject to Port Authority approval and the Lessee's assumption of all risk of loss or damage for such materials and equipment) for subsequent incorporation in the PA-Cost Work. Provided an Application for Payment is received by the Port Authority not later than the 30th day of a month, subject to Port Authority approval of such Application for Payment, the Port Authority shall make payment of the certified amount to the Lessee not later than the 30th day of the next month. If an Application for Payment is received by the Port Authority after the 30th day of a month, subject to Port Authority approval of such Application for Payment, payment shall be made

by the Port Authority not later than thirty (30) days after the Port Authority receives the Application for Payment.

(1) Each Application for Payment shall (x) show the percentage of completion, as of the end of the period covered by the Application for Payment, of each portion of the PA-Cost Work identified on the Schedule of Values included in "**Schedule 5.4.3**" attached hereto, and (y) with respect to materials and equipment delivered and properly stored at the Facility, be accompanied by true and accurate bills of lading or other similar documentation therefor. Additionally, the Lessee and Project A/E shall each certify and represent that the PA-Cost Work identified in such Application for Payment (i) has progressed to the point indicated, (ii) includes only the materials and equipment, that have been either incorporated in the Facility or been delivered to and are properly stored at the Facility, and (iii) has been performed in accordance and compliance with the Approved Construction Documents, the GWBBS Manual and the Requirements relating to such portion of the PA-Cost Work. The Lessee and the Lessee's Project CM shall also certify that such Project CM and all subcontractors have been paid, based on at least the minimum prevailing minimum rate of wage, all amounts owing to them with respect to the PA-Cost Work performed to date, except for Retainage, and any amounts that will be paid using the proceeds of the payment then being requested.

(2) Upon review of an Application for Payment, the Port Authority shall advance to the Lessee by check (or other agreed method of payment), the sums approved for payment by the Port Authority based on the Application for Payment for the thirty (30) day period for which such Application for Payment is submitted.

(3) The amount of each progress payment shall be computed as follows:

(i) Take that portion of the PA-Cost Work Fixed Price properly allocable to completed PA-Cost Work as determined by multiplying the percentage completion of each portion of the PA-Cost Work identified in the Schedule of Values by the share of the PA-Cost Work Fixed Price allocated to that portion of the PA-Cost Work in the Schedule of Values, less Retainage. For purposes of this Agreement, "**Retainage**" shall mean, with respect to any portion of the PA-Cost Work Fixed Price that would otherwise have been earned by the Lessee hereunder from time to time, ten percent (10%) thereof until the PA-Cost Work shall have been fifty percent (50%) completed and zero percent (0%) thereafter (so that the amount of the Retainage shall approach five percent (5%) of the total PA-Cost Work Fixed Price as the Lessee nears completion of the PA-Cost Work), provided that the total amount retained shall equal at least two hundred percent (200%) of the estimated cost necessary to complete the Punch List Items; and

(ii) Subtract the aggregate amount of all payments previously made by the Port Authority.

For purposes of computing progress payments, PA-Cost Work shall be deemed completed only after materials and equipment are either incorporated into the Facility or properly stored

at the Facility and ownership thereof is evidenced by bill of lading or other document satisfactory to the Port Authority.

(b) Retainage through Completion of Punch List Items. Upon Substantial Completion of the PA-Cost Work, Retainage in the amount of two hundred percent (200%) of the estimated cost of the remaining PA-Cost Work shall be withheld from the Lessee until the Lessee shall have satisfied the requirements of paragraph (c) of this Subsection 5.4.3.

(c) Final Payment. After Lessee has completed to the satisfaction of the Port Authority all Final Punch List Items in compliance with the Approved Construction Documents, the GWBBS Manual and the Requirements, provided the Lessee has delivered to the Port Authority the statements and documents required by subparagraph (1) below and Sections 5.17.1 and 5.17.2, the Port Authority shall pay to the Lessee the balance of the Retainage (the "**Final Payment**") and the Port Authority shall return the payment and performance bond referenced in Section 5.1.3.

(1) Before making the Final Payment to the Lessee, in addition to the information required for monthly progress payments, the Port Authority may require the Lessee and the Lessee's Project CM to provide a detailed sworn/ certified statement of all claims, just and unjust, of subcontractors, materialmen and other third persons then outstanding and which the Lessee has actual knowledge of or by reasonable inspection and inquiry should know of or which the Lessee has reason to believe may thereafter be made on account of the PA-Cost Work. Any such claims not made known to the Port Authority by inclusion in such certification will be deemed to have been resolved and released by the Lessee. The Port Authority shall make the Final Payment to the Lessee within thirty (30) days after the completion of the Final Punch List Items and delivery of such statement.

(2) The acceptance by the Lessee, or by anyone claiming by or through the Lessee, of the Final Payment shall be and shall operate as a release to the Port Authority of all claims and of all liability to the Lessee for all things done or furnished in connection with the PA-Cost Work and for every act and neglect of the Port Authority and others relating to or arising out of the PA-Cost Work, including claims arising out of breach of contract and claims based on claims of third persons. No payment, however, final or otherwise, shall operate to release the Lessee or (any sureties) from any obligations in connection with the PA-Cost Work or any performance or payment bonds. Such release shall include all claims, whether or not in litigation and even though still under consideration by the Port Authority. Such release shall be effective notwithstanding any purported reservation of right by the Lessee to preserve such claim. The acceptance of any check designated as "Final Payment" or bearing any similar designation shall be conclusively presumed to demonstrate the intent of the Lessee that such payment was intended to be accepted as final, with the consequences provided in this Subsection 5.4.2(c), notwithstanding any purported reservation of rights. The Lessee agrees that Lessee shall not be entitled to, and hereby waives any right the Lessee might otherwise have to, and shall not seek any judgment whether under this Agreement or otherwise for any such Final Payment or for an amount equivalent thereto or based thereon, or

for any part thereof, if such judgment would have the effect of varying, setting aside, disregarding or making inapplicable the terms of this Subsection 5.4.2(c) or have the effect in any way of entitling the Lessee to accept such Final Payment or an amount equivalent thereto or based thereon or any part thereof, other than in the same fashion as a voluntary acceptance of a Final Payment subject to all the terms of this Agreement including this Subsection 5.4.2(c), unless and until the Lessee should obtain a judgment on any claim arising out of or in connection with the PA-Cost Work (including a claim based on breach of contract) for an amount not included in said Final Payment.

(d) Withholding Of Payments. The Port Authority shall have the right, in its discretion, to withhold out of any payment (final or otherwise and even though such payment has already been certified as due) such sums as the Port Authority may deem ample to protect it against loss or to assure the payment of just claims of third persons, and to apply such sums in such manner as the Port Authority may deem proper to secure such protection or satisfy such claims, if

(1) the Lessee fails to perform any of Lessee's obligations under this Agreement with respect to the PA-Cost Work; or

(2) any claim (just or unjust) arises out of or in connection with the Lessee's obligations to perform the PA-Cost Work is made against the Port Authority; or

(3) any subcontractor performing work in connection with the PA-Cost Work fails to pay any claims lawfully made against such subcontractor by any materialman, subcontractor, workman or other third person which arises out of or in connection with the PA-Cost Work.

All sums properly so applied shall be deducted from the PA-Cost Work Fixed Price. Omission by the Port Authority to withhold out of any payment, final or otherwise, a sum for any of the above contingencies, even though such contingency has occurred at the time of such payment, shall not be deemed to indicate that the Port Authority does not intend to exercise its right with respect to such contingency. Neither the above provisions for rights of the Port Authority to withhold and apply monies nor any exercise or attempted exercise of, or omission to exercise, such rights by the Port Authority shall create any obligation of any kind to such materialmen, subcontractors, workmen or other third persons. Until actual payment to the Lessee, the Lessee's right to any amount to be paid in connection with the PA-Cost Work (even though such amount has already been certified as due) shall be subordinate to the rights of the Port Authority under this Subsection 5.4.2 (d).

Section 5.5 Intentionally Omitted.

Section 5.6 Modifications.

5.6.1 *Submission By Lessee.* If the Lessee shall (whether to address unforeseen site conditions, to satisfy a prospective end user of the Leased Premises or otherwise) desire

to modify the Approved Construction Documents, the Lessee shall prepare, execute, and submit to the Port Authority for its review an application substantially in the form prescribed by the Port Authority, which may be in the form of new TCA/TAA or a supplement to the Approved Construction Application (a "**Modification Application**"), setting forth in detail and by appropriate final construction drawings, specifications, calculations, product cuts, and/or other documents, consistent with the GWBBS Manual and the Requirements, the modifications the Lessee proposes to make (each, a "**Proposed Modification**"). All such plans and specifications to be submitted by the Lessee to the Port Authority shall bear the seal of the Project A/E or appropriate engineer on the Project A/E team, and shall be in sufficient detail to enable (a) the Port Authority to evaluate the Proposed Modification with reference to the criteria set forth in Subsection 5.6.2 hereof and (b) a contractor to perform the work. The Lessee shall submit such additional data, detail or information, whether relating to code or non-code matters, as the Port Authority may reasonably request in order to complete the Modification Application for Port Authority review. For the avoidance of doubt, no modification made at the initiative of the Lessee as contemplated by this Subsection 5.6.1 shall result in any increase in the PA Cost Fixed Price.

5.6.2 *Port Authority Review.*

(a) Following the Port Authority's receipt of any Modification Application, the Port Authority shall give its written approval thereto or else shall request revisions or modifications thereto. The Port Authority may refuse to grant approval of a Modification Application if, in its reasonable opinion, any of the proposed Construction Work as set forth in the Modification Application shall:

(i) be unsafe, unsound, hazardous, or functionally incompatible with the operations of the Reserved Premises, or a material change in the size or location of the Leased Premises;

(ii) adversely affect passenger bus service operations or materially delay the completion of the Reserved Premises Redevelopment Work, or increase the cost to the Port Authority of operating, maintaining and/or repairing the Reserved Premises following the Project Completion Date; or

(iii) be in violation of the GWBBS Manual or the Requirements; or

(iv) not comply with all applicable requirements of the National Fire Protection Association, the Insurance Services Office of New York, or any other board or organization exercising, or which may exercise similar functions; or

(v) to the extent relating to the Reserved Premises Redevelopment Work, be inconsistent with the Approved Construction Documents, unless necessitated by unforeseen site conditions (in which event, Port Authority approval shall not be unreasonably withheld); or

(vi) to the extent relating to other Design Criteria Project Elements including the character defining features of the exterior described in the Design Criteria's "Architectural" section relating to "Historic Overview", be inconsistent with the Design Criteria, unless necessitated by unforeseen site conditions (in which event, Port Authority approval shall not be unreasonably withheld);

(b) If revisions to a Proposed Modification are requested by the Port Authority in accordance with the foregoing paragraph (a), the Lessee shall either withdraw its Modification Application or else revise and modify its Proposed Modification accordingly until the Port Authority has approved the Modification Application.

(c) The Port Authority shall complete its initial (or subsequent) review of any submitted or re-submitted Modification Application as soon as possible, but not later than in accordance with the Construction Review Timetable.

5.6.3 *Final Approval.* The Lessee shall not implement any Proposed Modification until the Modification Application with respect thereto shall have been finally approved by the Port Authority in writing (at which time such approved Modification Application will become part of the Approved Construction Documents as described in Section 5.2 hereof, and shall supersede any inconsistent elements of the Approved Construction Documents as they previously existed).

5.6.4 *Modifications to PA-Cost Work Requested By the Port Authority.* With respect to the Reserved Premises, the Lessee shall not refuse to implement any change (including but not limited to, so-called "Design Basis Threat" and/or so-called "Progressive Collapse") that the Port Authority shall propose to make to the PA-Cost Work relating to the Reserved Premises, provided that (a) the Port Authority shall have previously agreed to pay all such reasonable incremental actual out-of-pocket hard and soft costs of the Lessee (subject to receipt of documentation reasonably satisfactory to the Port Authority) associated with such change (including the hourly fees of the Project A/E, 10% of hard costs for general conditions, 7% of hard costs in the aggregate for Project CM fee and Lessee's profit, and financing costs (if any)), whether relating to the Reserved Premises or the Leased Premises, (b) such change will not materially delay the completion of the redevelopment or leasing up of the Leased Premises by the Lessee, and (c) such change will not materially increase the cost of operating, maintaining and/or repairing the Leased Premises following the Project Completion Date; provided, however, that the foregoing shall not in any event be deemed to require the Lessee to agree to any material change in the size or location of the Reserved Premises. Notwithstanding the foregoing, any change to the Reserved Premises Redevelopment Work necessitated by unforeseen site conditions discovered during the Construction Work shall be performed at the Lessee's sole cost and expense without additional cost to the Port Authority or adjustment to the PA-Cost Fixed Price.

5.6.5 *Lessee Solely Responsible.*

(a) The Lessee shall be solely responsible for the plans and specifications used by it, and for the adequacy or sufficiency of such plans, specifications and all the improvements depicted thereon or covered thereby, regardless of any consent thereto or approval thereof by the Port Authority or the incorporation therein of any Port Authority requirements or recommendations. Without limiting or affecting any other term or provision of this Agreement, the Lessee shall also be solely responsible for the improvements and systems installed in the Leased Premises by the Lessee including utility, mechanical, electrical, communications and other, including, without limitation, the integrity of the structural steel, columns, supports, footings, and other structural elements thereof.

(b) In no event shall approval by the Port Authority of the Approved Construction Documents or any modifications thereto impose any liability on the Port Authority to the Lessee or any other Person for any errors or defects contained in such plans or for the failure of the Project or work provided for such plans to comply with the GWBBS Manual or the Requirements, any such liability to be that of the Lessee and/or the professionals who prepared such plans.

Section 5.7 Contractors and Subcontractors.

(a) The Lessee shall not engage any contractor or permit the use of any subcontractor in connection with the Construction Work unless and until each such contractor or subcontractor has completed and submitted to the Port Authority the required vendor integrity questionnaire and has been approved by the Port Authority; provided, however, that the Port Authority hereby, subject to the completion and submission of a vendor integrity questionnaire satisfactory to the Port Authority, approves Skanska USA Building Inc. as Project CM and agrees that all of the contractors and subcontractors shown on the Port Authority website, www.panynj.gov, or any successor thereto, shall be deemed approved, as of the date of this Agreement, provided however, ten (10) days prior to the awarding of any contract or subcontract, the Lessee by written notice to the Port Authority shall submit the name and the business address and federal identification number of each contractor or subcontractor shown on such website that will be utilized in the performance of the Construction Work in order to update the approved or disapproved status with respect to any such contractor or subcontractor. In the event the Port Authority has withdrawn its approval of any such contractor or subcontractor, the Lessee may repeat the foregoing contractor or subcontractor submission process until the Lessee is advised by the Port Authority that the contractor or subcontractor selected from such website is currently approved by the Port Authority. Alternatively, the Lessee may submit to the Port Authority for consideration and approval, names of contractors or subcontractors not shown on such website. In considering the Lessee's requests for approval of subcontractors, the Port Authority shall not act in an arbitrary or capricious manner, and shall act reasonably promptly after receiving the Lessee's written request for such approval. The Lessee shall include in all contracts or subcontracts relating to the Construction Work such provisions as are required in accordance with the Approved Construction Documents, and (unless the Lessee shall procure an owner-controlled insurance program as permitted by this Lease) the Lessee shall cause each such contractor and

subcontractor to obtain, maintain in force and submit evidence of, such insurance coverage in limits not lower than those described in the Section 5.13 hereof. All warranties extended or available to the Lessee in connection with the Leased Premises Redevelopment Work shall be for the benefit of the Port Authority as well as the Lessee, or else shall be assigned to the Port Authority, in the event that this Lease is terminated prior to the expiration of such warranties (subject to the rights of Recognized Mortgagees for so long as their rights under Section 14A.5.5 hereof shall not have expired). All warranties required by the Approved Construction Documents with respect to the Reserved Premises Redevelopment Work shall be assigned to the Port Authority by the Lessee as of the Project Completion Date and shall thereupon be directly enforceable by the Port Authority.

(b) Nothing contained in this Agreement shall grant or be deemed to grant any contractor, architect, supplier, subcontractor or any other Person engaged by the Lessee or any of its contractors in the performance of any part of the Construction Work any right of action or claim against any Port Authority Indemnified Party with respect to any work any of them may do in connection with the Construction Work. Nothing contained herein shall create or be deemed to create any relationship between the Port Authority and any such contractor, architect, supplier, subcontractor or any other Person engaged by the Lessee or any of its contractors in the performance of any part of the Construction Work and the Port Authority shall not be responsible to any of the foregoing for any payments due or alleged to be due for any work performed or materials purchased in connection with the Construction Work.

(c) Except as provided in Section 5.4 hereof, the Port Authority shall have no obligations or liabilities in connection with the performance of any Construction Work or the contracts for the performance thereof entered into by the Lessee. Provided that the Port Authority shall pay the amounts due and owing under Section 5.4 hereof, the Lessee shall pay all claims lawfully made against it by its contractors, subcontractors, material-men and workmen and all claims lawfully made against it by other third persons arising out of or in connection with or because of the performance of the Construction Work and shall cause its contractors and subcontractors to pay all such claims lawfully made against them. The obligations assumed by the Lessee in this Article, as well as elsewhere in this Agreement, shall not be limited, affected, impaired or in any manner modified by the Port Authority's approval of the Approved Construction Documents or any Modification Applications or contracts covering the Construction Work.

Section 5.8 <u>Commencement of Construction Work.</u>

The following shall be pre-conditions to the commencement of Construction Work:

(i) no objection by the Port Authority to the Lessee's OSHA worker safety plan;

(ii) attendance of appropriate representatives of the Lessee, the Port Authority, the Project A/E and the Lessee's Project CM at a duly convened pre-construction meeting;

(iii) delivery to the Port Authority of the payment and performance bond(s) required by Subsection 5.1.3 hereof;

(iv) due execution and delivery of this Agreement;

(v) delivery to the Port Authority of the evidence of insurance coverage required by Section 5.13 hereof;

(vi) approval by the Port Authority of the Lessee' plan for removing and/or encapsulating any asbestos and/or lead that will be impacted by the Construction Work;

(vii) delivery to the Port Authority of copies of any and all permits of Governmental Authorities having jurisdiction over the Construction Work and required for commencement thereof;

(viii) approval by the Port Authority of the Lessee's plan for complying with Article 5A hereof; and

(ix) delivery to the Port Authority of the name of the Lessee's representative to whom issues relating to the Construction Work are to be addressed and a list of the Lessee's, Project CM's and subcontractors' emergency telephone numbers.

(b) The Port Authority will provide the Lessee with a listing of Port Authority emergency telephone numbers, and such other information or material as shall be relevant or necessary to perform the Construction Work at the Facility, to the extent, if any, that the Port Authority has not heretofore (i.e. during the Interim Period) provided the same.

Section 5.9 Quality of Work.

All Construction Work, including workmanship and materials, shall be of First Class quality, and performed in accordance with the provisions of this Agreement, the GWBBS Manual, the Requirements and the Approved Construction Documents.

Section 5.10 Construction Work Monitoring and Inspection.

5.10.1 *Project A/E.* During the performance and through completion of the Construction Work, the Project A/E shall monitor the Construction Work, and witness and certify to (and provide supporting documentation for) all inspections sufficient to comply with the GWBBS Manual and the Requirements and to enable the Project A/E to issue the Lessee Completion Certificate, as required in Section 5.17 below entitled "Completion of

Construction Work". The Project A/E shall also review contractor applications for payment in accordance with common industry practice and prepare and/or review any Modification Applications prior to submitting the same to the Port Authority. Additionally, the Project A/E shall be responsible for interfacing and consulting with the Port Authority through completion of the Project.

5.10.2 *Port Authority's Project Representative.* (a) The Port Authority's assigned Project representative or its designee(s) ("**PA-Representative**") shall have the right during the construction period to monitor and inspect all Construction Work including without limitation life safety inspections, at all stages and at any and all reasonable times during the progress thereof, and to take samples and perform testing with respect to any part of the Construction Work.

(b) The appointment of any such PA-Representative shall not give the Port Authority any rights, powers or obligations not otherwise herein provided for and, without limiting the generality of the foregoing, shall not affect any of the other provisions of this Article 5 or any rights of the Port Authority hereunder. It is expressly understood and agreed that PA-Representative assigned pursuant to this subsection has no authority to approve (x) any change or modification to the Approved Construction Documents with respect to any portion of the Construction Work, (y) the construction by the Lessee of any portion of the Construction Work which is not in accordance with the Approved Construction Documents, the GWBBS Manual or the Requirements, (z) any variation by the Lessee from compliance with the terms of this Agreement, nor does such PA-Representative have authority to certify that the Construction Work has been performed in accordance with the Approved Construction Documents, the GWBBS Manual or the Requirements covering such Construction Work. Any material disputes relating to the Project or code matters shall be governed by procedures for resolution as set forth in Section 5.23 hereof.

(c) The Lessee shall consult with the PA-Representative for instructions and/or decisions relating to "field-condition" construction matters and shall comply with all directions and requirements of the PA-Representative with respect to the Project, provided such directions are consistent with the Approved Construction Documents, are not arbitrary or capricious and are issued in a nondiscriminatory manner. The PA-Representative shall be responsible to promptly obtain decisions from appropriate Port Authority personnel, including, as necessary, Port Authority technical advisory personnel or if required, the Management Oversight Committee noted in Exhibit G of the Interim Agreement, dedicated specifically to the Project for the purpose of resolving time sensitive in-the-field construction matters.

5.10.3 *Special Inspections.* So that the Port Authority may monitor inspections to be performed by the Project A/E, Project CM or an independent testing service, the Lessee shall endeavor to provide at least forty-eight (48) hours advance notice, but in no event less than twenty-four (24) advance notice, of any such inspection; provided however with respect to inspections that may interfere with the Port Authority's operations, the Lessee shall provide the PA-Representative with at least one (1) week advance notice.

5.10.4 *Non-Compliance.*

(a) In the event that the Port Authority shall determine that the Lessee has failed at any time during the performance of any portion of the Construction Work to comply with the requirements of the Approved Construction Documents (as they may be modified by any approved Modification Application) or the provisions of this Agreement relating to the Construction Work, the Lessee shall, at its sole cost and expense, remove all non-compliant work and perform the work in accordance with the Approved Construction Documents, or, at the Port Authority's sole election and direction, or as otherwise permitted by Subsection 5.6.1 hereof, submit to the Port Authority for its written approval a Modification Application for the Proposed Modification.

(b) In the event that such non-compliance is material and substantial, the Port Authority shall have the right to cause the Lessee to cease such part of the Construction Work as is being performed in violation of this Agreement. Upon direction from the Port Authority (which need not be in writing in the event of an emergency, including without limitation any non-compliance involving life safety issues) specifying the reasons therefor in reasonable detail, the Lessee shall promptly cease performance of the portion of the Construction Work specified.

(c) The Port Authority shall review such modifications, corrections or changes proposed by the Lessee within the time frames provided in the Construction Review Timetable for a "subsequent review time"; provided, however, that if the scope of any such modifications, corrections or changes would be substantially equivalent to an alteration under Section 6.1 or Section 6.2 hereof, the Port Authority shall review the same within the time frames provided for in the definition of Construction Review Timetable for an "initial review time".

If the Port Authority has required the Lessee to cease performance of any portion the Construction Work in accordance with paragraph (b) above, the Lessee shall not resume such portion of the Construction Work until it has received the Port Authority's written approval of the modifications, corrections or changes in or to the Construction Work that the Lessee proposes to make with respect thereto.

5.10.5 *No Duty to Police.* Notwithstanding the foregoing (but without limitation of Subsection 5.17.3, Subsection 5.17.4 and Subsection 5.17.5), it is hereby understood and agreed that the Port Authority has no duty or obligation of any kind whatsoever to inspect or police the performance of the Construction Work, and the rights granted to the Port Authority hereunder shall not create or be deemed to create such a duty or obligation. Accordingly, the fact that the Port Authority has not required the Lessee to submit a proposal pursuant to Subsection 5.10.4(a), or has not exercised its right to require the Lessee to cease its construction of all or any part of the Construction Work pursuant to Subsection 5.10.4(b), shall not constitute an agreement or acknowledgment on the part of the Port Authority that the Lessee has in fact performed such work in accordance with the terms of this Agreement and the Approved Construction Documents, nor shall such fact constitute a waiver by the Port Authority of the requirement of compliance by the Lessee in all material respects with the provisions of this Agreement and the Approved Construction Documents.

Section 5.11 Studies; Schedules; Project Meetings.

5.11.1 *Engineering Studies.* During the course of the Construction Work, the Lessee shall submit to the Port Authority any engineering data (including, without limitation, probes, samples, photographs, drawings), that (a) have not theretofore been submitted to the Port Authority and (b) shall pursuant to the Tenant Construction Review Manual be required by the Port Authority.

5.11.2 *Construction Period Forecasts.*

(a) The Lessee shall, at its own expense, prepare, submit prior to the commencement of the Construction Work and thereafter maintain and update on a bi-weekly basis a master critical path method (CPM) schedule for the Construction Work in electronic format, preferably Primavera P3 or such other industry standard scheduling software as shall be reasonably acceptable to the Port Authority. Each progress schedule shall bear the signature of the Lessee's authorized representative and shall be sufficiently detailed to accurately depict all the Construction Work (including any design, procurement and construction activities performed) and shall graphically represent the logical sequence and duration of activities, all in accordance with the requirements of the Approved Construction Documents. The information provided in progress schedules shall also include, but not be limited to, the interdependencies between the Lessee's activities and all other activities required for the successful completion of the Project (e.g., those activities to be performed by utility companies or by other entities). All milestone dates specified in the Approved Construction Documents shall be represented in this construction schedule by milestone

activities (such as the performance of specific activity or submission of certain documents) that are logically interrelated to the work that must be accomplished in order to achieve the milestone.

(b) Prior to the commencement of the Construction Work and upon the request of the Port Authority from time to time thereafter, the Lessee shall submit to the Port Authority its bi-weekly look ahead schedule for construction activities, including but not limited to the approximate number of people expected to be working at various times by trades, the expected utility demands, any shutdown schedule, noise profiles and such other information for that forecast period as the Port Authority may reasonably require. The Lessee shall also keep the Port Authority currently advised as to any material changes in the forecast information.

5.11.3 *Job Meetings and Reports.* Appropriate representatives of The Port Authority shall attend the Lessee's weekly job meetings while the Project is ongoing. The Lessee will provide to the Port Authority monthly written reports with respect to the progress of the Construction Work.

Section 5.12 Indemnification.

5.12.1 *Indemnification.* The Lessee shall indemnify, or cause its contractors to indemnify, the Port Authority Indemnified Parties against the following damages and claims or losses arising out of the performance of the Construction Work, whether such damages and claims or losses arise from the acts or omissions of the Lessee, any contractors of the Lessee, any Lessee Indemnified Party or third persons, excepting only risks, claims or losses which result solely from the intentional misconduct or negligence of any Port Authority Indemnified Party with respect to the Construction Work:

(a) damage to all or any part of the Construction Work before the Project Completion Date as defined herein, it being understood and agreed that in the event of any such loss or damage, the Lessee shall forthwith repair, replace and make good the work without cost or expense to the Port Authority;

(b) subject to Section 10.8 hereof, damage to any real and/or personal property of the Port Authority arising out of or in connection with the performance of the Construction Work, it being understood and agreed that, subject to Section 10.8 hereof, the Lessee shall indemnify the Port Authority and hold the Port Authority harmless with respect to the cost of repairing any and all such damage;

(c) all claims and demands, just or unjust, of third persons arising or alleged to arise out of the performance of the Construction Work, it being understood and agreed that the Lessee shall indemnify and hold harmless each Port Authority Indemnified Party against and from all such claims and demands, and for all expenses (including customary fair and reasonable Port Authority in-house staff and outside legal fees subject to Section 5.12.2 hereof), incurred by any Port Authority Indemnified Party in the defense,

settlement or satisfaction thereof, including without limitation claims and demands for death, for personal injury or for property damage, direct or consequential; and

(d) any Environmental Damages.

5.12.2 *Defense of Claims.*

(a) If so directed, the Lessee (or its contractor) shall at its own expense defend any suit based upon any such claim or demand (even if such suit, claim or demand is groundless, false or fraudulent). With reference to any such claim or demand, the Lessee shall not, without obtaining the express advance permission from the General Counsel of the Port Authority, raise any defense involving in any way the jurisdiction of the tribunal over the person of the Port Authority, the immunity of the Port Authority, its Commissioners, officers, agents or employees, the governmental nature of the Port Authority or the provision of any statutes respecting suits against the Port Authority.

(b) In the event that any action or proceeding is brought against the Port Authority by reason of any claims covered by the foregoing indemnity, the Lessee shall, upon notice from the Port Authority, resist or defend such action or proceeding by counsel reasonably satisfactory to the Port Authority. The Port Authority shall give reasonably prompt notice to the Lessee of any action or proceeding brought against the Port Authority by reason of any claims covered by the foregoing indemnity, together with copies of any documents served on the Port Authority in connection therewith. The Port Authority shall not defend such action or proceeding so long as the Lessee is diligently and competently doing so.

(c) With respect to the Reserved Premises before the Project Completion Date, the Port Authority shall indemnify and defend the Lessee as provided in Section 12.3 hereof.

Section 5.13 Insurance Coverage Until Project Completion Date.

5.13.1 *Liability Insurance.*

(a) In addition to all policies of insurance otherwise required in this Agreement, the Lessee in its own name as insured and with the Indemnified Parties as additional insureds with the same coverage as provided to Lessee, shall procure and maintain a policy or policies of Commercial General Liability Insurance, including without limitation coverage with a broad form property damage endorsement, premises-operations, products liability/completed-operations (for a minimum of three (3) years after the Project Completion Date) and explosion, collapse and underground property damages coverage, personal injury and independent contractors and providing for the coverage in the limit set forth below; and , if vehicles are to be used to carry out the performance of this Agreement, Commercial Automobile Liability Insurance covering owned, non-owned and hired vehicles, automatically covering newly acquired vehicles, and providing for coverage in the limit set forth below; with contractual liability endorsements covering the obligations assumed by the Lessee

hereunder, including without limitation the Lessee's indemnification obligations and the indemnification obligations required of the Lessee's contractors pursuant to Section 5.12.

(b) The foregoing insurance shall be in not less than the following amounts:

Commercial General Liability Insurance:	Minimum Limits
Combined single limit per occurrence for death, bodily injury and property damage liability	$50,000,000.00
Commercial Automobile Liability Insurance (covering any owned, non-owned and hired vehicles):	
Combined single limit per occurrence for death, bodily injury and property damage liability	$5,000,000.00

(c) The Lessee shall provide the foregoing insurance by either requiring the Project CM engaged by it for the Construction Work to procure and maintain such insurance, including contractual liability endorsements referred to in paragraph (a) above, or the Lessee may provide the foregoing insurance through Lessee's "Owner's Controlled Insurance Program (OCIP)".

(d) The foregoing insurance shall not contain any care, custody or control exclusions, or any exclusion for bodily injury to or sickness, disease or death of any employee of the Lessee or of any of its contractors which would conflict with or in any way impair the coverages resulting from the Port Authority's status as additional insureds or coverage under the contractual liability endorsement.

(e) Each policy of liability insurance shall also provide or contain an ISO standard "separation of insureds" clause or contain a cross liability endorsement providing that the protections afforded the named insured thereunder with respect to any claim or action against the named insured by a third person shall pertain and apply with like effect with respect to any claim or action against the Lessee by an Indemnified Party, but such endorsement shall not limit, vary, change, or affect the protections afforded the Indemnified Parties thereunder as additional insureds. In addition, each policy of insurance shall also provide or contain an endorsement providing that the protections afforded the Indemnified Parties thereunder with respect to any claim or action against any Indemnified Party by the Lessee or its contractor(s) shall be the same as the protections afforded the named insured thereunder with respect to any claim or action against the named insured by a third person, as if the Indemnified Parties were the named insureds thereunder.

(f) Each policy of liability insurance shall also provide or contain an endorsement providing that the insurer shall not, without obtaining express advance permission from the General Counsel of the Port Authority, raise any defense involving in any

way the jurisdiction of any tribunal over the person of the Port Authority, the immunity of the Port Authority, its Commissioners, officers, agents or employees, the governmental nature of the Port Authority or the provisions of any statutes respecting suits against the Port Authority.

5.13.2 *Workers' Compensation and Employer's Liability Insurance.* The Lessee shall procure and maintain Workers' Compensation Insurance in accordance with the requirements of law and Employer's liability coverage in limits not less than One Million Dollars ($1,000,000).

5.13.3 *Builder's Risk Insurance.* The Lessee shall procure and maintain, or cause to be procured and maintained, Builder's Risk ("All-Risk" or "Special Perils") Completed Value Insurance, including coverage for flood and earthquake, on a complete value form covering the Construction Work during the performance thereof including material delivered to the Project site but not yet attached to the Facility, until the Construction Work is completed. Such policy shall name (among others) the Port Authority as insured, as its interest may appear, with loss payable to the Depository, and shall provide that loss thereunder shall be used solely for the repair, replacement, rebuilding or other performance of the Construction Work.

5.13.4 *Environmental Insurance.* The Lessee shall procure and maintain an Environmental Insurance policy including the Port Authority as an additional insured, providing coverage for bodily injury, property damage or environmental damage caused by pollution conditions during the Construction Work, in limits not less than Five Million Dollars ($5,000,000) per occurrence and aggregate.

5.13.5 *General Requirements.* The insurance required hereunder from Lessee shall be maintained in effect during the performance of the Construction Work (but shall not be required to be maintained prior to the date on which the PPB is required to be delivered as set forth in Section 5.1.3) and shall be in compliance with and subject to the provisions of Section 10.1.2 through Section 10.1.6 of Article 10 "Insurance", except that the required, and satisfactory, certificate(s) of insurance for the Construction Work will be delivered to and received by the Port Authority before the start of such Construction Work. Any property insurance policy provided for in this Section may be carried in blanket form and any liability insurance may be carried in the form of a primary and one or more umbrella policies.

Section 5.14 <u>Insurance Required from the Port Authority.</u>

With respect to the Reserved Premises and the Port Authority's operations at all times throughout the Term, the Port Authority shall maintain insurance coverage as provided in Section 10.7 hereof, and waives any claim that it might otherwise have against the Lessee or any other Lessee Indemnified Party with respect to any accidental damage or destruction affecting the Reserved Premises as provided in Section 10.8 hereof.

Section 5.15 <u>Pollution to be Minimized; Safety.</u>

During the performance of the Construction Work the Lessee shall take appropriate measures to prevent the blowing of sand or other materials and if necessary shall erect fencing or partitioning and cover open areas with asphaltic emulsion or similar materials. The Construction Work shall be performed in such a manner that at all times during construction air pollution, water pollution, noise pollution and/ or any other type of pollution emanating from, arising out of or resulting from such construction will be minimized to the fullest extent reasonably practicable. Subject to the provisions of this Agreement, the Lessee shall construct such customary structures, fences, equipment, devices and other facilities as the Port Authority shall reasonably deem necessary or appropriate to accomplish the objectives set forth in this Section 5.15, consistently with the GWBBS Manual and the Requirements. In addition to its other obligations under this Section, the Lessee shall take appropriate measures to (x) safeguard the work so as to avoid, to the extent possible, injury or damage to persons or property and (y) control rodents and insects during the performance of the Construction Work, and provide extermination services as required.

Section 5.16 Disposition of Matter; Environmental Information.

5.16.1 *Disposition of Excavated Matter.* The Lessee, subject to complying with the GWBBS Manual, including all Environmental Requirements, shall be permitted to use, in the performance of the Construction Work, any soil, dirt, sand or other matter excavated by the Lessee during the course of the Construction Work, or if not used in the performance of the Construction Work, the Lessee shall dispose of any such matter at its expense subject to the Lessee's compliance with the GWBBS Manual and all Environmental Requirements, and its obligations under the following subsection.

5.16.2 *Disposition of Hazardous Substances.* Except under emergency circumstances, the Lessee shall notify the Port Authority prior to the Lessee's reporting to any Governmental Authority any Hazardous Substances discovered in connection with or arising out of the performance of the Construction Work. Without limiting any other term or provision of this Agreement, except where non-disturbance of and leaving in place any such Hazardous Substances is the best practice and/or provided for in the Approved Construction Documents, the Lessee shall be fully responsible, at its sole cost and expense, for the remediation and final disposition, with the Lessee named as the generator, of any Hazardous Substance discovered, tested or sampled as part of the Construction Work. All such testing or sampling shall be performed by a laboratory duly approved or certified by a Governmental Authority having jurisdiction. Prior to final disposition of any such Hazardous Substance, the Lessee shall submit to the Port Authority certifications stating the type and amount of material disposed, the method of disposal, the owner and the location of the proposed disposal facility and the name and address of the transporter. The format of such certifications, including the appropriate operating permits of the disposal facility and the transporter, shall follow the requirements of the Governmental Authorities having jurisdiction.

The foregoing shall be deemed to make the Lessee responsible only for the remediation of any Hazardous Substances that may exist or hereafter be discovered in any

portions of the Reserved Premises that have been and/ or are to be impacted in any manner whatsoever by the Construction Work that is contemplated by the Approved Construction Documents.

5.16.3 *Environmental Information.* Without limiting any other of the Lessee's obligations under this Agreement, the Lessee at its own cost shall provide the Port Authority with such information, documentation, records, correspondence, notices, reports, test results, and certifications and any other information ("**Environmental Information**") as the Port Authority shall reasonably request in connection with any Environmental Requirements or Environmental Damages, and the Lessee shall promptly acknowledge, swear to, sign or otherwise fully execute the same. The Lessee agrees that any such Environmental Information may be filed by the Port Authority with the appropriate Governmental Authority on behalf of the Lessee at the Lessee's cost and expense. Further, the Lessee agrees unless directed otherwise by the Port Authority, to provide the Port Authority with copies of all such Environmental Information and all other submissions relating to Environmental Requirements that shall be provided by the Lessee to any Governmental Authority or by any Governmental Authority to the Lessee within two (2) Business Days after the same are made available to or received by the Lessee with respect to any Environmental Requirements. In the event any Hazardous Substance is discovered at the Project site, the Lessee in reporting such Hazardous Substance shall direct such report to the attention of such individual at the subject Governmental Authority as the Port Authority shall require.

Section 5.17 Completion of Construction Work.

5.17.1 *Lessee Completion Certificate.* When the Construction Work (for both the Leased Premises and the Reserved Premises) has been completed, the Lessee and the Project A/E shall deliver to the Port Authority a signed and sealed statement, certifying that all of the Construction Work, including without limitation all Construction Work relating to structural integrity and life safety systems and all work relating to and/or required by code, have been one hundred percent (100%) completed and performed in accordance with the Approved Construction Documents relating to such Construction Work, and in compliance with the GWBBS Manual and the Requirements and that all applicable fire protection systems and devices have been properly installed and tested and their associated alarms have been successfully transmitted to the monitoring central station (such certificate, the "**Lessee Completion Certificate**").

5.17.2 *Additional Documentation.* Together with the Lessee Completion Certificate, the Lessee shall deliver to the Port Authority:

(1) complete copies of (w) the Project A/E's final inspection reports, special inspection/test reports and special inspection/test checklist, (x) drawings and analysis of the fire detection/suppression systems constructed pursuant to the Approved Construction Documents and (y) HVAC balancing reports and (z) copies of all equipment manuals and warranties; and

(2) "as built" drawings of the Construction Work, together with one copy of such "as built" drawings in an electronic CADD data file (Autocad Release 13 or later) or in such other form and number as reasonably requested by the Port Authority.

5.17.3 *Certificate of Completion.* Within five 5) Business Days of the date of the Port Authority's receipt of the Lessee Completion Certificate, the Port Authority shall inspect and/or test the Construction Work, and subject to the complexity of such inspections and/or tests, unless such certification is not correct, or the Port Authority shall determine that the Construction Work has not been completed as certified in the Lessee Completion Certificate, the Port Authority shall deliver to Lessee, with respect to the full and final completion of (i) the Leased Premises Redevelopment Work, a "*Permit to Occupy or Use*" substantially in the form attached hereto as "**Exhibit F**", and (ii) the Reserved Premises Redevelopment Work, a "*PA-Cost Work Construction Completion Notice*" in substantially the form attached hereto as "**Exhibit FF**" evidencing the same. The Port Authority agrees to use all reasonable efforts to complete such inspections and/or tests as soon as reasonably practicable. Except as provided in Subsection 5.17.4 hereof, the Lessee shall not use or permit the use of the Leased Premises until the Lessee has received the Permit to Occupy or Use. The "**Project Completion Date**" under this Agreement shall mean the date that is the *later* of the date on the Permit to Occupy or Use and the PA-Cost Work Construction Completion Notice.

5.17.4 *Leased Premises Partial Occupancy.* (a) The Lessee may wish to occupy a portion of the Leased Premises before the Leased Premises Redevelopment Work is completed. In addition to and without affecting the foregoing obligations of the Lessee, when an integral and material portion of the Leased Premises is properly usable and fit for its intended purpose and use, and all structural integrity items and life safety systems and all work relating to and/or required by code with respect to that portion of the Leased Premises have been one hundred percent (100%) completed ("**Substantial Completion**" or "**Substantially Completed**"), the Lessee may advise the Port Authority to such effect and may deliver to the Port Authority a certificate of an authorized officer of the Lessee and of the Project A/E certifying that such portion of the Leased Premises is Substantially Completed, and all work relating thereto, has been performed in compliance with the Approved Construction Documents, the GWBBS Manual and the Requirements, is properly installed, has been inspected and tested by the Lessee and Project A/E and can be properly and safely used even though the Leased Premises Redevelopment Work has not been finally completed ("**Lessee Substantial Completion Certificate**"), and that the Lessee desires such partial use (a "**Partial Occupancy Request**"). Such Partial Occupancy Request shall be accompanied by reports and check lists for the special inspections referenced in the TCRM and a life safety system test plan, which shall include at least testing of the fire detection and suppression systems, alarms, emergency/back-up power and smoke exhaust and a certification that all applicable fire protection systems and devices have been properly installed and tested and their associated alarms have been successfully transmitted to the monitoring central station and HVAC systems serving the portion of the Leased Premises identified as Substantially Completed.

(b) Within five (5) Business Days after the date of the Port Authority's receipt of any Partial Occupancy Request, the Port Authority shall inspect and /or test the portion of the Leased Premises identified in such Partial Occupancy Request and subject to the complexity of such inspection and/or test if the same has been completed as certified by the Lessee and the Project A/E, and satisfies the GWBBS Manual, the Requirements and the Port Authority's requirements for the issuance of a "*Temporary Permit to Occupy or Use*", the Port Authority shall issue a partial approval, a "*Temporary Permit to Occupy or Use*", substantially in the form attached hereto as "**Exhibit E**", with respect to such portion of the Leased Premises, permitting the use of the applicable portion of the Leased Premises for the purposes set forth in this Agreement (each such document, a "**Certificate of Partial Completion**"), and subject to such further conditions, restrictions and requirements as the Port Authority may at that time reasonably impose.

(c) The Port Authority agrees to use all reasonable efforts to complete such inspections and/or tests and to issue such Certificate(s) of Partial Completions as soon as reasonably practicable.

(d) If at any time prior to the Project Completion Date the Port Authority reasonably determines that Lessee's interim use of any portion of the Leased Premises pursuant to a Certificate of Partial Completion is unsafe or in violation of the provisions of this Agreement, the Lessee shall cure such unsafe condition(s) or violation(s) of the provisions of this Agreement within five (5) Business Days after receipt of notice thereof (but immediately following receipt of such notice in the case of a risk to life/safety). If Lessee fails to cure such condition or violation in accordance with the preceding sentence, then upon receipt of a notice from the Port Authority, cease the use of such portion of the Leased Premises.

5.17.5 *PA-Cost Work Substantial Completion.* (a) When the Lessee and the Project A/E believe that the PA-Cost Work has been Substantially Completed, they shall deliver to the Port Authority (i) a signed and sealed written statement in which the Lessee and the Project A/E certify (1) that the PA-Cost Work has been Substantially Completed in accordance with the Approved Construction Documents and in compliance with the GWBBS Manual and the Requirements (so that the Port Authority shall have "beneficial use" of the Reserved Premises and the Common Areas, meaning that the Port Authority's bus operation and support spaces, including without limitation, all bus gates, mechanical, electrical and signage systems, entry and egress passages and doors, vertical circulation equipment and toilet rooms, shall be fully functional), (2) the Lessee and Project A/E attended independent testing of code, life safety, structural integrity, mechanical, electrical, plumbing, fire protection and security systems, and passenger and service elevators, and (3) the Lessee and Project A/E approve the resulting inspection reports, all as required by the Approved Construction Documents, the GWBBS Manual and the Requirements, and (ii) a proposed list of minor elements of the PA-Cost Work that remain to be completed but can and will be completed without interfering with the full use and enjoyment of the Reserved Premises

("**Punchlist Items**"): the documentation required to be delivered in (i) and (ii) shall collectively be referred to as the "**PA-Cost Work Substantial Completion Certificate**".

(b) The Port Authority shall thereupon within five (5) Business Days of receipt of such PA-Cost Work Substantial Completion Certificate, inspect and/or test the Reserved Premises and Common Areas to confirm that (i) the PA-Cost Work, has been Substantially Completed as certified and in a manner consistent with requirements for the issuance of a Temporary Permit to Occupy or Use and (ii) the Reserved Premises (except as required to complete the Punchlist Items) have been delivered to the Port Authority free and clear of construction workers, materials, equipment, temporary structures, barriers, barricades, scaffolding and other temporary structures relating to the Reserved Premises Redevelopment Work, and subject to the complexity of such inspection and/or test, shall either (i) approve such certifications and Punchlist Items or (ii) identify its objections with respect thereto in writing and with specificity and then meet with the Lessee for the purpose of achieving consensus with respect to such objections. The Port Authority shall use all reasonable efforts to either approve such certifications and Punchlist Items or identify such objections and meet with Lessee as soon as reasonably practicable.

5.17.6 *PA-Cost Work Final Completion.* Subject to Unavoidable Delays, the Lessee shall cause all Punchlist Items to be completed as soon as commercially reasonably possible following the Substantial Completion of the PA-Cost Work, it being understood that a Certificate of Completion for the Project shall be issued to the Lessee only after completion of such Punchlist Items, so that on the Project Completion Date all Punchlist Items shall have been completed to the satisfaction of the Port Authority. Upon the final completion of the Reserved Premises Redevelopment Work, the Lessee shall deliver to the Port Authority "**PA-Cost Work Construction Completion Notice**" substantially in the form annexed hereto as **Exhibit FF** and assign to the Port Authority all contractor and vendor warranties that it shall have obtained with respect thereto, which warranties shall (i) satisfy the requirements of the Approved Construction Documents with respect to such warranties, and (ii) be for a period equal to the manufacturer's warranty duration commencing upon the Port Authority's occupancy and beneficial use of the subject equipment and materials in the Reserved Premises, however, Lessee acknowledges that any such warranties shall not be deemed to be a limitation upon any rights which the Port Authority would have, either expressed or implied, in the absence of such guarantees or warranties.

Section 5.18 Intentionally Omitted.

Section 5.19 Intentionally Omitted.

Section 5.20 Compliance With GWBBS Manual and the Requirements During Project.

During construction of the Project, the Lessee shall comply with the GWBBS Manual and the Requirements, as provided herein.

5.20.1 *Licenses and Permits.* The Lessee shall procure and maintain in effect throughout construction of the Project, at its sole cost and expense (subject to Subsection 5.1.1 hereof) all licenses, certificates, permits or other authorizations from Governmental Authorities or any other permits from the Port Authority required by the TCRM, including without limitation cutting and welding permits that shall be required by the Port Authority and necessary for the performance of the Construction Work; provided, however, that all construction, building or occupancy permit(s) with respect to the Facility shall be subject to the exclusive jurisdiction of the Port Authority, as provided under the provisions of this Article 5.

5.20.2 *Compliance and Cure; Contest or Challenge.*

(a) *Compliance and Cure.* In connection with the Project, the Lessee shall promptly: (1) comply with the GWBBS Manual and all applicable Requirements, and any summons or notice of violation or warning notice or enforcement process with respect thereto; and (2) correct or cure all such violations or notices of non-compliance therewith that it shall receive from the Port Authority or any Governmental Authority(ies) having jurisdiction, whether or not formally filed against the Facility, in either case, excluding any such violation or notice of non-compliance that has been caused by the Port Authority. The Lessee shall deliver to the Port Authority promptly after receipt from any such Governmental Authority, a true copy of any such notice of violation, warning notice or other legal process relating to the Construction Work.

(b) *Contest or Challenge of Requirements.*

(i) In the event the Lessee in good faith wishes to contest or challenge any notice of violation or non-compliance that it receives from any Governmental Authority, and if such contest or challenge does not pose material risks to safety, health or preservation of property, it may if permitted by law defer compliance, and in such event the Lessee shall diligently and continuously pursue its rights and remedies under the law to contest or challenge the same and shall keep the Port Authority fully informed with respect thereto. In the event the Lessee undertakes to so challenge or contest, it shall indemnify the Port Authority against any claims, damages or losses that may arise or result therefrom and shall provide the Port Authority with such security as the Port Authority may reasonably require against any loss or penalty which may be imposed against the Port Authority as a result of the Lessee's action.

(ii) In the event the Lessee in good faith wishes to contest or challenge any notice of violation or non-compliance with respect to code related matters that it receives from the Port Authority, the Lessee shall initiate and process such contest or challenge in accordance with Section 5.23.2 hereof.

(c) *Inapplicability of Requirements to the Port Authority.* The Lessee acknowledges that no provision of this Agreement nor any provision of this Section 5.20 are to be construed as a submission by the Port Authority to the application to itself of any

Requirements, but no alleged or purported immunity or exemption from any of the foregoing available to the Port Authority shall excuse compliance or be grounds for non-compliance on the part of the Lessee with substantive Requirements. In no event shall the Lessee raise any claim or defense in any contest or challenge involving in any way the immunity of the Port Authority, its governmental nature or the provision of any statute respecting the Port Authority without first obtaining prior written consent from the Port Authority, which consent may be conditioned, withheld or delayed in the Port Authority's sole and absolute discretion. Notwithstanding the foregoing, consistent with the Port Authority's long standing policy to conform with Requirements to the extent practicable, for purposes of this Agreement, the Port Authority shall maintain and operate the Reserved Premises applying standards consistent with or in excess of any such applicable Requirements so as not to materially adversely impact the Lessee during construction of the Project, and shall be afforded the same right to cure and /or to contest or challenge any such Requirement as provided to the Lessee.

(d) *1968 Code to Govern.* The Port Authority hereby acknowledges that, notwithstanding any provision of the TCRM or the Design Criteria, the Developer initiated Code Compliance Office review with respect to the Project on or about June 12, 2009, and accordingly the Project shall be governed by the 1968 NYC Building Code and amendments thereto, rather than by the 2008 NYC Building Code, by reason of the Project A/E having submitted to the Port Authority prior to July 1, 2009 a code and life safety package for the Project (which included preliminary floor plans and outlined the "basis of design" for code purposes).

Section 5.21 Operations During Construction Work.

5.21.1 *Lessee's Operations During Project Construction.*

(a) During the Construction Work, the Lessee, for security and safety reasons, shall require its employees, agents, contractors and subcontractors, invitees and those doing business with it, to

(i) comply with commercially reasonable Port Authority requirements for working at and/or obtaining access to the Facility, including, without limitation, wearing or carrying valid badges, displaying valid vehicle parking placards or other suitable means of identification or participation in security checks, and complying with work/construction hours and staging requirements generally set forth in the attached **Schedule 5.21.1(a)(i)** "GWBS Hours of Work and Construction Staging 6/09/09" as may be amended or modified from time to time by the Port Authority.

(ii) erect and maintain at the Lessee's expense in or about the Facility such barriers, shields and other suitable protective devices for the protection of the public and others and their property as in the opinion of the Port Authority (applying commercially reasonable standards) may be necessary or desirable for the purpose,

(iii) not permit the undue accumulation in or about the Facility of any debris, rubbish or liter of any sort resulting from the Construction Work and make such arrangements for the frequent removal thereof from the Facility, as shall in the reasonable opinion of the Port Authority be necessary to prevent such accumulation.

(iv) not overload any floor, roadway, passageway, pavement or other surface or any wall, partition, column or other supporting member or any elevator or other conveyance within or affecting any portion of the Facility, and repair, replace or rebuild any building element damage caused by any such overloading to the satisfaction of the Port Authority.

(v) not use or connect any equipment or engage in any activity or operation which will cause or tend to cause an overloading of the capacity, or interfere with the effectiveness or accessibility of any existing or future utility, mechanical, electrical, communication or other systems, or portion thereof, to the extent then required for the operations of the Reserved Premises as contemplated by the Staging and Phasing Plan.

(vi) not do or permit to be done in the Facility any act or thing that will invalidate or conflict with any of the insurance policies required under this Agreement, or which, in the opinion of the Port Authority, may constitute an extra-hazardous condition, so as to increase the risks normally attendant upon the construction operations contemplated by this Agreement.

(vii) promptly observe, comply with and execute the provisions of any and all present and future requirements, orders and directions of the National Fire Protection Association ("**NFPA**"), the Insurance Services Office of New York ("**ISO**"), and any other non-governmental board or organization exercising similar functions, which may pertain or apply to the operations contemplated by this Article.

(viii) take all appropriate measures to minimize vibrations originating from the Construction Work which may damage any equipment, structure, or adjacent buildings and keep the sound level of its operations within reasonably low levels so as to not unreasonably disturb others in the surrounding area, and

(ix) maintain in good condition and in adequate quantities such fire protection equipment and other safety equipment as may be required to comply with the requirements of this Agreement.

(x) securely fasten material or construction which must be left in place between working periods in a manner reasonably satisfactory to the Port Authority so as not to be a hazard.

(xi) comply with the Port Authority's commercially reasonable requirements to protect persons, traffic and property during dust or fragment generating

operations, concrete mixing or placing, or other operations which may stain, soil or damage property or injure persons.

(xii) provide and erect waterproof, fire-resistant, UL labeled tarpaulins with flame-spread rating of 15 or less, or other protective enclosures as approved by the Port Authority.

(xiii) restrict smoking to areas designated by the Port Authority, and

(xiv) not burn or bury debris of any type on Port Authority property, or wash waste materials down sewers or into waterways.

(b) No requirement of or omission to require any precautions under this Agreement shall be deemed to limit or impair any responsibility or obligation assumed by the Lessee under or in connection with the Project and the Lessee shall at all times comply with Port Authority commercially reasonable requirements to safeguard the occupants of the Facility, the Trans-Manhattan Expressway and the users thereof, the public and all persons engaged in the Construction Work and shall take such precautions and interact with Port Authority staff, as necessary to accomplish such end, without undue interference with the public or the operations of the Port Authority.

(c) The Lessee acknowledges that the Port Authority as well as others will be continuing their operations in the Reserved Premises during the period of time the Lessee is performing the Construction Work. In the performance of the Construction Work, in addition to the conditions for performing work set forth in the above paragraph (a), the Lessee shall not, except as contemplated by the Staging and Phasing Plan, do or permit to be done any act affecting the operation of the existing plumbing, heating, fire-detection, fire-protection, sewerage, drainage, water supply, electrical, ventilating, refrigerating, fuel or communication system at the Facility, or other such service system there at, including all pipes, tubes, lines, mains, wires, conduits, equipment and fixtures, except with the express written approval of the PA-Representative. Although the Port Authority recognizes that the Construction Work will inevitably involve inconvenience, noise, dust, interference and disturbance to said operations, and impact pedestrian and vehicular traffic in and around the Facility, the Lessee shall perform the Construction Work in coordination and cooperation with the Port Authority's ongoing and continuing bus service operations in the Reserved Premises, and in a manner that will minimize the impact and any disruption thereto resulting from the Construction Work while ensuring that the Facility will continue to effectively function as a public transportation facility and that ongoing services and operations at the Reserved Premises, including without limitation any and all utility services and electronics such as electrical service, HVAC, sanitary systems, domestic water service, CCTV, telephone, SCADA, fire alarm, etc., are maintained at the level, volume and schedule existing before commencement of the Construction Work.

(d) (i) Notwithstanding anything to the contrary in this Section 5.21.1, Lessee acknowledges that it may be necessary for the Port Authority to interrupt or interfere

with the Staging and Phasing Plan in order to address abnormal or emergency conditions affecting the Port Authority's operations. The Port Authority agrees that if such interruption or interference with the Staging and Phasing Plan continues for more than twenty-four (24) hours, then any such interruption or interference in excess of twenty-four (24) hours shall constitute Unavoidable Delay on a day-for-day basis.

(ii) Additionally, upon five (5) Business Days prior written request and subject to the Port Authority's prior written consent, which may be granted or withheld in the Port Authority's sole discretion, Lessee may perform elements of the Construction Work in the Reserved Premises during hours other than the hours set forth in Schedule 5.21.1(a)(i).

5.21.2 *Port Authority's Operations.*

(a) So long as the Port Authority occupies and uses the Reserved Premises during the Construction Work, except as otherwise provided in this Agreement, the Port Authority shall be solely responsible, at its own cost and expense, for the continuing operation, cleaning, and snow removal of the Reserved Premises in accordance with the Staging and Phasing Plan; provided, however, during Phase I (as shown in the Staging and Phasing Plan) of the construction, the Port Authority shall also maintain and repair all systems and equipment, including without limitation, escalators, elevators, and lighting, that are not under the control of or affected by the Lessee. During Phase II and Phase III (as shown in the Staging and Phasing Plan) of the construction, the Lessee shall assume responsibility for the maintenance and repair of all existing and newly installed equipment, systems, and structural elements until such time the same are officially turned over to the Port Authority and a Certificate of Completion has been issued, as provided in Subsection 5.17.6 hereof.

(b) Notwithstanding subsection (a) above, the Lessee shall perform all maintenance, repair and cleaning (including, but not limited to, toilets, HVAC system, electrical and life safety systems) of the temporary facilities and the stair tower to the bus level installed by Lessee in accordance with the Port Authority approved Staging and Phasing Plan (the "Temporary Facility") from the time said Temporary Facility is installed until such time as the same is no longer required, and Lessee shall pay for all costs, expenses or charges for usage consumption incurred on account of any temporary utility connection or service attributable to said Temporary Facility.

(c) Notwithstanding anything contained herein to the contrary, the Lessee's repair and maintenance obligations set forth in Sections 5.21.2(a) and 5.21.2(b) above relating, without limitation, to existing equipment, systems, structural elements and stair tower referenced above that remain, shall be limited to repairs and maintenance necessary to preserve or restore to, as the case may be, the existing condition thereof as established in the Baseline Survey (defined below) and shall not, in any event, include any obligation to replace without limitation, any such equipment, systems, structural elements and stair tower, unless replacement of any such item is included as part of the Project.

(d) Prior to commencement of the Construction Work, Lessee shall perform a so-called "baseline" survey to assess the condition and performance of the existing equipment and systems to remain, and to assess the condition of the existing site and structural elements intended to remain (the "Baseline Survey"), and shall submit a report of such Baseline Survey findings to the Port Authority upon completion of same. Upon completion of the Project, Lessee shall perform a so-called "as-built" survey of the completed Project (the "As-Built Survey") and shall submit a report of such As Built Survey findings to the Port Authority upon completion of the same. To the extent that Lessee damaged existing equipment, systems, and/or structural elements or site conditions that remain, in place after the completion of the Project, Lessee shall repair such damage and return the same to the condition at commencement of construction as established by the Baseline Survey and shall submit a final report identifying such repairs that were made. In the event the Lessee fails to complete such repairs to the satisfaction of the Port Authority within ten (10) Business Days after receipt of written notice of such failure from the Port Authority (or, in the event of an emergency, promptly upon demand by the Port Authority), the Port Authority may elect to perform such repairs as provided in Section 13.1 hereof.

5.21.3 *Utilities.* During performance of the Construction Work, utility services to the Reserved Premises shall be provided in accordance with the Staging and Phasing Plan. The cost of installing meters to measure use by the Reserved Premises of such temporary utility services (except for relocation of electrical substation) during Staging and Phasing, is included in the PA-Cost Work Fixed Price. The charges for consumption of the applicable utility company(ies)' temporary utility services by the Reserved Premises shall be paid by the Port Authority directly to such utility company(ies), except as otherwise provided in Subsection 5.21.2(b). Throughout the performance of the Construction Work, the Lessee at its sole cost and expense shall be responsible for installing, connecting and providing all temporary utility services necessary to complete the Project; provided, however, that services for sanitary discharge may at the sole cost and expense of the Lessee be connected to the Facility's existing sanitary discharge line and the Lessee shall maintain said sanitary discharge line at its sole cost and expense. Lessee shall not be responsible for removing any conduits wires, piping or asbestos that will be abandoned during or after the Reserved Premises Redevelopment Work, provided such abandonment is not inconsistent with the Conformed Documents or with the Conformed Design Criteria.

Section 5.22 <u>Fire, Other Casualty; Rebuilding Before Project Completion Date.</u>

(a) From the Lease Commencement Date until the Project Completion Date, the Lessee shall bear, at its sole cost and expense except as provided in Subsection 5.12.2(c) hereof, the risk of damage or destruction (by fire, the elements, the public enemy or other casualty, or by reason of any other cause whatsoever other than the willful misconduct or negligence of the Port Authority), to any portion of the Facility other than portions of the Reserved Premises not affected by the Reserved Premises Redevelopment Work.

(b) In the event of any such damage or destruction, the Lessee shall remove all debris resulting from such damage or destruction, and rebuild, restore, repair and replace, as applicable, the applicable portion of the Facility, as it existed prior to such damage or destruction, in accordance with the Approved Construction Documents therefor, or make such changes or alterations thereto as shall be permitted by this Article 5 (any and all such work being referred to herein as "**Restoration Work**". Any such Restoration Work required to be performed by the Lessee shall be commenced promptly (but in any event within six (6) months from the date of the damage or destruction) and shall proceed with all due diligence subject to the terms and conditions of this Agreement, and shall be performed without any increase to the PA-Cost Work Fixed Price, except that the PA-Cost Work Fixed Price shall be increased by an amount equal to one hundred five percent (105%) of the documented out-of-pocket hard and soft cost to the Lessee of such work (including design costs) to the extent that such cost shall relate to the restoration of elements of the Reserved Premises that would not have been affected by the Reserved Premises Redevelopment Work but for such damage or destruction. The Lessee shall make commercially reasonable efforts to cause the Project A/E to design and the Lessee's contractors to perform any such incremental Reserved Premises Redevelopment Work at an incremental cost to the Port Authority that shall be reasonable under the circumstances. Any previously uncontemplated modifications to the Reserved Premises necessitated by any such damage or destruction shall be governed by Section 5.6 hereof, entitled "Modifications".

(c) Notwithstanding the foregoing, in the event of total destruction of the Facility before the Project is completed, resulting from no fault of either Party, then, except as the Parties may otherwise agree, this Agreement shall terminate and the Lessee shall surrender and deliver possession of the Leased Premises to the Port Authority in the manner set forth in Subsection 11.2.3 hereof, and in Article 18 entitled "Surrender"; provided however, that Section 18.2 and all references to Section 9.1, Subsection 14A.5.5 and Subsection 14.9.7 shall not apply. Upon such surrender, neither Party shall have any rights against or obligations to the other, and each Party shall be entitled to receive and retain all proceeds of all insurance maintained by such Party with respect to the Facility; provided, however, that if the Lessee shall be prepared to proceed with the required Restoration Work and the Port Authority shall insist on the termination of this Agreement as provided in this paragraph, then the Port Authority shall, as a condition to such termination, pay to the Lessee (or at the Lessee's direction, to the Recognized Mortgagees) the amount, if any, by which (a) the amount that the Lessee and the Recognized Mortgagees would have received had the Port Authority taken the Leased Premises by eminent domain immediately prior to such destruction shall exceed (b) the net amount of the insurance proceeds to which the Lessee shall then be entitled.

Section 5.23 Dispute Resolution - Non-Code; Chief Engineer Contest - Code Compliance.

5.23.1 *Non-Code Related Disputes.* Except as provided in Subsection 5.23.2 hereof (which shall govern any disputes relating to the duties of the Code Compliance Office), any material disputes relating to the Project that are not resolved after diligent good faith

efforts by the Parties shall be resolved in accordance with the arbitration procedures set forth in this Subsection 5.23.1.

(a) If either party hereto desires to invoke the arbitration procedure set forth in this Subsection 5.23.1, the party invoking the arbitration procedure shall give a notice (the "**Arbitration Notice**") to the other party of the question at issue and the disinterested person such party wishes to appoint as an arbitrator on its behalf. Within ten (10) days after receipt of an Arbitration Notice, the other party shall appoint a second disinterested person as an arbitrator on its behalf and give written notice thereof to the first party, and if such party fails to appoint a second arbitrator, the arbitrator appointed by the person invoking the arbitration shall appoint a second disinterested person as an arbitrator. The two (2) arbitrators shall thereafter appoint a third disinterested person within ten (10) days after the appointment of the second arbitrator. If the first two arbitrators are unable to agree on the selection of the third arbitrator, they shall send notice thereof to the Lessee and the Port Authority who shall meet, within ten (10) days of receipt after such notice to attempt to agree on a third arbitrator. If the parties hereto have not agreed on the third arbitrator within ten (10) days after their meeting, then either party hereto, on behalf of both, may apply to the New York City office of the AAA for appointment of the third Arbitrator, or, if the AAA shall not then exist or shall fail, refuse or be unable to act such that the Arbitrator is not appointed by the AAA within thirty (30) days after application therefor, then either party may apply to the presiding judge of the Court, for the appointment of the Arbitrator and the other party shall not raise any question as to the Court's full power and jurisdiction to entertain the application and make the appointment. The date on which the third Arbitrator is appointed by the agreement of the parties, by appointment by the AAA or by appointment by such court is referred to herein as the "**Appointment Date**". If any Arbitrator appointed hereunder shall be unwilling or unable, for any reason, to serve, or continue to serve, a replacement Arbitrator shall be appointed in the same manner as the original Arbitrators. The first, second and third arbitrators are hereinafter referred to individually as an "**Arbitrator**", and collectively as the "**Arbitrators**". The Arbitrators appointed shall be competent, qualified by training and experience and shall each have not less than ten (10) years' experience in the area which is the subject of the dispute as it relates to construction, public transportation facilities and commercial buildings in New York City.

(b) The arbitration shall be conducted in accordance with the then prevailing construction rules of the AAA, modified as follows:

(i) Before hearing any testimony or receiving any evidence, the Arbitrators shall be sworn by an officer authorized to administer an oath to hear and decide the controversy faithfully and fairly and a written copy thereof shall be delivered to the Port Authority and the Lessee.

(ii) Within thirty (30) days after the Appointment Date, the parties hereto shall deliver to each Arbitrator two copies of their respective proposed written determinations of the question at issue (each, a "**Proposed Determination**"), together with

such affidavits, reports and other written evidence relating thereto as the submitting party deems appropriate. After the submission of any Proposed Determination, the submitting party may not make any additions to or deletions from, or otherwise change, such Proposed Determination or the affidavits, reports and other written evidence delivered therewith. If either party fails to so deliver its Proposed Determination within such time period, such party shall be deemed to have irrevocably waived its right to deliver a Proposed Determination and the Arbitrators, without holding a hearing, shall accept the Proposed Determination of the submitting party as the question at issue. If each party submits a Proposed Determination with respect to the question at issue, within the thirty (30) day period described above, the Arbitrators shall, promptly after their receipt of the second Proposed Determination, deliver a copy of each party's Proposed Determination to the other party.

(iii) Not more than thirty (30) days after the earlier to occur of (1) the expiration of the thirty (30) day period after the Appointment Date, or (2) the Arbitrators' receipt of both of the Proposed Determinations from the parties (such earlier date is referred to herein as the "**Submission Date**"), and upon not less than ten (10) days' notice to the parties, the Arbitrators shall hold one or more hearings with respect to the determination of the question at issue. The hearings shall be held in the Borough of Manhattan at such location and time as shall be specified by the Arbitrators. Each of the parties shall be entitled to present all relevant evidence and to cross-examine witnesses at the hearings. The Arbitrators shall have the authority to adjourn any hearing to such later date as the Arbitrator shall specify, provided that in all events all hearings with respect to the determination of the question at issue shall be concluded not later than sixty (60) days after the Submission Date, unless extended by agreement of the Port Authority and the Lessee.

(iv) The Arbitrators shall render their determination in a signed and acknowledged written instrument, original counterparts of which shall be sent simultaneously to the parties hereto, within ten (10) days after the earlier to occur of (i) their determination of the question at issue pursuant to Subsection 5.23.1(b)(ii), or (ii) the conclusion of the hearing(s) referred to in Subsection 5.23.1(b)(iii). In the absence of unanimity, the determination of any two of the Arbitrators shall control.

(c) The arbitration decision, determined as provided in this Subsection 5.23.1, shall be conclusive and binding on the parties, shall constitute an "award" by the Arbitrators within the meaning of the AAA rules and applicable law and judgment may be entered thereon in any court of competent jurisdiction.

(d) Each party shall pay its own fees and expenses relating to the arbitration (including, without limitation, the fees and expenses of its counsel and of experts and witnesses retained or called by it). The unsuccessful party shall pay the fees and expenses of the AAA and of the Arbitrators, but each party shall be responsible for the fees and disbursements of its own attorneys and the expenses of it own proof.

(e) Notwithstanding anything contained herein to the contrary, no Event of Default shall be deemed to exist with respect to any issue in connection with which an arbitration proceeding is outstanding and no arbitration decision has been made.

(f) After a decision of the Arbitrators has been rendered pursuant to this Subsection 5.23.1, and if a failure by the Lessee to comply with such decision would give rise to an Event of Default hereunder, then the Lessee shall have the period otherwise provided herein with respect to such default to effect such compliance before such failure shall result in an Event of Default.

5.23.2 *Code Compliance Office.* In order to resolve any material disputes arising out of, under, or in connection with, or in any way related to any duties to be performed by the Code Compliance Office with respect to the Project as set forth in this Agreement, the Lessee shall have the right to invoke, and the Port Authority hereby consents to, the administrative hearing procedure set forth in this Subsection 5.23.2 (any such invocation of such procedure being referred to herein as a "**Chief Engineer Contest**"). The Chief Engineer's decision, determined as provided in this Subsection, shall be conclusive, final and binding on the parties, absent palpable error.

(1) If the Lessee desires to invoke a Chief Engineer Contest, the Lessee shall deliver to the Chief Engineer's Office a written notice specifying, in reasonable detail, the question at issue, together with any reports or other written pertinent evidence relating thereto (a "**Contest Notice**"). The Chief Engineer, after examining the Contest Notice, may request additional information from the Lessee, and the Lessee shall promptly provide such information, to the extent practicable (the "**Additional Information**"). The Chief Engineer may, but shall not be obligated to, not more than twenty (20) Business Days after the receipt of the Contest Notice, or five (5) Business Days after the receipt of Additional Information, if applicable, and upon not less than five (5) Business Days notice to the Lessee, hold one or more hearings with respect to the determination of the question at issue in the Contest Notice (a "**Chief Engineer Hearing**"). All or any of the Lessee, the Project A/E and any contractors employed by the Lessee in connection with the Project may be requested by the Chief Engineer, and shall have the right, to attend the Chief Engineer Hearing. The Lessee shall also be entitled to have experts retained by it at the Chief Engineer Hearing. All such parties shall be permitted to be witnesses, present evidence and submit information. Upon receipt of a Contest Notice, the Chief Engineer and his or her staff shall be permitted to inspect, together with representatives of the Lessee, the Project A/E of record and the contractor involved, the work, equipment, material, alteration or improvement in question (all information and evidence discovered or identified by the Chief Engineer's staff in connection therewith is hereinafter referred to as the "**Discovery Materials**").

(2) The Chief Engineer shall render his or her determination in a signed written instrument, original counterparts of which shall be sent simultaneously to the parties hereto, after the later to occur of (i) fifteen (15) Business Days after receipt of the Contest Notice, (ii) if Additional Information has been requested, within five (5) Business Days after

the receipt thereof, or (iii) if the Chief Engineer has held a Chief Engineer Hearing, within five (5) Business Days after the conclusion of such hearing. The Chief Engineer shall have the right to establish different time frames for a Chief Engineer Contest if more than two (2) unrelated Chief Engineer Contests are requested simultaneously.

(3) No evidence or information shall be relied upon in any Chief Engineer Contest, other than information and evidence set forth in the Contest Notice, Discovery Materials, Additional Information or information or evidence provided at the Chief Engineer Hearing ("**Contest Information**"). The Chief Engineer's determination shall be based solely upon the GWBBS Manual, the Requirements, the Discovery Materials and the Contest Information.

(4) The Lessee shall pay its own fees and expenses relating to any Chief Engineer Contest (including, without limitation, the fees and expenses of its experts). The Lessee shall also pay the customary fair and reasonable fees and expenses of the Chief Engineer and his or her staff or experts.

Section 5.24 Claim Notice Procedures.

No claim against the Port Authority under this Article 5 shall be made or asserted in any action or proceeding at law or in equity, and the Lessee shall not be entitled to allowance of such claim, unless as a condition precedent, the Lessee shall have complied with all requirements relating to the giving of written notice of the information with respect to such claim as provided herein. The failure to give such written notice and information as to any claim shall be conclusively deemed to be a waiver by the Lessee of such claim. As used herein "claim" shall include any claim arising out of, under or in connection with, or in any way related to or on account of the Construction Work (including without limitation claims in the nature of breach of Contract or fraud or misrepresentation) for damages, payment or compensation of any nature or for extension of time for performance of any part of the Construction Work. Unless otherwise specified with respect to certain claims, the requirements as to the giving of written notice and information with respect to all other types of claims, notice shall have been given to the Port Authority as soon as practicable, and in any case, within 10 (ten) Business Days, after occurrence of the act, omission, or other circumstance upon which the claim is or will be based, stating as fully as practicable at the time all information relating thereto. Such information shall be supplemented with any further information as soon as practicable after it becomes or should become known to the Lessee, including daily records showing all costs which the Lessee may be incurring or all other circumstances which will affect any claim to be made, which records shall be submitted to the Port Authority.

ARTICLE 5A

LABOR HARMONY, AFFIRMATIVE ACTION

Section 5A.1 Labor Harmony.

Lessee shall use all reasonable efforts, taking all reasonable measures and means, to promote labor harmony during construction of the Project, all to the end of avoiding and preventing, to the extent reasonably possible, strikes, walkouts, work stoppages, slowdowns, boycotts and other labor trouble and discord. In undertaking any Construction Work, the Lessee shall include in any contract such provisions relating to labor harmony as the Port Authority may reasonably require.

Section 5A.2 Compliance with New York Law.

The Lessee agrees that in the performance of its construction obligations under this Agreement, it will comply with the provisions of this Article, which compliance will satisfy the policies of the State of New York with respect to affirmative action and equal employment opportunities.

Section 5A.3 Participation of MBEs and WBEs.

In addition to and without limiting any of the other terms and conditions of this Agreement, the Lessee agrees to require its contractors to make good faith efforts, consistent with the Lessee's exercise of good business judgment, including, without limitation, the consideration of cost competitiveness, to provide for meaningful participation by Minority Business Enterprises (MBEs) and Women-owned Business Enterprises (WBEs) in construction contracts entered into with respect to the Project. For purposes hereof, "**Minority Business Enterprise (MBE)**" shall mean any business enterprise which is at least fifty-one percent (51%) owned by, or in the case of a publicly owned business at least fifty-one percent (51%) of the stock of which is owned by, one or more citizens or permanent resident aliens who are members of one or more minority groups and whose management and daily business operations are controlled by one or more such individuals. As used herein minority group shall mean any of the following racial or ethnic groups:

Black (individuals having origins in any of the Black African racial groups not of Hispanic origin);

Hispanic (individuals of Mexican, Puerto Rican, Dominican, Cuban or Central or South American culture or origin, regardless of race);

Asian and Pacific Islander (individuals having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent or the Pacific Islands); and

Native American or Alaskan Native (individuals having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

For the purposes hereof, "**Women-owned Business Enterprise (WBE)**" shall mean any business enterprise which is at least fifty-one percent (51%) owned by, or in the case of a publicly owned business at least fifty-one percent (51%) of the stock of which is owned by,

one or more women and whose management and daily business operations are controlled by one or more women. "**Meaningful participation**" shall mean that at least seventeen percent (17%) of the total value of the contracts is for the participation of MBE and WBE), with a minimum of twelve (12%) participation by MBEs, and a minimum of five (5%) participation by WBEs in all purchasing, subcontracts, and services. Good faith efforts to include meaningful participation by MBEs and WBEs shall include at least the following:

(1) actively and affirmatively soliciting bids and proposals for contracts or subcontracts from MBEs and WBEs, including circulation of solicitations to MBEs and WBEs;

(2) providing prospective MBEs and WBEs with plans, specifications and other necessary background materials in sufficient time for review;

(3) utilizing the lists of certified MBEs and WBEs maintained by the Port Authority, the City, the State of New Jersey or the State of New York or seeking minorities, women and local business people from other sources for the purpose of soliciting contractors, subcontractors and suppliers;

(4) in the event that any such MBE/WBE requires advice or assistance in performing its obligations in connection with the Project, referring such MBE/WBE to available minority and women's community organizations, contractor's groups, local, State and Federal business assistance/development offices and other such non-profit and governmental or quasi-governmental organizations that provide assistance to MBE/WBEs;

(5) insuring that provision is made to provide progress payments to MBEs and WBEs on a timely basis, where appropriate, in the same manner that progress payments are made to other contractors or subcontractors; and

(6) not requiring bonds from and/or providing bonds for MBEs and WBEs for contracts or subcontracts of less than $100,000.

Section 5A.4 Certified MBEs and WBEs.

5A.4. *List.* The Port Authority has compiled a list, which may be supplemented and revised from time to time by the Port Authority, of the firms the Port Authority has determined satisfy the criteria for MBE and WBE certification. Such list is available on the Port Authority website (www.panynj.gov), under "Doing Business With the Port Authority" or will be provided to the Lessee upon request. The Port Authority makes no representation as to the financial responsibility of such firms, their technical competence to perform or any other performance-related qualifications. Only listed MBEs and WBEs and such firms as are not so listed but as are certified by the Port Authority as MBEs and WBEs hereunder and the MBEs and WBEs listed on the Port Authority website www.panynj.gov will count toward the MBE and WBE goals.

5A.4.2 *Certification.* Certification of MBEs and WBEs hereunder shall be made by the Office of Business and Job Opportunity of the Port Authority. If the Lessee wishes to utilize a firm not listed with the Port Authority but which the Lessee believes should be certified as an MBE or WBE, the Lessee may encourage such firm to complete an application (available on the Port Authority website (www.panynj.gov), for certification by completing and forwarding such forms as may be required by the Port Authority from time to time. All such applications shall be submitted to the Office of Business and Job Opportunity, the Port Authority of New York and New Jersey, 225 Park Avenue South, New York, NY 10003. If any such firm is determined eligible for certification it shall only be by a writing over the name of the Director in charge of such Office. The determination of the Port Authority shall be final and binding on the Lessee.

Section 5A. 5 Replacement of Cancelled MBEs and WBEs.

In the event that the participation of any MBE or WBE selected by the Lessee to participate in any construction contracts entered into with respect to the Project is cancelled or terminated for any reason, the Lessee agrees to make every good faith effort, to the maximum extent feasible, and consistent with the Lessee's exercise of good business judgment, including, without limitation, the consideration of cost competitiveness, to utilize other MBEs and WBEs so as to maintain appropriate participation by MBEs and WBEs in such contracts.

Section 5A.6 Goals For Minority and Female Participation.

Without limiting the provisions of the previous Sections of this Article, and without limiting any of the other terms and conditions of this Agreement, the Lessee agrees, and agrees to require its construction contractors and subcontractors at each tier of any construction undertaken pursuant to the provisions of this Agreement, to make good faith efforts to achieve the goals for minority and female participation set forth below. The Lessee agrees to appoint a project representative as a contact person for the implementation of the contractors' good faith efforts to achieve minority and female participation in the work force. The goals for minority and female participation, expressed in percentage terms for the aggregate workforce on an average basis for all trades on all construction work, are as follows:

Journey Level Trade Workers

Minority participation:	30%
Female participation:	6.9%

Laborers and Other Unskilled Workers

Minority participation:	40%
Female participation:	6.9%

These goals are applicable to all the Lessee's construction work performed for the Project. Compliance with such goals will be measured against the total work hours performed.

Section 5A.7 Notification of Contract Awards.

The Lessee agrees to require its contractors and subcontractors to provide written notification to the Lessee and the Lessee agrees to provide written notification to the Office of Business and Job Opportunity of the Port Authority within ten (10) working days of the award of any construction contract or subcontract in excess of One Hundred Thousand Dollars ($100,000.00) at any tier for any construction work. The notification shall list the name, address, telephone number and employer identification number of the contractor or subcontractor and the estimated starting and completion dates of the contract or subcontract. As used herein, "employer identification number" shall mean the Federal Employer Identification Number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.

Section 5A. 8 Inclusion of Goals in Subcontracts.

The Lessee agrees to require its contractors and subcontractors, at any tier, whenever they subcontract a portion of the construction work involving any construction trade, to physically include in each subcontract in excess of One Hundred Thousand Dollars ($100,000.00) those provisions which include the applicable goals for minority and female participation.

Section 5A.9 Implementation of Affirmative Action Standards.

The Lessee agrees to require its contractors and subcontractors to implement the specific affirmative action standards provided in subparagraphs (1) through (16) of Section 5A.12 of this Article. The goals set forth above are expressed as percentages of the total hours of employment and training of minority and female utilization the Lessee's contractors and subcontractors should reasonably be able to achieve in each construction trade in which it has employees on working on the Project. The Lessee agrees, and agrees to require its contractors and subcontractors, to use good faith efforts to make substantially uniform progress toward such goals in each craft during the period specified.

Section 5A.10 Non-Effect of Union Contracts.

The Lessee agrees to provide in its construction contracts that neither the provisions of any collective bargaining agreement, nor the failure by a union with which any contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the contractor's obligations thereunder unless the union itself has made good-faith efforts to achieve the goals set forth herein in its membership ranks.

Section 5A.11 Apprentices and Trainees.

The Lessee further agrees to provide in its agreements with its contractors that in order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals set forth herein, such apprentices and trainees shall be employed by the contractors during the training period, and the contractors shall have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees shall be trained pursuant to training programs approved by the U. S. Department of Labor or by or other appropriate governmental agency.

Section 5A.12 Affirmative Action Standards.

The Lessee agrees to require its contractors and subcontractors to take specific affirmative actions to ensure equal employment opportunity ("**Equal Employment Opportunity**" or "**EEO**"). The Lessee's evaluation of the contractor's compliance with these provisions shall be based upon a contractor's good faith effort to achieve maximum results from its actions. The Lessee agrees to require its contractors and subcontractors to document these efforts fully, and to implement affirmative action steps at least as extensive as the following:

(1) Ensure and maintain a working environment free of harassment, intimidation and coercion at all portions of the Facility at which the contractor's employees are assigned to work. The contractor, where possible, will assign two or more women to each phase of the construction project. The contractor shall specifically ensure that all foremen, superintendents and other supervisory personnel at the Facility are aware of and carry out the contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at the Premises.

(2) Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

(3) Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization.

(4) Provide immediate written notification to the Lessee when any union or unions with which the contractor has a collective bargaining agreement has not referred to the contractor a minority person or woman sent by the contractor, or when the contractor has other information that the union referral process has impeded the contractor's efforts to meet its obligations.

(5) Develop maximum job opportunities for apprentices appropriate to the conditions of the work, subject to applicable collective bargaining agreements, in conjunction with training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the contractor's

employment needs, especially those programs funded or approved by the Department of Labor. The contractor shall provide notice of these programs to the sources compiled under subparagraph (2) above.

(6) Disseminate the contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the contractor in meeting its EEO obligations: by including it in any policy manual and collective bargaining agreement; by publicizing it in the contractor's newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the contractor's EEO policy on bulletin boards accessible to all employees at each location where the construction work is performed.

(7) Review, at least every six (6) months, the contractor's EEO policy and affirmative action obligations hereunder with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions, including specific review of these items with on-area supervisory personnel such as superintendents, general foremen, etc., prior to the initiation of construction work at the Facility. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed and disposition of the subject matter.

(8) Disseminate the contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the contractor's EEO policy with other contractors and subcontractors with whom the contractor does or anticipates doing business.

(9) Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students, to minority and female recruitment and training organizations and to State certified minority referral agencies serving the contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the contractor shall send written notification to organizations such as the above describing the openings, screening procedures and tests to be used in the selection process.

(10) Encourage present minority and female employees to recruit other minority persons and women.

(11) Comply with 41 CFR Part 60-3 with respect to tests and other selection requirements.

(12) Conduct, at least every six (6) months, an inventory and evaluation of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

(13) Ensure that seniority practices, job classifications, work assignments and other personnel practices do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the contractor's obligations hereunder are being carried out.

(14) Ensure that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

(15) Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

(16) Conduct a review, at least every six (6) months, of all supervisors' adherence to and performance under the contractor's EEO policies and affirmative action obligations.

Section 5A.13 Contractor Participation in Associations.

The Lessee shall encourage its contractors to participate in voluntary associations which assist in fulfilling subparagraphs (1)-(16) of Section 5A.12 of this Article. The efforts of a contractor association, joint contractor-union, contractor-community or other similar group of which the contractor is a member and participant may be asserted by such contractor as fulfilling any one or more of its obligations under Section 5A.12 of this Article provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, encourages that the concrete benefits of the program are reflected in the contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the contractor. The requirement for good faith efforts to comply, however, shall remain with the contractor and the Lessee shall provide in its agreements with the contractor that failure of such a group to fulfill an obligation shall not be a defense for the contractor's non-compliance.

Section 5A.14 Affirmative Action for All Minority Groups.

Goals for minorities and a separate single goal for women have been established. The Lessee, however, agrees to require its contractors and subcontractors to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority, and to provide that, consequently, the contractor may be in violation of its agreement with the Lessee if a particular group is employed in a substantially disparate manner (for example, even though the contractor has achieved its goals for women generally, the contractor may be in violation if a specific minority group of women is under-utilized).

Section 5A.15 No Discrimination.

The Lessee agrees to provide that the contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

Section 5A.16 No Contracts with Debarred Persons.

The Lessee agrees that it will not enter into any contract with any Person debarred from U.S. Government contracts pursuant to Executive Order 11246.

Section 5A.17 Further Extensive Standards.

The Lessee agrees to require its contractors and subcontractors, in fulfilling their obligations to the Lessee, to implement specific affirmative action steps at least as extensive as those standards prescribed in Section 5A.12 hereof so as to achieve maximum results from their efforts to ensure equal employment opportunity.

Section 5A.18 Maintenance of Records.

The Lessee agrees to designate a responsible official to monitor all employment related activity to ensure that EEO policy is being carried out, to submit reports relating to the contractor's EEO obligations as may be required, and to keep records. The Lessee agrees to require that records shall at least include for each employee the name, address, telephone number, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g. mechanic, apprentice, trainee, helper or laborer), date of changes in status, hours worked per week in the indicated trade, rate of pay and location at which the work was performed. The Lessee further agrees to provide that records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors need not be required to maintain separate records.

Section 5A.19 Effect of Other Laws.

Nothing herein provided shall be construed as a limitation upon the application of any applicable laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program, if applicable).

Section 5A.20 Cooperation.

Without limiting any other term or provision of this Agreement, the Lessee agrees, and agrees to require its contractors and subcontractors, to cooperate with all federal, state or local agencies established for the purpose of implementing affirmative action compliance programs

and the Lessee agrees, and agrees to require its contractors and subcontractors, to comply with all procedures which may be agreed to by and between the Port Authority and the Lessee.

Section 5A.21 Additional Required Contract Provisions.

In addition to and without limiting any of the terms and provisions of this Agreement, the Lessee agrees to provide in its contracts and all subcontracts covering construction work, or any portion thereof, that:

(1) The contractor shall not discriminate against employees or applicants for employment because of race, creed, color, religion, national origin, ancestry, sex, age, liability for military service, disability or marital status, and shall undertake or continue existing programs of affirmative action to ensure that applicants are employed and employees are treated during employment without such discrimination. Such programs shall include, but not be limited to, recruitment or recruitment advertising, employment, job assignment, promotion, upgrading, demotion, transfer, layoff, termination, rates of pay or other forms of compensation, and selections for training or retraining, including apprenticeships and on-the-job training.

(2) At the request of either the Port Authority or the Lessee, the contractor shall request such employment agency, labor union or authorized representative of workers with which it has a collective bargaining or other agreement or understanding and which is involved in the performance of the contract with the Lessee to furnish a written statement that such employment agency, labor union or representative shall not discriminate because of race, creed, color, national origin, sex, age, disability or marital status and that such union or representative will cooperate in the implementation of the contractor's obligations hereunder.

(3) The contractor will state, in all solicitations or advertisements for employees placed by or on behalf of the contractor in the performance of the contract, that all qualified applicants will be afforded equal employment opportunity without discrimination because of race, creed, color, national origin, sex, age, disability or marital status.

(4) The contractor will include the provisions of subparagraphs (1) through (3) of this Section in every subcontract or purchase order in such a manner that such provisions will be binding upon each subcontractor or vendor as to its work in connection with the contract.

"Contractor" as used in subparagraphs (1) through (4) of this Section shall include each contractor and subcontractor at any tier of construction.

Section 5A.22 Clarifying Provisions.

Notwithstanding any provision of this Article 5A to the contrary, it is understood that the Lessee's obligations pursuant to this Article 5A are to make good faith reasonable attempts to perform the obligations set forth herein and to include in its direct construction

contracts provisions requiring its contractors to do the same and provisions requiring such contractors to include in its direct subcontracts provisions requiring its subcontractors to do the same. Whenever the word "ensure", "require" or words of similar meaning are used in Article 5A, it shall be deemed to mean make good faith efforts to achieve the stated goals of this Article. The provisions of this Article 5A shall only apply to the construction of the Project and shall not apply to "fit out" of interior tenant spaces nor to subsequent alterations. The requirements set forth in this Article 5A shall apply to direct contractors of the Lessee and to subcontractors of said direct contractors, but not to subcontractors of any further tier; provided, however, that the hiring of MBEs and/or WBEs by any subcontractors at any such further tier shall be counted towards the achievement of the goals set forth herein.

ARTICLE 6

ALTERATIONS AND IMPROVEMENTS

Section 6.1 Alterations to Leased Premises.

6.1.1 *Alterations Requiring Consent.* Lessee, subsequent to the Project Completion Date, shall not, without the prior written consent in each instance of the Port Authority, which consent shall not be unreasonably withheld, do any of the following: (i) make any alteration or change which would be in violation of the Certificate of Completion, the GWBBS Manual or the Requirements, (ii) perform any demolition work, or make any change or alteration affecting the Design Criteria Project Elements other than cosmetic changes to the Common Areas and/or store-fronts, or (iii) make any other alteration or change that, in the Port Authority's reasonable determination, will materially adversely impact the operation, maintenance, repair or security of the Reserved Premises. If the Lessee shall desire to perform any work of the nature described in this Subsection 6.1.1, the Lessee shall, to the extent such provisions are not patently inapplicable to such work, comply with the provisions of Article 5 in connection therewith (it being understood that for such purpose "Modification Application" shall be deemed replaced with "**Alteration Application**", "Proposed Modification" shall be deemed replaced with "**Proposed Alteration**", "Approved Construction Documents" shall be deemed replaced with "**Approved Alteration Documents**", "Project A/E" shall mean such New York State licensed professional architect/ engineer as shall have been selected by Lessee), and "PA-Representative" shall mean the Port Authority's then resident engineer or such other appropriate representative as may be designated by the Port Authority.

6.1.2 *Unauthorized Alterations.* In the event any work which requires the consent of the Port Authority under Subsection 6.1.1 hereof is performed by the Lessee without such consent, upon reasonable notice so to do from the Port Authority, the Lessee, at its sole cost and expense, shall remove the unauthorized installation, construction, improvement, alteration, modification or addition and restore the Leased Premises to the condition existing prior to such unauthorized work or, at the option of the Port Authority, cause such unauthorized installation, construction, improvement, alteration, modification or

addition to be changed to the reasonable satisfaction of the Port Authority. In the event the Lessee fails to comply with any such direction within 10 (ten) Business Days after receipt of such direction (or immediately in the event that the Lessee's actions have created a threat to life/safety), the Port Authority may remove or change such unauthorized installation, construction, improvement, alteration, modification or addition and the Lessee shall pay to the Port Authority on demand one hundred thirty percent (130%) of the Port Authority's actual out-of-pocket hard and soft costs of such removal or change.

6.1.3 *Alterations Not Requiring Consent.* Lessee, subsequent to the Project Completion Date, except as provided in Subsection 6.1.1, but subject to the requirements of Subsection 6.1.4, shall have the right, without the consent of the Port Authority, to make any and all alterations or changes in or to, the Leased Premises (including, without limitation, interior alterations and changes to prepare space for occupancy by Subtenants), to make repairs and replacements in or to the Leased Premises and to perform other work in and about the Leased Premises. The Lessee may also permit Subtenants to perform interior work within the space leased by them without the consent of the Port Authority except to the extent that such consent is required under Subsection 6.1.1 hereof and subject to the provisions of Subsection 6.1.4 hereof. All work performed pursuant to this Subsection 6.1.3 (whether by the Lessee or any Subtenant) shall be performed in good and workmanlike manner and in compliance with the GWBBS Manual, the Requirements and with all applicable rules, regulations, requirements, orders and directions of the NFPA, the ISO of New York and any other board or organization exercising or which may exercise similar functions.

6.1.4 *Review and Approval Procedures for Leased Premises.* Whether or not this Section 6.1 requires the Port Authority's consent to any of the work proposed to be performed by the Lessee or any Subtenant, if such work requires the filing and approval of plans under the Tenant Construction Review Manual, then the Lessee or such Subtenant shall comply in all respects in connection with such work with the requirements of the Tenant Construction Review Manual, including without limitation (except in the case of Initial Subtenant Fit-Out Work) any applicable requirements with respect to the payment of fees to the Code Compliance Office, with all certification and sealing to be done by a State of New York licensed engineer or architect retained by the Lessee or the Subtenant, as the case may be. In addition, Sections 5.10 and 5.17 hereof shall apply with respect to any such work.

Section 6.2 Alterations to Reserved Premises.

6.2.1 *Reserved Premises Existing as of Lease Commencement Date.* With respect to the Reserved Premises existing as of the Lease Commencement Date, the Port Authority shall not make any alterations to such existing Reserved Premises that would (i) increase the cost to the Lessee of the Project or (ii) materially delay the performance of the Project.

6.2.2 *Redeveloped Reserved Premises.* Subsequent to the Project Completion Date, alterations to the redeveloped Reserved Premises may be made by the Port Authority, at its own cost, provided (but only if) any such alteration would not materially adversely affect

or interfere with (a) the structural integrity of any portion of the Facility, or (b) any of the building systems serving the Leased Premises, or (c) the operation or maintenance of or the ability to repair the Leased Premises, or (d) subject to Subsection 6.2.4 hereof, the exterior appearance of the Facility or any portion of the Reserved Premises that shall be visible from any of the streets that adjoin the Facility.

6.2.3 *Alterations With Potential Materially Adverse Impacts.* Prior to making any alterations that may have any of the material adverse impacts that are described in Subsection 6.2.2 hereof, the Port Authority shall submit plans and specifications to the Lessee for the Lessee's review and comment (but not for the Lessee's approval). Lessee shall perform any such review and provide any comments in accordance with the Construction Review Timetable (as if the Lessee were the Port Authority and the Port Authority were the Lessee). The Port Authority shall consult with, and consider all comments timely received from, the Lessee before making any alterations that may have any of the potential material adverse impacts that are described in such Subsection 6.2.2.

6.2.4 *Air Rights Development.* Notwithstanding any other provision of this Section 6.2, the Lessee's consent shall not be required for any development in the air space above the redeveloped East Building (an "**Air Rights Development**") provided that it shall not cause any adverse impact described in clause (a), (b), or (c) of Subsection 6.2.2 hereof.

ARTICLE 7

COMPLIANCE WITH REQUIREMENTS FOLLOWING PROJECT COMPLETION

Section 7.1 Licenses and Permits.

Following the Project Completion Date, the Lessee shall procure and maintain in effect throughout the Term, at its sole cost and expense, all licenses, certificates, permits or other authorizations from all Governmental Authorities having jurisdiction over the operations of the Lessee which may be necessary for the conduct of and for Lessee's operations in the Leased Premises; provided, however, that all approvals and any construction, building or occupancy permit(s) with respect to all improvements of the Leased Premises shall be subject to the exclusive jurisdiction of the Port Authority, as provided under the provisions of Article 5 and Article 6 of this Agreement.

Section 7.2 Requirements - Compliance and Cure; Contest or Challenge.

7.2.1 *Compliance and Cure.* Following the Project Completion Date, and thereafter throughout the Term, the Lessee shall promptly: (1) comply with any and all Requirements and any summons or notice of violation or warning notice or legal process for the enforcement of any Requirement; and (2) correct or cure all such violations or notices of non-compliance therewith, that it shall receive from any Governmental Authority having jurisdiction, whether or not formally filed, against the Leased Premises. The Lessee shall

deliver to the Port Authority, promptly after receipt from any Governmental Authority, a true copy of any such notice of violation, warning notice or other legal process requiring the performance of construction. Lessee shall perform all remediation work and clean up of Hazardous Substances required in order to fully satisfy the compliance obligations set forth herein.

7.2.2 *Contest or Challenge of Requirements by Lessee.* In the event the Lessee in good faith wishes to contest or challenge any notice of violation or non-compliance that it receives from any Governmental Authority, and if such contest or challenge does not involve matters of safety, health or preservation of property it may if permitted by law defer compliance, and in such event the Lessee shall diligently and continuously pursue its rights and remedies under the law to contest or challenge the same and shall keep the Port Authority fully informed with respect thereto. In the event the Lessee undertakes to so challenge or contest, it shall indemnify the Port Authority against any claims, damages or losses that may arise or result therefrom and shall provide the Port Authority with such security as the Port Authority may reasonably require against any loss or penalty which may be imposed against the Port Authority as a result of the Lessee's action.

Section 7.3 Inapplicability of Requirements to the Port Authority.

Lessee acknowledges that no provision of this Agreement nor any provision of this Article 7 are to be construed as a submission by the Port Authority to the application to itself of any Requirements, but no alleged or purported immunity or exemption from any of the foregoing available to the Port Authority shall excuse compliance or be grounds for non-compliance on the part of the Lessee with substantive Requirements other than procedural (i.e. non-substantive) Requirements that do not apply because the Leased Premises are owned by the Port Authority. In no event shall the Lessee raise any claim or defense in any contest or challenge involving in any way the immunity of the Port Authority, its governmental nature or the provision of any statute respecting the Port Authority without first obtaining prior written consent from the Port Authority, which consent may be conditioned, withheld or delayed in the Port Authority's sole and absolute discretion. Notwithstanding but without limitation of the foregoing, consistent with the Port Authority's long standing policy to conform with Requirements to the extent practicable, for purposes of this Agreement, the Port Authority shall maintain and operate the Reserved Premises applying standards consistent with or in excess of any such applicable Requirements, to the extent, if any, necessary so as not to materially adversely impact the Lessee in its use, operation, maintenance and repair of the Leased Premises and shall be afforded the same right to cure as provided to Lessee in Subsection 7.2.1 hereof and to contest or challenge any such Requirement as provided to Lessee in Subsection 7.2.2 hereof.

ARTICLE 8

OPERATIONS; RULES AND REGULATIONS

Section 8.1 Lessee's Operations in the Leased Premises.

From the Project Completion Date and throughout the Term, the provisions in this Section 8.1 shall govern Lessee's operations. Lessee shall operate the Leased Premises in a First Class manner.

8.1.1 *Conduct and Operations of the Lessee.*

(a) Lessee shall, use commercially reasonable efforts to minimize, to the extent reasonably practicable, inconvenience to the operations of, and to the users of, the ongoing passenger bus services in the Reserved Premises.

(b) Lessee shall conduct operations in an orderly manner and so as not to annoy, disturb or be offensive to others, and make commercially reasonable efforts to control the conduct of its officers, members, and employees, agents, representatives, contractors, invitees and its Subtenants.

(c) Upon objection from the Port Authority, acting in a non-arbitrary and non-capricious manner, concerning the improper conduct of any such person, the Lessee shall promptly take all steps necessary to remove the cause of the objection.

(d) The Lessee shall not commit any nuisance, or do or permit to be done in the Leased Premises anything which may result in the creation or commission of a nuisance, including, without limitation, any unusual, noxious or objectionable smoke, gases, vapors, odors, noises, or vibrations.

(e) The Lessee shall not on the grounds of race, creed, color, sex or national origin, discriminate or permit discrimination against any person or persons in its selling of merchandise or rendering of services hereunder or in any of its operations or activities under or in connection with this Agreement.

(f) No undue quantities of garbage, debris, or other waste materials (whether solid or liquid) shall be allowed to collect or accumulate or on or about the Leased Premises and Lessee shall remove all the garbage, recycle debris, and other waste materials (whether solid or liquid) arising out of Lessee's occupancy or use.

(g) The Lessee shall not overload any floor, roadway, passageway, pavement or other surface or any wall, partition, column or other supporting member or any elevator or other conveyance within the Leased Premises, and, without limiting any other provision of this Agreement, the Lessee, shall repair, replace or rebuild any building element damaged by reason of any such overloading for which it shall be responsible. The Lessee shall not use or connect any equipment or engage in any activity or operation which will cause or tend to cause an overloading of the capacity of any existing or future utility, mechanical, electrical, communication or other systems, or portion thereof, nor permit to be done anything which may interfere with the effectiveness or accessibility thereof.

(h) The Lessee shall take all appropriate measures to eliminate vibrations originating from its occupancy and use which may damage any equipment, structure, or adjacent buildings and to keep the sound level of its operations within reasonably low levels so as not unreasonably to disturb others in the surrounding area.

(i) Without limiting the Lessee's law compliance obligations as elsewhere set forth in this Agreement, the Lessee shall maintain in good condition and in adequate quantities such fire protection and detection equipment and other safety equipment in the Leased Premises as may be required to comply with the requirements of this Agreement.

(j) The Lessee shall require its employees, agents, contractors and others doing business with it to comply with Port Authority commercially reasonable requirements for working and operating at, and accessing the Leased Premises, including without limitation, complying with hours of work and construction staging requirements set forth in **Schedule 5.21.1(a)(i)** and wearing or carrying badges or other suitable means of Port Authority required personal or vehicle identification.

8.1.2 *Compliance with Insurance Underwriters' Requirements.*

(a) The Lessee shall not do or permit to be done in the Leased Premises any act or thing that will invalidate or conflict with any of the insurance policies required under this Agreement, or which, in the opinion of the Port Authority, may constitute an extra-hazardous condition, so as to increase the risks normally attendant upon the operations contemplated by this Agreement, and the Lessee shall promptly observe, comply with and execute the provisions of any and all present and future rules and regulations, requirements, orders and directions of the NFPA and ISO, and of any other board or organization exercising or which may exercise similar functions, which may pertain or apply to the operations contemplated by this Agreement.

(b) Following the Project Completion Date, the Lessee shall, subject to and in accordance with the provisions of Article 6 of this Agreement, make any and all improvements, alterations or repairs of or to the Leased Premises that may be required at any time thereafter by any present or future NFPA or ISO rule, regulation, requirement, order or direction, and if by reason of any failure on the part of the Lessee to comply with this Subsection 8.1.6 any insurance rate payable by the Port Authority on account of the Facility or any part thereof, shall at any time be higher than it otherwise would be, then the Lessee shall pay to the Port Authority, as an item of Rental, that part of all insurance premiums paid by the Port Authority which shall have been charged because of such violation or failure by the Lessee, but no such payment shall relieve the Lessee of its other obligations under this Subsection.

Section 8.2 Rules and Regulations.

8.2.1 *Observance by Lessee, Subtenants, Etc.* The Lessee shall, in consultation with the Port Authority, promulgate from time to time commercially reasonable rules and

regulations to govern the activities of its Subtenants and their invitees in the Leased Premises (the "**Retail Rules and Regulations**") and shall make commercially reasonable efforts to enforce such Retail Rules and Regulations (by diligent enforcement of the Subleases, consistent with commercially reasonable business practice). In addition, the Lessee shall post in the Common Areas, and make commercially reasonable efforts to enforce, the "George Washington Bridge Bus Station Rules and Regulations", which are referred to herein as the "**GWBBS Common Area Rules and Regulations**". The Retail Rules and Regulations and the GWBBS Common Area Rules and Regulations are sometimes herein referred to collectively as the "**Rules and Regulations**". Nothing in the Rules and Regulations shall be construed to preclude the Lessee from performing its operations under this Agreement in accordance with the terms of this Agreement, including without limitation the uses permitted by Section 3.2 of this Agreement. In the event the Port Authority deems it advisable to change or supplement any present rule or regulation set forth in the GWBBS Common Rules and Regulations, or any part thereof, and such change or supplement is inconsistent with the rights granted to the Lessee under this Agreement, or prevents the use of the Leased Premises for the purposes stated under this Agreement, or otherwise materially adversely impacts the Lessee's operations, then, only to the extent of such inconsistency, it shall not apply to the Lessee, its agents, employees, Subtenants or invitees. Otherwise, nothing herein contained shall limit the effectiveness of any commercially reasonable rule or regulation now or hereafter promulgated by the Port Authority for reasons of safety, health or preservation of property at the Facility. The Port Authority agrees that, except in cases of emergency, it will give notice to the Lessee of every such change or supplement or further rule or regulation adopted by it at least thirty (30) days before the Lessee shall be required to comply therewith.

8.2.2 *Intentionally Omitted.*

8.2.3 *Public Events.* If the Lessee sponsors a public event, the Lessee shall, and shall use reasonable efforts to cause its Subtenants to, comply with the Rules and Regulations in connection with such event. The Lessee agrees to indemnify and hold harmless the Port Authority from and against any and all claims which may arise by reason of any violation of the Rules and Regulations by the Lessee in connection with a public event of which the Lessee is a sponsor.

8.2.4 *Signs.*

(a) All signage (whether revenue producing, directional or other types of signage customary in First Class retail facilities or subtenant advertising signage), installed in the Common Areas or on the exterior of the Leased Premises, shall be subject to the Port Authority's review and approval as to means and methods of attachment and material consistent with standards and requirements set forth in the TCRM and the Retail Branding Program, both of which are part of the GWBBS Manual. All revenue producing advertising signage installed in the Common Areas or on the exterior of the Leased Premises shall also be subject to the Port Authority's review and approval as to content, size and aesthetics, in each case not to be unreasonably withheld.

(b) The Lessee agrees not to use or make any reference by advertising or otherwise to the names "The Port Authority of New York and New Jersey", "Port Authority", or any simulation or abbreviation of any such names, unless such use or reference has been approved by the Port Authority in advance. The names "George Washington Bridge", "George Washington Bridge Bus Station", "The Port Authority of New York and New Jersey", "Port Authority", or any simulation or abbreviation of any such names, shall in all events remain the exclusive property of the Port Authority. Nothing contained herein shall, or shall be deemed to, confer upon the Lessee, the right to use any such name for any purpose, and the Lessee shall not, without the Port Authority's prior written consent, not to unreasonably withheld, make any use of any emblem, picture or reproduction of the George Washington Bridge that would constitute an unauthorized use of the Port Authority's intellectual property; provided, however, that (i) Lessee may use the name "George Washington Bridge" as part of the name of the mall or retail facility that Lessee intends to construct in the Leased Premises, and (ii) Lessee may use the name "George Washington Bridge Bus Station Development Venture LLC" and may refer in its advertising and other promotional materials to the fact that the retail facilities to be contained within the Leased Premises are located at the George Washington Bridge Bus Station and convenient to the George Washington Bridge. This provision shall be deemed to survive the expiration or earlier termination of this Agreement. No souvenir or souvenir type merchandise involving the George Washington Bridge, the George Washington Bridge Bus Station, or other Port Authority facilities (or depicting any aspect thereof) shall be sold at or from the Leased Premises without the prior consent of the Port Authority, unless such merchandise has been suitably licensed by the Port Authority.

Section 8.3 Leased Premises Security and Port Authority Police.

Lessee shall or shall cause its Subtenants to retain private security within the Leased Premises, to the extent, if any, typically provided in comparable First Class retail facilities in New York City, and, when necessary, shall contact the Port Authority Police Department as first responder to the extent that the New York City Police Department does not have jurisdiction.

Section 8.4 Reserved Premises.

8.4.1 *No Nuisance.* The Lessee acknowledges that the Leased Premises and the Reserved Premises are integrated premises constituting a single facility in which the Port Authority operates an existing active passenger bus transportation service in connection with the George Washington Bridge, that the Facility is situated over the active twelve (12) lane Trans Manhattan Expressway, and that the Reserved Premises are and will continue to be used for and in connection with or in support or operation of such bus services. However, subject to the foregoing, the Port Authority shall endeavor, to the fullest extent reasonably practicable, not to commit or do or permit in the Reserved Premises anything which may result in the creation or commission of a nuisance, including, without limitation, any unusual,

noxious or objectionable smoke, gases, vapors, odors, noises or vibrations, that would materially adversely interfere with the use of the Leased Premises for their intended purpose.

8.4.2 *No Overloading.* The Port Authority shall not overload any floor, roadway, passageway, pavement or other surface or any wall, partition, column or other supporting member or any elevator or other conveyance within the Reserved Premises, and, without limiting any other provision of this Agreement, the Port Authority, shall repair, replace or rebuild any building element damaged by reason of any such overloading for which it shall be responsible. The Port Authority shall not, to the detriment of the Lessee, use or connect any equipment or engage in any activity or operation which will cause or tend to cause an overloading of the capacity of any existing or future utility, mechanical, electrical, communication or other systems, or portion thereof, nor permit to be done anything which may interfere with the effectiveness or accessibility thereof.

8.4.3 *Fire Protection Equipment.* Without limiting the Port Authority's law compliance obligations as elsewhere set forth in this Agreement, the Port Authority shall maintain in good condition and in adequate quantities such fire protection and detection equipment and other safety equipment in the Reserved Premises as may be required to comply with the requirements of this Agreement.

8.4.4 *Free of Snow, Rubbish, Etc.* With respect to areas constituting part of the Reserved Premises, unless otherwise agreed in writing between the Parties, to the extent required by Requirements or in order to prevent injury to persons or property for which the Lessee might be held responsible, the Port Authority shall keep clean and free from snow, ice, rubbish and obstructions any roadways, sidewalks, parking facilities, plazas, vaults, chutes, railings, gutters and curbs contained within the Reserved Premises.

ARTICLE 9

MAINTENANCE AND REPAIR FOLLOWING PROJECT COMPLETION

Section 9.1 Lessee's Duty of Maintenance and Repair.

From and after the Project Completion Date and throughout the remainder of the Term, the Lessee shall assume the entire cost and responsibility for, and shall relieve the Port Authority as owner of the Leased Premises of all responsibility for, the operation, care, maintenance and repair, in a First Class manner, in accordance with the GWBBS Manual and the Requirements, of the Leased Premises (except certain capital repair and or replacement costs and expenses as provided in Sections 9.2 and 9.3 hereof), without regard to whether any required repair shall be ordinary or extraordinary, partial or entire, foreseen or unforeseen, structural or otherwise. As used in this Agreement, the term "repairs" shall include all necessary replacements, removals, alterations, and additions. Without limiting the generality of the foregoing, from and after the Project Completion Date and thereafter throughout the remainder of the Term, Lessee shall:

(a) at all times take good care of and keep the Leased Premises, and all parts thereof clean, and in an orderly condition and appearance, together with all the fixtures, improvements, furnishings, signage, advertising, equipment and personal property located in or on the Leased Premises including surrounding sidewalks;

(b) maintain in good condition and make all necessary repairs and replacements to the foundations, the exterior walls and the structural supporting frame and roof of Level 2 of the Leased Premises (which is the top of the Level 3 floor slab) and all other necessary structural repairs to the Facility to the extent (but only to the extent) that such elements constitute part of the Leased Premises, and provide, maintain and make necessary repairs to all utility lines and systems serving the Leased Premises where the responsibility for such utility lines and systems is not that of utility companies or other third parties;

(c) perform all necessary maintenance, including, but not limited to, painting, patching, repairing and cleaning, if required, as the necessity arises therefor regardless of the cause of the condition requiring the same, and whether or not caused by fire or other casualty, and perform periodic inspections (as set forth in (e) below) of the Leased Premises for the purpose of determining whether any repairs are required, so that, at the expiration or termination of the Term and all times during the Term following the Project Completion Date, the Leased Premises (or a reconstruction of all or any part thereof) will be in as good condition as they were upon the Project Completion Date (or reconstruction) thereof, in each case except for reasonable wear and tear which does not adversely affect the watertight condition or structural integrity of the Facility or adversely affect the occupancy or use of the Leased Premises;

(d) supply, replace, install, repair, maintain and keep clean all grease traps in all drainage pipes used in connection with the operation of the Leased Premises, whether such pipes are located on the Leased Premises or elsewhere, and maintain, repair and replace as necessary all sidewalks and curb cuts adjoining the Facility (exclusive of those that are part of the Reserved Premises on Level 3), repair any damage to exterior surfaces of the Leased Premises and remove snow and ice from the sidewalks adjoining the Facility (exclusive of those that are part of the Reserved Premises on Level 3); and

(e) comply with the Structural and Systems Integrity Requirements, insofar as they relate to the Leased Premises and the Facility to the extent (but only to the extent) that such elements of the Facility constitute part of, or are impacted by the Leased Premises.

Section 9.1A <u>Fire Protection and Fire Alarm Systems</u>.

(a) <u>Fire Protection Systems.</u> The Parties acknowledge and agree that the Facility is fitted with a single shared combined fire standpipe/sprinkler system. Water supply to the combined systems is provided from two independent sources. There is a single fire pump, connected to the Reserved Premises emergency generator for back-up electrical

power to the pump, which supplies water to the Reserved Premises and to the Leased Premises standpipe/sprinkler systems.

(i) Allocation of Maintenance Responsibilities. The Port Authority shall maintain and test the "shared components" (as defined below in Subsection a(ii) of this Section 9.1A) of the combined fire standpipe/sprinkler system. In the West Building, the components of the combined fire standpipe/sprinkler system dedicated for exclusive use in connection with the Reserved Premises, or for exclusive use in connection with the Leased Premises, shall be independently and separately maintained and tested by the Port Authority or the Lessee, as applicable, and begin at the isolation valves immediately after the fire pump in the "Fire Pump Room". In the East Building, the Reserved Premises combined fire standpipe/sprinkler system is separated from the Leased Premises combined fire standpipe/sprinkler system by the isolation valves located in the Leased Premises stairwells. Lessee shall maintain and test the Leased Premises components of the combined fire standpipe/sprinkler system including the Fire Department of New York City connections. The frequency, duration and type of maintenance and testing of the components of said combined fire standpipe/sprinkler system for which each Party is responsible shall comply with applicable plumbing and building Requirements. The Port Authority shall maintain and test the emergency generator.

(ii) Definition and Location of Shared Components. The Shared Components of the combined fire standpipe/sprinkler system are located in the West Building, and include the water meters, backflow preventers, fire pump, jockey pumps, all associated piping, heat trace, insulation, valves and connections, and all associated fire alarm components and devices, that originate from the two points of entry for the fire protection water supply to the isolation valves in the "Fire Pump Room" located in the West Building.

(iii) Shared Components Maintenance Costs. The Lessee shall pay the Port Authority $30,000.00 annually, escalated at two percent (2%) per annum consistent with the Common Area Charge set forth in Section 9.3.1 hereof, for the maintenance of the Shared Components of the combined fire standpipe/sprinkler and associated systems, which Shared Components are listed in attached Schedule 9.1A(a)(iii). The record as-built drawings showing the demarcation between shared, Leased Premises dedicated and Reserved Premises dedicated, components of the combined fire standpipe/sprinkler system and associated fire alarm components and devices shall be among the "as built" drawings of the Construction Work delivered to the Port Authority pursuant to Section 5.17.2 of the Lease.

(b) Fire Alarm Systems – Maintenance Responsibilities.

(i) Lessee shall be responsible for all fire alarm devices including but not limited to fire control panels, enunciators, strobes, strobe panels, speakers, dampers, smoke vents, smoke heads, taper switches, flow switches, wiring, piping whose alarms originate in the Lease Premises) including but not limited to escalators, elevators and Lessee's

fire standpipe system as described in Subsection (a) of this Section 9.1A up to and inclusive of the auto-dialer in the Port Authority's fire command station alarm system control panel.

(ii) The Port Authority shall be responsible for all fire alarm devices including but not limited to fire control panels, enunciators, strobes, strobe panels, speakers, dampers, smoke vents, smoke heads, taper switches, flow switches, wiring, piping whose alarms originate in the Reserved Premises including but not limited to elevators, the Port Authority's fire standpipe system as described in Subsection (a) of this Section 9.1A, and the Shared Components of the combined fire standpipe/sprinkler system as defined in subsection a(ii) of this Section 9.1A)

Section 9.1AA Gas, Domestic Water, Sanitary and Storm Systems and Service.

For avoidance of doubt, with respect to the responsibilities of each Party for gas, domestic water, sanitary and storm systems maintenance, testing and repair, the Parties acknowledge and agree each Party shall be responsible per Schedule 9.1AA hereto. The record as built drawings of the Construction Work delivered to the Port Authority pursuant to Section 5.17.2 of the Lease shall indicate the demarcation between the shared, the Reserved Premises dedicated, and the Leased Premises dedicated components of the utility systems as set forth in this Section 9.1AA.

Section 9.2 Shared Costs for Capital Repairs and/or Replacements.

9.2.1 *Common Vertical Circulation Facilities, Pedestrian Underpass, Sidewalks and Exoskeleton.*

(a) The Lessee and the Port Authority acknowledge and agree that during the Term capital repairs and/or replacements (as opposed to routine maintenance and minor repairs or replacements) will from time to time be necessary for (i) the Common Vertical Circulation Facilities, (ii) the Pedestrian Underpass, (iii) the sidewalks adjoining the Facility (exclusive of sidewalks constituting part of the Reserved Premises) and (iv) the Exoskeleton.

(b) In that regard, the Lessee and the Port Authority have heretofore agreed that, although the Lessee shall perform the work necessary to make such repairs and/or replacements, subject to Subsection 9.2.3 hereof the hard and soft costs of such capital repairs and/or replacements (to the extent not paid by a Governmental Authority) shall be shared fifty percent fifty percent (50% - 50%) between the Lessee and the Port Authority, provided that (i) such capital repair and/or replacement was (1) required by the GWBBS Manual or the Requirements, or (2) mutually agreed to be desirable or necessary by the Lessee and the Port Authority, each acting reasonably, and (ii) prior to awarding the contract to perform such work, (1) the Lessee shall have provided the scope, means and method, and the estimated cost for the work to be performed, to the Port Authority for the Port Authority's review and

approval, not to unreasonably withheld, and (2) the Port Authority shall have granted such approval. The Port Authority's share of such costs will be paid to the Lessee as provided in Subsection 9.2.2 hereof.

9.2.2 *Payment of Shared Capital Repair and/or Replacement Costs.* Provided the Port Authority shall have granted approval of the proposed capital repair and/or replacement as provided in Subsection 9.2.1 hereof, the Port Authority's share of such costs shall be paid in monthly installments as the applicable work progresses, in accordance with the procedures that are set forth in Subsection 5.4.2 hereof (applied *mutatis mutandis* as if such work were the PA-Cost Work), except that progress and final payments shall be based on the Lessee's actual, documented out-of-pocket costs, plus a development management fee of five percent (5%), rather than on the PA-Cost Work Fixed Price. Upon completion of any such capital repair and/or replacement work, (i) the Lessee shall deliver to the Port Authority a written certification that the work was performed in accordance with the plans and specifications approved by the Port Authority, (ii) the work shall be approved by the Code Compliance Office, and (iii) the Lessee shall deliver a written certification and itemized statement of the work performed and the actual costs therefor, which statement shall be reviewed and approved by the Port Authority within sixty (60) days after receipt of such delivery.

9.2.3 *Air Rights Development.* In the event of an Air Rights Development by the Port Authority, the cost-sharing formula set forth in Subsection 9.2.1(b) hereof shall be equitably adjusted.

Section 9.3 Common Area Charges.

9.3.1 *Payments By Port Authority.* From and after the Project Completion Date, in consideration of the Lessee's operation and performance in a First Class manner, of routine maintenance of the Common Areas as provided in "**Schedule 9.3.1**" attached hereto, the Port Authority shall pay to the Lessee (by issuance of a check or such other method as mutually agreed) monthly, on the first Business Day of each calendar month following the month in which such services were performed by Lessee the amount of One Hundred Forty-four Thousand Dollars ($144,000.00) per annum (the "**Common Area Charge**"), less such amounts as the Port Authority may withhold in the event that the Lessee fails to perform such services in a First Class manner and such failure continues following notice and a reasonable opportunity to cure. The proposed operation and maintenance services to be performed by Lessee in consideration of the Port Authority's payment of the Common Area Charge, are listed in Schedule 9.3.1. From time to time during the Term, Lessee may notify the Port Authority of changes to the scope of services shown on Schedule 9.3.1, provided, that in no event shall such services be less frequent or be of lesser quality than the services shown on Schedule 9.3.1. The amount of the Common Area Charge shall be escalated at two percent (2%) per annum as of the first day of each full Lease Year following the Project Completion Date and throughout the remainder of the Lease Term.

9.3.2 *Payments By Lessee.* From and after the Project Completion Date, the Lessee shall compensate the Port Authority for electrical power used in the Common Areas, in the amount of Fifty Thousand Dollars ($50,000.00) per annum, subject to increase by 2% per annum as of the first day of each full Lease Year following the Project Completion Date and throughout the remainder of the Lease Term. Such payments shall be made on a quarterly basis, by check payable to the Port Authority or as the Parties may otherwise agree.

Section 9.4 Standards for Leased Premises Maintenance, Repair, Etc.

9.4.1 *Code Compliance Office.* The Code Compliance Office shall be permitted the right, at reasonable times from time to time, and upon reasonable notice to the Lessee or to Lessee's Subtenants, as appropriate, (a) to inspect the Leased Premises and to require repairs to be made to the Leased Premises to comply with the GWBBS Manual and the Requirements, (b) to inspect and test the Leased Premises to determine compliance with the NYC Fire Department Code, as well as to inspect and test the elevators and escalators located throughout the Leased Premises to determine compliance with the GWBBS Manual and the Requirements, and (c) to conduct food establishment inspections to determine compliance with the NYC Health Code and to enforce the rights and remedies that are then available to the Commissioner of the New York City Health Department in the event a Subtenant or the Lessee shall have violated the NYC Health Code. In the event of emergency, all such inspections may be conducted at anytime. Reasonable and customary administrative and processing fees may be imposed by the Code Compliance Office in connection with providing any such inspection or other services to the Lessee.

9.4.2 *Violations Notices.* Subject to the provisions of Article 7, in the event that, upon inspection and testing of the Leased Premises, the Code Compliance Office determines that there are deficiencies or that certain items require repair and/or maintenance, in each case, the Code Compliance Office may issue a Violations Notice and the Lessee shall make, or shall cause the appropriate Subtenant to make, such requested repairs within the time frames set forth in such Violations Notice.

9.4.3 *Continuation of Functions.* The functions to be performed by the Code Compliance Office hereunder, including inspections, shall continue to be performed by the Code Compliance Office unless and until the Port Authority notifies the Lessee that the City of New York or other governmental entity having due jurisdiction over the Leased Premises shall perform such services.

9.4.4 *Chief Engineer Contests.* In order to resolve any material disputes arising out of, under, or in connection with, or in any way related to any duties to be performed by the Code Compliance Office the Lessee shall have the right to invoke, and the Port Authority hereby consents to, the administrative hearing procedure ("Chief Engineer Contest") set forth in Subsection 5.23.2 hereof.

Section 9.5 Reserved Premises.

From and after the Project Completion Date, the Port Authority shall, or shall cause a third (3rd) party contractor (who may be the Lessee) to, maintain and take good care of the Reserved Premises, including the utility connections, pipes and mains serving the Reserved Premises, in good and safe order and condition, make all repairs thereto, whether ordinary or extraordinary, foreseen or unforeseen, structural or non-structural (except to the extent otherwise provided in this Agreement), all as necessary to keep the Reserved Premises in good and safe order and condition and prevent leaks into the Leased Premises from or through the Reserved Premises, however the necessity or desirability therefor may occur.

Section 9.6 Applicability of Article 9.

Notwithstanding anything to the contrary contained in this Article 9, the provisions of this Article 9 shall only apply during that portion of the Term following the Project Completion Date.

ARTICLE 10

INSURANCE FOLLOWING PROJECT COMPLETION DATE

Section 10.1 Required Insurance From Lessee.

Effective from the Project Completion Date and thereafter throughout the remainder of the Term, the Lessee shall secure and maintain the policies of insurance as required and in the manner provided in this Section 10.1 and in Sections 10.2 through 10.6 hereof.

10.1.1 *Property.* "All-Risk" or "Special Perils" property damage insurance covering the full replacement cost of the Leased Premises. Full replacement cost shall be determined at the request of the Port Authority by an appraiser selected by the Lessee and acceptable to the Port Authority, from time to time, but not more frequently than once every two years. No omission on the part of the Port Authority to request any such appraisal shall relieve the Lessee of its obligations to maintain the appropriate insurance hereunder. Such insurance shall cover and insure against such hazards and risks as at least would be insured against under the Standard Form of Fire Insurance Policy in the State of New York, or any successor thereto, and the broadest form of extended coverage endorsement prescribed as of the effective date of said insurance by the rating organization having jurisdiction. The above insurance will also include coverage for flood and earthquake.

10.1.2 *Boiler and Machinery.* Boiler and machinery insurance for the full replacement value covering all boilers, pressure-vessels and machines operated by the Lessee or others in Leased Premises, the policy to be effective throughout the Term with liability coverage in such amounts as the Port Authority shall reasonably determine to be appropriate coverage against the hazards and perils occasioned by the existence and operation of such boilers, pressure vessels and machinery and to be in such form as may now or in the future be prescribed as of the effective date of said insurance by the rating organization having jurisdiction and/or the Superintendent of Insurance of the State of New York.

10.1.3 *Business Interruption Insurance.* Commencing with the sixth (6th) Lease Year, (i.e. during the period when Percentage Rent may be payable), the Lessee shall maintain business interruption insurance covering loss of income from rentals, during the period when the Leased Premises or a portion thereof, is out of operation due to fire or any other risk now or hereafter embraced by the "All-Risk" or "Special Perils" policy described in Subsection 10.1.1. The proceeds of such insurance shall be payable to the Depository, which shall apply such proceeds to the Rental obligations of the Lessee, with any remaining balance to be paid to the Lessee. Coverage shall be for a period of at least eighteen (18) months plus up to six (6) months "extended indemnity" to the extent required for the restoration of the affected premises.

10.1.4 *Liability.*

(a) The Lessee, in its own name as insured and including the Indemnified Parties as additional insureds with the same coverage as provided to Lessee, shall maintain and pay the premiums on a policy or policies of Commercial General Liability Insurance, including products/completed operations, premises-operations, explosion, collapse and underground property damage independent contractors coverage and broad form property damage coverage, and covering bodily injury, including death, and property damage liability, broadened to include or equivalent separate policies covering sprinkler leakage legal liability and water damage legal liability (including damage caused by water and any other substance discharged from any part of the fire protective equipment for the Leased Premises or the collapse or fall of tanks forming part thereof, or the component parts or supports of such

tanks), none of the foregoing to contain care, custody or control exclusions, and providing for coverage in the limits set forth below; and, if vehicles are to be used to carry out the performance of this Agreement, Commercial Automobile Liability Insurance covering owned, non-owned and hired vehicles of the Lessee and including automatic coverage for newly acquired vehicles and providing for coverage in the limit set forth below; provided, that if parking operations or repair operations (including without limitation car washing) will be conducted on the Leased Premises, the foregoing policies shall be broadened to cover garage liability exposure.

Commercial General Liability Insurance:	Minimum Limits
Combined single limit per occurrence for death, bodily injury and property damage liability	$50,000,000.00
Commercial Automobile Liability Insurance (covering any owned, non-owned and hired vehicles):	
Combined single limit per occurrence for death, bodily injury and property damage liability	$5,000,000.00
Employer's Liability Insurance	$1,000,000.00

Workers' Compensation Insurance. The Lessee shall procure and maintain Workers' Compensation Insurance in accordance with the requirements of law.

(b) In the event the Lessee maintains the foregoing insurance in limits greater than aforesaid, the Indemnified Parties shall be included therein as additional insureds with the same coverage as provided to Lessee, to the full extent of all such insurance in accordance with all the terms and provisions hereof.

(c) The policy of Commercial General Liability insurance required under this subsection shall contain a contractual liability endorsement covering the insurable obligations assumed by the Lessee under any indemnification provisions set forth in this Agreement and shall provide an ISO standard "separation of insureds" clause or contain a cross liability endorsement providing that the protection afforded the Lessee thereunder with respect to any claim or action against the Lessee by a third Person shall obtain and apply with like effect with respect to any claim or action against the Lessee by the Port Authority, and against the Port Authority by the Lessee, but such endorsement shall not limit, vary, change or affect the protections afforded the Indemnified Parties, as additional insureds.

(d) Each policy of liability insurance required under this subsection shall include the Port Authority as an additional insured with the same coverage as provided to Lessee, and contain a provision that in any action or proceeding under or in connection with such policy, the insurance carrier shall not without obtaining express advance consent from the General Counsel of the Port Authority raise any defense involving in any way the

immunity of the Port Authority, its Commissioners, elected officials, officers, agents or employees, the governmental nature of the Port Authority, the provisions of any statutes respecting suits against the Port Authority or the jurisdiction of the tribunal over the person of the Port Authority, or applicable tort claims laws.

(e) The limits of coverage shall not be reduced to amounts less than required herein without the Port Authority's prior written consent.

10.1.5 *War Risk Insurance.* If and when obtainable at commercially reasonable rates from the United States of America or any agency or instrumentality thereof or from an insurance company qualified to do business in the State of New York which shall have filed rates of premium for such insurance with the Superintendent of Insurance of the State of New York (or if no such company, then from another company approved by the Port Authority) and if and when a state of war or national or public emergency exists, or, in the reasonable judgment of the Port Authority, such state of war or national or public emergency threatens, Lessee shall maintain war risk insurance in an amount not less than the full replacement cost of the Leased Premises, or in the maximum amount of such insurance which is obtainable, whichever is lower.

10.1.6 *Environmental Liability.* Environmental liability insurance covering environmental hazards discovered or occurring on and from the Project Completion Date throughout the remainder of the Term, during operations, or through sudden and accidental release, in an amount not less than $5 million per discovery and in the aggregate.

Section 10.2 Other Requirements as to Policies.

10.2.1 *Insureds under Property Policies.* All property damage insurance policies required under this Agreement shall name the Lessee, the Port Authority and any Recognized Mortgagees as insureds as their interests may appear, and name the Depository as loss payee.

10.2.2 *Certificates, Etc.* With respect to all insurance required under this Agreement, an original certificate of insurance, or binders, shall be delivered to the Manager, Risk Management, of the Port Authority, not later than the Lease Commencement Date. In the event any binder is delivered, it shall be replaced within thirty (30) days by a certified copy of certificate or policy of insurance including all required endorsements and waivers of subrogation. A certificate of insurance or binder with respect to a renewal policy shall be delivered to the Port Authority at least ten (10) days prior to the expiration date of each expiring policy, except for any policy expiring after the date of expiration of the letting under this Agreement, and in the event any binder is delivered, it shall be replaced within thirty (30) days by a certificate of insurance.

10.2.3 *Certain Endorsements.* Each policy required under this Agreement shall contain a valid provision or endorsement (a) that the policy may not be canceled, terminated, changed or modified, without giving at least thirty (30) days written advance notice thereof to

the Port Authority, and (b) that the insurance as to the interest of the Port Authority shall not be invalidated by any act or negligence of the Lessee or any other insured.

10.2.4 *Blanket Policies, Etc.* Property insurance policies required under this Agreement may be written in the form of blanket policies and policies of liability insurance may be written in the form of a primary policy and one or more umbrella policies. On request of the Port Authority, which may be made at any time and from time to time, the Lessee shall furnish to the party or parties making such request a true copy of each of the insurance policies which the Lessee is required to carry under this Agreement; provided, however, that if any such insurance is carried in the form of a blanket policy, the Lessee need not furnish to the Port Authority the portions of such policy which relate to properties other than the Leased Premises.

10.2.5 *Notices of Claim, Action or Proceedings, Etc.* In the event that at any time during the term of the letting under this Agreement a notice of claim shall be filed or an action or proceeding commenced against the Port Authority which is required to be covered by insurance pursuant to the provisions of this Agreement or in the event that an action or proceeding at law or in equity or a dispute shall arise, whether between the Port Authority and the Lessee or between the Port Authority and a third party, or which otherwise involves the Port Authority, and which may relate to a matter covered by any such policy, then in either such event the Lessee shall deliver to the Port Authority, within thirty (30) days after a request by the Port Authority, a certified copy of any policy covering the premises which provides coverage against such claim, action or proceeding, or which relates to such dispute.

Section 10.3 Nature of Insurers.

All insurance provided for in this Agreement shall be issued by insurance carriers authorized to do business in the State of New York or subject to service of process in the State of New York and having an A.M. Best Rating of at least "A- X" or better or an equivalent rating by a comparable insurance rating agency.

Section 10.4 Port Authority Review.

All insurance coverages required under this Agreement may be reviewed by the Port Authority for adequacy of terms, conditions, coverages and limits of coverage at any time and from time to time during the Term. The Port Authority may, at any such time, require an increase in the minimum limits, or additions, deletions, amendments or modifications to the above-scheduled insurance requirements, or may require such other and additional insurance, in such reasonable amounts and, to the extent available on a commercially reasonable basis, against such other insurable hazards, as shall then customarily be carried by owners of comparable properties and the Port Authority shall reasonably deem to be required, and the Lessee shall promptly comply therewith.

Section 10.5 Settlement of Losses.

Losses, if any, under any of the property policies mentioned and provided for in this Agreement (except Commercial General Liability Insurance and Workers' Compensation Insurance) shall be adjusted by the Lessee, in consultation with the Port Authority in the case of any loss greater than Five Million Dollars ($5,000,000), as such amount shall be increased from time to time to reflect increases in the CPI. Except as otherwise provided herein, the proceeds shall be payable to the Depository to be held in trust by the Depository for the benefit of the Lessee. Except as otherwise provided herein, all said proceeds shall be used for the repair, replacement or rebuilding of the Leased Premises. Said proceeds shall be disbursed by the Depository upon the Lessee's request, or upon the request of an entity obligated to repair, replace or rebuild, provided that the Lessee or such entity has obtained the necessary approvals from the Port Authority to repair, replace or rebuild in accordance with the relevant provisions of this Agreement.

Section 10.6 Separate Insurance.

The Lessee shall not carry separate insurance concurrent in form or contributing in the event of loss with that required under this Agreement, unless the Port Authority is included therein as named insured, with loss payable as provided in this Agreement. The Lessee shall immediately notify the Port Authority of the carrying of any such separate insurance and, at the Port Authority's request, shall deliver to the Port Authority the policies therefor or duplicate originals thereof.

Section 10.7 Required Insurance From the Port Authority.

(a) Subject to paragraph (b) and (c) of this Section, the Port Authority shall be required to maintain, at all times throughout the Term, insurance coverage with respect to the Reserved Premises, the Trans Manhattan Expressway and the Port Authority's operations therein, affording the same amounts of coverage to the Lessee and the Port Authority (with respect to the same risks) as the Lessee is required to maintain as set forth in Article 10 hereof, and otherwise satisfying all of the requirements of such Article 10, applied *mutatis mutandis*.

(b) Notwithstanding paragraph (a) of this Section, it is understood that the Lessee, rather than the Port Authority, shall be responsible for carrying Builder's Risk and construction-related liability insurance with respect to the Reserved Premises Redevelopment Work, in accordance with Section 5.13 hereof.

(c) For so long as the Facility is owned in fee by the Port Authority of New York and New Jersey or a governmental entity of comparable net worth, the Port Authority may elect to act as a self-insurer with respect to any or all of the insurance that the Port Authority is required to carry pursuant to this Section. Without limiting the provisions of Section 10.8 hereof, if the Port Authority elects to act as a self-insurer with respect to any such insurance, then the Port Authority shall indemnify and hold harmless the Lessee Indemnified Parties from and against any and all third party claims (including any such claims arising out of any willful or negligent act or omission of any of such indemnified parties),

together with all costs, expenses and liabilities incurred in connection with each such claim or action or proceeding brought with respect thereto (including all reasonable attorneys' fees and disbursements), to the same extent that such claims, costs, expenses and liabilities would have been covered under the policies of liability insurance otherwise required to be maintained by the Port Authority pursuant to this Section. If the Port Authority elects to self-insure, then the release by the Port Authority set forth in Section 10.8 hereof shall be and remain in full force and effect to the same extent as if the Port Authority had procured from insurance companies and maintained all the insurance coverage required by this Section.

Section 10.8 Mutual Waiver of Claims.

The Lessee hereby waives any claim that it might otherwise have against the Port Authority with respect to any accidental damage or destruction affecting the Leased Premises, and the Port Authority hereby waives any claim that it might otherwise have against the Lessee or any other Lessee Party with respect to any accidental damage or destruction affecting the Reserved Premises and/or the TME, in each case to the extent that the loss suffered by the waiving party shall be covered by insurance maintained, or required to be maintained, pursuant to Article 10 hereof (in the case of loss suffered by the Lessee) or Section 10.7 hereof (in the case of loss suffered by the Port Authority). The Lessee and the Port Authority shall each make commercially reasonable efforts to cause its insurance carrier to authorize the foregoing waiver (and/or to waive subrogation against the other party) as necessary to effect the purposes of this Section.

Section 10.9 Port Authority Compliance With Insurance Underwriters' Requirements.

The Port Authority shall comply with any insurance policies required under this Agreement, and shall not do or permit anything to be done in the Reserved Premises that would invalidate any such policy or constitute an extra-hazardous condition so as to increase the risks normally attendant upon the operations contemplated by this Agreement, and the Port Authority shall promptly observe, comply with and execute the provisions of any and all present and future rules and regulations, requirements, orders and directions of the NFPA and ISO, and of any other board or organization exercising or which may exercise similar functions, which may pertain or apply to its operations in or about the Facility. If by reason of any failure on the part of the Port Authority to comply with this Section 10.9 any insurance rate payable by the Lessee on account of the Leased Premises or any part thereof shall at any time be higher than it otherwise would be, then, the Port Authority shall pay to the Lessee (in the form of a credit to Rental, if the Lessee so elects, or else by check), that part of all insurance premiums paid by the Lessee which shall have been charged because of such violation or failure by the Port Authority, but no such payment shall relieve the Port Authority of its other obligations under this Section.

ARTICLE 11

DAMAGE OR DESTRUCTION FOLLOWING PROJECT COMPLETION

Section 11.1 Repair of Damage, etc.

11.1.1 *Damage to Leased Premises.*

(a) Following the Project Completion Date, the Lessee shall bear, at its sole cost and expense except as provided in Section 12.3 hereof, the risk of any damage to or destruction of the Leased Premises by fire, the elements, the public enemy or other casualty, or by reason of any other cause whatsoever; provided, however, that the Port Authority and the Lessee shall in all events share, fifty percent-fifty percent (50% - 50%) subject to Subsection 9.2.2 hereof, the cost of any required Restoration Work relating to (i) the Exoskeleton, (ii) the Common Vertical Circulation Facilities, (iii) the sidewalks adjoining the Facility (other than those constituting part of the Reserved Premises) and/or (iv) the Pedestrian Underpass.

(b) In the event of any damage or destruction described in Subsection 11.1.1(a), and whether or not such damage or destruction is covered by insurance proceeds sufficient for the purpose, the Lessee shall remove all debris resulting from such damage or destruction, and rebuild, restore, repair and replace, as applicable, the Leased Premises as they existed prior to such damage or destruction, in accordance with the Approved Construction Documents therefor, or make such other repairs, replacements, changes or alterations as shall be permitted by Article 6 hereof (any and all such work being referred to herein as "**Restoration Work**".

(c) Any Restoration Work required to be performed by the Lessee pursuant to this Section 11.1.1 shall be commenced promptly (but in any event within six (6) months from the date of the damage or destruction) and shall proceed with all due diligence subject to the terms and conditions of this Agreement, including, without limitation, the terms and provisions of Article 6 hereof. The Lessee waives any rights now or hereafter conferred upon the Lessee by statute or otherwise to require the Port Authority, as landlord, to rebuild, restore, repair, replace or alter the Leased Premises or any portion thereof or personal property relating thereto on account of any destruction or damage.

11.1.2 *Damage to Reserved Premises.* From and after the Project Completion Date, it shall be the Port Authority's responsibility, at its sole cost and expense, to perform any work required, by reason of any damage to or destruction of the Reserved Premises, to restore the Reserved Premises. However, notwithstanding the foregoing, the parties may agree at the time any such damage or destruction shall occur that the Lessee shall perform such work on behalf of the Port Authority at the Port Authority's cost, subject to a separate agreement therefor.

11.1.3 *Coordination Between the Lessee and the Port Authority.* The Lessee and the Port Authority agree to cooperate and work together closely to coordinate any necessary rebuilding by each of them and complete such rebuilding in a timely and efficient manner so as to cause as little disruption as reasonably possible to the operation of the Leased Premises and the Reserved Premises.

Section 11.2 Destruction at End of Term.

11.2.1 *Lessee's Options.* Notwithstanding the provisions of Section 11.1 above, if such damage or destruction occurs during the last five (5) years of the Term and the cost of the Restoration Work necessitated thereby shall exceed twenty-five percent (25%) of the then full insurable value on a replacement cost basis of the Leased Premises immediately prior to such damage or destruction, the Lessee shall have the option, subject to the approval of the holders of all Mortgages, of either:

(a) performing the required Restoration Work, in accordance with the provisions of this Agreement, or

(b) terminating the letting under this Agreement in its entirety by written notice to the Port Authority given within sixty (60) days after the occurrence of such damage or destruction, provided that there shall be in force and effect the required insurance valid and subsisting and adequate to cover such damage or destruction without any defenses to the payment by the insurance carriers based upon acts or omissions of the Lessee or of any other insureds other than the Port Authority and provided, further, that, both at the time of the giving of notice and on the effective date thereof, the Lessee is not in material default under any of the provisions of this Agreement or under notice of termination from the Port Authority.

11.2.2 *Insurance Proceeds.* In the event of termination pursuant to the provisions of Subsection 11.2.1 above, the Lessee shall not be entitled to any portion of the proceeds of any insurance relating to the applicable damage or destruction which the Lessee is required to maintain pursuant to Article 10 hereof, all of which shall become the sole property of the Port Authority.

11.2.3 *Surrender of Leased Premises.* Upon the effective date of any termination pursuant to Subsection 11.2.1 above, the Lessee shall surrender and deliver up the Leased Premises, into the possession and use of the Port Authority in their then "as is" condition but otherwise in the manner specified in the Article 18 of this Agreement entitled "Surrender". Subject to the foregoing, the Lessee upon such termination, surrender and removal, shall be released and discharged from any and all obligations under this Agreement other than those which have accrued prior to the date of such termination or shall mature on such date.

Section 11.3 No Surrender.

Except as provided in Section 11.2 or Section 11.5 hereof, no destruction of or damage to the whole or any part of the Facility by fire or any other casualty, cause or condition shall permit the Lessee to surrender or terminate this Agreement or shall relieve the Lessee from its liability to make payment of any Rental payable under this Agreement or from any of its other obligations hereunder. The Lessee waives any rights now or hereafter conferred upon the Lessee by statute or otherwise to quit or surrender the Leased Premises and terminate this Agreement or any part thereof, or to any suspension, diminution, abatement or reduction of

rent on account of any such destruction or damage.

Section 11.4 Application of Insurance Proceeds.

If any damage or destruction as described in Subsection 11.1.1 above is covered by insurance, then (unless the Lessee elects to terminate this Agreement pursuant to Section 11.2 above) such proceeds shall be made available for and applied to the payment of the cost of the Restoration Work required to be performed by the Lessee under the provisions of this Agreement. Any insurance proceeds remaining upon the completion of such Restoration Work by the Lessee shall be released by the Depository to the Lessee, subject to the requirements of any then existing Mortgage.

Section 11.5 Total Destruction of Facility.

Notwithstanding the foregoing, in the event of total destruction of the Facility resulting from no fault of either Party, then, unless (subject to Subsection 11.2.1 hereof) the Port Authority in its sole discretion elects to proceed with restoration of the Reserved Premises in accordance with Subsection 11.1.2 hereof and to have the Lessee proceed with Restoration Work for the Leased Premises in accordance with Subsection 11.1.1 hereof, this Agreement shall terminate and the Lessee shall surrender and deliver possession of the Leased Premises to the Port Authority in the manner set forth in Subsection 11.2.3 hereof and in Article 18 entitled "Surrender"; provided however, that Section 18.2 and all references to Section 9.1, Subsection 14A.5.5 and Subsection 14.9.7 shall not apply. Upon such surrender, neither Party shall have any rights against or obligations to the other, and each Party shall be entitled to receive and retain all proceeds of all insurance maintained by such Party with respect to the Facility; provided, however, that if the Lessee shall be prepared to proceed with the required Restoration Work and the Port Authority shall insist on the termination of this Agreement as provided in this Section 11.5 then the Port Authority shall, as a condition to such termination, pay to the Lessee (or at the Lessee's direction, to the Recognized Mortgagees) the amount, if any, by which (a) the amount that the Lessee and the Recognized Mortgagees would have received had the Port Authority taken the Leased Premises by eminent domain immediately prior to such destruction shall exceed (b) the net amount of the insurance proceeds to which the Lessee shall then be entitled.

ARTICLE 12

INDEMNITY

Section 12.1 Landlord not Liable for Injury or Damage, Etc.

12.1.1 *Injuries.* Subject to Section 12.3 hereof, the Port Authority shall not be liable to the Lessee or others for any personal injury, death or property damage to the Lessee or to any other Person happening on, in or about the Leased Premises or its appurtenances, nor for any injury or damage to the Leased Premises or to any property belonging to the Lessee or to any other Person that may be caused by the use, misuse or abuse of any portion

of the Leased Premises (including, but not limited to, any of the common areas, hatches, openings, installations, stairways or hallways or other common facilities within the Leased Premises, and the streets, sidewalk or other public areas within the Leased Premises) or from falling material, water, rain, hail, snow, gas, steam, dampness, explosion, smoke, radiation, and/or electricity, whether the same may leak into or fall, issue, or flow from any part of the Leased Premises, including without limitation thereto any utility, mechanical, electrical, communication or other systems therein, or that may arise from any other cause whatsoever unless arising solely from the willful misconduct or negligence of the Port Authority or a willful violation of an express obligation of the Port Authority hereunder with respect to the maintenance, repair and operation of the Reserved Premises.

12.1.2 *Failure of Utility Services, Elements, Public Works.* Subject to Section 12.3 hereof, the Port Authority shall not be liable to the Lessee or to any other Person for any failure of water supply, gas or electric current, nor for any injury or damage to any property of the Lessee or of any other Person or to any portion of the Leased Premises caused by or resulting from gasoline, oil, steam, gas, electricity, or hurricane, tornado, flood, wind or similar storm or disturbance or by or from water, rain or snow which may leak or flow from the street, sewer, gas mains or subsurface area or from any part of the Leased Premises or by or from leakage of gasoline or oil from pipes, appliances, sewer or plumbing works therein or from any other place, nor for interference with light or other incorporeal hereditaments by any Person, or caused by any public or quasi-public work.

12.1.3 *Earth Movement, Excess Loads, Etc.* Subject to Section 12.3 hereof, in no event shall the Port Authority be liable to the Lessee or to any other Person for any injury or damage to any property of the Lessee or any other Person, or to the Leased Premises, arising out of any sinking, shifting, movement, subsidence, failure in load-bearing capacity of, or other matter or difficulty related to, the soil, or other surface or subsurface materials, under the Leased Premises, it being agreed that the Lessee shall assume and bear all risk of loss with respect thereto.

Section 12.2 Lessee Obligation to Indemnify and Defend.

12.2.1 *Lessee Obligation to Indemnify.* Subject to Section 12.3 hereof, the Lessee shall indemnify, defend and hold harmless the Port Authority Indemnified Parties from (and shall reimburse the Port Authority for the Port Authority's costs or expenses including legal expenses incurred in connection with the defense of) all claims and demands of third persons including but not limited to those for death, for personal injuries, or for property damages, arising out of any default of the Lessee in performing or observing any term or provision of this Agreement, or out of the use or occupancy of the Leased Premises by the Lessee or by others, or out of any of the acts or omissions of the Lessee, its officers, members, employees, agents, representatives, contractors and invitees.

12.2.2 *Lessee Defense of Claims.* Subject to Section 12.3 hereof, if so directed, the Lessee shall at its own expense defend, with counsel reasonably acceptable to the Port

Authority Indemnified Party, any suit based upon any such claim or demand (even if such suit, claim or demand is groundless, false or fraudulent), and in handling such it shall not, without obtaining express advance permission from the General Counsel of the Port Authority, raise any defense involving in any way the jurisdiction of the tribunal over the person of the Port Authority, the immunity of the Port Authority, its Commissioners, officers, agents or employees, the governmental nature of the Port Authority or the provision of any statutes respecting suits against the Port Authority.

Section 12.3 Port Authority Obligation to Indemnify and Defend.

12.3.1 *Port Authority Obligation to Indemnify.* With respect to the Reserved Premises, the Port Authority shall indemnify, defend and hold harmless the Lessee Indemnified Parties from (and shall reimburse the Lessee for the Lessee's costs or expenses including legal expenses incurred in connection with the defense of) all claims and demands of third persons including but not limited to those for death, for personal injuries, or for property damages, arising out of any default of the Port Authority in performing or observing any term or provision of this Agreement, or out of the use or occupancy of the Reserved Premises by the Port Authority or by other persons, or out of any of the acts or omissions of the Port Authority, its officers, members, employees, agents, representatives, contractors and invitees, including without limitation all claims and demands relating to or arising in connection with any Sublease (irrespective of whether such Sublease requires the Subtenant to indemnify the Lessee or the Port Authority with respect to such claims).

12.3.2 *Port Authority Defense of Claims.* With respect to the Reserved Premises, if so directed, the Port Authority shall at its own expense defend in such Lessee Indemnified Party's name, with attorneys for, or approved by, the Port Authority's insurance carrier (if such claim, action or proceeding is covered by insurance) or by such other attorneys as such Lessee Indemnified Party shall reasonably approve, any suit based upon any such claim or demand (even if such suit, claim or demand is groundless, false or fraudulent). The foregoing notwithstanding, a Lessee Indemnified Party may engage its own attorneys to defend such Lessee Indemnified Party; provided, however, that so long as the Port Authority or its insurance carrier stands ready to defend such Lessee Indemnified Party against any claim and such Lessee Indemnified Party is timely so notified, such Lessee Indemnified Party may engage its own attorneys only to assist in such defense and such Lessee Indemnified Party shall be responsible for the legal fees of such attorneys. In the event any Lessee Indemnified Party elects to defend itself against any claims, such Lessee Indemnified Party shall prior to any settlement thereof obtain the approval of the Port Authority with respect to such settlement, which approval shall not be unreasonably withheld or delayed.

ARTICLE 13

RIGHT TO PERFORM LESSEE'S COVENANTS

Section 13.1 Covenant to Maintain and Repair (Relating to Article 9).

In the event the Lessee fails to perform its obligations under Article 9 within thirty (30) Business Days after notice from the Port Authority to do so (except in the case of an emergency in which event only such advance notice as shall be reasonably possible under the circumstances shall be required) or, where such obligation by its nature is not susceptible of complete performance within such period, the Lessee or a Recognized Mortgagee fails to commence performing such obligation within such period or thereafter fails to diligently and continuously to perform such obligation to completion, the Port Authority may, at its option, perform the Lessee's obligations under Section 9.1 in addition to any other remedy available to it, and an amount equal to one hundred thirty (130%) percent of the actual out-of-pocket hard and soft costs of such work shall be payable by the Lessee to the Port Authority on demand as provided in Section 13.3 hereof. Any work to be performed by the Port Authority, its agents, employees or contractors in accordance with this Section shall be performed, except in an emergency requiring immediate action, on reasonable prior notice, at reasonable hours, and subject to reasonable security requirements of Subtenants.

Section 13.2 Covenants Under Agreement (Not relating to Article 9).

If (x) the Lessee, or a Recognized Mortgagee, fails to perform any obligation hereunder (including without limitation any payment of insurance premiums) within (except in the case of an emergency) five (5) Business Days after notice from the Port Authority for obligations involving the payment of money, or thirty (30) Business Days after notice from the Port Authority for other obligations, or (y) with respect to any obligation which by their nature are not susceptible of complete performance within the foregoing notice periods, if the Lessee, or a Recognized Mortgagee, has commenced performance within the relevant notice period but fails diligently and continuously to perform such obligation to completion, then, in such event, the Port Authority, in addition to all other remedies available, shall have the right to perform such obligation without further notice.

Section 13.3 Reimbursement Deemed to be Rent.

Any cost or expense paid or incurred by the Port Authority in accordance with Section 13.1 or Section 13.2 hereof, including any legal expense or cost in connection with any actions or proceedings brought by the Port Authority against the Lessee or by third parties against the Port Authority plus any interest costs, damages and penalties resulting from such actions or proceedings, shall be reimbursed to the Port Authority, or paid to the Port Authority's designee, as the case may be, by the Lessee within ten (10) Business Days after an itemized bill therefor shall have been delivered to the Lessee by the Port Authority. Any such amount owing by the Lessee shall be deemed to be Rental hereunder, recoverable by the Port Authority in the same manner and with like remedies as if it were originally a part of the Rental as set forth in Article 4 of this Agreement.

Section 13.4 No Duty to Perform.

Nothing in this Agreement, including this Article 13, shall be construed as imposing any duty on the Port Authority to perform any obligation required to be performed by the

Lessee hereunder and the performance of any such obligation by the Port Authority shall not constitute a waiver of the Lessee's default in failing to perform the same.

ARTICLE 14

ASSIGNMENT, TRANSFER, MORTGAGE AND SUBLETTING

Section 14.1 Definitions.

"Annual Index Percentage Increase" shall mean, with respect to each Anniversary Date, a percentage equal to the Annual Index Increase for that Anniversary Date, unless such Annual Index Increase is negative, in which case "Annual Index Percentage Increase" shall mean Zero. For purposes of the foregoing definition, the following definitions shall apply:

(1) **"Adjustment Period"** shall mean the calendar month that constitutes the Base Period, in each subsequent calendar year.

(2) **"Anniversary Date"** shall mean, as the context requires, the first anniversary of the Lease Commencement Date (the "First Anniversary Date") and each subsequent anniversary of such date.

(3) **"Annual Index Increase"** shall mean the percentage of increase in the Index on each Anniversary Date, equal to: (x) with respect to the First Anniversary Date, a fraction of which the numerator shall be the Index for the Adjustment Period immediately preceding such Anniversary Date less the Index for the Base Period, and the denominator shall be the Index for the Base Period, and (y) with respect to each Anniversary Date thereafter, a fraction of which the numerator shall be the Index for the Adjustment Period immediately preceding such Anniversary Date less the Index for the next preceding Adjustment Period, and the denominator shall be the Index for such next preceding Adjustment Period (for example, if the Lease Commencement Date were August 16, 2011, the Annual Index Increase for the Anniversary Date that is August 16, 2020 would be a fraction of which the numerator is the Index for June 2020 less the Index for June 2019 and the denominator is the Index for June 2019).

(4) **"Base Period"** shall mean the calendar month immediately preceding the first full calendar month preceding the Lease Commencement Date.

(5) **"Index"** shall mean the Consumer Price Index for All Urban Consumers - New York-Northern New Jersey-Long Island, NY-NJ-CT (All Items, unadjusted 1982-84=100) published by the Bureau of Labor Statistics of the United States Department of Labor.

"Assignee" shall mean, with respect to any Assignment, the entity that shall be the Lessee immediately following the consummation of such Assignment.

"Assignment" shall mean any sale, conveyance, transfer, exchange, assignment or other disposition, but not including any Mortgage or Sublease, of all or any portion of the Lessee's interest in this Agreement or the leasehold estate created hereby, whether by operation of law or otherwise.

"Assignor" shall mean, with respect to any Assignment, the entity that shall be the Lessee immediately prior to the consummation of such Assignment.

"Control" shall have the meaning provided in the definition of "Affiliate" set forth in Article 1 above.

"Independent Director/Manager" shall mean an individual who shall not have been at the time of such individual's appointment, will not be while serving and may not have been at any time during the preceding five (5) years from the date of appointment, (i) a partner, director (other than the Independent Director/Manager), member, shareholder of, or an officer, attorney, counsel or employee of, the Lessee or any of its respective partners, members, shareholders or subsidiaries, (ii) a customer of, or supplier to, the Lessee or any of its respective partners, members, shareholders or subsidiaries, (iii) a Person Controlling any such partner, member, shareholder, supplier or customer, or (iv) a member of the immediate family of any such shareholder, officer, employee, supplier or customer of the Lessee.

"Institutional Investor" shall mean any of the following: (i) a commercial bank, a savings and loan association, a savings bank, a trust company, a national banking association, an investment bank, a real estate investment trust, a credit union or a commercial credit corporation, whether acting for its own account or in a fiduciary capacity, including as trustee in connection with a securitization of commercial mortgage loans or as manager of any fund; (ii) an insurance company or a pension and/or annuity company, whether acting for its own account or in a fiduciary capacity; (iii) a pension, retirement or profit sharing trust, plan or fund; (iv) a public employees' pension or retirement system; (v) a governmental agency, body or entity, (vi) for the purposes of Mezzanine Financing, a Person whose principal business is real estate lending and who has maintained such principal business for at least the five (5) years preceding the contemplated Mezzanine Financing, or (vii) any entity, all of the equity or beneficial owners of which are one or more of the entities listed in the preceding clauses (i) through (vi), each of the foregoing (other than a governmental agency, body or entity or a Person referenced in the preceding subsection (vi)) having a net worth of at least One Hundred Million Dollars ($100,000,000.00), which net worth amount shall be increased annually, as of each anniversary of the Lease Commencement Date, by the Annual Index Percentage Increase. In addition to the foregoing, "Institutional Investor" shall include the "New York City Regional Center, LLC" (or any successor thereto), as the same has been approved and designated by the U.S. Citizenship and Immigration Services for participation in the Immigrant Investor Pilot Program (or any successor thereto) and provided that the New York City Regional Center, LLC (or any successor thereto) remains in good standing for such purposes.

"Master Sublease" shall mean any one Sublease that covers fifty percent (50%) or more of the Gross Square Footage of the Leased Premises, or any two or more Subleases to the same Subtenant or Affiliate(s) of the same Subtenant that together cover fifty percent (50%) or more of the Gross Square Footage of the Leased Premises; provided, however, that "Master Sublease" shall not include any Sublease for occupancy solely by the Subtenant where the Lessee (x) performs the services of the landlord and (y) is the direct recipient of all rentals payable by the occupant(s) of the space that is the subject of such Sublease; provided, further, that a Sublease that, at the commencement of its term, complies with the foregoing proviso shall not be deemed to become a Master Sublease merely because the Subtenant thereunder eventually exercises its right to sub-sublet some or all of the space that is the subject of such Sublease, so long as the Lessee continues to provide the services of a landlord with respect to such space.

"Mortgage" shall mean any mortgage or deed of trust, a deed to secure debt or other security instrument by which the Lessee's leasehold estate created hereunder is mortgaged, conveyed, assigned or otherwise transferred to secure a debt or other obligation, and all extensions, modifications and amendments thereto.

"Non-Consolidation Opinion" shall mean an opinion, dated as of the then current date, of an independent outside counsel, selected by the Lessee and reasonably satisfactory to the Port Authority, which shall be addressed to the Port Authority, to the effect that, subject to customary assumptions and qualifications, in a properly presented case, a United States bankruptcy court properly exercising jurisdiction over a case involving direct or indirect equity interests in a Parent of the Lessee, correctly applying the law to the facts, would not order the substantive consolidation of the assets and liabilities of the Lessee and with any such direct or indirect equity owners of a Parent of the Lessee.

"Prohibited Person" shall mean any Person or any Person that is controlled by a Person, or any Person who is an Affiliate of, or holds five percent (5%) or more of the equity interest in, a Person:

(1) that has been or is currently under indictment for or convicted of a crime in any jurisdiction, or the subject of a criminal investigation by any federal, state or local prosecuting or investigative agency and/or a civil anti-trust investigation by any federal, state or local prosecuting or investigative agency;

(2) that has had a development agreement with the Port Authority terminated for willful default or breach, has had a contract terminated by a governmental agency in the States of New York or New Jersey for willful breach or default or has had a contract terminated for any cause relating to an indictment or conviction of such Person or its principals;

(3) that is in material default beyond any applicable grace period, under any agreement with the Port Authority or has been, within the preceding five (5) years, in

material default, beyond any applicable grace period, under any agreement with the Port Authority;

(4) that has been suspended, debarred, found not responsible or otherwise disqualified from entering into any contract with any governmental agency or been denied a government contract for failure to meet standards related to integrity;

(5) that has had any sanction imposed as a result of a judicial or administrative proceeding related to fraud, extortion, bribery, bid rigging, embezzlement, misrepresentation or anti-trust regardless of the dollar amount of the sanctions or the date of their imposition;

(6) that is organized in or controlled from a country which is subject to any of the following: (i) the Trading with the Enemy Act of 1917, 50 U.S.C. App. §1, et seq., as amended; (ii) the International Emergency Economic Powers Act of 1976, 50 U.S.C. § 1701, et seq., as amended; and (iii) the Anti-Terrorism and Arms Export Amendments Act of 1989, codified at Section 6(j) of the Export Administration Act of 1979, 50 U.S.C. App. § 2405, as amended;

(7) that engages in any dealings or transactions or is blocked or subject to blocking pursuant to Executive Order 13224 of September 23, 2001 Blocking Property and Prohibiting Transactions With Persons Who Commit, Threaten to Commit, or Support Terrorism (66 Fed. Reg. 49079 (2001)) (the "**Executive Order**"), or is otherwise associated with any such Person in any manner violative of the Executive Order or any State or City of New York or the State of New Jersey statutes, codes, regulations, orders or other governmental action relating to activities referenced in this clause (7);

(8) that is on the list of Specially Designated Nationals and Blocked Persons or subject to the limitations or prohibitions under any other U.S. Department of Treasury's Office of Foreign Assets Control regulation or executive order ("OFAC") and/or with whom the Landlord is restricted from doing business with under OFAC or under any statute, executive order, or other governmental action or any State or City of New York or the State of New Jersey statutes, codes, regulations, orders or other governmental action relating to activities referenced in this clause (8);

(9) that has (i) filed a petition under any insolvency statute, (ii) made a general assignment for the benefit of its creditors, (iii) commenced a proceeding for the appointment of a receiver, trustee, liquidator or conservator of itself or of the whole or any substantial part of its property or shall otherwise be dissolved or liquidated, or (iv) filed a petition seeking reorganization or liquidation or similar relief under any applicable law or statute, or has been subject to any of foregoing;

(10) that is involved or has been involved in a material litigation or similar proceeding adverse to the Port Authority or any subsidiary thereof;

(11) whose involvement or presence in the Project or the Leased Premises, in the Port Authority's sole discretion, could create a potential security threat, and/or is repugnant to the public policy of the United States or other governmental authorities, or who may be involved in a public controversy (it being understood that if any Person's involvement in the Project and/or the Leased Premises is subject to the express approval of a federal or state governmental actor, and all such approvals are granted, then such Person shall be deemed excluded from this clause (11));

(12) whose involvement or presence in the Project or the Leased Premises would create any conflict of interest as defined under the Public Officers Law of the State of New York between any Commissioner of the Port Authority and itself or its chief executive officer, chief operating officer, chief financial officer, president, chairman of the board, other similar senior executive, or any Person or entity which controls, is controlled by, or is under common control with it; and

(13) that shall not subject or submit itself to the jurisdiction of the courts of the State of New York in any actions relating to the Project and/or this Agreement.

"Single Purpose Entity" shall mean a Person, other than an individual, which (i) is formed or organized solely for the purpose of holding, in the case of the Lessee, directly, or, in the case of a general partner, managing member or sole member of the Lessee, indirectly, an ownership interest in the leasehold estate created by this Agreement and related assets, (ii) does not engage in any business unrelated to its ownership of the leasehold estate created by this Agreement and its operation, improvement, financing, leasing and management of the Leased Premises and/or its activities hereunder with respect to the Reserved Premises, (iii) has not and will not have (A) any assets other than those related to its business as described in the foregoing clause (ii) and (B) any indebtedness other than (1) indebtedness which is not prohibited to be incurred by the terms of this Agreement, (2) trade payables incurred in the ordinary course of business, (3) partner or member loans (pursuant to which the lender thereunder has no enforcement rights against the Leased Premises whatsoever other than the right to convert into direct or indirect equity ownership in the Lessee and no rights to initiate any litigation or bankruptcy proceeding against the Lessee other than litigation to enforce any such conversion right), (4) obligations assumed on the Lease Commencement Date from the Port Authority, (5) obligations incurred and related to its ownership, operation, improvement, financing, leasing and management of its interest in the Leased Premises and/or its obligations hereunder with respect to the Reserved Premises, and (6) obligations otherwise incurred in accordance with the terms of this Agreement, (iv) maintains its own separate books and records and its own accounts, in each case which are separate and apart from the books and records and accounts of any other Person, (v) holds itself out as being a Person, separate and apart from any other Person, (vi) does not and will not commingle its funds or assets with those of any other Person, (vii) conducts its own business in its own name, (viii) maintains separate financial statements, (ix) pays its own liabilities out of its own funds, (x) observes all partnership, corporate or limited liability company formalities, applicable to it, (xi) maintains an arm's-length relationship with its Affiliates, (xii) pays the salaries of its own employees, if

any, and maintains a sufficient number of employees in light of its contemplated business operations, (xiii) does not guarantee or otherwise obligate itself with respect to the debts of any other Person or hold out its credit as being available to satisfy the obligations of any other Person, other than "take-over" or similar obligations, (xiv) does not acquire obligations or securities of its partners, members or shareholders, (xv) allocates fairly and reasonably shared expenses, including, without limitation, any overhead for shared office space, if any, (xvi) uses separate stationery, invoices, and checks, (xvii) does not and will not pledge its assets for the benefit of any other Person or make any loans or advances to any other Person, in each case other than as permitted pursuant to the terms of this Agreement or any agreement applicable to the ownership, operation, management, improvement or financing of its interest in the Leased Premises, (xviii) takes all reasonable steps and actions to correct any known misunderstanding regarding its separate identity, and (xix) maintains, or has reasonable access to, reasonably adequate capital in light of its contemplated business operations. In addition to the requirements set forth above, the following requirements shall be applicable to the Lessee and its general partner(s), managing member(s) or non-member manager(s) (or if the Lessee shall be wholly-owned by a single member limited liability company, to Lessee's managing member or non-member manager):

(1) if such Person is a partnership, all general partners of such Person shall be Single Purpose Entities;

(2) if such Person is a partnership and has more than one general partner, then the organizational documents of such Person shall provide that it shall continue (and not dissolve) for so long as a solvent general partner exists;

(3) if such Person is a corporation, then, at all times, such Person shall have at least one (1) Independent Director/Manager, and the board of directors of such Person may not take any action requiring the unanimous affirmative vote of 100% of the members of the board of directors unless all of the directors, including all Independent Directors/Managers, shall have participated in such vote;

(4) except as set forth above, if such Person is a limited liability company, each managing member or non-member manager shall be a Single Purpose Entity;

(5) if such Person is a limited liability company, the articles of organization, certificate of formation and/or operating agreement, as applicable, of such Person shall provide that it shall not dissolve upon the bankruptcy of its managing member or sole member unless a new managing member or new sole member shall not be appointed upon any such bankruptcy (or, if such Person is a Delaware limited liability company, as otherwise provided under Section 18-802 of the Delaware Limited Liability Company Act), and if such Person has more than one managing member, then the organizational documents shall provide that such Person shall continue (and not dissolve) for so long as a solvent managing member exists;

(6) such Person without the unanimous consent of all of the partners, directors or members, as applicable, including the unanimous consent of all Independent Directors/Managers, has not and will not with respect to itself or to any other Person in which it has a direct or indirect legal or beneficial interest (i) seek or consent to the appointment of a receiver, liquidator, assignee, trustee, sequestrator, custodian or other similar official for such Person or all or any portion of such Person's properties, or (ii) take any action that would cause such Person to become insolvent; and

(7) The Lessee and each Person required to be a Single Purpose Entity hereunder shall obtain the consent of all its members or partners, as applicable, including, without limitation, each Independent Director/Manager, to (i) file a bankruptcy or insolvency petition or otherwise institute insolvency proceedings or to authorize it to do so, or (ii) consent to or acquiesce in the filing of an involuntary bankruptcy or insolvency proceeding, and the organizational documents of each of them shall expressly prohibit the taking of any action to (x) dissolve or liquidate, or (y) amend its organizational documents with respect to any Single Purpose Entity requirements as set forth in this definition.

"Stabilization Date" shall mean the date on which eighty (80%) percent of the Gross Square Footage of the Leased Premises is occupied and open for business pursuant to binding Subleases, each for a term of at least five (5) years.

"Sublease" shall mean any sublease (including a sub-sublease or any further level of subletting) and any occupancy, license, franchise or concession agreement applicable to the Leased Premises or any portion thereof.

"Subtenant" or **"Sublessee"** shall mean any subtenant (including a sub-subtenant or any further level of subtenant), operator, licensee, franchisee, concessionaire or other occupant, pursuant to a Sublease.

"Transfer" shall mean the transfer, sale, assignment, pledge, hypothecation or other disposition of any interest in the Lessee or in any direct or indirect constituent entity of the Lessee, where such disposition (whether by itself or cumulatively with other transactions) directly or indirectly produces any change in Control of the Lessee, and shall include but not be limited to (1) the sale, assignment, redemption or transfer of outstanding stock of or membership interest in, respectively, any corporation or any limited liability company that is the Lessee or that is the general partner of any partnership that is the Lessee, (2) the issuance of additional stock or membership interest in, respectively, any corporation or limited liability company that is the Lessee or that is the general partner of any partnership that is the Lessee, and (3) the sale, assignment, redemption or transfer of any general or limited partner's interest in, or the admission of a new partner to, a partnership that is the Lessee or that is a general or limited partner of any partnership that is the Lessee.

Section 14.2 <u>Consent Required.</u>

14.2.1 *No Assignment, etc. Without Consent.* Except as otherwise expressly provided in this Agreement, no Assignment, Transfer, Sublease or Mortgage may be made without the prior written consent in each instance of the Port Authority, which consent shall be granted or denied in the Port Authority's sole and absolute discretion, and any Assignment, Transfer, Sublease or Mortgage made without such consent shall constitute a material default under this Agreement, giving rise to a right of termination by the Port Authority pursuant to Article 17 hereof entitled "Termination".

14.2.2 *Transfers Resulting in Change of Control.* From and after the second (2nd) anniversary of the Stabilization Date, the Port Authority shall not unreasonably withhold or delay its consent to any proposed Assignment, Transfer resulting in a change in Control of the Lessee (a **"Transfer of Control"**) or Master Sublease; provided, however, that after such second anniversary the following transactions shall not require the Port Authority's consent:

(1) an Assignment, a Transfer of Control or a Master Sublease to a Single Purpose Entity that is Controlled by an Institutional Investor and that has retained a management company to manage the Leased Premises (or portion of the Leased Premises subject to such Master Sublease), provided that such management company (x) is not a Prohibited Person and (y) manages, and has managed for at least the preceding ten (10) years, at least ten (10) comparable retail properties each containing as much retail space as is contained in the Leased Premises (or portion of the Leased Premises subject to such Master Sublease) (any such management company, **a "Managing Agent"**) and such Assignee, Subtenant under such Master Sublease or the Lessee (after such Transfer of Control), as the case may be, agrees to keep such agreement in effect with such Managing Agent or a similar agreement in effect with a successor Managing Agent; or

(2) an Assignment, a Transfer of Control or a Master Sublease to a Single Purpose Entity that is Controlled by a real estate investment trust or other owner or manager of real estate, provided that (x) such trust or other owner or manager is not a Prohibited Person, (y) such trust or other owner or manager owns and has owned (in fee or pursuant to a long-term net lease) and manages and has managed for at least the preceding ten (10) years, at least ten (10) comparable retail properties each containing as much retail space as is contained in the Leased Premises (or portion of the Leased Premises subject to such Master Sublease).

14.2.3 *Conditions for Written Consent.* Any request for written consent of the Port Authority required in this Section 14.2 shall be made by the Lessee at least thirty (30) days in advance of the effective date of the proposed transaction, and the Lessee shall comply with and satisfy the requirements of Section 14.4, Section 14.5 and Section 14.6 hereof.

Section 14.3 Consent Not Required.

14.3.1 *Certain Transactions Not Resulting in a Change in Control.* Notwithstanding the provisions of Section 14.2, the following Assignment and Transfers shall not at any time require the consent of the Port Authority, provided that (except in the case of a Transfer of the ownership of publicly-traded equity interests) the Lessee notifies the Port

Authority, at least fifteen (15) days in advance of the effective date of any such proposed Assignment or Transfer, of the nature of the Assignment or Transfer and the resulting change in the ownership structure of the Lessee, and the Lessee complies with and satisfies the requirements of Section 14.4, Section 14.5 and Section 14.6 hereof:

(1) an Assignment to an Affiliate that is a Single Purpose Entity, which Assignment does not result in a change in Control of the Lessee, provided, however, that the Port Authority's consent shall not be required only so long as the Assignee maintains the Affiliate relationship to the Lessee;

(2) a Transfer that does not (whether by itself or cumulatively with other Transfers) result in a change in Control of the Lessee; and

(3) a Transfer of the ownership of publicly-traded equity interests.

14.3.2 *Mortgage-Related Transactions.* Notwithstanding the provisions of Section 14.2.2 hereof, the Lessee may make certain Mortgages, as provided in Article 14A, and any Assignment made upon or in lieu of the foreclosure of a Recognized Mortgage (whether made before or after the second anniversary of the Stabilization Date) shall not require the consent of the Port Authority, so long as (x) the Assignee shall satisfy a standard that is set forth in Section 14.2.2(1) or (2) hereof and (y) if the Project Completion Date has not yet occurred, the Assignee's Parent either has itself managed, or else has entered into a development management agreement with a third-party development manager that has managed, the development of at least ten (10) comparable retail properties each containing as much retail space as is contained in the Leased Premises. Notwithstanding the foregoing, no foreclosure under a Mezzanine Financing may occur prior to the Project Completion Date.

14.3.3 *Subleases other than Master Subleases.* Subject to the provisions of this Article 14, the Lessee may, without obtaining the consent of the Port Authority, enter into any Sublease other than a Master Sublease, provided that the Lessee shall deliver to the Port Authority, within five (5) Business Days following the execution thereof, (x) a true, correct and complete copy of such Sublease, which shall comply with the requirements set forth in Section 14.9 below, and (y) an affidavit of an authorized officer, member or general partner of the Lessee or the proposed Sublessee, certifying that no owner of a five percent (5%) or greater nominal or beneficial interest in such proposed Sublessee is a Prohibited Person, or such other affidavit with respect to Prohibited Persons as is acceptable to the Port Authority in its reasonable discretion.

Section 14.4 Submission of Documents and Information.

Whenever the Lessee desires to effect any Assignment, Transfer, Sublease or Mortgage with respect to which the consent of the Port Authority is required pursuant to this Article, the Lessee shall, at least thirty (30) days prior to the effective date of such proposed transaction, notify the Port Authority in writing of such proposed transaction and submit to the Port Authority the following documents (which may be unexecuted but shall be in substantially final form, to the extent available, and shall be promptly supplemented with

revised drafts on a current basis) and information:

(1) In the case of an Assignment, (x) a copy of the proposed instruments of assignment containing, inter alia, the name, address and telephone number of the proposed Assignee, (y) a copy of the agreement with assignment and assumption referred to in Section 14.6 below and (z) an affidavit of the Assignee or an authorized officer, member or general partner thereof, setting forth the following:

(ii) in the case of a partnership, the names and addresses of all general partners and of all other partners having a five percent (5%) or greater ownership interest in the Assignee (unless such ownership interest consists of publicly traded securities),

(iii) in the case of a corporation, the names and addresses of all directors and officers and of all Persons having a five percent (5%) or greater ownership interest in the Assignee (unless such ownership interest consists of publicly traded securities), and

(iv) in the case of a limited liability company or other entity, the names and addresses of all managers or other Persons charged with the direction or management of its affairs and of all Persons having a five percent (5%) or greater ownership interest in the Assignee (unless such ownership interest consists of publicly traded securities);

(2) in the case of a Transfer, (x) a copy of the proposed instrument(s) effecting the Transfer, containing, inter alia, the name, address and telephone number of the proposed transferee, and (y) an affidavit of an authorized officer, member or general partner of the Lessee or transferee, setting forth the same information as is required with respect to assignees in subparagraph (1)(z) above;

(3) in the case of a Sublease, (x) a copy of the proposed sublease, (y) the name, address and telephone number of the proposed Sublessee, and (z) an affidavit of an authorized officer or general partner of the Lessee or such proposed Sublessee, setting forth the same information as is required with respect to assignees in subparagraph (1)(z) above; and

(4) in all such cases, such other documents and information as the Port Authority may reasonably request to permit the evaluation of such Assignment, Transfer or Sublease.

Section 14.5 Conditions to Effectiveness of Transactions.

Notwithstanding any other provision of this Agreement, and notwithstanding that the consent of the Port Authority may not be required or may have been given, in no event shall the Lessee enter into or permit an Assignment, Transfer, Sublease or Mortgage, and any purported Assignment, Transfer, Sublease or Mortgage shall be void and of no effect, if:

(1) in the case of an Assignment, the Lessee hereunder and its managing member(s) and/or general partner(s), on the proposed effective date of the Assignment, shall not remain Single Purpose Entities (evidence of which, including but not limited to a Non-Consolidation Opinion reasonably satisfactory to the Port Authority

(2) in the case of an Assignment, Transfer of Control, Master Sublease or Mortgage, on the proposed effective date of such Assignment, Transfer of Control, Master Sublease or Mortgage (x) there exists an Event of Default which remains uncured, (y) this Agreement shall not then be in full force and effect or (z) there is then in effect any notice of termination served by the Port Authority pursuant to Article 17 of this Agreement, or

(3) in the case of an Assignment, Transfer, Sublease or Mortgage, such Assignment, Transfer, Sublease or Mortgage is to any Person (or an Affiliate of any Person) who is a Prohibited Person.

Section 14.6 Assumption Agreement.

In all events, and notwithstanding any other provision of this Agreement, no Assignment shall be effective until an agreement of assignment with assumption substantially in the form annexed hereto, hereby made a part of this Agreement and marked "Exhibit G" (the "Assignment and Assumption Agreement") has been executed and delivered by the Assignor and the Assignee; upon such execution and delivery, the Assignor shall be relieved of all liabilities and obligations accruing under this Agreement from and after the effective date of such Assignment. Subject to Section 17.11 below, nothing contained herein shall be construed to release the Assignor under such Assignment from any liabilities or obligations that shall have accrued prior to the effective date of such Assignment.

Section 14.7 Conflicts of Interest.

In all events, and notwithstanding any other provision of this Agreement, no Assignment, Transfer, Mortgage or Sublease shall be permitted that would entail a violation of the Port Authority Code of Ethics or the relevant conflict of interest rules.

Section 14.8 No Waiver.

14.8.1 *Violations.* The Port Authority may collect all rentals and fees due hereunder from any Assignee or Subtenant or other party claiming a right under this Agreement or letting or occupying the Leased Premises pursuant to an Assignment or Sublease entered into in violation of the foregoing Sections, and the Port Authority shall apply the net amount collected to the rentals and fees herein reserved; but no such collection shall be deemed a waiver by the Port Authority of the prohibitions contained in the foregoing Sections or an acceptance by the Port Authority of any such Assignee, Subtenant, claimant or occupant as Lessee, nor a release of the Lessee by the Port Authority from the further performance by the Lessee of the covenants contained herein.

14.8.2 *Consents.* Any consent granted by the Port Authority to any Assignment, Transfer, Mortgage or Sublease pursuant to the provisions hereof shall not be construed or deemed to release, relieve or discharge any succeeding proposed Assignment, Transfer, Mortgage or Sublease from the requirement, if applicable, of having the prior written consent of the Port Authority.

Section 14.9 Certain Sublease Requirements.

14.9.1 *Lessee's Name.* The Lessee shall enter into all Subleases (other than sub-subleases) in its own name.

14.9.2 *Term.* The Lessee shall not, without the prior written consent of the Port Authority, enter into any Sublease for a term (including renewal options) expiring after the last Business Day immediately preceding the then scheduled Expiration Date.

14.9.3 *Required Provisions.* Every Sublease entered into by the Lessee shall provide as follows:

(1) It is subordinate and subject to this Agreement.

(2) Except for security deposits and any other amounts deposited with the Lessee the Subtenant shall not pay rent or other sums payable under the Sublease to the Lessee for more than one (1) month in advance (unless the Port Authority gives its consent to a longer period).

(3) Subject to Subsection 14.9.7 hereof, on the termination of this Agreement pursuant to Article 17, the Subtenant shall, at the option of the Port Authority, attorn to, or shall enter into a direct lease on terms identical to its Sublease with, the Port Authority for the balance of the unexpired term of the Sublease.

(4) The Subtenant shall be bound by and subject to all the terms and provisions of this Agreement as to the Subtenant's manner of occupancy and use of its portion of the Leased Premises as if it were the Lessee under this Agreement, including without limitation the obligations of the Lessee under this Agreement with respect to compliance with Requirements and the Rules and Regulations to the extent such Rules and Regulations are consistent with Lessee's permitted uses under this Agreement and with respect to prohibited activities and operations, rights of entry and non-discrimination. The Port Authority shall be a third party beneficiary of the provisions of the Sublease insofar as they relate to such terms and provisions of this Agreement, and entitled to enforce such provisions directly if the Lessee fails to do so after notice from the Port Authority.

(5) The Port Authority and its Commissioners, directors, officers, employees, agents and representatives, as third party beneficiaries under the Sublease, shall be indemnified, defended and held harmless from all claims and demands to the same extent as the Lessee and/or any the holder of any Mortgage; provided, however, that in the defense of any suit the Subtenant shall not, without obtaining express advance permission from the General Counsel of the Port Authority, raise any defense involving in any way the jurisdiction

of the tribunal over the person of the Port Authority, its Commissioners, officers, agents or employees, the immunity of the Port Authority, its Commissioners, officers, agents or employees, the governmental nature of the Port Authority or the provisions of any statutes respecting suits against the Port Authority.

14.9.4 *Subtenant Obligations.* The Lessee shall cause all Subtenants to comply with their obligations under their Subleases insofar as they correspond with obligations of the Lessee under this Agreement. A violation or breach of any of the terms, provisions or conditions of this Agreement that results from, or is caused by, an act or omission by a Subtenant shall not relieve the Lessee of the Lessee's obligation to cure such violation or breach; provided, however, that this Agreement shall not be subject to termination by reason of any such violation or breach for so long as the Lessee shall be making commercially reasonable efforts (by all available means, including litigation, when and as warranted) to cause such Subtenant to cure such violation or breach and/or to recover possession of the applicable portion of the Leased Premises as necessary itself to cure such violation or breach.

14.9.5 *Collection of Subrent by the Port Authority.* Subject to the rights of Recognized Mortgagees, after an Event of Default relating to the Lessee's monetary obligations hereunder, the Port Authority may collect rent and all other sums due under any Subleases and apply the net amount collected to the Rental payable by the Lessee hereunder. No such collection shall be, or shall be deemed to be, a waiver of any agreement, term, covenant or condition of this Agreement, nor (in and of itself) the recognition by the Port Authority of any Subtenant as a direct tenant of the Port Authority, nor a release of the Lessee from performance by the Lessee of its obligations under this Agreement.

14.9.6 *Sublease Assignment.* (a) As additional security for the full performance of all of the Lessee's monetary obligations hereunder, the Lessee hereby assigns, transfers and sets over unto the Port Authority, subject to the rights of all Recognized Mortgagees and contingent upon the occurrence and continuance of an Event of Default relating to the Lessee's monetary obligations hereunder, all of the Lessee's right, title and interest in and to all Subleases, and hereby confers upon the Port Authority, its agents and representatives, a right of entry in, and sufficient possession of, the Leased Premises to permit and ensure the collection by the Port Authority of all sums payable under such Subleases, and enforcement of all other rights of the Lessee under such Subleases. The exercise of such right of entry and qualified possession by the Port Authority shall not constitute an eviction of the Lessee from the Leased Premises or any portion thereof. If such right of entry and possession is denied to the Port Authority, its agents or representatives, the Port Authority, in the exercise of this right, may use all requisite force to gain and enjoy the Leased Premises with neither responsibility for nor liability to the Lessee, its servants, employees, guests or invitees, or any Person whatsoever.

(b) On June 30 and December 31 of each year during the term of this Agreement, commencing with the year in which the Leased Premises are first occupied by any Subtenant, the Lessee shall deliver to the Port Authority (x) a schedule of all Subleases, giving the names of all Subtenants, a description of the space that has been sublet (or licensed,

etc.), expiration dates, rentals and other fees and such other information as the Port Authority may reasonably request, and (y) a photostatic copy of all Subleases (however, after the first demand therefor only those executed, amended or assigned since the previous demand, and with respect to sub-subleases, etc., and all further levels of sub-subleasing, only those of which the Lessee is aware and is able to obtain). Upon reasonable request of the Port Authority, the Lessee shall permit the Port Authority and its agents and representatives to inspect original counterparts of all Subleases. The Port Authority shall maintain the confidentiality of such materials to the fullest extent legally permitted.

14.9.7 *Subtenant Nondisturbance.* (a) The Port Authority, for the benefit of any Subtenant whose Sublease was made in accordance with the applicable provisions of this Article, shall recognize such Subtenant as the direct tenant of the Port Authority upon the termination of this Agreement pursuant to the provisions of Article 17, provided that (x) at the time of execution of the Sublease, either (1) such Subtenant has been granted non-disturbance by the Senior Recognized Mortgagee, or (2) if there is no Mortgage at such time, the Lessee has delivered to the Port Authority a certificate of an independent real estate appraiser that is a member of the American Institute of Real Estate Appraisers or any similar organization reasonably satisfactory to the Port Authority, certifying that the rent and other moneys payable by the Subtenant throughout the term of its Sublease, after taking into account any escalations, renewal rent, credits, offsets or deductions to which such Subtenant may be entitled thereunder and other relevant terms and provisions of the Sublease but excluding any pass-through of benefits contained in this Agreement, constitutes not less than ninety percent (90%) of the then fair rental value of the space demised thereunder; and (y) at the time of the termination of this Agreement (A) no default exists under such Sublease beyond the expiration of any applicable cure period, which at such time would permit the landlord thereunder to terminate the Sublease or to exercise any remedy for dispossession provided for therein, and (B) such Subtenant delivers to the Port Authority an instrument confirming the agreement of the Subtenant to attorn to the Port Authority and to recognize the Port Authority as the Subtenant's landlord under its Sublease, which instrument shall provide that neither the Port Authority, nor anyone claiming by, through or under the Port Authority, shall be:

(1) liable for any act or omission of any prior landlord (including, without limitation, the then defaulting landlord); provided, however, that the foregoing shall not excuse any ongoing nonperformance of services required pursuant to the Sublease that shall continue after the Port Authority or its designee succeeds to the position of the landlord, to the extent such services are typically provided by landlords of comparable premises in the City of New York and are actually provided to other Subtenants at the Leased Premises;

(2) subject to any offsets (except as specifically provided in 14.9.7(a)(4) below) or defenses that such Subtenant may have against any prior landlord (including, without limitation, the then defaulting landlord);

(3) except as the Port Authority may otherwise agree, bound by any payment of rent that such Subtenant might have paid for more than the current month to any

prior landlord (including, without limitation, the then defaulting landlord) other than security deposits and any other amounts deposited with any prior landlord (including, without limitation, the then defaulting landlord) in connection with the payment of insurance premiums, real property taxes and assessments and other similar charges or expenses, but only to the extent that such security deposits and other amounts have actually been received by the Port Authority;

(4) bound by any covenant to undertake or complete, or to reimburse the Subtenant for the undertaking or completion of, any construction of the Leased Premises or any portion thereof demised by the Sublease; notwithstanding the foregoing, however, if such covenant is not performed, the following shall apply:

(ii) the Subtenant shall have the option to terminate the Sublease; or

(iii) the Subtenant, if it is the Subtenant under a Qualifying Sublease (as defined below) and is considered by the Port Authority to be creditworthy (provided, that if a Subtenant either (x) has a tangible net worth equal to seven (7) times the annual rent payable under the Sublease or (y) has provided, as security for its obligations under the Sublease, a clean, irrevocable letter of credit in the amount of nine (9) months' rent, then such Subtenant shall be deemed to be creditworthy), shall have the right to undertake and complete the construction of the fit-out of the premises for the Subtenant's use, and to take a monthly offset against the Sublease rent in an amount equal to the Offset Installment Amount (such right of offset, the **"Offset Right"**), provided, however, that the Offset Right must be exercised, if at all, prior to the fifteenth (15th) anniversary of the First Possession Date. By way of illustration, if the first Qualifying Sublease hereunder is a Sublease with Acme Corp. that has a Possession Date of 9/1/2013, the First Possession Date would be 9/1/2013; 8/31/2024 would be the deadline for the exercise of the Offset Right by Acme Corp. or any Subtenant under a subsequent Qualifying Sublease.

(A) **"Offset Installment Amount"** shall mean a monthly installment of the Construction Amount, evenly amortized without interest over the term of the Qualifying Sublease, but such monthly installment shall not in any event exceed such amount as would leave a remaining Sublease rent payment to the Port Authority equal to the amount of the rent payable under this Agreement allocable to the subleased premises plus the Port Authority's costs of providing services to such subleased premises, it being the parties' express intention that (x) the Port Authority would never receive less than the amount of the ground rent allocable to the subleased premises, plus the Port Authority's costs of providing services to the subleased premises, and (y) the maximum benefit afforded to the Subtenant shall be the aggregate of the Offset Installment Amounts taken over the term of the Qualifying Sublease, even if such aggregate is less than the Construction Amount. In the foregoing, **"Construction Amount"** shall

mean the total amount, as provided in a Qualifying Sublease (subject to any cap or other limitation provided therein), that the landlord under the Qualifying Sublease is obligated to expend, or reimburse the Subtenant for, with respect to the fit-out, for the Subtenant's use, of the premises under such Qualifying Sublease.

(B) **"Possession Date"** shall mean the date on which possession of the premises under a Sublease is delivered to the Subtenant; **"First Possession Date"** shall mean the first occurring Possession Date under a Sublease that is a Qualifying Sublease.

(C) **"Qualifying Sublease"** shall mean a Sublease with respect to which (v) the Possession Date is not later than the eleventh (11th) anniversary of the First Possession Date, (w) the term is at least ten (10) years, (x) the premises consist of either the entire third floor of the East Building or any other area(s) totaling at least twenty-seven thousand (27,000) square feet, (y) the Subtenant will actually occupy and use the premises, and (z) the landlord under such Sublease has covenanted to undertake or complete, or reimburse the Subtenant for the Subtenant's undertaking or completion of, the fit-out of the premises for the Subtenant's use.

(5) bound by any obligation to make any payment to the Subtenant; or

(6) bound by any amendment thereto or modification thereof which reduces the basic rent, additional rent, supplemental rent or other charges payable under the Sublease (except to the extent equitably reflecting a reduction in the space covered by the Sublease), or changes the term thereof, or otherwise materially affects the rights of the landlord thereunder, made without the prior consent of the Port Authority, unless the Senior Recognized Mortgagee shall have approved such amendment or modification and granted non-disturbance to such Subtenant.

The foregoing provision is intended to be self-operative and enforceable by Subtenants as third-party beneficiaries of this Agreement. However, upon request from any Subtenant, provided that the Lessee or such Subtenant pays any reasonable fee charged therefor, the Port Authority shall promptly execute and deliver a written instrument confirming such provision's applicability to any Sublease to which it shall apply (a **"Subordination, Non-Disturbance and Attornment Agreement"**). A Subordination, Non-Disturbance and Attornment Agreement shall be substantially in the form of **"Exhibit O-1"** annexed hereto, provided, however, that if the Subtenant is a Subtenant under a Qualifying Sublease, the Subordination, Non-Disturbance and Attornment Agreement shall be substantially in the form of **"Exhibit O-2"**.

(b) All Subleases shall contain the following provision:

"[The Subtenant] understands that, if by reason of a default on the part of [insert name of the Lessee] (the "Lessee") under the prime lease covering the premises between The Port Authority of New York and New Jersey (the "Port Authority") and the Lessee, or if for any other reason of any nature whatsoever, such prime lease and the leasehold estate of the Lessee are terminated by summary dispossess proceedings or otherwise, [the Subtenant], at the request in writing of the Port Authority, shall attorn to and recognize the Port Authority as the landlord under this lease, provided that the Port Authority shall theretofore have entered into a non-disturbance agreement in reasonable and customary form which shall provide that the possession and rights of [the Subtenant] shall not be disturbed in the event of the expiration or termination of such prime lease so long as [the Subtenant] shall not be in default beyond applicable cure periods under this lease (the "**Non-Disturbance Agreement**"). [The Subtenant] covenants and agrees to execute and deliver, at any time and from time to time, upon the request of the Port Authority, any reasonable instrument which may be necessary or appropriate to evidence such attornment, provided that it shall theretofore have received the aforementioned Non-Disturbance Agreement from the Port Authority. Provided that the Non-Disturbance Agreement has been entered into, [the Subtenant] further waives the provisions of any statute or rule of law now or hereafter in effect which may terminate this lease or give or purport to give [the Subtenant] any right of election to terminate this lease or to surrender possession of the leased premises demised hereby in the event such prime lease terminates, and [the Subtenant] agrees that this lease shall not be affected in any way whatsoever by any such termination."

ARTICLE 14A

PERMITTED MORTGAGES

Section 14A.1 Definitions.

For the purposes of this Article 14A, the following terms shall have the respective meanings set forth below:

"Construction Loan" shall mean a loan secured by a Mortgage and obtained to finance hard and soft costs of the Lessee through the earlier of (x) the Stabilization Date and (y) two (2) years following the Project Completion Date.

"Construction Mortgage" shall mean a Mortgage securing a Construction Loan.

"Maximum Construction Mortgage Loan Amount" shall mean, with respect to the Construction Loan(s), an amount, including any Mezzanine Financing, that is seventy-five percent (75%) of the hard and soft costs to be incurred by the Lessee through the earlier of (x) the Stabilization Date and (y) two years following the Project Completion Date to the extent such costs are included in the budget approved by the prospective lender of a Construction

Loan.

"Maximum Mortgage Amount" shall mean (x) in the case of the Construction Loan(s), the Maximum Construction Mortgage Loan Amount; (y) in the case of the Permanent Loan(s), the Maximum Permanent Mortgage Loan Amount; or (z) in the case of any Refinancing Loan(s), the Maximum Refinancing Mortgage Loan Amount.

"Maximum Permanent Mortgage Loan Amount" shall mean, with respect to the Permanent Loan(s), an amount, including any Mezzanine Financing, that is the greater of (x) the amount required to pay in full the outstanding principal amount of and all interest and other amounts then due under the Construction Loan(s) and the expenses of obtaining and closing such Permanent Loan(s) and (y) eighty-five percent (85%) of the value of the leasehold estate created hereunder (assuming the leasehold estate is not encumbered by any outstanding financing) at the time such Permanent Loan(s) are funded, as established by an appraisal approved by the Recognized Mortgagee(s) making such Permanent Loan(s), provided, that in the case of the foregoing subsection (y) the total amount secured by a mortgage or mortgages of the Lessee's leasehold estate hereunder shall not exceed seventy-five percent (75%) of such value.

"Maximum Refinancing Mortgage Loan Amount" shall mean, with respect to any new Refinancing Loan, an amount, including any Mezzanine Financing, that is the greater of (x) the amount required to pay in full the outstanding principal amount of and all interest and other amounts then due under the Permanent Loan(s) or existing Refinancing Loan(s), as the case may be, and the expenses of obtaining and closing the new Refinancing Loan and (y) eighty-five percent (85%) of the value of the leasehold estate (assuming that the leasehold estate is not encumbered by any outstanding financing) at the time the new Refinancing Loan is funded, as established by an appraisal approved by the Recognized Mortgagee making such new Refinancing Loan, provided, that in the case of the foregoing subsection (y) the total amount secured by a mortgage or mortgages of the Lessee's leasehold estate hereunder shall not exceed seventy-five percent (75%) of such value.

"Mezzanine Financing" means any financing provided by any Institutional Investor to the Lessee, or to Persons holding equity interests in the Lessee, that shall be secured by a pledge of all of the equity interests in the Lessee.

"Mezzanine Lender" means an Institutional Investor that shall hold a pledge of equity interests in the Lessee as security for any Mezzanine Financing.

"New Lease" shall have the meaning provided in Section 14A.5.5(a) below.

"Permanent Loan" shall mean a loan secured by a Mortgage and obtained, in whole or in part, to pay and satisfy the Construction Loan(s).

"Permanent Mortgage" shall mean a Mortgage securing the Permanent Loan.

"Recognized Mortgagee" shall mean a holder of a Mortgage in respect to which the notice provided for by Section 14A.3 of this Article has been given by the Port Authority acknowledging that the benefits of this Article 14A apply to such Mortgage. "Recognized Mortgagee" shall include a Mezzanine Lender if and as applicable.

"Refinancing Loan" shall mean a loan secured by a Mortgage and obtained, in whole or in part, to refinance a Permanent Loan or to refinance any subsequent loan secured by a Mortgage.

"Refinancing Mortgage" shall mean the Mortgage securing a Refinancing Loan.

"Senior Recognized Mortgagee" shall mean the Recognized Mortgagee most senior in lien.

Section 14A.2 Mortgages Authorized.

14A.2.1 *Mortgages Authorized.* Notwithstanding the provisions of Article 14 of this Agreement, if this Agreement is then in full force and effect, the Lessee may, without the consent of the Port Authority, at any time and from time to time, grant one or more Mortgages, provided that (x) the principal amount secured by any Mortgage when granted, together with the aggregate principal amount then secured by any other Mortgages, shall not exceed the applicable Maximum Mortgage Amount, (y) Lessee notifies the Port Authority at least fifteen (15) Business Days in advance of the effective date of such proposed Mortgage and (z) such Mortgage:

(1) is made to an Institutional Investor;

(2) does not cover property other than the Leased Premises;

(3) is not cross-defaulted or cross-collateralized with agreements covering any other property; not cross-defaulted with any Mezzanine Financing (provided, however, that there shall be no prohibition against a Mezzanine Financing being cross-defaulted with a Mortgage); and

(4) at the time such Mortgage is closed no Event of Default shall have occurred and be continuing hereunder and no notice of termination shall have been given pursuant to Article 17 of this Agreement and be in effect.

14A.2.2 *Assignment.* No Mortgage shall be assigned, except to an Institutional Investor.

Section 14A.3 Recognized Mortgages.

14A.3.1 *Notice.* If the Lessee intends to mortgage the leasehold estate created hereby in accordance with the provisions of Section 14A.2.1 above, and if the proposed

holder of such Mortgage shall provide the Port Authority with notice of its name and address together with a true and complete copy of such Mortgage, a certification that such holder meets the requirements for an Institutional Investor and an appraisal or other evidence that the amount of the loan secured by such Mortgage (taken together with any and all other loans then secured by Mortgages that will not be paid off at the closing of such loan) is not in excess of the applicable Maximum Mortgage Amount, then and in that event, provided that all the requirements of Section 14A.2.1 have been complied with, then, following receipt of such notice by the Port Authority, the remaining provisions of this **Article 14A** shall apply in respect of such Mortgage.

14A.3.2 *Acknowledgment.* The Port Authority shall within twenty (20) Business Days after receipt of the notice provided in Subsection 14A.3.1 above, acknowledge in writing that the holder of the Mortgage described in the notice is a Recognized Mortgagee, entitled to the benefits of this **Article 14A** or, in the alternative if the Port Authority reasonably so determines in good faith, notify the Lessee and such holder that it is not entitled to such benefits, setting forth the reasons therefor in reasonable detail. The Port Authority's determination under this Subsection 14A.3.2 shall be based solely upon (x) whether or not the holder of such Mortgage is an Institutional Investor and (y) whether or not the amount of the Mortgage will cause the applicable Maximum Mortgage Amount to be exceeded.

14A.3.3 *No More Than Three Recognized Mortgagees.* In all events, there shall not be more than three (3) Recognized Mortgagees at any one time, including any Mezzanine Lender. If (and for so long as) more than one Recognized Mortgagee shall seek to exercise any right that is afforded to Recognized Mortgagees hereunder, the Port Authority shall only be required to deal with the Senior Recognized Mortgagee which has elected to exercise its rights hereunder; otherwise, if the Senior Recognized Mortgagee has not elected to exercise its rights hereunder, then the Port Authority shall only be required to deal with a Mezzanine Lender which has exercised its rights hereunder.

Section 14A.4 Consent of Recognized Mortgagee Required.

No cancellation or surrender of this Agreement shall be effective unless consented to in writing by each Recognized Mortgagee, and no modification of this Agreement shall be effective as to any Recognized Mortgagee unless consented to in writing by such Recognized Mortgagee.

Section 14A.5 Default and Termination.

14A.5.1 *Default Notices.* Upon giving the Lessee any notice of (x) a default under this Agreement, or (y) a termination of this Agreement, or (z) a matter on which the Port Authority may predicate or claim a default, the Port Authority shall at the same time give a copy of such notice to each Recognized Mortgagee. No such notice by the Port Authority to the Lessee shall be deemed to have been duly given unless and until a copy thereof has been so given to each Recognized Mortgagee at its address last provided by such Recognized Mortgagee to the Port Authority pursuant to the provisions of this Article. From and after the

date on which such notice has been given to any Recognized Mortgagee, such Recognized Mortgagee shall have the same period, after the giving of such notice to it, for remedying any default or acts or omissions which are the subject matter of such notice, or causing the same to be remedied, as is given to the Lessee after the giving of such notice to the Lessee plus, in each instance, the additional periods of time specified in Section 14A.5.3 hereof to remedy, commence remedying or cause to be remedied the defaults or acts or omissions which are the subject matter of such notice. The Port Authority shall accept such performance by or at the instigation of any Recognized Mortgagee as if the same had been done by the Lessee. The Lessee shall authorize the performing or instigating Recognized Mortgagee to take any such action at such Recognized Mortgagee's option and shall authorize entry upon the Leased Premises by such Recognized Mortgagee for such purpose.

14A.5.2 *Termination Notices.* (a) Anything contained in this Agreement to the contrary notwithstanding, if any default shall occur and continue for such period as entitles the Port Authority to terminate this Agreement and the letting hereunder, the Port Authority shall not have the right to effectuate such termination unless, following the expiration of the period of time given the Lessee to cure such default or the act or omission which gave rise to such default, the Port Authority shall give each Recognized Mortgagee notice of the Port Authority's intent to so terminate (a "**Termination Notice**") at least ten (10) Business Days in advance of the proposed effective date of such termination if such default is capable of being cured solely by the payment of money, and at least twenty (20) Business Days in advance of the proposed effective date of such termination if such default is not capable of being cured solely by the payment of money.

(b) The provisions of Section 14A.5.3 below shall apply if, during such ten (10) or twenty (20) Business Day period (the "**Termination Notice Period**"), a Recognized Mortgagee:

(5) notifies the Port Authority of such Recognized Mortgagee's desire to nullify such notice; and

(6) pays or causes to be paid to the Port Authority all Rental then due and in arrears as specified in the Termination Notice, and undertakes to pay any and all Rental which may become due during the Termination Notice Period and of which such Recognized Mortgagee is given written notice by the Port Authority; and

(7) complies or in good faith, with reasonable diligence and continuity, commences to comply with all non-monetary requirements of this Agreement then in default and reasonably susceptible of being complied with by such Recognized Mortgagee. If the curing of any non-monetary default requires the Recognized Mortgagee to obtain possession of the Leased Premises, then the Recognized Mortgagee shall be deemed to have commenced in good faith to comply with the obligation of the Lessee which is in default with reasonable diligence and continuity, subject to the effects of any stay which may prevent it from so doing, if it has commenced and is prosecuting with due diligence proceedings to obtain such

possession, whether through foreclosure of its Mortgage, an application for the appointment of a receiver or otherwise or, having obtained such possession, is then undertaking to comply with such obligation with due diligence.

14A.5.3 *Procedure on Default.* (a) If the Port Authority elects to terminate this Agreement and the leasehold estate created hereby by reason of any default of the Lessee, and a Recognized Mortgagee shall have proceeded in the manner provided for by Section 14A.5.2 above, then the specified date for the termination of this Agreement as fixed by the Port Authority in its Termination Notice shall be extended for a period of six (6) months, provided that such Recognized Mortgagee shall, during such six (6) month period, pay or cause to be paid all Rentals as the same becomes due and continue its good faith efforts to perform all of the Lessee's other obligations under this Agreement as and to the extent provided in Section 14A.5.2 above, subject to the effects of any stay which may prevent it from doing so.

(b) If at the end of such six (6) month period such Recognized Mortgagee is complying with Section 14A.5.2 above, then, provided that such Recognized Mortgagee continues so to comply, this Agreement shall not then terminate, and the time for completion by such Recognized Mortgagee of the actions being taken by it pursuant to Section 14A.5.2(b)(iii) shall be extended for such additional period of time as may be required for the completion thereof with all due diligence, taking into account the effect of any stay which may prevent the Recognized Mortgagee from proceeding with such actions. Nothing in this Article 14A, however, shall be construed to extend the term of the letting hereunder beyond the scheduled Expiration Date or to require the Recognized Mortgagee to continue any foreclosure proceedings after the default in respect of which the Termination Notice was issued has been cured. If such default shall be cured and the Recognized Mortgagee shall discontinue such foreclosure proceedings, this Agreement shall continue in full force and effect as if the Lessee had not defaulted under this Agreement.

14A.5.4. *Recognized Mortgagee Need Not Cure Specified Defaults.* Nothing herein contained shall require any Recognized Mortgagee or its designee, as a condition to its exercise of its rights under this Article, or any purchaser at a foreclosure sale, to cure any non-monetary default of the Lessee not reasonably susceptible of being cured by such Recognized Mortgagee, designee or purchaser (including, by way of example and not as a limitation, the Lessee's filing of a bankruptcy petition, as described in Section 17.1(1) below) in order to comply with the provisions of this Section 14A.5.

14A.5.5. *Recognized Mortgagee's Right to New Lease.*

(a) If this Agreement is terminated as a result of a default on the part of the Lessee, the Port Authority shall, subject to the satisfaction of the conditions provided below, on written request of the Senior Recognized Mortgagee made at any time within sixty (60) days after the Port Authority has given notice of such termination to the Recognized Mortgagees (or if the Senior Recognized Mortgagee does not make such a request within such 60-day period, then upon the written request of the holder of the most senior Recognized

Mortgage (as may be determined by a mortgage title insurance policy or title certificate issued by a responsible title insurance company doing business within the State of New York) who makes such a timely written request), enter into a new lease of the Leased Premises with such Recognized Mortgagee or its designee (a "**New Lease**") within thirty (30) days after receipt of such request.

(b) Any such New Lease shall be effective as of the date of termination of this Agreement and, except as provided below, shall be upon all the same terms and conditions of this Agreement as would have been in effect had such Recognized Mortgagee taken an assignment of the leasehold estate under this Agreement from the Lessee, including any rights of renewal.

(c) The Port Authority shall not be obligated to enter into such a New Lease with any Recognized Mortgagee or its designee unless (i) such Recognized Mortgagee shall, contemporaneously with the delivery of such request for a New Lease, pay or cause to be paid to the Port Authority all Rental owed by the Lessee to the Port Authority which then remains unpaid and the Rental for the period after termination of this Agreement and until commencement of the New Lease which would have become due under this Agreement (less any rent or other charges for such periods actually collected by the Port Authority from Subtenants), together with all expenses, including reasonable attorney's fees, incurred by the Port Authority in connection with the termination of this Agreement and the execution and delivery of such New Lease, and (ii) such Recognized Mortgagee shall have performed or caused to be performed all covenants and agreements required as of that date to be performed by the Lessee under this Agreement except with respect to incurable defaults.

(d) The Port Authority shall have no obligation to deliver physical possession of the Leased Premises to such Recognized Mortgagee at the time of entering into such New Lease unless the Port Authority, at the time of execution and delivery of such New Lease, shall have obtained physical possession of the Leased Premises. Any New Lease granted pursuant to this Subsection 14A.5.5 shall enjoy the same priority as this Agreement over any lien, encumbrance, or other interest created by the Port Authority prior to the execution of such New Lease. The provisions of this Subsection 14A.5.5 shall survive the termination of this Agreement.

Section 14A.6 Eminent Domain.

The Lessee's share, as provided in Article 19 of this Agreement, of the proceeds arising from an exercise of the power of eminent domain shall, subject to the provisions of such Article, be disposed of as provided for by the Mortgage(s) held by any Recognized Mortgagee(s). Unless prohibited by applicable law, any Recognized Mortgagee shall have the right to be a party in any condemnation or eminent domain proceeding affecting the Leased Premises for the purpose of protecting its interest in such proceeding.

Section 14A. 7 Casualty Loss.

A standard mortgagee clause naming any Recognized Mortgagee(s) may be added to any and all casualty insurance policies required to be carried by the Lessee hereunder on condition that the insurance proceeds are to be applied in the manner specified in this Agreement, and the Mortgage(s) shall so provide.

Section 14A.8 Intentionally Omitted.

Section 14A. 9 Notices.

14A.9.1 *Address.* Notices from the Port Authority to any Recognized Mortgagee shall be mailed to the address furnished to the Port Authority pursuant to Subsection 14A.3.1 above, and those from any Recognized Mortgagee to the Port Authority shall be mailed to the address designated in or pursuant to the provisions of Article 23 hereof. In the event of any assignment of a Mortgage or in the event of a change of address of any Recognized Mortgagee, notice of the new name and address shall be provided to the Port Authority.

14A.9.2 *Manner.* Such notices, demands and requests shall be given in the manner described in Article 23 and shall be governed by the provisions of that Article.

Section 14A.10 Subordination.

Notwithstanding anything contained in any Mortgage or in this Article 14A, it is understood and agreed that the rights of the holder of any Mortgage, including a Recognized Mortgagee, shall be subject and subordinate to this Agreement. The terms, covenants, conditions and provisions of this Agreement shall govern as between the Port Authority, the Lessee and any Recognized Mortgagee, and in the event of any inconsistency between the terms, covenants, conditions and provisions of this Agreement and the terms, covenants, conditions and provisions of any Mortgage, the terms, covenants, conditions, and provisions of this Agreement shall control. Notwithstanding any provisions of any Mortgage to the contrary, the Lessee for all purposes shall be deemed to be the Lessee hereunder, unless and until a Recognized Mortgagee shall have acquired the Lessee's interest herein or a New Lease has been executed pursuant to this Article, as the case may be. Any Mortgage granted hereunder shall make reference to the provisions of this Agreement and shall provide that the Mortgage and the rights of the Recognized Mortgagee thereunder are and shall be in all respects subject to all provisions of this Agreement. Without limiting the generality of the foregoing, each Mortgage shall contain the following provisions:

> "This mortgage is executed upon the condition (i) that no purchaser at any foreclosure sale shall acquire any right, title or interest in or to the lease hereby mortgaged (the "Agreement") unless such purchaser, or the person, firm or corporation to whom or to which such purchaser's right has been assigned, in the instrument transferring to such purchaser or to such assignee the interest of Lessee under the Agreement shall have provided the Port Authority with the documents and information set forth in the Section 14.4 of the Agreement and satisfies the conditions in Section 14.5 and Section 14.6 of the Agreement, (ii)

that no further or additional mortgage or assignment of the Agreement shall be made except in accordance with the provisions of the Agreement and (iii) that a duplicate original of the instrument containing the assignment and assumption agreement required by Section 14.6 of the Agreement, duly executed and acknowledged by purchaser or assignee and in recordable form, is delivered to the Port Authority promptly after the consummation of such sale or assignment."

"The mortgagee agrees to have the proceeds of any insurance or the proceeds of any condemnation award applied to the repair or restoration of the mortgaged premises to the extent such application is required by the provisions of the Agreement."

Section 14A.11 Assignment by Recognized Mortgagee.

A Recognized Mortgagee shall have the right, at any time and without the consent of the Port Authority, to assign the Mortgage held by it to another Institutional Investor or to grant participations in its Mortgage so long as a single Institutional Investor continues to act as the Recognized Mortgagee thereunder. The Port Authority will be obligated to give notices to and otherwise deal with only the one Institutional Investor that acts as the Recognized Mortgagee with respect to any Mortgage.

Section 14A.12 Mezzanine Financing.

Subject to the restrictions that are set forth in Section 14A.2.1 hereof, but notwithstanding any other provision of this Agreement to the contrary, the Lessee may from time to time, by written notice to the Port Authority, designate any Mezzanine Lender as a Recognized Mortgagee for purposes of this Agreement. Any such notice to the Port Authority shall state the name and address of the applicable Mezzanine Lender and shall include a copy of the promissory note and security agreement evidencing the Mezzanine Financing provided or held by such Mezzanine Lender. Notwithstanding any provision herein to the contrary, upon the Port Authority's receipt of such notice, such security agreement shall be deemed to be a Mortgage for all purposes of this Agreement and the Mezzanine Lender so designated shall be deemed to be a Recognized Mortgagee and shall have all the rights of a Recognized Mortgagee hereunder including, without limitation, to the same extent that a holder of a mortgage secured by a lien on the Lessee's leasehold estate hereunder may take an assignment of the Lessee's interest in this Agreement or its interest in the leasehold estate hereunder, a Mezzanine Lender may take an assignment of the pledged equity interests securing such Mezzanine Lender's Mezzanine Financing. Further, insofar as they shall be applicable to any Mezzanine Lender any provisions of Article 14 or this Article 14A that make reference to the foreclosure of Mortgages or to a Recognized Mortgagee's right to a New Lease shall be deemed to refer instead to the foreclosure of the pledge of equity interests securing such Mezzanine Financing, provided, that no foreclosure under a Mezzanine Financing may occur prior to the Project Completion Date.

Section 14A.13 Modifications Requested By Prospective Lender.

The Port Authority shall not unreasonably refuse to make any modifications to this Agreement that shall be requested by prospective Recognized Mortgagees to enhance the financeability of this Agreement, provided that such modifications would not materially increase the obligations or materially impair the rights of the Port Authority hereunder.

ARTICLE 15

LANDLORD'S PARTICIPATION IN PROCEEDS

Section 15.1 Definitions.

"**Alternative Disposition**" shall mean any transaction or series of transactions that, by effecting a direct or indirect change in Control of the Lessee (including without limitation any change in Control relating to a Master Sublease), would allow the Lessee (or Master Sublessee) or the beneficial owners of the Lessee (or of the Master Sublessee) to realize appreciation in the value of the leasehold estate created by this Agreement or would constitute the functional equivalent of a Sale.

"**Financing**" shall include without limitation any Refinancing Loan(s) or other financing secured by the Lessee's interest in all or any part of this Agreement or the leasehold estate created hereby, provided, however, that "Financing" shall not include any transaction with respect to which the closing has been completed prior to (x) the twentieth (20th) anniversary of the Stabilization Date or (y) the twentieth (25th) anniversary of the Lease Commencement Date, whichever is earlier.

"**Net Proceeds**" shall mean an amount equal to Transaction Receipts less Transaction Expenses.

"**Proportionate Share**" of any item included in Transaction Receipts, with respect to a particular transaction, shall be equal to the percentage of the entire leasehold interest, or total ownership interest in the Lessee or its constituent entity, that is being sold.

"**Sale**" shall mean any Assignment (other than to a Related Single Purpose Entity), Transfer of Control, Master Sublease, license, unsecured loan, sale (including without limitation, resale or sale among shareholders, partners or members), syndication, or other transfer of part or all of the Lessee's interest in this Agreement or the leasehold estate created hereby, or any Alternative Disposition.

"**Transaction Expenses**" shall mean all reasonable and customary expenses of the pertinent transaction, which expenses shall include, without limitation, attorneys' fees and disbursements, accountants', appraisers', consultants', and other professional fees, title insurance premiums, transfer and recording taxes, real property transfer gains taxes, mortgage recording taxes, brokerage fees, origination fees, institutional lender participations, and

prepayment penalties; provided, however, that with respect to such expenses paid to any Affiliate of the Lessee, such amounts shall be no more than would have been paid to an unrelated party in an arms-length transaction; and provided, further, that "Transaction Expenses" shall in no event exceed the sum of (x) one and one-half percent (1.5%) of Transaction Receipts and (y) transfer and recording taxes, real property transfer gains taxes and mortgage recording taxes. With respect to a Master Sublease, Transaction Expenses shall be prorated on a monthly basis, to the extent not actually so paid.

"**Transaction Receipts**" shall mean:

(1) in the case of a Sale other than a Master Sublease, the aggregate of the following amounts, computed as of the closing date of such Sale, received as, or deemed to be, consideration for the Sale: (A) all cash or cash equivalent proceeds, (B) the fair market value of any property, other than cash, cash-equivalents or debt obligations made in connection with the Sale, (C) the Present Value of any Mortgages or other debt assumed or satisfied by the purchaser at such Sale or to which the Sale is made subject, or a Proportionate Share of such Mortgage or debt in the case of a Sale affecting only a portion of the leasehold estate or a less than one hundred percent (100%) interest in the Lessee (a "**Partial Sale**"), (D) the Present Value of any purchase money note or debt obligation made in connection with such Sale and (E) any other consideration for the Sale (e.g., debt forbearance), if, as, and when received from each Sale, or at such time as the transferor is relieved of a Mortgage or other debt in the obligation;

(2) in the case of a Financing, the principal amount of such Financing (including without limitation the amount of all proceeds received by the Lessee, as well as all other amounts for which the Lessee is or continues to be liable in connection with such Financing); and

(3) in the case of a Master Sublease, (A) any upfront and other lump-sum payments paid to the Lessee under such Master Sublease, and (B) the monthly rental or other periodic payments paid to the Lessee under such Master Sublease, provided, that any such monthly rental or other periodic payments included in Transaction Receipts for purposes of this Article 15 shall not be included in Gross Revenues for purposes of Section 4.3.

Section 15.2 Proceeds Payment; Distribution.

15.2.1 *Proceeds Payment to the Port Authority.*

(a) It is the intention of this Article 15 that the Port Authority share in any appreciation in the value of the Leased Premises realized by the Lessee, a Master Sublessee or any other person with an direct or indirect interest in the Lessee or Master Sublessee (but with respect to such persons with a direct or indirect interest, only to the extent a change in Control of the Lessee or Master Sublessee is involved), upon the terms and conditions of this Article 15. Accordingly, any transaction or series of transactions by which the Lessee, or any person, seeks to evade the clear intent and purpose of this Article, however characterized, and which

is not expressly exempted from the scope of this Article 15, shall be deemed to come within the scope of a "Sale" for purposes of this Article 15.

(b) In the event of any Sale or Financing, the Lessee shall pay or cause to be paid to the Port Authority, simultaneously with the consummation of each such Sale (except as otherwise provided below in the case of a Master Sublease) or Financing, a payment (a "**Proceeds Payment**") in a total amount equal to two and one-half percent (2.5%) of (x) the Net Proceeds relating to such Sale or Financing or, if the Sale or Financing is of interests representing assets in addition to a direct or indirect interest in the Lessee (such direct or indirect interest, the "**Lessee Interest**"), then (y) the Proportionate Share of the Lessee Interest in the value of such multiple property transaction. The Lessee shall make the Proceeds Payments in the manner specified in this Article 15 regardless of whether Transaction Receipts are received in a lump sum or, if in a stream of payments, then together with interest at the Rate, and whether based on a fixed price or a formula or index and whether received directly or indirectly.

15.2.2 *Publicly Traded Equity Interests.* Notwithstanding Subsection 15.2.1 above, no Proceeds Payment shall be due to the Port Authority by reason of a Transfer of Control of the ownership of publicly traded equity interests.

15.2.3 *Distribution of Net Proceeds.* Net Proceeds shall be distributed first to the Port Authority, in the amount of the Proceeds Payment, and then to the Lessee, in the amount of the remaining balance of Net Proceeds.

Section 15.3 Closings.

The Lessee shall notify the Port Authority of the time and location of the closing of any Sale or Financing, at least ninety (90) business days prior thereto, and shall include therewith a statement of the anticipated Transaction Receipts and Transaction Expenses, and a copy of the most recent available drafts of the Sale or Financing documents, as the case may be. If there is any material change in the facts as set forth in such notice (including any change whatsoever in anticipated Net Proceeds), the Lessee shall re-notify the Port Authority, with the corrected information, no less than sixty (60) Business Days prior to the closing. The Lessee shall thereafter supply the Port Authority with any documents or information requested by the Port Authority in order for the Port Authority to verify the calculation of Net Proceeds. Representatives of the Port Authority may attend such closing. Each Proceeds Payment shall be paid to the Port Authority at such closing by certified check or by wire transfer, and shall be accompanied by a statement, by a responsible officer of the Lessee, certifying the amounts of the Transaction Receipts, the Transaction Expenses and the Proceeds Payment. In the event the Proceeds Payment is to be paid in a stream of payments, then such payments shall be paid together with interest at the Rate.

Section 15.4 Annual Certificate.

Annually on or before each February 1 during the term of this Agreement, the Lessee

shall deliver to the Port Authority a certificate, subscribed by the secretary or a managing partner or manager of the Lessee, as the case may be, expressly referring to this Section 15.4, and setting forth the names, addresses and beneficial and record interests of all holders of nominal or beneficial interests in the Lessee and its direct and indirect constituent entities as of the preceding January; provided, however, that the foregoing shall not require the Lessee to identify any direct or indirect owners of interests in the Lessee of less than five percent (5%) or of interests that are publicly-traded.

Section 15.5 Survival of Liability for Proceeds Payments.

The Lessee's liability for Proceeds Payments to the Port Authority attributed to any one Sale or Financing shall survive until the Lessee shall have delivered to the Port Authority the certified statement provided in Section 15.3 hereof and shall have paid to the Port Authority the Proceeds Payment (including any additional Proceeds Payment [and any late charge or interest] that might thereafter be determined to be due following any audit as provided in Section 21.5 hereof), if any, indicated by such statement: the Port Authority shall thereupon release the Assignee from liability for any additional Proceeds Payment with respect to such specific Sale or Financing.

Section 15.6 Validity of Transactions.

Nothing contained in this Article 15 shall be construed to limit the rights of the Port Authority under the applicable provisions of Article 14, entitled "Assignment, Transfer of Control, Mortgage and Subletting", or Article 14A, entitled "Permitted Mortgages". Any Sale or Financing transacted in violation of such Articles or this Article shall be null and void.

Section 15.7 Proceeds Payments on Master Subleases.

15.7.1 *Payments.* In the event of any Master Sublease, the Lessee shall pay the Proceeds Payments applicable to such transaction by paying to the Port Authority an amount equal to two and one-half percent (2.5%) of the Net Proceeds, as and when the Transaction Receipts are received by the Lessee (for example, in installments or in a lump sum).

15.7.2 *Transactions of Master Subtenants.* In the event of a transaction by, or involving an interest in, a Master Subtenant, which transaction would, if the Master Subtenant were the Lessee, create the requirement for the payment of a Proceeds Payment, such a Proceeds Payment shall be payable by the Lessee to the Port Authority, in an amount calculated to produce a two and one-half percent (2.5%) share of the Net Proceeds of the transaction according to the principles set forth in this Article for calculating the Proceeds Payments due in connection with Lessee transactions.

ARTICLE 16

RIGHTS OF ENTRY

Section 16.1 Rights of Entry Reserved.

The Port Authority, by its officers, employees, agents, representatives and contractors, shall have the right at all reasonable times to enter upon the Leased Premises for the purpose of inspecting the same (including without limitation performing periodic evaluations of, among other things, the maintenance program, condition and code conformance of electrical, mechanical, structural and fire and life safety systems), for observing the performance by the Lessee of its obligations under this Agreement including without limitation the Lessee's obligations to comply with the GWBBS Manual and (subject to Section 7.2.2) the Requirements, and for the doing of any act or thing which the Port Authority may pursuant to the express provisions of this Agreement or pursuant to applicable law (e.g. as owner and/or Lessor of the Leased Premises) be obligated or have the right to do under this Agreement or otherwise. The Lessee upon request from the Port Authority shall demonstrate or operate any equipment, appliances, fixtures or machinery used in connection with its operations hereunder. In exercising its rights under this paragraph, the Port Authority will not unreasonably interfere with the Lessee's operations in the Leased Premises, and except in case of emergency the Port Authority shall give the Lessee reasonable advance oral notice prior to exercising its rights hereunder.

Section 16.2 Rights of Entry Upon Expiration of Letting.

At any time and from time to time during normal business hours within the three (3) year period preceding the then scheduled expiration of the Term, the Port Authority, by its agents and employees, whether or not accompanied by prospective lessees, occupiers or users of the Leased Premises, shall have the right to enter thereon for the purpose of exhibiting and viewing all parts of the same. In exercising its rights under this paragraph, the Port Authority will not unreasonably interfere with the Lessee's operations in the Leased Premises, and except in case of emergency the Port Authority shall give the Lessee reasonable advance oral notice prior to exercising its rights hereunder.

Section 16.3 No Eviction; No Damages.

The exercise of any or all of the foregoing rights by the Port Authority or others shall not be or be construed to be an eviction of the Lessee nor be made the grounds for any abatement of Rental or any claim or demand for damages, consequential or otherwise.

ARTICLE 17

EVENTS OF DEFAULT AND TERMINATION

Section 17.1 Events of Default.

If any one or more of the following events (each, an "**Event of Default**") shall occur, that is to say:

(1) the Lessee shall take the benefit of any present or future insolvency statute, or make a general assignment for the benefit of creditors, or file a voluntary petition in bankruptcy or a petition or answer seeking an arrangement or its reorganization or the readjustment of its indebtedness under the federal bankruptcy laws or under any other law or statute of the United States or of any State thereof, or consent to the appointment of a receiver, trustee or liquidator of all or substantially all its property; or

(2) a petition under any part of the federal bankruptcy laws or an action under any present or future insolvency law or statute shall be filed against the Lessee and shall not be dismissed or vacated within sixty (60) days after the filing thereof; or

(3) by order or decree of a court the Lessee shall be adjudged bankrupt or an order shall be made approving a petition filed by any of the creditors or stockholders of the Lessee seeking its reorganization or the readjustment of its indebtedness under the federal bankruptcy laws or under any law or statute of the United States or of any State thereof; or

(4) by or pursuant to any order or decree of any court or governmental board, agency or officer, a receiver, trustee or liquidator shall take possession or control of all or substantially all the property of the Lessee, or any execution or attachment shall be issued against the Lessee or any of its property whereby possession of the Leased Premises shall be taken by someone other than the Lessee, and any such possession or control shall continue in effect for a period of fifteen (15) days; or

(5) the letting hereunder of a part or all of the interest or estate of the Lessee under this Agreement shall be sold, transferred, assigned, subleased, mortgaged, pledged, hypothecated, encumbered or conveyed or shall pass to or devolve upon (by operation of law, by statute, or otherwise) any other Person, or the Lessee shall merge or consolidate with or into any other Person, except as permitted under Articles 14 and 14A of this Agreement; or

(6) if the Lessee is a partnership or limited liability company, the said partnership or limited liability company shall be dissolved as the result of any act or omission of its partners, members or other principals, or any of them, or by operation of law or the order or decree of any court having jurisdiction, or for any other reason whatsoever, and following such dissolution the Lessee shall not be reconstituted or its business continued; or if any of events described in subparagraphs (1), (2,), (3,), or (4) of this section shall occur to or with respect to any of the entities which are general partners or managing members of the Lessee; or

(7) any lien, other than a Mortgage, shall be filed against the Leased Premises because of any act or omission of the Lessee and is not removed, discharged, or bonded within sixty (60) days after the Lessee has received notice thereof; or

(8) substantially all of the Leased Premises are (A) voluntarily abandoned, (B) voluntarily deserted or (C) voluntarily vacated or operations therein are voluntarily

discontinued, and the Lessee fails to retake possession of the Leased Premises and resume operations therein within thirty (30) days after receipt of notice from the Port Authority so to do, unless (i) the Lessee is required to vacate the Leased Premises or discontinue operations in order to make any repairs or alterations which the Lessee is required or authorized to make pursuant to the provisions of this Agreement, and the Lessee diligently proceeds to make such repairs or alterations and thereafter promptly resumes operations or (ii) Lessee is continuing to make the repairs and provide the services needed to keep the Leased Premises in good condition and repair while is using commercially reasonable efforts to find Subtenants for any vacant rentable space and/or to regain possession of any such space; or

(9) the Lessee shall fail duly and punctually to pay any Rental to the Port Authority within fifteen (15) Business Days after receipt of notice of such default from the Port Authority; or

(10) the Lessee shall fail to commence the Construction Work within sixty (60) days after the Lease Commencement Date, or shall fail to expeditiously and diligently proceed with the Construction Work so as to Substantially Complete the Reserved Premises Redevelopment Work and all Leased Premises Redevelopment Work relating to the Common Areas, within three (3) years after the Lease Commencement Date, and the remainder of the Project within four (4) years after the Lease Commencement Date, except where Lessee's failure is due to Unavoidable Delays and Lessee expeditiously commences, recommences or continues the Construction Work thereafter; or

(11) the Lessee shall fail to be a Single Purpose Entity, and such default shall continue for a period of thirty (30) Business Days after notice; or

(12) the Lessee shall fail to keep, perform and observe any other promise, covenant or agreement (including without limitation its obligation as provided in Section 3.2 and Section 9.1 hereof to use, operate, maintain and repair the Leased Premises in a First Class manner) set forth in this Agreement on its part to be kept, performed or observed within thirty (30) days after receipt of notice of default of such failure from the Port Authority (except where fulfillment of its obligation requires activity over a period of time, and the Lessee shall have commenced to perform whatever may be required for fulfillment within thirty (30) days after receipt of such notice and diligently continues such performance except for causes beyond its control);

(13) if this Agreement shall require a guarantor of one or more of the Lessee's obligations under this Agreement, and any event described in subparagraphs (1), (2), (3), or (4) of this section shall occur to or with respect to the guarantor (whether or not such event shall have also occurred to, or with respect to, the Lessee) unless at the time of the occurrence of such event the guaranty has expired or the Port Authority is provided with a satisfactory substitute guaranty from a creditworthy entity;

(14) a material breach occurring under Section 1 of The Port Authority of NY & NJ Certification George Washington Bridge Bus Station Development Venture

LLC (the "Certification") being delivered to the Port Authority by the Lessee contemporaneously with the execution and delivery of this Lease that remains uncured for more than thirty (30) days after receipt of notice thereof from the Port Authority, which cure may be effected by reversing, terminating, relinquishing, or the like, as applicable, the subject conduct, or by the Lessee and/or one or more of its Key Persons (as defined in the Certification) initiating on or prior to the expiration of said thirty (30) day period measures to remove the Key Person, consultant or employee of Lessee responsible for the subject conduct from any continuing role with the Lessee and/or the Project (by purchase or redemption of beneficial interests, termination of contract, or other applicable means) and thereafter diligently, and with continuity, prosecuting said removal to completion and providing verifiable information and/or documentation demonstrating the completion of such removal;

(15) if the Lessee shall fail to timely deliver a PPB as required in Section 5.1.3 hereof, and such default shall continue for a period of thirty (30) days after receipt of notice from the Port Authority;

then upon the occurrence of any such Event of Default or at any time thereafter during the continuance thereof, the Port Authority may upon thirty (30) days notice terminate the letting under this Agreement, effective upon the date specified in such notice.

17.1.1 *Joint Several Acts.* If more than one legal entity constitutes the Lessee hereunder, any event of default shall be deemed to have occurred with respect to the Lessee, if it has occurred with respect to one of the legal entities constituting the Lessee whether or not such event of default has occurred with respect to all of the legal entities constituting the Lessee, and all acts or omissions of any one of such legal entities shall be deemed to be the acts or omissions of all such legal entities under this Agreement and all such legal entities shall be severally responsible therefor, including not limited the obligations of indemnification and repair.

Section 17.2 Acceptance of Rental.

No acceptance by the Port Authority of Rental in whole or in part for any period or periods after an Event of Default has occurred and while such Event of Default is continuing shall be deemed to be a waiver of the right on the part of the Port Authority to terminate the letting hereunder by reason of such Event of Default.

Section 17.3 Non-Exclusive Remedy.

The right to terminate the letting under this Agreement under the circumstances described in this Article shall be in addition to any other right of termination provided for in this Agreement and in addition to any other rights and remedies (other than termination) that the Port Authority would have at law or in equity consequent upon any breach of this Agreement by the Lessee, and the exercise by the Port Authority of any right of termination shall be without prejudice to any other such rights and remedies.

Section 17.4 Limitation on Counterclaims.

The Lessee shall not interpose any counterclaim in any summary proceeding or action for non-payment of Rental which may be brought by the Port Authority unless such counterclaim is in the nature of a mandatory counterclaim (i.e., the claim of the Lessee would be waived if not brought as such a counterclaim).

Section 17.5 Right of Re-Entry.

The Port Authority shall, as an additional remedy upon giving notice of termination of this Agreement and the letting hereunder, have the right to reenter the Leased Premises and every part thereof upon the effective date of termination without further notice of any kind, and may regain and resume possession either with or without the institution of summary or any other legal proceedings or otherwise. Such reentry, or regaining or resumption of possession, however, shall not in any manner affect, alter or diminish any of the obligations of the Lessee under this Agreement, and shall in no event constitute an acceptance of surrender.

Section 17.6 Waiver of Redemption.

The Lessee hereby waives any and all rights to recover or regain possession of the Leased Premises and any and all rights of redemption granted by or under any present or future law, in the event it is evicted or dispossessed for any cause or in the event the Port Authority obtains possession of the Leased Premises in any lawful manner.

Section 17.7 Survival of Obligations of Lessee.

In the event that the letting under this Agreement is terminated in accordance with the provisions of this Article, or in the event the Port Authority has re-entered, regained or resumed possession of the Leased Premises in accordance with this Article, all of the obligations of the Lessee under this Agreement shall survive such termination, re-entry or regaining or resumption of possession and shall remain in full force and effect for the full term of this Agreement, and damages shall become due and payable to the Port Authority as set forth below, subject to the provisions of Section 17.11 and Section 17.8 as if no termination had taken place. Notwithstanding anything to the contrary contained herein, all of the obligations of the Lessee under this Lease with respect to Environmental Damages and Environmental Requirements shall survive the expiration or termination of this Agreement.

Section 17.8 Damages.

Subject to the provisions of Section 17.11 hereof, immediately upon any termination and/or re-entry, regaining or resumption of possession in accordance with this Article, there shall become due and payable by the Lessee to the Port Authority, without notice or demand, as damages (which damages are not intended to be exclusive) the sum of the following:

(1) the amount of all then accrued and unpaid monetary obligations of the Lessee to the Port Authority under this Agreement as of the effective date of termination, re-entry or regaining or resumption of possession and the total cost to and expenses of the Port Authority for fulfilling all other obligations of the Lessee which have accrued or matured or which would have accrued or matured during the balance of the term or on the expiration date originally fixed or within a stated time after expiration or termination; and

(2) an amount equal to the cost to and the expenses of the Port Authority in connection with the termination, re-entry or regaining or resumption of possession, including without limitation, legal expenses and costs, and brokerage fees and commissions in connection with any reletting of the Leased Premises; and the Port Authority's costs and expenses for putting the Leased Premises in order, including without limitation cleaning, decorating and restoring (on failure of the Lessee to restore), and the Port Authority's costs and expenses for the care and maintenance of the Leased Premises, and the furnishing and equipping thereof during any period of vacancy; and

(3) in the event that on or before the effective date of termination, re-entry or regaining or resumption of possession the Lessee has failed to perform and complete the Project, an amount equal to the cost to and the expenses of the Port Authority in connection with the performance of such obligation, less the as-yet unadvanced balance of the PA-Cost Work Fixed Price, regardless of whether or not the termination, re-entry or regaining or resumption of possession is predicated upon the Lessee's failure to perform and complete the Project. In any such event the Port Authority may itself perform or contract for the performance or completion thereof or may retain a third party to act as agent or representative in accomplishing the same and the costs and expenses of the agent or representative in addition to those of the Port Authority shall likewise be included in the amount of damage under this provision; and

(4) an amount equal to the then Present Value of all Rental payable by the Lessee pursuant to this Agreement for the entire term following the effective date of termination, re-entry or regaining or resumption of possession as originally fixed in this Agreement, including any Rental attributable to Impositions payable by any Subtenants, regardless whether such payments were actually paid to and received by Lessee.

Section 17.9 Collection of Damages; Credit.

Subject to the provisions of Section 17.11 hereof, the Port Authority may at any time bring an action to recover all the damages set forth in Section 17.8 above not previously recovered in separate actions, or it may bring separate actions to recover the items of damages set forth in subparagraphs (1), (2) and (3) of Section 17.8 and separate actions periodically to recover from time to time only such portions of the damages set forth in subparagraph (4) of Section 17.8 as would have accrued as rental up to the time of the action if there had been no termination, re-entry, regaining or resumption of possession. In any such action the Lessee shall be allowed a credit against its survived damages obligations equal to the amounts which the Port Authority shall have actually received from any subtenant, licensee, permittee or other occupier of the Leased Premises, or any part thereof, during the period for which damages are sought, and, if recovery is sought for a period subsequent to the date of suit, a credit equal to the then Present Value of the market rental value of the Leased Premises during such period, provided, however, that the credit provided for in this sentence shall not exceed the amount due and payable by the Lessee to the Port Authority. If at the time of such action the Port Authority have relet the Leased Premises, the rental for the Leased Premises obtained through such reletting shall be deemed to be the market rental value of the Leased Premises or (if less than the entire Leased Premises have been relet) be deemed to be the basis for computing such market rental value.

Section 17.10 Reletting.

17.10.1 *Right to Relet.* The Port Authority, upon any termination or re-entry, regaining or resumption of possession pursuant to this Article may occupy or relet the Leased Premises, and shall have the right to permit any Person to enter upon the Leased Premises and use the same. The Port Authority may grant free rental or other concessions and such reletting may be of part only of the Leased Premises or of the Leased Premises or a part thereof together with other space, and for a period of time the same as or different from the balance of the term hereunder remaining, and on terms and conditions and for purposes the same as or different from those set forth in this Agreement. The Port Authority, upon such termination or re-entry, regaining or resumption of possession pursuant to this Article, shall also have the right to repair or make structural or other changes in the Leased Premises, including changes which alter the character of the Leased Premises and the suitability thereof for the purposes of the Lessee under this Agreement, without affecting, altering or diminishing the obligations of the Lessee hereunder.

17.10.2 *Credit.* In the event either of any actual reletting or of any actual use and occupancy by the Port Authority (the mere right of the Port Authority to use and occupy not being sufficient however) there shall be credited to the account of the Lessee against its survived obligations hereunder any net amount remaining after deducting from the amount actually received from any tenant, licensee, permittee or other occupier as the rental or fee in connection with the use of the Leased Premises or portion thereof during the balance of the letting as the same is originally stated in this Agreement, or from the market value of the

occupancy of such portion of the Leased Premises as the Port Authority may during such period actually use and occupy, all expenses, costs and disbursements incurred or paid by the Port Authority in connection therewith. No such reletting shall be or be construed to be an acceptance of a surrender.

Section 17.11 Limitation on Liability of Lessee.

Notwithstanding any provision to the contrary, the liability of the Lessee under or in respect of this Agreement shall be limited to the interest of the Lessee in, to and under this Agreement and the letting created hereby, its interest in the Leased Premises, its interest in all fixtures, equipment and personal property used in connection with the operation and maintenance of the Leased Premises, its interest in and to all subleases and rents payable thereunder and any other rights or interests of the Lessee relating to the Leased Premises or the Buildings, and in no event shall the Port Authority or any Person claiming by or under them, or either of them, seek or attempt to seek recourse against any other assets of the Lessee, or against any partner, member, officer, manager, director, shareholder or other principal or agent of the Lessee, for satisfaction of any liability of the Lessee under or in respect of this Agreement, other than (i) an action against the Lessee to remove the Lessee from possession during the continuance of an Event of Default, or (ii) an action against Lessee to collect a judgment or other judicial process or arbitration award requiring payment of money by the Lessee from any Gross Revenues, insurance proceeds, and condemnation awards thereafter payable to the Lessee with respect to the Leased Premises, and, if the Lessee is in breach or default with respect to its obligations under this Agreement, the Port Authority shall look solely to the Lessee's estate and interest in the Leased Premises (including, without limitation, any Gross Revenues, insurance proceeds, and condemnation awards thereafter payable to the Lessee with respect to the Leased Premises) and the Port Authority's sole remedy in the event of any such breach or default by the Lessee hereunder shall be to terminate the Lessee's estate and interest in the Leased Premises and to collect a judgment or other judicial process or arbitration award requiring payment of money by the Lessee from any Gross Revenues, insurance proceeds, and condemnation awards thereafter payable to the Lessee with respect to the Leased Premises, subject nevertheless to the rights of a Mortgagee to cure such breach or default in accordance with the applicable provisions of this Agreement. Nothing contained in this section shall be construed as relieving any Person from criminal or tort liability.

ARTICLE 18

SURRENDER

Section 18.1 Surrender of Leased Premises.

The Lessee covenants and agrees to yield and deliver possession of the Leased Premises to the Port Authority peaceably and promptly on the date of cessation of the Term, whether such cessation be by termination, expiration or otherwise, promptly and in the

condition provided in Section 9.1 hereof (Lessee's Duty of Maintenance and Repair); and subject to the provisions of Subsection 14A.5.5 hereof (Recognized Mortgagee's Right to New Lease) and Subsection 14.9.7 hereof (Subtenant Nondisturbance), all of the Leased Premises shall thereupon be free and clear of all liens, encumbrances, security interests and rights of any Subtenants (to be evidenced by a search made by a title company acceptable to the Port Authority and to be furnished by the Lessee at its sole cost and expense) and free from any pending matters that might develop into additional rent unless the Lessee shall secure payment and discharge thereof in a manner satisfactory to the Port Authority. To the extent permitted by law, the Lessee hereby waives notice now or hereafter required by law with respect to vacating the Leased Premises on any such termination date.

Section 18.2 Failure to Comply with Section 9.1.

In the event that the Leased Premises are not in the condition called for by Section 9.1 upon their surrender pursuant to this Article 18, the Port Authority shall have the right to perform any work required to place the Leased Premises in such condition, and (subject to Section 17.11 hereof) the Lessee shall reimburse the Port Authority for one hundred thirty percent (130%) of the Port Authority's actual out-of-pocket hard and soft costs of performing such work.

Section 18.3 Acceptance of Surrender.

No agreement of surrender or to accept a surrender of the Leased Premises shall be valid unless and until the same shall have been reduced to writing and signed by the duly authorized representatives of the Port Authority and the Lessee and approved by the Senior Recognized Mortgagee. Except as expressly provided in this Section, neither the doing of, nor any omission to do, any act or thing by any of the officers, agents or employees of the Port Authority shall be deemed an acceptance of a surrender of the Leased Premises or the letting hereunder.

ARTICLE 19

CONDEMNATION

Section 19.1 Definitions.

"**Temporary Taking**" shall mean the acquisition of a Temporary Interest in the Leased Premises by condemnation or the exercise of the power of eminent domain or agreement in lieu thereof approved by the Port Authority, the Lessee and all Recognized Mortgagees.

"**Temporary Interest in the Leased Premises**" shall mean an interest in the Leased Premises entitling the owner of such interest to the possession of the Leased Premises or a portion thereof (whether or not such interest includes or is co-extensive with an interest of the Lessee therein under this Agreement) for an indefinite term or for a term terminable at will or

at sufferance or for a term measured by a war or an emergency or other contingency or for a fixed term that shall expire prior to the scheduled expiration of the Term (including any Extension Period as to which the Lessee's extension option hereunder shall be exercised).

"**Permanent Taking**" shall mean the acquisition of a Permanent Interest in the Leased Premises by condemnation or the exercise of the power of eminent domain, or agreement in lieu thereof approved by the Port Authority, the Lessee and all Recognized Mortgagees.

"**Permanent Interest in the Leased Premises**" shall mean an interest in the Leased Premises or a portion thereof entitling the owner of such interest to possession of the Leased Premises for a period that shall extend beyond the scheduled expiration of the Term (including any Expiration Period as to which the Lessee's extension option hereunder shall be exercised).

"**All or Substantially All of the Leased Premises**" shall mean such part of the Leased Premises as, when so taken, would leave remaining a part of the Leased Premises which, due either to the area so taken or the location of the part so taken in relation to the part not so taken, would, taking into account economic considerations, the length of the remaining term of the letting hereunder, and zoning laws and building regulations then existing or prevailing and applicable to the Leased Premises, make it unfeasible to restore or rebuild the Leased Premises or to continue to operate the Leased Premises as contemplated by this Agreement.

Section 19.2 Permanent Taking of All or Any Part of the Leased Premises.

19.2.1 *All or Substantially All of the Leased Premises.* In the event of a Permanent Taking of All or Substantially All of the Leased Premises, this Agreement and the letting hereunder shall terminate and expire on the earlier of (i) the date the Lessee is deprived of physical possession of the Leased Premises or the portion so taken and (ii) the date of such taking, and all Rental due under this Agreement shall be apportioned and paid by the Lessee to the date of such termination.

19.2.2 *Less Than All or Substantially All of the Leased Premises.* In the event of a Permanent Taking of less than All or Substantially All of the Leased Premises, this Agreement and the term of the letting hereunder shall be deemed terminated as to the part so taken as of the earlier of (i) the date the Lessee is deprived of physical possession of such part and (ii) the date of such taking, and with respect to such taken portion all Rental due under this Agreement shall be paid by the Lessee to the date of such termination. With respect to the part not taken, the letting hereunder shall continue in full force and effect (subject to the provisions of Subsection 19.2.3 hereof) and the Lessee shall continue to pay all Rental attributable to such untaken portion provided to be paid by the Lessee under this Agreement without any reduction or abatement: provided, however, that the fixed Basic Rent, shall be abated proportionally based on the ratio of the value of the portion of the Leased Premises taken to the value of the entire Leased Premises prior to such taking.

19.2.3 *Damage.* If any portion of the Leased Premises shall be damaged or partially destroyed by any Permanent Taking of less than All or Substantially All of the Leased Premises, the Lessee shall proceed with due diligence to perform any necessary demolition and to repair, replace or rebuild at the Lessee's own cost and expense any remaining part of the Leased Premises so as to constitute such remaining part a complete unit of such usefulness, design and construction as to enable the Lessee to carry on therein the activities permitted under this Agreement, unless the parties shall otherwise agree in advance. All work necessary to repair, replace and rebuild the said portions of the Leased Premises shall be performed in full compliance with the provisions of this Agreement, including but not limited to the provisions of Article 5 or 6 hereof, as appropriate.

Section 19.3 Temporary Taking of All or Any Part of the Leased Premises.

In the event of a Temporary Taking of the Leased Premises or any part thereof, this Agreement shall nevertheless continue in full force and effect except to the extent the Lessee may be prevented from continuing its operations pursuant to the terms of the order of the condemning authority, and the Lessee shall continue to pay all Rental, provided to be paid by the Lessee under this Agreement without any reduction or abatement, but the Lessee shall have the right to assert a claim in such proceedings to protect its interests and to determine the value of the interest so taken. If such Temporary Taking shall damage any portion of the Leased Premises, then, following the expiration of such taking, and provided that the term of this Lease has not theretofore expired, the Lessee at its cost and expense shall diligently repair any such damage and shall put the same as nearly as possible in the condition thereof immediately prior to such taking.

Section 19.4 Determination and Distribution of Award.

19.4.1 *Appearance at Proceedings.* In the event of a Permanent Taking of all or any part of the Leased Premises, the Port Authority, the Lessee and all Recognized Mortgagees, if any, shall have the right to appear in the condemnation or eminent domain proceedings and to participate in any and all hearings, trials and appeals therein, for the purpose of protecting their interests hereunder. In any such proceeding to determine the value of the premises so taken, the Port Authority and the Lessee shall together make one claim for their combined interest in the Leased Premises and the fixtures, equipment, and other property constructed, installed or situated therein (to the extent compensable), and the net award received shall be paid as hereinafter provided in this Section.

19.4.2 *Permanent Takings.*

(a) Upon a Permanent Taking of All or Substantially All of the Leased Premises, the award, awards or damages in respect thereof, net of costs incurred in obtaining the same, shall be divided between the Lessee and the Port Authority and distributed as follows and in the following order of priority:

(i) first, to the Port Authority an amount equal to all unpaid Rental accrued through the date of taking;

(ii) second, to the Recognized Mortgagees, in the order of priority of their respective Mortgages, an amount equal to the remaining unpaid principal amount, accrued interest, and all other sums due under the Recognized Mortgages as of the effective date of such taking;

(iii) third, to the Port Authority, an amount equal to the value of the Port Authority's fee interest in the Leased Premises (and the Land to the extent taken), as burdened and benefited by this Agreement; and

(iv) fourth, the balance of such award to the Lessee.

(b) Nothing contained herein shall, or shall be deemed to, prevent the Lessee or any Subtenant from making a possible claim against the condemning party for an award for trade fixtures owned and installed by the Lessee or any Subtenant, and/or for moving expenses, if (i) such claim is then allowed by law and (ii) such award is made separately from the net award described in paragraph (a) of this Subsection 19.4.2, and will not reduce the amount thereof but this provision shall not be deemed a representation by the Port Authority of the validity or legality of any such claim.

(c) Upon a Permanent Taking of less than All or Substantially All of the Leased Premises, the award shall be made available to the Lessee for the repair or rebuilding of the Leased Premises and such portion of the award remaining after providing for the costs of such repair or rebuilding and the costs of obtaining the same shall be distributed in accordance with paragraph (a) of this Section 19.4.2 provided, however, that for purposes of applying such paragraph (a) the sums described therein shall each be determined proportionally based on the ratio of the value at the time of such taking of the portion of the Leased Premises taken to the value at the time of such taking of the entire Leased Premises. If the award is insufficient for the purpose of paying for the repair or rebuilding of the Leased Premises, the Lessee shall nevertheless be required to make or cause to be made the repair or rebuilding of the Leased Premises and pay or cause to be paid any additional sums required therefor.

19.4.3 *Temporary Taking.* Upon a Temporary Taking of all or any portion of the Leased Premises, and subject to the Lessee's repair obligations as set forth in Subsection 19.3 hereof, the Lessee shall be entitled to receive the full amount of the net award except for any portion of the award attributable to any period of the taking subsequent to the term of the Expiration Date, which portion shall be paid to and retained solely by the Port Authority.

19.4.4 *Reserved Premises.* Nothing contained herein shall be deemed to affect in any way any claim the Port Authority may have for the value of any portion of the Reserved Premises (including the Land) that may be affected by any taking described in this Article or shall serve to give the Lessee any interest in any such claim or to impose any obligation on

the Lessee with respect to the Reserved Premises (including the Land), except as agreed between the Parties.

19.4.5 *Disagreements.* In the event of a disagreement between the parties hereto (i) as to whether or not any taking is of All or Substantially All of the Leased Premises or (ii) as to the portion of any award or payment for a Temporary Taking which represents compensation for the expense of a restoration, after repossession of the Leased Premises by the Lessee, either party hereto may within 30 days after disagreement serve written notice on the other setting forth that the matter in dispute shall be disposed of by arbitration in accordance with the then existing rules of the American Arbitration Association or of any successor association. Each party shall select an architect or engineer to act as arbitrator in the dispute under clause (i) of this paragraph, and an accountant or auditor in the dispute under clause (ii) of this paragraph, the two arbitrators thus selected shall select a third and if neither they nor the parties can agree on the third, the remaining engineer or architect shall be selected by the presiding justice of the Appellate Division, First Department or failing that by an officer of the American Arbitration Association. The arbitrators shall be required to render a written decision and such decision shall be binding on the Port Authority and the Lessee and both parties agree to comply therewith. Costs and expenses of such arbitration shall be borne equally by the Port Authority and the Lessee. In any such arbitration as to whether or not a taking is of a material part of the Leased Premises the question to be submitted to the arbitrators for decisions shall be as follows:

(1) "Can the Leased Premises be adequately restored, repaired or reconstructed so that on an economic and operational basis the Leased Premises will constitute a complete architectural unit of such usefulness, design and construction so as to enable it to be used for the purposes set forth in the Section of this Agreement entitled "Permitted Use."

In any such arbitration as to what portion of the award or payment for a temporary taking of the Leased Premises represents compensation for the expense of restoration after repossession by the Lessee, the question to be submitted to the arbitrators for decision shall be as follows:

(2) "What portion of the award given as compensation for the taking of a temporary interest in the Leased Premises represents compensation for the expense of restoring the Leased Premises after reversion of possession of the Leased Premises to the Lessee?

Section 19.5 <u>Governmental Compliance.</u>

In the event that all or any portion of the Leased Premises is required by the Port Authority to comply with any present or future Requirement, the Port Authority shall give the Lessee notice that all or any such portion of the Leased Premises is so required and the Lessee shall deliver all or any such portion of the Leased Premises so required on the date specified in such notice and if the Lessee does not so deliver, the Port Authority may take the same.

The provisions of this Article entitled "Condemnation" shall apply to any such delivery by the Lessee or taking by the Port Authority, and no such taking or delivery shall be or be construed to be an eviction of the Lessee or a breach of this Agreement, or shall be made the basis of any claim by the Lessee against the Port Authority for damages, consequential or otherwise, other than pursuant to Section 19.4 hereof. In the event that the Lessee has received a notice hereunder it shall deliver all or any such portion of the Leased Premises so required in the same condition as that required hereunder for the delivery of the Leased Premises on the cessation of the letting. In the event of the taking or delivery of all the Leased Premises, this Agreement and the letting hereunder shall on the day of such taking or delivery cease and expire as if that day were the date, originally stated herein for the expiration of this Agreement; and, in the event of the taking or delivery of any portion of the Leased Premises, then, from and after such taking or delivery, such portion of the Leased Premises shall cease to be a part of the Leased Premises hereunder.

ARTICLE 20

LESSEE'S REPRESENTATIONS

Section 20.1 Lessee's Due Formation and Ownership Structure.

The Lessee hereby represents that (x) it is a limited liability company, duly organized and existing under the laws of the State of Delaware and (y) the names of its members and their ownership percentages, as of the Lease Execution Date, are correctly and completely shown on the diagram attached hereto as "**Exhibit I**" ("Lessee Organizational Chart") and hereby made a part hereof.

Section 20.2 Certain Certifications.

20.2.1 *Indictments, Etc.* The Lessee hereby certifies as to the truth and accuracy of the following statements as of the Lease Commencement Date:

(a) neither the Lessee, nor any of its officers, directors, general partners, members, management employees or significant equity participants has (x) been indicted for, or convicted of, a crime in any jurisdiction, or been the target of a grand jury investigation therefor, or (y) been suspended or otherwise disqualified from entering into contracts with any governmental agency; and

(b) neither the Lessee, nor any Affiliate, has (x) had a development agreement between itself and the Port Authority terminated by the Port Authority due to its willful breach or default, or (y) had a contract terminated by a governmental agency of the States of New York or New Jersey for willful breach or default, or (z) had a contract terminated for any cause relating to an indictment or conviction of itself or its principals.

Section 20.3 Brokerage.

Lessee and the Port Authority each represent and warrant that no broker has been involved in the negotiation of this Agreement and that it has dealt with no broker who is or may be entitled to be paid a commission in connection therewith. The Lessee shall indemnify and save harmless the Port Authority from any claims for commission or brokerage made by any and all Persons whatsoever for services rendered to the Lessee in connection with the negotiation and execution of this Agreement. The Port Authority shall indemnify and save harmless the Lessee from any claims for commission or brokerage made by any and all Persons whatsoever for services rendered to the Port Authority in connection with the negotiation and execution of this Agreement.

ARTICLE 21

PAYMENTS

Section 21.1 Rental Payments.

Except as otherwise specifically provided herein, all Rental shall be paid without notice or demand.

Section 21.2 Address for Payments.

After the Lease Commencement Date, all payments required of the Lessee by this Agreement shall be mailed to:

The Port Authority Of New York & New Jersey
P.O. Box 95000 - 1517
Philadelphia, PA 19195 - 1517

or to such other address as may be substituted therefor from time to time by written notice from the Port Authority to the Lessee.

Section 21.3 Nature of Payments.

No payment by the Lessee or receipt by the Port Authority of a lesser Rental amount than that which is due and payable under the provisions of this Agreement at the time of such payment shall be deemed to be other than a payment on account of the earliest Rental then due, nor shall any endorsement or statement on any check or in any letter accompanying any check or payment be deemed an accord and satisfaction, and the Port Authority may accept such check or payment without prejudicing in any way its right to recover the balance of such Rental or to pursue any other remedy provided in this Agreement or by law.

Section 21.4 Late Charges.

21.4.1 *Late Charge Amount.* If the Lessee shall fail to pay any Rental when due to the Port Authority, or if any such amount is found to be due as the result of an audit, or if the

Port Authority shall fail to pay any amount payable hereunder when payable by the Port Authority to the Lessee, then, in such event, the non-defaulting party may impose (by statement, bill or otherwise) a late charge with respect to each such unpaid amount for each late charge period (hereinbelow described) during the entirety of which such amount remains unpaid, each such late charge not to exceed an amount equal to eight-tenths (.08%) of one percent of such unpaid amount for each late charge period.

21.4.2 *Late Charge Periods.* There shall be twenty-four (24) late charge periods on a calendar year basis; each late charge period shall be for a period of at least fifteen (15) calendar days except one late charge period each calendar year may be for a period of less than fifteen (15) (but not less than thirteen (13)) calendar days. Without limiting the generality of the foregoing, late charge periods in the case of amounts found to have been owing to the Port Authority as the result of Port Authority audit findings shall consist of each late charge period following the date the unpaid amount should have been paid under this Agreement.

21.4.3 *Payable on Demand; No Waiver.* Each late charge shall be payable immediately upon demand made at any time therefor. No acceptance by either Party of payment of any unpaid amount or of any unpaid late charge amount shall be deemed a waiver of the right of such Party to payment of any late charge or late charges payable under the provisions of this Section with respect to such unpaid amount. Each late charge payable to the Port Authority shall be recoverable in the same manner and with like remedies as if it were originally a part of the Rental as set forth in the Article 4 of this Agreement. Nothing in this Section is intended to, or shall be deemed to, affect, alter, modify or diminish in any way (i) any rights of the Parties under this Agreement, including without limitation the Port Authority's rights set forth in the Article 17 of this Agreement entitled "Events of Default and Termination" or (ii) any obligations of the Parties under this Agreement. In the event that any late charge imposed pursuant to this Section shall exceed a legal maximum applicable to such late charge, then, in such event, each such late charge payable under this Agreement shall be payable instead at such legal maximum.

Section 21.5 Right To Audit; Audit Findings.

21.5.1 *Right to Audit.* The Lessee shall permit and/or cause to be permitted in ordinary business hours during the Term and for one year thereafter, the examination and audit by the officers, employees and representatives of the Port Authority of all the records and books of account of the Lessee that the Port Authority in its sole discretion believes may be relevant in connection with the calculation of amounts payable hereunder within ten (10) days following any request by the Port Authority, to examine and audit any such records and books of account, provided that any such request shall be made within six (6) years after the date of the relevant payment obligation.

21.5.2 *Audit Findings.* In the event that upon conducting an examination and audit as described in this Section 21.5 the Port Authority determines that unpaid amounts are due to

the Port Authority from the Lessee (hereinafter referred to as the "**Audit Findings**"), the Lessee shall be obligated, and hereby agrees, to pay to the Port Authority a service charge in the amount equal to five percent (5%) of the Audit Findings. Each such service charge shall be payable immediately upon demand (by notice, bill or otherwise) made at any time therefor by the Port Authority. Such service charge(s) shall be exclusive of, and in addition to, any and all other moneys or amounts due to the Port Authority by the Lessee under this Agreement or otherwise. No acceptance by the Port Authority of payment of any unpaid amount or of any unpaid service charge shall be deemed a waiver of the right of the Port Authority of payment of any late charge(s) or other service charge(s) payable under the provisions of this Agreement with respect to such unpaid amount. Each such service charge shall be and become fees, recoverable by the Port Authority in the same manner and with like remedies as if it were originally a part of the Rental to be paid hereunder. Nothing in this Section is intended to, or shall be deemed to, affect, alter, modify or diminish in any way (i) any rights of the Port Authority under this Agreement, including, without limitation, the Port Authority's rights to terminate this Agreement or (ii) any obligations of the Lessee under this Agreement.

ARTICLE 22

SECURITY FOR PERFORMANCE BY LESSEE

Section 22.1 Intentionally Deleted.

Section 22.2 Security Deposit.

At the onset of the Term, the Lessee shall pay advance Basic Rent to the Port Authority as described in Section 4.2 hereof. At all times from and after the first (1st) day of the eleventh (11th) Lease Year and throughout the remainder of the Term, the Lessee shall be required to maintain on deposit with the Port Authority a clean irrevocable letter of credit substantially in the form attached hereto as "**Exhibit J**" ("Form of Letter of Credit") or in another form, which terms and issuing institution have been previously (and will continue to be) approved by the Port Authority, in the amount of two (2) months' Basic Rent which amount may be increased up to a maximum amount equal to the then annual Basic Rent, in the Port Authority's sole discretion, if the Lessee is delinquent in the payment of Basic Rent for in excess of three Business Days on more than two occasions during any 24-month period. Upon the occurrence of any Event of Default involving the non-payment of Rental (which includes all obligations under this Agreement plus late charges), the Port Authority shall be entitled to apply such security deposit toward the payment of such Rental, and any such Event of Default shall not be deemed to have been cured until and unless the Lessee shall have replenished such security deposit. Upon notice of cancellation of a letter of credit the Lessee agrees that unless, by a date thirty (30) days prior to the effective date of cancellation, the letter of credit is replaced by another letter of credit satisfactory to the Port Authority, the Port Authority may draw down the full amount thereof without statement of default and thereafter the Port Authority will hold the same as security. Failure to provide such a letter of credit at

any time as required under this Section 22.2, valid and available to the Port Authority, including any failure of any banking institution issuing any such letter of credit previously accepted by the Port Authority, to make one or more payments as may be provided in such letter of credit, shall be deemed to be a breach of this Agreement on the part of the Lessee.

ARTICLE 23

NOTICES

Section 23.1 Delivery of Notices.

Notices, demands, requests, permissions, consents, approvals and other communication (all of the foregoing being hereinafter referred to as "**Notices**"), given or required to be given to or by party under this Agreement shall not be effective unless they are given in writing.

Section 23.2 Delivery.

All Notices shall be deemed to have been duly given and received if and only if (i) personally delivered with proof of delivery thereof (any notice or communication so delivered being deemed to have been received at the time delivered on a Business Day, or if not a Business Day, the next succeeding Business Day), (ii) sent by overnight mail, postage prepaid (any notice or communication so delivered being deemed to have been received at the time delivered on a Business Day, or if not a Business Day, the next succeeding Business Day), or (iii) by telecopier with confirmation of receipt (sender's confirmation of a successful transmission) (any notice or communication so sent being deemed to have been received on the date of transmission, if a Business Day, or if not a Business Day, the next succeeding Business Day), addressed to the respective parties as follows:

if to the Port Authority:	The Port Authority of New York and New Jersey 225 Park Avenue South 15th Floor New York, New York 10003 Attention: Executive Director Tel: 212-435-7271 Fax: (212) 435-6670
with a copy to:	The Port Authority of New York and New Jersey 225 Park Avenue South 19th Floor New York, New York 10003 Attention: Chief, Real Estate and Development Tel: 212-435-6482 Fax: (212) 435-5146

with a copy to:	The Port Authority of New York and New Jersey 225 Park Avenue South 19th Floor New York, New York 10003 Attention: Director Real Estate Services Department Tel: 212-435-6658 Fax: (212) 435-6560
with a copy to:	The Port Authority of New York and New Jersey One Madison Avenue 5th Floor New York, New York 10010 Attention: Director Tunnel, Bridges and Terminals Tel: 212-435-4800 Fax: (212) 435-4822
and with a copy to:	The Port Authority of New York and New Jersey 225 Park Avenue South 15th Floor New York, New York 10003 Attention: General Counsel Tel: (212) 435- 3515 Fax: (212) 453-6610
if to Lessee:	George Washington Bridge Bus Station Development Venture LLC c/o SJM Partners 9001 Congressional Court Potomac, Maryland 20854 Attention: Stephen J. Garchik Phone: (301) 299-8616 Fax: (301) 365-9154
and with a copy to:	Arent Fox LLP 1675 Broadway New York, New York 10019 Attention: Karen F. Candreva Tel: (212) 484-3953 Fax: (212) 484-3990

Each Party shall use all good faith efforts to promptly forward to the other Party any and all correspondence received that is not also addressed to the receiving Party and that appears to be intended for, or appears should have included, the other Party or that is patently of material interest to the key parties-in-interest in the Facility and/or in the Project, or to the other Party.

ARTICLE 24

PRIVATIZATION

Section 24.1 Authorized Status of Leased Premises.

In the event the Port Authority sells, assigns or otherwise disposes of its interest in the Leased Premises or in this Agreement, including by reason of a foreclosure by the holder of a mortgage encumbering the fee simple interest in the Leased Premises ("**Privatization**") to a non-governmental entity (the "**Successor Landlord**") then, as a condition to, and prior to the effective date of, the Privatization, the Port Authority shall obtain either (i) from the Department of Buildings of the City of New York (or its equivalent if the Department of Buildings of the City of New York ceases to exist or is no longer performing the functions it performs as of the Lease Commencement Date), a permanent certificate of occupancy (a "**C/O**") for the Leased Premises, which C/O shall indicate that any aspect or condition of the Leased Premises that does not then currently conform to the NYC Building Code is deemed to be a legal, non-conforming (i.e. "grandfathered") aspect or condition, or (ii) a statutory equivalent thereof or waiver thereof.

Section 24.2 Privatization Costs.

If, in order to satisfy the requirements of Section 24.1 above, Capital Improvements are required and provided that such Capital Improvements do not impair the value or utility of the Leased Premises in any material respect, as determined by the Lessee in its sole and absolute discretion, then, upon request of the Port Authority, the Lessee shall perform such Capital Improvements at the sole cost and expense of the Port Authority ("**Privatization Costs**"). Privatization Costs shall be paid by the Port Authority pursuant to Section 24.3 below, on written demand therefor by the Lessee, accompanied by reasonable documentation supporting such demand for payment, which payment shall be made promptly, but no later than thirty (30) days from the date such notice and necessary documentation are received by the Port Authority. The Port Authority shall, at the Lessee's option, either pay such Privatization Costs directly to the parties entitled to receive payment of the Privatization Costs, or if the Lessee has paid amounts due to any such party, upon receipt of an invoice marked "paid" or other documentation indicating the amounts due to such party have been paid, reimburse to the Lessee such amounts actually paid to such party. If the payments required to be made by the Port Authority pursuant to this Section 24.2 (or Section 24.3 below) are not made within the thirty (30) day time period set forth above, such amounts shall accrue late charges at the rate set forth in Subsection 21.4.1 relating to "Late Charges" from the date of expiration of the thirty (30) day period until the date such amounts are paid.

Section 24.3 Budget for Privatization Costs.

Prior to commencing any action to comply with the requirements in Section 24.2 above, the Lessee shall submit a budget to the Port Authority detailing the actions required to be taken to comply with such Section 24.2 and the Privatization Costs projected to be incurred

therewith, which budget shall be subject to the approval of the Port Authority, which approval may be withheld in its sole and absolute discretion. Within ten (10) Business Days of the receipt of such budget, the Port Authority will advise the Lessee as to whether such budget has been approved or disapproved, and in the event of a disapproval, provide reasonable detail as to the reasons for such disapproval.

(a) If the Lessee anticipates that the actual cost of the Capital Improvements may exceed the amounts set forth in the budget approved by the Port Authority, the Lessee shall provide documentation, in reasonable detail, detailing the reasons for such increased amounts, and requesting the Port Authority's approval of such increases in the approved budget, which approval the Port Authority may withhold in its in its sole and absolute discretion. Within ten (10) Business Days of the receipt of such documentation, the Port Authority will advise the Lessee as to whether such increases have been approved or disapproved, and in the event of (i) a disapproval, provide reasonable detail as to the reasons for such disapproval, or (ii) an approval, payments in connection with such costs shall be made in accordance with the budget, as amended by the increases that have been approved.

(b) The Lessee shall have no obligation to commence any Capital Improvements as set forth in Section 24.2 above to the extent the Port Authority has not approved the Privatization Costs to be incurred in connection therewith.

Section 24.4 Deletion of References to Port Authority.

In the event a Privatization, which satisfies the conditions set forth in Sections 24.1, 24.2 and 24.3 above, occurs (A) all references to the GWBBS Manual shall be deemed deleted and replaced with the NYC Building Code, (B) all references to the Code Compliance Office and the Port Authority, in its role and capacity as "governmental entity", and any reference to utilities or services to be provided by the Port Authority or by utility providers pursuant to agreements with the Port Authority shall be deemed deleted, (C) all references to the Port Authority, in its role and capacity as "landlord", shall be deemed to be solely a reference to the "Successor Landlord", and provisions relating to the "Commissioners of the Port Authority" shall be deemed deleted, (D) Section 3.2 relating to "Permitted Use" shall be deemed deleted and rendered void and of no force and effect and shall be replaced with the following: "[t]he Lessee shall use, operate and maintain the Leased Premises, subject to all of the provisions of this Agreement, for any use or purpose permitted by applicable "Requirements.", and (E) such other provisions specifically relating to or resulting from or in connection with fee ownership of the Leased Premises by the Port Authority shall be rendered void and of no force and effect: – including provisions relating to the immunity of the Port Authority; Port Authority ownership of the improvements and fixtures, Article 24A entitled "Reserved Premises (West Building) Right of First Offer" it being agreed and understood that any provisions not deemed deleted pursuant to this Section 24.4, including, without limitation, Section 4.4 relating to "Impositions" and Article 7 relating to "Compliance With Requirements", shall continue to apply in the event of a Privatization. Notwithstanding the foregoing, any term defined in a Section or Subsection which is deemed deleted and rendered

void and of no force and effect pursuant to the provisions of this Section and which is also used elsewhere in this Agreement shall continue to have the meaning ascribed thereto in such void Section or Subsection.

After a Privatization, the Lessee shall have the right to seek any and all remedies allowed by law or in equity against any Successor Landlord in the event of a default hereunder by such Successor Landlord.

ARTICLE 24A

RIGHTS OF FIRST OFFER

Section 24A.1 Reserved Premises.

(a) Subject to the provisions of this Article 24A and provided that (i) this Agreement shall then be in full force and effect, and (ii) no Event of Default shall have occurred and then be continuing, if at any time the Port Authority shall wish to sell or lease, to a non-governmental or commercial for-profit independent third party entity, the Reserved Premises in the West Building or any portion thereof, the Port Authority shall first deliver to the Lessee a notice to such effect including a reasonably detailed summary of the terms and conditions on which the Port Authority proposes (subject to any required Board of Commissioners approval) to sell or lease the Reserved Premises in the West Building or such portion thereof (a "**ROFO Notice**").

(b) In such event, the Lessee shall have ninety (90) days after it receives such ROFO Notice to negotiate and enter into a purchase or lease agreement with the Port Authority to acquire or lease from the Port Authority the applicable portion of the Reserved Premises in the West Building on the terms and conditions set forth in such ROFO Notice (the "**Right of First Offer**"). The Right of First Offer herein set forth is available only to, and may be exercised only by, the Lessee, and no other Person whatsoever. Time shall be of the essence with respect to said ninety (90) day period and the failure or inability of the Lessee to enter into a sales or lease agreement in the time and manner herein prescribed (for any reason whatsoever other than the Port Authority's failure to negotiate in good faith or unwillingness to enter into such sales agreement or lease) shall be deemed an irrevocable waiver (subject to paragraphs (c) and (d) of this Section) of the Lessee's Right of First Offer. If the Lessee elects not to purchase or lease the applicable portion of the Reserved Premises in the West Building on such terms and conditions, Lessee shall notify the Port Authority of the Lessee's waiver of its Right of First Offer and the Lessee shall, within ten (10) Business Days after demand by the Port Authority, execute and deliver to the Port Authority an instrument in substantially the form of "**Exhibit N**" (a "**ROFO Waiver**"). The fact that the Port Authority and the Lessee may, or in fact do, resume or enter into subsequent negotiations after said ninety (90) day period, shall not affect the validity or enforceability of any such waiver.

(c) Thereafter, the Port Authority shall be free for a period of twelve (12) months to sell or lease (as the case may be) the applicable portion of the Reserved Premises in

the West Building to a third party, for a sale price or rental (as the case may be) not less than ninety-five percent (95%) of the sale price or rental (as the case may be) that the Port Authority shall have offered to the Lessee, and otherwise on terms and conditions not materially less favorable to the purchaser or tenant than the terms and conditions that were set forth in the applicable ROFO Notice and/or required by the Port Authority during its negotiations with the Lessee.

(d) If no sale or lease (as the case may be) is entered into with a third party within such twelve (12)-month period, other than as a result of the failure of a condition resulting from a default by the Lessee hereunder, then the Right of First Offer shall be revived and reinstated in all respects with respect to any subsequent desire of or attempt by the Port Authority to sell or lease, to a non-governmental or commercial for-profit independent third party entity, any portion of the Reserved Premises in the West Building.

(e) No provision of this Article 24A shall be deemed to modify any other provision of the Lease.

Section 24A.2 Leased Premises. It is expressly understood that the foregoing does not, and shall not be deemed to, afford the Lessee any right of first offer with respect to any sale by the Port Authority of its interest in any portion of the Leased Premises, unless the Lessee being afforded such a right of first offer would not subject the Lessee's interest in the Leased Premises to real estate taxes pursuant to Section 402 of the Real Property Tax Law (or any successor statute). In such event, such right of first offer shall be subject to the conditions and procedures set forth in Section 24A.1.

ARTICLE 25

MISCELLANEOUS

Section 25.1 Limitation on Representations.

Except as may be expressly set forth in this Agreement, the Lessee acknowledges that it has not relied upon any representation or statement of the Port Authority or any of their Commissioners, officers, attorneys, employees or agents as to the condition of the Leased Premises or the suitability thereof for the operations permitted on the Leased Premises by this Agreement. The Lessee also acknowledges that prior to the execution of this Agreement it was given access to the Leased Premises to conduct such tests as it thought appropriate to determine the Environmental Condition of the Leased Premises and the Lessee hereby agrees to take the Leased Premises in their "as is" condition.

Section 25.2 Intentionally Omitted.

Section 25.3 Exculpation.

25.3.1 *Port Authority.* Neither the Commissioners of the Port Authority nor any of them, nor any officer, agent or employee thereof, shall be charged personally by the Lessee with any liability or held liable to it under any term or provision of this Agreement or because of its execution or attempted execution, or because of any breach or attempted or alleged breach thereof.

25.3.2 *Lessee.* Lessee shall not in any event be deemed to be in default under this Agreement by reason of any wrongful act or omission of the Port Authority (or any employee, agent, contractor, subtenant or invitee thereof) in its capacity as owner of the Reserved Premises.

Section 25.4 Force Majeure, Unavoidable Delays, Etc.

25.4.1 *Definitions.* "**Unavoidable Delays**", "**Force Majeure**" or "**causes or conditions beyond its control**" or words of similar import, shall mean acts of God, weather conditions, floods, earthquakes, fire, acts of any Governmental Authority, war, civil commotion, sabotage, shortage of labor or materials (exclusive of delays inherent in the ordering of long lead-time items, unless the need therefor could not reasonably have been anticipated), acts or omissions of third parties for which the Port Authority or the Lessee, as the case may be, is not responsible, injunctions, labor troubles or disputes of every kind (including those affecting the Port Authority or the Lessee, or its or their contractors, suppliers or subcontractors) or any other conditions or circumstances, whether similar to or different from the foregoing (it being agreed that the foregoing enumeration shall not limit or be characteristic of such conditions or circumstances) which are beyond the control of the Port Authority or the Lessee, as the case may be, and which could not be prevented or remedied by reasonable effort and at reasonable expense. Notwithstanding the foregoing, in no event shall lack of money required in any circumstances constitute Force Majeure or causes or conditions beyond the control of any party hereto. The Party claiming the occurrence of any such Unavoidable Delay shall within thirty (30) days after the occurrence thereof, deliver to the non-claiming Party a written notice of the occurrence of the event or circumstance of such Unavoidable Delay, advise the non-claiming Party as to the measures taken or proposed to be taken by the claiming Party to mitigate the delay caused by such occurrence of Unavoidable Delay, and thereafter shall keep the non-claiming Party reasonably informed as to the status of such measures and any anticipated ongoing delay.

25.4.2 *No Liability for Force Majeure/Unavoidable Delays.* No party to this Agreement shall be liable for any failure, delay or interruption in performing its obligations hereunder due to causes or conditions beyond its control unless the failure, delay or interruption shall result from failure on the part of such party to use reasonable care to prevent or reasonable efforts to remedy or end such failure, delay or interruption.

25.4.3 *No Default as a Result of Force Majeure/Unavoidable Delays.* If either the Port Authority or the Lessee shall be delayed in performing any of its obligations under this Agreement (other than monetary obligations) by reason of Force Majeure, the time for the

performance of the obligation in question shall be extended by the period of delay resulting from Force Majeure and neither the Port Authority nor the Lessee shall be in default under this Agreement by reason of such delay in the performance by it of such obligation.

25.4.4 *No Effect on Lessee's Rental Obligations.* No abatement, diminution or reduction of Rental payable by the Lessee, shall be claimed by or allowed to the Lessee as a result of Force Majeure nor shall this Agreement be affected by any such causes or conditions.

25.4.5 *Application of this Section 25.4.* All the provisions of this Section 25.4 shall apply to each and every obligation (other than monetary obligations) of each of the parties hereto under this Agreement, whether or not reference to Force Majeure or conditions beyond the control of the party or unavoidable delays in question is set forth in the provision of this Agreement which gives rise to such obligation. The fact that references to Force Majeure or conditions beyond the control of a party hereto or unavoidable delays may be included in only certain of the provisions of this Agreement shall not be construed as making the provisions of this Section inapplicable to those provisions of this Agreement which do not contain such references.

Section 25.5 Code Compliance - Chief Engineer Contest.

(a) In order to resolve any material disputes arising out of, under, or in connection with, or in any way related to any duties to be performed by the Code Compliance Office with respect to this Agreement, the Lessee shall have the right to invoke, and the Port Authority hereby consents to, the Chief Engineer Contest administrative hearing procedure set forth in Subsection 5.23.2 hereof.

(b) The Lessee and the Port Authority acknowledge and agree that all non-Code Compliance disputes arising directly or indirectly, out of or relating to this Agreement and all actions to enforce the covenants, conditions and provisions of this Agreement may be dealt with and adjudicated in the state courts of New York or the federal courts sitting in New York.

Section 25.6 Quiet Enjoyment.

The Lessee, upon paying all Rentals hereunder and performing all covenants, conditions and provisions of this Agreement, on its part to be performed, shall and may peaceably and quietly have, hold and enjoy the Leased Premises free of any act or acts of the Port Authority or any Successor Landlord or anyone claiming superior title through the Port Authority or such Successor Landlord, except as expressly provided in this Agreement, it being understood and agreed that the Port Authority's liability under this Agreement shall obtain only so long as it remains the owner of the Leased Premises.

Section 25.7 Waiver of Trial by Jury.

The Lessee waives its right to trial by jury in any summary proceeding or action that may hereafter be instituted by the Port Authority against the Lessee in respect of the Leased Premises and/or in any action that may be brought by the Port Authority to recover fees, damages, or other sums due and owing under this Agreement. The Lessee specifically agrees that it shall not interpose any claims as counterclaims in any summary proceeding or action for non-payment of rents, fees or other amounts which may be brought by the Port Authority unless such claims would be deemed waived if not so interposed.

Section 25.8 Effect of Use and Occupancy of Leased Premises after Expiration or Termination.

Without in any way limiting the provisions set forth in Article 17 of this Agreement entitled "*Events of Default and Termination*", unless otherwise notified by the Port Authority in writing, in the event the Lessee remains in possession of the Leased Premises after the expiration or termination of the Term under this Agreement, as it may be extended from time to time, in addition to any damages to which the Port Authority may be entitled under this Agreement or other remedies the Port Authority may have by law or otherwise, the Lessee shall pay to the Port Authority a rental for the period commencing on the day immediately following the date of such expiration or the effective date of such termination and ending on the date that the Lessee shall surrender and completely vacate the Leased Premises at an annual rate equal to twice the sum of (i) the annual rate of rental in effect on the date of such expiration or termination, plus (ii) all items of additional rent and other periodic charges, if any, payable with respect to the Leased Premises by the Lessee at the annual rate in effect during the three-hundred-sixty-five (365) day period immediately preceding such date. Nothing herein contained shall give, or be deemed to give, the Lessee any right to remain in possession of the Leased Premises after the expiration or termination of the letting under this Agreement. The Lessee acknowledges that the failure of the Lessee to surrender, vacate and yield up the Leased Premises to the Port Authority on the effective date of such expiration or termination will or may cause the Port Authority injury, damage or loss. The Lessee hereby assumes the risk of such injury, damage or loss and hereby agrees that it shall be responsible for the same and shall pay the Port Authority for the same whether such are foreseen or unforeseen, special, direct, consequential or otherwise and the Lessee hereby expressly agrees to indemnify and hold the Port Authority harmless against any such injury, damage or loss.

Section 25.9 No Subordination.

(a) The Port Authority's fee interest in the Leased Premises shall not be subject or subordinate to (x) any Mortgage now or hereafter existing, (y) any other liens or encumbrances hereafter affecting the Lessee's interest in this Agreement and the leasehold estate created hereby or (z) subject to Section 14.9.7 hereof any Sublease or any mortgages, liens or encumbrances now or hereafter placed on any Subtenant's interest in the Leased Premises.

(b) The Lessee's interest in this Agreement and the leasehold created hereby shall not be subject to or subordinate to any mortgage on the Port Authority's fee interest in the Leased Premises.

Section 25.10 Relationship of the Parties.

This Agreement does not constitute the Lessee the agent or representative of the Port Authority for any purpose whatsoever. Neither a partnership nor any joint venture is hereby created.

Section 25.11 Severability.

Each and every covenant and agreement contained in this Agreement shall for all purposes be construed to be a separate and independent covenant and agreement and the breach of any such covenant or agreement by either party shall not to any extent discharge or relieve the other from its obligation to perform each and every covenant and agreement of this Agreement on its part to be performed. If any term or provision of this Agreement or the application thereof to any person or circumstances shall to any extent be invalid and unenforceable the remainder of this Agreement, or the application of such term or provision to persons or circumstances, other than those as to which it is invalid or unenforceable, shall not be affected thereby, and each term and provision of this Agreement shall be valid and shall be enforced to the extent permitted by law.

Section 25.12 Remedies to be Non-Exclusive.

All remedies provided in this Agreement shall be deemed cumulative and additional and not in lieu of or exclusive of each other or of any other remedy available to the Port Authority or to the Lessee at law or in equity, and the exercise of any remedy, or the existence herein of other remedies or indemnities, shall not prevent the exercise of any other remedy.

Section 25.13 Construction and Application of Terms.

25.13.1 *Headings.* The use of article, section and subsection headings and a table of contents, and the organization of the various provisions of this Agreement thereunder, are for convenience of reference only and in no way define, limit or describe the scope or intent of any provision hereof.

25.13.2 *Ambiguities.* Any rule of construction to the effect that ambiguities are to be resolved against the drafting party shall not be applicable to the interpretation of this Agreement or any amendments, addendums or supplements hereto or any Time Designations. All designations of time herein contained shall refer to the time-system then officially in effect in the municipality wherein the Leased Premises are located.

25.13.3 *Exhibits and Schedules.* The provisions and obligations contained in any Exhibits or Schedules attached hereto are made a part of this Agreement and whether set out

in full or as amendments of or supplements to provisions set forth elsewhere in this Agreement, shall have the same force and effect as if herein set forth in full.

25.13.4 *Governing Law.* To the extent that any provisions of this Agreement are in any instance to be construed in accordance with the laws of a state, the laws of the State of New York shall apply.

25.13.5 *Successors and Assigns.* The covenants, agreements, terms, provisions and conditions contained in this Agreement shall be binding upon and inure to the benefit of the Port Authority and the Lessee and their respective successors and permitted assigns, except as otherwise expressly set forth herein.

25.13.6 *Joint and Several Obligation.* If more than one individual or other legal entity is the Lessee under this Agreement, each and every obligation hereof shall be the joint and several obligation of each such individual or other legal entity.

Section 25.14 Entire Agreement.

25.14.1 *Entire Agreement.* This Agreement, including the exhibits and schedules attached hereto, constitutes the entire agreement of the Parties on the subject matter hereof. The Lessee agrees that no representations or warranties shall be binding upon the Port Authority unless expressed in writing in this Agreement.

25.14.2 *Modifications to be in Writing.* No covenant, agreement, term or condition of this Agreement shall be changed, modified, altered, waived or terminated except by a written instrument of change, modification, alteration, waiver or termination executed by, the Lessee and the Port Authority and to extent required, each Recognized Mortgagee.

25.14.3 *No Waiver.* No failure by the Port Authority or the Lessee to insist upon the strict performance of any agreement, covenant, term or condition of this Agreement or to exercise any right or remedy consequent upon the breach or default of any agreement, covenant, term, or condition of this Agreement, and no extension, supplement or amendment or this Agreement during or after such breach or default, unless expressly stated to be a waiver, and no acceptance by the Port Authority of any Rental after or during the continuance of any such breach or default, shall constitute the waiver of such breach or default. No waiver of any default by either the Port Authority or the Lessee shall affect or alter this Lease, but each and every agreement, covenant, term and condition of this Lease shall continue in full force and effect with respect to any other then existing or subsequent default thereof.

25.14.4 *Counterparts.* This Agreement may be simultaneously executed in several counterparts, each of which shall be an original and all of which shall constitute but one and the same instrument.

Section 25.15 Estoppel Certificates.

(a) The Port Authority shall, at any time and from time to time hereafter, but not more frequently than twice in any one-year period unless such request is made in connection with any Assignment, Deemed Assignment or financing of the Lessee's leasehold interest or execution of any anchor Sublease, within thirty (30) days after written request by the Lessee to do so, certify to the Persons specified in such request, by written instrument duly executed and acknowledged by the Port Authority, substantially in the form attached hereto as "**Exhibit K**", as follows: (A) as to whether this Agreement has been supplemented or amended, and if so, the date and substance of each such supplement or amendment; (B) as to the validity, force and effect of this Agreement, as amended, in accordance with its tenor; (C) as to the existence of any default hereunder; (D) as to the existence of any offsets, counterclaims or defenses hereto on the part of the Lessee known to the Port Authority; (E) as to the commencement and expiration dates of the term of this Agreement; (F) whether a proposed Mortgage, Sublease, Assignment or Transfer is authorized hereunder; and (G) as to any other matters as may be reasonably so requested including, without limitation, the annual amounts of Basic Rent payable hereunder.

(b) The Port Authority shall, at any time and from time to time hereafter, but not more frequently than twice in any one-year period unless such request is made in connection with any Assignment, Deemed Assignment or financing of the Lessee's leasehold interest or execution of any anchor Sublease, within thirty (30) days after written request by the Lessee to do so, certify to the Persons specified in such request, by written instrument duly executed and acknowledged by the Port Authority, certify as follows with respect to the Certification as follows: (A) as to whether the Certification has been supplemented or amended, and if so, the date and substance of each such supplement or amendment; (B) as to the validity, force and effect of the Certification, as amended, in accordance with its tenor; (C) as to any notice delivered by the Port Authority to Lessee pursuant to said Certification; (D) as to the existence of any breach or default (or any state of facts that could, with the passage of time, ripen to a breach or default) under the Certification; (E) as to any other matters as may be reasonably so requested in connection with said Certification.

[SIGNATURE PAGE FOLLOWS]

IN WITNESS WHEREOF, the parties hereto have executed these presents as of the day and year first above written.

THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY

By: _____

Christoper O. Ward
Executive Director

GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC

By: GWB Development Partners, LLC, its sole member

By: Marketplace GWB LLC
Its: Managing Member

By: _____
Stephen J. Garchik
Authorized Signatory

IN WITNESS WHEREOF, the parties hereto have executed these presents as of the day and year first above written.

THE PORT AUTHORITY OF NEW YORK
AND NEW JERSEY
By:

_____
Name:
Title:

GEORGE WASHINGTON BRIDGE BUS
STATION DEVELOPMENT VENTURE LLC

By: GWB Development Partners, LLC, its sole member

By: Marketplace GWB LLC
Its: Managing Member

By: _____
Stephen J. Garchik
Authorized Signatory

FOR THE PORT AUTHORITY

STATE OF NEW YORK)

) ss.

COUNTY OF NEW YORK)

On the ~~day of~~ 21st July in the year 2011, before me, the undersigned, a Notary Public in and for said state, personally appeared Christopher O. Ward, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that she executed the same in her capacity, and that by her signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

(Notary)
DARRELL BUCHBINDER
Notary Public, State of New York
No. 60-0475475
Qualified in Westchester County
Commission Expires on April 30, 2015

FOR THE LESSEE

STATE OF NEW YORK)

) ss.

COUNTY OF NEW YORK)

On the day of in the year 20__, before me, the undersigned, a Notary Public in and for said state, personally appeared Stephen J. Garchik, personally n to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

(Notary)

FOR THE PORT AUTHORITY

STATE OF NEW YORK)

) ss.

COUNTY OF NEW YORK)

On the day of in the year 20__, before me, the undersigned, a Notary Public in and for said state, personally appeared , personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that she executed the same in her capacity, and that by her signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

(Notary)

FOR THE LESSEE

STATE OF NEW YORK)

) ss.

COUNTY OF NEW YORK)

On the 20th day of July in the year 2011, before me, the undersigned, a Notary Public in and for said state, personally appeared Stephen J. Garchik, personally n to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

Karen F Candreva

(Notary)

KAREN F. CANDREVA
Notary Public, State of New York
No. 02CA5045815
Qualified in Westchester County
Commission Expires 03/24/2014

~~NYC/428229.2~~

Exhibit A

Legal Description of the Land

See attached.

EXHIBIT A

LEGAL DESCRIPTION OF THE LAND

AS TO PARCEL A - BLOCK 2163 LOT 1:

ALL THAT CERTAIN plot, piece or parcel of land, with the buildings and improvements thereon erected, situate, lying and being in the Borough of Manhattan, City, County and State of New York, bounded and described as follows:

BEGINNING at the corner formed by the intersection of the northerly side of West 178th Street and the easterly side of Broadway;

RUNNING THENCE northerly along the easterly side of Broadway a distance of 204 feet 2 inches to the corner formed by the intersection of the easterly side of Broadway and the southerly side of West 179th Street;

THENCE easterly along the southerly side of West 179th Street a distance of 260 feet 8 7/8 inches to the corner formed by the intersection of the southerly side of West 179th Street and the westerly side of Wadsworth Avenue;

THENCE southerly along the westerly side of Wadsworth Avenue a distance of 200 feet to the corner formed by the intersection of the westerly side of Wadsworth Avenue and the northerly side of West 178th Street;

THENCE westerly along the northerly side of West 178th Street a distance of 301 feet 9 1/2 inches to the corner formed by the intersection of the northerly side of West 178th Street and the easterly side of Broadway to the point or place of BEGINNING.

SAID premises being more particularly bounded and described as follows:

ALL THAT CERTAIN plot, piece or parcel of land, being Tax Lot 1 in Tax Block 2163, situate, lying and being in the Borough of Manhattan, City, County and State of New York, being more particularly bounded and described as follows:

BEGINNING at the corner formed by the intersection of the southeasterly side of Broadway (100 feet wide) with the southwesterly side of West 179th Street (60 feet wide), as the streets are laid out on the Borough President of Manhattan Final Sectional Map No. 30, said point having the Memorial Church coordinates of North 24122.640 East 5478.278 (NAD 83 New York East coordinates of North 734630.813 East 647889.374);

continued.....

RUNNING THENCE southeasterly along southwesterly side of West 179th Street, a distance of 260.76 feet to the corner formed by the intersection of the southwesterly side of West 179th Street with the northwesterly side of Wadsworth Avenue (80 feet wide) said line forming an interior angle of 101 degrees 36 minutes 38 seconds with the southeasterly side of Broadway;

RUNNING THENCE southwesterly along the northwesterly side of Wadsworth Avenue, a distance of 200.00 feet to the corner formed by the intersection of the northwesterly side of Wadsworth Avenue with the northeasterly side of West 178th Street (60 feet wide); said line forming an interior angle of 89 degrees 58 minutes 55 seconds with the southwesterly side of West 179th Street;

RUNNING THENCE northwesterly along the northeasterly side of West 178th Street, a distance of 301.79 feet to the corner formed by the intersection of the northeasterly side of West 178th Street with the southeasterly side of Broadway; said line forming an interior angle of 90 degrees 00 minutes 53 seconds with the northwesterly side of Wadsworth Avenue;

RUNNING THENCE northeasterly along the southeasterly side of Broadway, a distance of 204.16 feet to the place and point of BEGINNING; said line forming an interior angle of 78 degrees 23 minutes 34 seconds with the northeasterly side of West 178th Street;

Said description prepared by Vollmer Associates LLP and based upon a survey prepared by same dated 6/18/06.

For information only: Said premises are known as 4200-4218 Broadway a/k/a 110-110 Wadsworth Avenue a/k/a 651-667 West 178th Street a/k/a 650-664 West 179th Street, New York, NY and designated as Section 8 Block 2163 Lot 1 as shown on the Tax Map of the City of New York, County of New York.

continued.....

AS TO PARCEL B - BLOCK 2176 LOT 17:

ALL THAT CERTAIN plot, piece or parcel of land, with the buildings and improvements thereon erected, situate, lying and being in the Borough of Manhattan, City, County and State of New York, bounded and described as follows:

BEGINNING at the corner formed by the intersection of the northerly side of West 178th Street and the westerly side of Broadway;

RUNNING THENCE northerly along the westerly side of Broadway a distance of 206 feet 0 1/2 inches to the corner formed by the intersection of the westerly side of Broadway and the southerly side of West 179th Street;

THENCE westerly along the southerly side of West 179th Street a distance of 423 feet 9 7/8 inches to the corner formed by the intersection of the southerly side of West 179th Street and the easterly side of Fort Washington Avenue;

THENCE southerly along the easterly side of Fort Washington Avenue a distance of 185 feet 2 1/4 inches to the corner formed by the intersection of the easterly side of Fort Washington Avenue and the northerly side of West 178th Street;

THENCE easterly along the northerly side of West 178th Street a distance of 341 feet 3 1/8 inches to the corner formed by the intersection of the

northerly side of West 178th Street and the westerly side of Broadway the point or place of BEGINNING.

EXCEPTING therefrom so much of the premises that may be taken for the widening of West 178th Street and West 179th Street.

SAID premises being more particularly bounded and described as follows:

continued.....

ALL THAT CERTAIN plot, piece or parcel of land, being Tax Lot 17 in Tax Block 2176, situate, lying and being in the Borough of Manhattan, City, County and State of New York, being more particularly bounded and described as follows:

BEGINNING at a point on the southeasterly side of Fort Washington Avenue (80 feet wide) extended northeasterly 20.02 feet, distant from the corner formed by the intersection of the southeasterly side of Fort Washington Avenue with the southwesterly side of West 179th Street (60 feet wide), as the streets are laid out on the Borough President of Manhattan Final Sectional Map No. 30, said point having the Memorial Church coordinates of North 24251.823 East 4956.112 (NAD 83 New York East coordinates of North 734756.743 East 647366.432);

RUNNING THENCE southeasterly along the northerly line of said Parcel B, a distance of 423.73 feet to an angle point on the northwesterly side of Broadway (100 feet wide) extended northeasterly; said line forming an interior angle of 92 degrees 32 minutes 33 seconds with the southeasterly side of Fort Washington Avenue extended northeasterly;

RUNNING THENCE southwesterly along the northwesterly side of Broadway extended, a distance of 205.98 feet to an angle point; said line forming an interior angle of 63 degrees 52 minutes 49 seconds with the last-mentioned course;

RUNNING THENCE northwesterly along the southerly line of said Parcel B, a distance of 341.28 feet to an angle point on the southeasterly side of Fort Washington Avenue extended southwesterly; said line forming an interior angle of 116 degrees 07 minutes 57 seconds with the northwesterly side of Broadway extended southwesterly;

RUNNING THENCE northeasterly along the southeasterly side of Fort Washington Avenue extended, a distance of 185.22 feet to the place and point of BEGINNING; said line forming an interior angle of 87 degrees 26 minutes 41 seconds with the last mentioned course.

Said description prepared by Vollmer Associates LLP and based upon a survey prepared by same dated 6/18/06.

For information only: Said premises are known as 4201-4219 Broadway a/k/a 406-422 Fort Washington Avenue a/k/a 701-721 West 178th Street a/k/a 700-720 West 179th Street, New York, NY and designated as Section 8 Block 2176 Lot 17 as shown on the Tax Map of the City of New York, County of New York.

continued....

Parcel A also described as:

LEGAL DESCRIPTION – PARCEL 1 (tax LOT 1 IN BLOCK 2163)

All that certain plot, piece or parcel of land, being tax Lot 1 in tax Block 2163, situate, lying in the Borough of Manhattan, City, County, and State of New York, being more particularly bounded and described as follows:

BEGINNING at the corner formed by the intersection of the southeasterly side of Broadway (100 feet wide) with the southwesterly side of West 179th street (60 feet wide), as the streets are laid out on the Borough President of Manhattan Final Sectional Map No. 30, said point having the Memorial Church coordinates of North 24122.640 East 5478.278 (NAD 83 New York East coordinates of North 734630.813 East 647889.374);

Running thence southeasterly along southwesterly side of West 179th Street, a distance of 260.76 feet to the corner formed by the intersection of the southwesterly side of West 179th Street with the northwesterly side of Wadsworth Avenue (80 feet wide) said line forming an interior angle of 101 degrees 36 minutes 38 seconds with the southeasterly side of Broadway;

Running thence southwesterly along the northwesterly side of Wadsworth Avenue, a distance of 200.00 feet to the corner formed by the intersection of northwesterly side of Wadsworth Avenue with the northeasterly side of West 178th Street (60 feet wide); said line forming an interior angle of 89 degrees 58 minutes 55 seconds with the southwesterly side of West 179th Street;

Running thence northwesterly along the northeasterly side of West 178th Street, a distance of 301.79 feet to the corner formed by the intersection of the northeasterly side of West 178th Street with the southeasterly side of Broadway; said line forming an interior angle of 90 degrees 00 minutes 53 seconds with the northwesterly side of Wadsworth Avenue;

Running thence northeasterly along the southeasterly side of Broadway, a distance of 204.16 feet to the place and Point of Beginning; said line forming an interior angle of 78 degrees 23 minutes 34 seconds with the northeasterly side of West 178th Street.

Containing 56,250.89 square feet or 1.2913 acres more or less.

continued....

Parcel B also described as:

LEGAL DESCRIPTION – PARCEL 2 (tax LOT 17 IN BLOCK 2176)

All that certain plot, piece or parcel of land, being tax Lot 17 in tax Block 2176, situate, lying in the Borough of Manhattan, City, County, and State of New York, being more particularly bounded and described as follows:

BEGINNING at a point on the southeasterly side of Fort Washington Avenue (80 feet wide) extended northeasterly 20.02 feet distant from the corner formed by the intersection of the southeasterly side of Fort Washington Avenue with the southwesterly side of West 179th Street (60 feet wide), as the streets are laid out on the Borough President of Manhattan Final Sectional Map No. 30, said point having the Memorial Church coordinates of North 24251.823 East 4956.112 (NAD 83 New York East coordinates of North 734756.743 East 647366.432);

Running thence southeasterly along the northerly line of said Parcel 2, a distance of 423.73 feet to an angle point on the northwesterly side of Broadway (100 feet wide) extended northeasterly; said line forming an interior angle of 92 degrees 32 minutes 33 seconds with the southeasterly side of Fort Washington Avenue extended northeasterly;

Running thence southwesterly along the northwesterly side of Broadway extended, a distance of 205.98 feet to an angle point; said line forming an interior angle of 63 degrees 52 minutes 49 seconds with the last-mentioned course;

Running thence northwesterly along the southerly line of said Parcel 2, a distance of 341.28 feet to an angle point on the southeasterly side of Fort Washington Avenue extended southwesterly; said line forming an interior angle of 116 degrees 07 minutes 57 seconds with the northwesterly side of Broadway extended southwesterly;

Running thence northeasterly along the southeasterly side of Fort Washington Avenue extended, a distance of 185.22 feet to the place and Point of Beginning; said line forming an interior angle of 87 degrees 26 minutes 41 seconds with the last-mentioned course.

Containing 70,758.37 square feet or 1.6244 acres more or less

Exhibit AA

Space Allocation Diagrams

See attached.

Exhibit B

GWBBS Manual

The below list of Documents that are incorporated by reference, defined in, and made a part of the Lease:

(i) Design Criteria
(ii) Tenant Construction Review Manual
(iii) Tenant Construction Plan and Specification Guidelines (with Tenant Construction or Alteration Application)
(iv) GWBBS Common Area Rules and Regulations
(v) Port Authority Structural and Systems Integrity Requirements
(vi) Retail Branding Program (to be provided at Lease execution)

Exhibit B(i)

Design Criteria

See attached.

THE PORT AUTHORITY OF NY & NJ

GEORGE WASHINGTON BRIDGE BUS STATION REDEVELOPMENT PROJECT

CONFORMED DESIGN CRITERIA REPORT

Prepared By
The Port Authority of New York and New Jersey
Engineering Department

JULY 15, 2011

Introduction 1
Design Criteria 3
- Sustainability 3
- Architectural 7
- Civil 43
- Electrical 45
- Electronics 55
- Environmental 61
- Geotechnical 63
- Mechanical 65
- Structural 77
- Traffic 79
- Construction Staging and Phasing 89

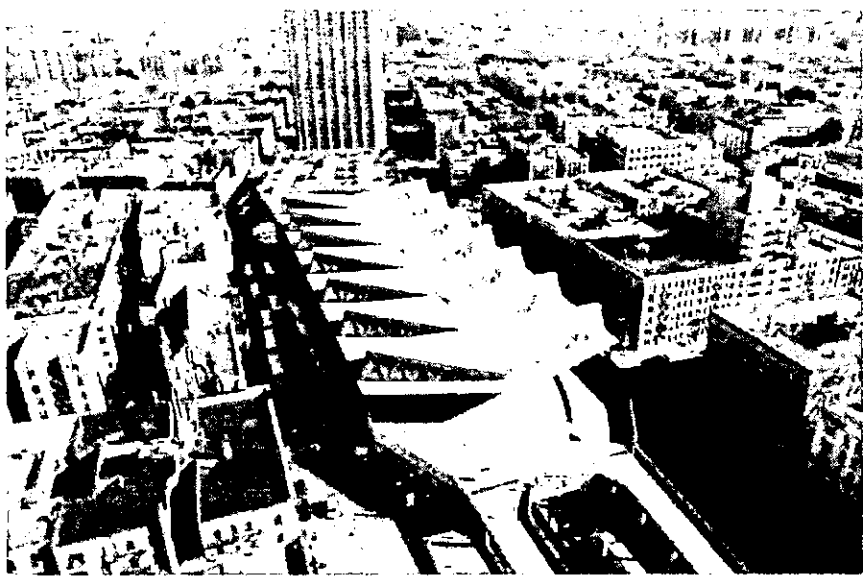
THIS PAGE INTENTIONALLY LEFT BLANK

GEORGE WASHINGTON BRIDGE REDEVELOPMENT PROJECT

The George Washington Bridge Bus Station (GWBBS) is located in Upper Manhattan, between 178th and 179th Streets, and Fort Washington Avenue, Broadway and Wadsworth Avenue. In 2004, the GWBBS handled approximately 7.4 million customers, averaging more than 20,000 customers per day.

The existing GWBBS totals over 250,000 gross square feet of space including public circulation, retail/commercial space and bus operations. The Facility is housed in two separate structures on the east and west sides of Broadway that, along with the sections of Broadway and Fort Washington Avenue adjacent to the GWBBS, span directly over the Trans Manhattan Expressway (TME). The West Building (Broadway to Fort Washington Avenue) functions as the "Bus Station," while the East Building (Broadway to Wadsworth Avenue) - a large floorless superstructure shell - houses a utility zone at street level and monthly public parking on the roof. The parking is accessed via two bridges that span over Broadway from the West Building. The electric substation, located in the East Building, presents an opaque wall running along Broadway's east street facade.

The project is an adaptive re-use of the GWBBS, which is an existing public facility. The redevelopment of the GWBBS should have a life expectancy of 50 years and is to include a consolidated bus operations, direct vertical transportation from the street and subway levels, and leasable tenant space. The public bus operations will be consolidated on the rooftop of the West Building. There will be approximately 119,000 square feet of gross leasable space for large-scale retail development, which will be leased to the Developer (the "Leased Premises") by the PA. The Leased Premises will also include the building Exoskeleton, which is the reinforced concrete structural support system on the exterior of the east and west buildings and on the bridges which connect them. Additionally, the Leased Premises will include certain common areas (the "Common Areas"). The balance of the Facility (the "Reserved Premises"), including the reinforced concrete roof over Level 3 of the West Building ("Nervi Roof"), will be retained by the PA (see the Space Allocation Diagrams at the end of this chapter).



Vertical circulation lobbies should allow departing and arriving bus passengers direct access between the bus concourse level and the streets from both Fort Washington Avenue to the west and Broadway to the east, as well as direct access to and from the NYCTA subway station via the below-grade pedestrian underpass.

This project is structured to be complete, the final design shall incorporate all additions, renovations, and alterations necessary for the entire Facility to be fully operational by the end of construction.

GWBBS Redevelopment Project Design Criteria

This Design Criteria report (the Report) lists the requirements the PA has developed to insure that the bus station will continue to provide a level of service a public transportation facility requires. This Report is to be used by the developer's Design Professional of Record (DPR). The Report is intended to provide the DPR with information that will assist the DPR in preparing the DPR's design as it relates to Port Authority standards and special GWBBS Facility system/equipment requirements. Compliance with the Project Criteria and the Port Authority's Standard Technical Specifications is required.

The design criteria set forth in the Report relate solely to the Design Criteria Project Elements (DCPE), which are the:

- Reserved Premises
- Common Areas
- Structural and Exterior elements
- Staging and Phasing Plans
- Portions of the Leased Premises that touch, adjoin, attach to and/or interface with the Reserved Premises, the Common Areas, or the exterior of the buildings.

The Report is divided into chapters by design discipline. Each chapter details the specific project requirements of a PA architectural or engineering discipline. A list of submissions required by each such discipline is provided at the end of the applicable chapters. The DPR shall send the PA these submissions for review for compliance with the design criteria.

The Facility Profile submission is required by all PA disciplines for review, as part of the DPR's design programming effort (see the end of the Architecture chapter for a sample profile sheet). The DPR shall provide a separate "criteria sheet" for every PA space and one for every space shared by the PA and the Developer (e.g. shared lobbies, mechanical rooms, corridors, etc.). The criteria sheets shall follow the database format shown.

Use of the Project Criteria, or the Port Authority Standard Technical Specifications, in no way relieves the DPR of any of the DPR's professional responsibility/liability for the code compliance, completeness, and accuracy of the DPR's design.

Building Codes, Regulations, Guidelines, Standards, and Laws

Design submissions will be reviewed for compliance with the design criteria outlined in the Report and for compliance with applicable codes, standards and regulations. All drawings shall be sealed and signed by a licensed NYS engineer or architect (Design Professional of Record) as per NYC Building Code Section 27 157. Construction Documents shall be in compliance with the following codes and regulations:

- Port Authority of NYNJ Standard Technical Specifications – November 8, 2010
- Port Authority of NYNJ Sustainable Building Guidelines – August 15, 2007
- New York City Building Code and its Referenced Standards (NYCBC) – latest edition*
- New York City Fire Prevention Code and Directives
- New York City Local Laws
- New York State Labor Laws
- Directives and Memorandia of the NYC Department of Buildings
- New York City Department of Health
- Americans with Disabilities Act Accessibility Guidelines (ADAAG)
- American National Standards Institute (ANSI)
- National Fire Protection Association (NFPA)**
- Occupational Health and Safety Act (OSHA)
- New York State Department of Environmental Conservation (NYS DEC) regulations
- New York City Department of Transportation (NYC DOT) requirements
- New York City Department of Environmental Protection (NYC DEP) regulations and guidelines
- Environmental Protection Agency (EPA) regulations
- New York City Electrical Code (NYCEC)
- New York State Commission of Correction Minimum Standards for Police Lock-ups
- Port Authority Tenant Construction Review Manual – December 2008

Reference Material

- AASHTO "A Policy on Geometric Design of Highways and Streets" 2004
- Port Authority Facility Condition Survey Program, George Washington Bridge Bus Station Bus Station and Bus Depot November 2005
- Port Authority Facility Condition Survey Program, George Washington Bridge Bus Station Bus Level Slabs & Nerv Truss, December 2009
- USGBC LEED Reference Manual, versions 2.1, 2.2 and 3

Submissions Milestones for DCPE

Final construction documents and specifications are subject to review and approval by the Quality Assurance Division (QAD) of the PANYNJ. The PA QAD shall review the comprehensive redevelopment program Tenant Alteration Application (TAA) package, which will include the Bus Station and Retail Programs, for conformance with all applicable building codes, regulations, standards and laws.

The developer's design team shall provide the required submissions described at the end of each chapter in this report to the PA Engineering Department to review for conformance with the Design Criteria herein. The following sets of submissions required are for the Port Authority spaces, Common Area spaces (shared lobbies and vertical circulation), Staging and Phasing, building exterior, and for incidental structure of the retail core and shell.

The Design Criteria conformance submission milestones are:

- Conceptual Design (Stage I) 50% and 100%
- Final Design (Stage III) 50% and 100%

** At time of 1) Developer submission of Code and Life Safety Package to PA, and 2) PA issuance of TAA number for the Project.*

*** Existing TME ventilation openings within the East and West building envelopes shall not be modified in any material respect.*

Any openings over the TME shall not be modified from those shown in the Design Criteria drawings (at the end of the Architectural chapter). Should the existing TME ventilation openings within the East and West building envelopes or the openings over the TME be modified in any material respect, the project shall comply with NFPA 502.

SUSTAINABILITY CRITERIA

Overview

On July 13, 2008, the Port Authority of NY & NJ adopted a policy "to reduce adverse environmental impacts of the design, construction, operation and maintenance and occupancy or leasing of new or substantially renovated buildings and facilities, reconstruction projects, and programs." The policy applies both to Port Authority and tenant capital projects.

To reduce the environmental impacts of capital projects, the Port Authority's policy references the "Sustainable Design Guidelines." These guidelines provide a design roadmap when undertaking new construction projects, substantial renovations, and reconstruction projects. More specifically, the guidelines take a comprehensive view of environmental performance, addressing the environmental qualities of capital projects that have to do with site, water, energy, construction, materials, indoor environment and maintenance & operations.

The guidelines take into account the US Green Building Council's LEEDTM 2.1 Rating System, New York State Executive Order 111 and the New York State Green Building Tax Credit. The Port Authority does not require that new buildings be LEEDTM certified. By adhering to the guidelines, however, new buildings could obtain certification.

GWBBS Redevelopment Project Sustainability Effort
According to the PANYNJ Sustainability Guidelines, if the size of a substantial renovation or reconstruction project in a building or facility is larger than 20,000 square feet, then best efforts shall be made to adhere to the "Guidelines" and surpass building code standards for energy efficiency by at least 10%. Indicate best efforts to adhere to the "Guidelines" by following those guidelines that are applicable to the project. Provide the corresponding documentation outlined in the "Guidelines" as part of the Tenant Alteration Application.

GWBBS Redevelopment Project Sustainability Preliminary Checklist
The following checklist briefly describes the individual credits, and identifies which ones will be met, which ones will be met as qualified, and which ones will not be met for this project.

GWBBS Redevelopment Project

PANYNJ Sustainable Design Guidelines Checklist

(Reconstruction Project greater than 70,000 Gr. SF)

see matrix for cost impact

Yes	yes as qual	No	Category	Qualification
			SITE ENVIRONMENTAL QUALITIES	
X			SEQ-1 Site Selection	Project complies
X			SEQ-2 Support Urban Development	Project complies
		X	SEQ-3 Brownfield Redevelopment	Project is not on a Brownfield site
X			SEQ-4 Expanded Public Transit	Project complies
	X		SEQ-5 Bicycle Access	will provide bicycle access for 40 with 4 standard racks located at Fort Washington on sidewalk adjacent ok building
	X		SEQ-6 Alternative Fuel Vehicles	Only signage designating preferred parking can be provided; not fueling stations.
		X	SEQ-7 Reduced Parking Disturbance	Project will not have preferred parking for carpools/vanpools
		X	SEQ-8 Reduced Site Disturbance	Not applicable due to project site
		X	SEQ-9 Reduced Development Footprint	Not applicable due to project site
		X	SEQ-10 Storm Water Use	Not applicable due to project site.
X			SEQ-11 Heat Island Effect Mitigation Site	50% of parking is covered - New covered parking structure calculated as .33 reflectivity based on typical concrete reflectivity ratings
		X	SEQ-12 Heat Island Effect Mitigation Roof	Project will not achieve this credit. Existing roof structures are not compliant (concrete .33) and their percentages (85%) cannot be offset with new compliant material.
		X	SEQ-13 Light Pollution Reduction	Curb light level requirements of 0.6 fc is inconsistent with program
			WATER ENVIRONMENTAL QUALITIES	
		X	WEQ-1 Water Management Plan	Project will not achieve this credit
		X	WEQ-2 Wastewater Reuse	Gray water systems are not provided by design
	X		WEQ-3 Water Use Efficiency	Will provide low flush fixtures (one pint urinals, etc.) and sensors on lavatories - all other aspects to remain per 100% stage I conformed plans
		X	WEQ-4 Landscape Hydrology	Not applicable to project scope.
			MATERIAL ENVIRONMENTAL QUALITIES	
	X		MEQ-1 Material Management Plan and Recycling	Will comply by a plan limited to procurement and construction and based on LEED 2.1 prerequisite
X			MEQ-2 Building Re-Use	Only LEED 2.1 MR Credit 1.1 is feasible.
		X	MEQ-3 Resource Reuse	Not practical based on the size and durability project requirements.
		X	MEQ-4 Materials with Recycled Content	
		X	MEQ-5 Material Proximity	
		X	MEQ-6 Agricultural Materials	5% not practical based on the size of this project, not durable.
		X	MEQ-7 Wood Certification	
		X	MEQ-8 Maintenance and Durability	
		X	MEQ-9 Wood Preservatives	
		X	MEQ-10 Design Flexibility	Project will not achieve this credit.

			ENERGY ENVIRONMENTAL QUALITIES	
	x		EEQ-1 Comprehensive Energy Management Plan	For RP, the BMS monitoring run time, setpoints, outside air, space conditions for heating and air conditioning equipment through the DC controllers. We are not directly monitoring KW or BTU for energy consumption. We are not monitoring lighting or other electrical consumption on the BMS. We will have utility bills for total electric and gas that can be reported for RP.
x			EEQ-2 Building Systems Commissioning	Will comply to level of CxA efforts.
	x		EEQ-3 Optimize Energy Performance	project will comply with ASHRAE 90.1-2007 which is significantly more efficient than ASHRAE 90.1-1999
x			EEQ-4 Ozone Layer Protection/Greenhouse Gas	Specification of new equipment will conform
		x	EEQ-5 Renewable Energy Transition	Renewables currently not in plans.
	x		EEQ-6 Energy Systems Control and Maintenance	We will have a non single source BMS system for the reserved premises
	x		EEQ-7 End User Metering	we will have end use utility company electric, water and gas metering per 100% conformed plans for RP plans and for individual tenants in LP. Total consumption will be provided from these meters
	x		EEQ-8 Additional Commissioning	Will comply to level of CxA efforts as per 100% conformed plans
			CONSTRUCTION ENVIRONMENTAL QUALITIES	
	x		CEQ-1 Construction Environment	Construction procedures will conform.
x			CEQ-2 Construction Storm Water Runoff/Pollution	Construction procedures will conform.
x			CEQ-3 Construction Waste Management	Construction procedures will conform.
x			CEQ-4 Construction IAQ Management Plan	Construction procedures will conform
			INDOOR ENVIRONMENTAL QUALITIES	
	x		IEQ-1 IAQ Performance	a. A ventilation table will be provided as a part of the contract documents that show compliance with ASHRAE-62-1999. b. TBT Bus Station Facility Manager and DV Retail Facility Manager to provide documentation for project file indicating that smoking will be prohibited within the building(s).
		x	IEQ-2 Daylight & Views	Project will not achieve this credit
	x		IEQ-3 Air Quality Monitoring	We will provide 3 sensors for CO2 monitoring in the waiting room which will be connected to the BMS system
	x		IEQ-4 Ventilation Effectiveness	as per 100% conformed drawings
		x	IEQ-5 Reduce Contaminants from Materials	Project will not achieve this credit.
	x		IEQ-6 Chemical & Particulate Control	We will provide MERV 16 filters to comply with this item. Wwil not have walk -off mats
		x	IEQ-7 Thermal Control	Project will not achieve this credit
	x		IEQ-8 Pest Control	We will comply with Pest management during construction activities for work on 100% stage one plans
		x	IEQ-9 Personal Control	Project will not meet this credit.
		x	IEQ-10 Acoustics	Project will not achieve this credit
	x		IEQ-11 Lighting Quality	We will comply in administrative areas based on 100% conformed plans
			MAINTENANCE & OPERATION ENVIRONMENTAL QUALITIES	
	x		MOEQ-1 Maintenance & Operations Program	a. TBT Facility Operations and Maintenance personnel have been and will continue to be included in the project design reviews. b. The design team CxA will provide a training and operations program to furnish a full understanding of all equipment, components, systems and their operation; and will coordinate the O & M manual for the following equipment/systems: Chiller, Cooling Tower, Chilled water pump, primary condenser water pump, secondary condenser water pump, Air handling units/RTU, Heat exchanger, kitchen exhaust /make up, exhaust fans, BMS, piping hydrostatic testing (up to 20 hours), Ductwork (up to 30 hours).
	x		MOEQ-2 Recycling Program	a. Request that the Port Authority TBT recycling policy be provided for the project file and for design team Sustainable Design Mgr review. b. Design team to assist the TBT Bus Facility Manager and DV Retail Facility Manager in designating a recycling site in both the Bus Station and in the Retail area during Stage 3 design.
	x		MOEQ-3 Training Program	a. Equipment and systems specifications will include requirements for training per Commissioning Agent scope of work. b. Building commissioning will be provided thru the design team. c. A request will be made to the Bus Station Facility Manager and the DV Retail Facility Manager to provide documentation regarding the procurement and use of environmentally preferable cleaning and maintenance products for the project file.

THIS PAGE INTENTIONALLY LEFT BLANK

ARCHITECTURAL

Bus Facility: Public

General

Pedestrian circulation paths through the Facility should be clear, direct and convenient. Pedestrian elements, (including queuing areas, walkways, corridors, doorways, entrances, exits, stairs, escalators, elevators, platform landings, waiting rooms, etc.) should be appropriately sized for peak loading requirements. Natural and artificial light, spatial volume, and other architectural attributes should be utilized where appropriate to help customers navigate at vertical and horizontal circulation points through orientation.

See the Architectural Conformed Stage I drawings (April 1, 2011) for an architectural representation of the transportation design criteria.

Passenger Waiting Room

The bus passenger waiting room should be comfortable and spacious, with natural light. The layout should be open with unobstructed views to maximize safety and security. Provide tempered air (see Mechanical chapter), and lighting and signage as described below. From the Passenger Waiting Room, there should be an unobstructed view of the George Washington Bridge. The maximum capacity to design for in terms of occupancy, seating, and toilet room requirements is 200 people (not including PA operations, maintenance and police staffs). Provide seating for half of these people (100 seats). The Passenger Waiting room is comprised of three zones; circulation, queuing, and waiting. While all three are open to each other, they should each be separate and distinct.

Circulation in and out of the Passenger Waiting Room must be simple, unobstructed, and direct. Escalators, stairs and elevators serving Passenger Waiting must be located within close proximity of the main entry doors. ADA-accessible public toilets should also be near the main circulation.

Locate the queuing zone adjacent to the circulation zone. Within this zone, provide three ticket/information windows and three ticket vending machines, all next to or directly facing each other. Allow adequate queuing space for commuters purchasing monthly passes to line up during peak periods.

The waiting zone should offer a clear view of the bridge and of the incoming buses. In addition, current bus arrival and departure information must be easily visible from the ticket purchasing points, seating areas, and at the waiting room entrances and exits. The signage itself should be dynamic, including LED, plasma screens, etc. (see Signage and Wayfinding section below.)

Bus Concourse

The layout of passenger queuing and circulation at the saw-tooth berths should optimize pedestrian safety. Passengers getting off buses must be provided a clear path of travel from the bus to beyond the bus entry queuing area. Therefore, there should be a physical separation (bollards, etc.) between the two groups of passengers: those leaving and those waiting to get on the bus. Queuing areas should be noticeably delineated from paths of travel through painting, stainless steel bollards, or other similar means. Each area should also be clearly labeled with queue number and bus status signage that is easily visible from either end of the saw-tooth island (see Signage section at the end of this chapter).

Connection to NYCT Station

The pedestrian underpass connecting the GWBBS and the NYCTA subway station is not in the scope of work.

Public Restrooms

All public restrooms at the Facility should have 3-foot wide by 7-foot high doorless entries, and the entries to male and female restrooms should be within close proximity of each other in a parent/child friendly configuration. Locate restroom entries so that they are clearly visible from the main concourse. Provide a centralized room deodorizer delivery system in each restroom. Locate the dispenser unit and the supply tank in the attendant's closet or in the janitor's closet.

Restrooms shall be ADA accessible, and should meet the following minimum standards (see restroom plans and elevations at the end of this chapter):

Toilet Compartments

Toilet partitions shall be chemical resistant, 1" thick, solid plastic high-density polyethylene (HDP) with a homogenous black finish and stainless steel hardware. The partition system shall be overhead hung and wall supported with a maximum clearance of 8 inches above the floor. The top of the partitions shall be 88" above finished floor (see "Restrooms" drawing, figure 28). Fixtures and furnishings shall be wall and ceiling hung to provide a clear space for mopping. Provide tubular steel support at the top of toilet compartments over large free spans. Attach compartment partitions to the walls with continuous full-length channel molding. The compartment shall be furnished with a surface-mounted toilet paper dispenser, a paper seat cover dispenser, a coat hook and a utility bag hook (mounted 18" from the top of partitions).

Doors to stalls shall have vertical lap joints or provided with a full length piano hinge and a lap joint on latch side to create a visual deterrent at jambs. Doors should secure by a simple flip bar operated from the inside, yet accessible from the outside by removing tiny pinhead security screws on the hasp. Spring or gravity hinges should be provided at "hold-open" doors unless they are latched, making mortised occupancy indicators unnecessary.

Provide heavy duty, industrial quality rust resistant, stainless steel hardware (hinges, locks screws and mounting attachments) for partitions and fixtures. Provide commercial duty wall-hung brushed stainless steel, siphon jet, wall mounted, GPF water closets with Sloan hard-wired automatic flush valves and manually operative push buttons. Connect the power for the automatic flush valves directly to the emergency lighting circuit. Install all transformers, controls and wiring in secured recessed compartments with plugs or quick disconnect power cords on the low voltage side of the power transformer to allow a person without electrical skills to service the automatic valve.

All toilet paper dispensers should be positioned so the dispenser outlet is between four (4) and six (6) inches in front and six (6) to twelve (12) inches horizontally above the front rim of the commode. Where height is in conflict with ADA railings or architectural features, the dispenser shall be set at a level above the obstruction. In no case should the dispenser outlet point be located directly adjacent or below the rim of the toilet fixture.

All restroom fixtures shall be touch-less automatic heavy-duty commercial fixtures with a manual override feature. All devices shall be low voltage, fed by an emergency power source, with a local quick disconnect cord.

Provide ceiling exhaust grilles directly above and/or behind each commode and also at the furthest point away from the restroom entries. LED exhaust fan status indicator pilot lights shall be provided at each restroom entry. It is assumed that all restroom air will be spilled or exhausted. Provide at least two (2) exhaust fans per restroom, each with the capability to assure 100% continuous ventilation during routine maintenance of either fan.

Urinals and Screens
Provide standard wall-hung vitreous china or brushed stainless steel urinals with Sloan hard-wired automatic flush valves and manually operated push buttons. Connect the power for the automatic flush valve directly to an emergency power circuit. Install all transformers, controls and wiring in secured recessed compartments with plugs or quick disconnect power cords on the low voltage side of the power transformer to allow a person without electrical skills to service the automatic valve.

Wall-hung screens between urinals shall match the material and finish of the toilet partitions. Screens shall be at least 2'-4" on center and screen supports should be secured to the wall framing either directly or in purlins.

Lavatory Counters/Snap Dispensers/Backsplash
Lavatory counters shall be continuous, and made of granite. The entire countertop surface shall be milled or pitched toward under-counter sinks. The counter backsplash shall be continuous, a minimum of 6" high, and should wrap around the end walls where applicable. The backsplash material shall be granite.

Under counter sinks shall be stainless and shall resist scratches, stains and high temperatures. Install hard-wired "hands free" automatic faucets that are hard-wired directly to emergency power circuits. Provide heavy-duty stainless steel wall mounted soap dispensers above the backsplash. Soap dispenser spouts shall extend into the lavatory.

Provide a plumbing shield under the full length of the counters (see "Restrooms" drawing, figures 4a and 4b). The plumbing shield shall be removable by sections so maintenance workers have access at every lavatory location. Provide recessed handles and pinned screw alignment guides at each shield panel. Shields shall not interfere with the maintenance or removal of serviceable plumbing piping, fixtures, or electrical components, and shall allow space to access drain cleanouts.

Provide at least one dedicated ground fault interrupter (GFI) service receptacle under each sink. These receptacles may also provide power to the automatic flushing devices, as long as they are connected to the emergency power circuits. Install all transformers, controls and wiring under each sink in secured recessed compartments with plugs or quick disconnect power cords on the low voltage side of the power transformer to allow a person without electrical skills to service the automatic valve.

Mirrors
Provide a continuous mirror along the entire length of the counter, from the top of the backsplash to the bottom of the soffit above (see "Restrooms" drawing, figures 4a and 4b).

Hand Dryers
Hand dryers with a touchless sensor electric switch shall be located near the sinks. Provide at least one hand dryer for every two sinks. Hand dryers shall be surface mounted, American Specialties Profile model 0165-00 ADA compliant steel/porcelain white dryers. Do not provide paper towel dispensers.

Trash Receptacles
Do not install wall-recessed trash receptacles. Facility will provide freestanding open wire trash receptacles with clear plastic bags.

Infant Changing Areas
Provide an area furnished with a fold-down changing table, sink, diaper disposal unit and a deodorizer in each men's and in each women's assisted family/ADA restroom.

Floors
The floor material shall be a slip-resistant ceramic tile that is impervious to moisture and cleaning agents. Install with a tight fit abutting a sanitary cove base tile. The tile grout shall be treated with a sealing agent. Floor drains shall be provided in the general area of the flushing fixtures (water closets and urinals).

Walls
The wall material shall be glazed ceramic tile that is impervious to moisture and cleaning agents. The tiles shall extend the full height from floor to ceiling. Provide epoxy tile grout. Provide stainless steel corner guards at all exposed corners.

All wall electrical devices located within the tiled walls shall be of industrial rain tight design to allow incidental exposure to water during pressure washing and cleaning of the walls & floors. Lighting switches are not recommended but if required shall be key operated and located in the janitor closet or other secured location.

Ceilings
Provide locking ceiling tiles at all public restrooms. Light fixtures shall have vandal resistant UV protective lenses. Provide continuous lighting in a soffit above the lavatories and along the rear wall of the toilet compartments.

Lighting
Lighting shall be designed to provide a general lighting level of not less than 20 foot-candles in the restrooms, which will have 60" high black toilet partitions. Light switches shall be key operated and located in the janitor closet or other secured room.

Toilet Room Attendant
The Facility requires one full-time attendant in each public toilet room during hours of operation. Provide a small supply closet with a sink and a locked door for the attendant in each toilet room. Provide hot and cold hose bibs in the attendant's closets.

Bus Facility: Police, Operations and Maintenance Areas

General

Police, Operations and Maintenance facilities should all be located in close proximity to each other on Level 3. The O.C.C. and electronics equipment room shall be adjacent to each other on Level 3, in close proximity to the operations and maintenance areas, with a door interconnecting the two spaces (see *PA Police, Operations & Maintenance Relationships* chart and plans at the end of this chapter).

Level 3

Staff Parking
Provide reserved parking at Level 3 for (4) PA personnel + (2) police vehicles + (1) prisoner transport vehicle for a total of (7) spaces. The prisoner transport vehicle space must be adjacent to the prisoner cells

Watch Engineers Office
Provide a 300 square foot watch engineers office for occupancy 24/7 by one to two watch engineers. The engineers require immediate access at all times to the West Building and to all the spaces they monitor and maintain. Since their office is occupied 24/7, they also require access to toilets, showers, lockers and a reserve room (pantry/break room) at all times.

Storage
Provide 400 square feet for Operations and Maintenance Storage, and 250 square feet for Police Crowd Control Storage (shields, helmets, bats, etc.). Provide access to Reserved Premises and Common Area elevators to Level 1 from the Storage Rooms

Police
Provide a police area on Level 3 incorporating the room size, adjacency and functional requirements delineated in the PA Police Functional Diagram at the end of this chapter. The drawings and specifications for the holding cells must be submitted to the New York State Department of Correction for their review and approval. Provide locking ceiling tiles in the Police area rooms, which are used by the public:

- Entrance Alcove
- Juvenile Holding
- Juvenile Processing
- Adult Arrest Area

Operations Control Center (OCC)
Provide a fully equipped OCC, with seating for 5-people at 5 cpu's, for use by PA staff 24/7 in the event that the command desk at the Fort Lee Administration Building is rendered inoperable (see Electronics chapter for room requirements). Locate an electronic equipment room adjacent to the OCC, with a door through the shared wall connecting the two rooms. There will be a row of (5) 3'x3' equipment racks in the center of the room. Allow at least 3' clear circulation on all sides of the row of racks. Since the OCC would be occupied 24/7, provide access to toilets, showers, lockers and a pantry/break area. The OCC can use the Operations and Maintenance showers as long as direct access is provided.

Cleaning Equipment Storage
Provide a cleaning equipment storage room large enough to accommodate (2) 3'x4' cleaning machines. Also provide a cleaning equipment office adjacent to the storage room which can hold a desk and chair for cleaning employee use.

Community/Conference Room
Provide a 270 square foot Community/Conference Room to be used by the Police, Operations and Maintenance for internal meetings and for meetings with community members

Electrical Substation
Provide man door(s) as required by code and a 10'x10' overhead roll-up door for equipment servicing and delivery.

No retail pipes, drains or clean-outs shall be installed below the existing second floor slab over the Electrical Substation. The entire existing second floor slab over the Electrical Substation shall be sealed and isolated from any leaks which may occur in the retail spaces above it

For more information on the requirements for this room, see Electrical chapter.

Shared Facilities

Vertical Circulation

Escalators, stairs and elevators should be located in proximity to each other, and in clear view of the horizontal pedestrian circulation to facilitate wayfinding. They should reasonably accommodate the pedestrian flows if one escalator, stair, or elevator is out of service. They should also accommodate off-peak hour pedestrian flows if one entrance and corresponding vertical circulation system is closed. Where vertical circulation is utilized for both bus facilities and retail movement, it should be possible to separate the retail areas from the vertical circulation during hours of bus operation that do not coincide with the retail hours of business

The vertical circulation spaces should minimize "hidden areas," be well-lit, incorporate slip resistant floor surfaces, utilize glass elevators, and be designed to promote and protect public safety

Since 75% of the bus passengers arrive and depart from the Fort Washington side of the building, the highest passenger demand for vertical transportation to and from the bus level is at this location. As per PA Traffic analyses (see the Traffic chapter), two heavy-duty escalators, two elevators (large enough to accommodate a gurney, in case of emergency), and a set of stairs (all serving Levels 1, 2 and 3) are required.

Two dedicated elevators serving Levels 1 and 3 are necessary to meet the transportation requirements at the Broadway side of the building (see the Traffic chapter).

Lobbies/Corridors/Cross Connections

These areas should also minimize "hidden areas," be well-lit, incorporate slip resistant floor surfaces, and be designed to promote and protect public safety. The materials in all public areas must be easily maintained, abuse resistant, and durable. They should be compatible with the existing building architecture

Pedestrian flows should be direct, convenient, and sized to accommodate peak loading requirements.

Retail Spaces

General

Retail design criteria are a common component in designing, constructing, leasing and managing retail spaces in shopping malls and urban mixed-use centers in the United States to control the appearance of retail, food and beverage, and consumer service concessions. Design criteria and aesthetic standards have been established by the Port Authority to control the overall appearance and enhance the overriding architectural character of the GWBBS as well as to balance the needs of each commercial tenant's retail identity

The purpose of these criteria is to establish visual and aesthetic guidelines to control the manner in which the retail tenant's designer (s) and contractor (s) create and construct the retail tenant's storefront (s) and identity sign (s) and those portions of the leased premise's Design Control Zone (see definition below) to be built out at the retail tenant's cost in order to conform to a unifying standard.

Retail Branding Program

The developer shall develop and provide a retail Branding Program for PA review and approval. This Program shall include criteria for Leased Premises signage, lighting, directories and wayfinding, to insure an overall level of quality and consistency of design. The developer will review and approve proposed Retail tenant designs based on conformance with the Branding Program. The Branding Program requirements shall not be in conflict with or less stringent than the requirements in the TCRM or in the Report.

The developer's retail tenants' spaces shall comply with the TCRM. In the event of conflict between the requirements of the TCRM and those contained in the Report, the more stringent requirements shall take precedence.

Definitions

The following terms are used in the retail criteria:

Storefronts shall be defined as the architectural facades of any store's perimeter adjacent to public circulation areas, including doorways. The storefront elements include side piers, the upper fascia/bulkhead and the floor surface at the lease line.

Demising Walls are walls that mark the lease line between independent retail tenant-leased area and the Common Areas.

End Cap refers to the material finish applied to the exposed end of demising partitions visible from public areas. The end caps will be specified and constructed by the DV with durable materials that are compatible with the Common Area finishes.

Lease Lines (except where noted in plan exhibits) extend from the outermost point of the exterior face of the storefront into the rear of the retail tenant demised premises. Unless otherwise indicated, lease lines will be located at the centerline of any demising wall.

Design Control Zones are areas established within the retail tenant leased premise within which specific design criteria as noted in this document apply and are governed by PA review and approval.

Interior Storefront Design Criteria

Storefronts on Common Areas

- Storefront construction shall extend from the floor slab to the horizontal neutral bulkhead above or to the finish ceiling, and shall abut the vertical demising system at both sides of the demised premises.
- Any soffit or pier returns exposed by recessing the storefronts shall be finished to match the surrounding construction and finishes.
- No element of the storefront may extend beyond the lease line.
- All storefronts, except entry doors, shall have a minimum of 6" high base of durable material integrated with the storefront design.
- High transparency in the storefront design is encouraged. Retail tenants overall storefront area shall be glazed. The retail storefronts, including the entries, shall be comprised of a uniform glazed storefront system; transparency and opacity of the glazing will be based on tenant requirements.
- All interior storefront glazing shall be tempered glass; opaque glass panels shall be laminated glass.
- The storefront mullion system, including doorframes, shall be high quality, light colored, and preferably metallic finished.
- The storefront system, including entries, shall be uniform in appearance and compatible with the Common Area finishes and the Exterior Building envelope finishes.
- Storefronts shall have uniform panel sizes and butt joint glazing.

Storefront Entries

- All entries shall recess 3' 0" from the storefront line.
- No part of any door swing shall extend beyond the lease line into the Common Areas.
- Retail tenants are required to extend the Common Area flooring material from the lease line to the recessed portion of the storefront closure line.
- Electronic surveillance or other shoplifting detection devices and security systems shall be within the Retail tenant Lease Line.
- Soffits at the recess entries shall be a minimum of 8'-6" above the finished floor where base building conditions permit.
- Recessed down lights are required for the recessed entry area and shall be of the low-brightness type. Colored incandescent bulbs are not permitted. No light source shall be visible at or below the ceiling line.

Interior Storefront Design Control Zone

- The Interior Storefront Design Control Zone is the area from the front lease line to a point 3'-0" inside the lease line between retail tenant demising piers.
- The Design Control Zone includes the soffit and lighting.
- There shall be a uniform ceiling height in the Design Control Zone where base building conditions permit.
- The ceiling within the Design Control shall be constructed of materials compatible with the Common Area finishes.
- The use of the following materials in storefront Design Controls Zone is encouraged:
- Non-directional stainless steel, bronze, copper – brushed, polished
- Shop painted wood – lacquer
- Clear tempered glass – etched, sandblasted, patterned as detail.
- Limestone, granite, marble – polished, honed, hammered, flamed.
- Laminated glass panel as manufactured by Cesar Color, Inc. or approved equal

Exterior Building Envelope Design Criteria

Exterior Building Envelope Glazing

- The exterior building envelope glazed wall system, including entries, shall be uniform in appearance and compatible with the existing building structure and materials.
- For more information on Exterior Building Envelope Design, refer to the Historical criteria section of this chapter
- Interior semi-transparent roll-down security gates shall be permitted on a case-by case basis only

Exterior Building Envelope Design Control Zone

- The Exterior Building Envelope Design Control Zone is the area from the inside face of the exterior storefront to a point 3'-0" into the retail tenant leased space
- The minimum height of the ceiling within the Exterior Storefront Design Control Zone is to align with the height of the glass storefront.
- All materials and finishes used in the Exterior Storefront Design Control Zone shall be of high quality to ensure durability
- All fixtures or displays shall be a minimum of 1'-0" from the glass.

Retail Signage

- All interior retail signage shall be located inside of the lease line a minimum of 1'-0" from the exterior storefront glass

Exterior Lighting

- Lighting within the Exterior Building Envelope Design Control Zone shall be of uniform light levels and compatible with the exterior building lighting design
- See the Architectural Lighting section of this chapter for more information.

Sign Restrictions

The following guidelines and restrictions apply to the fabrication and installation of retail signage within the exterior Building Envelope Design Control Zone:

- Retail tenants are prohibited from affixing permanent or temporary signing, decals, artwork, or other signage indicating product line. Credit card applicability will be permitted subject to developer's approval
- Permanent or temporary interior signage specifying products and prices must be designed, constructed and executed with quality and professional standards of fabrication.
- Animated component signs and signs employing moving or flashing lights will not be permitted.
- Plastics are not permitted without OTCR approval.

Fixtures and Furnishings

- All internally lighted showcases must be adequately ventilated

Interior Storefront Design Control Zone Lighting Criteria

Window Display Lighting

Window display lighting shall be high color rendering fluorescents where wash lighting is provided, or a combination of halogen or low brightness parabolic plastic or Alzek louvered fluorescent. Provide ceramic metal halide lighting where point sources are needed for window display. In general, light sources (including lamps) shall not be visible from the Common Areas, unless they are specific features of the design and approved

Spotlighting

Spotlighting within the exterior storefront Design Control Zone may be recessed adjustable angle fixtures or track-mounted adjustable spotlights. All adjustable units must be focused so that brightness is not visible from public area walkways with the possible exception of a small halogen spotlight

Interior General Lighting

All self-illuminated showcases and display cases must be adequately lit and ventilated. Direct visual exposure of incandescent lamps and/or fluorescent tubes is prohibited.

A seven-day, calendar type, 24-hour time device shall be provided by the retail tenant for lighting of the retail tenant's storefront(s) and show window(s) during required hours designated and controlled by PA. Cost for operating this lighting is the obligation of the retail tenant

Interior Storefront Design Control Zone Retail Sign Criteria

Retail tenants are required to design, fabricate, install and maintain interior storefront signs, which exhibit imagination, high fabrication quality, and compatibility with adjacent and facing storefronts and the Common Areas. All signs must be UL approved. No exposed raceways, ballast, transformers, sign company names or labels are permitted

Sign Types, Areas & Sizes

- A creative approach to storefront signage as an integral part of the storefront design is encouraged
- Interior retail signage must be designed and placed to permit an unobstructed view into the retail tenant public space.
- Signs shall comply with the requirements of the Retail Branding Program.

Sign Restrictions

The following guidelines and restrictions apply to the fabrication and installation of signage within the Design Control Zones:

- Permanent or temporary interior signage specifying products and prices must be designed, constructed and executed with quality and professional standards of fabrication
- Animated component signs and signs employing moving or flashing lights are not permitted
- Plastics are not permitted without OTCR approval.

Food-Service Counters in Interior Design Control Zones

Food service counters in Design Control Zones shall be consistent at a height between 40" and 48" above the finished floor level of the adjacent circulation/queuing area. Counters areas, which incorporate bakery or display cases are accepted, but may be no higher than 48" above the finished floor level of the circulation/queuing area, and may not occupy more than half the available counter frontage. Display cases must be faced with clear glass, and the housing material must relate to the overall design and materials selected for the counter component. The counter area is required to extend the entire width of the Tenant's space without openings, gates or pass-through unless approved by the PA

The face of the counter may be vertical or sloped back to provide more room below the lip of the counter edge. Retail Tenants are encouraged to detail the counter edge to incorporate lighting to "wash" the counter outer face. A recessed toe 6" high and 4" deep is required across the entire width of the frontage. The facing material of the toe space should be durable and compatible in color and material with other 6" base material

Counter fronts shall be of high quality materials previously identified, which are durable, easily maintained, and represent an atmosphere of cleanliness and hygiene. Polished or shiny surfaces in lighter value colors or materials are preferred. The Developer will carefully consider the detailing of counter fronts, counter surfaces and toe space with regard to joinery and joints between materials.

Countertops must be high quality materials which offer superior durability, must be monolithic, easily cleaned and should at all times visually convey the standard of cleanliness and hygiene. Close attention should be paid to the detailing and durability of the countertop at the edge, whether detailed as a consistent material edge or a separate bull-nose band. All areas of countertops within the defined Design Control Zone, which are visible to the public, should be designed and controlled to avoid a cluttered appearance. Any dispensers for food trays, cups, straws, cup covers, napkins and condiment containers are to be recessed into the counter as an integral part of the counter design.

Any containers for condiments, napkins, straws, utensils or other elements within the Design Control Zone shall be consistent and harmonious with materials, colors and detailing of the counter fronts, and counters and equipment in the Design Control Zone. No elements shall be placed on the top of the display cases, or other counter front equipment. Storage of paper goods, surplus items such as condiments or utensils, and other supplies are not permitted in any areas visible to the public.

Materials

General

The materials in all public areas must be easily maintained, vandal/graffiti resistant, and durable. They shall comply with the Design Criteria, and be compatible with the overall building architecture. Finish materials shall be in light-toned colors, reflective, and bright. Stainless steel elements shall be 316L non-directional brushed finish.

Public Spaces

Provide terrazzo floors, curvilinear stainless steel column enclosures, and perforated metal panel concealed spline ceilings. Maximize the use of glass and/or reflective wall materials. Glazing shall have stainless steel frames and butt joints. Glazing may be rear-illuminated. Provide hard surface finish around building cores (i.e. vertical transportation). Protect wall corners with a hard surface finish material that is compatible with adjacent wall finishes

PA Support Spaces

PA support space doors and frames (e.g. janitor closets, mechanical rooms, elevators, access hatches) shall be stainless steel. Provide heavy-duty wall and corner protection in high traffic areas.

Retail Spaces

The developer's retail tenants' spaces shall comply with the TCRM, and materials used at store facades and entries shall be compatible with the adjacent public space finishes. Floor finish must be made level with the abutting Common Area walkway surface.

Escalators

Provide heavy-duty (see vertical circulation section of mechanical chapter) escalators with non-directional stainless steel wall finish and clear glass newels. The guardrail around the escalator opening shall be glass with stainless steel posts and top rail.

Bus Facility Exterior

The wall materials shall be durable, easily maintained, vandal/graffiti resistant, and impervious to bus exhaust. Preferred materials include ground face concrete block, structural glazed facing tile, or approved equal. Provide full height glass exterior wall panels at either end of the waiting area and around the escalator opening (see Architectural plans at the end of this chapter).

Submissions Required

Stage I – Conceptual Design

- Life safety and code analysis
- Facility program space criteria sheets
- Schematic design drawings
- Presentation materials

Stage II – 50% Submission

- Design development drawings
- Outline specifications
- Sample boards of proposed finish materials

Stage III – Final Design

- Contract documents
- Specifications
- Branding Program, including:
- Signage
- Lighting
- Directories
- Wayfinding

Historic Overview

General

The George Washington Bridge Bus Station (GWBBS), which opened in 1963, is one of the finest examples in the United States of innovative Italian architectural engineering of the 1960's. Designed by architect-engineer Pier Luigi Nervi (1891-1979), the bus station is Nervi's first building in the United States and one of few in this country. A master of the integration of the art of architecture and the science of engineering, Nervi was especially known for his experimental and beautiful structural systems, and the creation of plastic forms in reinforced concrete. Some of his significant works include the UNESCO building in Paris – in collaboration with Marcel Breuer and other architects, the Exhibition Building and Palazzo del Lavoro at Turin, Italy, and perhaps his best-known building, the Palazzo de Sport in Rome.

Nervi made a major breakthrough in the field of reinforced concrete when he created his signature structural system "ferro-cemento," which consisted of a steel mesh core with layers of cement mortar brushed on top of it. The flexibility and elasticity of the mesh within the cement mortar allowed for a building material that could withstand a great deal of stress, perfect for an active bus station spanning a major highway. The GWBBS has an innovative ferro-cemento folded plate concrete roof structure consisting of 26 large-scale triangular roof components. This extraordinary feature distinguishes the bus terminal as one of the greatest examples of thin-shell construction in the United States. Fourteen triangular sections slope upwards from a central row of piers to create clerestory monitors, which appear to rise from the spine of the roof. They are supported along their sides by poured concrete structural members creating alternating triangular openings with windows and louvers, which allow dynamically filtered natural light onto the bus station's main platform.

The design and siting of the bus station reference and highlight the iconic George Washington Bridge structure spanning the Hudson River to the west. Nervi took cues from the bridge's criss-crossed steel trusses in the forms of the bus station's roof structure, with its triangular roof sections and structural beams radiating out from the row of concrete piers, and the triangular trusses connecting the bridge's lower and upper roadways are referenced in the concrete structural elements enclosing the bus station and the parking building to the east.

Architectural Approach

The GWBBS is not listed on the State or National Register of Historic Places, nor is it a designated landmark by the New York City (NYC) Landmarks Preservation Commission. However, any future development should be cognizant of and sensitive to the station's architectural heritage, and should retain its unique character.

Straddling Broadway between West 178th and 179th Streets, the station's East and West Buildings were conceived together as a unified structure. The major transportation Facility is in the larger West Building. The East Building provides ventilation for the Trans Manhattan Expressway below, and parking and mechanical support systems above, on its roof deck.

The East and West Buildings were designed as a continuous structure, linked architecturally, structurally and functionally. It is critical that the new design be referential to the characteristics of the East and West Buildings. However, a replicative design mimicking Nervi's historic building, for example, would be inappropriate and would compromise its architectural integrity.

Character defining features, such as the roof structure, the truss supports at the exterior walls, the exposed interior columns on Level 3 of the West building, and the building's integration with the adjoining roadway systems should be retained. The dramatic front entry canopy of the West Building and the exterior structural expression shared by and connecting both buildings, are equally character defining and should also be retained.

Design Parameters – West Building

An understanding of the significance of The GWBBS is critical in guiding any design proposals for the West Building. The new design should neither remove nor detract from the character-defining features of the building. The salient features include:

- The concrete roof structure, including the triangular roof panels and supportive column assemblies. This perhaps is the most significant element of Nervi's innovative design.
- The open-air nature of the top floor bus level.
- The concrete exterior truss system.
- The Broadway vehicular bridges linking the East and West Buildings.
- The exposed interior columns on Level 3.
- The Broadway entrance including the sidewalk canopy, designed by Nervi to echo the "butterfly" form of the roof system.

Any alteration of the West Building should not obscure these historic features.

Design Parameters – East Building

The addition to (and redevelopment) of the East Building structure should be designed with an understanding of the historic nature of the entire station complex. Most importantly, the scale, proportion and rhythm of the building addition must be appropriate to both buildings. The new design can neither overpower the missing of nor present an unrelated aesthetic to the historic west structure, and without mandating specific materials or designs, the proposal must appear to be sympathetically coordinated with it. Materials should be selected to have a harmonious relationship with the predominant concrete frame and glass and metal infill of the original structure.

The new design should provide a high level of transparency, especially at grade, to enliven the streetscape around the building. Entrances should be located to reflect retail development along Broadway. Finally, the high level of activity in the new building will have a great impact on the adjoining neighborhood and should establish a level of quality for future surrounding development.

Rehabilitation

Concrete Repair

The developer shall be responsible for implementing a program of concrete repair of all exposed concrete on the building (except the top of the Nervi roof) including, but not limited to, the exoskeleton, trusses, slabs, exposed columns, Broadway roof canopy and the underside of the Nervi roof.

The PA and Developer's Engineers identified the extent of Nervi roof repair during a site visit on February 17, 2011 as comprising approximately 450 square feet of the underside of the roof. Roughly, 100 square feet of that area requires "Type 1 Repair," which is applicable for areas where concrete removal has exposed less than half of the diameter of any existing rebar. The balance of the repairs require "Type 2 Repair," which is applicable for areas

where concrete removal has exposed more than half of the diameter of any existing rebar. The repairs of both types shall be as per the Conformed Specifications. (Please note that the preceding notes, quantities and specs are the same ones we gave to Tri and he used to price the roof repair for Exhibit K)

The repair shall correct spalls, cracks and other deficiencies with a compatible concrete repair system, matching the original material in color and texture including the exposed formwork of the historic cast in place concrete. An analysis of the original concrete material and sample mockups shall be utilized in the approval of an appropriate repair methodology.

Concrete Cleaning

The blue paint at the base of the exposed interior columns on Level 3 of the West building should be removed, and the entire columns cleaned and repaired to have a uniform appearance for the full height of the columns. The existing exposed concrete structure is a character-defining feature of the building and should be left exposed, intact and unpainted, to reflect the original design intent.

Canopy Rehabilitation

The George Washington Bridge Bus Terminal canopy, located at street level on the east façade along Broadway, is a character-defining element of the building. Its rehabilitation is a key component of the building.

The existing canopy and column cladding forms shall be retained and rehabilitated with materials and finishes that are compatible with and referential to the existing building exterior features and compatible with the new exterior retail wall design. The entrance wall system beneath the canopy shall be rehabilitated with materials and finishes that are compatible with the canopy and the new exterior retail wall design, preserving its solid appearance in order to distinguish the Bus Station entrance from the retail zones. Lighting, wayfinding signage, directory signage and identity signage shall also be developed to distinguish the Bus Station entrance from the retail zones.

Submissions Required

- Provide sample, in situ mockups for concrete repair and for cleaning the Nervi columns to determine the most appropriate method of treatment. All manufacturers' recommendations shall be followed in the application of the cleaner and preservative systems.

Signage and Wayfinding

Design Guidelines

- Port Authority of NYNJ Brand Standards Guidelines – Fall 2005

Building Identity

GWBBS redevelopment shall project a distinct identity as a Port Authority facility, which is clear to the public from all entrance points at all levels. This identity shall also be apparent to travelers approaching the building by vehicle from the bridge and urban arteries. Only official PA graphic guidelines shall be utilized (from PACommunications@panynj.gov) for its design.

General Criteria

Architectural graphics, commercial messages, and regulatory messages shall all enhance the building's historical, modernist vernacular and not detract from it. All aspects of the signage and wayfinding shall add to the lightness and celebrate the drama of the structure. Retail signage shall not block or obscure the view of PA signage.

Bus Information Signage

Bus Status Boards

Provide a large central directory of bus routes and numbers at a prominent location clearly visible to departing passengers when they arrive at the bus concourse level. Also, provide smaller directories at main building entries, including the main Broadway and Ft. Washington street level entries and the entry from the pedestrian underpass. List all bus stops on the directory, in alphabetical order, and then indicate the corresponding route number followed by the gate number. Also, provide an area for remarks and emergency information, e.g. "Driver does not accept any bills larger than $20," or "Bus 171 delayed 10 minutes," etc. All information on the directory shall be easily updatable.

Gate Elements

Provide a destination board at each gate indicating, in the following order:

- Platform number
- Carrier name
- Bus route (including all stops)

Destination boards shall all conform to the same design template. They shall all be the same size, shape, colors, and utilize identical fonts and graphics. Mount the boards at the same height and location at each gate, so that they are clearly visible from fifty feet. If bus carrier logos are used, they shall be the same size and location on every board, regardless of carrier. The text itself should be 5/8" to 3/4" high. Destination boards shall be easily updatable.

Entrance Information

Directory information of all major building functions for transportation and retail shall be placed at the main street level entries to the West Building. Transportation functions shall be dominant and visually set apart from commercial/retail functions.

Wayfinding Graphics

Wayfinding graphics, i.e. signage, shall follow the current Port Authority Graphic Standards, 3rd Edition, July 2005, for PA airports and transportation facilities as well as all applicable safety and accessibility code standards. Graphics and signage shall be prominently placed along pedestrian paths of travel to clearly guide people to their transportation and commercial destinations. The graphic and signage elements shall be well illuminated, whether internally, externally, or both. Provide signage throughout the Facility directing people to the PA police area. Graphic elements shall enhance rather than detract from the historic quality of the building. All elements shall be sensitively placed and sized to achieve this goal.

Retail Information and Graphics
Provide a comprehensive graphics manual, which specifies a standardized approach for retail and transportation information. Retail display standards shall comply with this manual for both exterior and interior storefronts. Store graphics shall be distinguished from wayfinding information in style and graphic intensity through text, placement, and illumination standards

Specialty Graphics

Provide locations for specialized graphics that enhance "sense-of-place". These may take the form of murals, wall treatments and art works appropriate to the neighborhood context and over-all building aesthetic Include provisions for community exhibits

Dynamic Signage

Dynamic signage (also referred to as variable message signage, or VMS), such as LED arrays, plasma screens or other technologies shall be used as a means of accommodating large amounts of information in restricted spaces. Examples of this are placing building directory information at pedestrian entry points and arrival/departure information at the passenger waiting room, Include a real time clock display component

Advertising

Retail advertising shall be executed in distinct zones, separate from the wayfinding information. Commercial and public transportation information must be managed by an overall entity, similar to the advertising management structure at Battery Park City

Advertising should be integrated in to the wall surfaces in backlit wall recessed panels, if space allows. Advertising shall not be freestanding nor impede pedestrian circulation in any way.

Regulatory

Provide building code and ADA compliant markers for all back of house spaces

Submissions Required

Signage and wayfinding:
- Location plans
- Message schedules
- Pathways plans
- Sign types
- Building directories
- Specialty graphics locations
- Advertising standards and locations
- DV Retail guidelines for Common Areas
- Graphics Manual

Passenger Information System Program (PISP)

Overview/Summary

The GWBBS Redevelopment Project will be a substantial change to the operations, wayfinding and functional configuration of the existing facility. These changes will require a new Passenger Information System (PISP) to better guide patrons through the new facility The PISP should incorporate current technologies to support the new operations, and should be updatable for future technologies The developer shall provide the PISP as a "turn-key" operation, which the Facility will operate and maintain.

Goals

The PISP should be a unified, consistent, comprehensive design The overall goal of the PISP is to clearly guide bus patrons to/from the street or subway through the building to access their next mode of transportation, typically NYCTA subways and MTA buses Information should be easy to read and easy to find at the time it is needed In addition, the information must be succinct, logical in progression and easily updatable. The GWBBS redevelopment shall project a distinct identity as a Port Authority facility, which is clear to the public from all entrance points at all levels. This identity shall also be apparent to travelers approaching the building by vehicle from the bridge and urban arteries

Existing Building

The existing building is primarily a bus transportation facility with public parking on Level 3 and some commercial space on Levels 1 and 2 Currently, there are bus gates on Levels 1 and 3, which are dedicated to specific carriers and routes The entire facility is maintained and operated by the Port Authority; no developer currently oversees the commercial aspect of the building Although there is a small wheelchair lift from the street to the second level, there is currently no direct ADA access to the bus departure gates on Level 3 (See existing plans at the end of the Architecture chapter)

Existing Information Technology

The existing passenger information system consists of static illuminated message signs that direct the public through the building to the bus departure gates. The signage conforms to current Port Authority Graphic Standards. These standards use functional color-coding, green backgrounds for arriving passengers and yellow ones for departing passengers. Buses are assigned to specific gates Passengers at the Level 2 waiting area watch small CRT monitors to determine if their Level 3 bus is ready to load and depart. This is a low-tech, analog system

Redeveloped Building

In the redeveloped building, commercial tenants will be on Levels 1 and 2 of the West Building and on Levels 1, 2 and 3 of the East Building, and will be managed by the Developer The bus operations, including waiting,

ticketing, restrooms, police, and bus gates, will all be consolidated on Level 3, and the bus facility will be ADA accessible.

Broadway Entry and Elevator Access at East End of Bus Concourse
Access to the retail venues on Broadway is directly from the street. The bus passenger entry at Broadway (east side of the building) will be dedicated to transportation only. Two express ADA accessible elevators that run directly to the Level 3 bus concourse will open directly to the street at Level 1, under the "Nervi" canopy. The canopy form echoes the shape of the roof structure on Level 3, clearly linking the transportation function at both levels. Since this entry alcove will serve bus passengers exclusively, passenger information at this location should make it clear that there is no access to Retail at this location. Therefore, the information presented must effectively guide travelers up to their gates. The technology should be variable and addressable so that passengers can view real time bus status information prior to entering the facility.

The Broadway elevators will open directly to the east end of the bus concourse on Level 3. There will be no waiting area or vestibule at this location. Passenger waiting, ticketing, restroom and police functions will be enclosed in the pavilion at the west (Ft. Washington) end of the concourse, over 200 feet away. Provide bus status and gate information at Broadway, immediately visible to bus patrons as they exit the elevators on Level 3.

The gates adjacent to the Broadway elevators will typically be for jitney arrivals and departures. Unlike standard buses, jitneys are smaller and depart when full. Each jitney has an assigned route, but they do not have schedules.

Ft. Washington Avenue Entry
Currently, two thirds of all bus passengers access the facility at Level 1 directly from the Pedestrian Tunnel, which connects the NYCTA subway and the GWBBS. Another one sixth of the passengers enter the facility on Level 2 directly from Ft. Washington. In the redeveloped building, these Ft. Washington entry points and Common Areas will be used by both bus passengers and retail patrons. The vertical transportation will connect all three levels, serving bus passengers and retail patrons.

Unlike Broadway, access to the retail venues will be from these shared entries and Common Areas, not directly from the street. There will not be an iconic, dedicated bus station entry at Ft. Washington. In fact, bus patrons will be confronted with a wall of retail storefront along the street and the Common Areas.

Consequently, the bus passenger information at the Ft. Washington entry points must quickly and clearly indicate that these are bus station entries. The passenger information presentation should be easily distinguishable from retail information systems. The path to the Level 3 bus gates and passenger amenities must be readily apparent within the retail context.

Bus Concourse
Passengers will arrive and depart from an open-air saw-tooth bus concourse on Level 3, which will be fully covered by the "Nervi" roof above. There will be a climate controlled bus pavilion on the west end of the concourse (see description below), and express elevators to Broadway on the east end. Passengers will have the option to line up in queues at their gates, or to wait for buses in the pavilion. Bus gate assignments can vary, although the jitneys will typically depart and arrive from the east side of the concourse. As such, the gate identification needs to be similar to an airport gate, which can accommodate multiple flights over the course of the day. Some of the gates will be dedicated drop-off only. Individual bus carriers requiring multiple gates will typically have gates adjacent to each other and/or directly across the platform from each other.

Carrier gate assignments can be changeable rather than permanently assigned. Buses will no longer "pull-through" for passenger boarding. Buses will arrive and depart from a saw-tooth slot. Gates could function as pick-up or drop-off only. However, at the majority of gates, buses will pull in, discharge passengers, load passengers, then back out to leave. This will necessitate an efficient use of space for viewing information, queuing, loading and unloading.

Arriving passengers can be descending from a bus while departing passengers are waiting in a queue at the same gate to board it. Therefore, distinct paths of travel for each group must be maintained. In addition, timely gate information guiding passengers seamlessly off and then on the bus must be provided. Bus concourse passenger information elements shall be designed and located to maintain maximum visibility from one end of the saw-tooth platform to the other.

After disembarking, passengers should be guided to connecting transportation, passenger amenities, including public restrooms and police, and to retail.

Level 3 Pavilion
The bus facility pavilion on the Ft. Washington side of the bus concourse will house passenger seating, ticketing, public restrooms, police, and maintenance and operations functions. Passengers using the vertical circulation from the Ft. Washington entries will arrive directly within the pavilion. Real time bus status and gate information must be clearly visible from the seating area. Passengers using the Broadway elevators will arrive on the east end of the open concourse, from which they can walk approximately 200 feet to the pavilion. There will not be any direct connection between the Broadway and Ft. Washington entries on Levels 1 and 2.

New Information Technology

Because the retail function at the new facility will be on the street levels, and the bus operations will be consolidated to the third level, the new passenger information system should have a unified, transportation oriented appearance, to clearly distinguish it from the retail environment. The information should be high resolution, updatable and combine variable and static components. In addition, up-to-the-minute transportation information should be readily available to bus patrons at the key decision points along their path of travel. These decision points would include: building entries, areas in advance of vertical movement, waiting areas, the bus concourse, and the gates. See the PISP diagrams at the end of this chapter showing these key decision points and the types of information to be displayed at each of them.

The information provided should be progressive, clearly and sequentially guiding patrons to their next destination. The types of information displayed should include bus status updates, and route and/or schedule changes. Dynamic signage such as LED arrays, LCD and TFT screens may be used. Messages displayed should be simple, succinct, and direct.

Once the passengers reach their gates, they will require a large amount of information specific to that gate. This information should be displayed in a single element, which does not obstruct passenger movement. Since the bus gate assignments will be variable, the gate numbers themselves should be prominently displayed, and easily visible from the entire bus concourse. Gates on the 179th Street side of the Concourse should be assigned even numbers, those on the 179th Street side should have odd numbers. The gate pylons themselves signal the beginning of the queues, so the monitor location on the gates is critical. Monitors shall be placed in the same location on all gate pylons.

The types of information provided at the gates should include: carrier name (and logo), route maps indicating scheduled stops and connections, fare information, regulatory information, schedule updates, and operations changes

Since jitneys do not have specific schedules, the information displayed at the jitney gates should include, carrier name (and logo), general route, and instructions to go the pavilion for passenger amenities (e.g. ticketing, restrooms, waiting, etc.) and subway access. However, to maximize flexibility, all gates, including jitney and drop-off only gates, shall be designed and built to provide the same information as the standard gates

The bus facility pavilion will serve both departing and arriving passengers Arriving passengers will require information directing them to the street or the subway levels, possibly incorporating real time information on connections to local modes of transportation. Departing passengers will need real time guidance to their gates, including any route and/or schedule updates Both groups will need information about passenger amenities available at the pavilion, including public restrooms, ticketing and police. A passenger pavilion "media center" should be considered that includes interactive components (e.g. ticket sales, Internet access, and/or local trip planning features) and advertising opportunities.

A large scale, bus status board should be provided in a prominent location in the pavilion, easily visible to arriving, departing, and waiting passengers The status board can incorporate static and variable information, and should include information on carriers, gates, major destinations, and real-time bus status

Operating Criteria

In general, the passenger information design should incorporate the latest technology into a cost effective and user-friendly system, which will require minimum training to operate Pre-programmed, canned messages, streaming information, and real-time information should all be considered All the systems components must be durable, vandal resistant and relatively easy to maintain and repair. Maximize the use of off-the-shelf components Provide O&M manuals for all PISP equipment installed

The system should be designed to incorporate information from a variety of internal and external sources. Provide modular units, which can accept new technologies as they are developed The system should be structured so that a single entity managed by the PA, controls the reception, distribution, and the display of information The PA should also be able to override displayed information with emergency messages.

Information display units that are exposed to the environment, such as those at building entries and bus gates, must be designed to withstand varying air temperatures, levels of humidity, light intensities, and vehicle exhaust.

Conceptual System

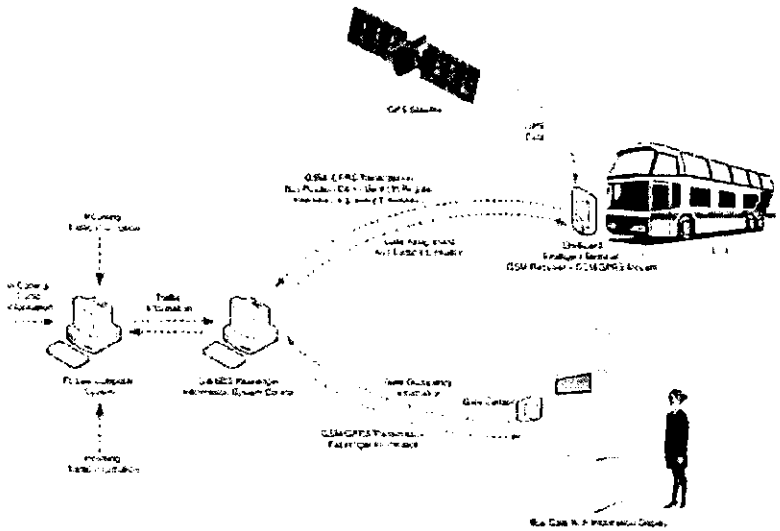
The PISP should be an integrated system that links bus status information between the carriers and the gates, possibly through GPS receptor/ transmitter devices on the buses Bus locations would be transmitted to the PISP, which could then provide real time arrival information (and even revise gate assignments) at the gates and at the key decision points. Passengers could be able to access PISP information displayed at the facility on their cell phones and/or PC's/laptops Gate sensors would track bus movements and update the bus status back to the PISP control center Locating sensors and/or EZ Pass readers at the bus ramps to and from the GWBBS should also be considered. Currently, GPS devices function on both the upper and lower levels of the GWB, however, a GPS cannot currently indicate which level of the bridge the vehicle is on.

Investigate incorporating existing applicable Traffic information from other sources, including: EZ Pass, the GWBS, the Highway Advisory Telephone (HAT) system, E-Alert, the Transportation Operations Coordinating Committee (TRANSCOM) "TRANSMIT" system, and the Fleet Management Automatic Vehicle Location (AVL) system Propose software systems that can synthesize input from these sources and provide timely, reliable passenger information For example, GPS and HAT data can be combined to determine and transmit bus delay information.

The Facility/T&T has not yet determined whether the PISP system will be controlled from the GWBBS or the Fort Lee Administration Building. Both options should be analyzed, and the staffing implications reviewed, to determine the optimal location. Ultimately, the system should require as little user interface as possible. Maximize the use of "canned" messages The Facility is compiling a collection of typical hand-written messages currently posted on a regular basis to help inform the list of "canned" messages.

The existing PA ITS system is currently integrated with the SCADA system and is in the process of being integrated with the PAWANET system (see Electronics chapter for more information) The GWBBS PISP shall be coordinated with the ITS system. The Master Clock will be controlled by the PAWANET.

"TRANSMIT" information shall not be sent outside of the PA, and locating devices, such as GPS, shall not be placed on police vehicles



Information at "Key Decision Points"

The "Key Decision Points" and the specific types information required at each are identified on the Conformed Drawings. There are three main types of passenger signage: Building identification, Directional, and Informational. In addition, the Facility has regulatory signage (e.g. "No Smoking," etc.) that shall be displayed in public areas. These signs can be incorporated into the Informational Signage or can be separate static signs.

Building Identification Signage
These signs will identify the building itself as a Port Authority public bus transportation facility, clearly distinguishing it from the retail components.

Directional Signage
These signs will guide bus patrons through the facility to their transportation destinations. The signs shall be static, bilingual (English and Spanish), and will maximize the use of simple graphics to guide the public. Directional information signs shall conform to the Port Authority Graphic Standards.

Informational Signage
These signs are the displays for the PISP. They will provide the variable updatable information passengers will need to make timely, informed, transportation decisions. The specific types of information to be displayed at the key decisions points identified on the plans are as follows:

Broadway Entry (Level1) and Fort Washington Entries (Levels 1 and 2)
- Bus status
- Public service
- Passenger alerts (e.g. "Elevator out of order.")

Passenger Pavilion (Level3)
- Public service
- Clock
- Bus Status and gate number
- Consider also providing the following at this location:

Advertising

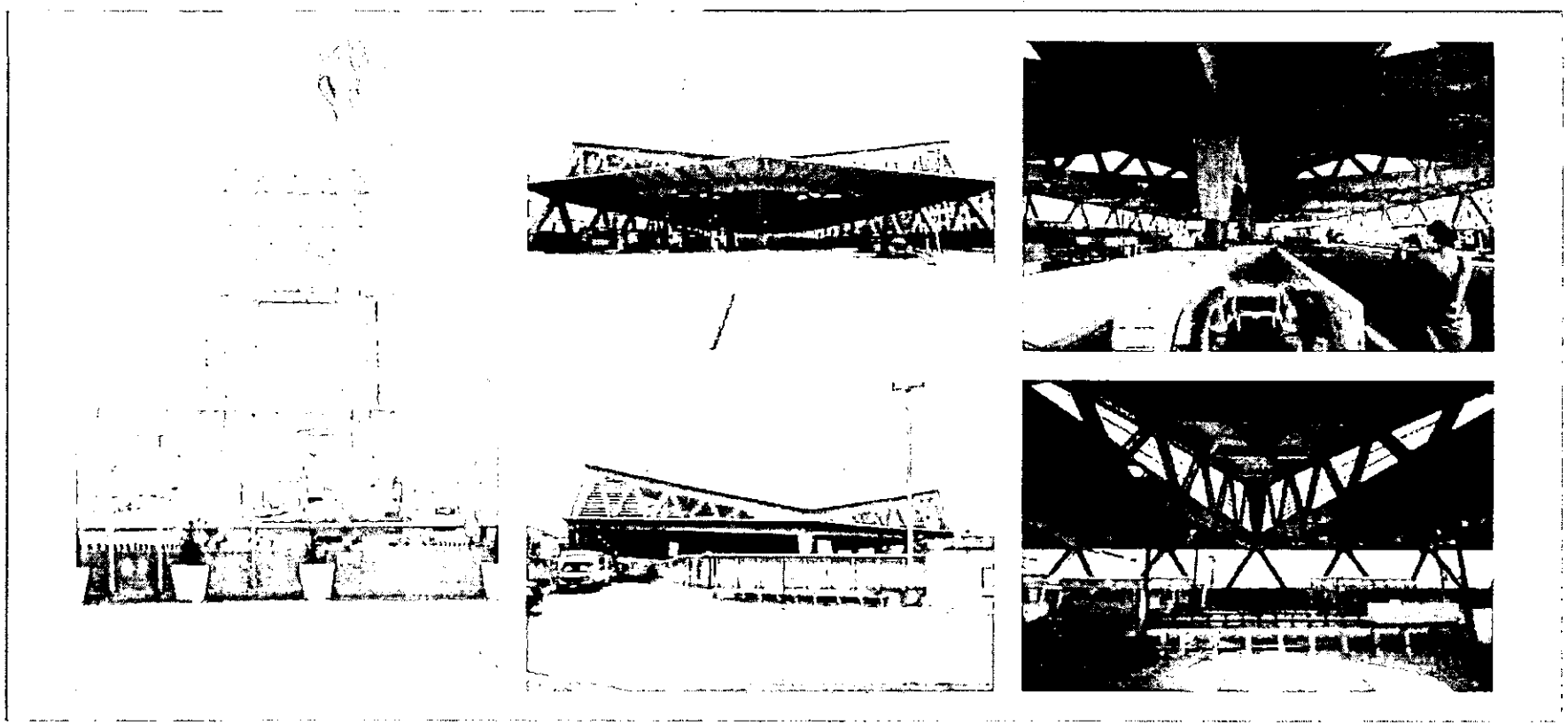
Neighborhood information

Maps

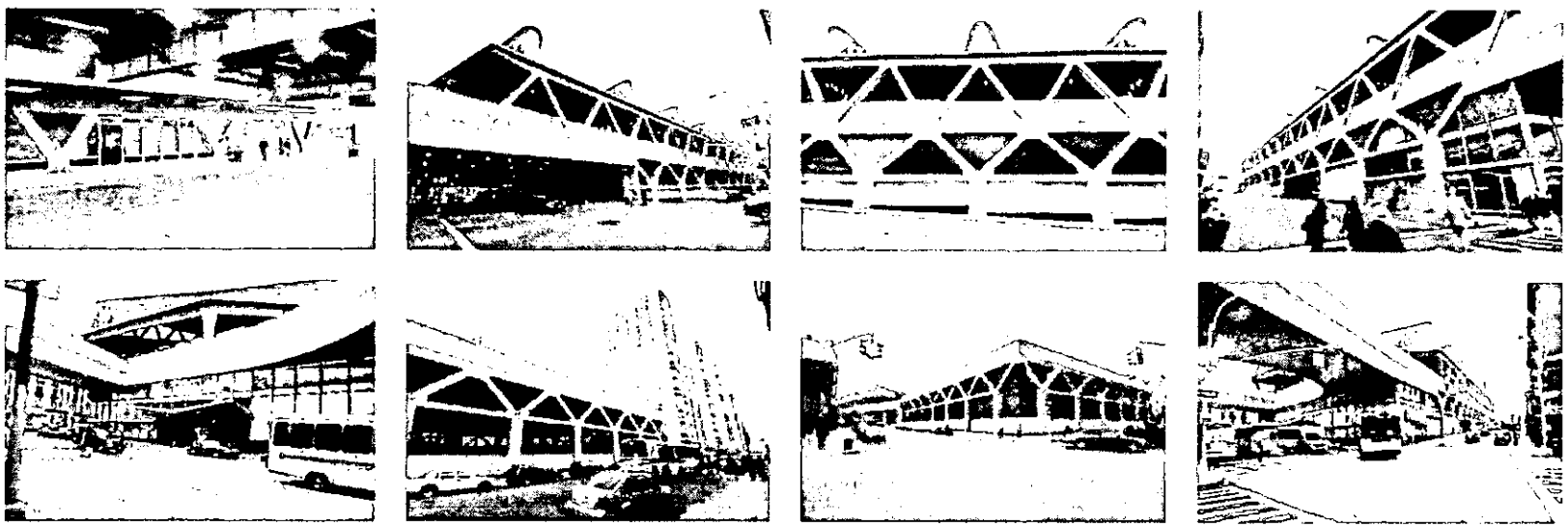
Interactive components

Level 3 Concourse at Broadway Elevators
- Bus status and gate number

References
- Port Authority of NYNJ Brand Standards Guidelines – Fall 2005
- Port Authority of NYNJ Signage and Wayfinding - Airport Standards Manual, 4th ed., June, 2008
- Port Authority of NYNJ George Washington Bridge – Rehabilitation of Signage System, Contract #GWB 244.717, September, 2004
- 42nd Street Bus Terminal - Signage Improvements Stage I Concept Design Report August 2003 (by Apple Designs, Inc.)



Site Photos



Site Photos

Exhibit B(ii)

Tenant Construction Review Manual

See attached.

Quality Assurance Division

TENANT CONSTRUCTION REVIEW MANUAL

December 2008

Engineering Department

THE PORT AUTHORITY OF NY & NJ

Quality Assurance Division

TENANT CONSTRUCTION REVIEW MANUAL

December 2008

This page is intentionally left blank.

TABLE OF CONTENTS

SECTION 1	INTRODUCTION	5
SECTION 2	GENERAL REQUIREMENTS	7
SECTION 3	CODES, REGULATIONS, AND STANDARDS	9
SECTION 4	CONCEPTUAL REVIEW	13
SECTION 5	ARCHITECTURAL	15
SECTION 6	STRUCTURAL	21
SECTION 7	GEOTECHNICAL	25
SECTION 8	CIVIL	29
SECTION 9	ELECTRICAL	37
SECTION 10	MECHANICAL	49
SECTION 11	PLUMBING	53
SECTION 12	FIRE PROTECTION	57
SECTION 13	PROTECTION FROM AIRPORT RAMPSIDE FUEL SPILL FIRE	61
SECTION 14	MATERIALS AND EQUIPMENT APPROVAL AND INSPECTION	65
SECTION 15	ENVIRONMENTAL	69
SECTION 16	CORROSION CONTROL/CATHODIC PROTECTION	73
SECTION 17	TRAFFIC	79
SECTION 18	ATTACHMENTS	85
A1	STANDARDS FOR INTERIOR PLASTIC SIGNS	87
A2	SPECIFICATIONS GOVERNING THE FLAMMABILITY OF DRAPERY AND CURTAIN MATERIALS IN UNSPRINKLERED AREAS	97
A3	SPECIFICATIONS GOVERNING THE FLAMMABILITY OF UPHOLSTERY MATERIAL AND PLASTIC FURNITURE IN UNSPRINKLERED AREAS	99
A4	SPECIFICATIONS GOVERNING THE FLAMMABILITY OF PLASTIC LAMINATE AND WOOD VENEER FURNITURE IN UNSPRINKLERED AREAS	101
A5	MARKING OF TRANSPARENT GLASS DOORS AND FIXED ADJACENT GLASS SIDELIGHTS	103
S1	PLASTER CEILING DESIGN STANDARDS	107
S2	SUSPENDED LIGHTWEIGHT CEILINGS DESIGN CRITERIA	115
S3	LGA – CTB NON STRUCTURAL CONCRETE FILL OVER CELLULAR STEEL DECKING	117
S4	PORT AUTHORITY BUS TERMINAL LIGHTWEIGHT CONCRETE SLAB AREAS	121
C1	INDEX OF CIVIL STANDARD DETAILS	123
C2	INDEX OF STANDARD CIVIL SPECIFICATIONS	127
C3	INDEX OF CIVIL DESIGN GUIDELINES	129
E1	ELECTRICAL MANHOLE AND DUCTBANK DETAILS	133
E2	PORT AUTHORITY BUS TERMINAL ELECTRICAL DESIGN CRITERIA	139
M1	PORT AUTHORITY BUS TERMINAL HVAC DESIGN CRITERIA	143

M2	PA BUS TERMINAL PLUMBING & FIRE PROTECTION DESIGN CRITERIA	149
RFS1	AIRPORT RAMPSIDE CLEARANCES	151
T1	INDEX OF TRAFFIC STANDARD DETAILS	153
INSP1	SPECIAL INSPECTION ITEMS- NEW YORK CITY FACILITIES	161
INSP2	SPECIAL INSPECTION ITEMS- NEW JERSEY FACILITIES	163
INSP3	SPECIAL INSPECTION ITEMS- NEW YORK STATE FACILITIES	165
LS1	LANDSCAPE ARCHITECTURAL DESIGN AT AIRPORTS	167

Historical Notes:
First published 1971; Rev. 1979; updated March 1984; Rev. March 1990; Rev. March 1997; Rev. March 2003;Rev. December 2008

SECTION 1 INTRODUCTION

This Manual presents the technical criteria to be followed by Tenants, and their Architectural and Engineering consultants, for construction work undertaken by a Tenant at Port Authority (PA) facilities. These technical criteria are in addition to other requirements contained in the lease agreement between the Port Authority and the Tenant. This Manual also covers the Port Authority Engineering Department's scope-of-review of the design documents (plans, specifications, calculations and other documents) submitted by Tenants in connection with proposed construction or alterations. It shall not be deemed to imply that there will not be additional reviews by other Port Authority Departments.

The Construction Design Standards Unit of the Engineering Department's Quality Assurance Division will review the Tenant Construction/Alteration Application submitted by the Tenant in accordance with the criteria contained in this Manual. The responsibility for Architectural and Engineering design shall remain with the Tenant's Architect or Engineer (A/E) of record. The Construction Design Standards Unit will not impose design solutions but will only comment on the design presented.

Reviews will not address the aesthetic or functional aspects of the design.

Construction documents for Tenant construction or alterations will be reviewed for compliance with all applicable Codes and Port Authority Technical Standards. In the absence of a specific code provision, this Manual sets forth the applicable standards to be followed by Tenants except as may otherwise be required. All design documents shall reflect the existing construction as well as the proposed work in order to determine compatibility with existing facility conditions. In this regard, a list of all reference documents and guidelines which the Tenant has obtained from the PA facility Tenant liaison office, and which affect the design, shall be included in the Tenant's construction document submission. If the review process will be aided by the inclusion of these reference documents, the documents should also be included in the submission.

This page is intentionally left blank.

I. All proposed Tenant construction shall be submitted for review, in completed form, accompanied by a "Tenant Construction or Alteration Application," Form PA531, which shall be provided to the Tenant by the appropriate Port Authority line department.

The PA line department shall forward all Tenant submittals to the Engineering Quality Assurance Division for review.

II. The design documents, such as drawings, reports, computations and specifications, required in connection with the proposed construction, shall be submitted with the Tenant Construction or Alteration Application. Existing construction shall be properly identified on the drawings. The design documents shall be sealed and signed by the Architect or Engineer of record licensed to practice in the State in which the proposed construction is to be performed. The Architect/Engineer indicated on the Application shall be considered the Architect or Engineer (A/E) of record. The required number of sets of drawings may be minimized if an electronic file (compact disc) of the drawings is included in the submission. The formatting and other requirements for the electronic file can be obtained from the PA facility Tenant liaison office.

Where other consultants have been acknowledged by the A/E of record, either in the Tenant Alteration Application or on the drawings, said consultants may seal and sign the documents they have prepared.

The A/E of record is responsible for assuring that the documents prepared by other consultants are properly coordinated.

Where the Tenant retains two or more independently functioning consultants, they each become an A/E of record for their respective scope of work. Each consultant will be required to submit a separate Tenant Alteration Application, and each consultant shall seal and sign their respective documents.

A signed and sealed statement from the A/E of record certifying compliance with the Energy Conservation Code of New York State shall be submitted with the Tenant Construction or Alteration Application for construction projects in all Port Authority facilities within New York City.

Responsibility for design or code compliance shall not be delegated to contractors.

III. All revisions to previously submitted documents shall be properly identified, and shall be accompanied by a brief description of the revisions.

IV. All voluntarily installed Fire Protection systems, including, but not limited to sprinklers, alarms, etc., shall comply with the provisions of the applicable Building Codes for such systems.

V. Fire protection plans, as described in article 109 of title 28 of the Administrative Code of the City of New York (New York City Construction Codes), shall be required along with other design documents for construction projects at all Port Authority facilities within New York City. After approval of the project for construction, and before a Permit to Occupy or Use is issued, the Tenant shall submit one (1) copy of these plans to the Manager of the Facility where the project is located, one (1) copy to the Inspection and Safety Division of the Operations Services Department and two (2) copies to the Quality Assurance Division of the Engineering Department.

VI. In accordance with the policy of the Port Authority of New York and New Jersey, the Tenant shall comply with the provisions of all federal, state, municipal, local and departmental laws, ordinances, rules, regulations and orders that may affect the construction or alteration. Where stricter requirements, stipulated in this Manual, apply, they shall be followed. The Tenant, or designated agents, shall not apply for any variance, license, waiver or permit from any municipal or governmental agency in the name of or on behalf of the Port Authority.

VII. All tenant construction or alteration projects are required to adhere to the Port Authority's Sustainable Design Policy. Details of the policy and the Sustainable Design Guidelines can be obtained from the PA facilities Tenant liaison office.

VIII. All landscape work at the airports that are within the scope of a TAA shall comply with Attachment LS1 in Section 18 of this Manual.

IX. The Attachments in Section 18 of this Manual are supplementary to the technical sections and shall be part of the requirements.

I. GENERAL

The construction documents, such as drawings, reports, computations, and specifications, required for the proposed construction or alteration project shall comply with the applicable codes, regulations and standards listed below and any additional regulations and standards listed in the respective technical sections of this Manual.

II. CODES AND REGULATIONS

A. New York City:

1. New York City Administrative Code, Title 28

2. New York City Construction Codes and their Reference Standards and Appendices. The New York City Construction Codes include:

   New York City Building Code
   New York City Mechanical Code
   New York City Plumbing Code
   New York City Fuel Gas Code

3. New York City Electrical Code

4. New York City Fire Code and Directives

5. New York City Health Code

6. New York City Local Laws

7. Rules of the City of New York:

   Title 1, Department of Buildings
   Title 2, Board of Standards and Appeals (BS&A)
   Title 3, Fire Department
   Title 24, Department of Health

8. New York State Labor Laws

9. New York State Multiple Dwelling Laws (Hotels)

10. Energy Conservation Construction Code of New York State

11. Directives and Memoranda of the Department of Buildings

B. New Jersey:

1. New Jersey Uniform Construction Code (NJUCC), its bulletins and the sub-codes with their Supplements and Reference Standards

2. New Jersey Uniform Fire Code

3. New Jersey Administrative Code - Title 7, Environmental Protection Laws

4. Applicable regulations of the NJ Department of Environmental Protection

C. New York State:

1. New York State Uniform Fire Prevention and Building Code which includes the following:

   Building Code of New York State (BCNYS)
   Mechanical Code of New York State (MCNYS)
   Plumbing Code of New York State (PCNYS)
   Fuel Gas Code of New York State (PCNYS)
   Fire Code of New York State (FCNYS)
   Existing Building Code of New York State (EBCNYS)
   Property Maintenance Code of New York State (PMCCNYS)

2. Energy Conservation Construction Code of New York State

3. New York State Multiple Dwelling Laws (Hotels)

D. All PA Facilities:

1. Americans with Disabilities Act (ADA)

2. Applicable Flood Control/Regulations

3. Federal Occupational Safety and Health Administration (OSHA) Regulations

4. Applicable regulations of the U.S. and local Environmental Protection Agency

5. Applicable regulations of the local municipal water supply, gas utility, and sanitary sewer governing agencies

E. All Airports:

1. Federal Aviation Regulations – Title 147 Part 139 Certification of Airports Subpart D – Operations

III. STANDARDS

The latest editions of the following standards shall be used:

AASHTO	American Association of State Highway and Transportation Officials
ANSI/EIA/TIA-222-E	Structural Standards for Steel Antenna Towers and Antenna Supporting Structures
AREMA	American Railway Engineering and Maintenance-of-Way Association
NFPA	National Fire Protection Association:
20	Standard for the Installation of Stationary Fire Pumps for Fire Protection
24	Installation of Private Fire Service Mains and Their Appurtenances
25	Standard for Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems
30	Flammable and Combustible Liquids Code
72	National Fire Alarm Code
75	Protection of Electronic Computer/Data Processing Equipment
130	Standard for Fixed Guide-way Transit and Passenger Rail Systems
407	Aircraft Fuel Servicing
409	Aircraft Hangars
415	Airport Terminal Buildings, Fueling Ramp Drainage, and Loading Walkways

This page is intentionally left blank.

I. GENERAL

At the Tenant's request, a Conceptual Review will be performed to provide comments on the preliminary design. These reviews will inform the consultants of established design criteria, pre-existing conditions that determine code compliance, and Port Authority requirements affecting the proposed work. The conceptual review shall be limited to fundamental concepts and items related to the criteria in this Manual that may significantly affect the design. The review will not address aesthetics or functional design.

Submitted conceptual plans shall indicate conformance to the applicable codes and design criteria.

II. SCOPE OF REVIEW

The scope of the Conceptual Review includes the following items:

A. Occupancy group and construction classification of the new, altered, and adjusted areas.

B. Fire protection of spaces in the building as it applies to ratings of interior separations, shafts, exterior walls, and sprinkler requirements.

C. Egress: Occupant load and adequacy of egress shall be established or the Tenant's Architect/Engineer may list the sections of the applicable Code on which the design is based. New Tenant egress scheme(s) shall be coordinated with existing conditions.

D. Special structural conditions, including foundations.

E. Special or unusual mechanical or electrical problems affecting environmental, energy, or power requirements.

F. Deviations from Code requirements.

III. PORT AUTHORITY DESIGN CRITERIA

See the subsequent Technical Sections of this Manual for specific criteria.

This page is intentionally left blank.

I. GENERAL

The scope of the architectural review shall comprise compliance with the applicable codes, regulations, and standards listed in Section 3 of this Manual, and Port Authority design criteria listed below.

II. PORT AUTHORITY DESIGN CRITERIA

A. General:

1. In unsprinklered areas, upholstered materials, furniture and draperies shall conform to the specifications governing flammability. See Section 18, Attachments A2, A3, and A4.

2. All baggage handling areas and conveyor spaces inaccessible to fire fighting equipment shall be provided with a sprinkler system. Spaces over all types of ceilings are considered inaccessible.

3. Conveyor belting shall be flame resistant. When subjected to a flame test in accordance with ASTM D378, the duration of flame shall not exceed an average of one minute after removal of the applied flame (after-flame time) and the duration of afterglow shall not exceed an average of three minutes. Test results shall be submitted for review.

4. Storage under canopies (such as at cargo buildings) shall be considered as storage occupancy group S-2, low hazard.

5. Baggage handling spaces in the airports shall be classified as storage occupancy group S-2, low hazard.

6. For Interior Plastic Sign Standard, see Section 18, Attachment A1.

7. For marking of Transparent Glass doors and fixed Adjacent Glass Sidelights, see Section 18, Attachment A-5.

8. Conveyor openings in fire rated construction, shall be protected with fire shutters with the appropriate fire protection rating. Fire shutters shall be provided with positive means to ensure the

prevention of obstructions interfering with the closing of fire shutters. These fire shutters shall be integrated with:

a. Smoke detectors provided on each side of the wall and located in concordance with NFPA 80 and the manufacturer's listing, in order to actuate the motorized shutters and the alarm system

b. Leading edge or electric eye devices to permit the passage of an obstruction on the conveyor by retraction of the fire shutter

c. Emergency power for the operation of the rated shutter(s), as well as for an adequate portion of the conveyors, to enable the passage of obstructions at the rated shutter(s)

d. Stoppage of the conveyors

e. Operation of other smoke and heat detectors within the fire zone shall also actuate these shutters

9. For openings in walls with fire resistance rating of 2 hours or less, a system of water spray nozzles may be used in lieu of fire shutters. At least four nozzles shall be provided on each side of the opening so as to give complete coverage of the opening. Nozzles shall be controlled by an automatic valve actuated by a heat detector. Nozzles shall be located at an angle not more than thirty degrees between the centerline of nozzle discharge and a line perpendicular to the plane of the opening. The water discharge rates shall be at least three gallons per square foot per minute.

10. Where spaces are provided with grilled openings for entrance and exiting, a safe means of egress shall be provided for the employees who may stay inside the space after the grille is closed, consisting of:

a. A door in compliance with code requirements; or

b. An approved device that will open the grille from inside

B. Airports:

1. All Airports:

a. All construction at JFK and LaGuardia Airports shall comply with the requirements for fire district in accordance with Appendix D in the New York City Building Code.

b. The means of egress for passenger terminal buildings shall be designed for an occupant load consisting of the sum of the passengers (100% capacity of aircraft), meeters and greeters, and employees, based on maximum anticipated flight schedules (such as holidays or other seasonal peaks), and a two (2) hour delay of flights. This number shall not be less than the occupant load computed based on the maximum floor area allowances per occupant in the code. Consideration shall be given to locations of concentrated crowding, rather than assuming uniform distribution of occupants over the entire building.

c. In passenger terminal buildings, concessions serving the public that are open to the public spaces shall be considered as part of the public space (Assembly Occupancy). Storage space belonging to concessions shall be enclosed as required by Code. Also, adjacent concession areas shall be separated from each other as required by Code for different tenancies.

d. For aircraft loading walkways, and for protection of buildings from ramp-side fuel spill fires, see Section 13 of this Manual.

e. Protection and fire rating of building walls and over-hangs adjacent to aircraft fuel pipeline surge suppressors shall be in accordance with NFPA 30 and shall be designed to have a fire rating depending on their distance 'd' as a radius from the surge suppressor:

$d > 25$ feet; fire rating = 0
$d > 10$ feet; fire rating = 2 hours
$d < 10$ feet; fire rating = 4 hours

2. LaGuardia Airport, Central Terminal Building:

   a. The main building conforms to construction classification 1B of 1968 Building Code of the City of New York.

   b. The fingers are unprotected steel construction, classification 1E of the 1968 Building Code of the City of New York, separated from the main building with fire shutters, and are further subdivided into fire areas.

   c. On the third (3rd) floor of the Terminal Building, a Safe Area, in compliance with Article 8 of the 1968 Building Code of the City of New York, constitutes part of the overall means of egress from the floor. The Safe Area consists of the central east-west corridor together with the public areas at the termination of the connectors from the parking garage.

III. DETAILS OF ARCHITECTURAL REVIEW

The following are representative of items reviewed:

A. Occupancy (use) of spaces, construction classification (hourly rating of the structure), and their compatibility.

B. Requirements of sprinklers, standpipes, smoke detectors, fire alarms, and exit signs

C. Provisions for the physically disabled persons

D. Compartmentation of spaces (rated separations, shafts, etc.)

E. Fire protection of building components and finishes (includes documentation verifying that all materials and equipment used are of an approved type)

F. Egress, establishing occupant load and existing capacity, including door and hardware requirement

G. Verification of strength of all glass subject to human impact, and the requirement for markings

H. Provision of plumbing fixtures (toilets, lavatories, drinking fountains, etc.)

I. Protection of airport terminal buildings from fires at ramp-side potential fuel spill points (PFSP). See Section 13 of this Manual.

J. Compliance with PA Standards and Specifications governing the Flammability of Plastic signs, Drapery, Upholstery and Plastic Furniture. See Section 18, Attachments A1 through A4.

This page is intentionally left blank.

I. GENERAL

A. The scope of the structural review shall comprise compliance with the applicable Codes, regulations, and standards listed in Section 3 of this Manual, and the design criteria listed below.

B. Computations shall be submitted with the structural plans.

II. PORT AUTHORITY DESIGN CRITERIA

A. Drilled-in adhesive anchors shall not be permitted for fastening to concrete in overhead applications.

B. In the LaGuardia Airport Central Terminal Building, concrete anchors or attachments to the steel decking are not permitted for connection of hangers for ducts, utilities, ceilings, bracings, signage and other miscellaneous loads in areas where the floor is constructed of non-structural concrete fill over cellular decking (See Section 18, Attachment S3 for locations). All such loads in these areas shall be directly supported from the existing structural floor framing or supplementary framing shall be provided to transfer the loads to the existing framing members.

C. Floors in certain areas of the Port Authority Bus Terminal South Wing are of lightweight low strength concrete construction. (See Section 18, Attachment S4 for locations). Concrete anchors are not permitted in these lightweight slabs for the attachment of hangers for supporting ducts, utilities, ceilings, and other miscellaneous loads. These loads shall be supported directly from floor beams or supplementary framing connected to the floor beams.

In areas where concrete inserts are permitted, only approved type stainless steel anchors rated for shock and vibration loads and elevated temperature shall be used.

D. Ceilings:

1. Plaster Ceiling Design Standards - See Section 18, Attachment S1

2. Lightweight Ceiling Design Criteria - See Section 18, Attachment S2.

E. Vehicular Traffic:

1. Elevated roadways shall be designed for all loadings, including seismic effects, in accordance with the AASHTO "Standard Specifications for Highway Bridges" and the relevant State DOT Standards.

2. The loading for the departure and arrival ramps servicing airport passenger terminals shall be HS 20-44 AASHTO highway loading. All other ramps servicing cargo facilities or road overpasses shall be designed for HS 25 AASHTO highway loading.

F. Signs:

1. Highway signs and luminaries shall conform to the AASHTO (American Association of State Highway and Transportation Officials) Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals.

2. Exterior signs adjacent to vehicular traffic such as streets, highways, trains and light rail vehicles or open terrain shall be designed in accordance with the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals. All other exterior signs shall be designed as per the applicable local building code.

3. Interior signs located in the entrance lobbies, entrance vestibules or boarding platforms of transportation terminals shall be designed for an incidental wind gust pressure of 15 psf. All other interior signs shall be designed for a minimum lateral pressure of 5 psf.

4. Interior signs shall also be designed for earthquake loads as per the applicable local building code.

5. All signs (exterior or interior) which require routine cleaning or servicing (i.e., variable message, internally lighted, etc.), whether or not specifically designed for a servicing device, shall be designed for all anticipated additional loads, but not less than a 100-lb concentrated horizontal load and a 300 –lb concentrated vertical load applied at the point of assumed or most eccentric loading. The additional concentrated loads shall be applied in combination with the sign dead load (not concurrent with wind or earthquake loads).

G. Aircraft loading walkways (Airports) design loads and the worse case loads combination shall be as prescribed in NFPA 415, Chapter 6.

III. DETAILS OF STRUCTURAL REVIEW

The following are representative of items reviewed:

A. The design calculations shall include but not be limited to:

1. Design criteria and applicable Codes
2. Reference Standards
3. Design loads, including wind and other forces
4. Allowable soil bearing capacity
5. Pile type and capacity
6. Design of connections other than AISC standard framed or seated beam connections
7. Location and details of expansion joints
8. Bracing systems and moment-resisting frames
9. Deflections and wind drift
10. Ponding
11. Investigation of superimposed loads from new construction on existing structure and foundation
12. Investigation of existing structural system and foundations under additional loads due to alterations

13. Where it has been established that post-construction settlements of foundations are to be monitored, the monitoring program, the limits of differential settlement that the structure can tolerate, and the necessary adjustments shall be submitted for review.

B. Drawings shall include, but not be limited to, the following Information:

1. Applicable Code and Reference Standard

2. Materials

3. Design live loads, wind, and other forces

4. Location and details of expansion joints

5. Machinery, equipment, and other concentrated loads in excess of 1000 lbs. Including footprints or support layout(s)

6. Allowable soil bearing capacity

7. Pile type, capacity, and minimum tip elevation

8. Accumulated design load for columns at each level for dead and live loads

9. Stress diagram(s) for trusses

10. Datum and ground water elevations

11. Typical moment connection details

12. Details of non-standard connections

13. Construction sequence

C. Specifications shall include, but not be limited to:

1. The scope of work and materials required for the construction or alteration

2. Limitations and restrictions due to the existing conditions and/or requirements for the methods of construction or staging

I. GENERAL

The scope of the geotechnical review shall be for compliance with the applicable codes, regulations and standards listed in Section 3 of this Manual, and the design criteria listed below. The review will include an evaluation of the Geotechnical Investigation and Foundation Design Report to verify that the choice of foundation system(s) is compatible with the subsurface conditions and the structure(s) to be supported. In the absence of definitive code requirements, PA standards and established practice will apply.

II. PORT AUTHORITY DESIGN CRITERIA

The minimum frost depth shall be three (3) feet.

III. PORT AUTHORITY STANDARDS

A. The following PA Standard Specifications shall apply for Tenant projects:

1. Steel Pipe Piles
2. Steel H Piles
3. Timber Piles
4. Monotube Piles
5. Drilled Minipiles
6. Tapertube Piles
7. Pile Coating
8. Pile Load Tests
9. Dynamic Pile Testing
10. Steel Sheeting Piling
11. Caissons
12. Aggregate Base Course

13. Open Graded Aggregate Base Course

14. Excavation, Backfill, and Fill

15. Instrumentation for Settlement and Groundwater Observations

16. Slurry Wall

17. Soil Erosion and Sediment Control

18. Dredging

19. Dewatering

20. Rock Excavation

21. Pre-stressed Soil and Rock Anchors

22. Rock Dowels

23. Pressure Grouting

24. Vertical Wick Drain

IV. DETAILS OF GEOTECHNICAL REVIEW

The following are representative of items that will be reviewed:

A. Required Report:

The Geotechnical Investigation and Foundation Design Report, signed and sealed by a registered Professional Engineer. The report shall include the applicable items listed below:

1. A description of the planned structure

2. Results of geotechnical site investigation, including test borings and laboratory tests; also, review of previous data obtained by the Port Authority or others

3. A plot showing the location of test borings and/or excavations

4. A record of the soil profile

5. Datum and ground water elevations

6. Description of foundation system(s) or planned ground improvement methodology

7. Recommendations for foundation type and design criteria, including but not limited to: bearing capacity of natural or compacted soil; provisions to mitigate the effects of expansive soils; mitigation of the effects of liquefaction, differential settlement and varying soil strength; and the effects of adjacent loads

8. Expected total and differential settlement

9. Pile and pier foundation recommendations and installed capacities

10. Special design and construction provisions for footings or foundations founded on treated soils, as necessary

11. Requirements for compacted fill material properties and testing

12. Sub-grade Soil Modulus (CBR, MR, K)

B. Calculations shall include the applicable items listed below:

1. Results of engineering evaluations of geotechnical site conditions, including interpretation of test boring and laboratory test results

2. Estimates of settlement resulting from the proposed construction at the construction and adjacent sites (structures, pavement, utilities)

3. Analyses for the design of sand drains, surcharging, deep compaction or other ground improvement methods

4. Where it has been established that post-construction settlement of foundations must be monitored, the instrumentation and monitoring program shall be submitted for review. Also, see Section 6, III.A.13 of this Manual.

5. Stability analyses for earth slopes, embankments, and deep excavations, both during and at the completion of construction

6. Analysis of dewatering and seepage control measures

7. Capacity analyses for earth and rock anchors

8. Pile foundation requirements including pile type, pile capacity, group action, down drag load, minimum pile tip elevation, pile driving hammer type and minimum transferred energy, and seismic loadings

9. Seismic liquefaction analysis, when required. Site specific analyses may be submitted, provided they incorporate ground motions derived from a seismic hazard analysis that has been reviewed and approved by the PA

10. Analysis of impacts on adjacent properties or utilities

I. GENERAL

The scope of Civil Engineering review shall comprise conformance with the applicable codes, regulations, and standards listed in Section 3 of this Manual, and other guidelines established in this section. The items to be reviewed will include proposed paving, sanitary sewer system, storm sewer system, gas utility, cold water domestic and fire protection distribution system construction whenever they are placed in areas outside of the leasehold.

Additionally, any proposed construction that connects to or impacts upon Port Authority utility systems or affects another Tenant, regardless of whether it is within the leasehold area, shall come under this review, and shall conform to Port Authority Civil Standard Details, Specifications, and Design Guidelines, included in Section 18, Attachments C1, C2 and C3, respectively.

In certain cases as noted herein, use of the Standard Details, Specifications and the Design Guidelines is required. When not required, the Tenants may choose to use these in lieu of developing their own designs. The standard Details, Specifications and the Design Guidelines will be provided by the Port Authority Engineering Department's Quality Assurance Division, when required for a specific Tenant project and requested through the facility Tenant liaison office.

The portions of the sanitary, water utilities, and storm sewers that service or will service more than one Tenant's leasehold (or premises) are hereinafter referred to as "for common service" sections of the respective utility.

II. PORT AUTHORITY DESIGN CRITERIA AND STANDARDS

A. General:

All site work outside the lease line shall conform to the appropriate Port Authority Civil Standard Details, Specifications and Design Guidelines. See Section 18, Attachments C1 and C2.

1. At all aviation facilities, the latest edition of the Federal Aviation Administration (FAA) Advisory Circulars, including but not limited to the following, shall be used:

FAA-AC150/5300-13	*Airport Design*
FAA-AC150/5320-5	Surface Drainage Design
FAA-AC150/5320-6	Airport Pavement Design and Evaluation
FAA-AC150/5340-1	Standards for Airport Markings
FAA-AC150/5370-13	Off-Peak Construction of Airport Pavements using Hot-Mix Asphalt

2. At all aviation facilities, the latest edition of the Federal Aviation Regulations (FAR), including but not limited to the following, shall be used:

139.305	Paved Areas
139.309	Safety Areas
139.311	Markings, signs and lighting
139.341	Identifying, marking and lighting construction and other unserviceable areas
139.335	Public Protection

B. Paving:

1. General:

a. Pavement shall be designed using a recognized procedure.

b. Sidewalks outside of the lease line shall conform to the latest PA Standard Detail Number 062.021 A&B and Americans with Disabilities Act guidelines.

2. Aviation Facilities:

a. Paving of taxiways, taxi lanes, or aprons to be constructed within Public Aircraft Facility (PAF) areas, or in areas to be used by more than one Tenant, shall conform to the latest PA Standard Details Number 062.001 or 062.004 or the latest FAA Advisory Circular, whichever results in the thicker pavement. Design calculations shall be submitted for review and approval

b. Paving within the Tenant's lease line should be designed in accordance with the latest FAA Advisory Circular.

c. Stabilization pavement shall be required wherever a blast from the aircraft may cause erosion of soil. Stabilization pavement shall conform to the latest PA Standard Detail Number 062.001 or 062.004 or with the latest FAA Advisory Circular, whichever results in thicker pavement.

d. Roadway pavements outside of the lease line shall conform to the latest PA Standard Details Number 062.001 or 062.004 or the latest AASHTO guide whichever results in the thicker pavement. Design calculations shall be submitted for review and approval.

C. Storm Sewer:

1. General:

a. Hydrologic and Hydraulic design shall conform to the Engineering Design Guidelines- Civil or an approved alternative method. See Section 3.6 of Section 18, Attachment C3.

b. Common service storm sewers shall be properly supported as per PA Standard Detail Number 041.001, or 066.002, or as determined by ASCE Manual No. 77 methods.

c. Verify that new and existing pipes can withstand the heaviest vehicle loads.

2. Aviation Facilities:

a. Surface drainage of airport aprons shall comply with the National Fire Protection Association (NFPA) Standards 407, 409, and 415, and Section 13 herein.

b. At the aircraft fueling ramps, fuel storage areas, and fuel truck parking areas, drainage inlets shall be equipped with vapor trap hoods. The hoods shall provide a minimum of 12 inches of water seal.

c. Common service storm sewer appurtenances and pipes shall be designed to withstand the heaviest anticipated aircraft or vehicle load. PA Standard Detail Numbers

010.010, 020.013 and 20.014 shall be used wherever appropriate.

3. Port/Commerce Facilities:

a. Sewer appurtenances and pipes within the Tenant's lease line shall be designed to withstand the heaviest anticipated container, container handling equipment or vehicular load. PA Standard Detail Numbers 010.014 and 020.021 shall be used wherever appropriate. Submit computations for review and approval

D. Sanitary Sewers:

1. General:

a. Hydraulic Design shall conform to Section 3.8 of the Engineering Design Guidelines - Civil. See Section 18, Attachment C3.

b. In New York City, for all proposed Tenant's sanitary sewer connections made to the city sewer off PA property, the Tenant shall be required to apply directly to the appropriate City Department for approval and a note to that effect shall appear on the drawings.

c. Sanitary sewers shall be properly supported as per PA Standard Detail Numbers 043.001, or 066.001,or as determined by ASCE Manual No. 60 methods.

d. Verify that new and existing pipes can withstand the heaviest vehicle loads.

2. Aviation Facilities:

a. Common service sanitary sewer appurtenances and pipes shall be designed to withstand the heaviest anticipated aircraft or vehicular load. PA Standard Details shall be used wherever appropriate.

3. Port/Commerce Facilities:

a. Sewer appurtenances and pipes within the Tenant's lease line shall be designed to withstand the heaviest anticipated container, container handling equipment or vehicular load. PA Standard Detail Number 010.014 shall be used wherever appropriate.

E. Exterior Water Distribution Systems:

1. General:

a. Coldwater Distribution systems shall be designed in accordance with Section 3.7 of the Engineering Design Guidelines - Civil. See Section 18, Attachment C3.

b. The cold water distribution system pipes and appurtenances are interconnected to the facility-wide cold water distribution systems and are for common service, and must conform to the requirements of the local municipal water authority. Port Authority Standards and Specifications are in compliance with these requirements and shall be utilized.

c. All coldwater distribution system pipes and appurtenances shall be designed to withstand the heaviest anticipated aircraft, container, container handling equipment or vehicle load.

d. All coldwater distribution system pipes shall have either a minimum cover of 4'-0", or be heat traced and insulated.

e. Pipe protection shall conform to the requirements of the Engineering Design Guidelines - Civil. See Section 18, Attachment C3.

f. Fire hydrants shall be spaced in accordance with the National Fire Protection Association Standards and Guides, and local municipality requirements, but in no case shall any part of a building's periphery be more than 300 feet from a hydrant.

g. Shut off valves shall be used at the point of connection wherever a proposed main is to be added to the existing distribution system.

h. All fire hydrants shall be connected to the supply main through a valved connection.

i. All curb and street valves shall be provided with a valve box meeting the requirements of the local municipal water authority.

j. All water distribution pipes and appurtenances shall be restrained against thrust forces. Thrust blocks are not permitted.

2. Port Facilities:

a. Hydrant spacing shall conform to NFPA (maximum 300', 150' at dead ends) except where PA Risk Management has approved a greater spacing in container yards.

b. In container yards, every effort shall be made to locate valves where they will not be obstructed by grounded containers.

c. Where a hydrant is more than 50' from the main or where the valve at the main is not in an aisle, provide valves at both the main and the hydrant.

d. In Port Newark and the Elizabeth PA Marine Terminal, provide additional joint restraint from the valve to the hydrant in accordance with the latest version PA Standard Detail 030.015. The joint restraints shall be of a type that can be removed and restored without cutting the pipe.

F. Gas Utilities:

Gas service piping design and installation shall conform to the standards and requirements of the utility company whose jurisdiction covers the area in which the construction takes place. Verification of this conformance shall be submitted.

G. Security Fence:

PA Standard Detail Number 090.011 and Standard Specification Section 02831 or 02832 shall be used for security fencing.

III. DETAILS OF CIVIL REVIEW

The following are representative of details reviewed:

A. Design Computations:

1. Pavement: Design procedure, service life, design vehicle and volume of traffic, structural design

2. Drainage: Hydrologic and hydraulic design

3. Sanitary Sewers: Design flow and hydraulic design

4. Water Supply: Design demands, residual pressure, hydraulic design, and thrust restraint

5. Computations showing the structural capacity of new and existing utility service lines and appurtenances to support new loads, signed and sealed by the Professional Engineer licensed to practice in the State where the work is to be performed.

6. The PA Engineering Department shall be informed of the water demand and sewer load during the earliest stages of design.

B. Plans:

1. Location and site plan with lease lines, showing all the coordinates

2. All areas to be paved and pavement details

3. All underground utility service lines (proposed and existing). The Design Consultant shall research and show the existing utilities on the plans. These will not be delegated to the contractor during construction.

4. Details for all proposed utility service lines and appurtenances

5. Whenever an existing utility service line is to be interrupted by specified work, a note requiring advance notification to facility operations personnel shall appear on the drawings.

6. Security fence detail and location

This page is intentionally left blank.

I. GENERAL

The scope of the electrical review encompasses an examination of the design drawings, specifications, and computations for compliance with the applicable Codes, regulations, and standards listed in Section 3 of this Manual, and Port Authority design criteria listed below.

II. PORT AUTHORITY DESIGN CRITERIA

A. General:

1. Electrical power shall be purchased from the PA for tenancies in the following facilities:

   World Trade Center
   JFK Airport
   LGA Airport
   Teleport
   Bathgate Industrial Park
   Port Authority Bus Terminal

   At JFK, terminal building tenant power distribution systems shall be based on second contingency conditions of the PA 5 kV services.

   All metering wiring shall be shown on the drawings where power is purchased from the PA.

2. Construction over existing duct banks and manholes shall not be permitted. Existing duct banks which fall within the footprint of the structure shall be relocated prior to commencing construction. Verify that existing duct banks to be relocated do not have asbestos conduits.

3. Manholes shall not be installed within the footprint of a structure.

4. Exploded-view drawings of existing and proposed electrical manholes in which the Tenant performs any work shall be submitted for review.

5. For fire detection and alarm requirements see Section 12 of this Manual.

6. For aircraft loading walkway requirements see Section 13 of this Manual.

7. For fire shutters in conveyor systems see Section 5 of this Manual.

8. PVC conduits shall not be used within buildings. PVC conduits and PVC insulation for wiring other than that for communications systems or remote control, signaling, or power limited circuits shall not be used in the Lincoln, Holland and PATH tunnels.

9. The minimum size underground conduit for power and communication systems shall be 2 inches. Provide a minimum of 25% spare conduits but not less than two spare conduits in each duct bank.

10. All underground duct banks shall be concrete encased and installed 2'-6" minimum below finished grade. The design and installation shall conform to PA standard detail for duct bank design. See Section 18, Attachment E1.

11. Conduits shall enter and leave manholes through the short-side walls, perpendicular to the walls. A drawing with tablet information showing each proposed manhole and its duct bank layout that is to be used for the power and communication systems shall be provided for all projects.

12. Shop drawings of medium voltage or service entrance switchgear shall be submitted for PA approval in advance of fabrication. The PA may request to participate in the factory inspection of the switchgear.

13. The Port Authority staff shall have exclusive 24/7 access to all areas, equipment and raceways associated with Port Authority systems without effecting tenant operations.

14. The maximum separation between manholes shall not exceed 450 feet. Duct banks shall be sloped towards the manholes to provide adequate drainage.

15. Conduits from manholes, hand holes or duct banks into buildings or remote equipment locations shall be changed to rigid steel prior to emerging from below grade.

16. Duct banks installed under vehicular roadways or other areas (parking lots, etc.) where trucks or other heavy equipment travel shall be concrete encased with high early strength concrete that has a six hour design compressive strength of 2000 psi.

B. Medium Voltage Power System, JFK and LGA Airports:

1. Medium voltage (over 600 volts) switchgear, transformers, and splicing chambers, that are installed indoors, shall be installed in Electrical vaults.

2. The incoming service shall be designed with a minimum of two (2) feeders (except as described in Section 'A -1' above), with automatic switch-over operation. The service shall be either:

   a. Primary Selective
   b. Secondary Selective
   c. Primary and Secondary
   d. Selective Spot Network

3. Primary selective switchgear shall be arranged with a mechanically interlocked tie switch to allow one feeder to supply the entire load. Medium voltage switchgear shall be as manufactured by the S&C Company.

4. Each incoming service switch shall be provided with a grounding switch, arranged to ground the incoming feeder (line side of switch). Mechanical Interlocks shall be provided to prevent closing the grounding switch if the feeder is energized. Kirk Key Interlocking System shall be provided for the incoming equipment (Load Interrupter Switch(s), Grounding Switch(s), Low Voltage Main Breaker(s)) in compliance with the "Interlocking and the Grounding" procedures at a specific airport and specific application. The interrupting rating shall be 270MVA for JFK International Airport and 180MVA for LaGuardia Airport.

5. All incoming feeders shall be copper conductor, EPR insulated, Flat Strap Cable (FSC), in accordance with PA Standard Specification, Section 16121. The main feeder size shall be 500 kcmil or 750 kcmil, as determined by the PA. The minimum tap

size shall be 4/0 AWG. Cables shall be manufactured by a factory approved by Con Edison.

6. For indoor installations, transformers shall be dry type, vacuum pressure impregnated. For outdoor locations, transformers shall be cast coil construction (primary and secondary).

7. The Tenant's drawings shall include a complete one-line diagram showing all primary connections, switching and interlocks; power sources, routing and feeder designations; size and type of feeder and conduit; KVA rating; types and voltages of all transformers; and all load data in justification of the amount of power requested. The load letter shall be prepared and submitted to PA in the format similar to utility company letters and should provide a break down of major types of loads, indicate the largest motor load, total anticipated demand, etc.

8. Shop drawing and/or catalog cuts for the medium voltage cables, splices and terminations shall be submitted for approval.

9. PA specifications for the medium voltage installation shall be used.

10. A short circuit current calculation and coordination study for the proposed power system shall be submitted for review.

11. Each incoming service shall be provided with required PA approved metering current transformers (CT's) and potential transformers (PT's). The CT's and PT's shall be connected to the primary side of the incoming feeders.

12. Dual power sources with automatic transfer from both incoming feeders' metering PT's shall be provided for the totalizer.

13. Provide a fire-treated plywood backer board for mounting the required meter plans and other metering devices including conduits, fittings, and wires for the installation of PA meters and totalizer. Metering equipment to be installed outdoors shall have a NEMA Type 3R enclosure. Meters and totalizer will be provided by PA and shall be installed by the Tenant.

14. Underground conduits to be used for the medium voltage power distribution system shall be concrete encased fiberglass reinforced epoxy (FRE). Minimum conduit size shall be five-inch. Provide twenty percent spare (empty) conduits, but not less than two in each duct bank. Duct banks of alternate

feeders shall be separated by a minimum of twenty feet and terminated in separate manholes.

15. Between manholes in the medium voltage power system, the total bending radius for underground duct banks shall not exceed 90 degrees and shall utilize wide sweeps.

16. Calculations of maximum pulling tension for all medium voltage cable to be installed into the underground duct banks shall be submitted for review.

17. All manholes shall be designed as per PA standards. See Section 18, Attachment E1. Size of manhole shall be determined based on the number and size of cables, wires, and conduits allowed. For areas where a PA standard manhole is not appropriate, submit a proposed manhole design including all dimensions and design calculations for review.

C. Network Protector Compartments, Transformer Vaults, and Bus Rooms:

1. Roofs and floors shall be constructed of reinforced concrete with a minimum thickness of 6 inches. Exposed metal decking shall not be allowed in transformer vault and network protector compartment ceilings. The compartment or vault shall be designed as a waterproof structure if any part of it is external to the building. There shall be no penetrations through the ceiling of any kind.

2. Walls shall be constructed of 8-inch concrete block with voids filled with cement mortar. Two fire rated (three hour) steel doors shall be provided for each compartment or vault. One door shall open to a public corridor or lobby and shall be fire rated and accessible at all times. The other shall open to the adjacent compartment or vault. Reinforcement bars shall clear all conduits into the network protector compartment by at least 4 inches.

3. Building steel shall clear all conduit and bus openings by at least 8 inches in order to prevent induced heat build-up in the steel members. All steel shall be encased with a minimum of 2 inches of concrete. Nothing shall be installed above the network bus. No conduits, wires, pipes, ducts, etc. shall enter or pass through the vault or compartment that are not specifically required for the operation of the vault. All ducts entering the network protector compartment shall be non-metallic.

4. Aspiration type smoke detectors shall be provided for the network compartment. The smoke detection equipment shall be located outside of the compartment and only the aspiration tube shall enter the compartment to allow maintenance to be performed without entering the compartment.

5. Forced air ventilation shall be installed and maintained including controls and alarms. All ventilation for transformer vaults shall be directly to outside air. Ventilation opening to interior spaces shall have three hour fire rated dampers.

6. Separation of network compartment from associated transformer vaults shall not exceed twenty-five feet.

7. Each network protector shall be installed in a separate compartment.

D. Port Authority Bus Terminal: See Section 18, Attachment E2.

E. Electrical Systems for Tenants at Port Authority Owned Buildings:

1. General:

a. Design, fabrication, installation, and performance of the work shall comply with the manufacturer's recommendation, applicable codes and all applicable provisions of this Manual.

b. All tenancies shall be metered.

c. All Port Authority tenant circuit power wiring shall emanate from the Port Authority electrical closets/rooms. These closets/rooms shall be available in each Building on a floor-by-floor basis. Electrical closets/rooms shall contain distribution panelboards for lighting and receptacle outlet circuits and for all other related electrical equipment circuits.

d. Local switch control for tenant lighting is permitted and is installed in many areas as an energy conservation measure. Tenants are encouraged to provide such switching at their own expense, especially full floor tenants who are metered electrically and can realize energy savings by using local switch control.

e. Ground rods shall be copper, ¾" diameter, and ten feet long. Ground cables shall be soft-drawn copper, Class 'B' stranding and connected to the ground rods by exothermal welds.

f. Electrical closets shall have 2-duplex receptacles (one on an Emergency power circuit and the other on a normal power circuit).

g. No splices or joints shall be permitted in either feeders or branches except at outlets or accessible terminal, splice or junction boxes.

h. All convenience type receptacles shall be of the grounding type.

i. All motors ½ HP and above shall be rated three phase 460 Volts.

j. All conduit runs shall contain an insulated ground wire, sized in accordance with the Code.

k. All wiring for power, lighting and control shall be in conduit. Conduits located in mechanical spaces, electrical rooms, encased in concrete, or at any locations subject to physical damage, shall be threaded rigid galvanized steel.

l. Minimum conduit size shall be ¾".

m. Unless otherwise specified, all conduit shall be installed concealed in finished areas.

n. Minimum conductor size for power wiring shall be #12 AWG.

o. All wires shall be identified by circuits in all cabinets, boxes, wiring troughs and other enclosures, and at all terminal points, i.e., receptacle, etc.

p. Top entries of conduits into electrical enclosures located in areas subject to water or condensation shall not be permitted.

q. For areas designated for demolition, disconnect from the power source and remove all existing electrical devices,

lighting fixtures, and associated conduit and wiring, etc., unless noted as existing to remain. All abandoned conduit and wiring shall be removed back to the overcurrent device serving the demolished circuit.

2. Electrical Power Distribution Equipment:

   a. Low voltage switchgear shall be metal enclosed. Low voltage (below 600 V) power circuit breaker switchgear built in accordance with ANSI/IEEE Standards C37.20 shall have copper buses and shall have as a minimum the following meters: volts, amperes (phase to phase and phase to neutral), frequency, ampere demand (one/phase and one average three phase), kilowatts hours, kilowatt demand, power factor, harmonic load content and (percent (THD), and be UL listed.

   b. Panelboards shall have a main circuit breaker, 100% neutral bus, ground bus, copper buses, bolt-on type line circuit breakers, and be UL listed. Each panelboard shall contain at least 25% additional space for future circuits, single pole breakers shall not be ganged to form multipole breakers and 'Series' rated equipment shall not be acceptable.

   c. Where a high concentration (60% or more) of harmonics creating loads (PCs, laser printers, electronic ballasts, VSD's, UPS's, or other similar type equipment) relative to other non-harmonic loads is anticipated, the following shall be provided: full size individual branch circuit neutrals, 200% panelboard neutrals, 'K' rated transformers, separate dedicated circuits for printers and PC's.

   d. Major electrical equipment, such as switchgear, transformers, and motor control centers and control panels shall have integral ground buses connected to the station ground grid at two diagonally opposite locations.

   e. Electrical panels, motors and other equipment, where required, shall be grounded utilizing an insulated ground wire connected in accordance with the manufacturer's recommendations. All clamps, connectors and other hardware used with the grounding system shall be made of copper.

F. Electronics and Radio systems:

1. PA Public Safety Radio Systems: Any tenant construction *involving interior space modifications or building/terminal* expansions shall modify the existing Port Authority Public Safety in-building radio antenna system. New buildings shall install new in-building antenna systems. The system typically consists of RF booster based signal regeneration and a suitable in-building antenna system to provide 97% coverage reliability. Submittals shall include complete design details and calculations subject to approval. Such antenna systems shall not be integrated with common carrier wireless communications systems.

2. *Wireless communications systems:*

   a. Tenant unlicensed wireless systems design shall be identified with the operating frequencies, the height and locations of antennas, the antenna effective radiated power, and the associated equipment. Interference issues shall be coordinated.

   b. Tenant licensed wireless systems design shall be identified with the operating frequencies, the height and locations of antennas, the antenna effective radiated power, RF interference study and the associated equipment. Outdoor radiation shall be submitted with coverage maps. Wireless systems shall not interfere with PA radio systems.

3. Command and Control Centers: Emergency communications capability with the Port Authority Public Safety shall be *incorporated in Tenant command and control centers. Critical* alarms shall be relayed to the Port Authority Public Safety through the Tenant's security reporting mechanism.

4. Airport Intrusion Detection System: Any tenant alterations or new construction introducing changes to boundaries between air-side and land-side spaces shall include supplementary changes to the PA Perimeter Intrusion Detection System.

5. Public Address System: Any tenant public address system coverage shall remain within the designated tenant space and

operate at lower volume levels relative to surrounding PA public address system.

III. DETAILS OF ELECTRICAL REVIEW

The following are representative of items reviewed:

A. Existing code violations in areas affected by the work.

B. The power distribution system (feeders, switchgear, transformers, panels and over-current protective devices), including coordination of plans regarding connections and available capacities with PA utilities. A one-line diagram giving source identification, conductor types and sizes, connected and demand loads, basis of source capacity, voltage drop, and adequacy of over-current protection shall be presented. Characteristics of special loads, e.g., large motor loads, shall be detailed. Key- and mechanical- interlocks shall be shown, identifying operational procedures for energizing, de-energizing and grounding of medium voltage equipment.

C. Obstruction, envelopment or elimination of electrical ducts, vaults, manholes, and hand-holes by new construction.

D. All materials and apparatus shall have been tested and approved for the proposed use by the agency or testing laboratory recognized in the relevant jurisdiction. See Section 14 of this Manual.

E. Coordination with other trades such as:

1. Architectural: Place of assembly lighting; electric door locks; exit signs; egress lighting; fire stopping

2. Structural: Suspension of lighting fixtures; weight of storage batteries

3. Mechanical: Ventilation and cooling of electrical rooms; diffusion of battery gases; fire and smoke detection for air handling systems

4. Environmental: PCB removal

5. Civil: Underground utilities

F. Wiring methods (conductors and raceways)

G. Grounding, including system grounding of derived systems such as transformers and generators

H. Communications wiring with regard to radiation, electromagnetic interference, electrical safety, and fire hazards

I. Signal wiring and emergency power for fire alarm and detection systems

J. Emergency power for lighting, exit lights and signs, Life Safety Equipment (HVAC & Smoke Purge) and opening protectives

K. Computer room disconnecting means for electronic and HVAC equipment

L. Code limitations on plastic light diffusers and Port Authority standard for plastic signs

M. Alarm, detection, and visible and audible alerting devices. See Section 12 of this Manual

N. Physical safety, such as clearances around equipment, and exit provisions from within electric rooms

O. Telephone installation shall not have any components in common with the power or lighting installation

P. The coordination of fire detection and fire suppression provisions with designs for open wiring such as in computer rooms and raised floors. For guidance, see NEC Article 645.

Q. Transformers and capacitors that are PCB-contaminated or PCB-filled shall be identified

R. Any operation, including repairs, that can possibly cause PCB to spill, must be coordinated with the Facility Manager

1. The Tenants shall comply with the requirements of:

2. Toxic Substance Control Act (Federal)

S. Regulations of federal, state, and local environmental protection agencies

T. Energy conservation

This page is intentionally left blank.

I. GENERAL

The scope of the mechanical review will be for compliance with the Applicable codes, regulations, and standards listed in Section 3 of this Manual, and Port Authority design criteria listed below, and will include the installation and alteration of service equipment and systems.

The following is a representative list of systems reviewed:

A. Heating, ventilating, air conditioning, and refrigeration

B. Smoke control and purge systems

C. Fire suppression systems and controls

D. Handling and storage of gases or fluids that are volatile, combustible, flammable, toxic or corrosive

E. Pressure vessels, fired and unfired

F. Industrial processes. Bulk storage and distribution of fuel and gases (glycol, LPG, LNG, etc.)

G. Airport fuel distribution systems

H. Energy conservation

I. Water recovery processes

J. Control of methane under buildings

K. Cargo handling equipment (ETV, etc.)

L. Emergency generators, fuel tanks, and piping

II. STANDARDS

ANSI	American National Standards Institute:
B-30.13	Storage/Retrieval (S/R) Machines and Associated Equipment
B-31.1	Power Piping
B-31.3	Process Piping
B-31.4	Pipeline Transportation Systems for Liquid Hydrocarbons and Other Liquids
B-31.9	Building Services Piping
API	American Petroleum Institute:
5L	Steel Line Pipe
600 Series	For Pumps, Valves, etc.
1104	Welding of Pipelines and Related Facilities
ASHRAE	American Society of Heating, refrigerating and Air-Conditioning Engineers, Inc.
ASME	Boiler and Pressure Vessel Code
PEI	Petroleum Equipment Institute - Recommended Practices for Installation of Underground Liquid Storage Systems
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association

III. PORT AUTHORITY DESIGN CRITERIA

A. Airports Aircraft Fueling Service:

1. Work affecting the airport fuel distribution system shall be coordinated with the existing airport system for compatibility, surge pressure safety, and system design check. Depending on the nature of the modification, surge pressure calculations may be required.

2. All automatic control valves shall be performance tested in compliance with the PA Engineering Department's initial contract requirements for the airport fuel systems.

3. Valving at fuel storage tank connections and at truck loading racks, beneath surge suppressors or hydrant valves shall be constructed with supplemental fire rated safety stop valves. These safety stop valves shall be closed by fusible link action

upon exposure to fire, and shall conform to UL or API Fire Tested Valve Safety Standards.

4. For the protection of building walls around pressure surge suppressors see Section 5.II.B.1.e of this Manual.

5. For the protection of the ramp drainage inlets see Section 8.II.C.2.c of this Manual.

B. Port Authority Bus Terminal: See Section 18, Attachment M1 for HVAC Design Criteria.

C. General:

PVC piping shall not be used above ground within buildings.

IV. DETAILS OF MECHANICAL REVIEW

The following are representative of items reviewed:

A. Existing code violations in areas affected by the work.

B. General system design:

1. Coordination of all new work with existing conditions

2. Materials, operating and safety controls, equipment approval

3. New controls interface with existing control system

4. Requirements for system and equipment testing and inspection

C. Specific System Design:

1. HVAC:

a. Shaft requirements for pipes and air ducts

b. Fire/smoke dampers at ducts through rated partitions and floors

c. Installation details for fire dampers or fire/smoke dampers to stay in place if a duct is disrupted. (See SMACNA Fire, Smoke, and Radiation Damper Installation Guide for HVAC systems)

d. Fire detector and smoke detector requirements for fan systems to shut down associated fans and close fire/smoke dampers automatically and transmit a signal to the local and central fire alarm control systems

e. Fire resistive insulation materials

f. Air filters in ventilating systems

g. Ventilation Schedule

h. Smoke control systems

2. Commercial type cooking/equipment: Grease ducts, extractors, dampers, insulation, fixed pipe fire extinguishing systems in hoods and ducts

3. Noise and vibration control

4. Energy Conservation: Building envelope analysis, design criteria, and thermal performance of component systems

5. Bulk storage of liquids and gases: Tanks, piping, supports, anchorage, clearances, electrical grounding, Fire Department regulations, and leak detection

6. Battery Charging Spaces:

   a. The components of the charging system shall be approved in accordance with the requirements outlined in Section 14 entitled "Materials and Equipment Approval and Inspection" of this Manual where the system is to be located.

   b. An adequate ventilation (exhaust) system shall be designed to prevent the accumulation of an explosive mixture of gases in the battery room under the worst conditions of battery and/or charger failure.

I. GENERAL

The scope of the plumbing review shall include the installation of and alteration to the following systems, in accordance with the applicable codes, regulations, and standards listed in Section 3 of this Manual, and Port Authority design criteria listed below.

A. Water supply and distribution

B. Sanitary and storm drainage and disposal

C. Industrial wastes

D. Sprinklers

E. Fire standpipes

F. Compressed air, vacuum and natural gas piping

II. STANDARDS

A. National Sanitation Foundation approval for Kitchen equipment

B. See Section 3 of this Manual

III. PORT AUTHORITY DESIGN CRITERIA

A. General:

1. PVC piping shall not be used above ground within buildings.

2. Fire standpipe hose shall be approved 100% synthetic single jacket fire hose.

3. Clamps for no-hub piping shall be those manufactured by Clamp-all Corp, Huskey SD series 4000 or approved equal.

4. All hubless pipes shall be anchored at each side of hub and at five (5) foot intervals.

5. In demolition work, unused piping shall not be abandoned in place. Piping shall be removed back to source or point of discharge, and the resulting openings plugged and sealed. Such work shall be shown on the drawings.

6. Oil separator effluents shall be discharged into the sanitary sewer system.

7. Toilet rooms with two or more plumbing fixtures shall be provided with floor drains.

B. Port Authority Bus Terminal: See Section 18, Attachment M2 for Plumbing and Fire Protection Design Criteria.

IV. DETAILS OF PLUMBING REVIEW

The following are representative of items reviewed:

A. Load calculations, complete layout and riser diagrams.

B. Existing conditions and systems shall be shown in sufficient detail to enable the review of proposed alterations.

C. Specifications for materials, equipment, fixtures, insulation, installation, procedures, etc.

D. Existing code violations in areas affected by the work.

E. The following is a partial list of items to be shown in the design documents:

1. Plumbing:

a. Floor plans showing the location, layout and spacing of all plumbing fixtures, the summation of plumbing loads; the size, location, and material for all building sewers and drains, and the soil, waste, vent, water, compressed air, vacuum and natural gas distribution piping

b. Riser diagrams showing:

i) Story heights
ii) All plumbing fixtures with diagrammatic arrangement of their connections to soil, waste, and vent piping

iii) Fixture units and all soil, waste, and vent stacks from the point of connection with the building drain to their termination above the roof

iv) All leader and storm water piping from the point of connection with the building drain to the roof drain with the corresponding square footage

v) All potable and non-potable water from the point of connection within the building to the fixtures and/or equipment

vi) Natural gas, vacuum and compressed air

c. All appurtenant equipment with access, including but not limited to: pumps, ejectors, waste tanks, meters, backflow preventers, irrigation systems, oil and grease interceptors, main control valves and piping shall be indicated clearly on the plans.

2. Fire Standpipe:

a. Floor plans showing the location and size of all risers, cross-connections, hose station (cabinet/racks), valves, siamese connections, source of water supply, piping, and other essential features of the system.

b. Riser diagrams showing the essential features of the system and indicating on the risers: riser control valves, cross-connections, hose valves, siamese connections, tanks, pumps, sources of water supply, pipe sizes, capacities, floor heights, zone pressures, and other essential data and features of the system.

c. The available water pressure at the top and bottom floors of each zone, and at each floor where the weight of pipe fitting changes, shall be shown on the riser diagram.

3. Sprinkler/Fire Protection System:

a. All sprinkler work submitted for review shall include the following:

i. A key plan identifying location of valve assembly controlling the sprinkler system protecting the area in the scope.

ii. Existing available flow rates and pressures, which will form the basis of the hydraulic calculations.

iii. Background shall indicate all column numbers, room names, ceiling heights and soffit conditions.

b. The location and size of water supplies and the location, spacing, number, and type of sprinklers to be used, with approximate location and size of all feed mains, risers, riser control valves, control valves, siamese connections, and other essential features of the system.

c. A diagram showing the proposed sprinkler system in relation to principal construction features of the building, such as its size, walls, columns, and partitions, and such other information as may be necessary for the evaluation of the system.

d. The location, number, and type of any electrical or automatic devices to be used in the system.

e. The available water pressure at the top and bottom floors of each zone shall be shown on the riser diagram.

f. Hydraulic calculations with all pertinent information as required by NFPA 13.

g. Other fire suppression systems. Plans for chemical or gaseous fire suppression piping systems shall contain the type of extinguishing agent and number and size of agent containers; size, length, and type of all piping that will be used; number and location of all fusible links or detectors and the temperature setting.

I. GENERAL

The scope of the review shall include the design of various fire detection, alarm, and suppression systems for compliance with the applicable codes, regulations, and standards listed in Section 3 of this Manual, and Port Authority design criteria listed below.

II. PORT AUTHORITY DESIGN CRITERIA

A. The National Fire Protection Association Standards (NFPA) and other referenced standards may be used for work in areas not covered by applicable municipal codes, subject to review and approval by the Port Authority.

B. Where an automatic sprinkler system is required by code in a building or space, sprinklers must also be provided in the following areas:

1. Electrical equipment rooms, rooms containing electrical equipment, or electrical closets, so that sprinkler protection is provided throughout the building.

2. Concealed conveyor spaces inaccessible to firefighting equipment shall be provided with a sprinkler system above the conveyor assembly. Spaces over all types of ceilings are considered inaccessible.

C. Schedule 40 galvanized piping shall be used for dry pipe sprinkler systems.

D. Fire Alarms:

1. The Tenant fire alarm systems serving the areas outside of the Port Authority responsibility shall be interconnected with the Port Authority base building or facility wide fire protection system.

2. The Tenant fire alarm systems shall be designed to control all systems and equipment installed by the Tenant and shall be fully integrated into the building or complex fire protection system to support HVAC, smoke purge, and life safety fire response procedures.

The Fire Alarm System annunciation and communication between the Port Authority and the Tenant Fire Alarm System shall satisfy the following requirements:

a. The Tenant's fire alarm panel shall be of the same manufacturer as the Port Authority Base Building Fire Alarm System or shall be an approved equal that is fully compatible.

b. The Tenant shall engage the Port Authority's fire alarm system maintenance contractor to furnish and install the interface connection to the Port Authority's fire alarm system.

c. The Port Authority's fire alarm system maintenance contractor shall be responsible for coordinating his work with the PA facility Tenant liaison office.

d. The Tenant shall provide all conduit, wiring, and interconnections.

e. The Tenant's fire alarm system shall transmit all addressable points to the Port Authority's fire alarm system in order to provide the complete status of all alarms, supervisory and trouble signals.

f. The audible and visual devices in the Tenant's leasehold shall be fully integrated with the Port Authority Base Building System and work in conjunction with Port Authority audible and visual devices so that all devices in a fire zone are activated simultaneously.

3. General System requirements:

a. The Tenant's fire alarm system shall be fully addressable and comply with all requirements for installation as identified by applicable codes and standards. A fully addressable fire alarm system shall be able to clearly identify the type of alarm, the location of origin, and the status of the system and device.

b. The Tenant's fire alarm system must be compatible with and able to extend the Port Authority Base Building Voice Evacuation System.

c. The fire alarm system shall consist of class 'A' style '7' signaling line circuits, class 'A' style 'Z' notification appliance circuits, and class 'A' style 'D' initiating device circuits. The entire fire alarm system and each major component such as zones, loops, circuits, panel components, power supplies, etc. shall have a minimum of 20% spare capacity.

d. All fire alarm conduits shall have a #10 AWG ground wire.

e. Field wiring for initiation and/or notification circuits or loops shall be installed in dedicated conduits, pull box or enclosure.

4. Existing fire alarm systems must be made compatible with central station alarm monitoring systems. New or altered fire alarm systems must be fully addressable and compatible with the central station monitoring system.

5. All fire alarm signals shall be transmitted to a central station monitoring system by approved methods. Facility specific requirements must be included in signal transmission.

6. Any additions, alterations, replacements, or new installations of any fire detection, suppression, or signalling system at an existing PA facility shall require the complete fire alarm system to conform to the latest edition of the municipal Building and Fire Codes.

E. For Port Authority Bus Terminal, see Section 18, Attachments M1 and E2 for smoke and fire detection requirements.

III. DETAILS OF FIRE PROTECTION REVIEW

The following are representative of items reviewed (See Section 11.IV.E.2 and 3 for additional items):

A. Sprinkler, water mist, and other systems using dry chemicals, foams, gaseous, and other extinguishing agents shall be shown on drawings, signed and sealed by the Architect or Engineer of record.

B. Plans for sprinkler systems must provide all information and data required by NFPA including water-sources, supply pressure, number and type of sprinklers (manufacturer, model, etc.), fire department

connections, hazard classification, alarm devices and supervisory connections.

C. Hydraulic calculations shall be submitted for all work involving new systems, upgrade of existing sprinkler system design demands, existing system alterations of over 20 sprinkler heads, or changes to existing systems that affect design remote locations.

D. A complete Fire Alarm riser showing locations of all fire alarm control panels, power booster panels, interface modules, detectors, manual pull stations, visible and audible alerting devices, conduit and wiring sizes, etc., shall be provided.

I. GENERAL

The following are minimum guidelines for the design of protective measures to reduce the hazard of a ramp-side fuel fire. Codes and regulations listed in Section 3 of this Manual, where applicable, shall serve as the minimum design criteria.

II. STANDARDS

The National Fire Protection Association (NFPA) standards shall be used, where applicable. The following are representative NFPA standards to be used in conjunction with PA design criteria (see paragraph III for Design Criteria):

A. Terminal Buildings, Satellites, Fingers, Aircraft Loading Bridges, etc.:

1. NFPA 407: Aircraft Fuel Servicing - Proximity of vent and fill points to air intake points on the building and the proximity of the building to fueling hydrants, cabinets, and pits.

2. NFPA 415 — Airport Terminal Buildings, Fueling Ramp Drainage, and Loading Walkways:

   a. Special provisions for below-grade areas to be protected from fuel and vapor penetration

   b. Distance and protection of heating and ventilation openings on the building, and openings to certain mechanical rooms, from points of potential fuel or vapor release

   c. Exit doors discharging onto ramps shall be marked "EMERGENCY EXIT ONLY"

   d. Protection of window glass when potential fuel spill points (pfsp) are within 100 feet (also see paragraph IV.A.1)

   e. Proximity of aircraft fueling ramp drainage points to structures and ramp gradients

f. Aircraft loading walkways

III. PORT AUTHORITY DESIGN CRITERIA

A. See Section 18, Attachment RFS1.

B. Terminal Buildings, Satellites, and Fingers:

The exterior walls of the building shall be protected as follows:

1. There shall be no potential fuel spill points (pfsp) such as fueling hydrants, catch basins, fuel tank fill connections, etc., within 50 feet of the building.

   Exception:
   Aircraft may be positioned with a minimum distance of 25 feet from the building to the aircraft fuel system vents or fuel tank openings provided that there are no combustion and ventilation air-intake to any boiler, heater, or incinerator room within 50 feet of the vent or tank openings. Exit doors or exit stairs opening onto the apron within 50 feet of pfsp must be protected by a full height radiation barrier.

2. Large areas of window glass, covering more than 50% of a wall, which has a distance of less than 100 feet from a pfsp, shall be protected by means of an automatic system of water curtain or fire shutters activated by an appropriate fire detection system.

   Note:
   In determining the above percentages, only that portion of the wall not backed by the building's structural components should be included. Also, the distance from the pfsp shall be measured horizontally to the center of the wall.

C. Aircraft Loading Walkways:

1. The design shall provide a safe exit route from the aircraft for a period of at least five (5) minutes under severe fire exposure conditions, equivalent to a free-burning jet fuel spill fire, in compliance with NFPA 415. The Engineer-of-record shall certify compliance in writing and submit the test reports and computations as defined in NFPA 415 to demonstrate compliance.

2. Loading Walkways shall be designed to prevent sudden failure (collapse, explosion, or development of excessive smoke and gases) during the ten (10) minute test.

3. Walkways shall comply with the following:

   a. A maximum travel length of 150 feet. Portions exceeding 150 feet shall be designed as part of the terminal building.

   b. A minimum width of 44 inches or the width of the aircraft door being served, whichever is larger.

   c. Non-slip floor covering

   d. Emergency lighting.

   e. Light diffusers of plastic material shall be of an approved type for exits, or wired glass shall be used.

4. Compliance shall include:

   a. Structural integrity of the walkway under the fire conditions. For structural criteria see Section 6 of this Manual.

   b. Integrity of flexible closures, slat curtains, and miscellaneous seals with weather-stripping curtain with respect to smoke penetration through cracks and openings shall be established.

      Particular attention must be paid to the following details:

      i) There shall be no direct path for flame or smoke between the exterior and the interior of the bridge.

      ii) The junctures of bridge components, such as hinge pins and slat curtains, shall be covered or sealed with appropriate fire resistant material.

   c. The positive pressure ventilation fan shall be of sufficient capacity to provide and maintain a positive pressure throughout the bridge and shall be automatically activated anytime that an aircraft is at the bridge.

5. The door opening into the walkway shall have an electrical interlock to prevent opening until the walkway is engaged with the aircraft.

6. The aircraft loading walkway shall not be located over any drainage outlets. See NFPA 415.

7. The electrical installation shall comply with the applicable requirements of the National Electrical Code, particularly with the Hazard requirements; i.e., presence of flammable vapors from aircraft fueling, venting, and storage points.

8. The hydraulic and electrical system for the walkway shall be demonstrated to be fail-safe.

I. GENERAL

The purpose of this section is to outline:

A. The requirements for acceptance (approval) of materials, assemblies, forms, methods of construction, and the intended use of equipment.

B. The requirements for inspection of materials, assemblies, and construction.

II. NEW YORK CITY

A. Approval/Acceptance of Materials, Equipment, etc.:

1. Construction documents shall identify all materials proposed to be used, including identification of the test method to which they conform, and where applicable, supporting information or test data attesting to such conformance shall be submitted.

2. No material, assemblies, forms, method of construction, equipment, machinery, and devices, which are regulated by the provisions of the code, will be acceptable for the intended use unless:

   a. It is tested and approved for use in accordance with the specific provisions of the codes and rules of the New York City Department of Buildings.

   b. Or, previously approved by the New York City Board of Standards and Appeals (BS&A) or by the Materials and Equipment Acceptance (MEA) Division of the New York City Department of Buildings.

   c. Complete test data or MEA or BS&A resolutions of approval shall be submitted along with other documents. Manufacturers' or distributors' letters are not acceptable. See Article 113 of Chapter 1 of Title 28 of the Administrative Code of the City of New York for specific requirements.

B. Special Inspection:

1. All items subject to "special inspection" shall be listed on the title sheet of the construction documents, or the sheet immediately following. See Administrative Code of the City of New York, Section 28 - 104.7.7.

2. All materials, equipment, and construction designated by the Code for "special inspection" shall be inspected and/or tested by a special inspection agency registered with the New York City Department of Buildings and employ special inspectors with the required qualifications.

3. See Section 18, Attachment INSP1 for the list of items subject to special inspections, as well as the relevant Code sections, where applicable. Effort has been made to make this list as inclusive as possible. Other items subject to special inspection, as required by the NYC Building Code, that have been omitted in this list must also comply.

III. NEW JERSEY

A. Approval/Acceptance of Materials, Equipment, etc.:

1. Acceptance of materials, assemblies, equipment, forms, methods of construction, etc., shall be based on certified test reports from approved agencies. See Building, Mechanical and other sub-codes of New Jersey Uniform Construction Code (NJUCC).

2. See NJUCC, Section 5:23-4.26 for certification of building elements, such as trusses, fire walls, fire separation walls, wall panels, pre-stressed/pre- fabricated floor or roof panels and pre-engineered structural frames.

B. Special Inspection (New Jersey Uniform Construction Code Section 5:23-2.20):

1. All "special inspections" shall be made and required by the Code shall be made and conducted under the supervision of the Registered Architect or Professional Engineer (A/E of record) retained by the Tenant.

2. All items subject to "special inspection" shall be listed on the title sheet of the plans, or the sheet immediately following.

3. See Section 18, Attachment INSP2 for the list of items subject to "special inspection of critical construction components." Effort has been made to make this list as inclusive as possible based on the current sub-codes adopted by the NJUCC. Other construction items subject to "special inspection", as required by these codes that have been omitted in this list, must also comply:

IV. NEW YORK STATE

A. Approval/Acceptance of Materials, Equipment, etc.:

1. Acceptance of materials, assemblies, equipment, forms, methods of construction, etc., shall be based on certified test reports from approved agencies. See Building Code of New York State, Chapter 17.

B. Special Inspection (Building Code of New York State):

1. The Tenant or the Registered Architect or Professional Engineer (A/E of record) retained by the Tenant shall employ one or more special inspectors (with minimum qualifications, as per the Building Code of the State of New York, Table 1704.1) to provide inspections for items that are designated by the Code for "special inspection."

2. All items subject to "special inspection" shall be listed on the title sheet of the plans, or the sheet immediately following.

3. See Section 18, Attachment INSP3 for the list of items subject to "special inspection of critical construction components." Effort has been made to make this list as inclusive as possible based on the current code. Other construction items subject to "special inspection", as required by the code that have been omitted in this list, must also comply.

This page is intentionally left blank.

I. GENERAL

The scope of the environmental review shall include asbestos and lead paint inspections and abatement plans, soil excavation management plans, dewatering plans, subsurface investigations, waste identification and disposal plans, site remediation, underground storage tank installation, testing, repair or removal; air emission sources, and storm water management. Documents will be reviewed for compliance with applicable codes, regulations and standards.

The following types of documents shall also be submitted to the Port Authority:

A. Best Management Plans

B. Spill Plans

C. Storm water Management Plans

D. Subsurface Investigation Reports and Remedial Action Reports

E. Permit Applications and Regulatory Approval Request letters

F. Asbestos/Lead Abatement Drawings and Specifications

G. All official correspondences with regulatory agencies

II. RULES, REGULATIONS, AND PROGRAMS

The following federal, state and local environmental laws, regulations, and programs, as applicable, shall be complied with:

A. Federal:

1. Clean Air Act

2. Clean Water Act, including Underground Storage Tank and Spill Regulations

3. Federal Insecticide, Fungicide, and Rodenticide Act

4. Noise Control Act

5. Occupational Safety and Health Act

6. Resource Conservation and Recovery Act

7. Toxic Substances Control Act

8. National Environmental Policy Act

B. New York City:

1. Administrative Code of the City of New York

2. Asbestos Control Program

3. Department of Sanitation Codes

4. New York State Department of Environmental Conservation Programs

5. New York State Environmental Quality Review Act

C. New Jersey State:

1. New Jersey Administrative Code

2. Industrial Site Recovery Act (ISRA)

3. NJ Department of Environmental Protection Program

III. STANDARDS

A. Port Authority Standard Specifications for Asbestos Removal

B. Port Authority Standard Specifications for Lead-based Paint Removal

C. American Petroleum Institute Guidelines

IV. DETAILS OF ENVIRONMENTAL REVIEW

The following are representative of items reviewed:

A. Asbestos/Lead Management:

1. Building Surveys

2. Abatement Plans and Specifications including: Dimensions, isolation barriers, location of decontamination systems, exhaust locations, waste storage, negative air unit calculations, emergency exits, and detail abatement procedures

3. Federal and State Notifications

4. Health and Safety Plan signed by a Certified Industrial Hygienist

B. Soil Excavation Management Plans:

1. Quantity of soil to be excavated, disposed off site, and reused on site

2. For off site reuse/disposal; off site facility acceptance criteria, State permit or approvals allowing off site facility to accept excavated soil

3. Soil tests completed, summary table comparing analytical results with state reuse criteria and/or disposal facility criteria

4. Dewatering plans/permit/approvals

5. Waste Manifiest/Bill of Lading for soil transported off site

6. Health and Safety Plan signed by Certified Industrial Hygienist

C. Underground Storage Tanks:

1. New tank installation Plans and As-Built Drawings signed by State Licensed Professional Engineer, including certification statement on as-built drawings stating that storage tanks installed are in compliance with State Regulations

2. Tank registration forms/renewals

3. Results of tank tests, monitoring and inspection logs

4. Tank closure regulatory notification, revised registration form, closure plan and closure report

5. Tank repair documentation

This page is intentionally left blank.

I. GENERAL

The scope of the corrosion control/cathodic protection review includes an examination of the cathodic protection, coatings and other related systems design drawings, specifications, and computations for all metallic structures exposed to underground, marine, or atmospheric environment, (including atmospherically exposed reinforced concrete) in regard to their compliance with the codes, standards, and Port Authority Criteria.

II. RULES AND REGULATIONS

A. Federal:

1. Environmental Protection Agency: 40 CRF Parts 280 and 281

2. Department of Transportation: Title 49, Parts 191, 192, 193 and 195

B. New York:

New York State Department of Environmental Conservation: 6NYCRR Parts 612, 613, 614

C. New Jersey:

New Jersey Department of Environmental Protection: N.J.A.C. 7:14B.

III. STANDARDS

A. NACE International Standards: RP 0169, RP0193, RP 0285

B. ASTM Standards: G3, G4, G5, G51, G57, G97, and G102

IV. PORT AUTHORITY CRITERIA

A. The design of all Corrosion Control/Cathodic Protection Systems shall be performed by a NACE International ("NACE") certified Corrosion Specialist or Cathodic Protection Specialist.

B. The cathodic protection systems shall be compatible with the

existing systems at the PA facility.

C. The design of the systems shall take into account the presence of stray currents and their impact on existing and proposed structures, and the impact of connecting structures into existing cathodically protected structures. All tenant hydrant fueling systems shall be electrically isolated from the PA fueling mains.

D. The design shall take into account the monitoring requirements for compliance with the respective state agencies and federal regulations for corrosion control. Provisions shall be made to allow the effectiveness of all installed dielectric isolation devices(flange isolation kits, etc.) to be tested periodically without the need for confined space entry into vaults, etc.

E. In New York, all cathodic protection systems shall be registered with the "Greater New York Corrosion Committee" and in New Jersey, all cathodic protection systems shall be registered with the "New Jersey Committee on Corrosion.

F. All cathodic protection system designs and commissioning tests for fuel storage facilities in New Jersey shall be performed by an individual certified by the State of New Jersey as a Corrosion Specialist, in accordance with the requirements of Subchapter 13 of N.J.A.C. 7:14B of the New Jersey Department of Environmental Protection rules for underground storage tank facilities.

G. All cathodic protection systems shall be energized and tested by a NACE certified Corrosion Specialist or Cathodic Protection Specialist. A report shall be prepared and submitted to the Port Authority. The report shall document all settings, protection levels, and the impact of stray currents on all nearby structures. Recommendations for mitigation of said interference effects shall be included.

H. Where proposed utility pipelines will run in proximity (within 100 feet) of DC-powered traction systems, provisions shall be incorporated into the design of the structures to measure the effects of stray currents on those structures.

V. DETAILS OF CORROSION CONTROL / CATHODIC PROTECTION REVIEW

The following are representative of items reviewed:

A. Calculations and reports shall include, but not be limited to, the following:

1. Result of a risk assessment of new utilities to be constructed, taking into account the risk factors associated with a failure of the structure, including public safety, interruption of facility operations, and cost of repairs/replacement of the utility structures.

2. For fuel transfer pipelines and aboveground storage, citation of the specific regulatory requirements for corrosion protection that apply to that facility or structure.

3. Where fuel storage facilities in New Jersey are involved, certification of individual and firm by the New Jersey Department of Environmental Protection shall be provided for review.

4. Results of a corrosion site investigation, including soil resistivity testing, chemical analysis of soil samples at proposed structure depth, and stray current testing. Also, a review of previous data and corrosion control designs by the Port Authority or others, with conclusions regarding how to best coordinate proposed and existing systems.

5. Cathodic protection design basis including design life assumptions, maintenance requirements, current density assumptions and other extraordinary factors that would impact on system performance and/or life. If proposed structures are to be connected to existing structures that are cathodically protected, the impact on the existing cathodic protection system by the interconnection shall be considered. The proposed approach to the incorporation of the new structure(s) into the existing cathodic protection system shall be clearly laid out, including procedures to evaluate the effectiveness of the overall cathodic protection system both prior to and after the interconnection of the structures.

6. Evaluation of alternative system materials and installation configurations and consideration of the life cycle cost of each alternative.

7. Consideration of stray current effects on existing structures in the area of the proposed structures, and provision of test facilities to allow for the testing of the severity of those effects on the structures to allow for 1) additional mitigation of the stray current or, 2) report of the significant stray current that require maintenance of the transit system's stray current control

provisions designed to keep stray current generation to a tolerable level.

8. Evaluation of requirements for electrical bonding continuity.

B. Plans shall include, but not be limited to:

1. Location and plot plan with lease lines, showing all the coordinates.

2. All underground utility service lines (proposed and existing).

3. Plan of all cathodic protection system components, interconnections, test station locations.

4. Details of all systems components, including but not limited to anodes, junction boxes, rectifiers, test facilities, remote monitoring facilities, and stray current monitoring and control provisions.

5. Locations where new structures are to be electrically isolated from existing structures to maintain efficient cathodic protection current distribution characteristics.

6. Electrical bonding continuity requirements for mechanically joined pipelines.

C. Specifications shall include, but not limited to:

1. The scope of work and materials required for the construction of the proposed cathodic protection systems.

2. Qualifications for the installation contractor and the cathodic protection specialty contractor, including the appropriate certified corrosion specialist.

3. Specialized installation methods to be used to install an effective and reliable cathodic protection system.

4. Testing and monitoring requirements for the systems to insure the proper operation of both new and existing systems for the life of the system. The test procedures for documentation of the effectiveness of the existing cathodic protection system shall be clearly indicated, along with requirements to document that the combined system is effective in meeting NACE criteria for cathodic protection after the new system is installed and energized.

5. Testing requirements to evaluate the stray current interference effects of new cathodic protection systems on any other underground metallic structures, and to recommend the required mitigative measures. Also requirements to measure the effects of stray current on the new structures.

This page is intentionally left blank.

I. GENERAL

The scope of the traffic review shall comprise an examination of the design drawings and specifications for compliance with the latest applicable standards, including those of the Port Authority, and a review of the operational characteristics of the site with regard to vehicular and pedestrian movements. The design documents associated with Traffic Engineering shall be related to both permanent-type traffic improvements and/or temporary controls for work zones involving construction, maintenance, or incident management operations (commonly referred to as 'maintenance and protection of traffic').

II. STANDARDS

A. Federal – Applicable to all Facilities:

1. Federal Highway Administration (FHWA):

   a. Manual on Uniform Traffic Control Devices (MUTCD)

   b. Traffic Control Devices Handbook (TCDH)

   c. Standard Highway Signs

   d. Standard Alphabets for Highway Signs and Pavement Markings

   e. Standard Color Tolerance Charts

   f. Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects

   g. Railroad-Highway Grade Crossing Handbook

2. Transportation Research Board (TRB):

   Highway Capacity Manual, Special Report 209

3. American Association of State Highway and Transportation Officials (AASHTO):

a. A Policy on Geometric Design of Highways and Streets.

b. Roadside Design Guide

c. Standard Specifications for Highway Bridges

d. Guidelines for the Selection of Supplemental Guide Signs for Traffic Generators Adjacent to Freeways

e. Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT $\leq$ 400)

f. Highway Safety Design and Operations Guide

g. Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals

4. Institute of Transportation Engineers (ITE):

a. Standard for Vehicle Traffic Control Signal Heads.

b. Standard for Pedestrian Traffic Control Signal Indications

c. Standard for Flashing and Steady Burn Barricade Warning Lights

d. Standard for Traffic Signal Lamps

e. Trip Generation Manual

f. Turning Vehicle Templates

g. Traffic Signing Handbook

h. Design and Safety of Pedestrian Facilities

i. Manual of Traffic Signal Design

j. Standard for Traffic Control Systems

k. National Transportation Communications Intelligent Transportation System Protocol (NTCIP)

5. American Traffic Safety Service Association (ATSSA):

   a. Guidelines for the Use of Portable Changeable Message Signs

   b. Quality Guidelines for Work Zone Traffic Control Devices

6. Americans with Disabilities Act (ADA):

   a. ADA Accessibility Guidelines for Buildings and Facilities (ADAAG)

B. New York:

Highway Design Manual, New York State Department of Transportation (NYSDOT)

C. New Jersey:

1. Design Manual – Roadway, New Jersey Department of Transportation (NJDOT)

2. Standard Roadway Construction/Traffic Control/Bridge Construction Details, (NJDOT)

3. Standard Specifications for Road and Bridge Construction, (NJDOT)

D. Port Authority of NY & NJ (PANYNJ):

1. Traffic Standard Details. See Section 18, Attachment T1 for an Index

2. Maintenance of Traffic and Work Area Protection under "General Provisions" (Division 1) of the Specifications

3. Airport Signing Standard Manual (for Airport facilities)

4. Operations and Maintenance Standards, O&M #20, O&M #37, and O&M #73

5. Traffic Signal Design and Drawing Preparation Guidelines

6. Signing and Wayfinding Airport Standards Manual for Pedestrians

Note:
The Traffic Standard Details and other Port Authority standards listed in this section will be provided by the Port Authority Engineering Department's Quality Assurance Division, when required for a specific Tenant project and requested through the facility Tenant liaison office.

E. Other:

1. Parking Structures – Planning, Design, Construction, Maintenance and Repair – by Chrest, et al., Published by Kluwer Academic Publishers, Boston, MA.

III. DETAILS OF TRAFFIC ENGINEERING REVIEW

A. Maintenance of Traffic and Work Area Protection (temporary traffic controls associated with work zones):

1. Plans shall include drawings which depict properly designed temporary traffic control devices wherever a work zone occupies or interferes with the normal operation of:

   a. Any active roadway, ramp, bridge, or tunnel which carries vehicular and/or pedestrian traffic.

   b. Any portion of any parking lot or garage area, driveway, access way, trucking terminal or yard, or loading dock area where there are vehicle and/or pedestrian movements.

   c. Any sidewalk, walkway, concourse, hallway, plaza, doorway, station area or platform, stairway, moving stairway, or elevator where pedestrians have access.

2. Contract documents shall specify 'duration of contract' and 'hours of work'. Based on these parameters, temporary traffic control devices shall comply with all applicable standards.

3. Plans shall indicate where temporary traffic control devices conflict with any permanent control devices, and shall indicate the appropriate action to be taken with the affected permanent devices (i.e., to be removed, relocated, covered, etc.). Notes shall include a provision that any items negatively impacted during construction shall be replaced by the Tenant to the satisfaction of the PA at no cost to the PA.

4. Contract documents shall specify the precautions required to protect vehicles and/or pedestrians from dust, fragments, construction particles, effects of spraying and excessive noise generated by the work operations.

5. Where required, according to the applicable code(s)/standard(s), in conjunction with the temporary control devices, the appropriate lighting devices shall be incorporated in the design.

6. Where required, contract documents shall specify the extent of "flagger operations", to include confirmation of appropriate training, as specified in the Federal MUTCD, Part VI, Temporary Traffic Control.

7. Contract documents shall specify extent of 'daily' and 'end of contract' removal of temporary control devices and include restoration to their original condition and location of any permanent traffic control devices affected during the course of the work.

B. Permanent Traffic Control Devices:

1. Tenant/applicant shall have checked all existing traffic control devices for deficiencies or missing items, and any found, as such, prior to or as a result of the work of the contract, shall be replaced or upgraded.

2. All new and/or existing control devices shall have been checked for visibility and adequate sight distance(s) in daytime and nighttime, also accounting for seasonal variations, such as restrictions caused by growth of vegetation.

3. All new and existing installations shall have been analyzed for the need to incorporate appropriate roadside barriers (e.g., guide rails) in the design.

4. The traffic design shall have been coordinated with other engineering/architectural disciplines, particularly civil, structural, geotechnical, and electrical.

5. With regard to coordination with electrical engineering, wherever required, the permanent control devices and adjacent project areas shall have been designed with illumination levels which meet code standards.

6. When the application includes traffic/roadway modifications and/or changes in traffic demand, the applicant shall have included any of the following, as justified:

   a. A traffic capacity analysis (to determine whether the 'Level of Service' of any nearby roadways is affected). Level of Service (LOS) for all elements of the roadway system (roadways, weaving sections, signalized and un-signalized intersections, pedestrian crosswalks and walkways) shall be equal to or better than LOS "C/D" as defined in the Transportation Research Board Highway Capacity Manual. All closely spaced signalized intersections shall be analyzed both as a coordinated system and as isolated intersections.

   b. A "speed study" (analyzing whether any speed limit change(s) are required).

7. The scope of work to be done in association with the application shall incorporate the results and recommendations of any approved analyses and studies.

8. Any traffic signals impacted during construction must be inspected by the Port Authority Traffic Engineering via a "Turn on Inspection" as well as a "Final Inspection". These checklists will be provided at the beginning of construction.

9. Drawings shall include all pedestrian and vehicular way finding sign layouts.

SECTION 18 ATTACHMENTS

The following attachments in this section include requirements that are supplementary to the requirements in the technical sections of this Manual and are to be complied with.

A1	Standards for Interior Plastic Signs
A2	Specifications Governing the Flammability of Drapery and Curtain Materials in Unsprinklered Areas
A3	Specifications Governing the Flammability of Upholstery Material and Plastic Furniture in Unsprinklered Areas
A4	Specifications Governing the Flammability of Plastic Laminate and Wood Veneer Furniture in Unsprinklered Areas
A5	Marking of Transparent Glass Doors and Fixed Adjacent Glass Sidelights
S1	Plaster Ceiling Design Standards
S2	Suspended Lightweight Ceilings Design Criteria
S3	LaGuardia Airport – Central Terminal Building - Non-structural Concrete Fill Over Cellular Steel Decking
S4	Port Authority Bus Terminal – Lightweight Concrete Slab Areas
C1	Index of Civil Standard Details
C2	Index of Standard Civil Specifications
C3	Index of Civil Design Guidelines
E1	Electrical Manhole and Ductbank Details
E2	Port Authority Bus Terminal – Electrical Design Criteria
M1	Port Authority Bus Terminal – HVAC Design Criteria
M2	Port Authority Bus Terminal – Plumbing & Fire Protection Design Criteria

RFS1	Airport Rampside Clearances
T1	Index of Traffic Standard Details
INSP1	Special Inspection Items - New York City Facilities
INSP2	Special Inspection Items - New Jersey Facilities
INSP3	Special Inspection Items - New York State Facilities
LS1	Landscape Architectural Design At Airports

1.0 **General:** The provisions of this specification shall govern the design and use of interior plastic signs and panels in both New York & New Jersey.

2.0 **Definitions, symbols and notations:** The following definitions, symbols and notations shall apply to the provisions of this standard (units in parenthesis are for the variable described):

A_S (ft^2) =	Allowable sign facing area
L (ft) =	The length along the ceiling of a ceiling sign
P_w (ft) =	Minimum distance between an egress path and a sign. Distance can be passage width or height
t (inches) =	Thickness of sign facing material(s)
V_C (ft^3) =	Volume of space or room in which the sign is located

Ceiling sign: A ceiling mounted sign with its top located within one foot of the ceiling and its bottom located five feet or higher above the floor.

Interior plastic sign: A sign, located within a structure, which has a facing which is constructed of plastic.

Multiple-faced sign: A sign with more than one exposed face.

Sign: Any fabricated sign or display structure, including its structure, consisting of any letter, figure, character, mark, point, plane, marquee sign, design, poster, pictorial, picture, stroke, stripe, line, trademark, reading matter or illuminating device, which is constructed, attached, erected, fastened or manufactured in any manner whatsoever so that the same shall be used for the attraction of the public to any place, subject, person, firm, corporation, public performance, article, machine, or merchandise whatsoever, and displayed in any manner for recognized advertising purposes.

Sign facing: The display portion of a sign.

Single-faced sign: A sign with display on one face only.

Volume of Space or Room (V_c): The volume between physical barriers which may limit the movement of fire products (e.g., fire doors in cross corridor partitions). The space shall have a maximum average length to width ratio of 4:1. If the ratio exceeds 4:1, the length of four times the average width shall be used for volume calculation. The volume of a compartment with a ratio exceeding 4:1 shall be calculated by the following equation:

$$4 \times (\text{average width of compartment})^2 \times \text{height}.$$

3.0 **Flame Spread Rating:** All plastic sign facings shall have a flame-spread rating, determined by ASTM E84, not greater than 200.

Exception: Materials less than 1/28-inch in thickness shall comply with the criteria in NFPA 701, "Flame Tests for Flame-resistant Textiles and Films," or when tested in accordance with ASTM D568, "Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Flexible Plastics in a Vertical Position," exhibit an average burn time for ten specimens of 15 seconds or less and a burning extent of 15 centimeters or less.

4.0 **Allowable Sign Facing Area:** The area of an individual plastic sign facing shall not exceed the limitations established in paragraph 4.1 through paragraph 4.6, or as calculated in accordance with the Appendix to this standard. The maximum area of all signs in a space shall not exceed 20 percent of the aggregate wall and ceiling area of the space. For multiple-faced signs, the calculated allowable area is the total area of all faces of all signs within separation distances specified in paragraph 4.7. Signs which are separated by less than the minimum sign separation distance as given in paragraph 4.7, shall be considered a single sign.

Exception: The area of an individual plastic sign facing is not limited where the portion of the building, where the sign is located, is equipped with an automatic sprinkler system. However, the 20 percent limitation, in the paragraph above, shall apply.

4.1 Polymethylmethacrylate (PMMA) (e.g., Acrylic, Plexiglass, Lucite) Sign Materials: The allowable area of a PMMA sign facing shall be determined from the following equation.

$$A_s = 0.00034 \cdot \frac{V_c}{t} \quad | \text{for } t \le 0.46 \text{ inch}$$

$$A_s = 0.000745 \cdot V_c \quad | \text{for } t \rangle 0.46 \text{ inch}$$

Example: Given a space (room or compartment) 50' long by 40' wide with a 10' high ceiling, how large a PMMA (acrylic) sign facing is allowable if PMMA is 0.25" thick?

$$A_s = 0.00034 \cdot \frac{(50)(40)(10)}{0.25} = \frac{6.8}{0.25} = 27.2 \text{ sq.ft.}$$

4.2 Polycarbonate (e.g., GE Lexan S100) Sheet Sign Material: The allowable area of a polycarbonate sign facing shall be determined from the following equation:

$$A_S = 0.00031 \cdot V_C$$

4.3 Polyethylene Teraphthalate (PET) (e.g., IMPET 300) Sign Material: The allowable area of a PET sign facing shall be determined from the following equation:

$$A_S = 0.0000759 \cdot \frac{V_C}{t} \quad | \text{for } t \le 0.41 \text{ inch}$$

$$A_S = 0.000185 \cdot V_c \quad | \text{for } t > 0.41 \text{ inch}$$

4.4 Duratrans - Glossy Sign Facing Material: The allowable area of a Duratrans sign facing shall be determined from the following equation:

$$A_s = 0.000046 \cdot \frac{V_c}{t} \quad | \text{ for } t \le 0.043 \text{ inch}$$

$$A_s = 0.00108 \cdot V_c \quad | \text{for } t \rangle 0.043 \text{ inch}$$

4.5 **Duratrans Matte Finish Sign Facing Material:** The allowable area of a Duratrans matte finish sign facing shall be determined from the following equation:

$$A_s = 0.0000224 \cdot \frac{V_c}{t} \quad \text{for } t \leq 0.0576 \text{ inch}$$

$$A_s = 0.000389 \cdot V_c \quad \text{for } t > 0.0576 \text{ inch}$$

4.6 **Other Plastic Sign Materials:** The allowable area of a sign facing constructed from a plastic material not listed in paragraphs 4.1 through 4.5, or from composites of plastics, shall be determined in accordance with the Appendix to this standard. The method in the Appendix may also be used for plastics listed in paragraphs 4.1 through 4.5.

4.7 **Sign Separation Distances:** The minimum separation distance between any two individual signs shall be in accordance with paragraphs 4.7.1., 4.7.2, and 4.7.3. Signs located less than the minimum sign separation distances apart shall be considered as one sign for allowable sign facing area.

Exception: Sign separation distances do not apply where the signs are located in a space equipped with an automatic sprinkler system.

4.7.1 **Single-Faced Sign Separation Distances:** The minimum separation distance between two adjacent signs with a single side of sign facing shall be 6 feet.

4.7.2 **Multiple-Faced Sign Separation Distances:** The minimum separation distance between two signs with multiple faces on different planes shall be 13 feet.

4.7.3 **Ceiling Sign Separation Distances:** Signs greater than 10 feet in length and one foot in height shall have a minimum separation distance of 10 feet, except as noted in 4.7.2. Other signs shall conform to Sections 4.7.1.

4.8 **Minimum Dead End Passage Width for Signs:** Minimum passage width applies to dead end corridors and rooms having means of egress in locations requiring an occupant to pass by a sign. The minimum passage width shall be 20 feet in locations where an occupant must pass a single-faced sign, and 28 feet in locations where an occupant must pass a multiple-faced sign to exit. The minimum passage width (P_w) is defined as the minimum distance between an egress path and a sign, i.e., the closest an occupant will be to the sign during egress. The minimum passage width or height (for ceiling signs) where an occupant must pass by a sign which is perpendicular to the occupants path of travel shall be calculated from the following equation:

$$P_w = 0.00255 \cdot L^{3.654} \mid \text{for } L \geq 2 \text{ ft}$$

Exception: There is no restriction for signs less than 4 square feet in area and ceiling signs less than 2 feet long.

Calculation of Allowable Sign Area for Signs of Any Plastic Material or Composite of Plastics.

A.1 *Definitions, symbols and notations:* The following definitions, symbols and notations shall apply to the provisions of this Appendix (units in parenthesis are for the variable described):

A_S (ft^2) =	Allowable sign facing area.
A_1 (ft^2) =	Initial allowable sign facing area based on Figure A-1.
A_2 (ft^2) =	Corrected allowable sign area based on the time to burn through a sign.
$\Delta H_{c,40}$ (kJ/kg) =	Heat of combustion for an incident heat flux of 40 kW/m^2.
L (ft) =	The length along the ceiling of a ceiling sign.
$\dot{m}''_{40}$(kg/s-m^2) =	The average specimen mass loss rate of the fuel per unit area with a radiant flux exposure of 40 kW/m^2. Mass loss rate shall be determined in accordance with average horizontal specimen mass loss rate in ASTM E- 1354.
P_w (ft) =	Minimum distance between an egress path and a sign. Distance can be passage width or height.
t_b (sec) =	Time to burn through a specimen, used to correct allowable areas for thin signs.
t (inches) =	Thickness of sign facing material(s).
V_c (ft^3) =	Volume of space or room in which the sign is located.
$\sigma_{m,40}$ (m^2/kg) =	Specific extinction area, on a mass loss basis for an incident heat flux of 40 kW/m^2.
ρ (kg/m^3) =	Density of sign material.
SP (1/s) =	Smoke production factor used to determine uncorrected sign area based on volume.

A.2 All plastic sign facings shall meet the flame spread rating criteria specified in paragraph 5.0. All test results and material properties used in the following calculations must be submitted for approval.

A.3 The allowable area of a sign facing constructed from plastic materials shall be determined in accordance with the following procedure. The procedure is applicable for all plastic materials including those listed in paragraphs 4.1 - 4.5.

1. Obtain the sample mass density ρ, in kg/m³.

2. Obtain the following from ASTM E 1354:

   a) The average specimen mass loss rate per unit area for an incident heat flux of 40 kW/m² ($\dot{m}''_{40}$).

   b) The average specific extinction area for an incident heat flux of 40 kW/m² ($\sigma_{m,40}$).

   c) The average effective sample heat of combustion for an incident heat flux of 40 kW/m² ($\Delta H_{C,40}$).

3. Calculate the material's smoke production factor (SP):

$$SP = \sigma_{m,40} \cdot \dot{m}''_{40}$$

4. Using Figure A-1 and the appropriate values of SP and V_C, estimate the value of A_1.

5. The initial corrected allowable area of a combustible sign facing (A_2) based on the thickness of the material shall be calculated using the following formulas:

$$A_2 = \frac{600}{t_b} \cdot A_1$$

where t_b is determined by the following formula:

$$t_b = 0.0254 \cdot \frac{\rho \cdot t}{\dot{m}''_{40}}$$

Exception: If t_b is greater than 600, then a corrected area is not required, i.e., $A_2 = A_1$.

6. The final allowable area of a combustible sign facing (A_S) based on the heat release rate properties of the combustible materials shall be calculated using the following formula:

$$A_s = \frac{452}{\dot{m}''_{40} \cdot \Delta H_{c,40}} \cdot A_2$$

Exception: If $\dot{m}''_{40} \cdot \Delta H_{c,40}$ is less than 452.0 kW/m², a corrected area is

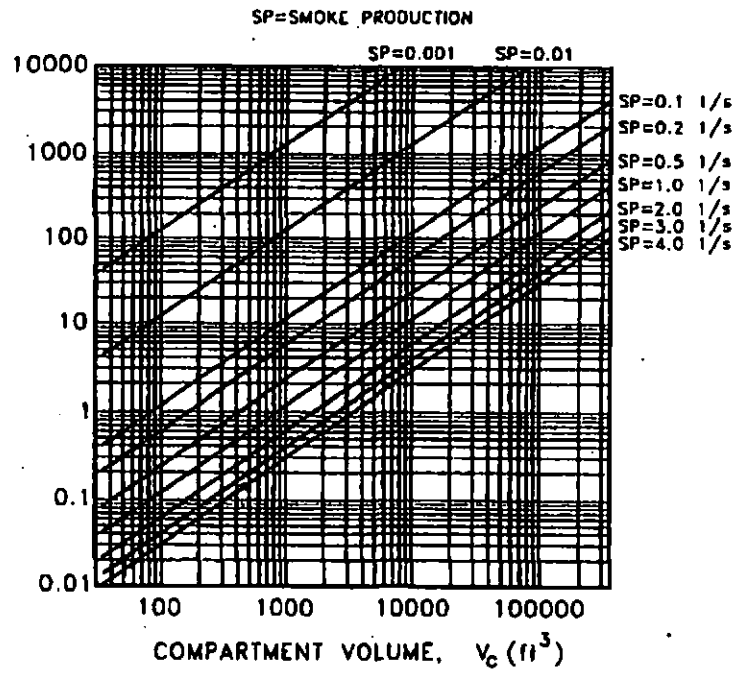


Figure A-1
Allowable Sign Area as a Function of the Smoke Production and Room Volume

not required, i.e., $A_S = A_2$.

7. Allowable facing area of composite sign materials shall be determined in the same fashion as signs with single materials. Material properties of the composite sign (α_{40}, σ_m, ΔH_c, ρ) shall be a weighted average of each component mass material. For example, material properties of a composite with two materials shall be determined via where 1 and 2 refer to materials number

$$\alpha_{40} = \frac{\text{mass}_1}{\text{mass total}} \cdot \alpha_{40,1} + \frac{\text{mass}_2}{\text{mass total}} \cdot \alpha_{40,2}$$

$$\sigma_m = \frac{\text{mass}_1}{\text{mass total}} \cdot \sigma_{m,1} + \frac{\text{mass}_2}{\text{mass total}} \cdot \sigma_{m,2}$$

$$\Delta H_c = \frac{\text{mass}_1}{\text{mass total}} \cdot \Delta H_{c,1} + \frac{\text{mass}_2}{\text{mass total}} \cdot \Delta H_{c,2}$$

$$\rho = \frac{\text{mass}_1}{\text{mass total}} \cdot \rho_1 + \frac{\text{mass}_2}{\text{mass total}} \cdot \rho_2$$

one and two.

This page is intentionally left blank.

A2

SPECIFICATIONS GOVERNING THE FLAMMABILITY OF DRAPERY AND CURTAIN MATERIALS IN UNSPRINKLERED AREAS

A. All drapery and curtain materials, including linings, shall be subject to the vertical flame tests as required by Federal Aviation Regulation FAR 25.853(a) and Appendix F, revised February 2, 1995.

The test method requires that the flame shall be applied for 12 seconds and then removed, that the average char length shall not exceed eight (8) inches, that the average flame time after removal of the flame specimen shall not continue to flame for more than five (5) seconds after falling.

B. The manufacturer of the finished item shall submit written certification for each component fabric of the completed items as follows:

1. If the material contains 100% fibers that are inherently flame resistant by virtue of the physical properties of the untreated fiber, a written certification by a recognized independent testing laboratory, attesting to the permanent flame resistant properties of all the fibers within, shall be submitted to the Port Authority.

2. If the material contains fibers which are not inherently flame resistant in the untreated state, a written certification by a recognized independent testing laboratory shall be submitted to the Port Authority, attesting that the treated materials have maintained their flame resistant properties, as determined by the burn test in paragraph A above, after five (5) washings and/or dry cleanings. The washing test procedure shall be performed as defined by the Technical Manual of the American Association of Textile Chemists and Colorists (AATCC) Test Method 124-1978 using the wash temperature of 120° ±5°F and the "Tumble Dry" procedure. The dry cleaning test procedure shall be performed by subjecting the material to dry cleaning in a "Coin-OP" machine as manufactured by Norge or Westinghouse or an equal machine. The size sample of material and the machine size are to be commensurable to each other. When necessary, dummy pieces of material shall be added to the test specimens to make up a load equal to the machine rating.

This page is intentionally left blank.

SPECIFICATIONS GOVERNING THE FLAMMABILITY OF UPHOLSTERY MATERIAL AND PLASTIC FURNITURE IN UNSPRINKLERED AREAS

A. All upholstery materials, including covering, interliner, lining, webbing, cushioning; and padding shall be subject to the vertical flame test as required by Federal Aviation Regulation FAR 25.853(a) and Appendix F, revised February 2, 1995.

The test method requires that the flame be applied for 12 seconds and then removed, that the average burn length shall not exceed eight (8) inches, that the average flame time after removal of the flame source shall not continue to flame for more than an average of five (5) seconds after falling.

Test samples subject to the vertical test shall be tested using the thickness of the material as used in the finished product; except that, the maximum thickness of a test sample shall be one-half inch (1/2") in cases where the final product material exceeds that thickness.

B. Padding that exceeds one-half inch (1/2") thickness and all cushioning, in addition to meeting the requirements of Section A above, shall be tested in accordance with the Standard Test Method for Surface Flammability of Materials Using a Radiant Heat Energy Source - ASTM E162-94. Wire mesh screen and aluminum foil shall be used as indicated in Section 5.8.1 of this standard test method.

1. Padding and cushioning with a flame propagation index not exceeding 100 is acceptable for use with an external covering that meets the requirements of Section A of this specification.

2. Padding and cushioning with a flame propagation index exceeding 100 may be covered with materials or interliners complying with paragraph A of this specification. However, the final assembly of these materials which make up the cushion, arm rest, or other parts of the furniture, shall be subject as a composite unit to Standard Test Method ASTM E162-94. Composite assemblies with a flame spread index not exceeding 100 will be acceptable.

C. All self-supporting plastic materials shall be subject to the vertical flame test as required by FAR 25.853(a) and Appendix F. The test method requires that the flame be applied for 60 seconds and then removed, that the average burn length shall not exceed six (6) inches, that the average flame time after removal of the flame source shall not exceed 15 seconds, and that drippings from the test specimens shall not

continue to flame for more than an average of three (3) seconds after falling.

D. The thickness of the materials and of the composite assemblies tested under paragraphs B and C above shall be the same as the thickness used in the finished item. Certification submitted by the manufacturer shall indicate the thickness of the materials as tested.

E. The manufacturer of the finished item shall submit a certification by a recognized, independent, testing laboratory of the results of the tests specified above and of the service life of the flame retardancy of a treated material or a certification that the flammability characteristics of the material are inherent therein by virtue of the chemical properties of the material. Treated material may be used only when the certified flame retardant service life exceeds that of the planned service life of the finished item.

A. Test and Criteria:

1. Flame spread indices for this specification shall be determined by either ASTM-E-84 or ASTM-E162. Flame spread indices shall not exceed 25.

2. The vertical flame test shall be performed in accordance with Federal Aviation Regulation, FAR 25.853(a) and Appendix F, revised February 2, 1995. This test method requires that the flame be applied for 12 seconds and then removed, that the average burn length shall not exceed eight (8) inches, that the average lame time after removal of the flame source shall not exceed 15 seconds, and that drippings from the test specimen shall not continue to flame for more than five (5) seconds after falling.

B. Free Standing Office Partitions:

1. All core and/or structural materials shall be tested and meet the requirements specified in A.1 above.

2. All insulation and covering materials shall be tested and meet the requirements specified in A.2 above.

C. Desk, Tables, Credenzas, Bookcases, etc.:

1. All core and/or structural materials shall be tested and meet the requirements specified in A.1 above.

2. Plastic laminate or wood veneer layer materials having a thickness not greater than 1/28 inch shall be tested and meet the requirements specified in A.2 above.

3. Plastic laminates or veneer layer materials having a thickness greater than 1/28 inch shall be subject to vertical flame test as per Federal Aviation Regulation, FAR 25.853(a) or (c), and Appendix F determined by the PA's Risk Management Division.

4. The application of intumescent coatings to achieve fire resistance shall be reviewed by the PA's Risk Management Division.

D. Certification:

The supplier of the finished item shall submit a certification and test data by a recognized independent testing laboratory of the results of the tests specified above. The certification and tests shall cover the materials supplied in the finished product. Proof of use of UL labeled products meeting the specified flammability criteria will be accepted in lieu of the certification.

1.0 General.

These rules are identical to New York City Board of Standards and Appeals Rule 4-01 and shall be applicable to all new construction at Port Authority facilities, both in New York and New Jersey.

2.0 Definitions.

Sidelights. Fixed panels of transparent glass which form part of or are *immediately adjacent to and within six feet horizontally of the vertical edge of* an opening in which transparent glass doors are located. For purposes of this section, a sidelight shall consist of transparent glass in which the transparent area above a reference line 18 inches above the adjacent ground, floor or equivalent surface is 80 percent or more of the remaining area of the panel above such reference line.

Transparent glass. Material predominantly ceramic in character which is not opaque and through which objects lying beyond are clearly visible. For the purpose of this section, rigid transparent plastic material shall be construed as transparent glass.

Transparent glass door. A door, Manually or power actuated, fabricated of transparent glass, in which the transparent area above a reference line 18 inches above the bottom edge of the door is 80 percent or more of the remaining area of the door above such reference line

Transparent safety glazing materials. Materials which will clearly transmit light and also minimize the possibility of cutting or piercing injuries resulting from breakage of the material. Materials covered by this definition include laminated glass, tempered glass (also known as heat-treated glass, heat-toughened glass, case hardened glass or chemically tempered glass), wired glass, and rigid plastic.

3.0 Requirements.

1. Transparent glass doors and fixed adjacent transparent glass sidelights shall be marked in two areas on the glass surface thereof.

2. Fixed adjacent transparent glass sidelights 20 inches or less in width with opaque stiles at least one and three-quarters inches in width shall be exempt from the marking requirements.

3. Where the ground, floor or equivalent surface area in the path of approach to a fixed adjacent transparent glass sidelight from either side for a minimum distance of three feet from such sidelight is so arranged, constructed or designed as to deter persons from approaching such sidelight or a permanent barrier is installed in the path of approach, the sidelight shall be exempt from this requirement.

4. Decorative pools, horticultural planting or similar installations shall be considered as indicating that the ground, floor or equivalent surface area is not a path of approach. Planters, benches and similar barriers which are securely fastened to the floor or wall to prevent their removal shall be considered as blocking the path of approach provided they shall be not less than 18 inches in height from the ground, floor or equivalent surface and extend across at least 2/3 of the total width of the glazed area of the sidelight.

5. Fixed adjacent transparent glass sidelights which are supported by opaque sill and wall construction of at least 18 inches above the ground, floor or equivalent surface immediately adjacent shall be exempt from the marking requirements.

6. Display windows in any establishment, building or structure which fall within the definition of a sidelight shall be exempt from the marking requirements if the top of the supporting sill and wall construction is not less than 18 inches above the ground, floor or equivalent surface immediately adjacent and the interior area is occupied with merchandise or similar displays to clearly indicate to the public that it is not a means of ingress or egress.

4.0 Marking locations.

1. One such area shall be located at least 30 inches but not more than 36 inches and the other at least 60 inches but not more than 66 inches above the ground, floor or equivalent surface below the door or sidelight. The use of horizontal separation bars, muntin bars or equivalent at least one and one-half inches in vertical dimension that extend across the total width of the glazed area and are located at least 40 inches but not more than 50 inches above the bottom of the door or sidelight is permitted in lieu of markings.

2. The marking design shall be at least four inches in diameter if circular or four inches in its least dimension if elliptical or polygonal, or shall be at least 12 inches in horizontal dimension if the marking is less than four inches in its least dimension. In no event shall the vertical dimension of any marking including lettering be less than one and one-half inches in height.

   In addition to horizontal muntin bars, separation bars or equivalent, any of the following methods may be used to alert persons to the presence of transparent glass doors and fixed adjacent transparent glass sidelights in their path of movement:

   i) Chemical etching.

   ii) Sand blasting.

   iii) Adhesive strips not less than one and one-half inches in vertical dimension extending across at least two-thirds of the total glazed area.

   iv) Decals.

   v) Paint, gilding or other opaque marking materials.

   vi) Opaque door pulls or push bars extending across at least two-thirds of the total width of the glazed area.

5.0 Replacement and new installations.

1. Any transparent glazing material used for replacement in existing transparent glass doors shall be transparent safety glazing material. Transparent safety glazing material shall be used in all new transparent glass door installations. The manufacturer's permanent identification mark denoting safety glazing materials shall be visible on the glass after installation of the door.

2. Replacement of fixed adjacent transparent glass sidelights shall be of transparent safety glazing material or annealed glass at least one-half inch in thickness. New fixed adjacent transparent glass sidelights shall be of transparent safety glazing material or annealed glass at least one-half inch in thickness. The manufacturer's permanent identification mark denoting safety glazing material shall be visible on the glass after installation of the sidelight.

A. ELECTRICAL SERVICE OPTIONS

1. Rent Inclusion:

   Tenant shall finish and install a 265/460 or 208/120 volt feeder in a conduit sized for the anticipated Tenant load, from the Bus Terminal point of electrical distribution to the perimeter of the leasehold, and terminate in a junction box. All electrical distribution, step-down transformers, wiring, panels, boxes, and lighting shall be provided by the Tenant.

2. Metered Service:

   Tenant shall furnish and install a conduit sized for the anticipated Tenant load, and terminate in a junction box. Install the conduit from the 265/460 or 208/120 volt Tenant Switchboard to the perimeter of the leasehold. All electrical distribution, step-down transformers, wiring, panels, boxes, and lighting, shall be provided by the Tenant. The Tenant shall be required to furnish and install a 200A, 3 phase, 7 point bypass meter pan whenever a metering system does not exist for a location, or when the existing meter pan is not sufficient for the Tenant's load.

B. TELEPHONE SERVICE

An empty conduit shall be installed by the Tenant from the Bus Terminal point of telephone distribution to the perimeter of the leasehold.

C. CONDUITS AND CONDUCTORS

1. Conduits

   a. Minimum conduit size shall be 3/4-inch.

   b. Maximum EMT size shall be two (2) inches.

   c. All outdoor, exposed conduit shall be rigid galvanized steel.

   d. PVC conduits shall not be installed in any indoor area.

2. Conductors

   a. General

Minimum wire size for power shall be #12 AWG, copper.

b. Fire Alarm

All fire alarm cables shall be New York City approved, shielded, twisted pair #14 AWG, solid copper, 200-degree C, 600V, except control circuits shall be unshielded.

D. GROUNDING

1. Whenever a grounding conductor is required (including feeders to motor loads greater than 1/8-horsepower), a separate ground wire shall be installed.

2. Ground-fault protection shall be provided for all receptacles and equipment located near running water, such as electrical water coolers.

E. TENANT FIRE ALARM SYSTEM

1. General

a. The design of Tenant fire alarm systems shall comply with the Building Code of the City of New York and the Electrical Code of the City of New York, and shall be Compatible with the existing Bus Terminal Fire Alarm System.

b. The Tenant Fire Alarm Systems shall utilize both automatic and Manual initiating (detection) devices and audible and visual notification (signaling) appliances.

i. Systems shall utilize either conventional or multiplex technologies. The use of addressable/intelligent systems is required.

ii. In cases where microprocessor software programmable systems are utilized a fully functional and manufacturers licensed copy of the software program, Manuals and accessories shall be provided to the Authority as part of the system.

iii. In all cases the occupants of the facility shall be able to clearly hear, and as required, clearly see the

system alarm signal(s).

iv All system components (Detectors, Signals, Modules, etc.) shall be UL Listed and Cross Listed for use with the System Control Panel.

c. Power to the smoke detection and fire alarm equipment shall be taken via fused cutouts connected to the line terminals of the nearest emergency electrical panel.

2. The Tenant Fire Alarm System shall be fully compatible with the existing Bus Terminal System Model MXL as manufactured by Cerberus Pyrotronics.

F. HVAC SMOKE DETECTORS

1. The Tenant shall provide smoke detectors in the HVAC systems which have been listed by Underwriters Laboratories, and approved by the New York City Building Department of the particular application. Detectors shall sense products of combustion. Detectors shall not be subject to an alarm due to the rapid change of humidity.

2. Duct detectors shall be Cerberus Pyrotronics Model ILI-1B with a Model AD-X3RI housing.

G. AREA SMOKE DETECTORS

a. The Tenant shall provide smoke detector over each leasehold entrance to the public corridor.

b. The area detector shall be Cerberus Pyrotronics Model ILI-1 with a DB-35 base.

H. LOCAL CONTROL PANEL AND EMERGENCY POWER SUPPLY

1. The Local Control Panel shall be Model MXL-IQ, as manufactured by Cerberus Pyrotronics, and shall be fully compatible with the Bus Terminal Fire Alarm System.

2. Emergency Power Supply for Local Control Panel shall have a back-up battery supply system of ample capacity and approved by PA.

3. The Local Control Panel shall be wired with provisions for tie-in with the Building's Fire Alarm System. Tenant shall provide

conduit and wire to the nearest point of connection to the Building Fire Alarm System. Terminations to the Building Fire Alarm System shall be performed by the Port Authority.

4. All "Tenant-required" sprinkler alarms shall be wired to addressable device adapter modules as manufactured by Cerberus

I. EMERGENCY SMOKE PURGE MANUAL PULL STATION

1. The Tenant shall install a Manual pull station with break glass rod, provided with an engraved nameplate with the legend "EMERGENCY SMOKE PURGE". The pull station shall be Model MS-MI with MS-GR glass rod and MS-SB surface-mounted backbox as manufactured by Cerberus Pyrotronics.

2. For Smoke Purge Activation, See Section 18, Attachment M1.

J. SPRINKLER ALARMS

Sprinkler alarms have been provided by the Port Authority. However, should the Tenant require his own internal alarm, he must conform to the Section titled "Local Control Panel and Emergency Panel Supply.

The following Design Criteria shall be used to properly size and design Tenant HVAC and smoke purge systems to meet the Port Authority (PA) Standards for the Bus Terminal.

A. GENERAL

1. The tenant HVAC systems are to be designed so that conditioned air is not taken from air conditioned public spaces.

2. The Tenant shall provide complete automatic temperature controls to control the space conditions in his area.

3. Chilled water will be shut down during the winter season.

4. Heating hot water for HVAC will be shut down during the summer season.

5. Steam for HVAC will not be provided during the summer season.

6. A time clock shall be provided for off-hours A.C. shutdown by the Tenant.

7. The Tenant shall furnish and install automatic dampers for temperature control and smoke purge requirements.

B. OUTSIDE AIR

A duct will provide each leasehold with outside air, filtered and preheated to 37°F minimum, if required. The final design criteria for the use of outside air shall be:

1.	Minimum	0.30 cfm/sf
2.	Maximum	1.2 cfm/sf
3.	Supply Pressure at connection to PA duct	Not less than 0.00 inches water

C. SPILL AIR

A spill air duct connection will be provided for each leasehold not having direct access to spill air discharge louvers, allowing for the carrying away and discharge of spill air directly to the outdoors.

Spill air CFM should equal outside air CFM less any local exhaust, and an exfiltration allowance of approximately 10% of supply air quantity.

Return or spill air fan shall be sized to satisfy the smoke purge Requirements, as described hereinafter under Smoke Purging; otherwise, a separate smoke purge system, including a dedicated smoke purge exhaust fan, shall be provided by the Tenant.

D. CHILLED WATER

Valved supply and return connections will be provided by the PA with a cooling capacity as follows: To maintain leasehold at 78°F, 50% RH, with 0.30 cfm/sf outside air at 91°F DB, 75°F WB, 6 watts/sf electrical load, 50 sf/person occupancy, plus solar exposure and transmission heat gain, where such exists.

Chilled water temperature: Supply is 45°F, return is 60°F. Available pressure differential between supply and return is 12 psi, and working pressure is 125 psig. The Control valve shall be two-way modulating type and valve operations shall be sized to shut the valve against a 50 psig differential. Tenant shall provide the drain piping necessary to carry the cooling coil condensate from his A/C equipment, for spillage into Tenant's own drain facility.

E. STEAM (SOUTH WING ONLY)

A valved connection for steam will be provided by the PA with 15 psig at the point of connection. A valved connection at the PA's condensate return line will also be provided by the PA for connection by the Tenant.

F. HEATING HOT WATER (NORTH WING ONLY)

Valved supply and return connections will be provided by the PA as follows:

To provide heating capacity for the Tenant HVAC system such that a

leasehold is maintained at 70 °F indoor temperature, with 5°F outdoor.

Heating hot water range is 180°F supply 140°F return.

Available pressure differential between supply and return is 6 psi, working pressure is 125 psif. Control valve shall be two-way modulating type, and valve operator shall be sized to shut the valve against a 50 psig differential pressure.

A baseboard radiation heating system is provided for leasehold(s) exposed to the outdoors, sized to maintain a 50°F minimum leasehold, with 5°F outdoors, when the Tenant HVAC system is not operating.

G. SMOKE PURGING

1. Fan Capacity:

   The Tenant shall install a new exhaust fan to provide exhaust at a minimum of 1.5 cfm/sf or 6 air changes per hour, whichever is greater, for a store with a closed storefront, or a minimum 200 FPM velocity through an open storefront leading to the public areas, when the smoke purge is automatically or Manually activated.

2. Equipment:

   a. The entire smoke purge system, including exhaust fan, damper, discharge louver, duct connection to outdoors, etc., shall be furnished and installed by the Tenant.

   b. Where applicable, and if adequate size is available, the existing spill air duct may be utilized as a smoke purge exhaust duct. Connection to existing spill air duct shall be provided by the Tenant.

3. When the return air fan is used for smoke purge, the Tenant shall provide all necessary motorized dampers in spill and return air ducts.

4. Concourse-to-Tenant Space Make-up Air Transfer Duct:

The Tenant shall provide transfer duct with motorized fire damper, to permit flow of make-up air from the concourse to the tenant space during smoke purge operation.

H. TEMPERED OUTSIDE AIR SUPPLY

A capped connection is provided from a tempered (37°F) air duct, located in the concourse ceiling. Tenant shall furnish and install all ductwork from this connection to his A/C equipment.

I. ELECTRICAL WIRING

Refer to Section 18, Attachment E1 for electrical wiring requirements for HVAC.

J. SMOKE DETECTORS

1. The Tenant shall provide smoke detectors in the return air duct, as well as downstream of the filters in the air handling unit supply duct. In addition, the Tenant shall provide area smoke detectors on the basis of a minimum of one (1) area detector per 900 sf. For requirements of duct and area smoke detector, refer to Section 18, Attachment E1.

2. HVAC and Area Smoke Detectors shall:

   a. Provide an audio-visual signal at the Local Control Panel; specified herein in Section 18, Attachment E2.

   b. Activate the smoke purge mode of the Tenant's A.C. system.

K. HVAC CONTROL - SMOKE PURGE MODE

1. Automatic Smoke Purge Cycle:

   Upon activation of an HVAC or area smoke detector, an alarm shall be initiated, the supply air fan shall stop, the outside air and return air dampers shall close, the spill air damper shall open fully, and the return air fan, if designated as a smoke purge fan, shall keep running; otherwise, it shall also stop, and the dedicated smoke purge fan shall start, bypassing all other controls.

   In the event that activation of the area smoke detector(s) occurs at night when the A.C. system is off, the return air fan, if designated as a smoke purge fan, or the dedicated smoke purge fan shall start, and the dampers shall be positioned as described above.

2. Manual Smoke Purge Cycle:

   a. Local Manual Control shall originate from the Local Control

Panel, specified in Section 18, Attachment E2.

b. Provision shall also be made for accomplishing the Tenant's smoke purge cycle remote-Manually from the Manual Pull Station, specified herein in Section 18, Attachment E2.

L. LOCAL CONTROL PANEL AND EMERGENCY POWER SUPPLY

For requirements for the Local Control Panel, and for the emergency Power Supply to the Local Control Panel, refer to Section 18, Attachment E2.

M. MANUAL PULL STATION/BREAK GLASS EMERGENCY SWITCH (TENANT SPACES)

Install a Manual pull station with break glass rod. For requirements refer to Section 18, Attachment E2.

N. KITCHEN EXHAUST

Tenants requiring kitchen exhaust systems shall provide New York City approved hoods, ductwork, grease/vapor removal devices, and fire extinguishing equipment.

This page is intentionally left blank.

The following Design Criteria shall be used to properly size and design Tenant plumbing and fire protection systems to meet the Port Authority (PA) Standards for the Bus Terminal.

A. GENERAL

1. Control valves shall be located in spaces immediately accessible to PA staff at all times.

2. Hangers shall be supported from building steel framing members. Where none are available, miscellaneous steel supports between building framing members shall be provided.

3. When shutdowns of existing systems become necessary, the Contractor shall notify the Port Authority Engineer who will make the necessary arrangements required for the shutdown. Notification of any planned shutdown shall be made to the Port Authority Engineer at least 72 hours in advance.

B. PLUMBING

1. All sanitary piping 4 in. and larger shall be service weight cast iron "No-Hub" with couplings consisting of a neoprene gasket and stainless steel clamp assembly. Couplings shall be "Clamp-All" or manufactured by Clamp-All Corporation or "Husky" SD Series 4000 as manufactured by Anaheim Foundry Company.

2. Support "No-Hub" cast iron piping at 5'-0" intervals and on each side of each coupling assembly.

C. FIRE PROTECTION

All tenant spaces shall be sprinklered.

1. Sprinkler systems shall be hydraulically designed. A pipe schedule design may be used only for minor renovation work that doesn't change the number of heads and relocates only a few existing sprinkler heads.

2. All sprinkler piping shall be standard weight, Schedule 40 black steel pipe. All dry and pre-action sprinkler system piping and fittings shall be galvanized.
3. Victaulic fittings are not permitted to be used for size 2-1/2 in. and under unless otherwise approved.
4. Supervised valves shall be installed with tamper switches.

This page is intentionally left blank.

INDEX OF TRAFFIC STANDARD DETAILS

NUMBER	TITLE
	Legends, Notes and Abbreviations TD10
TD 010.01	Traffic Symbols Legend
TD 010.02	List of Traffic Abbreviations
TD 010.03	Maintenance of Traffic Symbols and Legend
TD 010.04	General Traffic Notes
TD 010.05	Maintenance of Traffic Notes
TD 010.06	General Notes
	Traffic Signals TD20
TD 020.01	Type "T" Traffic Signal Pole and Truss Type Mast Arm Assembly
TD 020.02	Type "K" Traffic Signal Pole and Truss Type Mast Arm Assembly
TD 020.03	Type "K-H" Traffic Signal Pole and Truss Type Mast Arm Assembly
TD 020.04	Type "S" Steel Traffic Signal Pole, Arm and Base
TD 020.05	Pull Box, Frame, Cover, and Loop Detector Splice Box
TD 020.06	Conduit Installation
TD 020.07	Aluminum Traffic Signal Pole Foundation (SFT, SPF, SFK)
TD 020.08	Aluminum Traffic Signal Pole Foundation (SFK-H)
TD 020.09	Steel Traffic Signal Pole Foundation
TD 020.10	Type "P" Controller Cabinet Foundation
TD 020.11	"T" and "K" Poles - Elevation, Show Base, Cable Outlet and Cast Cap
TD 020.12	"T" Pole Transformer Base
TD 020.13	"K" Pole Transformer Base
TD 020.14	"T" Pole Truss Type Mast Arm, Clamp and End
TD 020.15	"K" Pole Truss Type Mast Arm, Clamp and End
TD 020.16	Traffic Signal Pedestal Assembly
TD 020.17	Pole Clamp Mounting Assemblies
TD 020.18	Signal Head Pole Top and Bracket Mounting
TD 020.19	Universal Joint, Wire Outlet, Elevation Plumbizer and Mast Arm Slip Fitter
TD 020.20	Signal Head Mid Mast-Arm and Safety Chain Mounting
TD 020.21	Hollow Spider Assembly

TD 020.22	Signal Heads and Backplate
TD 020.23	Overhead Mast Arm Swing Sign Bracket
TD 020.24	P Cabinet Layout
TD 020.25	Controller Cabinet Skirt for UPS
TD 020.26	Loop Detector Installation
TD 020.27	Cable Identification Tag
TD 020.28	Span Wire Mounted Installation
TD 020.29	Span Wite Traffic Signal Pole Foundation
TD 020.30	Traffic Signal Assembly
TD 020.31	Temporary Span Wire Signal Installation 1
TD 020.32	Temporary Span Wire Signal Installation 2
TD 020.33	Temporary Mast Arm and Pedestal
TD 020.34	Video Camera Mounting Details

Sign Mounting TD30

TD 030.01	Breakaway Sign Supports and U-Post Assembly Details
TD 030.02	Breakaway Support System For Sign Post Break - Safe Model AP
TD 030.03	Breakaway Support System For Sign Post Break - Safe Model AS4
TD 030.04	Breakaway Support System For Sign Post Break - Safe Model B525
TD 030.05	Sign Mounted on Concrete Barrier
TD 030.06	Standard Sign Assembly Details 1 of 3
TD 030.06	Standard Sign Assembly Details 2 of 3
TD 030.06	Standard Sign Assembly Details 3 of 3
TD 030.07	Standard Height and Lateral Location for Traffic Sign Assembly
TD 030.08	J-Channel and H-Channel Details
TD 030.09	Sign Height and Lateral Positioning to Minimize Specular Glare
TD 030.10	Flashing Beacon Sign Assembly
TD 030.11	Bucklestrap, Clamp and Clip Mounting Detail
TD 030.12	Square Post Base Plate For Sidewalk Sign Mounting
TD 030.13	Suspended Ceiling Mounting Detail
TD 030.14	Concrete Wall, Wire Cage and Steel Column Mounting Details
TD 030.15	Pipe Column Floor Mounting Detail
TD 030.16	Fire Standpipe Sign Mounting Details
TD 030.17	Overhead Sign Bridge Clearance Mounting Details
TD 030.18	Floor Mounted Directory Sign Details
TD 030.19	CMS Sign Mounting Details
TD 030.20	Alternative Double Posted Mounting Details
TD 030.21	(JFKIA) Square Post Large Guide Sign Assembly Details
TD 030.22	Wood Sign Post Details

TD 030.23	(NJ Breakaway) Typical Large Guide Sign Support Details (1 of 5)
TD 030.23	(NJ Breakaway) Typical Large Guide Sign Support Details (2 of 5)
TD 030.23	(NJ Breakaway) Typical Large Guide Sign Support Details (3 of 5)
TD 030.23	(NJ Breakaway) Typical Large Guide Sign Support Details (4 of 5)
TD 030.23	(NJ Breakaway) Typical Large Guide Sign Support Details (5 of 5)
TD 030.24	(NJ Non-Breakaway) Typical Large Guide Sign Support Details (1 of 2)
TD 030.24	(NJ Non-Breakaway) Typical Large Guide Sign Support Details (2 of 2)
TD 030.25	(NY State) Typical Large Guide Sign Assembly 1 of 4
TD 030.25	(NY State) Typical Large Guide Sign Assembly 2 of 4
TD 030.25	(NY State) Typical Large Guide Sign Assembly 3 of 4
TD 030.25	(NY State) Typical Large Guide Sign Assembly 4 of 4

Sign Layout Data TD40

TD 040.01	Typical JFK Airport Pedestrian and Vehicular Wayfinding Signs
TD 040.05	Standard Arrow Details
TD 040.06	Typical JFK Airport Guide Sign Standard Details
TD 040.07	Typical LGA Airport Guide Sign Standard Details
TD 040.08	Typical EWR Airport Guide Sign Standard Details
TD 040.09	Sign Fabrication Details
TD 040.10	Sign Cover Details
TD 040.20	Regulatory Sign Data Sheet 1 of 2
TD 040.20	Regulatory Sign Data Sheet 2 of 2
TD 040.21	Warning Sign Data Sheet 1 of 2
TD 040.21	Warning Sign Data Sheet 2 of 2
TD 040.30	P.A. Standard Signs Sign Data Sheet 1 of 4
TD 040.30	P.A. Standard Signs Sign Data Sheet 2 of 4
TD 040.30	P.A. Standard Signs Sign Data Sheet 3 of 4
TD 040.30	P.A. Standard Signs Sign Data Sheet 4 of 4

Pavement Markings TD50

TD 050.01	Notes And Longitudinal Markings
TD 050.02	Transverse Markings
TD 050.03	Symbol And Arrow Markings 1 of 2
TD 050.03	Symbol And Arrow Markings For Bicycle 2 of 2
TD 050.04	Word Markings 1 of 2
TD 050.04	Word Markings 2 of 2
TD 050.05	Lane and Ramp Pavement Markings 1 of 2
TD 050.05	Lane and Ramp Pavement Markings 2 of 2
TD 050.06	Parking Lot Markings

TD 050.07	Accessible Parking for People with Disabilities
TD 050.08	Intersection Markings 1 of 3
TD 050.08	Intersection Markings 2 of 3
TD 050.08	Intersection Markings 3 of 3
TD 050.09	Hatch Island Detail and Temporary Pavement Markings
TD 050.10	Airside Markings and Sign Placement

Delineation Devices and Markers TD60

TD 060.01	Safety Curb
TD 060.02	Qwick Kurb
TD 060.03	Dura-Curb
TD 060.04	Delineator Details and Mounting 1 of 3
TD 060.04	Delineator Details and Mounting 2 of 3
TD 060.04	Delineator Details and Mounting 3 of 3
TD 060.05	Delineator Application Placement and Spacing
TD 060.06	Reflectorized Pavement Markers, Legend and Placement Detail
TD 060.07	Reflectorized Pavement Markers Location Details 1 of 2
TD 060.07	Reflectorized Pavement Markers Location Details 2 of 2
TD 060.08	Object Markers

Permanent Impact Attenuators TD70

TD 070.01	Quadguard Impact Attenuators with Tension Strut Backup
TD 070.02	Quadguard Impact Attenuators with Concrete Backup
TD 070.03	REACT 350
TD 070.04	TRACC
TD 070.05	CAT-350
TD 070.06	Inertial Sand Filled Barrel Arrays
TD 070.07	Nose Cover Marker for Attenuator End Treatment

Maintenance of Traffic Devices TD100 to TD150

a. Channelizing Devices TD100

TD 100.01	Traffic Cones, Plastic Drums and Barriacades Types I, II, & III

b. Temporary Barrier TD110

TD 110.01	Precast Concrete Construction Barrier Type I
TD 110.02	Precast Concrete Construction Barrier Type 4 (Alternates A & B)
TD 110.03	Precast Concrete Construction Barrier Type 4 Joint Connection and Reinforcement Details

TD 110.04	Precast Concrete Construction Barrier Tapered End Section
TD 110.05	Precast Concrete Construction Barrier with Chain Link Fence, Sign Mount and Glare Screen Details
TD 110.06	Water Filled Traffic Barrier
TD 110.07	Timber Barricades Type I and II

c. Temporary Impact Attenuators TD120

TD 120.01	Inertial Sand Filled Barrel Arrays
TD 120.02	Quadguard CZ, TRACC and NEAT Crash Cushions
TD 120.03	ADIEM II Crash Cushion

d. Construction Signs TD130

TD 130.01	Construction Sign Data Sheet 1 of 2
TD 130.02	Construction Sign Data Sheet 2 of 2

e. Typical Lane Closure and Reduction Details and Notes TD140

TD 140.01	Typical Lanes Closures and Reduction
TD 140.02	Croswalk Closing and Access Details
TD 140.03	Traffic Control Device Placement, Ramping and Work Area Details

f. Miscellaneous Devices TD150

TD 150.01	Stop/Slow Paddle
TD 150.02	FASU
TD 150.03	Portable Sign Support Details
TD 150.04	Video Detection System Details
TD 150.06	Temporary Roadway Plates

Permanent Barriers TD200

TD 200.01	Type A Concrete Barrier Curb, Dowelled
TD 200.02	Variable Width Median Barrier
TD 200.03	On Bridge Concrete Barrier Curb
TD 200.04	Median Concrete Barrier Curb
TD 200.05	Concrete Barrier Precast
TD 200.06	Concrete Barrier Cast-in-Place
TD 200.07	Concrete Barrier Machine Formed
TD 200.08	Concrete Barrier Single Slope
TD 200.09	Concrete Barrier Half Section Single Slope
TD 200.10	Single-Slope Concrete Barrier Terminal Section-Ramped Terminal
TD 200.11	Barrier Transition Details

TD 200.12	Transition Between Wide and Normal Width Single Slope Concrete Median Barrier
TD 200.13	Transition of Concrete Barrier Between Standard (NJ) and Single Slope Concrete Shapes
TD 200.14	Concrete Barrier with Light Post Detail

Guide Rail Details TD300

TD 300.01	Heavy Post Block-Out W-Beam Guide Rail
TD 300.02	Heavy Post Block-Out W-Beam Post and Standard Guide Rail Hardware Details
TD 300.03	Heavy Post Block-Out Thrie-Beam Guide Rail
TD 300.04	Heavy Post Block-Out Modified Thrie-Beam Guide Rail
TD 300.05	Heavy Post Block-Out Dual Faced W-Beam Guide Rail
TD 300.06	Heavy Post Blocked-Out W-Beam Median Barrier
TD 300.07	Guiderail Post Installation Detail
TD 300.08	Type II End Assembly Details
TD 300.09	Typical Treatments for Buried Ends (Rock or Soil)
TD 300.10	W-Beam Guide Rail Anchorages
TD 300.11	Thrie Beam & W Beam Guide Rail Terminal Connection & End Section
TD 300.12	Guide Rail Attachments General Notes and Rub Rail Details
TD 300.13	Box Beam End Assembly Type III Grading and Layout Details
TD 300.14	Box Beam Type I End Assembly
TD 300.15	Box Beam Tangent Section and Treatment For Buried End Detail
TD 300.16	Box Beam Median Barrier Details
TD 300.17	Box Beam Guide Rail Transition to W-Beam Guide Rail
TD 300.18	Box Beam Connections (On-End & Off-End) To Concrete Barrier and Anchor Bolt Detail
TD 300.19	Box Beam Transition To Parapet or Barrier Connection
TD 300.20	Box Beam Transition to Pylon and to Railing Transition Wall
TD 300.21	Box Beam Transition to Variable Width Concrete Barrier
TD 300.21	W-Beam Median Guide Rail Installation Layout Detail
TD 300.22	W-Beam Guide Rail Installation Layout Detail
TD 300.30	Shedding Type Gating End Terminals (SRT-350)
TD 300.31	Parallel Type Gating End Terminals (ET 2000)
TD 300.32	Heavy Post Blocked-Out W-Beam End Treatment
TD 300.40	Transition Between Heavy Post Block-Out W-Beam Single Guide Railing and Slope Half Section Concrete Barrier
TD 300.41	Transition Between Heavy Post Block-Out W-Railing and Half Section Concrete Barrier
TD 300.42	Transition Between Heavy Post Block-Out W-Median Barrier & Concrete Median Barrier (Sheet 1 of 2)
TD 300.42	Transition Between Heavy Post Block-Out W-Median Barrier and Concrete

	Median Barrier (Sheet 2 of 2)
TD 300.43	Transition Between HPBO W-Beam Median Barrier and Single Slope Concrete Median Barrier
TD 300.44	Transition Between HPBO W-Beam Median Barrier And Jersey Shape Concrete Median Barrier
TD 300.45	Guide Rail Attachment To Sidewalk, Footing and Parapet
TD 300.46	Guide Rail Attachment-New Construction New Jersey Barrier Shape Parapet (No Roadway Curbing on Approach)
TD 300.47	Guide Rail Attachment-New Construction New Jersey Barrier Shape Parapet (With Roadway Curbing on Approach)
TD 300.48	Guide Rail Attachment - New Construction (Sidewalk With Parapet)
TD 300.49	Guide Rail Attachement - New Construction (Sidewalk with Steel Railing)
TD 300.50	Transition Between Box Beam Guide Rail and Single Slope Half Section Concrete Barrier (Sheet 1 of 3)
TD 300.50	Transition Between Box Beam Guide Rail and Single Slope Half Section Concrete Barrier (Sheet 2 of 3)
TD 300.50	Transition Between Box Beam Guide Rail and Single Slope Half Section Concrete Barrier (Sheet 3 of 3)
TD 300.51	Transition Between Box Beam Median Barrier and Single Slope Concrete Median Barrier (Sheet 1 of 3)
TD 300.51	Transition Between Box Beam Median Barrier and Single Slope Concrete Median Barrier (Sheet 2 of 3)
TD 300.51	Transition Between Box Beam Median Barrier and Single Slope Concrete Median Barrier (Sheet 3 of 3)
TD 300.52	NonVegetative Surface Details

Traffic Calming Devices TD410

TD 410.01	Speed Hump
TD 410.02	Rumble Strips and Toll Plaza Approach Rumble Strips
TD 410.03	Shoulder Grooving For Rumble Strips

Traffic-Related Civil Details TD420

TD 420.01	End of Curb Treatment (CD60.003)
TD 420.02	Curb to Header Transition (CD60.003)
TD 420.03	Concrete Curb Details (CD60.003)
TD 420.04	Steel Face Curb - Type SF (CD60.004)
TD 420.05	Drop Curb and Driveway Detail (CD62.022)
TD 420.06	Railroad Track in Open Paved Areas Detail (CD82.001)
TD 420.07	Rubber Railroad Crossing Detail (CD82.006)
TD 420.08	Pipe Guard Spacing Details (CD90.001)
TD 420.09	Pipe Guard With Footing Detail (CD90.002)
TD 420.10	Pipe Guard With Footing (Heavy Duty) (CD90.003)

TD	420.11	Pipe Guard for Bus Parking Areas (CD90.005)
TD	420.12	Metallic Coated Chain Link Fence-EWR (CD90.010)
TD	420.13	Metallic Coated Steel Chain Link Fence (CD90.011)
TD	420.14	Timber Bumper Details (CD90.030)
TD	420.15	Timber Barricade - Type 1 (CD90.031)
TD	420.16	Sidewalk Curb Ramp Detail
TD	420.17	Detectable Warning Surface
TD	420.18	Precast Concrete Bumpers

SPECIAL INSPECTION ITEMS-NEW YORK CITY FACILITIES

Special Inspection Category	Sub Category	Building Code Section
Foundations	1. Soils Investigation, borings, and test pits 2. Soils -Site Preparation 3. Excavation, Sheeting, Shoring, and Bracing 4. Soils-Fill Placement and In-place Density 5. Pile Foundation & Drilled Pier Installation 6. Pier Foundation 7. Underpinning	1. BC 1704.7.4 2. BC 1704.7.1, 1704.7.2, and 1704.7.3 3. BC 1704.19 and 3304.4.1 4. BC 1704.7.1, 1704.7.2, and 1704.7.3 5. BC 1704.8 and 1808.2.2 6. BC 1704.9 7. BC 1704.9.1
Concrete	8. Cast In-place & Precast 9. Prestressed Concrete	8. BC 1704.4 9. BC 1707.4
Steel	10. Erection 11. High Strength Bolting 12. Cold –formed steel	10. BC 1704.3.2 11. BC 1704.3.3 12. BC 1704.3.4
Welding (2RCNY 25-BSA Rule)	13. Steel 14. Aluminum 15. High pressure Steam Piping 16. High Pressure Gas Piping	13. BC 1704.3.1 14. BC 1704.26.1 15. BC 1704.17 16. BC 1704.18
Wood Construction	17. Prefabricated wood I-joists and metal plate connected wood trusses	17. BC 1704.6
Masonry	18. Masonry	18. BC 1704.5
Structural Safety	19. Stability 20. Mechanical Demolition	19. BC 1704.19 20. BC 1704.19
Exterior Walls	21. Wall Panels, Curtain Walls, and Veneers 22. Exterior Insulation and Finish Systems (EIFS)	21. BC 1704.10 22. BC 1704.12
Fire Protection Systems & Fire Resistant Construction	23. Sprayed Fire-resistant Materials 24. Firestop, Draftstop, and Fireblock Systems 25. Smoke Control Systems 26. Standpipe Systems 27. Sprinkler Systems 28. Fire Alarm Test 29. Emergency Power Systems	23. BC1704.11 24. BC1704.25 25. BC 1704.14 26. BC 1704.21 27. BC 1704.22 28. BC 29. BC

Special Inspection Category	Sub Category	Building Code Section
Plumbing & Mechanical Systems	30. Mechanical Systems 31. Fuel-oil Storage and Fuel-oil Piping Systems 32. Heating Systems	30. BC 1704.15 31. BC 1704.16 32. BC 1704.23
Others	33. Chimneys 34. Site Storm Drainage Disposal and detention 35. Flood Hazard Mitigation 36. Photoluminescent Exit Path Markings 37. Seismic Isolation Systems	33. BC 1704.24 34. BC 1704.20 35. BC G105 36. 1RCNY 1026-01 37. BC1707.8

SPECIAL INSPECTION ITEMS-NEW JERSEY FACILITIES

Special Inspection Category	Sub Category	Building Code Section
Foundations	1. Existing site soil conditions, fill placement, and load bearing requirements 2. Soils -Site Preparation 3. Excavation, Sheeting, Shoring, and Bracing 4. Soils-Fill Placement and In-place Density 5. Pile Foundation & Drilled Pier Installation 6. Pier Foundation 7. Underpinning	7. 1704.7 8. BC 1704.7.1, 1704.7.2, and 1704.7.3 9. BC 1704.19 and 3304.4.1 10. BC 1704.7.1, 1704.7.2, and 1704.7.3 11. BC 1704.8 and 1808.2.2 12. BC 1704.9 13. BC 1704.9.1
Concrete	8. Cast in-place & Precast 9. Prestressed Concrete	14. BC 1704.4 15. BC 1707.4
Steel Construction	10. Inspection of Fabricators 11. Welding 12. High Strength Bolting 13. Framing details	16. 1704.2 17. 1704.3.1 18. 1704.3.3 19. 1704.3.2
Welding	14. Steel 15. Aluminum 16. High pressure Steam Piping 17. High Pressure Gas Piping	20. BC 1704.3.1 21. BC 1704.26.1 22. BC 1704.17 23. BC 1704.18
Wood Construction	18. Prefabricated wood I-joists and metal plate connected wood trusses	24. BC 1704.6
Masonry	19. Masonry	25. BC 1704.5
Structural Safety	20. Stability 21. Mechanical Demolition	26. BC 1704.19 27. BC 1704.19

Special Inspection Category	Sub Category	Building Code Section
Exterior Walls	22. Wall Panels, Curtain Walls, and Veneers 23. Exterior Insulation and Finish Systems (EIFS)	28. BC 1704.10 29. BC 1704.12
Fire Protection Systems & Fire Resistant Construction	30. Sprayed Fire-resistant Materials 31. Smoke Control Systems	32. BC1704.11 33. BC 1704.14
Special Cases	1. Alternative material 2. Unusual applications of materials 3. Materials and systems requiring additional instructions from manufacturers	34. 1. BC 1704.13

SPECIAL INSPECTION ITEMS-
NEW YORK STATE FACILITIES

Special Inspection Category	Sub Category	Building Code Section
Foundations	7. Existing site soil conditions, fill placement, and load bearing requirements 8. Soils -Site Preparation 9. Excavation, Sheeting, Shoring, and Bracing 10. Soils-Fill Placement and In-place Density 11. Pile Foundation & Drilled Pier Installation 12. Pier Foundation 13. Underpinning	4. 1704.7 5. BC 1704.7.1, 1704.7.2, and 1704.7.3 6. BC 1704.19 and 3304.4.1 7. BC 1704.7.1, 1704.7.2, and 1704.7.3 8. BC 1704.8 and 1808.2.2 9. BC 1704.9 10. BC 1704.9.1
Concrete	14. Cast in-place & Precast 15. Prestressed Concrete	11. BC 1704.4 12. BC 1707.4
Steel Construction	16. Inspection of Fabricators 17. Welding 18. High Strength Bolting 19. Framing details	13. 1704.2 14. 1704.3.1 15. 1704.3.3 16. 1704.3.2
Welding	20. Steel 21. Aluminum 22. High pressure Steam Piping 23. High Pressure Gas Piping	17. BC 1704.3.1 18. BC 1704.26.1 19. BC 1704.17 20. BC 1704.18
Wood Construction	24. Prefabricated wood I-joists and metal plate connected wood trusses	21. BC 1704.6
Masonry	25. Masonry	22. BC 1704.5
Structural Safety	26. Stability 27. Mechanical Demolition	23. BC 1704.19 24. BC 1704.19
Exterior Walls	28. Wall Panels, Curtain Walls, and Veneers 29. Exterior Insulation and Finish Systems (EIFS)	25. BC 1704.10 26. BC 1704.12
Fire Protection Systems & Fire Resistant Construction	30. Sprayed Fire-resistant Materials 31. Smoke Control Systems	27. BC1704.11 28. BC 1704.14
Special Cases	29. Alternative material 30. Unusual applications of materials Materials and systems requiring additional instructions from manufacturers	1. BC 1704.13

This page is intentionally left blank.

The following criteria shall govern the landscape architectural design at the airports.

I. GENERAL

The goal is to provide a quality landscape environment that complements the design elements (roadways, signage, exists and entrances to frontages and parking facilities and residual open space) serving the airport patron while providing a minimum of attractants to birds,

In order to achieve this goal a successful landscape must satisfy these objectives:

a. A design that is approved by the FAA/USDA Wildlife Damage Control Division.

b. A design that is incorporated into an area suitable for vigorous plant growth and maintenance.

c. A design that includes a sustainable form of irrigation.

d. A design that includes under a separate, stand alone landscape contract that requires a minimum two year maintenance follow up by the installing Contractor, who shall have as his superintendent over the entire installation and maintenance a State Certified Arborist knowledgeable and experienced in this type of Work.

e. <u>A LANDSCAPE DESIGN LEAST LIKELY TO ATTRACT BIRDS SHOULD HAVE THE FOLLOWING QUALITIES:</u>

(1) Avoid plant material and design features that provide birds with a source of FOOD, WATER, COVER and SPATIAL DOMAIN.

(2) Canopy trees should be planted in linear rows, canopies spaced 15-20 feet apart at maturity. Adjacent canopies should never be touching.

(3) Shrubs and small trees should be used moderately and not be planted under or directly adjacent to canopy trees.

(4) Shrub beds should be small in size and discontinuous.

(5) Flowering ornamental trees should be limited in quantity.

(6) Groundcover should be well-manicured, healthy, dense, moderately tall lawn, a fruitless low growing groundcover, gravel or bark mulch.

(7) All plants should be planted at the same size and time.

II. PLANT MATERIAL

a. Trees:

Trees shall be selected that meet the following criteria:

(1) To withstand pollution and tough urban environments,
(2) To tolerate wind and drought
(3) To tolerate excessive road de-icing salts and salt laced prevailing winds
(4) To be unattractive to birds as a food source and meet FAA approval
(5) To be unattractive to birds as a roosting site and meet FAA approval
(6) To be primarily deciduous, since evergreen trees are an ideal bird habitat
(7) To have interesting flowers, fall color, size, shape or habit
(8) To be obtainable on the commercial market

Sample List

Gleditsia triacanthos 'Halka'
Moraine Honeylocust
Quercus phellos
Willow Oak
Zelkova serrata
Japanese Zelkova

b. Ornamental trees:

Ornamental trees shall meet the same criteria as trees

Sample List

Chioanthus virginicus
Fringe Tree
Cornus x Ruth Ellen

Stellar White Dogwood
Koelreuteria paniculata
Golden Rain Tree
Malus Spring Snow (Fruitless)
Spring Snow Crabapple
Parrotia persica
Persian Parrotia
Syringa reticulata 'Ivory Silk'
Ivory Silk Lilac

c. Shrubs and groundcover:

Shrubs and groundcovers shall meet the same criteria as trees.

Abelia x grandiflora
Glossy Abelia
Forsythia x 'Goldtide'
Goldtide Forsythia
Hamamelis 'Arnold Promise'
Arnold Promise Witchhazel
Juniperus chinensis sargenti
Sargent's Chinese Juniper
Spiraea nipponica 'Snowmound'
Snowmound Spirea
Taxus x media wardii
Ward's Yew
Weigela florida 'Red Prince'
Purple Leaf Weigela

d. Seasonal display:

Caryopteris x clandonensis 'Blue Mist'
Blue Mist Caryopteris
Echinacea purpurea 'Magnus'
Magnus Purple Coneflower
Eupatorium purpureum 'Big Umbrella'
Big Umbrella Joe Pye Weed
Eupatorium purpureum 'Gateway'
Gateway Joe Pye Weed
Hemerocallis 'Happy Returns'
Happy returns Daylily
Hemerocallis ' Stella de Oro'
Stella de Oro Daylily
Nepeta faassenii 'Walkers Low'
Walkers Low Catmint
Pennisetum alopcuroides "Cassian'

Cassian Fountain Grass
Rudebeckia fulgida 'Goldsturm'
Black-eyed Susan
Sedum x 'Autumn Joy'
Autumn Joy Sedum
Stachys byzantina 'Helene von Stein'
Lambs Ear

e. Bulbs

Daffodil x 'Ice Follies'
Ice Follies Daffodil
Daffodil x 'King Alfred'
King Alfred Daffodil

f. Lawn

Select cultivars that can thrive on low nutrient, low water availability and that are "90% endophyte enhanced" variety.

III. STANDARDS

A. Federal aviation Administration (FAA) AC 15/5200-33A – Hazardous Wildlife Attractants on or near Airports
B. USDA- Asian Long Horned Beetle Quarantine and Regulations
C. American Standard For Nursery Stock, ANSI Z60.1-2004, American Nursery & Landscape Association

Exhibit B(iii)

Tenant Construction Plan
and
Specification Guidelines (with Tenant Construction or Alteration Application)

See attached.

TENANT CONSTRUCTION OR ALTERATION APPLICATION

NOTE: This is an instruction sheet only. Please remove before completing alteration application.

PREPARATION OF TENANT CONSTRUCTION OR ALTERATION APPLICATIONS

Tenant Construction or Alteration Applications are prepared as follows:

1. Prepare 4 copies of form PA 531 for minor alterations such as electric outlets, partitions, cabinets, etc. Attach 1 copy of plans and specifications to each copy of form.

2. Prepare 7 copies of form PA 531 for all other tenant construction. Include 10 copies of plans and specifications for an application whose estimated cost is $50,000 or more.

TENANT CONSTRUCTION PLAN AND SPECIFICATION GUIDELINES

The following comments are to assist your engineer or architect in preparing drawings of proposed work. Use of the guidelines, where pertinent, will minimize Port Authority review time and resultant comments.

1. Locate area of construction with respect to existing conditions, (i.e., column numbers, coordinates, dimensions to existing structures, etc.), and provide a "Plot Plan."

2. Indicate existing structures and facilities in area affected and adjacent areas; also indicate all demolition and removals.

3. Include on drawings the plans, sections, elevations and details of proposed work.

4. Show arrangement of equipment and furniture, which might constitute an obstruction of passage to exits.

5. Provide floor plans to include that area beyond the limits of proposed work area necessary to show the entire means of ingress and egress.

6. Indicate where prescribed occupancy count for all area.

7. Give location and specifications for all fire protection equipment, i.e. fire doors, fire dampers, smoke detectors, sprinklers, fire alarm systems, hose cabinets, extinguishers, etc.

8. Include a note on the drawings requiring all work to be done in accordance with the National Electrical Code and the applicable code of the City, or municipality in which work occurs. F.I.R.O. and Employers Group of Insurance Companies approval required for sprinkler and fire protection items.

9. Indicate power requirements and source of power. Also indicate size and type of all electrical equipment, i.e. conduit, wire, panels, control devices, etc.

10. Provide details of all built-in equipment.

11. Provide complete specifications for all materials.

12. Show all new and modified ventilating systems including that portion outside the area of proposed work necessary to indicate the complete circulation cycle.

13. Provide design computations for major structural members including all existing members receiving additional loads.

14. All drawings must bear the stamp of a Registered Architect or Professional Engineer licensed in the state in which the work is to be performed.

15. If proposals require resubmission, clearly indicate change from original on the resubmitted drawings.

16. "As Built" Drawings are to be furnished after completion of this work.

17. Asbestos Certification Letter, Form PA 3677, is to be submitted with Form PA 531.

18. If Form PA 3677, Asbestos Certification Letter, indicates that asbestos will be disturbed, Form PA 3678 is to be submitted with Form PA 531.

19. If Form PA 3677, Asbestos Certification Letter, indicates that asbestos will be disturbed and the tenant is waiving his/her right to participate in the Port Authority's litigation, Form PA 3679 is to be submitted with Form PA 531.

20. All materials used for the construction of this project, whether building materials or appurtenances, shall be non-asbestos containing materials.

21. A contractor approved by the Port Authority must perform asbestos work.

22. All environmental services required to be performed with respect to tenant construction, including and without limitation, surveys,

THE PORT AUTHORITY OF NY & NJ

TENANT CONSTRUCTION OR ALTERATION APPLICATION PA 0531 (7/03-10)

225 Park Avenue South New York, New York 10003

For Port Authority Use Only	
Facility	APP. No.
Date	Applicant's Name

APPLICANT MUST READ THE TERMS AND CONDITIONS INCLUDED WITH THIS FORM

The Applicant shall not commence performance of any of the said work prior to the receipt by Applicant of a copy of this application duly signed in Part Two hereof on behalf of the Port Authority of New York and New Jersey. Upon receipt thereof, the Applicant agrees to perform said work in accordance with the following "Information to be Furnished by Applicant" and to comply with and be bound by all requirements and conditions set forth below under the remarks, if any, in Part Two hereof and the terms and conditions set forth in this form.

Minimum Insurance Limits Unless Specified to be Greater – Bodily Injury $500,000 each person; $500,000 each occurrence; Property Damage $500,000 each accident; $500,000 aggregate.

PART ONE: Information to be furnished by Applicant (Refer to your lease or permit for required information)

Permission is hereby requested to perform the following described work on the space occupied by the Applicant.

At (Facility)	Pursuant to (Lease, Space, Permit) No.	Location (Building No. or Area) of Space to be Altered

Description of Work and Reason

Estimated Cost of Work $	Estimated Time to Complete (Days)	Starting Date	Completion Date

Plans: Prints of each drawing must be submitted with copies of application. Include floor plan and show area affected by proposed Work (size 8 ½" x 11" or larger).

TITLE OF DRAWING	DRAWING NO.	DATED

Name & Address of Contractor (If Not Known, Submit Later)	Name & Address of Engineer or Architect	Telephone No.
Email (Optional)	Email (Optional)	License No.

Send Correspondence To:
(Name & Address of Employee in Charge of Work)

	Email (Optional)
	Telephone No.

Applicant's Name (As it Appears on Lease or Permit)

ENGINEER OR ARCHITECT CERTIFICATION

I have supervised the preparation of plans and specification f or the entire work represented herein and hereby certify that they conform to the requirements of the respective enactments, ordinances, resolutions and regulations of the City, town or municipality in regard to construction and maintenance of buildings and structures and in regard to health and fire protection which should be applicable if the Port Authority were a private corporation.

By (Signature of Authorized Rep.)	Title	Date	Signature of Licensed Prof. Engineer or Architect	Date

PART TWO: Prepared by Port Authority and returned to applicant.

The above Application is ☐ Approved ☐ Disapproved. Subject to the following conditions:

☐ Continued on Rider "A" attached

Please advise the undersigned in writing, when this work has been completed.

The Port Authority of New York and New Jersey

Inspected By	Date

By:

Title	Date

TERMS AND CONDITIONS

1. In the performance of work covered hereunder the Applicant shall, unless otherwise directed in writing by the Port Authority, conform to the requirements of the respective enactments, ordinances, resolutions and regulations of the city, town or municipality in which the Facility is located in regard to the construction and maintenance of buildings and structures and in regard to health and fire protection which would be applicable if the Port Authority were a private corporation. The Applicant's obligations to comply with the above governmental requirements is for the purpose of assuring proper safeguards for the protection of persons and property at the Facility and is not to be construed as a submission by the Port Authority to the applications to itself of such requirements or any of them.

2. The Applicant shall comply also with such federal, state and municipal laws, statues, orders and regulations, if any, as may be legally applicable to the work or the performance thereof or its employees therein. The Applicant shall consult with the Facility Manager with respect to the applicability of any and all laws, statutes, enactments, ordinances, resolutions and regulations and as to the procedures to be followed before taking any other action with respect thereto, and shall follow the instructions and procedure prescribed by said Facility Manager with respect thereto.

3. The Applicant shall also observe and obey (and compel its officers, employees, agents and contractors to observe and obey) the rules and regulations of the Port Authority now in effect which are applicable to the performance of the work and such further applicable rules and regulations which may from time to time during the said performance be promulgated by the Port Authority for reasons of safety, health, preservation of property or maintenance of a good and orderly appearance of the Facility, or for the safe and efficient operation of the Facility.

4. The Applicant shall procure and maintain bodily injury and property damage liability insurance in its own name in at least the limits specified in the preamble to this Application and Workmen's Compensation Insurance; or if the work is to be done by an independent contractor, the Applicant shall require such contractor to procure and maintain such insurance in the contractor's name. A certificate evidencing such insurance shall be furnished to the Port Authority Facility prior to the commencement of the work.

5. The Applicant shall indemnify and hold harmless the Port Authority, its Commissioners, officers, agents and employees, against and from (a) the risk of injuries (including wrongful death) or damage direct or consequential, to it or them or to its or their property, arising out of or in connection with the performance of the work, and (b) the risk of claims and demands by third persons arising or alleged to arise out of the performance of the work, whether such risks arise out of acts of omissions or the Applicant its contractors, the Port Authority, or otherwise.

6. The Applicant shall pay all claims lawfully made against it by contractors, subcontractors, materialmen and workmen, and all claims lawfully made against it by other third persons arising out of or in connection with or because of the performance of the work, and shall cause all contractors and subcontractors to pay all such claims lawfully made against them.

7. Only first-class materials and workmanship shall be used in the performance of the work, which shall be done in accordance with the drawings described in Part 1 of this Application and to the satisfaction and subject to the inspection of the Facility Manager; the Applicant shall re-do or replace at its own expense any work not approved by him.

8. The Applicant shall notify the Facility Manager no less than two days prior to the commencement of the work, and shall complete the same within the number of days specified in Part 1 of this Application; and upon completion shall notify the Facility Manager.

9. In the performance of the work, (a) the Applicant shall not do or permit to be done any act affecting the operation of the existing plumbing, heating, fire-protection, fire-alarm, sewerage, drainage, water supply, electrical, sprinkler, ventilating, refrigerating, fuel or communication system at the Facility, or other such service system thereat, including all pipes, tubes, lines, mains, wires, conduits, equipment and fixtures, except with the express written approval of the Facility Manager or the Port Authority resident engineer; (b) the Applicant shall obtain a Port Authority permit from the Facility Manager prior to any cutting or welding and shall comply with the conditions which form a part of said permit, a sample of which may be examined in the office of the Facility Manager.

10. (a) Prior to the commencement of the work and throughout the performance thereof, the Applicant shall erect and maintain at its own expense in or about the space such barriers, shields and other suitable protective devices for the protection of the public and others and their property as in the opinion of the Facility Manager may be necessary or desirable for the purpose. The work shall be performed in such manner as will cause the minimum inconvenience to members of the public and others at the Facility. During the performance of the work, the Applicant shall not permit the accumulation in or about the space of any debris, rubbish or litter of any sort resulting from such performance and shall make such arrangements for the frequent removal thereof from the Facility, by means of facilities to be furnished by the Applicant, as may in the opinion of the Facility Manager be necessary to prevent such accumulations.

(b) In the performance of the work covered by this permit, the Applicant shall not employ any contractor nor shall the Applicant or any of its contractors employ any persons or use or have any equipment or materials or allow any condition to exist if any such shall, or in the opinion of the Port Authority, may cause or be conducive to any labor troubles at the Facility which interfere, or in the opinion of the Port Authority, are likely to interfere with the operations of the Facility by the Port Authority or with the operations of others at the Facility or with the progress of other construction work thereat. The determinations of the Port Authority shall be conclusive on the Applicant and, upon notice from the Port Authority, the Applicant shall immediately remove such contractor or withdraw or cause its contactors to withdraw from the Facility the persons, equipment or materials specified in the notice and replace them with unobjectionable contractors, persons, equipment and materials and the Applicant shall or shall cause it contractor to immediately rectify any conditions specified in the notice in the event of failure by the Applicant or any of its contractors to immediately comply with the requirements of this paragraph (whether or not such failure is due to the Applicant's fault) the Port Authority shall have the right to suspend this permit and the permission thereby granted, without prior notice when the labor troubles shall be so settled that such interference or the danger thereof no longer exists, the Port Authority, by notice to the Permittee, shall reinstate this permit on all the same terms and conditions as before the suspension. "Labor troubles" shall mean and include strikes, boycotts, picketing, work-stoppages, slowdowns, complaints, disputes, controversies or any other type of labor trouble, regardless of the employer of the person involved or their employment status if any.

(c) Not withstanding the approval of this permit by the Port Authority, the Applicant shall not perform or permit to be performed any work hereunder, the performance of which or the subsequent use or occupancy of which will (1) invalidate or conflict or conflict with any insurance covering the Facility or any part thereof, or in any property located therein or thereon, or (2) increase the rate of any fire insurance, extended coverage, rental insurance or other insurance on the Facility, or any part thereof or upon any property located therein or thereon. The Applicant shall promptly observe, comply with and execute the provisions of any and all present and future rules, regulations, requirements, orders, directions and standards of the National Board of Fire Underwriters as interpreted by the New York Fire Insurance Rating Organization as to work performed in New York State, or as interpreted by the Fire Insurance *Rating Organization of New Jersey as to work performed in New Jersey, or of any other board or organization exercising or which may exercise similar functions, which may pertain or* apply to the performance of the work or to the completed work (including use or operation (hereof) and the Applicant shall make any and all structural and non-structural improvements, alterations or repairs of the work that may be required at any time hereafter by any such present or future rule, regulation, requirement, or order or direction. If because of the work done or by reason of any failure on the part of the Applicant to comply with the provisions of this paragraph any such insurance shall at any time be limited, cancelled or invalidated, then the Applicant shall immediately remove the work, or if the rate of premium for any such insurance shall be higher than it otherwise would be, then the Applicant shall pay to the Port Authority on demand that part of all premiums which shall have been charged because of such work or by reason of such failure by the Applicant. The Applicant shall furnish to the Port Authority evidence of approval of the work by the insurance authority having jurisdiction.

11. Title to any installation, improvement, alteration, modification, addition, repair or replacement resulting from work done pursuant hereto shall immediately upon completion vest in the Port Authority (or in the Port Authority's lessor, if any and if the agreement between such lessor and the Port Authority so provides) without execution of any further instrument. The Applicant shall not remove or change the same unless the Port Authority, on or prior to the expiration or termination of the lease or permit described in Part 1 of this Application or within sixty (60) days after such expiration or termination, shall give notice to the Applicant requiring removal or restoration, in which case the Applicant (on or prior to the expiration or termination date or, if the notice is given after such date, then immediately after receipt of the notice) shall complete the removal of all of the same (or as much thereof as may be required by the notice) and the restoration (to the extend required by the notice) of the space effected by the work to the same condition as it was in prior to the commencement of the said work. If the Applicant shall fail to comply with such notice, the Port Authority may effect the removal and restoration and the Applicant shall pay the cost thereof to the Port Authority upon demand.

12. A certificate of completion shall be issued be issued to the Applicant by the Facility Manager upon request of the Applicant on completion of the work hereunder in accordance with the Terms and Conditions hereof and inspection thereof by the Facility Manager. Issuance of such certificate shall not preclude the Port Authority from showing that Applicant has failed to comply with his obligations hereunder nor shall it release Applicant from such obligations.

Exhibit B(iv)

GWBBS Common Area Rules and Regulations

See attached.

GEORGE WASHINGTON BRIDGE BUS STATION
Rules and Regulations

Permission granted to use the George Washington Bridge Bus Station is conditioned upon compliance with Port Authority Rules and Regulations. Entry upon or into the George Washington Bridge Bus Station shall be deemed to constitute an agreement by such person or persons to comply with said rules and regulations. Subsequently, the Manager of the George Washington Bridge Bus Station or his/her duly authorized representative shall have authority to deny the use of the Station to any person violating the Rules and Regulations or laws, ordinances or regulations of the United States, the State of New York, or the City of New York.

- **No person shall film or take pictures inside or around any areas of the station without permission.**
- **No person shall cause any obstruction, litter or interfere with the safe, orderly flow of vehicular or passenger traffic.**
- **No person shall be permitted to sleep, lie down or sit on the floors, hallways, platforms, stairs, landings or other places where such activity may be hazardous.**
- **No person shall spit, urinate or defecate on any part of the Station other than a urinal or toilet intended for that purpose.**
- **No person shall enter any area of the Station posted as being closed or otherwise restricted.**
- **No person shall bathe, shower, shave, launder or change clothes or remain undressed in any public restroom, washroom, or any other area of the Station.**
- **No person shall solicit funds or contributions for any purpose, conduct commercial or non-commercial activity, or post, distribute or display commercial signs, advertisements, circulars or printed or written material without permission.**
- **No person shall drink or carry any open alcoholic beverage.**

- **No person shall smoke or carry a lighted cigar, cigarette, pipe, matches or any naked flame in areas of the Station.**

- **No person shall deface, mark, break or damage any part of the Station or interfere with the effectiveness or accessibility of equipment installed or located at the Station.**

- **No person except those authorized shall enter in or upon the George Washington Bridge Bus Station with any animal except a seeing eye dog or any animal confined for shipment.**

- **No person shall make, continue, cause or permit to be made or continued any unauthorized, objectionable or disturbing noises.**

- **No person shall abandon or store any personal property nor store baggage, bundles, paper, cloth, cardboard, or any other material; solid, liquid or gas, that could pose a fire or life safety hazard.**

- **No person, except those person authorized, shall bring into or carry firearms, explosives, acids, inflammable or compressed gases in the Station.**

- **No person shall operate any automatic or other vehicle including skateboards, roller skates, bicycles, scooters or ay other self-propelled vehicle or device on or through any part of the station not designated for such use.**

Exhibit B(v)

Port Authority Structural and Systems Integrity Requirements

See attached.

Port Authority will conduct inspections, surveys or tests to ensure compliance with applicable Regulations including the New York City Building Code (NYC BC) and the Port Authority (PA) Structural Integrity Program (AI 45-1.07, Structural Integrity Program), requirements as follows:

STRUCTURAL AND SYSTEMS INTEGRITY REQUIRMENTS

Areas / Systems Subject to Inspection, Survey, or Test	**Frequency of Inspection, Survey, or Test**	**Compliance Standards *in addition* to applicable Regulations**
Building Condition	6 years	PA Structural Integrity Program
Vertical Transportation Systems (Elevators & Escalators)	Periodic Tests Annually (minimum 2x year)	NYC BC; American Society of Mechanical Engineers Code Section A17.1
All Boilers	Annually (minimum 1x)	NYC BC
Fire Protection and Life Safety Systems	Annually (minimum 1x)	NYC BC

Exhibit B(vi)

Retail Branding Program

See attached.

Exhibit C

Index of Conformed Stage 1 Documents

See attached.

George Washington Bridge Bus Station Redevelopment Project
Reserved Premises
100% Stage One Submission Conformed Set
July 15, 2011

Drawing List

Architecture

A001	LIST OF ABBREVIATIONS, LEGEND, DRAWING CONVENTIONS, AND ARCHITECTURAL NOTES
A002	ARCHITECTURAL SPECIFICATION NOTES
A003	BUS LEVEL PLAN AND SECTION
A004	BUS LEVEL REMOVALS PART A
A005	BUS LEVEL REMOVAL PART B
A101	PAVILION PLAN
A102	PAVILLION ROOF PLAN
A103	PAVILION REFLECTED CEILING PLAN
A104	PAVILION ELEVATIONS 1
A105	BUS PAVILION ELEVATIONS 2
A106	PAVILION SECTIONS 1
A107	PAVILION SECTIONS 2
A108	PAVILION SECTIONS 3
A109	PAVILION WAITING AREA PLAN
A110	INSULATED GLASS ELEVATIONS SECTIONS AND DETAILS
A111	LAMINATED GLASS ELEVATIONS SECTIONS AND DETAILS
A112	INTERIOR ELEVATIONS PAVILION WAITING AREA
A113	EXTERIOR SIDING ELEVATIONS AND MISC. DRAWINGS
A114	PAVILION PLAN OPERATIONS AND POLICE AREAS WALL TYPES AND DOOR SCHEDULE
A115	PARTITION TYPES
A116	PARTITION TYPES
A117	DOOR SCHEDULE FINISH SCHEDULE SCHEDULE NOTES & ABBREVIATIONS
A201	CONCOURSE PLAN
A202	CONCOURSE SECTIONS AND MISC. ELEVATOR DRAWINGS
A203	CONCOURSE REFLECTED CEILING PLAN
A204	CONCOURSE REFLECTED CEILING PLAN
A-205	TYPICAL BUS GATE CRASH GUARD AND DRAIN COVER DETAILS

A-206	TYPICAL PAVEMENT JOINT DETAILS
A-220	FT WASHINGTON WEST MECHANICAL ZONE GENERATOR ROOM
A300	BROADWAY DEMO PLAN SECTION AND ELEVATION
A301	BROADWAY ENTRY SECTION AND ELEVATION
A302	BROADWAY ENTRY SECTION AND ELEVATION
A303	ENLARGED GATE PLAN SECTIONS ELEV. AND DETAILS
A401	EAST BUILDING BUS LEVEL PLAN
A501	DYNAMIC SIGNAGE PYLON BUS CONCOURSE
A502	PAVILION CLERESTORY PLANS AND SECTIONS
A-901	WEST BUILDING VERTICAL TRANSPORTATION BUS TERMINAL ELEVATORS

PH-A-101	STAGING AND PHASING – PHASE 1 OVERALL PLANS
PH-A-102	STAGING AND PHASING – PHASE 2 OVERALL PLANS
PH-A-103	STAGING AND PHASING – PHASE 3 OVERALL PLANS
PH-A-104	STAGING AND PHASING – PHASE 1 SUBWAY +194 LEVEL WEST BUILDING PART PLAN
PH-A-105	STAGING AND PHASING – PHASE 1 FT WASHINGTON +209 LEVEL BUS +225 LEVEL WEST BUILDING - PART PLAN
PH-A-106	STAGING AND PHASING – PHASE 1 BUS +225 LEVEL EAST BUILDING PART PLAN
PH-A-107	STAGING AND PHASING – PHASE 2 SUBWAY +194 LEVEL WEST BUILDING PART PLAN
PH-A-108	PHASE 2 BUS +225 LEVEL FT WASHINGTON +209 LEVEL WEST BUILDING - PART PLAN
PH-A-109	STAGING AND PHASING – PHASE 3 SUBWAY +194 LEVEL WEST BUILDING PART PLAN
PH-A-110	PHASE 3 BUS +225 LEVEL FT WASHINGTON +209 LEVEL WEST BUILDING - PART PLAN
PH-A-111	PHASE 3 BUS +225 LEVEL FT WASHINGTON +209 LEVEL EAST BUILDING - PART PLAN
PH-A-301	STAGING AND PHASING TEMPORARY EXTERIOR STAIR PLANS, SECTIONS AND ELEVATIONS
PH-A-303	STAGING AND PHASING ENLARGED TRAILER DRAWINGS

Architectural Signage

AS-101	TYPEFACES, MATERIALS AND COLORS
AS-102	INTERIOR WAYFINDING SIGN MATRIX AND MOUNTING POSITIONS
AS-103	INTERIOR WAYFINDING SIGN MATRIX
AS-104	LONGITUDINAL SECTION
AS-105	LOCATION PLAN: BROADWAY LEVEL
AS-106	LOCATION PLAN: FORT WASHINGTON LEVEL
AS-107	LOCATION PLAN: BUS LEVEL

AS-108	LOCATION PLAN: BROADWAY LEVEL: DETAIL
AS-109	LOCATION PLAN: FORT WASHINGTON LEVEL: DETAIL
AS-110	LOCATION PLAN: BUS LEVEL WEST DETAIL
AS-111	LOCATION PLAN: BUS LEVEL EAST DETAIL
AS-112	LOCATION PLAN: FORT WASHINGTON LEVEL: BUNKER
AS-201	CONNECTION DETAILS: B-SERIES WAYFINDING DIRECTIONAL SIGNS: CEILING HUNG
AS-202	CONNECTION DETAILS: B-SERIES WAYFINDING DIRECTIONAL SIGNS: SUSPENDED
AS-203	CONNECTION DETAILS: B-SERIES WAYFINDING DIRECTIONAL SIGNS: WALL-MOUNTED
AS-204	DETAIL: E1.1 AMENITY ID, WALL MOUNTED
AS-205	DETAIL: D3.1 EGRESS MAP AND B5.1 ELEVATOR DIRECTORY, WALL MOUNTED
AS-206	DETAIL: D1.1 FLOOR ID, WALL MOUNTED
AS-207	DETAIL: D2.1 STAIR ID, WALL MOUNTED
AS-208	DETAIL: D4.1 ROOM ID, WALL MOUNTED
AS-209	ELEVATIONS AND DETAILS: M2.4, M2.5, M2.6
AS-210	BUS LEVEL: M1.1 AND C1.1: GATE IDENTIFICATION PYLON
AS-211	BUS LEVEL: GATE IDENTIFICATION PYLON DETAIL
AS-212	ELEVATION: A1.1: BROADWAY LEVEL IDENTIFIER
AS-213	ELEVATION: A1.2: FORT WASHINGTON LEVEL IDENTIFIER
AS-214	DETAILS: P1.2: PROJECTING TRAILBLAZER SIGN
AS-215	DETAILS: B4.2: WAYFINDING SIGN W/STATION ID
AS-216	DETAILS: M2.1: BUS LEVEL ARRIVALS/DEPARTURES BOARD
AS-217	TRAFFIC FLOW DIAGRAM: INGRESS: BROADWAY LEVEL
AS-218	TRAFFIC FLOW DIAGRAM: INGRESS: FORT WASHINGTON LEVEL
AS-219	TRAFFIC FLOW DIAGRAM: INGRESS: BUS LEVEL
AS-220	TRAFFIC FLOW DIAGRAM: EGRESS: BROADWAY LEVEL
AS-221	TRAFFIC FLOW DIAGRAM: EGRESS: FORT WASHINGTON LEVEL
AS-222	TRAFFIC FLOW DIAGRAM: EGRESS: BUS LEVEL
AS-223	ADVERTISING ZONES: BROADWAY LEVEL
AS-224	ADVERTISING ZONES: FORT WASHINGTON LEVEL
AS-225	ADVERTISING ZONES: BUS LEVEL
AS-226	ELEVATION: M2.2: BUS LEVEL MEDIA ZONE
AS-227	ELEVATION: M2.2: BUS LEVEL MEDIA ZONE DETAIL
AS-228	SECTIONS: M2.2: BUS LEVEL MEDIA ZONE SECTIONS

Lighting

LTR-100	LIGHTING LEGEND
LTR-101	PAVILION BUILDING REFLECTED CEILING PLAN
LTR-102	BUS LEVEL REFLECTED CEILING PLAN
LTR-102P	BUS LEVEL LIGHTING PLAN
LTR-103	BROADWAY ENTRY REFLECTED CEILING PLAN
LTR-104	TEMPORARY EXTERIOR STAIR AND TRAILER REFLECTED CEILING PLAN
LTR-200	FIXTURE ILLUSTRATION 1
LTR-201	FIXTURE ILLUSTRATION 2
LTR-202	FIXTURE ILLUSTRATION 3
LTR-203	FIXTURE ILLUSTRATION 4
LTR-204	FIXTURE ILLUSTRATION 5
LTR-205	FIXTURE ILLUSTRATION 6

Environmental

EN-101	ASBESTOS ABATEMENT +209 FT WASHINGTON LEVEL +225 BUS LEVEL KEY PLANS
EN-102	ASBESTOS ABATEMENT WEST BUILDING PART B +186 BROADWAY LEVEL PLAN
EN-103	ASBESTOS ABATEMENT WEST BUILDING PART A +194 SUBWAY LEVEL PLAN
EN-104	ASBESTOS ABATEMENT WEST BUILDING PART B +194 SUBWAY LEVEL PLAN
EN-105	ASBESTOS ABATEMENT WEST BUILDING PART A +209 FT WASHINGTON LEVEL PLAN
EN-106	ASBESTOS ABATEMENT WEST BUILDING PART B +209 FT WASHINGTON LEVEL PLAN
EN-107	LEAD-BASED PAINT MANAGEMENT EAST BUILDING +186 BROADWAY LEVEL DEMOLITION PLAN
EN-108	LEAD-BASED PAINT MANAGEMENT EAST BUILDING +209 FT WASHINGTON LEVEL DEMOLITION PLAN
EN-109	LEAD-BASED PAINT MANAGEMENT +209 FT WASHINGTON LEVEL +225 BUS LEVEL KEY PLANS
EN-110	LEAD-BASED PAINT MANAGEMENT WEST BUILDING PART B +186 BROADWAY LEVEL PLAN
EN-111	LEAD-BASED PAINT MANAGEMENT WEST BUILDING PART A +194 SUBWAY LEVEL PLAN
EN-112	LEAD-BASED PAINT MANAGEMENT WEST BUILDING PART B +194 SUBWAY LEVEL PLAN
EN-113	LEAD-BASED PAINT MANAGEMENT WEST BUILDING PART A +209 FT WASHINGTON LEVEL PLAN
EN-114	LEAD-BASED PAINT MANAGEMENT WEST BUILDING PART B +209 FT WASHINGTON LEVEL PLAN
EN-115	LEAD-BASED PAINT MANAGEMENT EAST BUILDING +186 BROADWAY LEVEL DEMOLITION PLAN
EN-116	LEAD-BASED PAINT MANAGEMENT EAST BUILDING +209 FT WASHINGTON LEVEL DEMOLITION PLAN
EN-117	PCB CONTAINING CAULK REMOVAL NARRATIVE AND NOTES

EN-118 PCB CONTAINING CAULK REMOVAL PLAN

EN-119 GWBBS PAVILION PIGEON GUANO REMOVAL PLAN

Civil Traffic Engineering

C-100 WEST BUILDING BUS LEVEL PAVEMENT REMOVAL PLAN

C-101 WEST BUILDING BUS LEVEL PAVEMENT PLAN

C-102 WEST BUILDING BUS LEVEL PAVEMENT DETAILS

C-103 FORT WASHINGTON AVENUE PAVEMENT PLAN

C-104 PROPOSED UTILITY CONNECTIONS FROM GWBBS TO STREETS

MT-101 MAINTENANCE OF TRAFFIC TRANS-MANHATTAN EXPRESSWAY UPPER EXPRESSWAY EAST LEFT LANE CLOSURE

MT-102 MAINTENANCE OF TRAFFIC TRANS-MANHATTAN EXPRESSWAY UPPER EXPRESSWAY WEST LEFT LANE CLOSURE

T-101 WEST BUILDING BUS LEVEL PAVEMENT MARKING PLAN

T-102 EAST BUILDING BUS LEVEL PAVEMENT MARKING PLAN

Structural

S-001 GENERAL NOTES

S-103 WEST BUILDING BROADWAY LEVEL EL. 186'

S-104 WEST BUILDING FT. WASHINGTON LEVEL EL. 209'

S-105 FORT WASHINGTON BRIDGE BUS LEVEL - WEST AREA EL. 225'

S-106 WEST BUILDING BUS LEVEL - MIDDLE AREA EL. 225'

S-107 WEST BUILDING BUS LEVEL - EAST AREA EL. 225'

S-108 TEMPORARY STAIR FRAMING PLAN

S-109 WEST BUILDING PAVILION ROOF AND CLERESTORY FRAMING PLANS

Mechanical

RP-M-001 RESERVED PREMISES KEYS TO SYMBOLS, ABBREVIATIONS, AND DRAWING INDEX

RP-M-002 RESERVED PREMISES GENERAL NOTES

RP-M-003 RESERVED PREMISES HVAC AND BATC DESIGN CRITERIA AND SYSTEMS DESCRIPTION

RP-M-004 RESERVED PREMISES BROADWAY LEVEL (EL. ±186) KEY PLAN

RP-M-005 RESERVED PREMISES FT. WASHINGTON LEVEL (EL. ±209) PART PLANS

RP-M-006	RESERVED PREMISES BUS LEVEL (EL. ±225) KEY PLAN
RP-M-104W.1	RESERVED PREMISES WEST BUILDING - PAVILION BUS LEVEL (EL. ±225) LOWER MECHANICAL PLAN
RP-M-104W.2	RESERVED PREMISES WEST BUILDING - PAVILION BUS LEVEL (EL. ±225) UPPER MECHANICAL PLAN
RP-M-104W.3	RESERVED PREMISES WEST BUILDING - PAVILION BUS LEVEL (EL. ±225) ROOF MECHANICAL PLAN
RP-M-104W.4	RESERVED PREMISES BUS PLATFORM/ROADWAY LEVEL VENTILATION/SMOKE EXHAUST MECHANICAL PLAN
RP-M-301	RESERVED PREMISES WEST BUILDING - PAVILION BUS LEVEL (EL. ±225) MECHANICAL SECTION SHEET NO.1
RP-M-401	RESERVED PREMISES HVAC FLOW DIAGRAM NO.1
RP-M-501	RESERVED PREMISES HVAC SCHEDULE SHEET NO.1
RP-M-502	RESERVED PREMISES HVAC SCHEDULE SHEET NO.2
RP-M-503	RESERVED PREMISES SCHEDULE SHEET NO.3
RP-M-601	RESERVED PREMISES HVAC CALCULATION SHEET NO.1
RP-M-602	RESERVED PREMISES HVAC CALCULATION SHEET NO.2
RP-M-701	RESERVED PREMISES BATC KEY OF SYMBOLS AND INSTRUMENTATION
RP-M-702	RESERVED PREMISES DIGITAL DIRECT CONTROL SYSTEM ARCHITECTURE DIAGRAM
RP-M-703	RESERVED PREMISES MISCELLANEOUS AC, VENTILATION AND EXHAUST SYSTEM CONTROL DIAGRAMS
RP-M-704	RESERVED PREMISES ROOFTOP AIR HANDLING UNIT CONTROL DIAGRAM – VARIABLE AIR VOLUME
RP-M-705	RESERVED PREMISES ROOFTOP AIR HANDLING UNIT CONTROL DIAGRAM – CONSTANT VOLUME
RP-M-706	RESERVED PREMISES HOT WATER SYSTEM CONTROL DIAGRAM

Plumbing

RP-PFP-001	PLUMBING & FIRE PROTECTION COVER SHEET, KEY OF SYMBOLS, NOTES & DRAWING LIST
RP-PFP-002	PLUMBING & FIRE PROTECTION DESIGN CRITERIA & SYSTEM DESCRIPTIONS
RP-PFP-101	BROADWAY LEVEL (EL. ±186) PLUMBING & FIRE PROTECTION PLAN
RP-PFP-102	SUBWAY LEVEL (EL. ±194) PLUMBING & FIRE PROTECTION PLAN
RP-PFP-103W	WEST FT. WASHINGTON LEVEL (EL. ±209) PLUMBING & FIRE PROTECTION PLAN
RP-PFP-103E	EAST FT. WASHINGTON LEVEL (EL. ±209) PLUMBING & FIRE PROTECTION PLAN

RP-PFP-104W	WEST BUS LEVEL (EL. ±225) PLUMBING & FIRE PROTECTION PLAN
RP-PFP-104W.1	WEST BUILDING – PAVILION BUS LEVEL (EL. +225) PLUMBING & FIRE PROTECTION PLAN
RP-PFP-104E	EAST BUS LEVEL (EL. ±225) PLUMBING & FIRE PROTECTION PLAN
RP-PFP-105E	EAST BUILDING (EL. ±245) PLUMBING & FIRE PROTECTION PLAN
RP-PFP-106	WEST BUILDING CONCOURSE ROOF (EL. ±225) PLUMBING & FIRE PROTECTION PLAN
RP-PFP-301	RESERVED FIRE PROTECTION AND DOMESTIC WATER RISER DIAGRAMS
RP-PFP-302	RESERVED SANITARY AND STORM RISER DIAGRAMS
RP-PFP-303	COMMON RESERVED AND LEASED PREMISES GAS RISER DIAGRAM
RP-PFP-PH-101	STAGING AND PHASING – PHASE 2 SUBWAY +194 LEVEL WEST BUILDING PART PLAN
RP-PFP-PH-102	STAGING AND PHASING – PHASE 2 FT WASHINGTON +209 LEVEL WEST BUILDING PART PLAN

Electrical

RP-E-001	TITLE SHEET
RP-E-002	ELECTRICAL DESIGN CRITERIA AND SYSTEM DESCRIPTION
RP-E-101	BROADWAY LEVEL (±187.0) POWER PLAN
RP-E-103W	WEST BUILDING FT. WASHINGTON LEVEL (±209.0) POWER PLAN
RP-E-103E	EAST BUILDING FT. WASHINGTON LEVEL (±209.0) POWER PLAN
RP-E-104X-W.1	WEST BUILDING BUS LEVEL (±225.0) DEMOLITION PLAN 1
RP-E-104X-W.2	WEST BUILDING BUS LEVEL (±225.0) DEMOLITION PLAN 2
RP-E-104W.1	WEST BUILDING BUS LEVEL (±225.0) POWER PLAN 1
RP-E-104W.2	WEST BUILDING BUS LEVEL (±225.0) POWER PLAN 2
RP-E-104E	EAST BUILDING BUS LEVEL (±225.0) POWER PLAN 3
RP-E-107W	WEST BUILDING FORT WASHINGTON STREET BUILDING POWER PLAN
RP-E-300	FIRE ALARM DIAGRAM AND NOTES
RP-E-301	DETAIL SHEET NO. 1
RP-E-400.3	POWER ONE LINE DIAGRAM
RP-E-400A	MODIFICATIONS TO POWER RISER DIAGRAM LOWER EAST BUILDING
RP-E-402	FEEDER SCHEDULE

Electronics

ES001	NOTES GENERAL NOTES, LEGEND AND ABBREVIATIONS
ES101	BLOCK WIRING DIAGRAM PUBLIC ADDRESS SYSTEM
ES102	BLOCK WIRING DIAGRAM VISUAL PAGING WITH MASTER CLOCK SYSTEM
ES103	BLOCK WIRING DIAGRAM TELEPHONE SYSTEM

ES104	BLOCK WIRING DIAGRAM CCTV SYSTEM
ES105	BLOCK WIRING DIAGRAM RADIO SYSTEMS
ES106	BLOCK WIRING DIAGRAM ACCESS CONTROL SYSTEM
ES107	BLOCK WIRING DIAGRAM FIBER RING AND COMMUNICATION BACKBONE SYSTEM
ES108	BLOCK WIRING DIAGRAM PISP SYSTEM
ES201	BLOCK WIRING DIAGRAM TEMPORARY ELECTRONIC PHASING
ES202	WEST BUILDING SITE PLAN ELECTRONICS EQUIPMENT ROOMS LOCATIONS
ES203	WEST BUILDING SITE PLAN - INSTALLATIONS TEMPORARY TRAILER AREAS
ES204	WEST BUILDING SITE PLAN - CCTV COVERAGE TEMPORARY BUS LEVEL AREA
ES301	SUBWAY LEVEL (186) - ELECTRONICS SYSTEM REMOVALS
ES302	UPPER BUS LEVEL (225) - ELECTRONICS REMOVALS AND ENCLOSURE REMOVAL
ES-401	WEST AND EAST BUILDING 186W INSTALLATIONS AND 186E SWITCHGEAR ROOM INSTALLATIONS
ES-402	WEST BUILDING 194-W INSTALLATIONS
ES-403	WEST BUILDING 209-W INSTALLATION
ES-404	WEST BUILDING 225-W INSTALLATION WAITING AREA PAVILION
ES-405	WEST BUILDING 225-W INSTALLATION BUS LEVEL
ES-406	EAST BUILDING 225-E LEVEL INSTALLATION BUS LEVEL
ES-501	WEST BUILDING FT. WASHINGTON LEVEL (±187.0) EXISTING COMMUNICATION ROOM REMOVALS AND ELEVATIONS
ES-502	WEST BUILDING FT. WASHINGTON LEVEL (±187.0) OCC DESK LAYOUT ELEVATIONS
ES601	GWBSS DETAILS SHEET 1 OF 2
ES701	GWBBS SCHEDULES SHEET 1 OF 2
ES-702	GWBBS SCHEDULES SHEET 2 OF 2

George Washington Bridge Bus Station Redevelopment Project
Leased Premises
Revised Stage One for PANYNJ/DV Lease
July 15, 2011

Drawing List

Architecture

G-001	ABBREVIATIONS AND SYMBOLS
G-106	EAST BUILDING TME VENTILATION COMPARISON FOR REFERENCE ONLY
A-101	+186 BROADWAY LEVEL +194 SUBWAY LEVEL KEY PLANS
A-102	+209 FT WASHINGTON LEVEL +225 BUS LEVEL KEY PLANS
A-103	WEST BUILDING PART B +186 BROADWAY LEVEL PLAN
A-104	WEST BUILDING PART A +194 SUBWAY LEVEL PLAN
A-105	WEST BUILDING PART B +194 SUBWAY LEVEL PLAN
A-106	WEST BUILDING PART A +209 FT WASHINGTON LEVEL PLAN
A-107	WEST BUILDING PART B +209 FT WASHINGTON LEVEL PLAN
A-108	EAST BUILDING +178 CABLE ROOM LEVEL PLAN
A-109	EAST BUILDING +186 BROADWAY LEVEL PLAN
A-110	EAST BUILDING +209 FT WASHINGTON LEVEL PLAN
A-111	EAST BUILDING +225 BUS LEVEL PLAN
A-112	EAST BUILDING +244 ROOF LEVEL PLAN
A-201	OVERALL KEY ELEVATIONS
A-202	WEST BUILDING 178TH STREET ELEVATIONS
A-203	WEST BUILDING 179TH STREET ELEVATIONS
A-204	WEST BUILDING FT WASHINGTON ELEVATIONS
A-205	WEST- EAST BUILDING BROADWAY ELEVATIONS
A-206	EAST BUILDING 178TH STREET – 179TH STREET ELEVATIONS
A-207	EAST BUILDING +225 THIRD LEVEL ELEVATIONS
A-208	FT WASHINGTON WEST MECHANICAL ZONE PLAN, ELEVATIONS AND SECTIONS
A-210	WEST BUILDING 178TH STREET AT BROADWAY PART ELEVATION
A-211	WEST BUILDING 178TH STREET AT LOADING DOCK PART ELEVATION
A-212	WEST BUILDING 179TH STREET AT FT WASHINGTON PART ELEVATION
A-213	WEST BUILDING FT WASHINGTON PART ELEVATION

A-214	WEST BUILDING BROADWAY PART ELEVATION
A-215	EAST BUILDING BROADWAY PART ELEVATION
A-216	EAST BUILDING 178TH STREET AT BROADWAY PART ELEVATION
A-301	OVERALL KEY SECTIONS
A-302	WEST BUILDING PARTIAL LONGITUDINAL SECTIONS
A-303	WEST BUILDING PARTIAL LONGITUDINAL SECTIONS
A-304	WEST BUILDING CROSS SECTIONS
A-305	WEST BUILDING CROSS SECTIONS
A-306	EAST BUILDING PARTIAL LONGITUDINAL SECTIONS
A-701	WEST BUILDING +194 SUBWAY LEVEL PART PLAN AND INTERIOR ELEVATIONS
A-702	WEST BUILDING +209 FT WASHINGTON LEVEL PART PLAN AND INTERIOR ELEVATIONS
A-703	WEST BUILDING +194 SUBWAY LEVEL PART REFLECTED CEILING PLAN
A-704	WEST BUILDING +209 FT WASHINGTON LEVEL PART REFLECTED CEILING PLAN
A-705	WEST BUILDING +186 BROADWAY LEVEL PART PLAN AND INTERIOR ELEVATIONS
A-706	WEST BUILDING +209 FT WASHINGTON LEVEL PART PLAN AND INTERIOR ELEVATIONS
A-901	WEST BUILDING VERTICAL TRANSPORTATION BUS TERMINAL ELEVATORS
A-902	WEST BUILDING VERTICAL TRANSPORTATION RETAIL AND FREIGHT ELEVATORS
A-903	EAST BUILDING VERTICAL TRANSPORTATION RETAIL ELEVATORS
A-904	WEST BUILDING VERTICAL TRANSPORTATION ESCALATORS

Lighting

LTL-100	LIGHTING LEGEND
LTL-101	LIGHTING PLAN BROADWAY LEVEL
LTL-102	LIGHTING PLAN SUBWAY LEVEL
LTL-103	LIGHTING PLAN FT. WASHINGTON LEVEL
LTL-104	LIGHTING PLAN BUS LEVEL
LTL-200	FIXTURE ILLUSTRATION 1
LTL-201	FIXTURE ILLUSTRATION 2

Structural

S-001	EAST AND WEST BUILDINGS GENERAL NOTES
S-102	EAST BUILDING EXISTING CABLE ROOM FRAMING EL. 178.81'
S-103	WEST BUILDING BROADWAY LEVEL EL. 186'
SR-104	EAST BUILDING BROADWAY LEVEL EL. 186'- REMOVAL PLAN

S-104	EAST BUILDING BROADWAY LEVEL FRAMING PLAN EL. 186'
S-105	WEST BUILDING SUBWAY LEVEL EL. 194'
S-106	WEST BUILDING SUBWAY LEVEL MEZZANINE EL. 197'
SR-107	EAST BUILDING BOILER ROOM LEVEL EL. 205' - REMOVAL PLAN
S-107	EAST BUILDING BOILER ROOM LEVEL FRAMING PLAN EL. 209'-0"
S-108	WEST BUILDING FT. WASHINGTON LEVEL EL. 209'
S-109	WEST BUILDING FT. WASHINGTON LEVEL EL. 209'
S-110	WEST BUILDING BUS LEVEL EL. 225'
S-111	WEST BUILDING BUS LEVEL EL. 225'
S-112	BROADWAY BRIDGE BUS LEVEL EL. 225' FRAMING PLAN
SR-113	EAST BUILDING BUS LEVEL EL. 225'-0" - REMOVAL PLAN
S-113	EAST BUILDING BUS LEVEL ELEVATION 225' FRAMING PLAN
S-114	EAST BUILDING ROOF/ HIGH ROOF ROOM FRAMING PLAN
S-115	FRAMING PLANS AT FORT WASHINGTON MECHANICAL SPACE

Mechanical

LP-M-001	LEASED PREMISES KEYS TO SYMBOLS, ABBREVIATIONS, AND DRAWING INDEX
LP-M-002	LEASED PREMISES GENERAL NOTES
LP-M-003	LEASED PREMISES HVAC AND BATS DESIGN CRITERIA AND SYSTEM DESCRIPTION
LP-M-101E	LEASED PREMISES EAST BUILDING PART A BROADWAY LEVEL +186 MECHANICAL PLAN
LP-M-101W.2	LEASED PREMISES WEST BUILDING PART A BROADWAY LEVEL +186 MECHANICAL PLAN
LP-M-102W.1	LEASED PREMISES WEST BUILDING PART A SUBWAY LEVEL +194 MECHANICAL PLAN
LP-M-102W.2	LEASED PREMISES WEST BUILDING PART B SUBWAY LEVEL +194 MECHANICAL PLAN
LP-M-103E	LEASED PREMISES "ALTERNATE" EAST BUILDING PART A +209 LEVEL MECHANICAL PLAN
LP-M-103W.1	LEASED PREMISES FT. WASHINGTON MECHANICAL ZONE
LP-M-103W.2	LEASED PREMISES WEST BUILDING PART B FT. WASHINGTON LEVEL +209 MECHANICAL PLAN
LP-M-104E	LEASED PREMISES EAST BUILDING PART A BUS LEVEL +225 MECHANICAL PLAN
LP-M-105E	LEASED PREMISES EAST BUILDING PART A ROOF LEVEL +245 MECHANICAL PLAN
LP-M-301	LEASED PREMISES HVAC SECTION SHEET NO.1
LP-M-501	LEASED PREMISES HVAC SCHEDULE SHEET NO.1
LP-M-502	LEASED PREMISES HVAC SCHEDULE SHEET NO.2
LP-M-503	LEASED PREMISES HVAC SCHEDULE SHEET NO.3
LP-M-504	LEASED PREMISES HVAC SCHEDULE SHEET NO.4
LP-M-601	LEASED PREMISES HVAC CALCULATION SHEET NO.1

LP-M-602	LEASED PREMISES HVAC CALCULATION SHEET NO.2
LP-M-603	LEASED PREMISES HVAC CALCULATION SHEET NO.3
LP-M-701	LEASED PREMISES BATC KEY OF SYMBOLS AND INSTRUMENTATION
LP-M-702	LEASED PREMISES CONDENSER WATER SYSTEM CONTROL DIAGRAMS
LP-M-703	LEASED PREMISES MISCELLANEOUS CONTROL DIAGRAMS
LP-M-704	LEASED PREMISES CONTROL SYSTEM ARCHITECTURE DIAGRAM

Plumbing and Fire Protection

LP-PFP-001	PLUMBING & FIRE PROTECTION COVER SHEET, KEY OF SYMBOLS, NOTES & DRAWING LIST
LP-PFP-002	PLUMBING & FIRE PROTECTION DESIGN CRITERIA & SYSTEMS DESCRIPTIONS
LP-PFP-101	BROADWAY LEVEL (EL. ±186) PLUMBING & FIRE PROTECTION PLAN
LP-PFP-102	SUBWAY LEVEL (EL. ±194) PLUMBING & FIRE PROTECTION PLAN PART PLANS, SECTIONS, AND ELEVATIONS
LP-PFP-102.1	EXISTING & NEW PIPING BELOW SUBWAY LEVEL (EL. ±194) PLUMBING & FIRE PROTECTION PLAN
LP-PFP-103W	WEST FT. WASHINGTON LEVEL (EL. ±209) PLUMBING & FIRE PROTECTION PLAN
LP-PFP-103E	EAST BUILDING FT. WASHINGTON LEVEL (EL. ±209) PLUMBING & FIRE PROTECTION PLAN
LP-PFP-104W	WEST BUS LEVEL (EL. ±225) PLUMBING & FIRE PROTECTION PLAN
LP-PFP-104E	EAST BUS LEVEL (EL. ±225) PLUMBING & FIRE PROTECTION PLAN
LP-PFP-105E	LEASED PREMISES EAST BUILDING ELEVATION ±225 PLUMBING & FIRE PROTECTION PLAN
LP-PFP-301	LEASED PREMISES FIRE PROTECTION AND DOMESTIC WATER RISER DIAGRAMS
LP-PFP-302	LEASED PREMISES SANITARY AND STORM RISER DIAGRAMS
LP-PFP-303	COMMON GAS SERVICE RISER DIAGRAM SERVING RESERVED & LEASED PREMISES
LP-PFP-401	PLUMBING & FIRE PROTECTION DETAILS

Electrical

LP-E-002.2	ELECTRICAL RETAIL DESIGN CRITERIA AND SYSTEM DESCRIPTION

George Washington Bridge Bus Station Redevelopment

George Washington Bridge Bus Station Redevelopment Project

Reserved Premises Conformed Specifications List

July 15, 2011

Specification Number	Specification Title	Specification Date
01000	GENERAL PROVISIONS	
02075	PARTIAL REMOVALS	C 03/28/11
02076	SELECTIVE DEMOLITION FOR INTERIORS	C 03/28/11
02079	REMOVAL, TEMPORARY STORAGE AND REINSTALLATION OF DISPATCHER BOOTHS	C 3/22/11
02081	ASBESTOS REMOVAL AND DISPOSAL FOR PORT AUTHORITY OF NEW YORK AND NEW JERSEY	P 3/18/11
02082	PCB-CONTAINING CAULK REMOVAL WORK – GEORGE WASHINGTON BRIDGE BUS STATION – RESERVED PREMISES	May 11, 2011
02092	CLEANING, HANDLING AND DISPOSAL OF PIGEON GUANO AND RELATED DEBRIS – GEORGE WASHINGTON BRIDGE BUS STATION – RESERVED PREMISES	May 11, 2011
02094	WORKER AND ENVIRONMENTALPROTECTION FOR LEAD PAINT REMOVAL	C (9/06)
02501	SILANE SEALER	N 6/6/00
02578	PAVEMENT JOINT SEALING	P 3/20/03
02850	PLYWOOD SIGN PANELS AND WOOD SIGN POSTS	N 1/5/01
02851	ALUMINUM SIGN PANELS	N 5/1/01
03301	PORTLAND CEMENT CONCRETE, LONG FORM	A 5/12/09
03350	CONCRETE PAINT REMOVAL	
03730	CONCRETE SPALL REPAIRS	N 6/11/01
03734	CONCRETE CRACK REPAIR	N 2/12/96
04060	MASONRY MORTAR	C 06/08/09
04070	MASONRY GROUT	C 06/08/09
04170	JOINT REINFORCEMENT AND STEEL REINFORCING	C 06/08/09
04220	CONCRETE MASONRY UNITS	C 06/08/09
05080	STAINLESS STEEL FINISH	A 5/31/06
05311	STEEL DECK	N 10/24/00
05506	MISCELLANEOUS STEEL	C 06/08/09

George Washington Bridge Bus Station Redevelopment

05522	STAINLESS STEEL PIPE AND TUBE RAILINGS	C 06/08/09
05580	SHEET METAL FABRICATIONS	C 06/08/09
05721	GLASS AND STAINLESS STEEL GUARDRAIL	C 3/6/07
05810	PREFABRICATED EXPANSION JOINT ASSEMBLIES	C 06/08/09
06100	ROUGH CARPENTRY	C 06/08/09
06400	CUSTOM CASEWORK	C 06/08/09
06415	GRANITE LAVATORY COUNTERTOPS	C 4/1/11
07212	BLANKET TYPE BUILDING INSULATION	C 06/08/09
07250	SPRAYED-ON CEMENTITIOUS FIREPROOFING	C 06/08/09
07270	FIRESTOPPING	C 06/08/09
07416	METAL WALL PANEL SYSTEMS	C 3/30/11
07465	DECORATIVE GLASS PANELS	C 06/08/09
07530	FULLY ADHERED SINGLE-PLY THERMOPLASTIC MEMBRANE ROOF SYSTEM WITH MECAHNICALLY FASTENED INSULATION	P 11/20/97
07531	EPDM MEMBRANE ROOFING	C 4/1/11
07571	COLD LIQUID APPLIED ELASTOMERIC WATERPROOF MEMBRANE	C11/26/07
07600	METAL SCUPPER AND DOWNSPOUTS	09/05/08
07710	MANUFACTURED ROOF SPECIALTIES	C 11/07/05
07720	PREFABRICATED CURB AND EQUIPMENT SUPPORT UNITS	A 6/21/90
07910	COMPRESSION SEALS	A 5/31/06
07920	SEALANTS	C 06/08/09
08110	CUSTOM HOLLOW METAL	C 06/08/09
08305	ACCESS DOORS – WALL TYPE	C 06/08/09
08306	ACCESS DOORS – FLOOR TYPE	C 06/08/09
08307	ACCESS DOORS – CEILING TYPE	C 06/08/09
08470	REVOLVING ENTRANCE DOORS	N 6/28/95
08520	ALUMINUM WINDOWS	P 7/11/03
08522	STAINLESS STEEL SECURITY WINDOWS	C 4/4/07
08715	FINISH HARDWARE	C 6/29/09
08805	GLASS AND GLAZING	C 06/13/11
08970	STRUCTURAL GLASS WALLS	
09205	METAL FURRING AND LATHING	C 06/08/09
09206	METAL FURRING AND LATHING – CEILING SUPPORT SYSTEMS	C 06/08/09

George Washington Bridge Bus Station Redevelopment

09250	GYPSUM DRYWALL	C 06/08/09
09253	GYPSUM DRYWALL – INTERIOR CEILINGS AND SOFFITS	C 06/08/09
09270	DRYWALL SHAFT SYSTEMS	C 06/08/09
09310	CERAMIC TILE	C 06/08/09
09332	GRANITE TILE AND PORCELAIN PAVER TILE	C 06/08/09
09441	EPOXY MATRIX TERRAZZO	N 2/18/97
09503	LAY-IN ACOUSTICAL CEILINGS	A 5/31/06
09515	SECURITY METAL PANEL CEILINGS	C 3/24/11
09546	METAL PLANK CEILINGS	N 2/3/97
09660	RESILIENT TILE FLOORING	A REVISED 5/99
09665	TACTILE WARNING STRIPS	C 3/18/11
09910	PAINTING	A 2/24/10
10160	TOILET PARTITIONS	C 06/08/09
10210	METAL WALL LOUVERS	A 11/05/04
10505	METAL LOCKERS AND LOCKER ROOM BENCHES	A 5/31/06
10810	TOILET ACCESSORIES	C 06/08/09
10860	BIRD DETERRENT SYSTEM	C 4/1/11
11199	SECURITY HOLLOW METAL PANEL WALL SYSTEM	C 4/10/07
12301	TICKETING COUNTERS	C 03/30/11
12610	TRAX SEATING SYSTEM	

Note: Specifications with no date were provided by the consultants or manufacturers.

100% Design Review
Historic Preservation Comments
June 2, 2011

Prepared by: Higgins Quasebarth & Partners LLC

Project Overview

The George Washington Bridge Bus Station (GWBBS) is a multi-modal transit center located in upper Manhattan. The project site occupies two city blocks between West 178th Street and West 179th Street on both sides of Broadway; the West Building is the primary bus operation. The West Building bus platforms are located under a large V-shaped reinforced-concrete shell roof truss that provides weather protection for the platforms. The roof is open to the elements on all four sides through triangular openings created by the reinforced-concrete trusses. Bus platforms are located on the top level of the West Building, connected to the East Building by a pair of bridges that cross over Broadway. The East Building houses electrical equipment, serves as a bus turn-around for the West Building Bus Station at the top level and provides passive ventilation for the Trans Manhattan Expressway, which runs beneath the project site. The East Building roof is open to the sky and, in addition to the bus turn-around, is used as a monthly parking deck for private vehicles.

GWBBS was designed by renowned Italian architect/engineer Pier Luigi Nervi and the Port Authority of New York & New Jersey (PANYNJ) Engineering Department. Constructed by PANYNJ, which owns and operates the facility, the station opened to the public in 1963. Nervi's role in the project was as designer of the reinforced-concrete superstructure that frames both buildings, as well as the iconic V-shaped West Building roof and the cross-tapering columns supporting the roof at the bus platform level. The concrete frames around each building are comprised of columns that rise from street level to support triangular concrete trusses on the side street elevations. Nervi also designed the steel-framed canopy that identifies the West Building Bus Station entrance at Broadway. PANYNJ architects and engineers designed the interior public spaces, the storefronts along Broadway, Fort Washington Avenue and the side streets – W178th and W179th – as well as other infill within the reinforced concrete shell superstructure

Most contemporary and modern critiques of the structure acclaim the significance of Nervi's bold concrete forms and are dismissive (at best) of the rest of the design. Contemporary publications such as *Progressive Architecture* praised Nervi's tour de force, and denigrated the Port Authority's contribution to the project, the interiors and storefronts/infill at the exterior. *Progressive Architecture* [February 1963] referred to the mediocre design of the station's interior. Donald Canty, writing in *Architectural Forum* [March 1967, v. 126, pages 71-72] was particularly unimpressed with the Port Authority's contribution:

> The arriving passenger's first experience of the terminal is all Nervi, or nearly so. The bus deck, topmost of the terminal's three levels, is a dramatic display of virtuosity in the architectural use of exposed concrete.

> Downstairs, the experience is all Port of New York Authority, Nervi's client and design collaborator. The Port Authority's approach to the decoration of the enclosed spaces was to cover every inch – notably including the sculpted columns - with the brightest and shiniest materials it could find. As a result, the interiors have all the charm of a public restroom in a Miami Beach resort...
>
> The terminal's presence in the city, amidst the low brick monotony of Washington Heights, is that of a bristling warship moored among tugboats. Where the prow meets Broadway, the Port Authority once again sought to make its building cheerier, this time by filling in between the concrete with glass and metal storefront and Rexall signs.
>
> But on the narrow side streets, Nervi resumes command. Along these block-long walls, muscular concrete diagonals engage in a bravura balancing act that ends in support of the wingtips of the roof high overhead. There has been some unfortunate infilling here too, but the strength of Nervi's structure easily prevails.

The primary objective of the West Building Bus Concourse, a public interior space, designed and installed by the PANYNJ, was to provide areas for passenger waiting and amenities, as well as vertical and horizontal circulation from the surrounding streets and from the "A" train subway up to the second-level Concourse and then to the rooftop bus platforms above. Elevators, escalators and stairs are located throughout. The public spaces are characterized by terrazzo floors, metal-clad columns and acoustic-tile ceilings with recessed fluorescent light fixtures. Small-scale retail and ticketing booths are constructed of metal and glass storefronts. Decades of wear and lack of maintenance are evident throughout the Concourse. The interior signage (which is not historic) is typical of a bus station, airport or other transportation hub. Similarly, the exterior storefront systems at the street level are of poor quality and in poor repair. Beyond the maintenance and deterioration of these finishes, it is the lesser quality of design that stands in stark counterpoint to the powerful forms established by Nervi's structure.

The surrounding neighborhood is mixed-use residential and commercial, with a strong commercial presence along Broadway. The community is not served well by the existing retail in the station. The long, blank storefronts and opaque walls deaden what should be a lively commercial block along Broadway. The GWBBS has never operated at or near its intended capacity. According to the *New York Times* [18 March 1960, p. 27], GWBBS was designed for a capacity of 50,000 passengers per day. As early as 1963, the PANYNJ was expressing concern over the low ridership levels [*NYT*, 17 January 1964, p. 22], and today, the Authority's website reports ridership of less than 15,000 per day. As a result, the vast interior public and operational spaces of the GWBBS are underutilized both for their transportation functions and for their potential commercial value. For that reason, the PANYNJ has established a partnership with George Washington Bridge Bus Station Development Venture, LLC (DV) to redevelop GWBBS for large-scale neighborhood and destination retail, as well as a 21st-century Bus Station.

A new Bus Concourse will be constructed at the West Building rooftop, replacing the existing non-original bus islands. The West Building interior will be reconfigured for retail use as will an existing jitney-bus pass through that connects West 178th Street to West 179th Street. Deteriorating storefronts along Broadway, Fort Washington Avenue and portions of the West 178th and West 179th Street elevations of the West Building will be replaced with new aluminum-and-glass storefronts incorporating retail signage throughout. The westernmost portion of the East Building will be converted to retail use. New aluminum-and-glass storefronts incorporating retail signage will be installed at the

East Building on the Broadway elevation and along a small portion of the West 178th and West 179th Street elevations. A one-story addition will be constructed to create commercial space on the rooftop area of the East Building that is currently used as a public parking lot and bus turn-around.

The PANYNJ and DV have determined that the project will not be regulated by state or local preservation agencies, however, the GWBBS is potentially eligible for local, state and federal designation, and the project team is cognizant of the historic and design importance of the structure. Therefore, PANYNJ and DV have asked Higgins Quasebarth & Partners, LLC (HQ) to comment on the historic preservation aspects of the conformed Stage I Design submission..

Review Methodology

HQ met with the A/E team several times, made two site visits and reviewed concept drawings. HQ's review comments are limited to the compatibility of the proposed work with the historic nature of the existing facility in the context of generally-accepted historic preservation practices, and do not address any non-preservation issues.

The GWBBS is generally recognized as an important monument in American post-War Modern architecture and as an important work of Nervi, a recognized master. The facility is not a local landmark and it has not been listed on the National Register of Historic Places. It is likely that the State Historic Preservation Office (SHPO), if asked, would determine that the GWBBS is eligible for listing on the National Register (NR).

The PANYNJ and DV have determined that the project will not be regulated by state or local preservation agencies. However, because the building is an important work of architecture and engineering, regardless of whether or not a formal review is required, an insensitive design approach could raise the public profile of this project inviting public scrutiny.

In order to understand the preservation impact of the proposed project, HQ has reviewed the scope of work using the guidelines and standards of a state-level historic preservation review. The parameters of a typical state-level preservation review process are outlined here:

- A determination of eligibility for NR listing by SHPO means that any undertaking on the facility involving State or Federal action would be subject to a historic preservation review at the state level (under Section 14.09 of the State Historic Preservation Law) or at the federal level (under Section 106 of the federal Historic Preservation Law).

- The Department of the Interior's Standards for Rehabilitation (the Standards, see attached) would be the guidelines under which such a review would be undertaken, which is why HQ has used them here to identify potential issues.

- Depending on the level of intervention, State or Federal action could require public review.

HQ's review assesses the design based on two criteria:

- The George Washington Bridge Bus Station Redevelopment Design Criteria prepared for PANYNJ by Beyer Blinder Belle Architects & Planners LLP, which address a broad range of design issues, including historic preservation.

- The Secretary of the Interior's Standards for Rehabilitation (the Standards), which would apply if the building were subject to a State- or Federal-level preservation review (Section 14.09 or Section 106). The Standards are used by the state and federal agencies to review undertakings involving historic properties. We use them here to identify areas where the proposed work might be vulnerable in a public review.

A typical preservation review under state or federal guidelines will look at the overall impact of the project in order to determine its effect on the historic property. Individual areas of work may not fully meet the Standards, but the overall project can still be determined to be in compliance with the Standards. While HQ believes that the overall project approach is reasonable, there are specific areas of work that might not meet the Standards or the Design Criteria on their own if the project were subject to review.

For each individual work area potential adverse effects have been identified. Where appropriate, possible refinements to the design that would be more in keeping with the Standards or the Design Criteria are suggested.

Many aspects of the project would probably meet the Standards in a preservation review. For example, the proposed Pavilion Building on the Bus Concourse and the glazed security partition at the Broadway entrance are well-designed and sensitive insertions into the historic fabric. The restoration of the *reinforced concrete where required – if handled properly – and the rehabilitation of the existing* Broadway canopy are positive preservation actions. A case can be made for the removal of inferior interior finishes. Replacement of the deteriorated exterior storefronts with storefronts of similar design to the existing would also likely meet the Standards.

Review of the proposed work is based on HQ's experience interpreting local, state and federal preservation guidelines on many rehabilitation projects. However, it is important to recognize that these are HQ's opinions alone, and are no guarantee of any particular outcome. HQ's opinions are based on a review of the individual components of the Stage I submission (including revisions), as posted on the Project website as of the date of this document.

Review

West Building Roof

The flying Vs of the concrete roof are a powerful and iconic presence, boldly expressing the structure of the West Building from within and without. The roof is perhaps the most significant element in the Nervi design.

As part of the overall project, the PANYNJ has determined that the Bus Concourse will require life-safety upgrades that were not required when the building was originally constructed. The Bus Station Design Criteria called for a series of passenger life safety and air quality tests to determine whether the new facility would require significant positive air distribution along the new Concourse. Accommodating this new air distribution system would require 6 foot diameter ducts to run continuously along the Concourse, as well as significant exhaust fan positions located within the roof zones to mitigate smoke in the event of a bus fire. Both of these interventions would have created significant impacts to the historic

fabric of the Nervi roof. However, PANYNJ has determined through Computational Fluid Dynamics (CFD) modeling that these interventions are not required.

The Bus Station program also requires a reinterpretation of code and life safety based upon the 1968 NYC Building Code. PANYNJ has determined that Construction Classification and Building Occupancy shows that the Nervi roof will require full sprinklering in order to comply with the updated code criteria. A sprinkler plan has been developed that is integral with the triangular roof forms serving to reduce the visual impact of the system. The installation of the sprinklers will require that all areas of underside of the roof truss will be impacted. With the Vs of the roof, small-diameter pipes will be run on the underside of the ribs with sprinkler heads arranged to provide the required coverage. The main feed for the system will be via two 4"-diameter pipes that will run longitudinally along the east/west spine beam and columns that support the Nervi roof above the Bus Concourse, with one pipe on either side of the center columns and beam.

The proposed sprinklers represent the minimal intervention into the Bus Concourse space. While the sprinklers will interfere with the reading of the roof when observed directly, for most users of the Concourse, they will be a minimal presence. Therefore, we believe that the proposed sprinklers are consistent with the Standards and the Design Criteria.

In addition, two new lighting raceways will be installed to run longitudinally through the Bus Concourse, parallel to each of the 4" sprinkler mains. These raceways will consolidate all of the electrical, audio and video cabling into two simple plenums that will also serve as the mounting point for lighting, speakers, cameras, etc. As with the sprinkler mains, the lighting raceway represents a minimal and simple intervention into the Bus Concourse space, and they will not interfere with a reading of the Nervi structure above.

Bus Concourse

The Bus Concourse is an open-air public space where passengers wait for and board buses. It is the area of the West Building where the public most directly experiences the Nervi roof structure and columns. As early as 1963, the PANYNJ began installing pre-fabricated bus shelters along the original bus platforms to provide passengers protection from the elements, particularly winter winds coming off the Hudson River. Because they are not original and have not acquired historic significance on their own, the removal of these later interventions would be consistent with the Standards.

The primary intervention at the Bus Concourse is the construction of a new Passenger Pavilion at the west end of the Concourse. The Pavilion is necessitated in part by the removal of waiting areas at the west end of the existing second-floor Concourse. The Pavilion is a freestanding structure that will be easily read as a new intervention within the Concourse. The Pavilion is divided into two functions:

(1) a public passenger waiting area with associated station operations, police back-of-house space; and

(2) utility rooms that provide MEP equipment to serve the Building.

Two fresh air intake ducts emerge from the far westerly end of the Pavilion. They are hung on the north and south sides of the Pavilion below the Nervi roof over the busway zones; connecting to the roof exterior. They are required for the Pavilion operation, and will be minimally visible to pedestrians on standing in the Bus Concourse waiting areas. The Pavilion does not touch the roof structure. A single

Nervi roof column falls within the Pavilion passenger waiting area. The Pavilion ceiling at this surrounding the column is raised to allow the column to be fully expressed within the public space. The enormous scale of Nervi's structure and roof can accommodate the much smaller scale of the new Pavilion. Further, the Pavilion is well designed in a contemporary vocabulary, and is, in our opinion, compatible with the Standards as well as the Design Criteria.

Additional work at the Bus Concourse level includes reconfiguration of the bus islands in a "sawtooth" operation, the introduction of new sign pylons and other wayfinding, and the construction of a new elevator at the east end of the Concourse, connecting the new Broadway Bus Station entrance. The removal of the existing bus shelters and signage will not remove any historic fabric. The existing bus islands and bus circulation are not character-defining features of the Concourse. The new signage is contemporary, clean and well designed. The new elevator enclosure uses the same glass curtain-wall system as in the pavilion. All of this work is compatible with the Standards as well as the Design Criteria.

The Bus Concourse scope of work includes paint stripping, cleaning and patching of the center columns along the Concourse level. The paint stripping and cleaning should be specified in accordance with the Secretary of the Interior's Standards. Cleaning and paint removal should use recognized restoration chemicals (ProSoCo, Dumond, or the equivalent), applied in the gentlest means possible. Sandblasting and high-pressure rinses should not be used. Patching should be done in a manner that closely matches the color, texture, tooling and strength of the historic concrete. Coating systems may not be compatible with the Standards, and should be very carefully evaluated prior to installation.

East Building Rooftop Addition

A new addition for a retail venue is proposed for the roof of the East Building. Currently, the East Building roof is used as a parking deck for cars and turnaround for buses. The proposed addition will be clad in an aluminum-and-glass exterior glazing system on its west (Broadway) elevation and in metal panels on the other elevations. The Design Criteria mandate that the "scale, proportion and rhythm of the building addition" be appropriate to both buildings, a notion that is in keeping with the Standards. The new addition will not destroy historic material. The canted west facade of the addition and the use of a different exterior glazing system from the façade of the historic below allow the addition read as a separate intervention making this feature compatible with the Standards and the Design Criteria.

West Building Interior Public Spaces

When constructed, the GWBBS second-level Concourse was not reviewed favorably by critics. Those who lauded Nervi's structural design practically ridiculed the interior design and finishes. In addition to half a century of wear and tear, there have been minor alterations to the interior of the building over time. While many of the original interior finishes remain, these features lack the design quality and significance of the Nervi structure.

The proposed GWBBS scope will remove all existing fabric from the interior West Building. The spaces will be reconfigured as large-scale neighborhood and destination retail, with all finishes being contemporary. Much of the interior build-out will be dependent on tenant needs. We believe a case could be made for the removal of substandard interior finishes. The new finishes and circulation systems are not fully detailed in the project drawings, but to the extent that they are contemporary and do not create a false sense of history; it could be argued that they are compatible with the Standards and the Design Criteria. However, it should be noted that the removal of historic fabric of even questionable design quality could be judged in a review as incompatible with the Standards.

West Building Exterior: Bus Station Broadway Entrance

The GWBBS West Building Broadway entrance is marked by a W-shaped canopy with glass tile on the underside. The canopy is supported by an aluminum-clad column that sits at the center of a recessed Station entrance. Within the recessed entry, the floor is terrazzo and the walls are clad in granite. Four doors at the southwest end of the recess lead into the Station, where escalators carry the visitor up to the second level Concourse.

The recessed entrance at Broadway will be reconfigured into a semi-enclosed space. A new 'mullionless' glass screen gate will be constructed at the building line. The screen gates will be open during operating hours and closed other times. The gates are an intervention that will change the relationship of the street to the recess and to the interior of the building, but the transparency of the screen gate and open position of the gates when the Facility is in operation will help mitigate this impact. The glass screen gate itself is well-designed and minimally detailed in terms of structural supports and mullions, making it an unobtrusive and modern intervention. The restoration (or in-kind replacement) of the canopy tiles is consistent with the Standards.

The removal of the granite cladding and terrazzo floor at a primary entrance would likely be reviewed with greater scrutiny than the removal of similar fabric at secondary interior spaces. While the work proposed appears to be consistent with the Design Criteria's categorization of this area as a renovation (vs. restoration) zone, we believe that the removal of this fabric is may not be seen as compatible with the Standards.

West Building Exterior: West Building Storefronts and Exterior Envelope

The existing storefronts of the Broadway and Fort Washington Avenue facades of the West Building (some of which are obscured by non-original roll-down gates) are of mill-finished aluminum, with widely-spaced mullions and large glass panes. The existing storefronts continue up to the Subway level on the Broadway elevation and return one bay onto the side-street elevations. Past the storefronts along West 178th and West 179th Streets, the Nervi structure is largely an open truss system of concrete framing on the side streets; some of the triangular openings were historically filled in with black metal panels and louvers..

The proposed work includes the removal of all existing storefronts on Broadway, Fort Washington Avenue and the side streets. As with the interior finishes, the storefront infill was not favorably reviewed at the time of construction. The storefronts are now in poor condition. Thus, removal of the existing historic storefronts is probably consistent with the Standards and Design Guidelines.

The proposed new storefront system is a contemporary exterior glazing system that retains the simplicity of the existing aluminum framing system and does not detract from the Nervi structure. The new system also complies with all current life-safety and energy codes, and well as PANYNJ sustainability criteria.

The proposed system is of contemporary aluminum members with a silver metallic paint finish. The spacing of the major vertical framing members (mullions) matches that of the historic storefront system. The proposed storefronts include double-height recessed entries at four locations on the Broadway elevation, with architectural grilles at each recess to accommodate HVAC systems. Lighting would be incorporated at the interior of the storefronts, greatly reducing the clutter and opacity of existing security systems. The compatibility of the framing system with the historic storefronts and the greater

transparency of the storefronts will be an improvement over the existing and historic condition. Mechanical louvers are obscured by architectural grilles at each recessed storefront entrance.. Thus, the proposed exterior glazing system appears to be compatible with the Standards and the Design Criteria.

Most of the truss openings along the side streets are open, allowing the structure to read as a truss rather than as a wall. A small number of Nervi truss openings were historically filled in with metal panels and louvers to accommodate utility spaces and passive ventilation behind the trusses.

The current proposal calls for exterior glazing to be incorporated along West 179th Street to accommodate new retail venues. The new exterior glazing system incorporates simple butt-glazing within the triangular concrete zones that enclose the new retail venues to create a largely transparent and unobstructed infill system that is compatible with the historic open condition of these truss openings. Therefore, we believe that this new intervention is compatible with the Standards and Design Criteria. A loading dock will be located along the West 178th Street elevation, incorporating painted rolling door systems. This intervention is consistent with the functional and secondary nature of this area of the building, and we believe that it is compatible with the Standards and Design Criteria as well.

Fort Washington Utility Building

A new Utility Building will be constructed on the west side of Fort Washington Avenue. The building will be located in an area that was not historically part of the Bus Station and that would likely not be included in a designation of the building. The building will be located below the viaduct that feeds the bus level, and thus is part of the interrelated infrastructure of the Bus Station, George Washington Bridge and Trans-Manhattan Expressway.

A generator will be located within the Building requiring a flue, which will emerge from the west side of the Building and penetrate the bus level west of the Bus Concourse level rising approximately 10 feet above the bus roadway. The flue is a minor intervention in an area of the viaduct that likely would not be part of a designated Concourse.

East Building Exterior: East Building Storefronts

The historic Broadway facade of the East Building utilizes the same aluminum framing system as on the West Building, but has opaque metal panels in lieu of transparent glass. This system returns onto a small portion of the West 178th Street and West 179th Street facades. Further east on the side streets, the East Building is an open structure that serves as a ventilation stack for the Cross Manhattan Expressway that runs underneath GWBBS.

The proposed scope of work utilizes the same aluminum-and-glass exterior glazing system proposed for the West Building. Like the West Building, the infill of the East Building does not appear to hold any great significance. The Design Criteria calls for the installation of a new exterior wall system along this facade, so the proposed work is consistent with those Criteria, and would probably meet the Standards as well.

Branding and Signage

The inclusion of retail signage is a necessary part of the adaptation of the building for a new use. Historically, most of the signage at GWBBS was related to the Facility's transit-related functions, with very little retail signage at the interior or exterior.

The proposed way-finding and transit-related signage is a required component of the historical function of the building and appears to meet the Standards and the Design Criteria. The detailing of the proposed leased-premises and retail signage program is generally consistent with the Standards and Design Criteria. It is simple, muscular and has a functional feeling to it that is appropriate to a large reinforced-concrete structure. At the same time, the detailing of this signage does not detract from the character of the historic building.

A new sign is proposed to hang over Broadway between the East and the West Buildings and the bridges that connect the two buildings. The sign is simple and contemporary in its design, and could be seen as consistent with the Standards. Vertical retail sign "blades" are proposed to be hung from the Broadway bridges. These are contemporary in design and will not obscure any significant historic fabric. The proposed signage and branding appears to be compatible with the Standards and with the Design Guidelines.

Appendix: The Secretary of the Interior's Standards for Rehabilitation

"The Standards (Department of Interior regulations, 36 CFR 67) pertain to historic buildings of all materials, construction types, sizes, and occupancy and encompass the exterior and the interior, related landscape features and the building's site and environment as well as attached, adjacent, or related new construction. The Standards are to be applied to specific rehabilitation projects in a reasonable manner, taking into consideration economic and technical feasibility.

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.

2. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.

3. Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.

4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.

5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a property shall be preserved.

6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.

7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.

8. Significant archeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.

9. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.

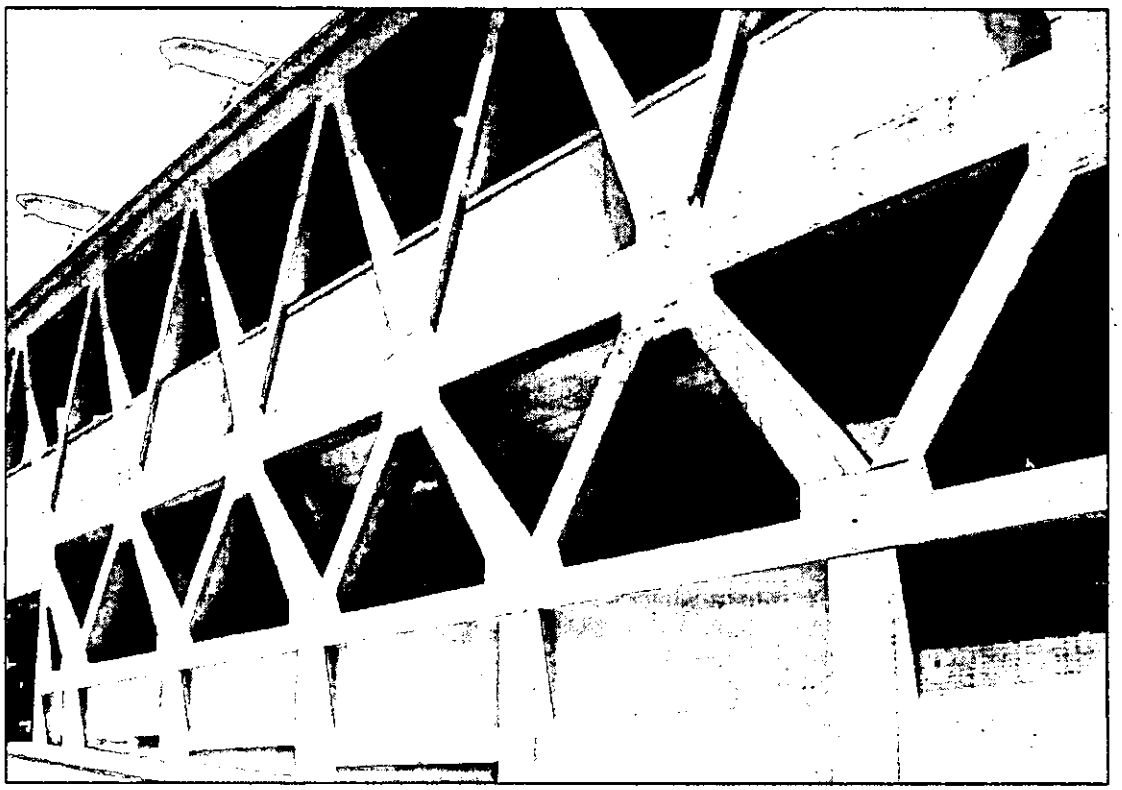
10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

ICR

CONSERVATION SERVICES

GEORGE WASHINGTON BRIDGE BUS STATION

NEW YORK, NY



prepared for:

STV, Inc.
225 Park Avenue South
New York, New York

by

Integrated Conservation Resources
41 East 11th Street
New York, New York

April 2011
Conformed For Issue 15 July 2011

TABLE OF CONTENTS

1 Introduction 1
2 Preliminary Survey 1
2.1 Methodology 1
2.2 Findings 1
3 In Situ Cleaning Testing 6
3.1 Methodology 6
3.2 Findings 6
3.2.1 General Soiling 6
3.2.2 White Crust 9
3.2.3 Ferrous Staining 9
3.2.4 Guano 9
3.2.5 Graffiti 9
3.2.6 Yellow Discoloration 10
3.2.7 Black Staining 12
3.2.8 White Discoloration 13
3.3 Recommendations 13
4 Black Residue Analysis 14
4.1 Methodology 14
4.2 Findings 15
5 Paint Removal Testing 15
5.1 Methodology 15
5.2 Findings 16
5.3 Recommendations 16
6 Concrete Analysis 16
6.1 Methodology 16
6.2 Findings 18
7 Repair Material Review 18
7.1 Methodology 18
7.2 Findings 19
7.3 Recommendations 19
8 Coating Testing 20
8.1 Methodology 21
8.2 Findings 22

APPENDIX A: CLEANING TESTING LOCATIONS
APPENDIX B: FTIR REPORT
APPENDIX C: PETROGRAPHY REPORT
APPENDIX D: PRODUCT DATA SHEETS

1 Introduction

Integrated Conservation Resources (ICR) was retained by STV, Inc. to conduct concrete testing at the George Washington Bridge Bus Station. This scope includes field and laboratory testing on the exterior elevations of the East and West Buildings, the Broadway Bridges, and the underside of the Nervi Roof on the West Building. The testing program, as outlined in our scope of work, included cleaning testing, paint removal testing, compositional analysis of samples of the concrete, testing new concrete coatings, and the development of concrete repair recommendations for cracks and spalls.

The concrete structure of the GWBBS was never painted and the exposed concrete finish is one of the building's character-defining features. This surface, however, is now marred by soiling and staining. A review of potential coatings was therefore undertaken upon request of the client to explore alternative approaches for providing a more uniform appearance for the building. This is, however, not recommended by ICR as an approach for an historic building.

2 Preliminary Survey

2.1 Methodology

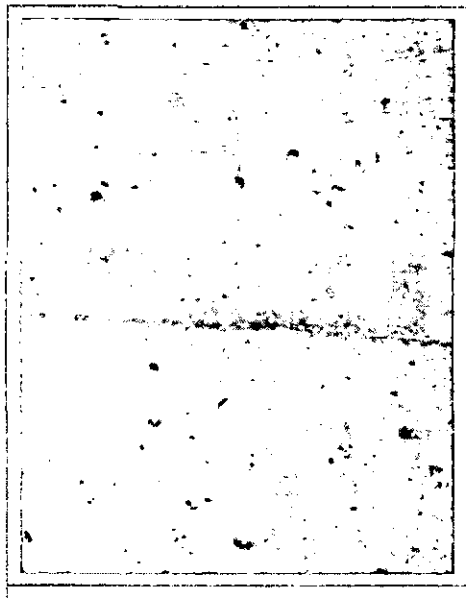
The preliminary site survey was conducted to provide a general review of conditions that required cleaning and repair of the concrete. The survey was conducted from the ground and limited boom access. Conditions were documented with photography.

2.2 Findings

In general, the concrete surfaces at the Bus Station can visually be categorized in two ways. One category is "weathered" concrete, which is seen on the exterior at the East Building, Broadway Bridges, and West Building and in limited areas below the Nervi Roof. The second category is "unweathered" concrete which can be seen at the underside of the Nervi Roof and limited areas of the exterior East and West Buildings that are protected.

The unweathered concrete still retains a smooth finish with no exposed aggregate. This is typically a result of vibrating the concrete during construction. Vibrating brings the paste and fines to the surface of the formwork and fills in "bugholes" (voids in the concrete that were not filled by vibrating during construction) creating the smooth finish. The weathered concrete is exposed to the elements or water run-off which gradually breaks down the smooth finish, making the aggregate apparent at the surface.

Images of examples of the concrete within each category are provided below to illustrate the difference. These categories will be referred to throughout this report.



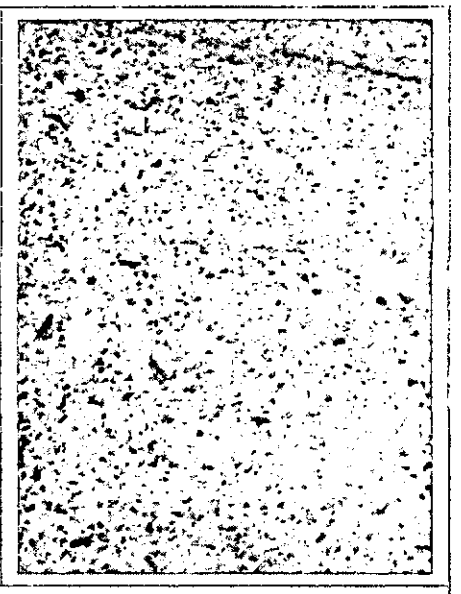
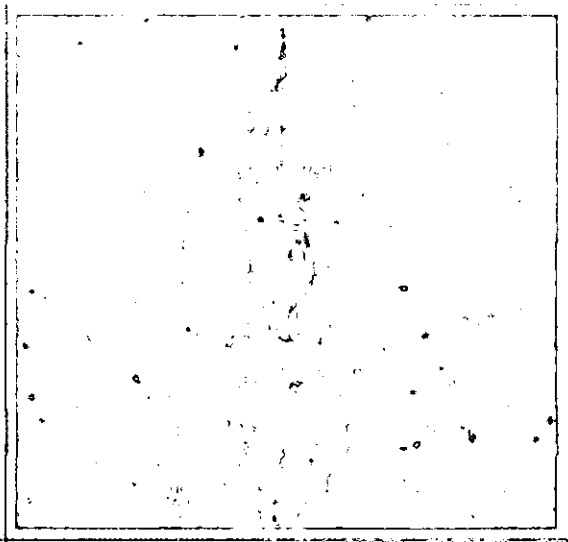


Figure 1 (left): An example of unweathered concrete.
Figure 2 (right): An example of weathered concrete.

A photographic conditions glossary table is provided below identifying the condition and a narrative of the condition with a corresponding representative photograph.

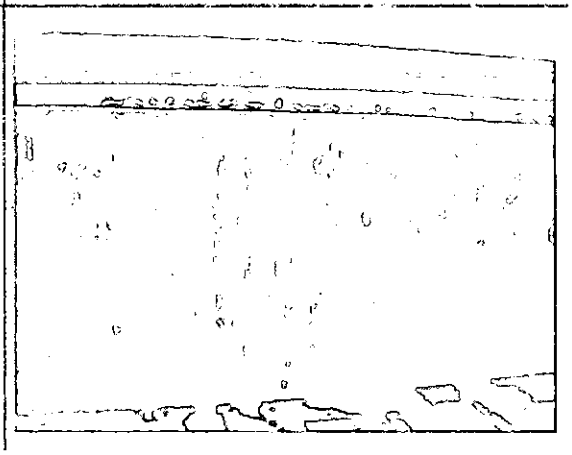
CONDITION	EXAMPLE
GENERAL SOILING: Moderate to heavy deposition on the concrete surface of airborne particulates or pollutants	

WHITE CRUST:
A superficial white crust, likely of calcium carbonate ($CaCO_3$).



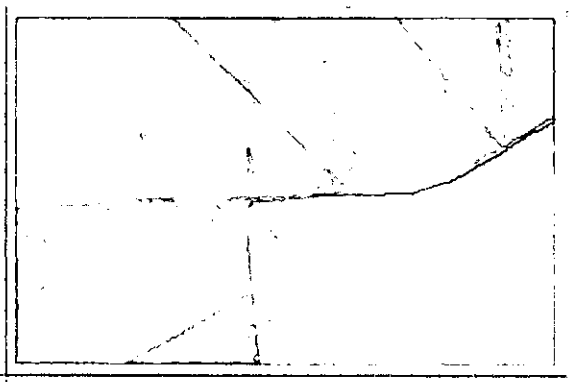
FERROUS STAINING:
Alteration characterized by random or localized pigmentation of the surface, related to the presence of corroding metallic elements.

GUANO:
The accumulation of extraneous materials of varying nature (i.e. bird droppings) which modifies or obscures the original appearance of the material.



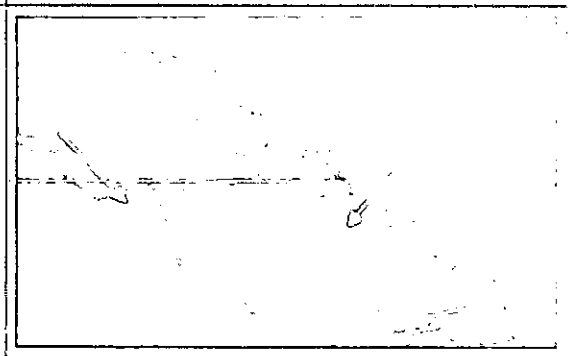
GRAFFITI REMOVAL:

Random instances of applied paint to concrete surfaces



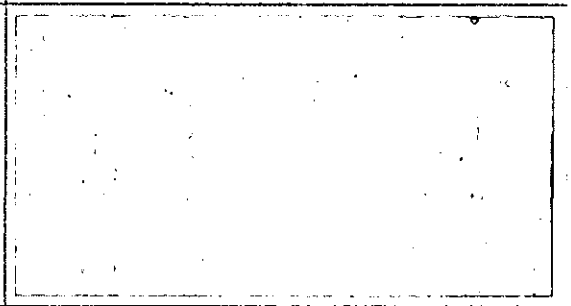
BLACK STAINING (AT BEAM UNDERSIDE):

Chromatic alteration of the surface appearance at beam underside, likely related to exposure of the surface to water and pollutants



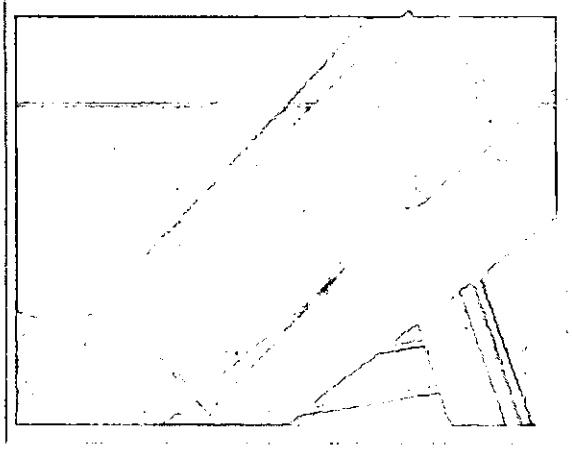
YELLOW DISCOLORATION

A chromatic alteration on the concrete. It is typically found where the concrete is unweathered



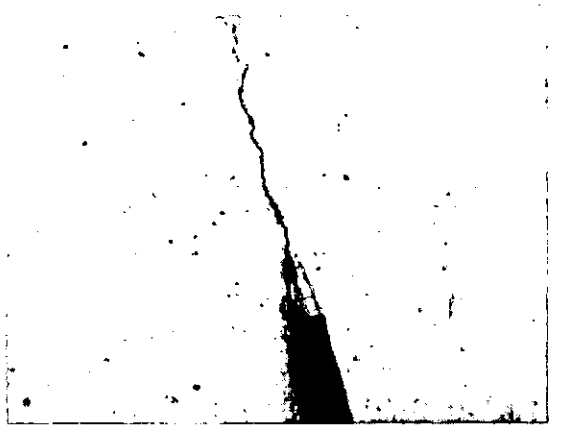
WHITE DISCOLORATION (EXHIBITED IN PATTERNS ON VERTICAL SURFACE OF BEAMS):

Alteration characterized by patterned discoloration on vertical surfaces. They are typically white powdery areas often with black residue at the center.



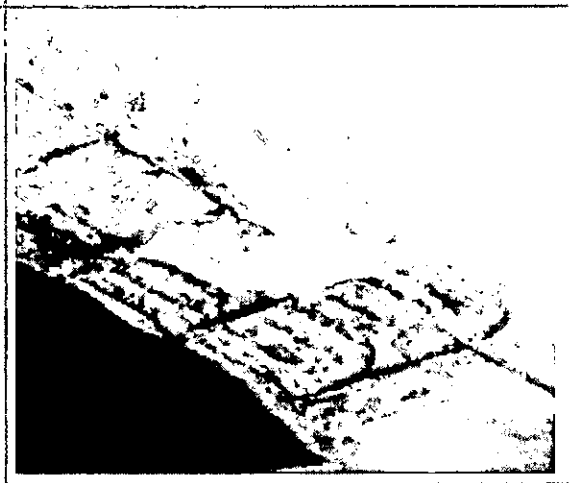
CRACK

A fracture or fissure in the concrete of variable width or length that could be the result of shrinkage during construction, construction details, or structural failure/weakness.



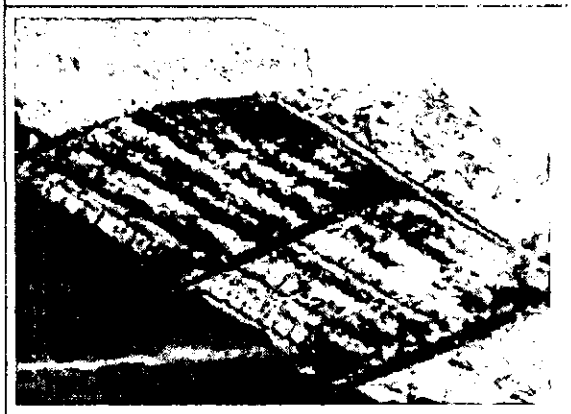
SPALLS

Detachment or loss of concrete, generally deeper material than exfoliation, often related to the infiltration of water beneath the surface expansion of ferrous elements, or construction defects.



CORRODED STEEL

Oxidized reinforcing steel, anchors, nails, hooks, and other metallic elements mechanically fastened to surfaces; often causing related spalls and cracking.



3 In Situ Cleaning Testing

3.1 Methodology

Limited site testing was conducted to address the cleaning of various conditions noted during the preliminary survey. Locations for in situ testing were chosen as representative of each of the identified conditions within the restrictions of site and boom access. Cleaning test procedures included the use of proprietary products chosen according to suitability for use on concrete. Primarily pH neutral, alkaline and abrasive cleaners which are appropriate and most effective for use on concrete were tested. All proprietary products were applied according to the manufacturer's recommendations.

NOTE: As materials which have sustained years of environmental exposure and use, some degree of the current condition and appearance must be deemed irrevocable. While cleaning methods which were successful during testing may remove most of the surface soiling from the concrete, an "ideal" condition may not necessarily be achieved without compromising the physical integrity of the material. As such, to conserve the historic material in sound condition, some measure of color inconsistency or residual soiling of the materials should be expected. It is the opinion of ICR that any such residual conditions be considered acceptable as a patina due to age.

3.2 Findings

3.2.1 General Soiling

ICR conducted tests in two areas of general soiling: one was light soiling on the coffers of the underside of the Nervi Roof which appear mottled and the other location was on a western-most, east-facing beam where soiling was heavy and guano was also present.

ICR selected five chemical cleaners, a water scrub, and mechanical cleaning with Sponge Jet, all compatible with concrete, to test at the light soiling location and six chemical cleaners and a water scrub for the heavy soiling. For the light soiling ICR tested: Light Duty Concrete Cleaner, Liquid Marble Cleaner, EK Restoration Cleaner, All Surface Cleaner, Cleaner/Degreaser, water and Sponge Jet media Silver 320. For the heavy soiling ICR tested: 766 Limestone and Masonry Prewash and Afterwash, Liquid Marble Cleaner, EK Restoration Cleaner, All Surface Cleaner, Cleaner/Degreaser, MasonRe Latex 20, Cementex #80, and water. Sponge Jet equipment was not able to access the selected heavy general soiling location.

For the light soiling, the water scrub worked the most effectively; however, the mottled appearance of the concrete still remains, just in a more muted tone. A water scrub was also effective on the heavy soiling by removing superficial dirt and guano; however, the yellow discoloration of the surface fines on the un-weathered concrete still remains. The chemical cleaners gave a blanched appearance to the concrete, which is not satisfactory.

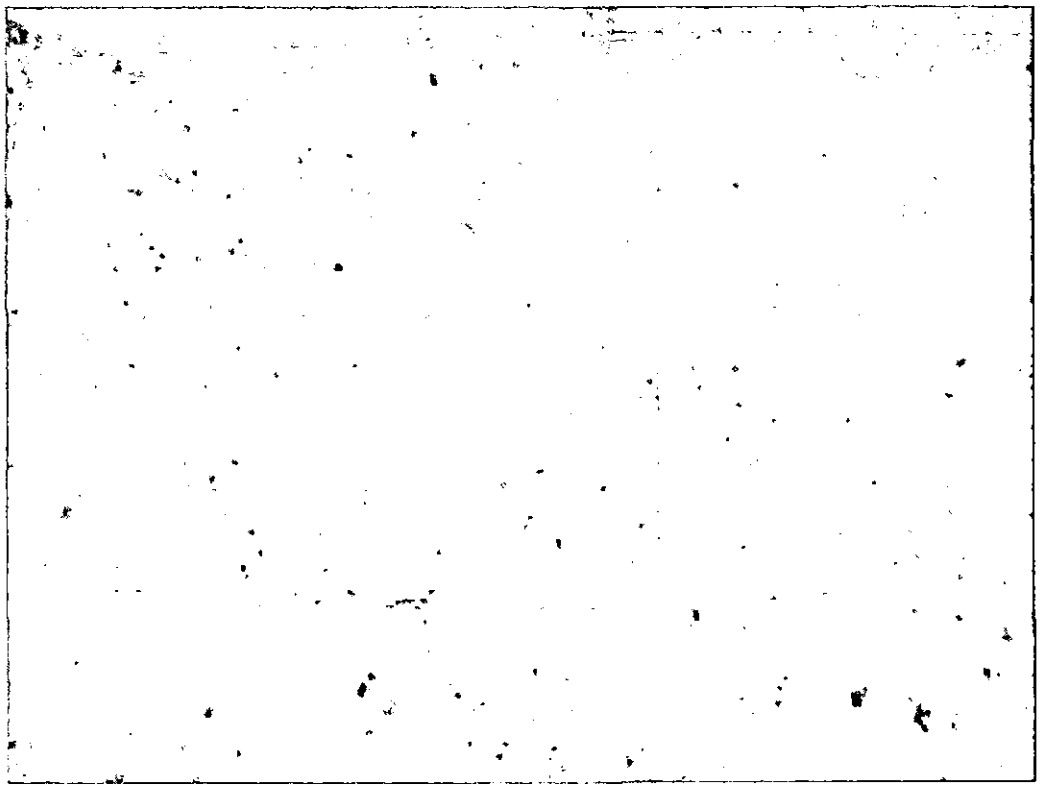
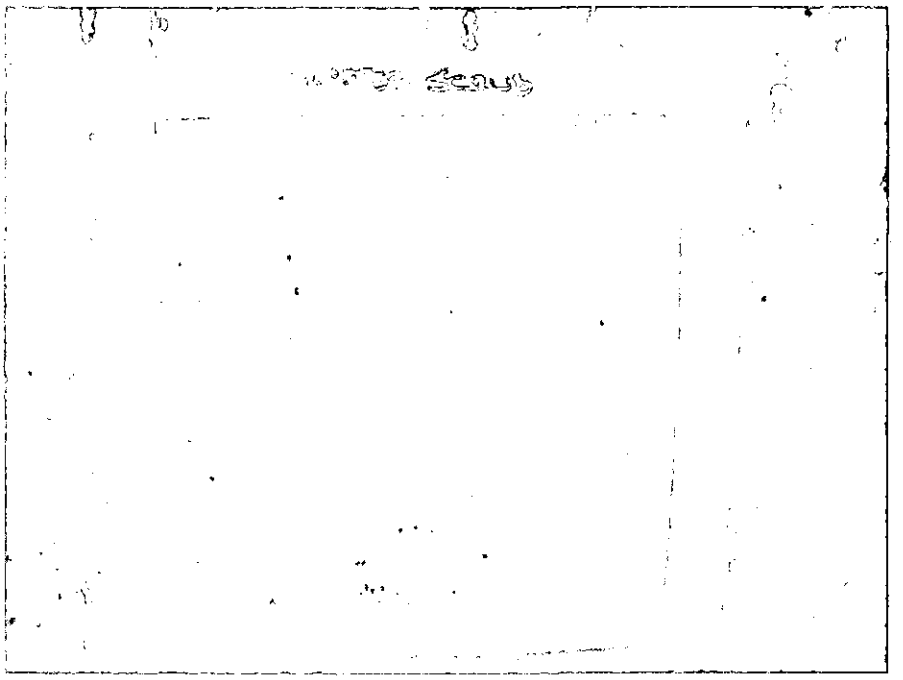


Figure 3: Cleaning test areas on light soiling in coffers or Nervi roof underside.

1. Liquid Marble Cleaner, 15 minute dwell
2. EK Restoration Cleaner, 5 minute dwell
3. All Surface Cleaner, 10 minute dwell
4. Cleaner/Degreaser, 3 minute dwell
5. Water Scrub
6. Light Duty concrete Cleaner



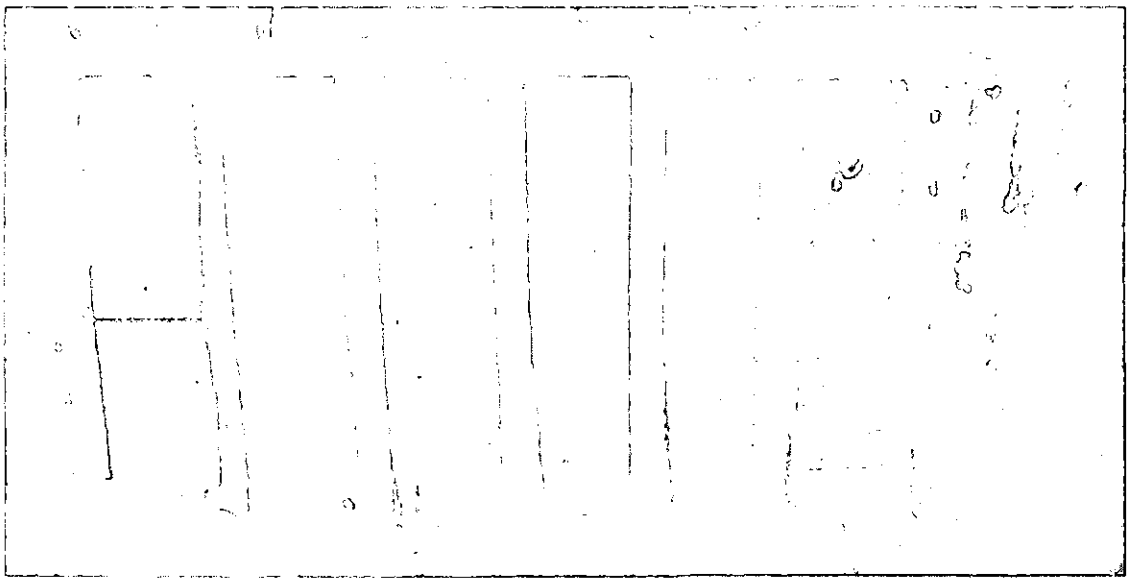


Figure 4: Cleaning test areas on heavy soiling and guano on westernmost east-facing beam, Nervi roof underside.

1. Water scrub, no dwell
2. 766 Limestone & Masonry Prewash Upper half 1 hour dwell, followed by Limestone & Masonry Afterwash, 5 minute dwell Lower half: 30 minute dwell, followed by Limestone & Masonry Afterwash, 3 minute dwell
4. Liquid Marble Cleaner 10 minute dwell
5. All Surface Cleaner, 10 minute dwell
6. EK Restoration Cleaner, 5 minute dwell
7. Cleaner/Degreaser, 3 minute dwell
8. MasonRE Latex 20, 3 hour dwell (note: test area is still wet)
9. Cementex Natural Latex #80, 3 hour dwell (note: test area is still wet)

3.2.2 White Crust

This condition requires mechanical removal, which was not able to be tested due to limited access. If cleaning is implemented ICR can work with the contractor to conduct mock ups to determine the best removal method for the crusts.

3.2.3 Ferrous Staining

ICR tested five products on ferrous stains located at the western-most beam on its east-facing side. The products tested were T-1047, T-1087, 1260 Limestone & Marble Poultice, 942 Limestone & Marble Cleaner, and MasonRe B+ While it appears from a distance that the T-1047 was the most effective, the product removed some of the concrete so is not recommended. The T-1087 was the most successful product and did not have a deleterious effect on the concrete.

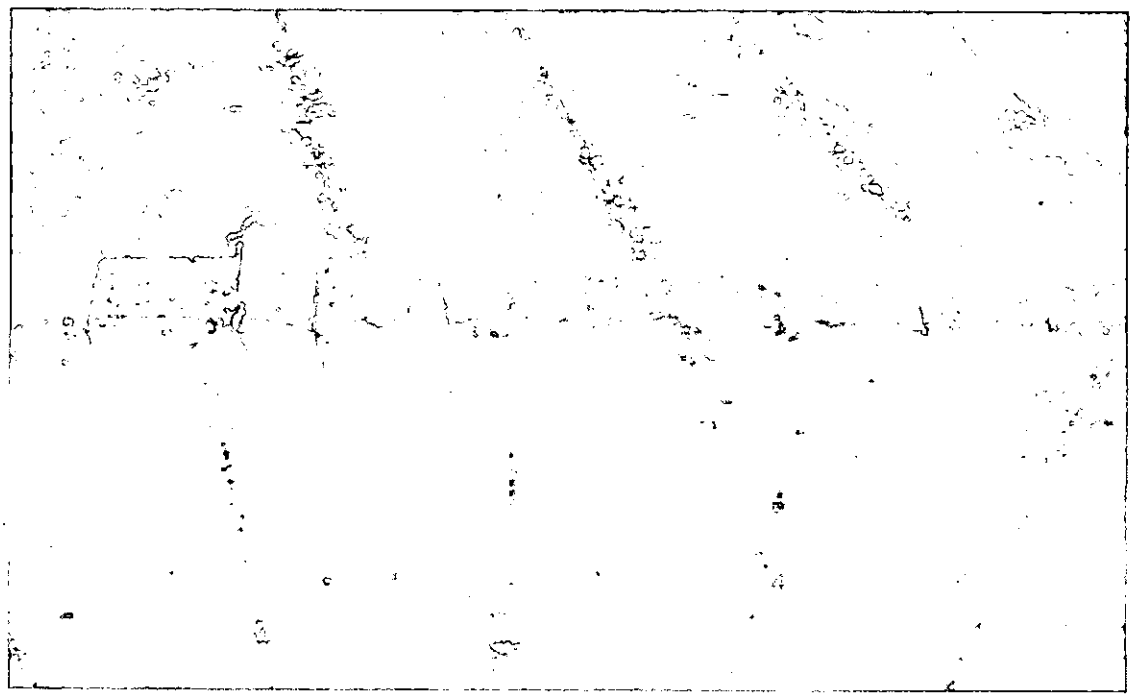


Figure 5: Cleaning tests on ferrous staining on westernmost east-facing beam, Nervi roof underside.

1. T-1047 poultice with kaolin, 24 hour dwell
2. T-1087 poultice with kaolin, 24 hour dwell
3. 1260 Limestone & Marble Poultice, 24 hour dwell
4. 942 Limestone & Marble Cleaner, 24 hour dwell
5. MasonRE B+, 24 hour dwell

3.2.4 Guano

The guano was tested in an area of heavy general soiling. Please see *Section 3.2.1 General Soiling* above.

3.2.5 Graffiti

The graffiti could not be tested for removal due to limited access.

3.2.6 Yellow Discoloration

This condition appears on much of the unweathered concrete on the underside of the Nervi Roof, with the exception of the "ceiling" coffers. The cause of this condition is not known.

ICR tested nine chemical cleaners, a water scrub, and mechanical cleaning with Sponge Jet in various media on this condition. The tests on this condition were located at one beam east of the westernmost beam at the south portion of the upper level of the Bus Station. Both the east and west faces of the beam were tested and all test mock ups included both the yellow and the white discoloration condition (the latter discussed below in *Section 3.2.8 White Discoloration*).

The chemical cleaners tested were EK Restoration Cleaner, All Surface Cleaner, Cleaner/Degreaser, Liquid Marble Cleaner, Orvus, 1260 Limestone & Marble Poultice, 942 Limestone & Marble Cleaner, MasonRe B+, Light Duty Concrete Cleaner, and a water scrub. Additionally, mechanical cleaning tests were conducted with a Sponge Jet by a product representative.

The EK Restoration Cleaner, Cleaner/Degreaser, Liquid Marble Cleaner, 1260 Limestone & Marble Poultice, 942 Limestone & Marble Cleaner, and MasonRe B+ created a blanched appearance to the yellow discoloration as opposed to a clean concrete appearance. The All Surface Cleaner, Orvus and the water scrub removed superficial soiling and lightened the yellow discoloration, but did not remove it.

Sponge Jet is a mechanical cleaner employing various media embedded in sponge and applied in a range of pressure. Three different media were tested at various psi: Glass at 15 psi, Glass at 40 psi, Silver 320 at 60 psi, Silver 80 at 15 psi, and Silver 80 at 30 psi. The Sponge Jet tests resulted in a cleaner concrete surface with the removal of the yellow discoloration, however bugholes were created due to the pressure. The most successful of the tests was the Silver 80 at 15 psi which resulted in the least amount of bugholes with the best removal of the yellow discoloration and the best retention of the unweathered smooth concrete finish.

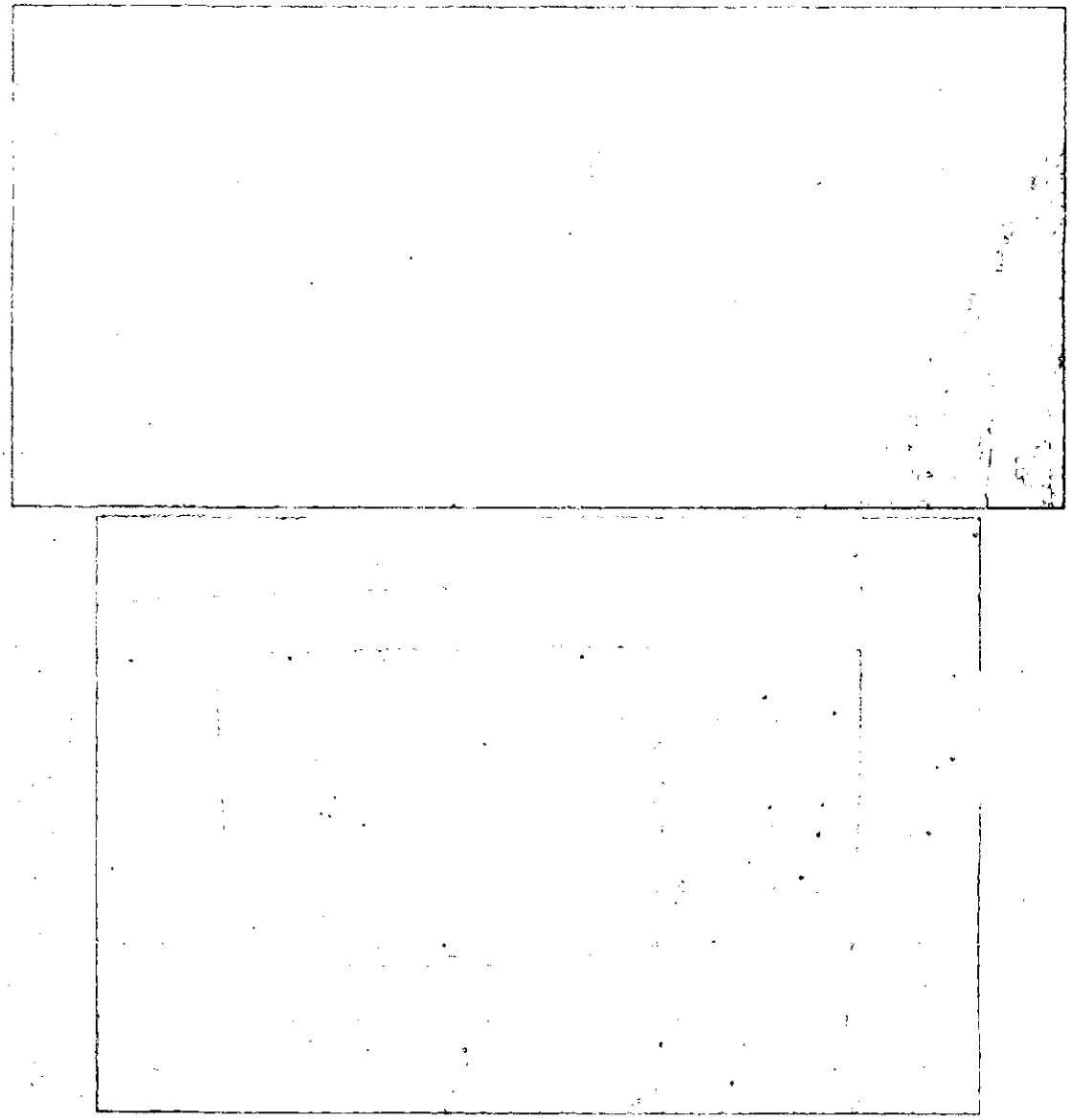


Figure 6: Cleaning tests on yellow discoloration on second from the west beam, west-facing, Nervi roof underside.

1. EK Restoration Cleaner, 10 minute dwell
2. All Surface Cleaner, 10 minute dwell
3. Cleaner/Degreaser, 3 minute dwell
4. Liquid Marble Cleaner, 15 minute dwell
5. Orvus (concentrate)
6. Water scrub
7. 942 Limestone & Marble Cleaner, 24 hour dwell
8. 1260 Limestone & Marble Poultice, 24 hour dwell
9. MasonRE B-, 24 hour dwell
10. Light Duty Concrete Cleaner

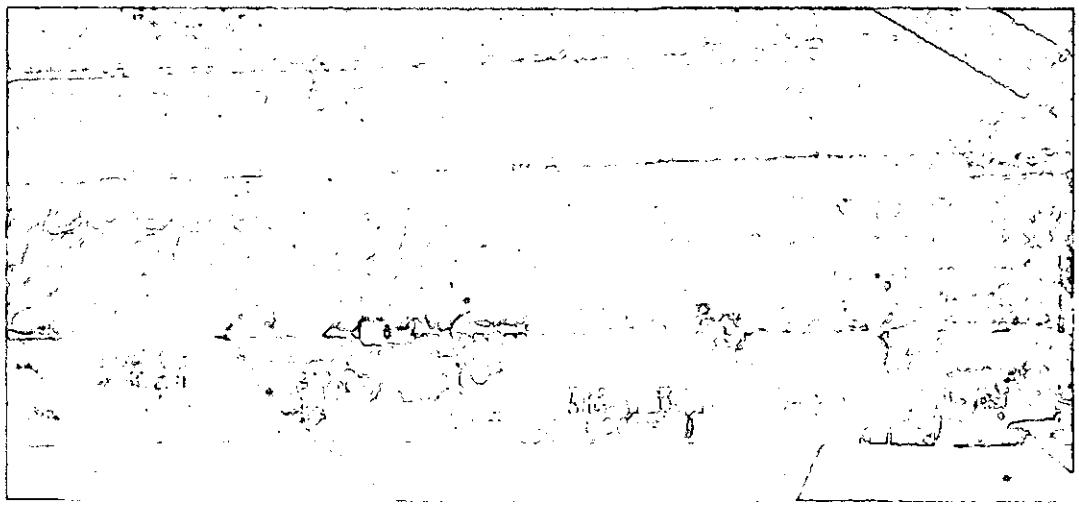


Figure 7: Cleaning testing areas with Sponge Jet

3.2.7 Black Staining

This condition is primarily found on the underside of the beams of the Nervi Roof. ICR tested chemical and mechanical cleaners on this condition.

The chemical cleaners tested were EK Restoration Cleaner, All Surface Cleaner, Cleaner/Degreaser, Liquid Marble Cleaner, and Orvus. The EK Restoration Cleaner and Liquid Marble Cleaner created a blanched appearance as if a surface film remained and the other three cleaners were not effective.

Sponge Jet was also tested on this condition. Three different media at various psi were tested: Glass at 15 psi, Glass at 40 psi, Silver 320 at 60 psi, and Silver 80 at 15 psi. The most effective test was the Silver 80 at 15 psi. For an image of the mechanical cleaning tests see Figure 7.

Figure 8: Chemical cleaning tests on black staining at beam underside. Nervi Roof underside.

Left to right: Liquid Marble Cleaner, 15 minute dwell, EK Restoration Cleaner, 10 minute dwell, All Surface Cleaner, 10 minute dwell, Cleaner/Degreaser, 3 minute dwell, Orvus (concentrate)

3.2.8 White Discoloration

This condition presents a consistent pattern of circles on certain beams at the underside of the Nervi Roof. The circles are typically white and powdery. The cause of this condition is not known and no holes, breaches or patches in the concrete surface correspond to each circle suggesting they were not port holes for a repair.

The chemical cleaners tested were EK Restoration Cleaner, All Surface Cleaner, Cleaner/Degreaser, Liquid Marble Cleaner, Orvus, 1260 Limestone & Marble Poultice, 942 Limestone & Marble Cleaner, MasonRe B+, Light Duty Concrete Cleaner, and a water scrub. Additionally, mechanical cleaning tests were conducted with Sponge Jet by a product representative.

All the chemical cleaners and the water scrub removed the white powdery substance from the concrete surface; however the Orvus and water had the most consistent and appropriate appearance for the concrete. The other chemical cleaners created a darker and/or mottled appearance once the white powdery substance was removed. See Figure 6 for results; the yellow discoloration test areas also incorporated the circular white discolored conditions at the left of all test areas.

Sponge Jet was also tested on this condition on the same beam on the east face. Three different media at various psi were tested: Glass at 15 psi, Glass at 40 psi, Silver 320 at 60 psi, Silver 80 at 15 psi, and Silver 80 at 30 psi. The Sponge Jet tests resulted in a darker appearance where the white discoloration existed, see Figure 7.

In the area tested on the east facing beam there was a black residue at the center of some of the circles. This may contribute to the darkening of these areas after cleaning. Further testing should be conducted to determine if the substance can be removed or if it interferes with any possible coatings being applied to the concrete in the future.

3.3 Recommendations

Overall, the cleaning test results were not very satisfactory; however, water and bristle brush scrubbing is the best approach as it resulted in a cleaned area equal to or better than the chemical cleaners. The water scrub, however, would not remove the yellow discoloration, white crust, black staining, or ferrous staining. The ferrous staining would have to be cleaned with the T-1087. The white crust would have to be addressed in its isolated areas due its deleterious effect on the concrete. Tests would be required to determine its removal.

A low-pressure water washing may be another option to cleaning; however, mock ups would need to be conducted to determine the most gentle yet most effective pressure. Similar to the Sponge Jet, if the water pressure is too high it will create bugholes in the concrete surface. Pressure washing was attempted, but there was insufficient water pressure to the equipment so tests were not able to be conducted.

If the concrete is going to be coated (see *Section 8 Coating Testing*), water scrubbing is not acceptable for a cleaning approach. The conditions remaining on the surface of the concrete after water scrubbing will potentially interfere with the adhesion of the coating to the substrate. The cleaning material and method

to employ if the building is to be coated is the Sponge Jet, Silver 80 at 15 psi. This approach will prepare the surface for a coating.

If a greater degree of cleaning is desired in areas where soiling and staining is heavy, (e.g. the beams or the underside of the beams) the Sponge Jet Silver 80 at 15 psi is also an option. This material and method is satisfactory for removing the general soiling and yellow discoloration and lessens the black crust. There is also the possibility that this approach will remove the white crusts and ferrous staining, though mock ups would have to be conducted to determine if it is effective. The pressure may have to vary on these other conditions which should be tested in a controlled manner to ascertain no historic fabric is affected.

4 Black Residue Analysis

4.1 Methodology

An unusual pattern of circular white crusts set at fairly regular intervals was noted at beams on the underside of the roof. In some of the circular areas there is a black residue seen prior to and after cleaning. While the nature of this staining could not be immediately determined, any type of surface residue has the potential to be incompatible with an applied coating. Therefore, one sample of the residue was extracted from the area of staining and sent to an independent laboratory for Fourier Transform Infrared Spectroscopy (FTIR) in order to better understand the composition of the stain and its potential effects on an applied coating

Figure 9: *(Left)* Beam with circular white crusts in uncleaned areas, and dark staining in cleaned areas (in white boxes). Red square denotes sample area. *(Right)* Detail of black residue prior to cleaning.

FTIR is a tool to characterize organic and inorganic molecules. An infrared beam is directed at the sample and the sample's response is monitored. The energy is transmitted through, reflected off, or absorbed by constituent compounds at a rate that is characteristic of each compound. The frequencies are recorded,

measured, and translated into a spectrum that represents particular molecular transmissions, reflections or absorptions, which are unique to each compound. The analysis thus creates a molecular fingerprint of the sample which is then compared to that of a known standard

A synopsis of the independent analysis is provided below; for the complete report submitted by Orion Analytical, LLC refer to Appendix B.

4.2 Findings

FTIR analysis found that the sample contained expected materials such as cement and gypsum. An organic material was also noted, though this material could not be identified given the small, limited sample quantity. This testing was not part of the original scope of work and the inconclusive findings suggest further investigation is required to ensure the substance does not interfere with any possible coatings that may be applied in the future.

5 Paint Removal Testing

5.1 Methodology

Paint removal testing was conducted on site to determine a procedure that would successfully remove coatings from the concrete substrate. The tests were conducted on the blue paint on the east side of the pier just to the west of bus platform #20. Multiple products were tested due to the unknown composition of the many accumulated paint layers.

With the exception of SafStrip 8 (which was applied in 2 applications for 30 minute dwells) each of the products were given an initial 24 hour dwell. Oil & Grease Stain Remover and Peel Away 1 were relatively ineffective at removing the top paint layers after one application, and testing was not continued with these products. Heavy Duty Paint Stripper, Safety Peel 1, Safety Peel 3, and Peel Away 7 were applied for a second 24 hour dwell.

It should be noted that this material and method for removal can be conducted only if lead is not present in the coatings. Testing for lead was not under the ICR scope of work, but was being addressed by another consultant.

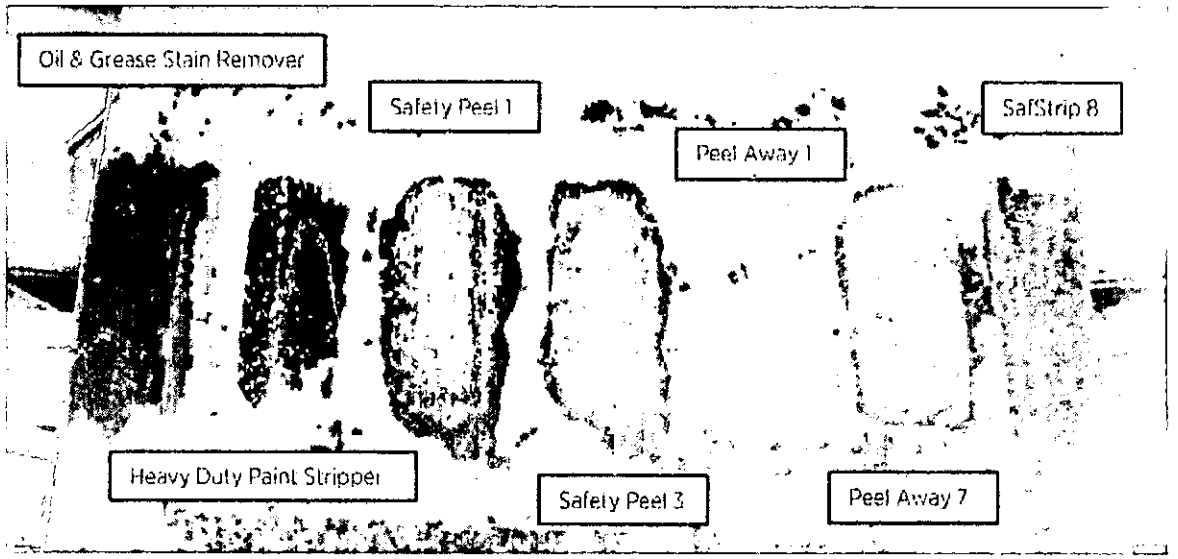


Figure 10: Paint removal tests on blue paint on pier at the upper level of the bus station after all testing was completed

5.2 Findings

Both Safety Peel 3 and Peel Away 7 were effective in removing the multiple layers of paint. Peel Away 7 removed the most paint after the first application. Additional applications may be necessary depending on the cleaning material and method implemented.

5.3 Recommendations

Use Peel Away 7 according to the following procedure to remove the blue paint:

1. Apply Peel Away 7 paste in an even coat approximately 1/16" - 1/8" thick using natural bristle brush, roller or spray equipment. See also Product Data Sheet.
2. Cover paste with accompanying Peel Away laminated paper ensuring printed side is facing out. Rub smooth to remove air pockets.
3. Allow to dwell for 24 hours.
4. Remove by sliding a plastic spatula into the paste around the edges of the paper, easing the softened paint, paste and paper away from the surface in one piece. Remove as much residue as possible with the spatula.
5. Repeat steps 1-5.

6 Concrete Analysis

6.1 Methodology

Petrographic analysis allows for observations of microstructure and identification of constituent materials in the concrete. One sample was allowed for extraction from an area of an existing spall on a beam underside.

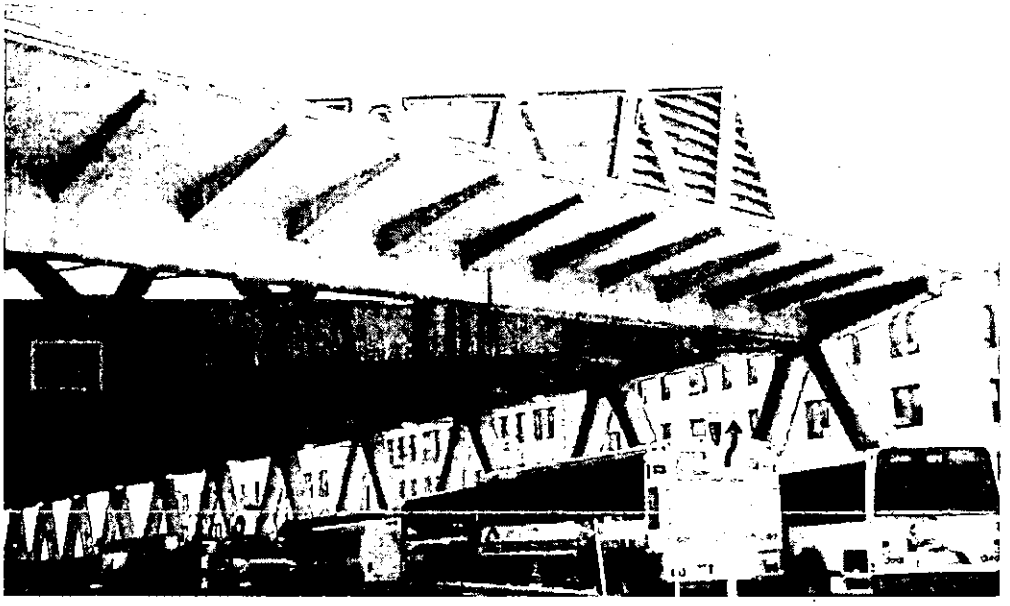


Figure 11: South side at west end. Blue box indicates location of concrete sample extraction in area of spall.

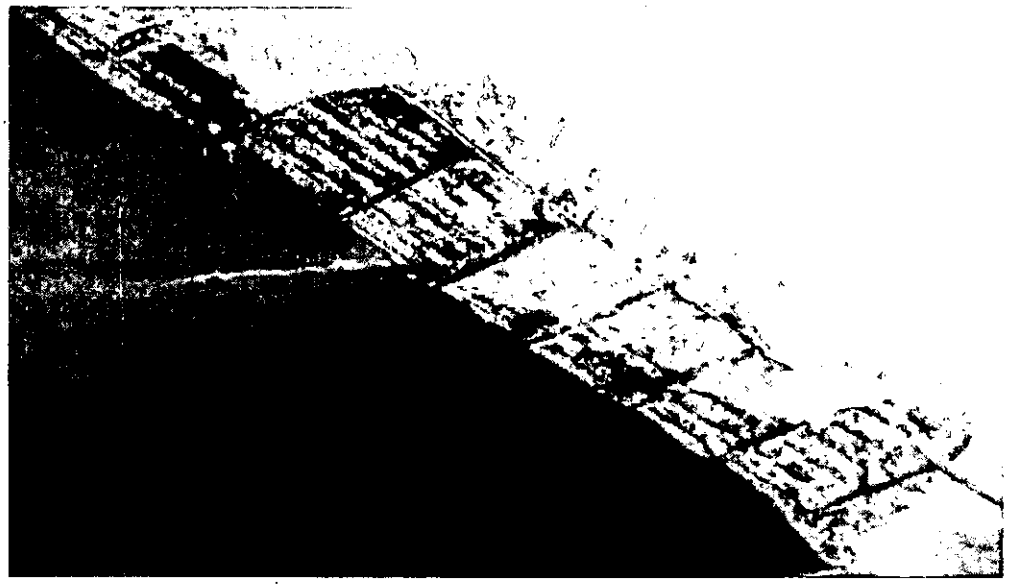


Figure 12: Detail of blue box in previous figure. This is the area where concrete was extracted for petrography.

These samples were submitted to a petrographer for microscopic investigation. Samples were prepared by vacuum impregnation with blue epoxy and then slicing a thin section approximately 20-30 microns thick. Thin sections were then mounted on a slide for observation. The petrographer uses an Olympus BX-51 polarized/reflected light microscope and a Bausch and Lomb Stereozoom 7 stereoscopic reflected light microscope. The samples are then viewed in reflected light, polarized and cross-polarized light to discern textural relationships and microstructure, and to distinguish components (particularly phases of cement hydration). The examination is conducted in accordance with ASTM 856: Standard Practice for

Petrographic Examination of Hardened Concrete. Point-count analysis was also conducted to determine approximate volume percentages of paste, aggregate, and voids. This test was performed in accordance with ASTM C457: Standard Test Method for Microscopical Determination of Parameters of the Air-Void System in hardened Concrete.

A synopsis is provided below; for the complete report submitted by Highbridge Materials Consulting, Inc. refer to Appendix B.

6.2 Findings

The concrete consists of an ordinary gray normal weight portland cement with siliceous coarse aggregate and fines. Intentional air entrainment was observed but it is low in volume so not providing freeze-thaw resistance. The cement paste is considered dense, impermeable and sound and the concrete itself is considered sound. The concrete has a low water cement ratio (approximately 0.40), which contributes to its durability. The fines are quartz and are well distributed and well graded. The coarse aggregate is a siliceous natural gravel with a nominal top size of one inch and is also well graded. No deficiencies were noted in the placement or curing.

7 Repair Material Review

Isolated areas of spalling and loss were noted within the GWBBS. In order to address these areas, two polymer-modified concrete repair systems were reviewed. These included:

- Edison Coatings' Custom System 45 Type CN, with Latex Admixture RI -1
- Keim's Concretal Universal Mortar-S

The Custom System 45 is a tintable portland cement-based repair system which uses a latex admixture. The Concretal Universal Mortar-S is an untinted fiber-reinforced repair system that is modified with polymers. These products were selected for review because they were part of proprietary repair/coating systems offered by Edison and Keim.

7.1 Methodology

Both repair materials were prepared following manufacturer's instructions and reviewed for workability. Individual 2"x4" coupons of each repair mix were also made to serve as substrates for subsequent evaluation of coatings. A limited amount of actual building material was available for comparison, so additional coupons composed of gray portland cement and aggregate, modeled after the composition of the original concrete that was identified through petrography, were made to serve as a control and substitute for the original gray concrete of the building.

Because Edison's Custom System 45 is tintable, the manufacturer was asked to provide a tinted sample to correspond with the color selected for coating review (Keim 9523).

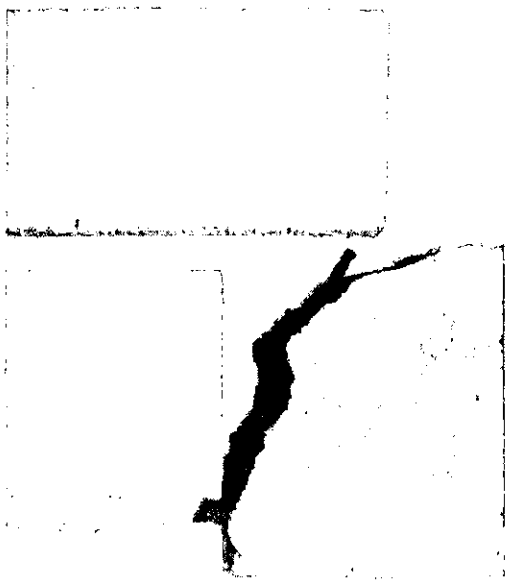


Figure 13: Repair mix coupons and original building sample:

TOP: Edison Custom System 45 Type CN, tinted to match Keim 9523

CENTER, LEFT: gray portland cement

CENTER, RIGHT: original building sample

BOTTOM: Keim Universal Mortar S, untinted

7.2 Findings

Of the two repair compounds, the Custom System 45 Type CN with Latex Admixture RL-1 mix was found to be the easiest to work with, the latex admixture providing a "stickiness" that will serve well when used for overhead applications. The Keim mix is also untintable and very light in color when compared to original building samples and the gray portland cement mix. Because the Custom System 45 mix is tintable, it can be color matched to the surrounding concrete to visually minimize the appearance of repair areas. This quality is important if the decision is made to not coat the building or to use a semi-transparent coating.

7.3 Recommendations

Based on this review of repair materials, it is recommended that Edison Coatings' Custom System 45 Type CN with Latex Admixture RL-1 be used to repair areas of loss at the GWBBS. This product offers ease of workability and can be tinted to better blend repairs with the surrounding original concrete. To maintain manufacturer consistency, it is recommended that for crack repairs Edison Coatings Pump X53i be used for non-structural, non-moving cracks. If Sponge Jet and a coating are implemented the resulting bugholes from the microabrasive should be filled with tintable Edison Coatings Thin-Fill 55 for those bugholes with a minimum diameter of ¼". The product manufacturer's datasheets must be adhered to for implementation of all these products.

8 Coating Testing

The concrete structure of the GWBBS was never painted and the exposed concrete finish is one of the building's character-defining features. This surface, however, is now marred by soiling and staining. Cleaning tests conducted in order to remove or minimize the discoloration caused by these conditions did not result in the hoped for homogenous surface appearance. A review of potential coatings was therefore undertaken upon request of the client to explore alternative approaches for providing a more uniform appearance for the building. This is, however, not recommended by ICR as an approach for an historic building.

Because the unpainted concrete of the building is an important feature, potential coatings for the building were carefully selected with the goal of maintaining the existing matte appearance. The building also features areas of weathered concrete, where aggregate is exposed, as well as smooth, unweathered surfaces. Two critical characteristics then of any potential coating are no or minimal sheen and the ability to adjust translucency in order to have the option of preserving the appearance of the weathered surface.

Investigation into "anti-soiling" coatings as requested by the client resulted in only one option. It is a titanium anatase solution that requires ultraviolet light to attack organic particles. It was determined that there is not enough ultraviolet light at the underside of the Nervi Roof to allow for the product to be effective.

Clear coatings that are more easily "washable" than the concrete were explored, but they were not ideal in that they either seal the concrete, thus decreasing its permeability, or they create a glossy appearance.

As a result, two primary coating types were reviewed – silicate-based stains/paints and polyurethane-based stains.

Silicate-based coatings can provide a matte finish that is very similar in appearance to concrete. In addition, because the silicate coating actually bonds to the concrete surface, this type of coating is very durable. However, this bond also makes a silicate-based coating essentially irreversible – the only way to remove it is through mechanical abrasion (sanding). A more easily reversible coating can be found in a polyurethane-based system. Reversibility may be a desirable quality given that the building was never painted historically.

Both opaque and semi-transparent versions of the coatings were included in the review in order to better understand differences between these two coating types in terms of appearance and coverage. Tested products included:

Semi-transparent polyurethane	Semi-transparent silicate	Opaque silicate
Edison Coatings System 90-W-Color	• Edison Coatings Everkote 300 Peretral • Keim Concretal Lasur	• Edison Coatings Everkote 300 Palinar • Keim Concretal W

8.1 Methodology

A standard Keim color, Keim 9523, was selected as a general overall match to both the weathered and unweathered surfaces of the building. All coatings were provided by the manufacturers as matched to this color.

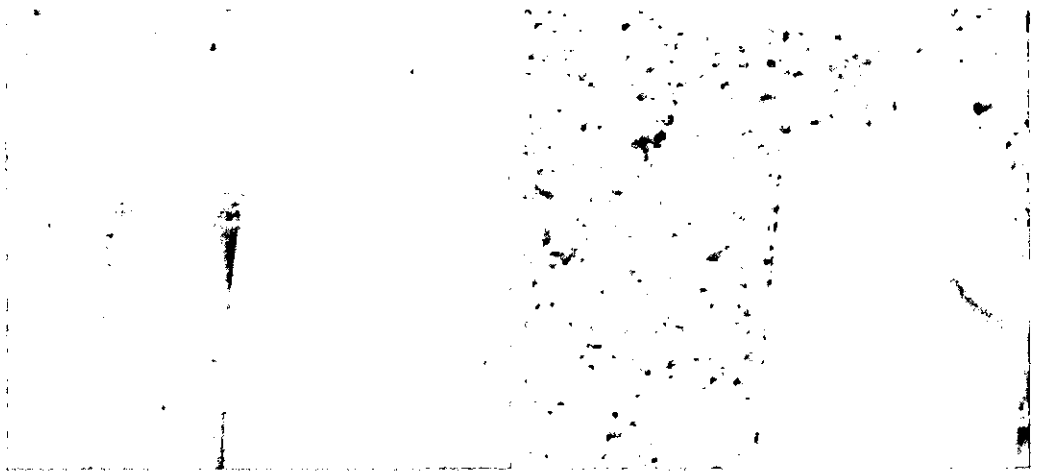


Figure 14: Keim 9523 chip compared to unweathered (left) and weathered (right) building surface.

As noted in the previous section, individual coupons of the corresponding Edison and Keim repair materials were made to serve as a substrate for the coatings. These coupons were intended to be representative of areas of repair on the building. Because samples of actual building material were not available to use in this review, coupons made of gray portland cement and aggregate, as noted above, were also made to serve as a control and substitute for the original gray concrete of the building.

Coupons of each of the substrate (Edison, Keim, and gray portland cement) were then partially covered with black oil paint to mimic staining conditions on the building (Figure 15). This was done to facilitate review of the translucent coatings and to better understand the results of different dilutions.

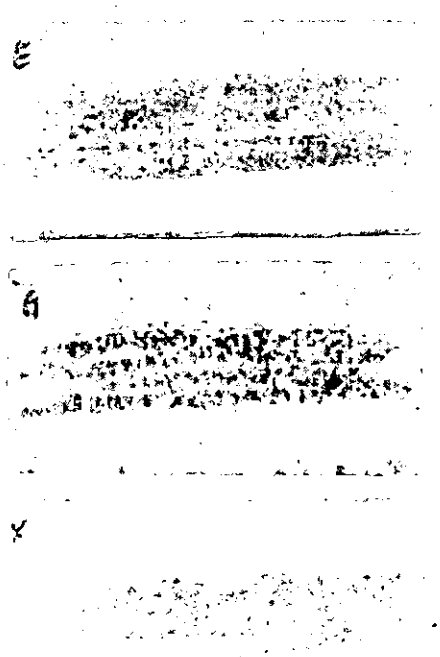


Figure 15: Coupons for testing with black oil paint applied to mimic staining.

TOP: Edison Custom System 45 Type CN, tinted to match Keim 9523

CENTER: gray portland cement

BOTTOM: Keim Universal Mortar S, untinted

In addition, Keim had recommended use of their silane-based water repellent, Silan-100. Keim recommends that this treatment be applied prior to application of their coatings. Keim products were therefore reviewed both as applied directly to the substrate and as applied over the Silan-100.

8.2 Findings

In general, after reviewing opaque and semi-transparent coatings provided by both Edison Coatings and Keim, the semi-transparent coatings produced a finished appearance that more closely resembled the unpainted concrete, leaving subtle variations in the surface appearance still visible while slightly masking darker areas of staining. The opaque coatings, on the other hand, presented more of a "coated" appearance, which compromised the appearance of the original concrete.

Of the Edison Coatings products, only the System 90-W-Color provided the desired transparent quality. The System 90-W-Color was easily diluted with a clear version of the product to adjust the translucence of the finished appearance. However, this product required thorough mixing before and during application or the resulting separation of constituents produced a bluish tinge to the final applied color. This product also produced a slight sheen on the surface.

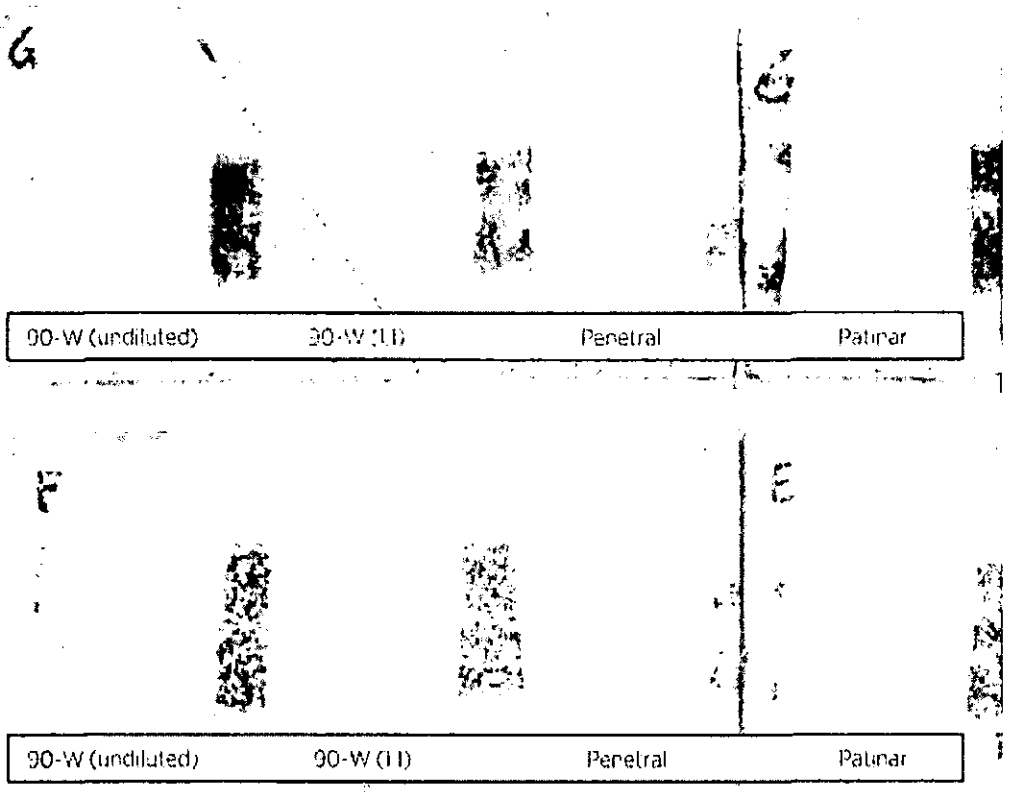


Figure 16: Edison Coatings products applied over gray portland cement mix (top) and Edison's Custom System 45 Type CN tinted repair mix (bottom). Note bluish hue.

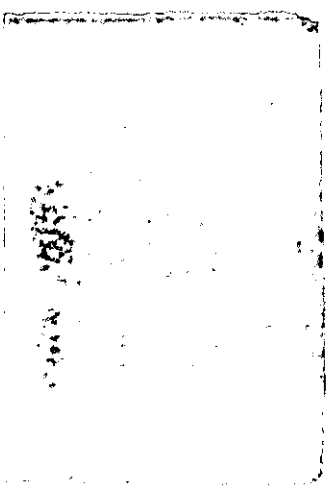


Figure 17: Visible sheen noted on tests with System 90-W-Color after one application (diluted 1:4).

Of the Keim products that were reviewed, the Concretal Lasur provided the semi-transparency desired (Figure 18). When diluted with Concretal Dilution, it was easy to adjust the translucency of this coating. The resulting finish did not have any sheen but instead retained the matte appearance of the original concrete.

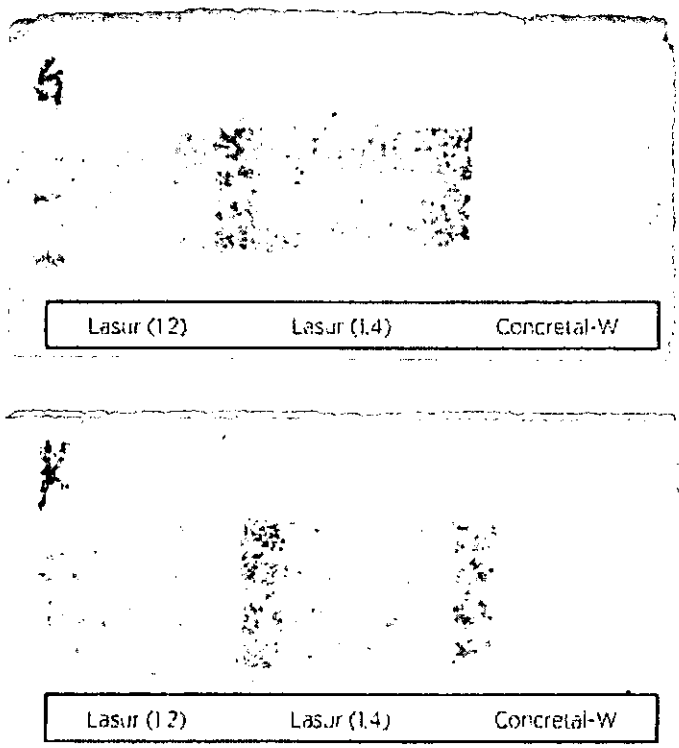


Figure 18: Keim products applied over gray portland cement mix (top) and Keim's Universal Mortar S (bottom)

Application of Keim's Silan 100 initially darkened the appearance of the underlying substrate. This change in color was observed in both the Universal Mortar S and gray portland cement mixes, though was more distinguishable in the cement mix. This darkening lessened over time and within a few days after application was not apparent. However, when the Lasur was applied over the Silan 100, the water repellent greatly affected the translucency of the coating. A much more dilute mix was required to achieve a semi-transparent quality.

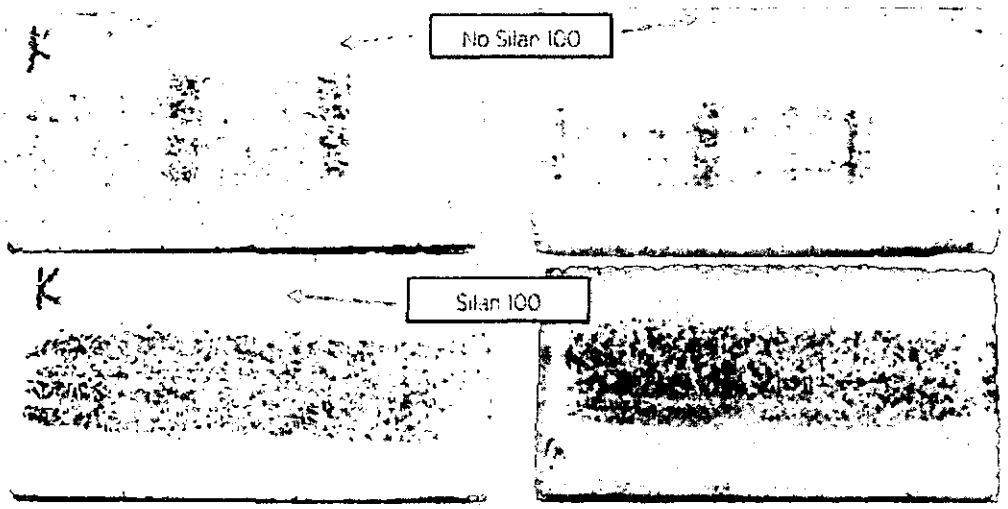


Figure 19: Darkening of substrate noted after application of Silar 100 on lower coupons, Universal Mortar S (left) and gray portland cement mix (right).

If it is decided to implement a coating to homogenize the surface appearance of the building, it is recommended that Keim's Concretal Lasur be used. This product produces a semi-transparent finish that can easily be modified to achieve the desired final translucency. Consultation with Keim has confirmed that this coating is compatible with repair materials that incorporate an acrylic admixture, such as the Custom System 45 Type CN. The recommended system for coating is Sponge Jet Silver 80 at 15 psi for cleaning, Custom System 45 Type CN with Latex Admixture RL-1 for loss repair, Pump X53i for crack repair, Thin-Fill 55 for bughole filling, and Concretal Lasur for coating.

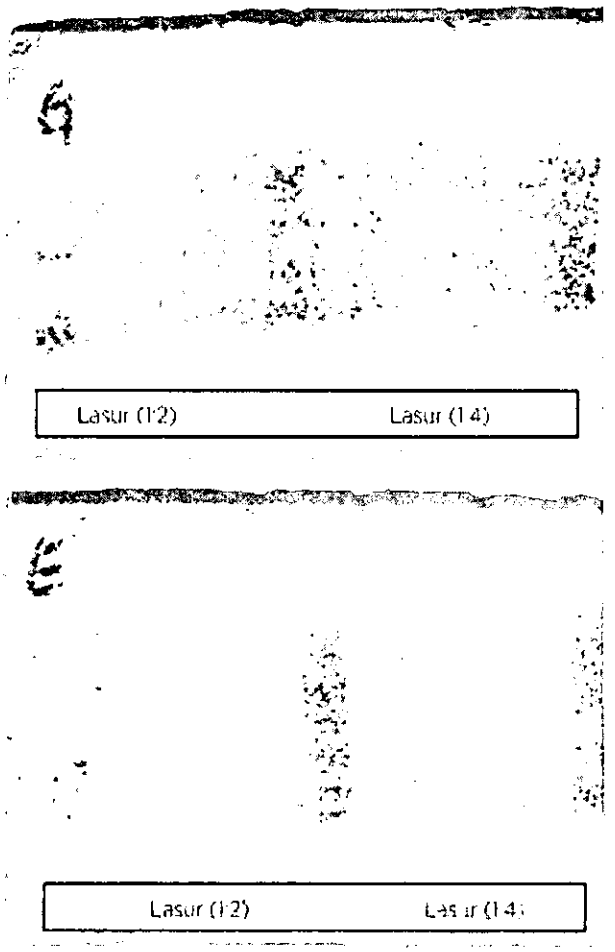


Figure 20: Keim product's applied over gray portland cement mix (top) and Edison's Custom System 45 (bottom).

While the Lasur coating was reviewed at dilutions of 1:2 and 1:4 as part of this scope, in situ mock-ups should be conducted to confirm the appropriate dilution. An appropriate dilution should balance the retention of the appearance of existing exposed aggregate in areas of weathering with the masking qualities required to create an overall uniform surface appearance.

Keim's 9523 color was chosen as a general match to the building for the purposes of this review. If a coating is implemented, in situ mock-ups should be conducted to determine the most appropriate color or colors for implementation.

Prior to implementation of any coating, the building should be cleaned following the methods and materials identified through in situ testing. It is critical that loose particles of soiling and any residue be removed from the concrete surface so that optimum adhesion between concrete and coating can occur.

Because analysis of the black residue in the circular areas on the beam was inconclusive, it is critical that this area be thoroughly cleaned to remove any possible residue. In situ testing should be conducted to confirm that the selected coating can effectively be applied over any remaining staining after cleaning.

Typically water repellents are applied to concrete buildings in order to protect interior rebar from exposure to water and thus from corrosion. Given that much of the concrete surface of the building is protected from environmental elements by the bus terminal roof, a water repellent such as Keim's Silan 100 is not recommended.

It should again be noted that there should be serious consideration before coating the building as it never was historically coated and that the recommended coating is not reversible. Cleaning with a water scrub and cleaning isolated areas with other materials and methods results in a sufficiently clean building with an acceptable patina denoting its age and use.

Grunig and Wertz ·Architects T 212 866 5800
685 West End Avenue New York NY 10025 F 212 866 5810
Zoning and Code Consultants

Project: **George Washington Bridge Bus Station Redevelopment**

Agency: Port Authority of NY & NJ

Architect: STV Incorporated

Date: June 15, 2011

Conformed for Lease 15 July 2011

RESERVED AREA SUMMARY BUILDING CODE REPORT

INTRODUCTION

The existing main bus terminal building is being redeveloped and some uses will be changed. The building covers a city block, is two stories high above grade at the east and one story above grade at the west. A new enclosed penthouse, the Pavilion, on the roof (Bus Level) at the west and the existing Nervi-designed open concrete canopy structure will shelter the commuter bus operations.

The smaller two-story building on the eastern side of Broadway, is connected to the main building at the roof level by a concrete deck over Broadway, used as driveway, turnaround and layover area for the commuter buses. It will have a third story added.

DISCUSSION

Applicable Codes

The buildings were constructed in the 1950's under the 1938 New York City Building Code. An alteration application for the subject redevelopment was filed in June, 2009, under the *NYC Building Code* (NYC BC), 1968 edition, as amended. The Authority Having Jurisdiction (AHJ) is the Port Authority of New York and New Jersey (PANYNJ) and its Quality Assurance Division.

The applicable building code is the *Building Code of the City of New York*, Title 27 of the Administrative Code, 1968 edition as amended; except that the *2008 New York City Building Code*, Title 28 of the Administrative Code is applicable for the installation and alteration of the fuel gas, plumbing and mechanical systems and for the installation, alteration and addition of the fire protection systems.

The *NFPA 130 - Standard for Fixed Guideway Transit Systems*, 2010 edition, is used for the egress system for the Bus Level, which is appropriate for transportation uses.

Occupancy and Construction Classification

The buildings will be classified as Occupancy Group D-1 with a Fire Index of 3 and fire separations per Table 5-1 provided between different occupancies. This is consistent with the discussion and recommendation in the *Building Code Occupancy and Egress Analysis*, dated 4-23-99, by the PANYNJ Engineering Design Division, in the chapter on "Fire Segregation of Occupancies".

The redeveloped main building will be a mixed use building containing Occupancy Groups:

- D-1, Industrial (the covered bus driving and loading areas, mechanical areas, Fire Index 3),
- C, Mercantile (Fire Index 2), and
- F-3, Assembly (the passenger platform, common areas and the fitness club, Fire Index 1).

The predominant use based on square footage would be Group C - Mercantile. But the NYC BC permits the building to be classified in any occupancy group provided such occupancy group has a higher fire index than the fire index of the occupancy group classification of the main use [NYCBC §27-239]. The D-1 classification has the highest fire index of the three occupancy groups.

According to the PANYNJ Design Criteria for the redevelopment, the existing building's construction classification is I-A, Noncombustible, with ratings of four hours for columns supporting more than one floor, three hours for floor construction and two or one hour for roofs less than 15 ft height above the floor and 15 ft to 20 ft above the floor respectively [Table 3-4]. The structure is steel encased in concrete and reinforced concrete.

Building Area and Height Limitations

The buildings will be protected throughout with automatic sprinkler systems. The western building's largest floor area is approximately 70,000 sq ft and its entire perimeter fronts on streets; its two-story height is approximately 40 ft above the lowest street level at Broadway.

Construction Class I-A permits a fully sprinklered D-1 Industrial or a C Mercantile building of unlimited floor area and unlimited height [Table 4-2, "Area and Height Limitations for Sprinklered Buildings and Spaces"]. Construction Class I-C would the lowest suitable class for a D-1 building of 70,000 sq ft per floor: no limit to the floor area and a height limit of 85 ft and seven stories. Construction Class I-C, Noncombustible, has ratings of two hours for columns and 1 ½ hours for floor construction. The building's actual construction class of I-A is twice the minimum requirement: by two hours and 1½ hours for columns and floors respectively.

Fire Separations

The fire separation between the bus operations and the passenger waiting area in the Pavilion and between the passenger egress and the mercantile spaces, which are all lower fire indices than the building, will be one-hour fire rated equivalent: noncombustible glazed partition with sprinkler curtain protection on the bus platform side.

One means of egress for the Bus Level occupants and portions of the other western building occupants (from the Ft Washington and Subway levels) through the Common Area surrounded by glazed retail occupancies at the Fort Washington Avenue level will be via an open stair and escalators, as permitted by NFPA 130. The Common Area of three interconnected floors will be separated from surrounding retail spaces by noncombustible glazed partitions equivalent to two-hour construction with sprinkler curtain protection and a positive smoke exhaust system, equivalent to the NYC rules for malls and atrium enclosures [§27-521] and exit passageways through street floor lobbies [§27-370].

The exit stair enclosures within the buildings that are not in common areas will be enclosed in at least one-hour construction, which is permitted for buildings three stories or less.

The Shared Vestibule on Broadway will be the entrance to the two retail stores on the upper level. It will also serve as the enclosure for the stair and escalators that are the second and third means of egress from the two second floor stores and as the second exit from one street-level store. The Shared Vestibule will be two stories high and separated from the retail stores by noncombustible one-hour construction. Where glazing will be used it will be one-hour fire-resistance rated glazing or, subject to QAD approval, an equivalent glazing with sprinkler curtain protection as set forth in the 1968 Building Code §27-521.3(d) and NYC DOB memorandums. The two-story two-hour fire-rated eastern Leased area elevator hoistway will open on to an elevator lobby, which will be separated from the Shared Vestibule stair/escalator enclosure by one-hour construction with ¾-hour fire rated doors normally held open with electro-magnetic releases activated by smoke and heat detectors.

The third story on the eastern building, above the open bus level platform, which will house a fitness center, has fire separation distances of more than 30 ft and no fire rating will be required for the non-loadbearing walls [§27-274, Table 3-4].

Egress

Egress calculations in accordance with NFPA 130, 2010 edition, were prepared for egress from the Bus Platform to points of safety; the contributing occupants at the street and subway levels were included in the western egress to Ft Washington Avenue. The standard requires the platform *to be cleared within four minutes and the last person reaches a point of safety within six minutes.*

<u>Bus Platform</u>:
The platform is cleared in approximately 1.75 minutes. A point of safety on Ft Washington Ave is reached in approximately 4.9 minutes and outdoors on the east platform in 2.9 minutes, both less than the 6 minutes allowed by the Standard.

The future maximum bus projected platform occupant loads are calculated per NFPA 130. The future estimated number of departing passengers loading on buses in 15-minute morning and evening typical weekday peak periods were provided in the *GWBBS Redevelopment Design Criteria;* a 20% surge factor was added. The incoming bus loads are 100% capacity on all buses and jitneys in the morning peak and 75% of all in the evening peak.

The peak morning platform occupant load of 1,313 is larger. According to the relative capacities of the west and east exits, approximately 382 persons will exit west through the Pavilion and down the stairs and escalator through the Common Area to Ft Washington Ave and approximately 931 persons will exit east to an open point of safety on the eastern platform. At 3 sq ft per occupant, approximately 2,800 sq ft of safe area would be adequate. Areas totaling approximately 9,600 sq ft and more are available next to the two exit stairs leading to the streets.

The two elevated eastern roadways are open to the fresh air, owned by a public entity, remote from the bus platform, of generous size, interconnected on the eastern end, and each is provided with an enclosed exit stair down to street level. Therefore, they will meet the NFPA 130 third alternate in the definition of a *point of safety*: "... any other approved location", because they would provide a "tenable environment", defined as "In a transportation system, an environment that permits self-rescue of occupants for a specific period of time." At the point of safety, the last person will enter one of the two enclosed stairs in approximately 7.5 minutes and be on the street in less than 1.5 minutes after that.

The two eastern roadways shall be well marked as emergency exits so that the bus platform passengers will know they have the option to exit that way in an emergency.

Common Area Stores:
The retail stores egress will comply with the NYC Building Code, 1968 edition, using Table 6-1 for exit requirements, Table 6-2 for occupant loads, 22" unit widths (UW), maximum travel distance of 200 ft for sprinklered building, and exits from a space located at least one-third the diagonal space dimension apart.

The retail stores' occupant loads are all calculated at 25 sq ft of net floor area per occupant, because they are either on street floor, the main (and sole) entrance floor if above the street, or in the basement, as required by §27-358, Table 6-2. Prior to availability of layouts of fixed equipment, the net floor area was taken at 80% of the interior area. All spaces with an occupant load greater than 75 will have at least two means of egress; the largest store on the second floor will have four exits.

The subway level west common area will have approximately 400 occupants from the retail stores emptying into it, which requires 7 exit unit widths of stairs/escalators. The main stair at 66" width and one nominal 48" width escalator will provide 5 UW; the 66" wide western stair up to the street will provide 3 UW.

The subway passage will not contribute occupant load to the Common Area because the unpaid free area to which the passage leads has other exits directly to the street. The subway passage is available for egress from the Common Area during peak and daytime periods. The doors to the subway passage are closed in the nighttime hours. If the passage would be open to contribute occupants, then it is also available for egress from the common area. [At the morning and afternoon peak Bus Level occupancy periods, with a surge factor of 20% added, the subway passage would contribute to the common area approximately 57 persons and 168 persons in six minutes.]

The Ft Washington level of the Common Area receives the 382 occupants form the Bus Level, 480 occupants from the large store, 478 occupants from the small stores at that level, and 300 from the lower subway level, total approximately 1,640 persons. However, those occupants flow through at different times. The upper and lower level occupants flow through later than the street level occupants. Even so, the NFPA 130 calculations, with 1,258 occupants from the lower and street level stores added to the bus level exiting load at the Common Area lobby, show that the last person from the bus platform using the west egress is out on Ft Washington Ave in under five minutes – less than the six-minute maximum and in compliance.

The NYC Building Code provides that the occupants from floors shall not be cumulative for designing vertical exits, except where one floor is used by another for egress. Therefore, the street floor store occupant loads of 958, rather than the bus level and lower level loads of 682 arriving later, are used to test the Ft Washington lobby stair, ramp and doors widths, which are adequate.

The Shared Vestibule for the two retail stores at the Broadway side will be the two-story enclosure for one of the required exits from the two stores. The Shared Vestibule will have an open 66" stair and two open 48" nominal escalators, of which one is counted for egress, within the enclosure of one-hour fire-rated construction, and with a positive smoke exhaust system with gravity back-up in accordance with §27-370 for Street Floor Lobbies as Exit Passageways. The options for the one-hour enclosure are either fire-rated glazing or glazing protected with sprinklers, subject to

approval by PANYNJ QAD, as stated under "Fire Separations". The use of the open stair and escalators in the two-story enclosure is subject to acceptance by the PANYNJ QAD.

Plumbing Fixtures:
The quantities of plumbing fixtures will be in accordance with the *2008 NYC Plumbing Code*.

Fire Protection Systems:

The mechanical, electrical, plumbing and fire protection engineers have determined the detailed requirements for fire protection systems. This report includes scope and extent requirements set forth in the building code.

Automatic Sprinkler Systems:
The entire building, including the outdoor bus waiting and loading areas under the Nervi canopy, will be protected throughout with an automatic sprinkler system designed and installed in accordance with the 2008 New York City Building Code and NFPA 13.

The noncombustible glazed fire and smoke barriers separating the areas listed below will be protected on one side with a sprinkler curtain, with sprinklers at six feet on center, in accordance with NYC Building Code, 1968, Section §27-521 and 2008 NYC Building Code §28-404.5, Exception 1, for an equivalent one-hour construction. The areas separated by the barriers with sprinkler curtains will be:

- The Pavilion passenger and PANYNJ operations area protected from the bus loading and driveways under the canopy;
- The western three-story Common Area protected from the retail stores;
- The eastern two-story Shared Vestibule egress enclosure protected from the retail stores, and the eastern elevator lobby separated from the Shared vestibule, if approved by PANYNJ QAD and if fire-rated glazing is not used;

The fire pump will serve the sprinkler and standpipe systems for the entire building and will be on the emergency power system with stationary generator that serves the Reserved area.

Standpipe Systems:
The existing standpipe system will be altered to accommodate the redevelopment as required by the 2008 NYC Building Code.

Fire Alarm and Detection Systems:
An automatic fire alarm system will be provided for the bus waiting and loading operations and its three-story Common Area exit, which is an A-3 Assembly occupancy with more than 1,000 occupants, in accordance with §907.2.1. The system will have a pre-signal to a constantly-attended location and an emergency voice/alarm communication system in accordance with §907.2.1.1. The system will be provided with an approved emergency power source designed and installed in accordance with NFPA 72 and the *NYC Electrical Code*.

A manual and automatic fire alarm system will be provided for the retail leased areas (M Mercantile occupancy where several fire areas exceed 12,000 sq ft, a combined area of all fire areas exceeds 24,000 sq ft, and where a below-grade fire area exceeds 1,500 sq ft) in accordance with §907.2.7. The two-story exit for the eastern Shared Vestibule does not require a voice/alarm communication system as set forth in §907.2.13, which requires such for three-story atriums.

The primary and secondary power supplies for the fire alarm system will be provided in

accordance with the *NYC Electrical Code*, §706, which requires the secondary power supply to be provided by an emergency power system that is an automatic starting, engine-driven generator.

Smoke Control Systems:
The three-story Common Area at the west will have a positive smoke control system in accordance with §909 [NYC BC 1968 §27-521.15 and 2008 NYC BC §402.9]. The smoke control system will be provided with two sources of power in accordance with §909.11and the *NYC Electrical Code*. The secondary power will be from the emergency generator serving the Reserved area. An option will be considered to separate the upper level from the lower level, creating a two-story Common Area and the life safety requirements may be adjusted.

The two-story Shared Vestibule exit enclosure at the east will have a smoke control system in accordance with Exit Passageways – Street Floor Lobbies, §27-370 (h) (3) d 3 (f), with a fresh air intake, a positive smoke exhaust system and smoke detectors which, when activated, shall permit circulation only of fresh air; with back-up gravity ventilation with remote manual controls.

A §909 smoke control system would be required by the 2008 NYC BC for the Shared Vestibule if it were an "atrium": three or more floors were interconnected.

Emergency Power Systems:

The scope and technical details of the emergency and secondary power supplies to various systems in the building are provided as set forth by the mechanical engineering report.

An emergency power stationary generator system will be provided for:

- The fire pump serving the sprinkler and standpipe systems throughout the building.
- The Reserved area fire alarm system.
- The voice /alarm communications system for the passenger waiting and loading areas and the western Common Area (Assembly occupancies);
- The smoke control system for the western Common Area and any other Reserved areas required to have it;
- Exit signs and means of egress illumination in the Reserved area.
- The designated elevators providing an accessible means of egress from the Bus Level and the lower level Common Area.

An emergency power storage battery system will be provided for:

- The remote manual controls for the Leased area smoke exhaust system back-up gravity ventilation.
- Exit signs and means of egress illumination in the Leased area.

MILESTONE REVIEW

Issued For: ☐ Comments ☑ Response ☑ Follow-up

Issue Date: 07/15/2011

Project Title: George Washington Bridge Bus Station Redevelopment Project

Contract No: CB48-241.701

Comments							Response				
Master Comment Number	Date	Reviewer Name	Discipline/ Department/ Organization	Document/ Drawing Reference	Comment Number	Review Comment	Priority	Date	Response By	Response	Comment Resolved
1	6/17/11	N.Ramanan	Electrical	General	E1	This Stage I-100% submission, in general, complies with the major comments of the Stage I-100% submission and comments made on the QA/QC set dated 6/6/2011. The electrical design concept presented in this submission in general is acceptable for use as the basis of a detailed Stage II and III design. Specific comments on the drawings are shown below.					
2	6/14/11	N.Ramanan	Electrical	RP-E-002	E2	E. Electrical Grounding System: Clarify Note 9. All circuit feeders shall be provided with equipment grounding conductors sized in accordance with the code.					
3	6/14/11	N.Ramanan	Electrical	RP-E-002	E3	"GWBBS Emergency Generator Loads" Table: Update Generator sizing calculation uploaded in BUZZSAW to the loads shown on this Table. Apply Diversity factor and verify if size shown is optimum. Verify if the 150HP Fire Pump can be started on the 750kW generator in compliance with voltage drop criteria of IEEE					
4	6/14/11	N.Ramanan	Electrical	RP-E-101	E4	Locate ATS-6 in the substation					

Priority Codes: **A** – Will Comply no further action; **B** – Inter-Disciplinary discussions required; **C** – Outside Group discussions required; **D** – Change In Scope Required

Master Comment Number	Date	Reviewer Name	Discipline/ Department/ Organization	Document/ Drawing Reference	Comment Number	Review Comment	Priority	Date	Response By	Response	Comment Resolved
5	6/17/11	RP	GRAPHICS PA	AS-105	1	Coordinate wall layout shown on plans on drawing A104. Match Level designation nomenclature on each discipline's drawings.					
6	6/17/11	RP	GRAPHICS PA	AS109	2	Coordinate wall layout shown with drawing A109.					
7	6/17/11	RP	GRAPHICS PA	AS106	3	Coordinate lighting layout with sign placement.					
8	6/17/11	RP	GRAPHICS PA	ES001-ES405	4	Show VMS and VP functions on Electronics drawings.					
9	6/17/11	RP	GRAPHICS PA	E S001	5	Clarify key, speaker fixtures, surface mounted, recessed or surface mounted, flush					
10	6/17/11	RP	GRAPHICS PA	ES404	6	Coordinate with dynamic display shown on AS107					
11	6/17/11	RP	GRAPHICS PA	ES405	7	Coordinate with dynamic display shown on AS107					
12	5/26/11	D.Kogan	Mechanical/ HVAC	RP-M-002	1	Delete "NYC BLDG. CODE NOTES".					
13	5/26/11	D.Kogan	Mechanical/ HVAC	RP-M-002	2	General notes # 4, 9, & 12 refer to specification sections. Provide these specifications for review.					
14	5/26/11	D.Kogan	Mechanical/ HVAC	RP-M-002	3	NYC Vent Index – supply and exhaust airflow are identical. Is there pressurization for these spaces?					
15	5/26/11	D.Kogan	Mechanical/ HVAC	RP-M-003	4	Note 2.f. Coordinate/confirm space noise criteria with acoustical consultant. Acoustical drawings (AC-101 thru AC-103) are missing from this submission.					
16	5/26/11	D.Kogan	Mechanical/ HVAC	RP-M-003	5	Note 3.1)g) and 3.2)g) Should a duct mounted smoke detector be also provided on return duct?					
17	5/26/11	D.Kogan	Mechanical/ HVAC	RP-M-003	6	Boiler Heating Plant - Notes b & c – add "HEATING" after PREHEATING.					
18	5/26/11	D.Kogan	Mechanical/ HVAC	RP-M-003	7	7) Ventilation Systems – add "AND GENERATOR" after FUEL OIL STORAGE.					
19	5/26/11	D.Kogan	Mechanical/ HVAC	RP-M-003	8	8) Delete "LIFE SAFETY AND" in the title and add "OCC. ELECTRONIC ROOM" after "MECHANICAL EQUIPMENT ROOM".					
20	5/26/11	D.Kogan	Mechanical/ HVAC	RP-M-003	9	Note 17.c – Confirm whether the heating hot water piping insulation meets the NYS Energy Conservation Code requirements.					

Priority Codes: **A** – Will Comply no further action; **B** – Inter-Disciplinary discussions required; **C** – Outside Group discussions required; **D** – Change In Scope Required

Master Comment Number	Date	Reviewer Name	Discipline/ Department/ Organization	Document/ Drawing Reference	Comment Number	Review Comment	Priority	Date	Response By	Response	Comment Resolved
21	5/26/11	D.Kogan	Mechanical/ HVAC	RP-M-003	10	Note 18 – Provide HVAC equipment schedules and cooling, heating and ventilation calculations for the temporary provisions.					
22	5/26/11	D.Kogan	Mechanical/ HVAC	RP-M-003	11	18)3.b – Depending on staging arrangements, AC for the entire temporary waiting facility may be required.					
23	5/26/11	D.Kogan	Mechanical/ HVAC	RP-M-003	12	Building automation and temperature control system – Connect and integrate with the existing BMS at the GWB NJAB.					
24	5/26/11	D.Kogan	Mechanical/ HVAC	RP-M-005, 104W.1, 104W.2, 104W.3, 501	13	Unit AC-3/ACC-3 serving the elevator machine room for Fr. Washington elevators shall be removed from the Reserved Premises package and added to the Leased Premises package since the equipment serving common area elements shall be shown on the Leased Premises documents. In addition, ACC-3 condensing unit shall not be installed on the Pavilion roof since only the Reserved Premises equipment shall reside on that roof to avoid the service access issues.					
25	5/26/11	D.Kogan	Mechanical/ HVAC	RP-M-104W.1	14	Provide ventilation for three (3) MERs.					
26	5/26/11	D.Kogan	Mechanical/ HVAC	RP-M-104W.2	15	Airflow of 25 CFM for two diffusers appears to be too small.					
27	5/26/11	D.Kogan	Mechanical/ HVAC	RP-M-502	16	Condensing boiler gas train shall be also ASME CSD-1 approved.					
28	5/26/11	D.Kogan	Mechanical/ HVAC	RP-M-502	17	Include boiler efficiency in schedule.					
29	5/26/11	D.Kogan	Mechanical/ HVAC	RP-M-502	18	Condensing Boiler Model BMK-2 from AERCO has a min. output capacity of 1,750 MBH, not 500 MBH or 600 MBH.					
30	5/26/11	D.Kogan	Mechanical/ HVAC	RP-M-503	19	Have all listed fans been verified with the acoustical consultant for sound traps requirement?					
31	5/26/11	D.Kogan	Mechanical/ HVAC	RP-M-702	20	Indicate new BMS connection to the existing GWB NJAB building management system. Refer to electronic drawings for details.					
32	5/26/11	D.Kogan	Mechanical/ HVAC	RP-M-702	21	Where are the two NSP located and what do they connect to?					
33	5/26/11	D.Kogan	Mechanical/ HVAC	LP-M-103W.3	22	Provide ventilation for the generator room, foam room, and ATS room.					
34	5/26/11	D.Kogan	Mechanical/ HVAC	LP-M-103W.3	23	The generator flue and muffler are not indicated on the drawings. Show where the generator flue terminates and its routing.					

Priority Codes: **A** – Will Comply no further action; **B** – Inter-Disciplinary discussions required; **C** – Outside Group discussions required; **D** – Change In Scope Required

Master Comment Number	Date	Reviewer Name	Discipline/ Department/ Organization	Document/ Drawing Reference	Comment Number	Review Comment	Priority	Date	Response By	Response	Comment Resolved
35	5/26/11	D.Kogan	Mechanical/ HVAC	RP-E-300	24	Does the fire alarm design address smoke purge activation and how will it be implemented?					
36	5/26/11	D.Kogan	Mechanical/ HVAC	General	25	Indicate Fire and Fire/Smoke Dampers on drawings.					
37	5/26/11	D.Kogan	Mechanical/ HVAC	All dwgs	26	Provide graphical scale bar for all plans and sections.					
38	5/26/11	D.Kogan	Mechanical/ HVAC	LP-A-201 thru 206	27	The existing opening/louvers used for TME ventilation in the West Building shall not be obstructed.					
39	5/26/11	D.Kogan	Mechanical/ HVAC	RP-A-104, A-105,& A-106	28	Provide continuous 3 feet high opening along the perimeter wall for the mechanical equipment rooms accommodating RTU-1 and RTU-2.					
40	6/20/11	D.Kogan	Mechanical/ HVAC	RP-M-003	29	Note 4.a – Is boiler a packaged modular type?					
41	6/20/11	D.Kogan	Mechanical/ HVAC	RP-M-003	30	Note 9.a – Is the fuel tank located at the lowest level of the building?					
42	6/20/11	D.Kogan	Mechanical/ HVAC	RP-M-003	31	Note 9.c – Include generator flue.					
43	6/20/11	D.Kogan	Mechanical/ HVAC	RP-M-005	32	Show fan ventilation for generator room.					
44	6/20/11	D.Kogan	Mechanical/ HVAC	RP-M-005	33	Show generator flue and muffler.					
45	6/20/11	D.Kogan	Mechanical/ HVAC	RP-M-104W.1, W.2, & W.3	34	Locations of equipment, ductwork, & piping shown on M-drawings do not match with Architectural plans					
46	6/20/11	D.Kogan	Mechanical/ HVAC	RP-M-104W.1	35	Provide sufficient clearance for RTU-1 & RTU-2.					
47	6/20/11	D.Kogan	Mechanical/ HVAC	RP-M-104W.2	36	How is the make-up or outside air for MERs exhaust provided?					
48	6/20/11	D.Kogan	Mechanical/ HVAC	RP-M-104W.2	37	Can the return fan and ductwork be located above electrical equipment?					
49	6/20/11	D.Kogan	Mechanical/ HVAC	RP-M-104W.2	38	Condensate lines should not spill to bathroom sink or shower.					
50	6/20/11	D.Kogan	Mechanical/ HVAC	RP-M-401	39	RTU -1: Provide spill air CFM needed to maintain 0.005" w.g. pressurization.					

Priority Codes: **A** – Will Comply no further action; **B** – Inter-Disciplinary discussions required; **C** – Outside Group discussions required; **D** – Change In Scope Required

Master Comment Number	Date	Reviewer Name	Discipline/ Department/ Organization	Document/ Drawing Reference	Comment Number	Review Comment	Priority	Date	Response By	Response	Comment Resolved
51	6/20/11	D.Kogan	Mechanical/ HVAC	RP-M-401	40	RTU-2: Spill CFM is incorrect.					
52	6/20/11	D.Kogan	Mechanical/ HVAC	RP-M-401	41	Cond. Boiler Schematic: Indicate air separator.					
53	6/20/11	D.Kogan	Mechanical/ HVAC	RP-M-501	42	RTU-1 & RTU-2: Avoid use of propylene glycol. Use electric heat tracing and freeze protection pumps. Or use glycol with HX & pumps for RTU units only.					
54	6/20/11	D.Kogan	Mechanical/ HVAC	RP-M-503	43	ST-14: Is a sound trap required for this 400 CFM fan?					
55	6/20/11	D.Kogan	Mechanical/ HVAC	RP-M-702	44	What is the NSP (Future) used for and where is it located?					
56	6/20/11	D.Kogan	Mechanical/ HVAC	General	45	The proposed Building Management System does not address the integration with the existing Siemens system in the NJ Admin. Bldg.					
57	6/20/11	D.Kogan	Mechanical/ HVAC	General	46	Flue and mufflier for the emergency generator are not shown on drawings.					
58	6/20/11	D.Kogan	Mechanical/ HVAC	General	47	Generator room ventilation is not shown on drawings.					
59	6/20/11	D.Kogan	Mechanical/ HVAC	General	48	Provide replacement of the ventilation system for the electrical substation in the East Building.					
60	6/20/11	D.Kogan	Mechanical/ HVAC	General	49	Provide air conditioning for the temporary waiting area trailer.					
61	6/20/11	D.Kogan	Mechanical/ HVAC	General	50	TME coverage in the East Building is not resolved. Proposed TME coverage is not approved.					
62	6/20/11	S.Ng	Structural	S109	1	Add a note referring to Architectural drawings for clerestory framing details.					
63	11/12/10	S Fitzgerald	Mechanical/ VTX	Title Sheet Reserved	1	Where are the Vertical Transportation Drawings?					
64	11/12/10	S Fitzgerald	Mechanical/ VTX	A002	2	Item shown to be removed is an escalator not a stair.					
65	11/12/10	S Fitzgerald	Mechanical/ VTX	A101	3	Provide details for elevators and escalators at the glazing system.					
66	11/12/10	S Fitzgerald	Mechanical/ VTX	A103	4	Provide Code compliant lighting over the escalators.					

Priority Codes: **A** – Will Comply no further action; **B** – Inter-Disciplinary discussions required; **C** – Outside Group discussions required; **D** – Change In Scope Required

Master Comment Number	Date	Reviewer Name	Discipline/ Department/ Organization	Document/ Drawing Reference	Comment Number	Review Comment	Priority	Date	Response By	Response	Comment Resolved
67	11/12/10	S Fitzgerald	Mechanical/ VTX	A106	5	Provide details for elevators and escalators at the glazing system.					
68	11/12/10	S Fitzgerald	Mechanical/ VTX	A109	6	Provide details for elevators and escalators at the glazing system.					
69	11/12/10	S Fitzgerald	Mechanical/ VTX	A202	7	Where are the noted Vertical Circulation Drawings?					
70	11/12/10	S Fitzgerald	Mechanical/ VTX	A301 S1	8	Coordinate all connection details at elevator entrance with the Vertical Transportation Drawings.					
71	11/12/10	S Fitzgerald	Mechanical/ VTX	A301 P1	9	Provide elevator number and details for the shaft and pit layouts.					
72	11/12/10	S Fitzgerald	Mechanical/ VTX	A302 E3	10	Provide complete elevator entrance details.					
73	11/12/10	S Fitzgerald	Mechanical/ VTX	A302 P1	11	Provide elevator number.					
74	11/12/10	S Fitzgerald	Mechanical/ VTX	A303 P1	12	Provide elevator number and details for finishes at the entrances. Lighting. Clearances and Drainage.					
75	11/12/10	S Fitzgerald	Mechanical/ VTX	A401	13	Provide elevator number and details.					
76	11/12/10	S Fitzgerald	Mechanical/ VTX	S-103	14	Provide details for all elevators and escalator pits. Details for pits are not the same.					
77	11/12/10	S Fitzgerald	Mechanical/ VTX	S-103	15	Provide more rails suppons for all roped hydraulic elevators.					
78	11/12/10	S Fitzgerald	Mechanical/ VTX	S-103	16	Provide Vertical Transportation Drawings that are noted as "See Elevator Drawings".					
79	11/12/10	S Fitzgerald	Mechanical/ VTX	S-104	17	Provide more rails supports for all roped hydraulic elevators.					
80	11/12/10	S Fitzgerald	Mechanical/ VTX	S-104	18	Provide Vertical Transportation Drawings to comply with Work Description Note 1).					
81	11/12/10	S Fitzgerald	Mechanical/ VTX	S-106	19	Provide more rails supports for all roped hydraulic elevators.					
82	11/12/10	S Fitzgerald	Mechanical/ VTX	S-108	20	Provide Vertical Transportation Drawings to comply with Work Description Note 1) and 2).					
83	11/12/10	S Fitzgerald	Mechanical/ VTX	S-107	21	Provide more rails supports for all roped hydraulic elevators.					

Priority Codes: A – Will Comply no further action; B – Inter-Disciplinary discussions required; C – Outside Group discussions required; D – Change In Scope Required

Master Comment Number	Date	Reviewer Name	Discipline/ Department/ Organization	Document/ Drawing Reference	Comment Number	Review Comment	Priority	Date	Response By	Response	Comment Resolved
84	11/12/10	S Fitzgerald	Mechanical/ VTX	S-107	22	Provide Vertical Transportation Drawings to comply with Work Description Note 1) and 2).					
85	11/12/10	S Fitzgerald	Mechanical/ VTX	RP-PFP-002	23	Do the elevator pits need to comply with NFPA 13 in NYC? Provide pit sprinklers if applicable.					
86	11/12/10	S Fitzgerald	Mechanical/ VTX	RP-E-002	24	GWB BS Emergency Generator Loads chart is missing information.					
87	11/12/10	S Fitzgerald	Mechanical/ VTX	RP-E-002	25	Provide power plans to feed the escalators. Where are the controllers located?					
88	11/12/10	S Fitzgerald	Mechanical/ VTX	RP-E-103E	26	Only elevator related equipment is allowed in the EMR. Provide a coordinated layout with the vertical transportation drawing. Room appears to be too small. Detail 301-8 is not provided.					
89	11/12/10	S Fitzgerald	Mechanical/ VTX	RP-E-501	27	Provide a coordinated schedule for all elevator and escalator required circuits.					
90	11/12/10	S Fitzgerald	Mechanical/ VTX	RP-E-501	28	Had to Note 8 all exposed elevator hydraulic piping and sills subject to freezing temperatures.					
91	11/15/10	S Fitzgerald	Mechanical/ VTX	PH107	29	Where are the controller rooms for the elevator and escalators in this staging plan?					
92	11/15/10	S Fitzgerald	Mechanical/ VTX	Title Sheet Leased	30	Where are the Vertical Transportation Drawings? VT Consultant should coordinate all aspects of the project. Coordination cannot happen at the elevator shop drawing stage.					
93	11/15/10	S Fitzgerald	Mechanical/ VTX	A104	31	Where are the layouts and coordination for ESC 7 and PE9 in the A900 series drawings?					
94	11/15/10	S Fitzgerald	Mechanical/ VTX	A107	32	Where are the layouts and coordination for ESC 7 and PE9 in the A900 series drawings?					
95	11/15/10	S Fitzgerald	Mechanical/ VTX	A-108	33	Room size conflicts with A901 for EMR for PE1 and PE2.					
96	11/15/10	S Fitzgerald	Mechanical/ VTX	A-109	34	Why is there a wall in between the EMR's? Verify size sizes seem to conflict with elevator capacity sizes. PE3 & 4 are larger elevators in a smaller SF room.					
97	11/15/10	S Fitzgerald	Mechanical/ VTX	A-902	35	Why is the SF of the platforms different yet the capacity is the same for PE1 and PE2?					
98	11/15/10	S Fitzgerald	Mechanical/ VTX	A-902	36	Where is the layout for PE9?					
99	11/15/10	S Fitzgerald	Mechanical/ VTX	A-902	37	PE5 & PE6 should be roped hydraulics at this travel.					

Priority Codes: A – Will Comply no further action; B – Inter-Disciplinary discussions required; C – Outside Group discussions required; D – Change In Scope Required

Master Comment Number	Date	Reviewer Name	Discipline/ Department/ Organization	Document/ Drawing Reference	Comment Number	Review Comment	Priority	Date	Response By	Response	Comment Resolved
100	11/15/10	S Fitzgerald	Mechanical/ VTX	A904	38	The note states that "dimensions vary by manufacturer", for ESC5& 6 but are provided for the other escalators. Verify that the dimensions given are for the greatest APTA dimension for each required point.					
101	11/15/10	S Fitzgerald	Mechanical/ VTX	A-904	39	Why are the escalator pit lengths different for ESC3 & 4 and ESC1 & 2?					
102	11/15/10	S Fitzgerald	Mechanical/ VTX	A-904	40	Where is the escalator data?					
103	11/15/10	S Fitzgerald	Mechanical/ VTX	A-904	41	Where is the layout for ESC7?					
104	11/15/10	S Fitzgerald	Mechanical/ VTX	Dwg. A-103 from 50% submission	42	Are these hydraulic elevators? Provide all hydraulic elevator motor rooms with ventilation either naturally or mechanically to outside air.					
105	11/15/10	S Fitzgerald	Mechanical/ VTX	Dwg. LP-M-003 from 50% submission	43	Are any elevators connected to generator power?					
106	11/15/10	S Fitzgerald	Mechanical/ VTX	Dwg. A002 from 50% submission	44	The drawing shows the remove of a stair at Col B-1A. Detail is of an escalator. What is being removed?					
107	11/15/10	S Fitzgerald	Mechanical/ VTX	Dwg. A-106 from 50% submission	45	What is the safety zone clearance at the top of the escalators in S1?					
108	11/15/10	S Fitzgerald	Mechanical/ VTX	Dwg. A-106 from 50% submission	46	The elevator hoistway limits are not shown. Does the elevator hoistway extend past 10'-6" in S2?					
109	11/15/10	S Fitzgerald	Mechanical/ VTX	Dwg. RP-M-001 from 50% submission	47	Where are the mechanical drawings for elevator and escalator systems?					
110	11/15/10	S Fitzgerald	Mechanical/ VTX	Dwg. RP-M-006 from 50% submission	48	Provide ventilation for West EMR and East EMR. How will the heat exchange be addressed for the escalator control systems?					
111	11/15/10	S Fitzgerald	Mechanical/ VTX	Dwg. RP-M 105 from 50% submission	49	Provide ventilation for EMR.					
112	11/15/10	S Fitzgerald	Mechanical/ VTX	Dwg. RP-PFP-301 from 50% submission	50	Where is the FP detail for the elevator pits?					

Priority Codes: A – Will Comply no further action; B – Inter-Disciplinary discussions required; C – Outside Group discussions required; D – Change In Scope Required

Master Comment Number	Date	Reviewer Name	Discipline/ Department/ Organization	Document/ Drawing Reference	Comment Number	Review Comment	Priority	Date	Response By	Response	Comment Resolved
113	11/15/10	S Fitzgerald	Mechanical/ VTX	Dwg. RP-E-301 from 50% submission	51	Was the information for the horse power (hp) for the elevators and escalators coordinated? There is no detail on the drawings. Are these hydraulic elevators? Are there tank coolers and/or heaters? Are the transformers located in the EMR's if so coordinate the additional heat load?					
114	11/15/10	S Fitzgerald	Mechanical/ VTX	Dwg. ES001 from 50% submission	52	Are Electronic Systems going to be provided in the elevators? Coordinate all wiring requirements with the elevator system to insure the travel cables contain the proper conductors. Provide a telephone line at each elevator controller.					
115	11/15/10	S Fitzgerald	Mechanical/ VTX	Dwg. A-101 from 50% submission	53	The electrical service calls for 4 elevators and 2 escalators. How many are being proposed? They are all the same sizes on the electrical plan, however the capacity is different on the A series drawings. There are passengers and freights as well.					
116	11/15/10	S Fitzgerald	Mechanical/ VTX	Dwg. A-103 from 50% submission	54	Where are the escalator controllers located?					
117	11/15/10	S Fitzgerald	Mechanical/ VTX	Dwg A-109 from 50% submission	55	Are the freight elevators opening to the exterior?					
118	5/27/11	S Fitzgerald	Mechanical/ VTX	Title Sheet Leased	56	Where are the Vertical Transportation Drawings?					
119	5/27/11	S Fitzgerald	Mechanical/ VTX	A104	57	Elevator Machine room size is large enough and does not match A902					
120	5/27/11	S Fitzgerald	Mechanical/ VTX	A104	58	Elevator Pits are at too different elevations protection between shafts needs to be designed.					
121	5/27/11	S Fitzgerald	Mechanical/ VTX	A105	59	Elevator Machine room size is not large enough and does not match A902					
122	5/27/11	S Fitzgerald	Mechanical/ VTX	A105	60	Elevator Pits are at too different elevations protection between shafts needs to be designed.					
123	5/27/11	S Fitzgerald	Mechanical/ VTX	A105	61	Where are the hoistway and machine room layouts for PE 3 and 4? What landings do they serve? There is only one entrance shown.					
124	5/27/11	S Fitzgerald	Mechanical/ VTX	A106	62	EMR size does not match A901. Remove common room combine the Esc Room and Elevator room to maximize space and layout options. Where is the layout for the Esc Room? Are 4 APTA controllers going into the space?					

Priority Codes: **A** – Will Comply no further action; **B** – Inter-Disciplinary discussions required; **C** – Outside Group discussions required; **D** – Change In Scope Required

Master Comment Number	Date	Reviewer Name	Discipline/ Department/ Organization	Document/ Drawing Reference	Comment Number	Review Comment	Priority	Date	Response By	Response	Comment Resolved
125	5/27/11	S Fitzgerald	Mechanical/ VTX	A107	63	Where are the hoistway and machine room layouts for PE 3 and 4? What landings do they serve? There is only one entrance shown.					
126	5/27/11	S Fitzgerald	Mechanical/ VTX	A108	64	Layouts for elevator and escalator pits do not match the layout drawings. Pits for PE 7 & 8 are 5' deep at 186'. Pits for Esc 7 and 9 are not reflected in any other layout only onA109 and A110.					
127	5/27/11	S Fitzgerald	Mechanical/ VTX	A109	65	Where are PE 9 and Esc 7 layouts and machine rooms.					
128	5/27/11	S Fitzgerald	Mechanical/ VTX	A110	66	Layouts for elevator and escalator pits do not match the layout drawings. Pits for PE 7 & 8 are 5' deep at 186'. Pits for Esc 7 and 9 are not reflected in any other layout only onA109 and A110.					
129	5/27/11	S Fitzgerald	Mechanical/ VTX	A901	67	Where is the elevator and escalator Data found (HP, Voltage Amperage, Reactions, etc)?					
130	5/27/11	S Fitzgerald	Mechanical/ VTX	A901	68	All notes should be coordinated during this design by VT Consultant not by the Elevator Contractor.					
131	5/27/11	S Fitzgerald	Mechanical/ VTX	A901	69	Oil coolers should be provided and layout coordinated. Provide EMR ventilation.					
132	5/27/11	S Fitzgerald	Mechanical/ VTX	A901	70	Provide access to both sides of tank if required by OEM.					
133	5/27/11	S Fitzgerald	Mechanical/ VTX	A901	71	VT Consultant should design the load and capacity of the hoist beam.					
134	5/27/11	S Fitzgerald	Mechanical/ VTX	A901	72	Coordinate governor access at landing. Is this practical at the bus level?					
135	5/27/11	S Fitzgerald	Mechanical/ VTX	A901	73	Coordinate pit drain line size and location with oil water separator with the Code requirements.					
136	5/27/11	S Fitzgerald	Mechanical/ VTX	A902	74	Coordinate sump pit and pit drain line sizes and locations with oil water separator with the Code requirements.					
137	5/27/11	S Fitzgerald	Mechanical/ VTX	A902	75	What is the Class loading for the freight cars? What is the usage of the cars? Service or freight only? Note on A107 calls out a Service Car.					
138	5/27/11	S Fitzgerald	Mechanical/ VTX	A902	76	VT Consultant should design the load and capacity of the hoist beam.					
139	5/27/11	S Fitzgerald	Mechanical/ VTX	A902	77	Oil coolers should be provided and layout coordinated. Provide EMR ventilation.					
140	5/27/11	S Fitzgerald	Mechanical/ VTX	A902	78	Provide access to both sides of tank if required by OEM.					

Priority Codes: **A** – Will Comply no further action; **B** – Inter-Disciplinary discussions required; **C** – Outside Group discussions required; **D** – Change In Scope Required

Figure 2

Master Comment Number	Date	Reviewer Name	Discipline/ Department/ Organization	Document/ Drawing Reference	Comment Number	Review Comment	Priority	Date	Response By	Response	Comment Resolved
141	5/27/11	S Fitzgerald	Mechanical/ VTX	A902	79	All notes should be coordinated during this design by VT Consultant not by the Elevator Contractor.					
142	5/27/11	S Fitzgerald	Mechanical/ VTX	A903	80	Same comments as A902					
143	5/27/11	S Fitzgerald	Mechanical/ VTX	A904	81	Escalators are not APTA grade escalators. See all prior comments.					
144	5/27/11	B. McLaughlin	PA Civil Engineering	RP-General Civil	1	Drawing set is missing Location Plan and General drawings					
145	5/27/11	B. McLaughlin	PA Civil Engineering	RP- General Civil	2	Show horizontal and vertical control datum information to reference coordinates and elevations.					
146	5/27/11	B. McLaughlin	PA Civil Engineering	RP- General Civil	3	Civil drawings contain structural related details, i.e. slab removals and expansion joint work, which should be coordinated with or moved to structural drawings.					
147	5/27/11	B. McLaughlin	PA Civil Engineering	RP- General Civil	4	Change term "existing pavement" to "concrete wearing course"					
148	5/27/11	B. McLaughlin	PA Civil Engineering	RP-General Civil	5	Show wearing course thickness in details					
149	5/27/11	B. McLaughlin	PA Civil Engineering	RP-General Civil	6	Show one legend for all civil drawings or specify that legend is only for a specific drawing					
150	5/27/11	B. McLaughlin	PA Civil Engineering	RP-General Civil	7	Show construction joint detail for stoppages between concrete pours. Show concrete joint details.					
151	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C101	8	Elevation of drain low points shown as 225.0. Are all drains at the same elevations? Since these drains are shown to remain, have the elevations been verified by survey?					
152	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C100	9	Show existing limits of bus platforms (conc. Islands) to be removed and add hatch in the legend.					
153	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C100	10	Coordinate curb and sidewalk alignment with Traffic drawings. (traffic drawings not provided)					
154	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C100	11	Legend – include hatch pattern for removal of existing bus platform concrete islands					
155	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C100	12	Legend - Change language "Limit of removal over LW concrete slab) to "remove 5" +/- existing concrete wearing course and waterproofing system. See detail X". Include a detail for removal.					

Priority Codes: A – Will Comply no further action; B – Inter-Disciplinary discussions required; C – Outside Group discussions required; D – Change In Scope Required

Master Comment Number	Date	Reviewer Name	Discipline/ Department/ Organization	Document/ Drawing Reference	Comment Number	Review Comment	Priority	Date	Response By	Response	Comment Resolved
156	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C100	13	Legend – 2nd item – It is not clear what the "limit of removal" represents					
157	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C100	14	Legend and plan – show steel faced curb limits on plans and an symbol in the legend					
158	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C100	15	Details 04, 03 & 06 – Do not remove structural slab.					
159	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C100	16	Detail 04 – Verify slab thickness with record drawing GWBBS-210.007					
160	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C100	17	Detail 02 – Is concrete slab L.W., as shown?					
161	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C101	18	Show control joint pattern for concrete wearing course					
162	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C101	19	Legend – Change language "limit of new pavement" to concrete wearing course. See detail A					
163	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C101	20	Legend – Change language "limit of new platform" to concrete island. See detail A					
164	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C101	21	Detail A – Specify wire mesh type for wearing course					
165	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C101	22	Legend - Change language "surface grade" to direction of downward pitch					
166	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C101	23	Complete grading information for all wearing course and platform areas					
167	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C101	24	Legend – Change language "limit of new pavement" to concrete wearing course. See detail A					
168	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C101	25	Legend – Change language "limit of new platform" to concrete island. See detail A					
169	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C101	26	Show dimension/coordinates required to layout concrete islands, sidewalks and platform construction.					
170	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C101	27	Detail A – Specify wire mesh type for wearing course					
171	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C100-101	28	Include detail for abandonment or removal of drain, which addresses treatment of structural slab and coordinate with Plumbing drawings.					

Priority Codes: **A** – Will Comply no further action; **B** – Inter-Disciplinary discussions required; **C** – Outside Group discussions required; **D** – Change In Scope Required

Master Comment Number	Date	Reviewer Name	Discipline/ Department/ Organization	Document/ Drawing Reference	Comment Number	Review Comment	Priority	Date	Response By	Response	Comment Resolved
172	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C100-101	29	Show details for new wearing course and waterproofing at existing drains					
173	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C102	30	Detail A note3, remove word asphalt and substitute concrete wearing course					
174	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C102	31	Detail C is not necessary since it is specified in specification section 07571. If shown aggregate should be partially embedded in 2nd coat of waterproofing.					
175	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C102	32	Detail 01 – Conduit embedded in a concrete slab may present a dangerous condition for future maintenance or rehabilitation work..					
176	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C102	33	Detail 06B – change 2" concrete sidewalk to "concrete finish"					
178	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C102	34	Detail 06A – Is existing slab L.W. concrete?					
179	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C102	35	Detail 02 show new condition, therefore no need to state "reconstruct"					
180	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C102	36	Do notes 1 and 2 pertain to a specific detail? Suggest providing a list of concrete wearing course related notes on drawings c101.					
181	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C102	37	Note 5 references 02551 which is an asphalt concrete paving specification					
182	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C101-102	38	Verify number of existing drains along column lines 7, 9 & 11. Record drawing P1 of contract GWB-506 shows additional drains. Have these drains been site verified?					
183	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C102	39	Specify longitudinal spacing for anchor studs for steel faced curb					
184	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C102	40	Is it feasible to construct a 2" thick sidewalk with a wire mesh mat? This would leave very little room for concrete cover after consideration of the steel thickness and sag in the wire mesh.					
185	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C103	41	Show legend and associated hatches for all sitework, i.e. curbs, pavement drains. Drawing C104 contains site features such as catch basins & light poles not shown on drawing C103.					
186	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C103	42	Show proposed grades and utility work along with limits of curb and sidewalk removal and construction. Provide construction details for curbs and sidewalks.					

Priority Codes: A – Will Comply no further action; B – Inter-Disciplinary discussions required; C – Outside Group discussions required; D – Change In Scope Required

Master Comment Number	Date	Reviewer Name	Discipline/ Department/ Organization	Document/ Drawing Reference	Comment Number	Review Comment	Priority	Date	Response By	Response	Comment Resolved
187	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C103	43	Clearly define limits of site work					
188	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C104	44	Existing utility information in streets is incomplete, missing electrical, communication, gas, etc. and water and sanitary main sizes, materials and inverts.					
189	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C104	45	Provide pavement, curb, sidewalk restoration details for utility work					
190	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C104	46	Utility connections (PFP-103W) along 178th St. not shown. Show proposed gas line.					
191	5/27/11	B. McLaughlin	PA Civil Engineering	RP-C104	47	Show details for connection of proposed utilities to existing					
192	5/27/11	B. McLaughlin	PA Civil Engineering	EN-101	48	In table specify focation of waterproofing that contains asbestos., i.e. depth. Material descriptions "Middle Layer slab" and bottom layer slab seem misleading. Material is actually beneath the board which is beneath concrete					
193	6/16/11	Mohammad Usmani	Electrical/ TB&T	RP-E-002	1	1. Item A(5) under "Systems Description" should read " A *lineup of 4160 volt switchgear will be provided as per the* Power One-line Diagram" 2. Item B(1) under "Systems Description": Include Emergency Generator KW rating. 3. Item 5 under "Wiring Methods": Include the Fire Alarm system as well to have RGS conduits.					
194	6/16/11	Mohammad Usmani	Electrical/ TB&T	RP-E-104W.1	2	1. Show Fire Alarm Devices in each of the Watch Engineer's office and Police Room. 2. Indicate how the conduits will be run in the Pavilion Area. 3. Show the type, size and quantity of conduits in each run as *per the quantities used in the estimate.*					
195	6/16/11	Mohammad Usmani	Electrical/ TB&T	RP-E-104.2	3	• Show the type, size and quantity of conduits in each run as per the quantities used in the estimate.					
196	6/16/11	Mohammad Usmani	Electrical/ TB&T	RP-E-104E	4	1. Show smoke detectors in the Operations storage Room and Police Storage Room (Repeat comment of the 6-6-11 submission). 2. Show the type, size and quantity of conduits in each run as per the quantities used in the estimate.					

Priority Codes: **A** – Will Comply no further action; **B** – Inter-Disciplinary discussions required; **C** – Outside Group discussions required; **D** – Change In Scope Required

Master Comment Number	Date	Reviewer Name	Discipline/ Department/ Organization	Document/ Drawing Reference	Comment Number	Review Comment	Priority	Date	Response By	Response	Comment Resolved
197	6/16/11	Mohammad Usmani	Electrical/ TB&T	RP-E-107W	5	• Indicate Emergency Generator ratings.					
198	6/16/11	Mohammad Usmani	Electrical/ TB&T	RP-E-300	6	1. Show connection of the East Building DGP to the PA Fire Command Center (Repeat comment from 6-6-11 submission). 2. Indicate how the conduit for Item 1 above will be run from East to West Building.					
199	6/17/11	Ken Sagrestano/Dave Riva	GWB Maintenance	Electronics Drawings & Estimate	7	1. General – Pricing inconsistent throughout document. 2. In pavilion bld.: Should be 2 visual paging displays 3. In PANYNJ offices and equipment rooms: should have 11 phones, missing one Access Control card reader. I do not see the missing camera they added. 4. In 166E &W Broadway Entrance: Should have 1 Visual Paging Displays 5. In 225 Bus Level: Should have 1 Visual Paging Displays 6. In 209 &194 Mezzanine and Subway Common: should be three Police/maintenance radio antennas 7. In staging and phasing: 2 PTZ CCTV cameras and 3 fixed CCTV cameras.					
200	6/20/11	Ken Sagrestano/Dave Riva	GWB Maintenance	LP-A103-A108	1	• Access to skin area not maintained to all areas as agreed too. Update drawings with these access points.					
201	6/20/11	Ken Sagrestano/Dave Riva	GWB Maintenance	LP A-109	2	• 5/24 set had an East Building Switchgear room shown. This set does not. However, area is shown on other drawings in set such as on S-104. If this exists, place back on the drawing.					
202	6/20/11	Ken Sagrestano/Dave Riva	GWB Maintenance	LP A-109	3	• Existing Mechanical Room to remain should be revised to reflect that existing mechanical/electrical equipment on both stories is to be removed.					
203	6/20/11	Ken Sagrestano/Dave Riva	GWB Maintenance	LP A-110	4	• Existing Mechanical Room to remain should be revised to reflect that existing mechanical/electrical equipment on both stories is to be removed.					
204	6/20/11	Ken Sagrestano/Dave Riva	GWB Maintenance	LP S-104	5	• Does East Building switchgear room still exist? If not, then remove from drawing.					

Priority Codes: **A** – Will Comply no further action; **B** – Inter-Disciplinary discussions required; **C** – Outside Group discussions required; **D** – Change In Scope Required

Master Comment Number	Date	Reviewer Name	Discipline/ Department/ Organization	Document/ Drawing Reference	Comment Number	Review Comment	Priority	Date	Response By	Response	Comment Resolved
205	6/20/11	Ken Sagrestano/Dave Riva	GWB Maintenance	LP-M-003	6	• Under scope of work item #3 Boiler Heating Plant letter c) it refers to drawing LP-103W.3. It is not in this set.					
206	6/20/11	Ken Sagrestano/Dave Riva	GWB Maintenance	LP-M-003	7	• Under letter B, Bld Automation and Temperature Control System there needs to be a reference to the PA Siemens system integration					
207	6/20/11	Ken Sagrestano/Dave Riva	GWB Maintenance	LP-M-101E	8	• Existing Mechanical Room to remain should be revised to reflect that existing mechanical/electrical equipment on both stories is to be removed.					
208	6/20/11	Ken Sagrestano/Dave Riva	GWB Maintenance	LP-M-103E	9	• Existing Mechanical Room to remain should be revised to reflect that existing mechanical/electrical equipment on both stories is to be removed.					
209	6/20/11	Ken Sagrestano/Dave Riva	GWB Maintenance	LP-PFP - 101	10	• Existing Mechanical Room to remain should be revised to reflect that existing mechanical/electrical equipment on both stories is to be removed.					
210	6/20/11	Ken Sagrestano/Dave Riva	GWB Maintenance	RP C-103	11	• Why are curbs being installed at the ends of Fort Washington area? They should remain at street level for parking for maintenance in the final design similar to the way they are laid out in PH-A-10.					
211	6/20/11	Ken Sagrestano/Dave Riva	GWB Maintenance	RP C-104	12	• Why are there no gas connections designated on this drawing?					
212	6/20/11	Ken Sagrestano/Dave Riva	GWB Maintenance	RP-M-103	13	• What is spare capacity for heat load for electronics room? Spare capacity must comply with Design Criteria at a minimum					
213	6/20/11	Ken Sagrestano/Dave Riva	GWB Maintenance	RP-M-103	14	• BMS system is not to be a stand-alone system. Must be integrated with the existing PA Siemens system.					
214	6/20/11	Ken Sagrestano/Dave Riva	GWB Maintenance	RP-M-004	15	• Removal of electrical gear for cooling tower also needs to be removed.					
215	6/20/11	Ken Sagrestano/Dave Riva	GWB Maintenance	RP-M-005	16	• Removal of electrical gear for cooling tower also needs to be removed					
216	6/20/11	Ken Sagrestano/Dave Riva	GWB Maintenance	RP-M-006	17	• Why are we putting AC in storage rooms?					

Priority Codes: A – Will Comply no further action; B – Inter-Disciplinary discussions required; C – Outside Group discussions required; D – Change In Scope Required

Master Comment Number	Date	Reviewer Name	Discipline/ Department/ Organization	Document/ Drawing Reference	Comment Number	Review Comment	Priority	Date	Response By	Response	Comment Resolved
217	6/20/11	Ken Sagrestano/Dave Riva	GWB Maintenance	RP-M-104W.4	18	• Why are we putting AC in storage rooms?					
218	6/20/11	Ken Sagrestano/Dave Riva	GWB Maintenance	RP-PFP-002	19	• Remove Preaction systems from B fire Protection-11 sprinkler system – letter I in electronics room and OCC. Should also not be in Third Floor electric closet.					
219	6/20/11	Ken Sagrestano/Dave Riva	GWB Maintenance	RP-PFP-101	20	• Existing Mechanical Room to remain should be revised to reflect that existing mechanical/electrical equipment on both stories is to be removed.					
220	6/20/11	Ken Sagrestano/Dave Riva	GWB Maintenance	RP-PFP-102	21	• Clarify better how sanitary lines will be connected for both LP and RP on drawing.					
221	6/20/11	Ken Sagrestano/Dave Riva	GWB Maintenance	RP-PFP-103W	22	• Remove all drains from RP generator, foam, and electrical rooms on Fort Washington Bld					
222	6/20/11	Ken Sagrestano/Dave Riva	GWB Maintenance	RP-PFP -301	23	• Domestic emergency bypass valve needs to be located in PA controlled area. Add note to drawing.					
223	6/20/11	Ken Sagrestano/Dave Riva	GWB Maintenance	RP-PFP-303	24	• PA areas appear to be defined as E1.2. Why are there two other areas defined similarly?					
224	6/20/11	Ken Sagrestano/Dave Riva	GWB Maintenance	RP ES202	25	• Did not show Broadway Distribution room as requested by Engineering in Red-lined comment set.					
225	6/20/11	Ken Sagrestano/Dave Riva	GWB Maintenance	RP ES-301	26	• Did not address the existing Command Telephone Rooms as requested by Engineering in Red-lined comment set.					
226	6/20/11	Ken Sagrestano/Dave Riva	GWB Maintenance	RP ES-404	27	• A card Reader needs to be added on the door between the hallway next to NJT areas and the Watch Engineers office.					

Priority Codes: A – Will Comply no further action; B – Inter-Disciplinary discussions required; C – Outside Group discussions required; D – Change In Scope Required

Exhibit D

Form of "Sales Tax Exemption Letter"

See attached.

EXHIBIT D

Form of Sales Tax Exemption Letter

_____, 20__

George Washington Bridge Bus
Station Development Venture LLC
c/o SJM Partners
9001 Congressional Court
Potomac, Maryland 20854
Attention: Stephen Garchik

Re: **Redevelopment of George Washington Bridge Bus Station ("Facility") located in NY, New York (designated on NYC tax map as Blk 2163, Lot 1 and Blk 2176 Lot 17)**

Dear Mr. Garchik:

In connection with the construction work that you are to perform with respect to the referenced matter, this letter confirms that the land upon which the Facility is located, and all improvements constructed or to be constructed thereon, are owned by the Port Authority of New York and New Jersey (the "Port Authority"), a municipal corporate instrumentality and political subdivision of the States of New York and New Jersey. This letter also confirms that you, George Washington Bridge Bus Station Development Venture LLC, are the net lessee of the Facility, exclusive of the areas operated by the Port Authority for bus passenger services, pursuant to a lease dated _____ (the "Lease"). The Lease provides in Section 2.8:

> Without limiting any provision of this Agreement, all improvements, fixtures, machinery, apparatus, and fittings hereafter affixed to the Leased Premises and whether or not by operation of law are considered real property shall be a part of the Leased Premises and shall be, or become, the property of the Port Authority upon the installation thereof, as the case may be, without the doing of any other act or thing (provided, however that Lessee shall execute and deliver such documents confirming passage of title as the Port Authority may require), and title thereto shall be and remain in the Port Authority, subject to the terms and provisions of this Agreement. The foregoing is not intended to preclude the Lessee from claiming depreciation or other tax-related benefits by reason of its ownership of a long-term leasehold interest in such property.

It is my understanding that contractors duly registered with the New York State Department of Taxation and Finance as vendors may purchase certain tangible personal property in New York exempt from sales tax if the personal property will be sued to improve the real property of an exempt entity under Section 1116(a) of New York's Tax Law, such as the Port Authority, and if the contractors present each of their own suppliers with a properly completed Contractor Exempt Purchase Certificate, Form ST-120.1 (4/60).

You may use this letter in communications with your contractors and with the New York State Department of Taxation and Finance relating to sales tax issues that may arise in connection with the construction and redevelopment of the George Washington Bridge Bus Station facility.

Sincerely,

The Port Authority of New York
and New Jersey

By: _____[signature]
Title: [Director of Real Estate Services]

Exhibit E

Form of "Temporary Permit to Occupy or Use"

See attached.

Form of Temporary Permit to Occupy or Use

THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY
ENGINEERING DEPARTMENT – CSIU/QAD
100 MULBERRY STREET – GATEWAY 3
NEWARK, NJ 07102

TO: < >, Facility Manager

TEMPORARY PERMIT TO OCCUPY OR USE
OF
TAA < >
< >
< >

Description: < >

Based on the Report on Audit Conformance issued by < >, Engineer of Construction, dated < >, which states that the work described above is substantially completed in accordance with the approved Drawings and Specifications and requirements of the Port Authority and my audit of the construction, I hereby issue a Temporary Permit to Occupy or Use commencing from the date of this Temporary Permit until the issuance of a Permit to Occupy or Use signed by the Chief Engineer after all work required by the subject TAA is substantially completed.

Manager
Construction Standards & Inspection
Quality Assurance Division

Dated: < >

cc:

Exhibit F

Form of "Permit to Occupy or Use"

See attached.

FORM OF PERMIT TO OCCUPY OR USE

THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY
OFFICE OF THE CHIEF ENGINEER
233 PARK AVENUE SOUTH
NEW YORK, N. Y. 10003

TO: Facility Manager Name and Title

PERMIT TO OCCUPY OR USE
OF
TAA < >
< >
< >

Based upon the Report on Audit Conformance issued by < >, Engineer of Construction, under date of < >, which states that the work performed by < > for < > at < > has been substantially completed, in accordance with the approved Drawings and Specifications and requirements of the Port Authority, so as to permit occupancy or use on < >, and the fact that audit of field construction and/or field records made by the Engineering Department during the progress of work under TAA No. < > have not, to the best of my knowledge and belief, disclosed any evidence that the requirements of the approved Drawings and Specifications and requirements of the Port Authority have not been met, I hereby issue a Permit to Occupy or Use.

Chief Engineer

Dated: < >
New York, NY

cc:

Exhibit FF

Form of PA-Cost Work Construction Completion Notice

See attached.

THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY
233 PARK AVENUE SOUTH
NEW YORK, N. Y. 10003

TO: GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC

RE: PA-Cost Work Construction Completion Notice
TAA Number – _____
(# assigned to entire Project)

Based on the final inspection, the PA-Cost Work has been satisfactorily completed in accordance with the Approved Construction Documents. There are no open items remaining.

The Port Authority of New York
and New Jersey
By:

_____
Signature Date

_____
Name of Signatory Title

CC:

Exhibit G

Form of "Assignment and Assumption of Net Lease"

See attached.

ASSIGNMENT AND ASSUMPTION OF GROUND LEASE

THIS AGREEMENT, made as of _____ __, 2____ between [**GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC** (the "Assignor"), a limited liability company organized and existing under the laws of the State of Delaware and having an office and place of business at c/o SJM Partners, 9001 Congressional Court, Potomac, Maryland 20854, Attention: Stephen Garchik][1], and _____ (the "Assignee"), a _____ organized and existing under the laws of _____ and having an office _____.

WITNESSETH, THAT:

WHEREAS, the Assignor desires to assign to the Assignee that certain Agreement of Lease dated as of _____ __, 2___ made by and between The Port Authority of New York and New Jersey (the "Port Authority"), a body corporate and politic created by compact between the States of New York and New Jersey with the consent of the Congress of the United States of America, and the [Assignor][2] (as the same may heretofore have been amended or extended, the "Lease", covering premises located within the Borough of Manhattan, the City of New York, as more particularly described in **Exhibit A** annexed hereto (the "Premises"); and

WHEREAS, the Port Authority has consented to such assignment, as evidenced by a separate instrument dated as of _____, 2___ and executed by the Port Authority, or else its consent is not required;

NOW, THEREFORE, in consideration of the covenants and mutual promises herein contained, the Assignor and the Assignee hereby agree as follows:

1. The Assignor does hereby assign, convey, transfer and set over the Lease and the leasehold estate created thereby, and all right, title and interest of the Assignor in and to the Premises, to the Assignee, its legal representatives, successors and permitted assigns, to its and their own proper use, benefit and behoof, to have and to hold the same unto the Assignee, its legal representatives, successors and permitted assigns, from the _____ day of _____, 2___ (the "Effective Date"), for and during all the rest, residue and remainder of the term of the letting under the Lease, subject nevertheless to all the terms, provisions, covenants and conditions therein contained. The Port Authority hereby consents to the foregoing assignment, conveyance and transfer. Notwithstanding anything herein to the contrary, the granting of such consent by the Port Authority shall not be, or be deemed to operate as, a waiver of the requirement for consent or consents to each and every subsequent assignment by the Assignee or by any subsequent assignee, to the extent required under the Lease.[3]

2. The Assignee does hereby, effective from and after the Effective Date, assume the performance of and does hereby agree to perform, observe and be subject to all the terms,

---

[1] **Change for assignments after first assignment.**
[2] **Change for assignments after first assignment.**
[3] Insert this sentence if applicable.

provisions, covenants and conditions, including without limitation the obligations to pay Rental, contained in the Lease which are to be performed or observed by or are applicable to the Lessee thereunder on and after the Effective Date, subject to the provisions of Section 17.11 of the Lease, which is incorporated in this Agreement by reference. Without limiting the foregoing, the Assignee covenants and agrees that the Assignee will use the Premises solely for the purposes set forth in Section 3.2 of the Lease and that such use shall be subject to all of the provisions of the Lease.

3. The Assignor agrees that this assignment of the Lease and the consent of the Port Authority hereto shall not in any way whatsoever affect or impair the liability of the Assignor to perform all the terms, provisions, covenant and conditions of the Lease (including without limitation thereto the obligation to pay Rental) on the part of the Lessee to be performed prior to the Effective Date, subject to the provisions of Section 17.11 and 25.3 of the Lease. However, the Assignor shall be, and hereby is, relieved of all liability and obligations accruing under the Lease on and after the Effective Date. Assignee agrees to indemnify, protect, defend and hold Assignor harmless from and against any and all claims, demands, liabilities, losses, costs, damages or expenses (including without limitation, reasonable attorneys' fees and disbursements, arising out of or resulting from any breach or default by Assignee under the terms of the Lease and accruing on or after the Effective Date.

4. The execution of this Agreement by the Port Authority does not constitute a representation that the Assignor has performed or fulfilled every obligation required by the Lease through the date of this Agreement; and as to such matters, the Assignee agrees to rely solely upon the representation of the Assignor.

5. The provisions of this Agreement shall be binding upon, and shall inure to the benefit of, the successors and assigns of Assignor and Assignee, respectively.

6. This Assignment of Lease may be executed in counterparts and once fully executed in counterparts, it shall be in full force and effect as if all parties hereto executed the same original.

BALANCE OF PAGE INTENTIONALLY LEFT BLANK

IN WITNESS WHEREOF, the Assignor and the Assignee have executed this Agreement as of the date first hereinabove set forth.

ASSIGNOR:

[GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC, a Delaware limited liability company][4]

ATTEST:

_____

By: _____
Name:
Title:

ASSIGNEE:

_____
a _____ _____

ATTEST:

_____

By: _____
Name:
Title:

[4] **Change for assignments after first assignment.**

STATE OF _____ §
§
COUNTY OF _____ §

On _____, 2___, before me, the undersigned, a notary public in and for said State, personally appeared _____, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies) and that, by his/her/their signature(s) on the instrument, the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

_____, Notary Public

My Commission Expires:

_____

STATE OF _____ §
§
COUNTY OF _____ §

On _____, 2___, before me, the undersigned, a notary public in and for said State, personally appeared _____, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies) and that, by his/her/their signature(s) on the instrument, the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

_____, Notary Public

My Commission Expires:

_____

EXHIBIT A

LEGAL DESCRIPTION

Exhibit H

Form of "Payment and Performance Bond"

See attached.

EXHIBIT H

PERFORMANCE AND PAYMENT BOND

FOR

TCA / TAA NO. _____

KNOW ALL MEN BY THESE PRESENTS that we, the undersigned[1] contractor and surety company (or companies), as principal and surety (or sureties) (hereafter collectively "Surety"), respectively,

Contractor	**Surety(ies)**

are hereby held and firmly bound unto George Washington Bridge Bus Station Development Venture (herein called the "Developer") and The Port Authority of New York and New Jersey (herein called the "Authority") in the penal sum of _____Dollars and _____ Cents ($ _____.), for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, representatives, executors, administrators, successors and assigns. Each Surety, however, if there is more than one, shall be jointly and severally liable for said penal sum.

Signed this _____ day of _____ 20_____

The condition of the above obligation is that

WHEREAS, the above named principal ("Principal") has entered into a construction contract in writing with the Developer (the "Contract"), a copy of which is attached and hereby made a part of this bond ("Bond"); and

WHEREAS, the Authority has required this Bond for the faithful performance by the Principal of all obligations imposed on the Principal by the Contract ("Performance Bond Claims") and also for the payment by the Principal of all lawful claims of subcontractors, materialmen and workmen arising out of the performance of the Contract ("Payment Bond Claims"), and has required that the Authority be named as a co-obligee on this Bond;

NOW, if the Principal shall well and faithfully do and perform the things agreed by it to be done

---

1 Insert names of the Contractor and surety company (or companies) in the appropriate columns. If space is sufficient add rider.

If the Contractor is a corporation, give the state of incorporation, using also the phrase "a corporation organized under the laws of _____".

If the Contractor is an individual using a trade name, give individual name, using also the phrase, "an individual doing business under the trade name of _____".

and performed according to the terms and true intent and meaning of the Contract and if all lawful claims of subcontractors, materialmen and workmen arising out of the performance of the Contract are paid, then this obligation shall be void, but otherwise the same shall remain in full force and effect, it being expressly understood and agreed that, provided the Surety shall comply with the provisions hereof, the aggregate liability of the Surety for any and all claims hereunder shall in no event exceed the penal amount of this obligation as hereinbefore stated.

1. This undertaking is for the benefit of the Developer and the Authority and all subcontractors, materialmen and workmen having lawful claims arising out of the performance of the Contract, and all such subcontractors, materialmen and workmen (as well as the Developer and the Authority themselves) shall have a direct right of action upon this Bond; but the rights and equities of such subcontractors, materialmen and workmen shall be subject and subordinate to those of the Developer and the Authority.

2. The said Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and this Bond shall be in no way impaired or affected by any extensions of time, modification, omission, addition or change in or to the Contract or the construction to be performed thereunder, or by any supervision or inspection or omission to supervise or inspect the construction, or by any payment thereunder before the time required therein, or by any waiver of any provision or condition thereof (whether precedent or subsequent), or by any assignment, subletting or other transfer thereof or of any part thereof or of any construction to be performed or any moneys due or to become due thereunder; and said Surety does hereby waive notice of any and all of such extensions, modifications, omissions, additions, changes, payments, waivers, assignments, subcontracts and transfers, and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to assignees, subcontractors and other transferees shall have the same effect as to said Surety as though done by or in relation to the Principal.

3. The Surety shall not be liable to Developer, the Authority, or any of them, unless the Developer, the Authority, and each of them, have performed all of their respective material payment obligations for work satisfactorily performed under said Contract in the manner required therein. The rights of the Authority hereunder are subject to the same defenses Principal and/or Surety have against the Developer. If the Authority has terminated the Developer's Lease, then the Surety may make any payments under this Bond directly to the Authority.

4. With respect to lawful Payment Bond Claims, the Surety shall give the General Counsel of the Authority and the Developer the following notices:

A. Written notice of intent to pay any claim of any subcontractor, materialman or workman hereunder; and

B. Written notice within five (5) days of the institution of any action against the Surety by any subcontractor, materialman or workman hereunder.

The Surety shall not pay a Payment Bond Claim hereunder until the expiration of thirty (30) days after receipt by the Developer and said General Counsel of notice under either subparagraph A or B above, describing the claim to be paid.

5. With respect to Performance Bond Claims, the Surety, upon written notice of the Principal's default from the Developer or the Port Authority, as applicable, shall within thirty (30) days, and at the Surety's expense, take one of the following actions:

A. Arrange for the Principal, with consent of the Developer or the Port Authority, as applicable, to perform and complete the Contract; or

B. Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or

C. Obtain bids or negotiated proposals from qualified contractors acceptable to the Developer and /or the Port Authority, as applicable, for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by the Developer or the Port Authority, as applicable, and the contractor selected with the Developer's and/ or the Port Authority's, as applicable, concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Contract, and pay to the Developer or the Port Authority, as applicable, the amount of damages as described in Section 6 in excess of the balance of the Contract Price incurred by the Developer or the Port Authority, as applicable, resulting from the Principal's default; or

D. Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

(i) After investigation, determine the amount for which it may be liable to the Developer or the Port Authority, as applicable, and, as soon as practicable after the amount is determined, tender payment therefor to the Developer or the Port Authority, as applicable; or

(ii) Deny liability in whole or in part and notify the Developer or the Port Authority, as applicable, citing reasons therefor.

6. If the Surety does not proceed as provided in Section 5, the Surety shall be deemed to be in default on this Bond fifteen (15) days after receipt of an additional written notice from the Developer or the Port Authority, as applicable, to the Surety demanding that the Surety perform its obligations under this Bond, and the Developer or the Port Authority, as applicable, shall be entitled to enforce any remedy available to the Developer or the Port Authority, as applicable. If the Surety proceeds as provided in Section 5.D, and the Developer or the Port Authority, as applicable, refuses the payment tendered or the Surety has denied liability, in whole or in part, without further notice the Developer or the Port Authority, as applicable, shall be entitled to enforce any remedy available to the Developer or the Port Authority, as applicable.

7. After the Developer or the Port Authority, as applicable, has terminated the Principal's right to complete the Contract, and if the Surety elects to act under Section 5.A, 5.B, or 5.C above, then the responsibilities of the Surety to the Developer or the Port Authority, as applicable, shall not be greater than those of the Principal under the Contract, and the responsibilities of the Developer or the Port Authority, as applicable, to the Surety shall not be greater than those of the Developer under the Contract. To the limit of the amount of this Bond, but subject to commitment by the Developer or the Port Authority, as applicable, of the balance of the Contract Price to mitigation of costs and damages on the Contract, the Surety is obligated without duplication for:

A. The responsibilities of the Principal for correction of defective work and completion of the Contract;

B. Additional reasonable legal, design professional and delay costs resulting from the Principal's default, and resulting from the actions or failure to act of the Surety under Section 5; and

C. Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of the Principal.

(REMAINDER OF PAGE INTENTIONALLY LEFT BLANK)

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, as of the day and year first set forth above.

_____
Principal

By[2] _____

Name / Title / Seal _____

_____
Surety

By[3] _____

Name/ Title / Seal _____

APPROVED AS TO ACCEPTABILITY OF SURETY(IES):

_____
Credit Manager, The Port Authority of New York and New Jersey

_____
(Print/ type name)

_____20____

---

2 If a bond is signed by an officer or agent, give title; if signed by a corporation, affix corporate seal.

3 Add signature or additional sureties, if any.

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

State of _____
_____ SS:
County of _____

On this _____. day of _____, 20____, before me personally came and appeared _____, to me known, who being by me duly sworn, did depose and say that he resides at _____; that he is the _____ of _____ the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the directors of said corporation, and that he signed his name thereto by like order.

(Seal) _____

Notary Public

ACKNOWLEDGMENT OF PRINCIPAL, IF A PARTNERSHIP

State of _____
_____ SS:
County of _____

On this _____, day of _____, 20____, before me personally came and appeared _____, to me known, and known to me to be one of the members of the firm of _____ described in and who executed the foregoing instrument and he acknowledged to me that he executed the same as and for the act and deed of said firm.

(Seal) _____

Notary Public

ACKNOWLEDGMENT OF PRINCIPAL, IF AN INDIVIDUAL

State of _____
_____ SS:
County of _____

On this _____ day of _____, 20___, before me personally came and appeared _____, to me known and known to me to be the person described in and who executed the foregoing instrument and he acknowledged to me that he executed the same.

(Seal) _____

Notary Public

EXHIBIT I

LESSEE ORGANIZATIONAL CHART

See attached.

NYC/596362.1

George Washington Bridge Bus Station Development Restructure

Final Structure

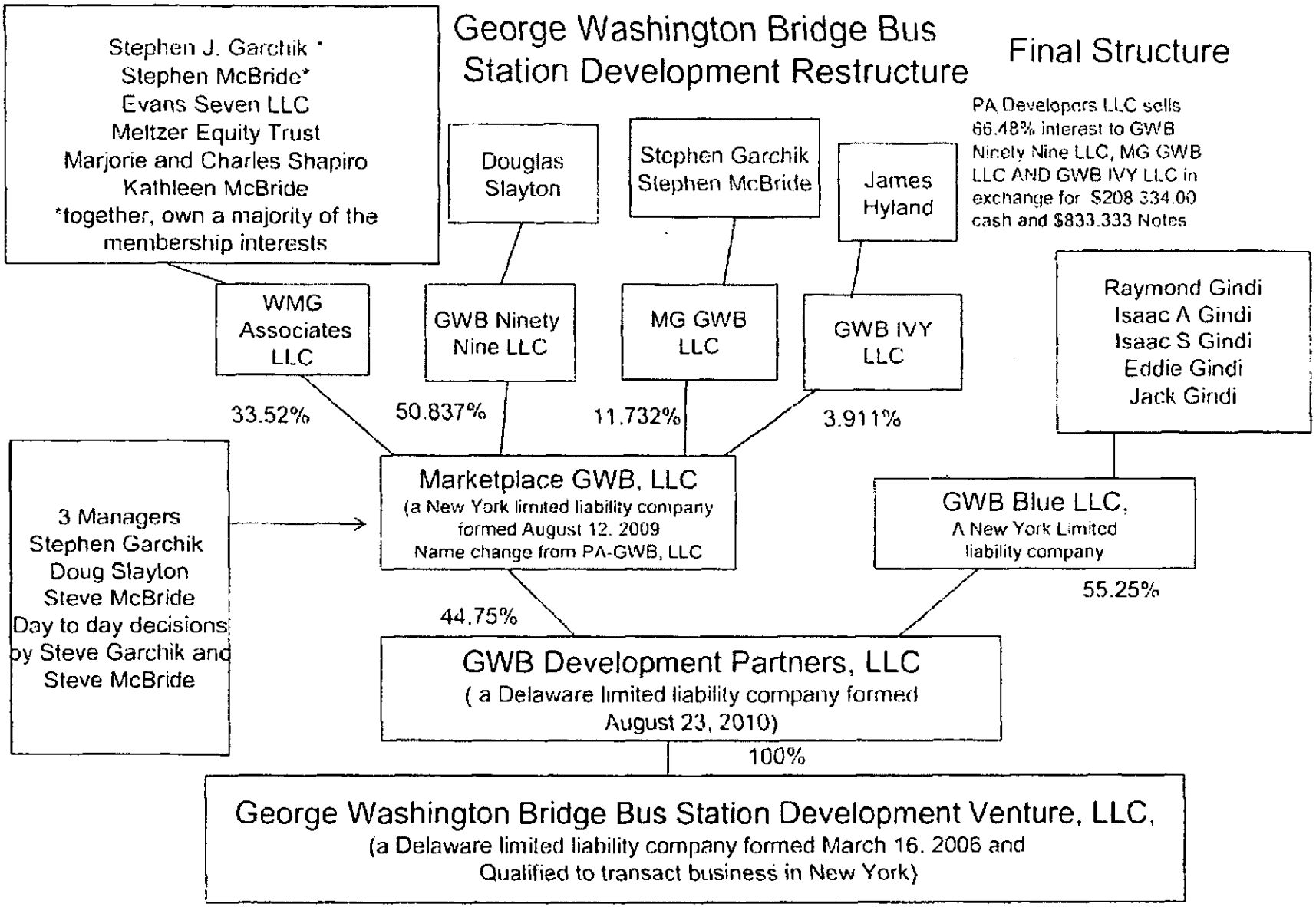


Exhibit J

Form of "Standby Letter of Credit"

See attached.

The Port Authority of New York & New Jersey
225 Park Avenue South, 12th Floor
New York, NY 10003

Date_____

Attn: CREDIT MANAGER

CLEAN IRREVOCABLE STANDBY LETTER OF CREDIT NO. _____(C)_____

At the request of _____(A)_____, we _____(B)_____ hereby open this CLEAN IRREVOCABLE LETTER OF CREDIT NO. _____(C)_____ in your favor up to an aggregate of _____(D)_____ U.S. Dollars, available by your draft(s) on us at sight.

We warrant to you that all your drafts under this CLEAN IRREVOCABLE LETTER OF CREDIT WILL BE DULY HONORED UPON PRESENTATION OF YOUR DRAFT(S) drawn on us and presented to us at _____(E)_____ on or before the expiration date set forth below or future expiration date as indicated below. Our obligation *under this Letter of Credit is the individual obligation of the Bank, in no way contingent upon reimbursement* thereto, or upon our ability to perfect any lien or security interest.

All drafts must be marked "Drawn Under _____(B)_____ Letter of Credit No. ___(C)____ dated _____". Partial drawings under this Letter of Credit are permitted.

This CLEAN IRREVOCABLE LETTER OF CREDIT expires at the close of business on _____(F)_____ This CLEAN IRREVOCABLE LETTER OF CREDIT shall be automatically extended without amendment for additional periods of one (1) year from the present or each future expiration date unless we have notified you in writing not less than sixty (60) days before such date that we elect not to extend the Letter of Credit for such additional period, such notice to be sent by registered or certified mail to you at the address herein. Upon receipt by you of such notice you may draw on us at sight for the balance remaining in this Letter of Credit within the then applicable expiration date, no statement required.

EXCEPT AS OTHERWISE EXPRESSLY PROVIDED HEREIN, THIS LETTER OF CREDIT IS SUBJECT TO THE UNIFORM CUSTOMS AND PRACTICE FOR DOCUMENTARY CREDITS (2007 REVISION) INTERNATIONAL CHAMBER OF COMMERCE PUBLICATION NO. 600.

_____
BANK OFFICER/REPRESENTATIVE

LEGEND:
A – INSERT APPLICANT NAME, I.E. TENANT OR LESSEE NAME
B – INSERT NAME OF ISSUING BANK
C – INSERT L/C IDENTIFICATION NUMBER
D – INSERT DOLLAR VALUE OF INSTRUMENT
E – INSERT EXACT ADDRESS OF LOCAL BANK BRANCH
F – INSERT EXPIRATION DATE-ONE YEAR FROM ISSUE DATE

*** Please instruct your Bank to have the Letter of Credit issued in the above format in "Draft" form and fax to Michael Mayurnik, Credit Manger, at (212) 435-5846 for approval **PRIOR** to issuance in "Original" form or email a Word file to MMayurni@panynj.gov. **If the draft is not reviewed in advance, the Letter of Credit can be rejected**. If you are in need of further assistance, Mr. Mayurnik can be reached at (212) 435-5838. ****

Exhibit K

Form of "Lessor Estoppel Certificate"

See attached.

Exhibit K
Form of Lessor Estoppel Certificate

George Washington Bridge Bus Station
Development Venture LLC (DV)
c/o SJM Partners
9001 Congressional Court
Potomac, Maryland 20854
Attention: Stephen Garchik

Ladies and Gentlemen:

Reference is hereby made to the Lease dated _____ between the undersigned, as Landlord, and you, DV, as Lessee. It is our understanding that Lessee may obtain from a lender ("Lender"), a loan ("Loan"), which may be secured in whole or in part, directly or indirectly, by its leasehold interest in the Leased Premises. We acknowledge and agree that you, as Lessee, Lender, and any party who at any time may have any direct or indirect interest in the Lessee, the Leased Premises or the Loan, may rely on this estoppel letter as though addressed to them.

Landlord is party to that certain lease, dated _____, between Landlord, as landlord and George Washington Bridge Bus Station Development Venture LLC, as Lessee, which lease has been modified, amended or supplemented, or assigned by the following documents: _____ _____ (as modified, amended or supplemented, the "Lease"). Landlord hereby certifies that:

1. The Lease is in full force and effect and, except as indicated in the previous paragraph, has not been, modified, supplemented, or amended in any way. There are no other agreements or understandings, whether written or oral, between Landlord and Lessee with respect to the Leased Premises or the Lease.

2. Lessee has accepted possession of and occupies the entire Leased Premises pursuant to the Lease.

3. The term of the Lease commenced on _____ and expires on _____ and Lessee has renewal options as set forth in Article 3 of the Lease. Lessee has no cancellation rights (excluding cancellation rights related to a casualty or a condemnation).

4. The Lease contains a right of first offer for Lessee to purchase or lease the Reserved Premises (as defined in the Lease) portion of the West Building (as defined in the Lease).

5. In certain circumstances (as more fully set forth in the Lease), the Lessee may have a right of first offer to purchase all or portions of the Leased Premises (as defined in the Lease) portions of the West Building (as defined in the Lease) and/or the East Building (as defined in the Lease).

6. The current monthly base rent under the Lease is $_____. The base rent has been paid through _____, _____. All other amounts payable by Lessee under the Lease have been paid in full. No base rent or additional rent has been received more than thirty (30) days in advance of its due date.

7. All improvements to the Leased Premises required to be made by Landlord have been completed and all payments by Landlord to Lessee for any improvement work, allowances, moving expenses and other payments pursuant to the Lease have been made.

8. As of the date hereof, there are no offsets, credits, abatements, deductions or defenses accruing in favor of the Lessee regarding either the Lessee's obligation to the pay rent under the Lease or the enforcement of any of the other terms of the Lease by Landlord.

9. To the best of Landlord's knowledge, there are no defaults by Landlord or Lessee under the Lease and no event has occurred, which with the giving of notice, the passage of time or both, would constitute a default by Landlord or Lessee under the Lease.

10. The [amount of the] security deposit presently held by Landlord under the Lease is [a security bond/letter of credit in an amount equal to][cash in the amount of] $_____.

11. To the best of Landlord's knowledge, Lessee has not (i) assigned the Lease except as follows: -_____, or (ii) subleased the Leased Premises or any portion thereof, except as follows: _____. Tenant has no option or right of first refusal to purchase all or any portion of the Leased Premises.

Very truly yours,

THE PORT AUTHORITY OF NEW YORK
AND NEW JERSEY

By:_____
Name:
Title:

Exhibit L

Permitted Encumbrances

See attached.

Stewart Title Insurance Company

SCHEDULE B

Policy No O 8911 proforma 900018
Title No 900018

Showing defects, liens, encumbrances and other matters against which the Company does not, by this Policy, insure:

1. Rights or claims of tenants, as tenants only, with no rights of first refusal or options to purchase, as described on the attached Exhibit B.

2. Covenants and Restrictions made by John Appleton Haven and Gurdon Buck, dated 8/17/1836 and recorded 11/24/1836 in Liber 369 page 252.

3. Covenants and Restrictions contained in a deed made by Joseph Woodward Havens and Cornelia Havens, his wife and Charles O'Conor, dated 11/15/1851 and recorded 10/20/1856 in Liber 714 page 564.

4. Covenants and Restrictions made by Charles W. Sloane, Nina Byron Sloane, his wife, and Thomas O'Conor Sloane and Alice Eyre Sloane, his wife and Sarah V. Baker, dated 12/16/1904 and recorded 12/16/1904 in Sec 8 in Liber 23 page 75.

5. Agreement made by and between Fort Washington Syndicate, Hudson Realty Company and Max Marx, dated 2/19/1907 and recorded 2/21/1907 in Sec 8 Liber 29 page 499.

6. Covenants and Restrictions made in a deed made by Fort Washington Syndicate, Hudson Realty Company and Max Marx, dated 6/30/1908 and recorded 8/12/1908 in Sec 8 Liber 31 page 449.

7. Covenants and Restrictions made by Fort Washington Syndicate and Dayton Realty Company, dated 4/2/1909 and recorded 4/2/1909 in Sec 8 Liber 35 page 176.

8. Covenants and Restrictions made by Fort Washington Syndicate and Alexander P.W. Kinnan, dated 5/17/1909 and recorded 5/18/1909 in Sec 8 Liber 36 page 133.

AS TO 2-8 ABOVE:

Policy insures that said nuisance covenants and restrictions have not been violated and that there are no provisions therein under which, if violated, by which a forfeiture or reversion of title would occur

9. Approximately **20** feet of the premises described in Schedule "A" lies in the beds of **West 178th Street and West 179th Street**, as the same are laid out on the Official Map of The City of New York for the Borough of **New York**. This portion of the premises is subject to the restricted use imposed by the provisions of Section 35 of the General City Law. (Block 2176 only)

   Notwithstanding same, policy insures that the building as currently erected may remain for as long as it shall stand and that any replacement building may occupy the same footprint as the currently erected building.

10. The premises in Schedule "A" are listed as totally exempt from taxation at the present time, but said exemption is subject to the discontinuance of such exemption and the restoration of taxes from the date of the transfer of title. The policy will except the possible lien of restored taxes, if any.

Stewart Title Insurance Company

SCHEDULE B

Policy No O 8911 proforma 900018
Title No 900018

11. The policy will except all water meter and sewer rent charges from date of the last actual reading of the meter(s) herein reported, including all impositions hereafter entered but which might include charges for use prior to the date of this policy. An actual meter reading must be arranged by appointment.

12. Survey made by Vollmer Associates LLP dated 6/18/06 and last revised on 10/23/2008 shows no encroachments, violations of restrictions or variations with lot lines except as follows:

    A. Building on Parcel B (Parcel II on survey), Block 2176, Lot 17) encroaches up to .2 feet onto West 178th Street.

    B. Survey shows proposed street widening areas as to Parcel B.

    C. Improvements on Parcel B extend over proposed street widening areas.

    D. Survey locates outer edges of sub-surface roadway as well as overhead ramp between parcels over Broadway.

Subject to changes since the date of said survey.

SCHEDULE B

Title No. 900018
Policy No. O 8911 proforma 900018

EXHIBIT B

Tenancies

1. S&R Confections
2. 4211 Broadway (d/b/a Pizza Palace)
3. Credit Where Credit is Due
4. Bernardo Madera (d/b/a EZ Vision)
5. Washington Heights Optical
6. Central Parking System of NY, Inc. (f/k/a Kinney Upper Manhattan, Inc.)

Exhibit M

Intentionally Omitted

Exhibit N-1

Form of "Waiver of Right of First Offer" (Reserved Premises)

See attached.

Exhibit N-1

Form of Waiver of Right of First Offer (Reserved Premises)

THIS WAIVER OF RIGHT OF FIRST OFFER ("ROFO Waiver") is executed as of the _____ day of _____, by _____, a _____, having an office at _____ ("Lessee").

WITNESSETH:

WHEREAS, The Port Authority of New York and New Jersey (the "Port Authority") and the Lessee have heretofore entered into an Agreement of Lease, dated as of _____, between The Port Authority, as lessor (or landlord) , and Lessee, as lessee (the "Lease");

WHEREAS, pursuant to the terms of the Lease, Lessee has been granted a Right of First Offer to purchase or lease the Port Authority's interest (or any portion thereof) in the West Building of the Reserved Premises (as such terms are defined in the Lease);

WHEREAS, the Lease sets forth certain circumstances whereby the Lessee shall waive its Right of First Offer; and

WHEREAS, such circumstances have occurred.

NOW, THEREFORE, in consideration of the premises, the undersigned expressly acknowledges and agrees that the Right of First Offer set forth in Article 24A.1 of the Lease shall be deemed waived. This ROFO Waiver is pursuant to the provisions of Article 24A.1 of the Lease and is given with the express understanding that it will be relied upon by any purchaser or lessee of the Port Authority's interest (or portion thereof) in the West Building of the Reserved Premises, any lender providing financing to such purchaser or lessee and any title insurance company providing title insurance in connection with such purchase or lease. This ROFO Waiver may be recorded and is non-revocable.

All terms not defined herein shall have the meaning ascribed thereto in the Lease.

IN WITNESS WHEREOF, the undersigned has executed this ROFO Waiver as of the date and year first above written.

[LESSEE]
By:

[Signature]_____
Name:
Title:

STATE OF)

:ss:

COUNTY OF)

On this _____ day of _____, before me, the undersigned, a Notary Public in and for said State, personally appeared _____, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____

Notary Public

Exhibit N-2

Form of Waiver of Right of First Offer (Leased Premises)

See attached.

Exhibit N-2

Form of Waiver of Right of First Offer (Leased Premises)

THIS WAIVER OF RIGHT OF FIRST OFFER ("ROFO Waiver") is executed as of the _____ day of _____, by _____, a _____, having an office at _____ ("Lessee").

WITNESSETH:

WHEREAS, The Port Authority of New York and New Jersey (the "Port Authority") and the Lessee have heretofore entered into an Agreement of Lease, dated as of _____, between The Port Authority, as lessor (or landlord) , and Lessee, as lessee (the "Lease");

WHEREAS, pursuant to the terms of the Lease, Lessee has been granted a Right of First Offer in certain circumstances to purchase or lease the Port Authority's interest (or any portion thereof) in the West Building and/or the East Building of the Leased Premises (as such terms are defined in the Lease);

WHEREAS, the Lease sets forth certain circumstances whereby the Lessee shall waive its Right of First Offer; and

WHEREAS, such circumstances have occurred.

NOW, THEREFORE, in consideration of the premises, the undersigned expressly acknowledges and agrees that the Right of First Offer set forth in Article 24A.2 of the Lease shall be deemed waived. This ROFO Waiver is pursuant to the provisions of Article 24A.2 of the Lease and is given with the express understanding that it will be relied upon by any purchaser or lessee of the Port Authority's interest (or portion thereof) in the West Building and/or the East Building of all or any portion of the Leased Premises, any lender providing financing to such purchaser or lessee and any title insurance company providing title insurance in connection with such purchase or lease. This ROFO Waiver may be recorded and is non-revocable.

All terms not defined herein shall have the meaning ascribed thereto in the Lease.

IN WITNESS WHEREOF, the undersigned has executed this ROFO Waiver as of the date and year first above written.

[LESSEE]
By:

[Signature]_____
Name:
Title:

STATE OF)

:ss:

COUNTY OF)

On this _____ day of _____, before me, the undersigned, a Notary Public in and for said State, personally appeared _____, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public

Exhibit O-1

Form of "Subordination, Non-Disturbance and Attornment Agreement" (Standard)

See attached.

EXHIBIT O-1

SUBORDINATION, NON-DISTURBANCE
AND ATTORNMENT AGREEMENT (STANDARD)

THIS SUBORDINATION, NON-DISTURBANCE AND ATTORNMENT AGREEMENT (this "**Agreement**") is made as of the ____ day of _____ 20__, by and between THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY, a body corporate and politic created by Compact between the States of New York and New Jersey with the consent of the Congress of the United States of America and having its office at 225 Park Avenue South, 15th Floor, New York, New York 10003 (the "**Overlandlord**"), and [TENANT], a _____ [nature of entity and jurisdiction], having its principal office at _____ ("**Tenant**").

WITNESSETH:

The Overlandlord is the owner in fee of _____, which is more particularly described in Exhibit A annexed hereto and made a part hereof (the "**Overlease Premises**").

The Overlandlord and _____ (the "**Landlord**") entered into a Lease dated as of _____, 20__ (the "**Overlease**") pursuant to which the Overlandlord leased to the Landlord the Overlease Premises. The Overlease or a memorandum of the Overlease has been recorded with the City Register of the City of New York.

The Landlord has entered into a sublease dated as of _____ with Tenant (the "**Sublease**") covering certain space (the "**Premises**") on the _____ floor(s) of the Overlease Premises. The Landlord has agreed in the Sublease to cause the Overlandlord to enter into this Agreement with Tenant in order to assure Tenant of continued occupancy pursuant to the Sublease in the event of the termination of the Overlease.

NOW, THEREFORE, in consideration of the promises and other good and valuable consideration by each party to the other paid, the receipt of which is hereby acknowledged, the Overlandlord and Tenant hereby agree as follows:

1. Tenant agrees that the Sublease is and shall be subject and subordinate in all respects to the Overlease and to all renewals, amendments, modifications and extensions thereof.

2. The Overlandlord agrees that if, by reason of the default by the Landlord thereunder, or by agreement between the Overlandlord and the Landlord, the Overlease is canceled or terminated, (a) the Sublease shall continue in full force and effect as a direct lease between the Overlandlord and Tenant, subject to all the terms, covenants and conditions of the

Sublease, and (b) the Overlandlord shall not disturb Tenant's right of quiet possession of the Premises under and in accordance with the terms of the Sublease, in each case so long as Tenant is not in default under the Sublease beyond applicable grace periods provided for therein.

3. Tenant agrees that, in the event of a cancellation or termination of the Overlease as described in paragraph 2 above, Tenant will attorn to and recognize the Overlandlord as its landlord under the Sublease for the remainder of the term of the Sublease (including all extension periods which have been or are hereafter exercised) upon the same terms and conditions as are set forth in the Sublease, and Tenant hereby agrees to continue to pay and perform all of the obligations of Tenant under the Sublease.

4. Tenant agrees that, in the event the Overlandlord succeeds to the interest of Landlord under the Sublease, the Overlandlord shall not be:

(a) liable for any act or omission of any prior landlord (including, without limitation, the then defaulting landlord); provided, however, that the foregoing shall not excuse any ongoing nonperformance of services required pursuant to the Sublease that shall continue after the Overlandlord or its designee succeeds to the position of the landlord, to the extent such services are typically provided by landlords of comparable premises in the City of New York and are actually provided to other tenants at the Overlease Premises;

(b) subject to any offsets or defenses that Tenant may have against any prior landlord (including, without limitation, the then defaulting landlord);

(c) except as the Overlandlord may otherwise agree, bound by any payment of rent that Tenant might have paid for more than the current month to any prior landlord (including, without limitation, the then defaulting landlord) other than security deposits and any other amounts deposited with any prior landlord (including, without limitation, the then defaulting landlord) in connection with the payment of insurance premiums, real property taxes and assessments and other similar charges or expenses, but only to the extent that such security deposits and other amounts have actually been received by the Overlandlord;

(d) bound by any covenant to undertake or complete, or to reimburse Tenant for the undertaking or completion of, any construction of the Premises or any portion thereof demised by the Sublease; provided, however, that if such covenant is not performed, Tenant shall have the option to terminate the Sublease;

(e) bound by any obligation of any prior landlord to make any payment to Tenant; or

(f) bound by any amendment thereto or modification thereof which reduces the basic rent, additional rent, supplemental rent or other charges payable under the Sublease (except to the extent equitably reflecting a reduction in the space covered by the Sublease), or

changes the term thereof, or otherwise materially affects the rights of the landlord thereunder, made without the prior consent of the Overlandlord, unless the Senior Recognized Mortgagee under the Overlease shall have approved such amendment or modification and granted non-disturbance to Tenant.

5. Any notice, election, communication, request or other document or demand required or permitted under this Agreement shall be in writing and shall be deemed delivered on the earlier to occur of (a) receipt or (b) the date of delivery or refusal to accept delivery indicated on the return receipt, if deposited in a United States postal depository, postage prepaid, sent certified or registered mail, return receipt requested, or if sent via recognized commercial courier service providing for a receipt, addressed to Tenant or the Overlandlord, as the case may be, at their respective addresses first set forth above in this Agreement, or at such other address of which either party hereto may hereafter notify the other party in the manner set forth above.

6. The term "Overlandlord" as used herein includes any successor or assign of the named Overlandlord herein, and the term "Tenant" as used herein includes any successor or assign of the named Tenant herein.

7. If any provision of this Agreement is held to be invalid or unenforceable by a court of competent jurisdiction, such provision shall be deemed modified to the extent necessary to be enforceable, or if such modification is not practicable such provision shall be deemed deleted from this Agreement, and the other provisions of this Agreement shall remain in full force and effect.

8. Neither this Agreement nor any of the terms hereof may be terminated, amended, supplemented, waived or modified orally, but only by an instrument in writing executed by the party against which enforcement of the termination, amendment, supplement, waiver or modification is sought.

9. This Agreement shall be construed in accordance with the laws of the State of New York.

10. This Agreement may be executed in any number of counterparts, each of which shall be deemed to be an original and all of which shall be deemed to constitute one and the same instrument.

11. Nothing contained herein shall constitute a waiver of any rights of the Overlandlord with regard to Landlord or its servants, agents and employees, based on any representations made herein or a waiver of any right, claim or undertaking that the Overlandlord may or will have against Landlord or its servants, agents and employees.

12. Nothing contained herein shall amend, supersede or otherwise modify in any

manner the provisions of the documents referred to herein.

13. No Commissioner officer, agent or employee of the Overlandlord shall be charged personally with any liability or held personally liable in connection with any term or provision of this Agreement or any statements contained herein or because of acts or omissions of any such individual.

Witness the execution hereof as of the date first written above.

ATTEST:	THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY
_____	_____
Secretary	(name) (title)
ATTEST:	[TENANT].
_____	_____
(name) (title)	(name) (title)

STATE OF NEW YORK)
) ss:
COUNTY OF NEW YORK)

On this _____ day of _____ 20_ before me, personally appeared _____, _____ of THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY, who I am satisfied is the person who signed the within instrument, and, I having first made known to him the contents thereof, he did acknowledge that he signed, and delivered the same as such _____ aforesaid and the within instrument is the voluntary act and deed of such Authority, made by virtue of the authority of its Board of Commissioners.

_____
Notary Public

STATE OF)
) ss:
COUNTY OF)

On this _____ day of _____ 20_ before me, personally appeared _____, the _____ of [TENANT], who I am satisfied is the person who signed the within instrument, and, I having first made known to him the contents thereof, he did acknowledge that he signed, and delivered the same as such officer aforesaid and the within instrument is the voluntary act and deed of such corporation, made by virtue of the authority of its Board of Directors.

_____
Notary Public

EXHIBIT A

Exhibit O-2

Form of "Subordination, Non-Disturbance and Attornment Agreement" (Qualifying)

See attached.

EXHIBIT O-2

SUBORDINATION, NON-DISTURBANCE
AND ATTORNMENT AGREEMENT (QUALIFYING)

THIS SUBORDINATION, NON-DISTURBANCE AND ATTORNMENT AGREEMENT (this "**Agreement**") is made as of the ____ day of _____ 20__, by and between THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY, a body corporate and politic created by Compact between the States of New York and New Jersey with the consent of the Congress of the United States of America and having its office at 225 Park Avenue South, 15th Floor, New York, New York 10003 (the "**Overlandlord**"), and [TENANT], a _____ [nature of entity and jurisdiction], having its principal office at _____ ("**Tenant**").

W I T N E S S E T H:

The Overlandlord is the owner in fee of _____, which is more particularly described in Exhibit A annexed hereto and made a part hereof (the "**Overlease Premises**").

The Overlandlord and _____ (the "**Landlord**") entered into a Lease dated as of _____, 20__ (the "**Overlease**") pursuant to which the Overlandlord leased to the Landlord the Overlease Premises. The Overlease or a memorandum of the Overlease has been recorded with the City Register of the City of New York.

The Landlord has entered into a sublease dated as of _____ with Tenant (the "**Sublease**") covering certain space (the "**Premises**") on the _____ floor(s) of the Overlease Premises. The Landlord has agreed in the Sublease to cause the Overlandlord to enter into this Agreement with Tenant in order to assure Tenant of continued occupancy pursuant to the Sublease in the event of the termination of the Overlease.

NOW, THEREFORE, in consideration of the promises and other good and valuable consideration by each party to the other paid, the receipt of which is hereby acknowledged, the Overlandlord and Tenant hereby agree as follows:

1. Tenant agrees that the Sublease is and shall be subject and subordinate in all respects to the Overlease and to all renewals, amendments, modifications and extensions thereof.

2. The Overlandlord agrees that if, by reason of the default by the Landlord thereunder, or by agreement between the Overlandlord and the Landlord, the Overlease is canceled or terminated, (a) the Sublease shall continue in full force and effect as a direct lease between the Overlandlord and Tenant, subject to all the terms, covenants and conditions of the

Sublease, and (b) the Overlandlord shall not disturb Tenant's right of quiet possession of the Premises under and in accordance with the terms of the Sublease, in each case so long as Tenant is not in default under the Sublease beyond applicable grace periods provided for therein.

3. Tenant agrees that, in the event of a cancellation or termination of the Overlease as described in paragraph 2 above, Tenant will attorn to and recognize the Overlandlord as its landlord under the Sublease for the remainder of the term of the Sublease (including all extension periods which have been or are hereafter exercised) upon the same terms and conditions as are set forth in the Sublease, and Tenant hereby agrees to continue to pay and perform all of the obligations of Tenant under the Sublease.

4. Tenant agrees that, in the event the Overlandlord succeeds to the interest of Landlord under the Sublease, the Overlandlord shall not be:

(a) liable for any act or omission of any prior landlord (including, without limitation, the then defaulting landlord); provided, however, that the foregoing shall not excuse any ongoing nonperformance of services required pursuant to the Sublease that shall continue after the Overlandlord or its designee succeeds to the position of the landlord, to the extent such services are typically provided by landlords of comparable premises in the City of New York and are actually provided to other tenants at the Overlease Premises;

(b) subject to any offsets (except as specifically provided in paragraph 4(d) below) or defenses that Tenant may have against any prior landlord (including, without limitation, the then defaulting landlord);

(c) except as the Overlandlord may otherwise agree, bound by any payment of rent that Tenant might have paid for more than the current month to any prior landlord (including, without limitation, the then defaulting landlord) other than security deposits and any other amounts deposited with any prior landlord (including, without limitation, the then defaulting landlord) in connection with the payment of insurance premiums, real property taxes and assessments and other similar charges or expenses, but only to the extent that such security deposits and other amounts have actually been received by the Overlandlord;

(d) bound by any covenant to undertake or complete, or to reimburse Tenant for the undertaking or completion of, any construction of the Premises or any portion thereof demised by the Sublease; notwithstanding the foregoing, however, if such covenant is not performed, the following shall apply:

(i) Tenant shall have the option to terminate the Sublease; or

(ii) Tenant, if it is the subtenant under a Qualifying Sublease (as defined below) and is considered by the Overlandlord to be creditworthy (provided, that if Tenant either (x) has a tangible net worth equal to seven (7) times the annual rent payable

under the Sublease or (y) has provided, as security for its obligations under the Sublease, a clean, irrevocable letter of credit in the amount of nine (9) months' rent, then Tenant shall be deemed to be creditworthy), shall have the right to undertake and complete the construction of the fit-out of the premises for Tenant's use, and to take a monthly offset against the Sublease rent in an amount equal to the Offset Installment Amount (such right of offset, the "**Offset Right**"), provided, however, that the Offset Right must be exercised, if at all, prior to the fifteenth (15th) anniversary of the First Possession Date. By way of illustration, if the first Qualifying Sublease under the Overlease is a sublease with Acme Corp. that has a Possession Date of 9/1/2013, the First Possession Date would be 9/1/2013; 8/31/2028 would be the deadline for the exercise of the Offset Right by Acme Corp. or any subtenant under a subsequent Qualifying Sublease.

(A) "**Offset Installment Amount**" shall mean a monthly installment of the Construction Amount, evenly amortized without interest over the term of the Qualifying Sublease, but such monthly installment shall not in any event exceed such amount as would leave a remaining Sublease rent payment to the Overlandlord equal to the amount of the rent payable under the Overlease allocable to the Premises plus the Overlandlord's costs of providing services to the Premises, it being the parties' express intention that (x) the Overlandlord would never receive less than the amount of the Overlease ground rent allocable to the Premises, plus the Overlandlord's costs of providing services to the Premises, and (y) the maximum benefit afforded to the subtenant shall be the aggregate of the Offset Installment Amounts taken over the term of the Qualifying Sublease, even if such aggregate is less than the Construction Amount. In the foregoing, "**Construction Amount**" shall mean the total amount, as provided in a Qualifying Sublease (subject to any cap or other limitation provided therein), that the landlord under the Qualifying Sublease is obligated to expend, or reimburse the subtenant for, with respect to the fit-out, for the subtenant's use, of the premises under such Qualifying Sublease.

(C) "**Possession Date**" shall mean the date on which possession of the premises under a sublease is delivered to the subtenant; "**First Possession Date**" shall mean the first occurring Possession Date under a sublease that is a Qualifying Sublease.

(D) "**Qualifying Sublease**" shall mean a sublease with respect to which (v) the Possession Date is not later than the eleventh (11th) anniversary of the First Possession Date, (w) the term is at least ten (10) years, (x) the premises consist of either the entire third floor of the East Building or any other area(s) totaling at least twenty-seven thousand (27,000) square feet, (y) the subtenant will

actually occupy and use the premises, and (z) the landlord under such sublease has covenanted to undertake or complete, or reimburse the subtenant for the subtenant's undertaking or completion of, the fit-out of the premises for the subtenant's use.

(e) bound by any obligation of any prior landlord to make any payment to Tenant; or

(f) bound by any amendment thereto or modification thereof which reduces the basic rent, additional rent, supplemental rent or other charges payable under the Sublease (except to the extent equitably reflecting a reduction in the space covered by the Sublease), or changes the term thereof, or otherwise materially affects the rights of the landlord thereunder, made without the prior consent of the Overlandlord, unless the Senior Recognized Mortgagee under the Overlease shall have approved such amendment or modification and granted non-disturbance to Tenant.

5. Any notice, election, communication, request or other document or demand required or permitted under this Agreement shall be in writing and shall be deemed delivered on the earlier to occur of (a) receipt or (b) the date of delivery or refusal to accept delivery indicated on the return receipt, if deposited in a United States postal depository, postage prepaid, sent certified or registered mail, return receipt requested, or if sent via recognized commercial courier service providing for a receipt, addressed to Tenant or the Overlandlord, as the case may be, at their respective addresses first set forth above in this Agreement, or at such other address of which either party hereto may hereafter notify the other party in the manner set forth above.

6. The term "Overlandlord" as used herein includes any successor or assign of the named Overlandlord herein, and the term "Tenant" as used herein includes any successor or assign of the named Tenant herein.

7. If any provision of this Agreement is held to be invalid or unenforceable by a court of competent jurisdiction, such provision shall be deemed modified to the extent necessary to be enforceable, or if such modification is not practicable such provision shall be deemed deleted from this Agreement, and the other provisions of this Agreement shall remain in full force and effect.

8. Neither this Agreement nor any of the terms hereof may be terminated, amended, supplemented, waived or modified orally, but only by an instrument in writing executed by the party against which enforcement of the termination, amendment, supplement, waiver or modification is sought.

9. This Agreement shall be construed in accordance with the laws of the State of New York.

10. This Agreement may be executed in any number of counterparts, each of which shall be deemed to be an original and all of which shall be deemed to constitute one and the same instrument.

11. Nothing contained herein shall constitute a waiver of any rights of the Overlandlord with regard to Landlord or its servants, agents and employees, based on any representations made herein or a waiver of any right, claim or undertaking that the Overlandlord may or will have against Landlord or its servants, agents and employees.

12. Nothing contained herein shall amend, supersede or otherwise modify in any manner the provisions of the documents referred to herein.

13. No Commissioner officer, agent or employee of the Overlandlord shall be charged personally with any liability or held personally liable in connection with any term or provision of this Agreement or any statements contained herein or because of acts or omissions of any such individual.

Witness the execution hereof as of the date first written above.

ATTEST:	THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY
_____	_____
Secretary	(name) (title)
ATTEST:	[TENANT].

_____	_____
(name)	(name)
(title)	(title)

STATE OF NEW YORK)
) ss:
COUNTY OF NEW YORK)

On this _____ day of _____ 20_ before me, personally appeared _____, _____ of THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY, who I am satisfied is the person who signed the within instrument, and, I having first made known to him the contents thereof, he did acknowledge that he signed, and delivered the same as such _____ aforesaid and the within instrument is the voluntary act and deed of such Authority, made by virtue of the authority of its Board of Commissioners.

_____
Notary Public

STATE OF)
) ss:
COUNTY OF)

On this _____ day of _____ 20_ before me, personally appeared _____, the _____ of [TENANT], who I am satisfied is the person who signed the within instrument, and, I having first made known to him the contents thereof, he did acknowledge that he signed, and delivered the same as such officer aforesaid and the within instrument is the voluntary act and deed of such corporation, made by virtue of the authority of its Board of Directors.

_____
Notary Public

EXHIBIT A

Schedule 2.1(a)

Preliminary Leased Premises Floor Area

See attached.

EAST BUILDING	Size
East Building - Ground Floor	
E1.1	1,892
E1.2	1,033
E1.3 (includes Passenger Elevators)	756
E1.4	1,864
Retail Display Area	484
Retail Passenger/Service Elevator	134
Egress Stair	179
Egress Stair	266
Ramp	493
Electrical Distribution Room	3,317
Utilities/MEP	967
Existing Cooling Tower	1,472
Sub-Total	**12,857**
East Building - Second Floor	
E2.1	9,781
Egress Stair	510
Egress Stair	556
Passenger Elevators	103
Retail Passenger/Service Elevator	134
Utilities/MEP	400
Existing Cooling Tower	1,472
Sub-Total	**12,955**
East Building - Third Floor	
E 3 1	15,160
Egress Stair	203
Egress Stair	397
Passenger Elevators	103
Port Authority Storage Rooms	660
Utilities/MEP	268
Sub-Total	**16,788**
East Building Total	**42,601**

WEST BUILDING	Size
West Building - Ground Floor at Broadway	
W 1.1	3,432
W 1.2	4,279
W 1.3	3,391
Retail Vestibule	1,233
Utilities/MEP	1,427
Retail Passenger Elevators	125
Broadway Retail Vestibule	1,450
Port Authority Passenger Elevators and Entry	876
Sub-Total	**16,211**
West Building - Ground Floor at Subway	
W 1.1 Mezz	1,717
W 1.2 Mezz	979
W 1.3 Mezz	1,762
W 1.4	1,644
W 1.5	986
W 1.6	1,850
W 1.7	13,976
W 1.8	2,153
W 1.9	699
W 1.10	1,237
W 1.11	1,214
Egress Stair	194
Egress Stair	214
Retail Passenger Elevators (at Broadway)	125
Loading Area	5,576
Common Area	3,336
Common Area Passenger Elevators	185
Retail Service Elevators	305
Utilities/MEP	3,365
Port Authority Utilities/MEP	129
Port Authority Passenger Elevators (at Broadway)	203
Sub-Total	**41,848**
West Building - Second Floor	
W2.1	6,579
W2.2	30,116
W2.3	2,255
W2.4	1,681
W2.5	570
W2.6	578
W2.7	1,049
W2.8	255
W2.9	1,091
Public Toilets	383
Common Area	6,972
Retail Shared Vestibule (at Broadway)	1,363
Egress Stair	296
Egress Stair	327
Egress Stair	304
Retail Service Elevators (includes vestibule)	422
Retail Passenger Elevators (at Broadway)	125
Port Authority Passenger Elevators (at Broadway)	203
Utilities/MEP	2,948
Common Area Utilities/MEP	284
Port Authority Utilities/MEP	561
Sub-Total	**58,340**
West Building - Ft. Washington	
Utilities/MEP	2,524
Port Authority Utilities/MEP	1,288
Sub-Total	**3,811**
West Building Total	**120,210**
Grand Total	**162,811**

Schedule 5.1.2A

Process for Advancement of Stage I Conformed Documents
To Approved Stage III Documents (Approved Construction Documents)

See attached.

SCHEDULE 5.1.2A

PROCESS FOR ADVANCEMENT OF STAGE I CONFORMED DOCUMENTS TO APPROVED STAGE III DOCUMENTS (APPROVED CONSTRUCTION DOCUMENTS)

1. Responsibilities of the Parties; Scope of Port Authority Review.

(a) Port Authority Responsibilities. From and after the date hereof until the Port Authority has approved (in accordance with Sections 2 and 3 below of this Schedule 5.1.2A) the Stage III Documents, the Port Authority shall be responsible for providing timely input, review and approvals with respect to all submissions received from the Lessee in accordance with time frames set forth in Attachment 1 attached hereto.

(b) Lessee's Responsibilities. On or prior to the date hereof, the Lessee's engineers and architect have taken over from the Port Authority engineers, and have assumed full responsibility for, design and production of the architectural and traffic aspects of the Reserved Premises Redevelopment Work. The Lessee shall be responsible for managing all of the work relating to the Project (including without limitation establishing and implementing bidding requirements for trade contractors, budgeting, and scheduling) and for directing and overseeing the Project A/E in the timely performance of the Project A/E's responsibilities described in Section 1(c) below. In addition, the Lessee shall be responsible for advancing the Staging and Phasing Plan that is part of the Stage I Conformed Documents to Stage III Documents for Port Authority approval and for implementing such Port Authority approved Staging and Phasing Plan (the "Staging and Phasing Plan") to ensure that throughout the redevelopment of the Facility the Reserved Premises will continue to function effectively as a public transportation facility providing the level and volume, and maintaining the schedule, of bus service that shall have existed before commencement of the Project with as little inconvenience to passengers as reasonably possible. As set forth in the Conformed Design Criteria and the Conformed Documents, the Staging and Phasing Plan shall be elaborated in progressively greater detail as the design work proceeds, and as such shall be embodied in the plans, specifications and other documents or materials comprising the Stage III Documents submitted for the Project. The Staging and Phasing Plan shall include specifications setting forth agreed-upon safeguards for protecting persons and property (including, without limitation, the Trans-Manhattan Expressway) from unintended harm during the redevelopment of the Facility.

(c) Project A/E Responsibilities. The Project A/E shall be responsible for performing and/or coordinating all design work relating to the Project, including (i) the Leased Premises Redevelopment Work (whether or not relating to the Design Criteria Project Elements) and (ii) advancing the approved Stage I Conformed Documents to approved Stage III Documents. The Project A/E shall also be responsible for promptly clarifying the details of the existing and proposed systems and equipment affecting the Reserved Premises Redevelopment Work per the Conformed Design Criteria (to the extent not already clarified in the Stage I Conformed Documents or otherwise herein). The Parties acknowledge that the Project A/E Agreement (as hereinafter defined) relating to the Reserved Premises provides that in the event of a conflict between that Project A/E Agreement and the Lease, the provisions of the Lease shall prevail and be controlling.

(d) Roles, Responsibilities and Relationships. A graphic depiction of the intended roles, responsibilities and reporting relationships among the Port Authority and the Lessee and the Project A/E through approval of the Stage III Documents by the Port Authority is attached hereto as Attachment 2 and is labeled "GWBBS Redevelopment Project Flow Chart."

2. Scope of Port Authority Review.

(a) The Parties hereby confirm that they have agreed upon, and hereby ratify, the Conformed Design Criteria dated July 15, 2011. For the avoidance of doubt, the Parties acknowledge and agree that the Conformed Design Criteria relate and apply with respect to, and only to, the Design Criteria Project Elements (as defined in Article 1 of the Lease).

(b) All design work relating to the Design Criteria Project Elements shall be subject to Port Authority review and approval for, and only for, (1) compliance with the Conformed Design Criteria (including the Tenant Construction Review Manual and all codes, regulations, guidelines, standards and laws referenced therein), and (2) functional compatibility of the Leased Premises Redevelopment Work with the portions of the Reserved Premises and Common Areas that touch, adjoin, attach to or interface with the Leased Premises.

(c) All design work relating to the elements of the Leased Premises Redevelopment Work that do not constitute Design Criteria Project Elements shall be subject to Port Authority review and approval for, and only for, (i) functional compatibility with the Reserved Premises, (ii) any impact the Leased Premises Redevelopment Work may have on the operation, maintenance or security of the Reserved Premises and/or Common Areas, and (iii) compliance with the Tenant Construction Review Manual and the Retail Branding Program. In this regard, the Lessee acknowledges that the Lessee shall be required to submit Stage III Documents for such elements of the Leased Premises Redevelopment Work for review, comment and approval by the Port Authority. However:

(1) the Port Authority acknowledges that the Stage III Documents for such elements of the Leased Premises Redevelopment Work need not be submitted to the Port Authority concurrently with submissions of the Stage III Documents relating to the Design Criteria Project Elements;

(2) the Port Authority shall, upon request from time to time, provide confirmation that specified portions of such design submissions do not have any bearing on the Reserved Premises and/or Common Areas and shall therefore not require further review other than by the Code Compliance Office; and

(3) any modifications that the Port Authority may desire to the designs for any elements of the Leased Premises Redevelopment Work that do not constitute Design Criteria Project Elements shall, except to the extent required pursuant to the Tenant Construction Review Manual, be subject to and governed by Section 3(h) hereof.

3. Document Submission, Review and Approval.

(a) The Lessee shall cause the Project A/E to prepare and submit to the PA Representative the Stage III Documents for the Project. Insofar as the Stage III Documents relate to the Design Criteria Project Elements (but not otherwise), the Lessee shall submit to the PA Representative for Port Authority review and approval both 50% Stage III Documents and 100% Stage III Documents. (For the avoidance of doubt, the Parties acknowledge that set forth terms set forth in the "Milestone Review" having an "Issue Date" of 07/15/2011, a "Project Title" of "George Washington Bridge Bus Station Redevelopment Project", and a "Contract No:" of "CB48-241.701" ("Milestone Review Chart"), attached to the Lease as Exhibit C, which chart comprises a component of the Stage I Conformed Documents, shall be addressed, resolved, and incorporated into the 50% Stage III Documents, subject to approval by the Port Authority as to conformity with the Conformed Design Criteria; however, the Parties may mutually agree to defer addressing, resolving and incorporating such comments until 100% Stage III Documents.) The Stage III Documents shall include, as appropriate, all of the items specified for these submissions at the ends of the various chapters of the Conformed Design Criteria.

(b) Subject to extension for Unavoidable Delays and for any delay caused by the Port Authority: (x) all required formal document submissions shall be submitted, reviewed and approved by no later than the deadlines that are set forth in the Attachment 1 and (y) the outside deadline for submission by the Lessee of the TCA/TAA and 100% Stage III Documents for the entire Project shall be March 31, 2012, subject to extension also for any additional time requested by the Lessee and approved by the Port Authority, which approval shall not be unreasonably withheld. However, the parties acknowledge that (i) such deadlines are outside dates and that it is the intention of the Parties to proceed more rapidly and each of the Parties shall make reasonable efforts to proceed on a more aggressive schedule, (ii) each of their respective abilities to adhere to a more aggressive schedule is predicated upon timely performance by the other Party; and (iii) notwithstanding the schedule, all submissions to the Code Compliance Office may be conducted "by appointment" upon request of Lessee in accordance with the procedures and within the time frames that are described in Schedule 5.6.3 to the Lease.

(c) Pending the Lessee's formal submission of the completed Stage III Documents, the operative method of consultation and review will be what is sometimes referred to as "review on board", which is to say that responsible representatives of Port Authority, the Project A/E and the Lessee will have more or less continuous access to all design work in progress, so as to foster ongoing and informal communication and maximize the efficiency of the design team.

(d) The Port Authority acknowledges that the Lessee may submit for review and comment, independent "packages" ("Voluntary Packages"), which may include, without limitation, packages relating to staging and phasing, egress/code analysis, electronics and mechanical, demolition, vertical transportation, electrical equipment, the West Building and Fort Washington utility zone, and the East Building and Broadway bridges, and the Port Authority shall review, comment upon and provide Lessee with a determination regarding such Voluntary Packages in a timely manner in accordance with Attachment 1 hereto.

(e) As soon as reasonably practicable after the date hereof, and at regularly scheduled meetings thereafter, the Lessee, the Project A/E and appropriate representatives of the Port Authority (including the PA Representative and representatives of the Code Compliance Office) shall meet in order to facilitate the design process and other activities contemplated by this Schedule 5.1.2A.

(f) The Port Authority shall not, except as necessary to ensure TCRM compliance, withhold its approval of the 50% Stage III Documents unless they are inconsistent with the Conformed Design Criteria and/or the Conformed Documents in a manner that shall not have been manifestly clear to all concerned. The Port Authority shall not, except as necessary to ensure TCRM compliance, withhold its approval of the 100% Stage III Documents unless they are inconsistent with the approved 50% Stage III Documents in a manner that shall not have been manifestly clear to all concerned. For the avoidance of doubt, the foregoing shall not preclude the Port Authority from objecting during advancement of the design to Stage III Documents (in accordance with Section 2 hereof), to any new details that shall not theretofore have been elaborated or as to any matters that are affected by such new details.

(g) The Port Authority shall not unreasonably refuse to consider any modifications to the Conformed Design Criteria that may be proposed by the Lessee, to the extent required to address unforeseen site conditions or requirements of prospective Subtenants; provided, however, that (i) such modifications will not (1) increase the cost to the Port Authority of the PA-Cost Work, (2) adversely affect the historical features of the Facility identified in the Conformed Design Criteria, (3) adversely affect bus transportation operations or materially delay the completion of the PA-Cost Work, (4) materially increase the cost of operating, maintaining and/or repairing the Reserved Premises following the Project Completion Date or (5) adversely affect operations, maintenance or security of the Reserved Premises and/or Common Areas, and (ii) the Port Authority shall not in any event be required to agree to any material change in the size or location of the Leased Premises or to waive any requirements of the TCRM.

(h) Notwithstanding the foregoing, the Port Authority may request that the Lessee make changes to the Conformed Design Criteria and corresponding changes to the Stage I Conformed Documents or the Stage III Documents theretofore submitted by the Lessee to the Port Authority, and/or the Port Authority may request that the Lessee make changes to elements of the Leased Premises Redevelopment Work that do not constitute Design Criteria Project Elements in order to enhance the operation, maintenance and/or security of the Reserved Premises, the TME and/or the Common Areas, subject, however, to the terms and conditions set forth in Section 5.6.4 of the Lease in all respects. Any delays resulting from any such request shall constitute Unavoidable Delays for purposes of this Agreement. This Section 3(h) shall not apply to changes requested by the Port Authority to ensure continued compliance by the Conformed Documents (as the same are advanced to Stage III Documents) with the Conformed Design Criteria and/or the TCRM.

(i) Prior to commencement of any construction, demolition work or any environmental condition abatement work, the Lessee shall have (x) submitted an OSHA Plan to the Port Authority to which no objection has been made by the Port Authority, (y) delivered the PPB pursuant to Section 4(g) of the First Amendment or Section 5.1.3 of the Lease, as the case

may be, and (z) submitted the 50% Stage III Documents with all comments contained in the Milestone Review Chart addressed, resolved and incorporated into the 50% Stage III Documents, subject to approval by the Port Authority as to conformity with the Conformed Design Criteria; however, the Parties may mutually agree to defer addressing, resolving and incorporating such comments until the 100% Stage III Documents. Contemporaneously with the Lessee's submission of the Stage III Documents, the Lessee shall also submit its proposed master critical path method schedule for the Construction Work, as described in Section 5.11.2 of the Lease, for review by the Port Authority.

4. Costs of Design Work. The Lessee shall be solely responsible for, as part of the PA-Cost Work Fixed Price, all costs of the design-related work necessary in order to advance the Conformed Documents to a Stage III Documents level. The Port Authority shall reimburse the Lessee for up to Four Million Five Hundred Twenty-Nine Thousand and Eighty-Seven Dollars ($4,529,087) including Electronics design-related work, (the "PA-Cost Work A&E Reimbursement Amount") for such costs. Within thirty (30) days after the Lease Commencement Date, the Port Authority shall (as the first installment of the PA-Cost Work Fixed Price) pay to the Lessee an amount equal to the then aggregate documented out-of-pocket costs then incurred to date by the Lessee for such work performed to such date (which the Parties acknowledge shall not yet be to the Stage III Documents level approved by the Port Authority) as such cost shall have related to the PA-Cost Work and shall be consistent with the two Professional Services Agreements by and between Lessee and STV Incorporated dated as of May 18, 2010 (collectively, the "Project A/E Agreement"). Thereafter, the Port Authority shall reimburse the Lessee for any additional design-related costs incurred by Lessee to develop or refine design related work to Stage III Documents level and A/E Stage IV (the "Construction Stage") in accordance with Section 5.4.3 of the Lease so long as the same do not exceed, in the aggregate, the cap amount of the PA-Cost Work A&E Reimbursement Amount set forth above in this Section. All requisitions that include a request for payment in connection with the PA-Cost Work A&E Reimbursement Amount shall, with respect to such PA-Cost Work A&E Reimbursement Amount line item, be supported by cancelled check(s) payable to the Project A/E or other reasonable proof of payment of the subject design-related work, except with respect to any such amounts that the Developer is contesting in good faith (the Developer hereby agreeing to notify the Port Authority in writing of the resolution of any such billing disputes)

5. PA-Cost Work Fixed Price.

(a) As provided in Section 5.4.1 of the Lease, the Parties have agreed that the Port Authority shall pay to the Lessee the PA-Cost Work Fixed Price in consideration of advancement by the Lessee of the Conformed Documents to approved Stage III Documents and performance by the Lessee of PA-Cost Work. For the avoidance of doubt, except as otherwise provided in Section 5.6.4, or Section 5.22 of the Lease, (x) the Port Authority shall not be charged for the cost of any PA-Cost Work that exceeds the PA-Cost Work Fixed Price, and (y) Lessee, at its sole cost and expense, shall pay all costs in excess of the PA-Cost Work Fixed Price.

(b) The Parties acknowledge that notwithstanding the Conformed Documents have been conformed to the Conformed Design Criteria, certain design refinements may be required to be made to the drawings as the drawings are advanced to a Stage III Documents level. Any and

all such refinements shall be part of the PA-Cost Work Fixed Price and shall not constitute a "modification" under Section 5.6.4 of the Lease. For avoidance of doubt, Lessee acknowledges and agrees that to the extent any costs attributed to any such refinements result in the PA-Cost Work costing in excess of the PA-Cost Work Fixed Price, such excess shall be assumed by the Lessee at its sole cost and expense.

(c) The PA-Cost Work Fixed Price shall also include use of unionized labor/prevailing wages in the performance of the Construction Work, work to be performed at any time or day (as authorized by the Port Authority to the extent consistent with the Conformed Design Criteria) to complete the Project, structural survey of the areas of work that are required by the Conformed Documents to be surveyed, a one-time cleaning of pigeon droppings immediately prior to installation of bird netting, and repair and replacement of sidewalks and street pavement to the extent the such areas are directly affected by the work performed by Lessee.

6. INTENTIONALLY DELETED.

7. Seismic Upgrade Work and Remediation Costs.

(a) As more particularly set forth in the Memorandum dated April 28, 2011 prepared by Severud Associates Consulting Engineers, P.C., on behalf of Lessee, a copy of which was previously submitted to the Port Authority, for which no approval or concurrence has been given by the Port Authority, no seismic upgrade work is required under the 1968 NYC Building Code and amendments thereto in connection with the development the Project in accordance with the Stage I Conformed Documents and the current design documents for the Leased Premises. If, as a result of a design refinement (if any and pursuant to this Schedule 5.1.2A 1) resulting from the advancement of the Stage I Conformed Documents to approved Stage III Documents, a provision of the 1968 NYC Building Code requiring seismic upgrade work is rendered applicable to the Project, then (and only then) shall the following provisions of this Section 7 apply.

(b) As used herein, "Required Reserved Premises Seismic Upgrade" means any modification of the structure of the West Building (whether located in the Leased Premises or in the Reserved Premises) that shall be required to comply with any code provision relating to seismic loads and necessitated by the Reserved Premises Redevelopment Work; and "Required Leased Premises Seismic Upgrade" means any modification of the structure of the West Building or East Building (whether located in the Leased Premises or in the Reserved Premises) that shall be required for such purpose and necessitated by the Leased Premises Redevelopment Work.

(c) The Parties anticipate, and the Port Authority's Chief Engineer has determined based on current assumptions with respect to the Project as they have heretofore been presented to him, that the Reserved Premises Redevelopment Work in the East and West Building can be accomplished without any Required Reserved Premises Seismic Upgrade. If, however, such upgrade is necessary, the cost thereof shall be deemed subsumed within PA-Cost Work Fixed Price. The Lessee's structural engineer shall prepare (if not prepared prior to the Lease Commencement Date), and the Code Compliance Office shall promptly review, calculations as

needed to confirm that such designs will not necessitate any such Required Reserved Premises Seismic Upgrade.

(d) The Parties anticipate, and the Port Authority's Chief Engineer has determined based on current assumptions with respect to the Project as they have heretofore been presented to him, that the Leased Premises Redevelopment Work in the West Building and the East Building can be accomplished without triggering any Required Leased Premises Seismic Upgrade. As soon as reasonably possible as the designs for the Project are sufficiently advanced, the Lessee's structural engineer shall prepare (if not prepared prior to the Lease Commencement Date), and the Code Compliance Office's shall promptly review, calculations as needed to confirm that such remains the case (i.e., in light of the advancement of and refinements to the drawings for the Leased Premises Redevelopment Work). If, however, such upgrade is necessary, the cost thereof shall be for the cost thereof (whether in the West Building or in the East Building), and the Lessee acknowledges and agrees that the Port Authority shall not be responsible for the cost of any Required Leased Premises Seismic Upgrade.

8. Electrical Substation; Electrical Power.

(a) Electrical Substation. The Parties acknowledge and agree that the electrical substation, located on Level 1 of the East Building existing and serving the Facility as of the Effective Date (the "Existing Substation"), supplies electrical power to critical systems for and relating to the Facility (including the George Washington Bridge (GWB) and the TME), shall be replaced in its existing location. Replacement of the Existing Substation shall include the complete replacement of the existing electrical switchgear equipment in accordance with the Power One-line Diagram shown on Conformed Drawing RP-E-400.3, including but not limited to, switchgear enclosures, circuit breakers, transformers, disconnect switches with new equipment; no reconditioned equipment shall be used (the "Replaced Substation"). All electrical switchgear equipment shall be covered by manufacturer's warrantees, which shall go into effect only after the switchgear equipment has been installed, tested and accepted by the Port Authority as provided in Subsections 5.17.5 and 5.17.6. The replacement of the electrical switchgear equipment shall be staged, and may include the use of temporary electrical equipment or existing equipment, so that there is no interruption in required power to the Facility, the GWB, the TME or other related areas without the prior approval of the Port Authority, which approval shall not be unreasonably withheld. The Replaced Substation shall meet all relevant codes, regulations, standards and laws, for all systems associated with the room, including but not limited to electrical, egress and life safety, HVAC, fire protection, and required equipment access and clearances for maintenance, repair and future replacement.

(b) Electrical Power.

(1) The Parties acknowledge and agree that Con Edison (Con-Ed) is building a new transformer vault adjacent to the existing Con-Ed vault in the sidewalk at the southeast corner of 178th Street and Broadway. In connection therewith, the Parties further acknowledge and agree that (a) the existing three full rated take-offs in the existing vault identified as "Collector Bus Compartment 1" on drawing RP-E-400.3 of the Conformed Documents, shall be for the exclusive electrical power use of the Port Authority, and (b) of the two take off's in the

new Con-Ed vault identified as "Collector Bus Compartment 2" on drawing RP-E-400.3 of Conformed Documents (i) one full rated (3500 Amperes at 208 volts) take-off will be dedicated for Port Authority electrical power use, and (ii) one take-off will be dedicated for the Lessee's electrical power use. In the future, should the Leased Premises require additional electrical power, the Lessee may acquire such power from the Port Authority electrical substation by installing a sub-meter for the same at the Lessee's sole cost and expense, subject to approval of the Port Authority which approval shall not be unreasonably withheld.

(2) Additionally, the Lessee shall be responsible for the "Customer" responsibilities listed in the section "To supply your electrical requirements," on the Con-Ed drawing filed with New York City Department Of Transportation for the Project (identified as Layout No. S09-06010-M) that Con-Ed requires for implementation of the Con-Ed transformer vault expansion. All costs associated with the installation of the electrical feeders ("reach") that bring power to or in connection with the Leased Premises from the expanded Con-Ed vault to the West Building shall be the obligation of the Lessee. For avoidance of doubt, the Lessee hereby acknowledges and agrees that all costs associated with the expansion of the existing transformer vault/power capacity shall be at the Lessee's sole cost and expense.

(c) Prior Agreements. This Section 8 supersedes any prior agreement between the Parties and/or their respective agents regarding the electrical substation and/or electrical power for the Project.

9. Ventilation. The Port Authority hereby confirms that its Chief Engineer has determined that, as long as the Lessee does not materially modify the existing Trans-Manhattan Expressway ventilation openings within the envelopes of the East Building and West Building and does not materially modify the openings over the TME that are shown in the applicable drawings in the Conformed Design Criteria, compliance with the so-called § 502 requirements of the National Fire Protection Association, as existing at the time of such determination, shall not be required in connection with the Project.

10. Building Code. The Port Authority hereby acknowledges that, notwithstanding any provision of the TCRM or the Conformed Design Criteria, the Lessee shall be deemed to have initiated Code Compliance Office review with respect to the Project prior to July 1, 2009, and accordingly the Project shall be governed by the 1968 NYC Building Code and amendments thereto, rather than by the 2008 NYC Building Code, by reason of the Project A/E having submitted to the Port Authority prior to July 1, 2009 a code and life safety package for the Project (which included preliminary floor plans and outlined the "basis of design" for code purposes).

11. Landmark Status. The Parties acknowledge and agree that as of the date hereof (and, if not the same date, as of the Lease Commencement Date): (i) no portion of the Facility is designated as an interior or exterior landmark by the New York City Landmarks Preservation Commission (or any successor thereto), (ii) no portion of the Facility is on the New York State Register of Historic Places, (iii) no portion of the Facility is on the National Register of Historic Places, (iv) the Keeper National Register has not listed any portion of the Facility, and (v) the

National Park Service has not made a determination of eligibility with respect to any portion of the Facility.

ATTACHMENT 1 to SCHEDULE 5.1.2A

REVIEW, COMMENT AND APPROVAL PERIODS

The Port Authority shall be required to deliver to Lessee any comments (including a comment that additional information is required to complete a submitted application) or its approval of any submissions received from the Lessee within the time periods set forth below, measured from the date the Port Authority receives a submission from the Lessee which review time periods are set forth on page 2 of this Attachment 1.

Cost	**Technical + QAD Review**	**Incorporation of Comments**
$0 - $500,000	Ten (10) Business Days	Ten (10) Business Days
$500,001 - $5,000,000	Fifteen (15) Business Days	Fifteen (15) Business Days
$5,000,001 - $15,000,000	Twenty (20) Business Days	Fourteen (14) Business Days
Over $15,000,000	Thirty (30) Business Days	Eighteen (18) Business Days

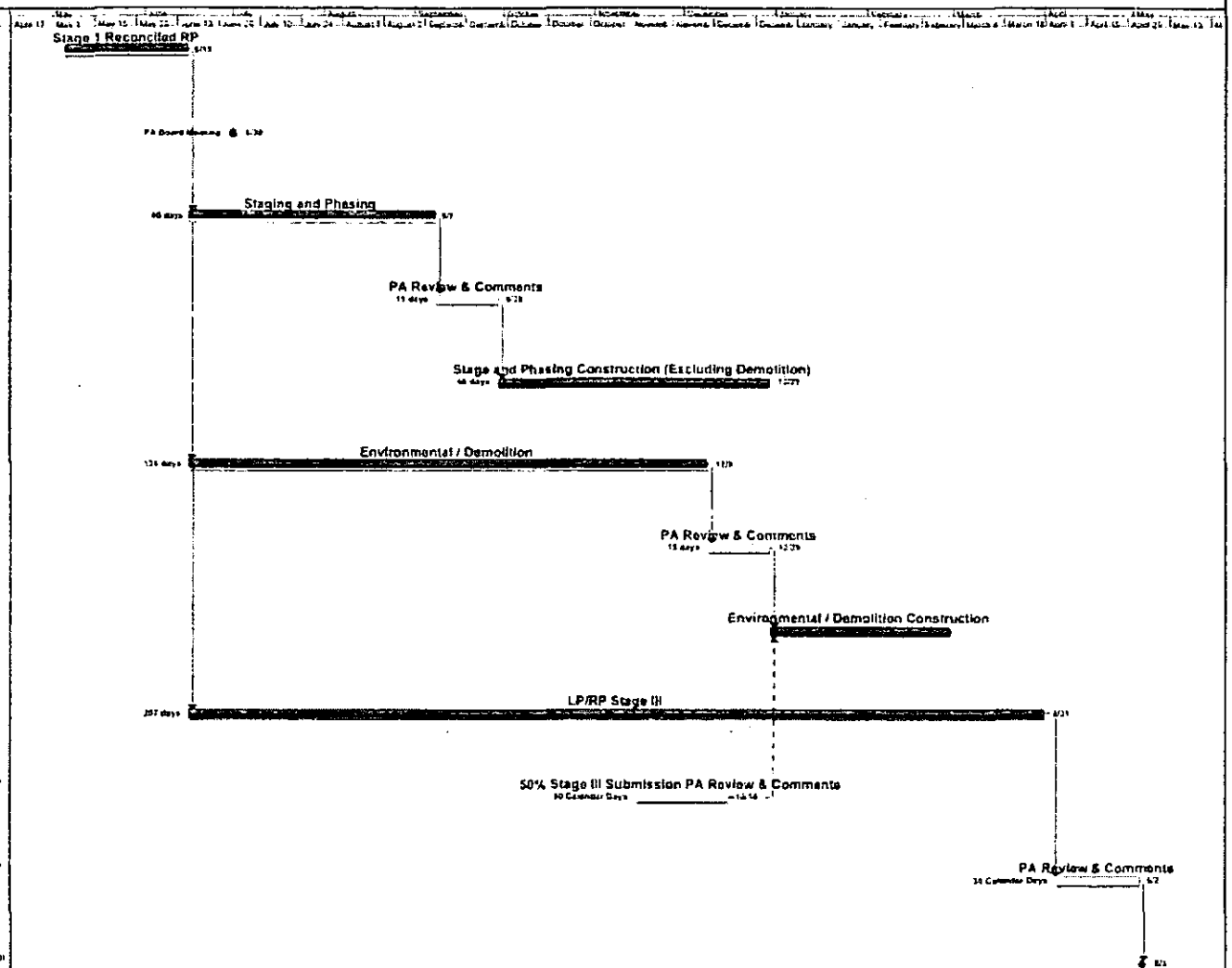
Notwithstanding the foregoing, (a) Lessee shall, in any event, have the right to expedited review under the same process set forth in Schedule 5.6.3 attached to the Lease (i.e., Review by Appointment) and (b) the Port Authority shall make every reasonable effort to expedite its review of submissions relating to unforeseen field conditions or other conditions that could delay the then projected construction schedule in any way.

In the event of any inconsistency between the time frames set forth in the table above and the time frames set forth in the bar graph on page 2 of this Attachment 1, the latter shall govern.

[SEE ATTACHED BAR GRAPH]

Schedule July 15th 2011

ID	Task Name	Duration	Start	Finish	Notes
1	Stage 1 Reconciled RP	30 days	Thu 6/3/11	Wed 6/15/11	
2	PA Board Meeting	0 days	Tue 6/7/11	Thu 6/30/11	
3	Staging and Phasing	65 days	Thu 6/16/11	Wed 9/7/11	
4	PA Review & Comments	15 days	Thu 9/8/11	Wed 9/28/11	
5	Stage and Phasing Construction (Excluding Demolition)	60 days	Thu 9/29/11	Thu 12/29/11	Provided PA Has Approved EAP Plans
6	Environmental / Demolition	126 days	Thu 6/16/11	Thu 12/29/11	
7	PA Review & Comments	15 days	Fri 12/30/11	Thu 12/29/11	
8	Environmental / Demolition Construction	43 days	Fri 12/30/11	Tue 2/28/12	Provided PA Has Approved EIO Plans
9	LP/RP Stage III	207 days	Thu 6/16/11	Sat 3/31/12	
10	50% Stage III Submission PA Review & Comments	23 days	Tue 11/15/11	Thu 12/15/11	30 Calendar Days
11	PA Review & Comments	23 days	Thu 4/5/12	Wed 5/2/12	23 Calendar Days
12	LP/RP Construction	1 day	Thu 5/3/12	Thu 5/3/12	Provided PA Has Approved Stage III Submission



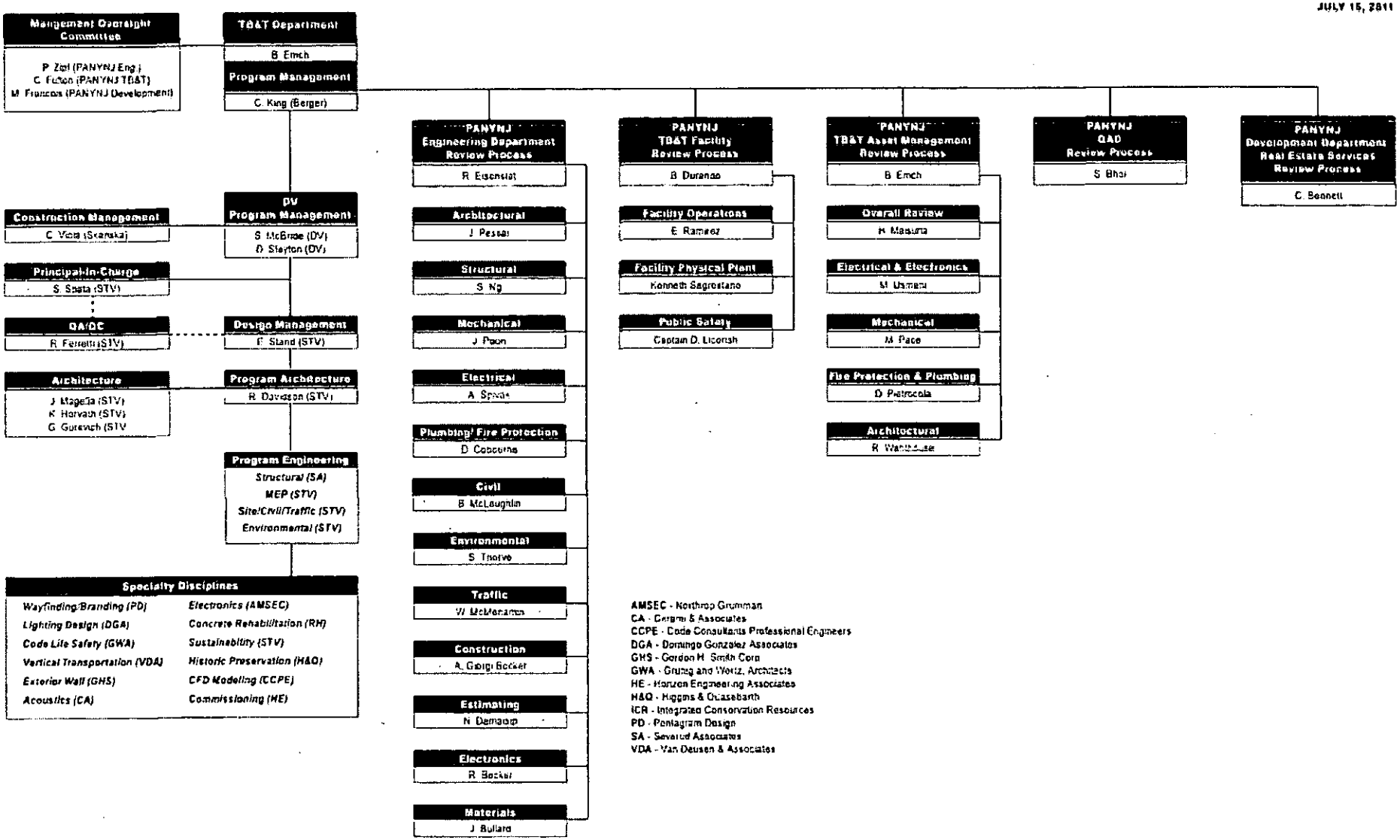
ATTACHMENT 2 to SCHEDULE 5.1.2A

GWBBS Redevelopment Project Flow Chart

See attached.

THE PORT AUTHORITY OF NY & NJ

EXHIBIT G
GWBBS REDEVELOPMENT PROJECT FLOW CHART
JULY 15, 2011



AMSEC - Northrop Grumman
CA - Cerami & Associates
CCPE - Code Consultants Professional Engineers
DGA - Domingo Gonzalez Associates
GHS - Gordon H. Smith Corp
GWA - Gruzen and Wertz, Architects
HE - Horizon Engineering Associates
H&O - Higgins & Chasebarth
ICR - Integrated Conservation Resources
PD - Pentagram Design
SA - Severud Associates
VDA - Van Deusen & Associates

Schedule 5.4.3

Form of Application for Payment and Schedule of Values

See attached.

APPLICATION AND CERTIFICATE FOR PAYMENT - AIA DOCUMENT G702

TO OWNER: *Port Authority of NYNJ*

PROJECT: *GWB BS Redevelopment Project*

APPLICATION NO.:
PERIOD TO:
PROJECT NOS.:

Distribution to:
[ ] OWNER
[ ] CONTRACTOR
[ ] ARCHITECT

FROM CONTRACTOR: *GWB BS DV LLC*

VIA ARCHITECT: *STV*

CONTRACT FOR: *Port Authoruty of NYNJ*

CONTRACTOR'S APPLICATION FOR PAYMENT
Application is made for payment, as show below, in connection with the Contract.
Continuation Sheet, AIA Document G703, is attached.

1	**ORIGINAL CONTRACT SUM:**		$ $52,650,558.00
2	**Net change by Change Orders:**		$
3	**CONTRACT SUM TO DATE (Line 1 +/- 2)**		$
4	**TOTAL COMPLETED & STORED TO DATE** (Column G on G703)		$
5	**RETAINAGE**		
	a. 10% of Completed Work (Columns D + E on G703)	$	
	b. % of Stored Material (Column F on G703)	$	
	Total Retainage (Line 5a +5b or Total in Column I of G703)		$
6	**TOTAL EARNED LESS RETAINAGE** (Line 4 less Line 5 Total)		$
7	**LESS PREVIOUS CERTIFICATES FOR PAYMENT** (Line 6 from prior Certificate)		$
8	**CURRENT PAYMENT DUE**		$
9	**BALANCE TO FINISH, INCLUDING RETAINAGE** (Line 3 less Line 6)		$

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner		
Total approved this Month		
TOTALS		
NET CHANGES by Change Order		

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by the Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

By: Date:

State of:
County of:
Subscribed and sworn to before me this day of

Notary Public:
My Commission expires:

ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work as progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED
(Attach explanation if amount certifed differs from the amount applied for. Initial all figures on this Application and on the Continuation Sheet that are changed to conform to the amount certified.)

By: Date:

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

CONTINUATION SHEET

AIA DOCUMENT G703

AIA DOCUMENT G702, APPLICATION AND CERTIFICATE FOR PAYMENT, CONTAINING
CONTRACTOR'S SIGNED CERTIFICATION IS ATTACHED
IN TABULATIONS BELOW, AMOUNTS ARE STATED TO THE NEAREST DOLLAR

APPLICATIONS NUMBER:
APPLICATION DATE:
PERIOD TO:
ARCHITECT'S PROJECT NO.:

A	B	C	D	E	F	G	H	I
ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD	MATERIALS PRESENTLY STORED (NOT IN D OR E)	TOTAL COMPLETED AND STORED TO DATE (D+E+F)	% (G/C)	BALANCE TO FINISH (C-G)	RETAINAGE
1	Mobilization								
	Mobilization								
	Submittals								
	Demolition/Abatement(Excluding Bus Concourse Roadway)								
	Temporary space								
	Temporary Stair								
	Exterior Temporary Stair Tower								
	Temporary Police, Maintenance & Bus Operations Trailers								
	Traffic Maintenance								
	Temporary protection/barriers								
	Temporary Utilities								
	Temporary Power								
	Temporary Data								
	Temporary Fire Detection								
	Temporary Plumbing								
	Temporary Sanitary Connections								
2	Common Areas								
	Structural framing								
	Structural decking								
	Miscellaneous/Ornamental Metals								
	Glazing								
	Doors & hardware								
	Exterior Metal Panels/Louvers								
	CMU walls								
	GWB Partitions								
	Ceilings								
	Finishes								
	Specialties								
	Static Signs								
	Variable Message Signage								
	Vertical Transportation								
	Stairs								
	Ramps								
	Guardrails								
	Handrails								
	Shaft/Pit Demolition/Abatement								
	Shaft/Pit Construction								
	Vertical Transportation - escalators								
	Vertical Transportation - elevators								
	Elevators Sprinklers								
	Elevators Oil-Water Separators								
	Elevators Sump Pumps								
	Plumbing								
	Sanitary Waste and Vent Piping								
	Natural Gas Piping								
	Domestic Water Piping								
	Fixtures								
	Fixtures (furnish, install and test)								
	water heater								
	Booster pump								
	circulation pump								

Sprinkler
- Sprinkler - Wet System
- Equipment (Furnish, install and test)
  - Fire Protection Plumbing: Fire Pump
  - Fire Protection Plumbing: Fire Service
  - Fire Protection Plumbing: Water Service- Domestic
  - Fire Protection Plumbing: Water Service- Fire
  - Fire Protection Plumbing: Backflow Preventers
  - Fire Protection Plumbing: Bulk Main and Risers
  - Fire Protection Plumbing: Hose Cabinets
  - Fire Protection Plumbing: Siamese Connections

HVAC
- Ductwork
- Duct Insulation
- Ductwork - Dampers
- Ductwork - Fans
- Ductwork- Louvers
- Water Piping
- Refrigerant Piping
- Fuel Oil System-Tank
- Fuel Oil System-Pump
- Fuelo Oil System- Piping
- Equipment (Furnish, install and test)
  - AC units
  - Fans
  - heaters
  - sound attenuators
  - pumps
  - boiler
- Automatic Temperature Controls

Electrical
- Electrical rough-in
- Electrical Finishes connections
- Electrical Equipment/Panels
- Lighting - furnish & install
- Electrical/Fire Alarm rough-in
- Electrical/Fire alarm Devices
- Electrical/Fire alarm Control Panels
- Electrical/Fire alarm Graphic System/ Software Update

3 Bus Concourse/Roadway
- Roadway Demo/Asbestos Abatement
- Guano Abatement
- Cleaning/Patching and Paint Removal of Nerwiew's structure
- Slab In-Fill
- Roadway Waterproofing Membrane
- Roadway Paving
- Concrete Sidewalk and Curb
- Concrete Platform/Sawtooth installation and Curb
- Crash guards
- Bus Berth Pylons
- Striping
- Platform Concrete Architectural Detail
- Static Signs
- Variable Message Signage

Plumbing
- Storm Piping
- Domestic Water Piping
- Plumbing Access Panels
- Equipment (Furnish, install and test)
  - water heater
  - Booster pump
  - circulation pump
- Roadway Drain Retrofit

Sprinkler
- Sprinkler - Wet System
- Sprinkler - Dry System
- Sprinkler- Air Pump
- Sprinkler Room Fit-out
- Sprinkler- Test Ports

	Sprinkler- Dry Valves									
	Sprinkler- Piping									
	Fire Hose & Cabinet (West Bldg)									
	Fire Hose/Siamese Connection (East Bldg)									
	Equipment (Furnish, install and test)									
	Fire Pump									
	Jockey Pump									
	Automatic Transfer Switch									
	Compressor									
HVAC										
	Fresh Air Intake Ducts									
	Ductwork-Fans									
	Ductwork - Louvers									
	Jinny Exhaust									
Electical										
	Lighting - furnish & install									
	Lighting Platform Conduit									
	Lighting Fixtures									
	Electrical Raceway									
	Lighting Armature									
	Electrical/Fire Alarm rough-in									
	Electrical/Fire alarm Devices									
	Electrical Rough-in									
	Electrical Equipment/Panels									
4	Pavillion & Concourse Utility Rooms									
	Structrual Framing									
	Structrual Decking									
	Glazing									
	Curtainwall									
	Doors Assemblies and Hardware									
	Revolving Doors									
	Exterior Metal Panels System									
	Louvers									
	Orso Grille									
	CMU walls									
	GWB Partitions									
	Ceilings									
	Flooring									
	Roofing									
	Painting and Finishes									
	Tiling									
	Railings									
	Toilet Room Specialties									
	Ticket Windows and shelves									
	Locker Room Specialties									
	Waiting Area Seating									
	Glass Veneer Wall Panels									
	Holding Cells									
	Static Signs									
	Variable Message Signage									
Plumbing										
	Sanitary Waste and Vent Piping									
	Natural Gas Piping									
	Domestic Water Piping									
	Fire Protection-Plumbing									
	Fixtures									
	Equipment (Furnish, install and test)									
	water heater									
	Booster pump									
	circulation pump									
Sprinkler										
	Fire Curtain									
	Sprinkler - Wet System									
	Sprinkler - Dry System									
	Special Systems - FM 200									
	Equipment (Furnish, install and test)									
	Fire Pump									
	Jockey Pump									
	Automatic Transfer Switch									

	Compressor									
	HVAC									
	Ductwork									
	Duct Insulation									
	Ductwork- Dampers									
	Ductwork- Fans									
	Ductwork- Louvers									
	Air Handler Units									
	Air Handler Units- HTU									
	Water Piping									
	Refrigerant Piping									
	Equipment (Furnish, install and test)									
	AC units									
	Fans									
	heaters									
	sound attenuators									
	pumps									
	boiler									
	Automatic Temperature Control									
	Electrical									
	Electrical Rough-In									
	Electrical Equipment/Panels									
	Lighting - furnish & install									
	Occupancy Sensors									
	Electrical/Fire Alarm rough-in									
	Electrical/Fire alarm Devices									
5	**Ft. Washington Generator**									
	750kW generator									
	750kW enclosure									
	750k generator foundation									
	750k load bank									
	750kW belly tank									
	Fire Suppression System- Foam									
	Fire Suppression System Room									
	HVAC									
	Doors and Hardware									
	4 hour Rated Concrete Enclosure									
	Automatic Transfer Switch									
	ATS Room									
	ATS Electrical Panel and Connections									
	Oil Water Separator									
	Electronic Systems									
	Conduit Run and Wiring to Substation and Pavilion Elec Rm									
	Static Signs									
	Automatic Temperature Controls									
	Equipment (Itemize list of major components)									
6	**Base Building Systems**									
	Plumbing									
	Storm Piping									
	Sanitary Waste and Vent Piping									
	Natural Gas Piping									
	Domestic Water Main and Risers									
	Fire Protection- Point of Entry									
	Domestic Water- Point of Entry									
	Base Building Equipment									
	Static Signs									
	Sprinkler									
	Bulk Main and Risers									
	Sprinkler- Monitoring									
	Fire Protection Plumbing: Backflow Preventers									
	Fire Protection Plumbing: Bulk Main and Risers									
	Fire Protection Plumbing: Siamese Connections									
	Equipment (Furnish, install and test)									
	Fire Protection Plumbing: Fire Pump									
	Fire Protection Plumbing: Fire Service									
	Fire Protection Plumbing: Water Service- Domestic									
	Fire Protection Plumbing: Water Service- Fire									
	Fire Protection Plumbing: Backflow Preventers									

	Fire Protection Plumbing: Bulk Mains and Risers								
	Fire Protection Plumbing: Hose Cabinets								
	Fire Protection Plumbing: Siamese Connections								
	HVAC								
	Sheet Metal								
	Sheet Metal Accessories								
	Duct Insulation								
	Water Piping								
	Refrigerant Piping								
	Fuel Oil System								
	Equipment (Furnish, install and test)								
	AC units								
	Fans								
	heaters								
	sound attenuators								
	pumps								
	boiler								
	Automatic Temperature Controls								
	Electrical								
	Fire Suppression System								
	Electrical/Fire alarm Control Panels								
	Electrical/Fire alarm Graphic System/ Software Update								
	Fire Alarm Systems								
	Telephone/Communication Service								
7	**Electrical Substation**								
	Fire suppression System								
	Automatic Transfer Switches (ATS)								
	HVAC and Appurtenances								
	Ductwork								
	Duct Insulation								
	Ductwork - Dampers								
	Ductwork - Fan								
	Ductwork - Louvers								
	Electronics Equipment (Provide List)								
	Electronics Panels								
	Conduit from substation to RP Electronics Rooms								
	Miscellaneous Finishes								
	Doors and hardware								
	Fire Alarm Systems								
	Fire Alarm Rough-Ins								
	Electrical- Switch Gear Equipment								
	Electrical- Feeders (Substation to Pavilion)								
	Electrical Service Power to Substation								
	Electrical Substation Equipment Panels								
	Electrical- Feeders to Reserve Premises Electric Rooms								
	Lighting - furnish & install								
	Static Signage								
8	**Broadway Entry/Canopy**								
	Doors Assemblies and Hardware								
	Glass Veneer Wall Panels								
	Column Cover								
	Nervi Canopy Rehabilitation								
	Canopy Roof								
	Lighting - furnish & install								
	Glass Fence and Gate								
	Shell/P4 Construction								
	Floor finishes								
	Vertical Transportation - elevators								
	Elevators: Sprinklers								
	Elevators: Oil-Water Separators								
	Elevators: Sump Pumps								
	Static Signage								
	Variable Message Signage								
9	**Electronics (Furnish, Install and Test)**								
	Access Control								
	Security Cameras								
	Public Address Speakers								

Each Device/System Installed & Tested								
Police Radio								
Facility Radio								
CCTV								
BMS								
SCADA								
Data								
PISP Software								
PISP Hardware								
PISP Wiring								
10 General Conditions embed within each line items cost								
11 A & E - summary page								
12 Insurance - summary page								
13 Performance Bond - summary page								
14 GC Fee Embed within each line item's cost.								

Schedule 5.6.3

Review by Appointment

See attached.

Schedule 5.6.3
Review by Appointment

SCHEDULING TAA REVIEW BY APPOINTMENT

It has always been the objective of the Engineering Department Quality Assurance Division, Design Standards Unit to process Tenant Alteration Application reviews in the most efficient and predictable manner. To further this objective a procedure for review of TAA's by appointment has been implemented in conjunction with the normal review process.

This review method is intended for **major projects** with **complex** scope-of-work and has been successfully used on many projects. An outline procedure for TAA reviews by appointment is presented below.

A. Documentation:

1. To establish a review appointment date, it is required that a Review Request be submitted **ten (10)** business days in advance of the desired review-start date.

2. The Review Request Form, submitted by the Line Department, must contain or have attached the following information:

   a) Review Request date.
   b) Tenant Alteration Application number.
   c) Tenant's name.
   d) Tenant's location.
   e) Outline description of the scope-of-work, including ALL relevant disciplines.
   f) Estimated cost of construction.
   g) COMPLETE list of ALL documents to be submitted, including for each document its original date for first submissions, title, drawing number, and a revision date for re-submissions.

   All documents shall be completed, collated, signed and sealed by the A/E of record. A minimum of **four (4)** sets of documents is required. Depending on the number of disciplines to be reviewed, additional sets may be required.

   Please note that if the actual number of submitted documents, significantly exceeds the quantity given in Item 2.g. above, additional review time will be required.

Schedule 5.6.3
Review by Appointment

B. General Requirements:

1. Reviews will include conceptual, first, and re-submissions.

2. A written FAX confirmation of the scheduled document delivery date is required **three (3) days** in advance. Documents must be delivered to TCRU/Design Standards by 10:00 A.M. of the first day of the review period. If the appointment time is missed, the reviewers scheduled for this job will have to proceed with their next schedule review, and the review-by-appointment date will have to be re-scheduled.

C. Review Periods:

1. Review periods will be targeted at a maximum of ten (10) Business days.

2. Review periods for projects of EXTRAORDINARY complexity will be considered on a case-by-case basis. If such review periods require more than ten (10) business days, the Line Department will be notified as early as possible.

3. Confirmation of scheduling for review-by-appointment will occur *as soon as possible following receipt of the contract documents*; approximately two (2) or three (3) business days.

QUALITY ASSURANCE DIVISION

TAA REVIEW TURN- AROUND TIME

Construction Cost	Initial Review	Subsequent Review
Up to $500,000	10 business days	10 business days
$500,001 - $ 5,000,000	15 business days	12 business days
$5,000,001 - $ 15,000,000	20 business days	14 business days
Over $ 15,000,000	30 business days	18 business days

Schedule 5.21.1(a)(i)

GWBBS Hours of Work and Construction Staging

See attached.

Schedule 5.21.1(a)(i)

GWBBS REDEVELOPMENT PROJECT

HOURS OF WORK AND CONSTRUCTION STAGING 6/9/09

Hours of Work:

Subject to all requirements stated elsewhere herein, the Work shall be performed in accordance with the following restricted hours of Work.

Work not requiring lane closures shall be performed between the hours of 7:00 A.M. and 3:00 P.M. Monday through Friday.

Work requiring lane closures shall be performed as follows:

Daytime Weekday	Eastbound only	10:00AM to 3:00PM
Daytime Weekday	Westbound only	08:30AM to 2:30PM
Nighttime	Weekdays	11:00PM to 05:00AM
	Weekends Saturday and Sunday	12:01AM to 08:00AM

Closure of the center lane alone is not permitted at any time. Center lane closure must be accompanied by the closure of the adjacent curb lane.

Notwithstanding anything to the contrary hereinabove, for the duration of the Contract, no closure of any traffic lanes is permitted during the following periods:

Memorial Day weekend (5:00 AM Friday through 5:00 AM Tuesday).

Independence Day weekend (5:00 AM Friday through 5:00 AM Tuesday if the holiday falls on a Monday; 5:00 AM Thursday through 5:00 AM Monday if the holiday falls on a Friday; and 5:00 AM the day before to 5:00 AM the day after if the holiday falls in the middle of the week).

Labor Day weekend (5:00 AM Friday through 5:00 AM Tuesday).

Mother's Day and Father's Day weekends (5:00 AM Friday through 5:00 AM Monday).

Thanksgiving weekend (5:00 AM Friday before the Holiday through 5:00 AM Monday).

Schedule 5.21.1(a)(i)

Christmas through New Year (5:00 AM December 23 through 5:00 AM January 2
Easter weekend (5:00 AM Friday through 5:00 AM Monday).

From 5:00 AM the day before to 5:00 AM the day after the start of Rosh Hashanah, Yom Kippur, Passover and Hanukkah.

Columbus Day weekend (5:00 AM Friday through 5:00 AM Tuesday).

From 5:00 AM the day before to 5:00 AM the day after Veteran's Day.

On scheduled days of Yankees, Jets, Giants games and/or events at the Meadowlands, roadways shall be cleared of construction closures two hours prior to event start time and closures will not start until one hour after the ending time of the event.

Sidewalk closures must be submitted at least two weeks in advance for the duration subjected to facility events requiring sidewalks and or weather

The Contractor shall submit to Engineer at least one week in advance, his scheduled hours of Work for each week. Also a two week look ahead will be needed.

Do not perform Work at the construction site outside of these time periods or on a Federal legal holiday or a holiday of the State(s) in which the Work is being performed, unless otherwise permitted by the Engineer.

All contractor vehicles assigned to the job must be permeantly marked with the company logo / name, all vehicles needed @ job site must apply and receive a GWB parking placard, to be submitted with a copy of the vehicles registration. The permit is good for a three-month period and must be reapplied for. Resident Engineer must pre-approve.

All personnel working on this facility must apply and receive a GWB Police identification card; in order to receive this ID all employees must apply and receive a background check through the SWAC program. ID'S are valid for a three-month period and must be re-applied for.

Lenel Security Access control cards for egress to high security areas must be pr-approved by the Resident Engineer. Personnel requiring security access control must apply and receive a SWAC background check in order to receive. Once issued cards are given for up to one year and must be re-applied for if needed.

Schedule 9.1AA

GWBBS Gas, Domestic Water, Sanitary and Storm Systems Maintenance, Testing & Repair

See attached.

GWBBS -Gas, domesitc water, sanitary and storm systems maintenance, testing & repair 15-Jul-11

System	Item	DV per section 9.1 and 9.4 of lease	PA per section 9.5 of lease	Third party
Gas	1 (a). Incoming gas services from the street and related piping and apparatuses up to the line side of the gas meter(s)			Con Ed
	1 (b). Dedicated Reserved Premises gas meter(s) and all related gas piping and apparatuses serving only the Reserved Premises		x	
	1 (c). Dedicated Leased Premises gas meter(s) and all related gas piping and apparatuses serving the Leased Premises	x		
Water	2 (a)(i). Dedicated Incoming domestic water service from the street and related piping and apparatuses up to the line side of the meter(s) for Reserved Premises		x	
	2 (a)(ii). Dedicated Incoming domestic water service from the street and related piping and apparatuses up to the line side of the meter(s) for Leased Premises	x		
	2 (b)(i). Reserved Premises water meter(s) and all related domestic water piping and apparatuses serving only the Reserved Premises. (ii) The emergency domesitc water by-pass line serving the Reserved Premises inclusive of the by-pass valve		x	
	2 (c)(i). Leased Premises water meter(s) and all related domestic water piping and apparatuses serving only the Leased Premises. (ii)The Leased Premises emergency domestic water by-pass line leading up to but not inclusive of the by-pass valve	x		
Sanitary	3 (a). All Sanitary main discharge lines, vent lines and house traps.	x		
	3 (b). All sanitary piping and apparatuses serving only the Reserved Premises from the Reserved Premises to the point of connection to the common main building discharge lines		x	
	3 (c). All sanitary piping and apparatuses serving the Leased Premises from the Leased Premises to the point of connection to the common main building discharge lines	x		
Storm	4 (a). Stormwater common main building discharge lines, vent lines and traps to be shared 50% Leasee and 50% Port Authority	x	x	
	4 (b). All storm piping and apparatuses serving only the Reserved Premises from the Reserved Premises to the point of connection to the common main building discharge lines		x	
	4 (c). All storm piping and apparatuses serving only the Leased Premises from the Leased Premises to the point of connection to the common main building discharge lines	x		

Schedule 9.3.1

Common Area Operation and Maintenance Services

See attached.

George Washington Bridge Bus Station

Retail

O&M Guide

CAM Budget

Work:	Freq	Comments
Fire System Contract		
Fire Alarm Contract - Inspection	1x/yr	Central Station monitoring, annual inspection
Fire Alarm R & M	as needed	As needed repairs and system maintenance
Fire Sprinkler - Inspection	1x/yr	Annual inspection
Fire Sprinkler - R & M	as needed	As needed repairs and system maintenance
Exterminating Contract		
Rodent/Insect Control	12x/yr	Pest Management contract with services on regular basis, plus on call availability
Pigeon Control	as needed	Habitrol applications, spikes, netting, etc.
Misc. Repairs		
Doors & Glass	as needed	Repairs to doors, hinges, handles, push bars, locks, glass replacement
Carpentry Repairs	as needed	Repairs to drywall, ceilings, ceiling tiles, moldings,
Flooring Repairs	as needed	Repairs to finished flooring, expansion joint covers, stair treads, threshold covers
Graffiti Removal	as needed	Exterrior Power wash or paint over ,
Lighting Maintenance		
Bulb Replacement	as needed	Replace burnt bulbs
Lens Replacement	as needed	Replace damaged lens covers
Ballast/Fixture Replacement	as needed	As needed repairs
Painting		
Spot Area Repairs	as needed	Due to vandalism, wear and tear
Whole Area Re-Painting	Every 4 years/as needed	For aesthetics
HVAC Maintenance		Preventative maintenance, Inspections, and service contract (Common Area only)
Filter Changes	4x/yr	Filter changes four times per year
Inspections and PM	4x/yr	Service Contract - 1 start up inspection prior to cooling season, 3 operating inspections
Repairs	as needed	Condenser fans and motors, belts, compressors, sensors, leaks, etc.
EMS Contract	as needed	Contract to maintain EMS System
EMS Repairs	as needed	Repairs not covered under contract
Misc. Fan Repairs	as needed	For exhaust fans, purge fans, etc.
Duct work cleaning	as needed	
Snow Removal		
Sidewalk Snow and Ice Removal	as needed	Contract to remove snow and ice, apply melters, etc
Ice Inspections	as needed	Conditions warranting, contractor to inspect for hazardous conditions
Window Washing		
Exterior Windows	2x/yr	Clean all two times per year
Elevator & Escalator		
Service Contract	Monthly	Inspections as required by code, service calls to facility
Repairs	as needed	Repairs not covered under contract - Due to vandalism, water, fire, etc
OT Calls	as needed	Additional labor charges not under contract due to weekend/night/holiday service calls
Independent Consultant	1x/yr	Annual inspection by independent consultant as required by city code
Power Washing		
Sidewalk Cleaning	2x/yr	Clean sidewalks, remove gum, remove stains, etc
Façade Washing	1x/yr	Clean building façade
Concrete Repair		
Sidewalk repairs	as needed	Repair cracks, joints, flags
Loading Dock	as needed	Repairs to dock area
Utility Consumption		Lighting, vertical transportation, HVAC, ext. lights
Electrical Consumption	12x/yr	Con Edison costs for electric consumption for common area lighting, elev/esc, signs, etc
Natural Gas Consumption	12x/yr	Con Edison costs for gas consumption for common area heating and hot water
Water Consumption	as billed	Water costs as charged by NYC
Janitorial		
Common Area Janitorial	daily/nightly/project	Commercial Cleaning and Janitorial Services contract
Exterior	daily/nightly/project	Commercial Cleaning and Janitorial Services contract
Plumbing		
Waste Line Maintenance	as needed	Clear blockages, sewer jetting
Inspections	1x/yr	Back flow and meter inspections
Site Management		
Site Manager	salary	Property Manager supervision
Maintenance Mechanics	hourly rates	For repairs and maintenance
Engineers	hourly rates	For HVAC and boiler operation, per code
Trash Removal		
Waste Removal	weekly	Carting fees for common are waste removal(does not include tenant waste)
Recycling	weekly	Comprehensive Waste Management Program, including Recycling
Roof		
Repairs	as needed	For leaks, seams, etc.
Maintenance	2x/yr	Cleaning, drain clearing, etc.

George Washington Bridge Bus Station

Retail

O&M Guide

CAM Budget

Work:	Freq	Comments
Fire System Contract		
Fire Alarm Contract - Inspection	1x/yr	Central Station monitoring, annual inspection
Fire Alarm R & M	as needed	As needed repairs and system maintenance
Fire Sprinkler - Inspection	1x/yr	Annual inspection
Fire Sprinkler - R & M	as needed	As needed repairs and system maintenance
Exterminating Contract		
Rodent/Insect Control	12x/yr	Pest Management contract with services on regular basis, plus on call availability
Pigeon Control	as needed	Habitrol applications, spikes, netting, etc.
Misc. Repairs		
Doors & Glass	as needed	Repairs to doors, hinges, handles, push bars, locks, glass replacement
Carpentry Repairs	as needed	Repairs to drywall, ceilings, ceiling tiles, moldings.
Flooring Repairs	as needed	Repairs to finished flooring, expansion joint covers, stair treads, threshold covers
Graffiti Removal	as needed	Exterior Power wash or paint over .
Lighting Maintenance		
Bulb Replacement	as needed	Replace burnt bulbs
Lens Replacement	as needed	Replace damaged lens covers
Ballast/Fixture Replacement	as needed	As needed repairs
Painting		
Spot Area Repairs	as needed	Due to vandalism, wear and tear
Whole Area Re-Painting	Every 4 years/as needed	For aesthetics
HVAC Maintenance		Preventative maintenance, inspections, and service contract (Common Area only)
Filter Changes	4x/yr	Filter changes four times per year
Inspections and PM	4x/yr	Service Contract - 1 start up inspection prior to cooling season, 3 operating inspections
Repairs	as needed	Condenser fans and motors, belts, compressors, sensors, leaks, etc.
EMS Contract	as needed	Contract to maintain EMS System
EMS Repairs	as needed	Repairs not covered under contract
Misc. Fan Repairs	as needed	For exhaust fans, purge fans, etc.
Duct work cleaning	as needed	
Snow Removal		
Sidewalk Snow and Ice Removal	as needed	Contract to remove snow and ice, apply melters, etc
Ice Inspections	as needed	Conditions warranting, contractor to inspect for hazardous conditions
Window Washing		
Exterior Windows	2x/yr	Clean all two times per year
Elevator & Escalator		
Service Contract	Monthly	inspections as required by code, service calls to facility
Repairs	as needed	Repairs not covered under contract - Due to vandalism, water, fire, etc
OT Calls	as needed	Additional labor charges not under contract due to weekend/night/holiday service calls
Independent Consultant	1x/yr	Annual inspection by independent consultant as required by city code
Power Washing		
Sidewalk Cleaning	2x/yr	Clean sidewalks, remove gum, remove stains, etc
Façade Washing	1x/yr	Clean building façade
Concrete Repair		
Sidewalk repairs	as needed	Repair cracks, joints, flags
Loading Dock	as needed	Repairs to dock area
Utility Consumption		Lighting, vertical transportation, HVAC, ext. lights
Electrical Consumption	12x/yr	Con Edison costs for electric consumption for common area lighting, elev/esc, signs, etc
Natural Gas Consumption	12x/yr	Con Edison costs for gas consumption for common area heating and hot water
Water Consumption	as billed	Water costs as charged by NYC
Janitorial		
Common Area Janitorial	daily/nightly/project	Commercial Cleaning and Janitorial Services contract
Exterior	daily/nightly/project	Commercial Cleaning and Janitorial Services contract
Plumbing		
Waste Line Maintenance	as needed	Clear blockages, sewer jetting
Inspections	1x/yr	Back flow and meter inspections
Site Management		
Site Manager	salary	Property Manager supervision
Maintenance Mechanics	hourly rates	For repairs and maintenance
Engineers	hourly rates	For HVAC and boiler operation, per code
Trash Removal		
Waste Removal	weekly	Carting fees for common are waste removal(does not include tenant waste)
Recycling	weekly	Comprehensive Waste Management Program, including Recycling
Roof		
Repairs	as needed	For leaks, seams, etc.
Maintenance	2x/yr	Cleaning, drain cleaning, etc.

George Washington Bridge Bus Station

Retail

O&M Guide

CAM Budget

Work:	Freq	Comments
Fire System Contract		
Fire Alarm Contract - Inspection	1x/yr	Central Station monitoring, annual inspection
Fire Alarm R & M	as needed	As needed repairs and system maintenance
Fire Sprinkler - Inspection	1x/yr	Annual inspection
Fire Sprinkler - R & M	as needed	As needed repairs and system maintenance
Exterminating Contract		
Rodent/Insect Control	12x/yr	Pest Management contract with services on regular basis, plus on call availability
Pigeon Control	as needed	Habitrol applications, spikes, netting, etc.
Misc. Repairs		
Doors & Glass	as needed	Repairs to doors, hinges, handles, push bars, locks, glass replacement
Carpentry Repairs	as needed	Repairs to drywall, ceilings, ceiling tiles, moldings,
Flooring Repairs	as needed	Repairs to finished flooring, expansion joint covers, stair treads, threshold covers
Graffiti Removal	as needed	Exterior Power wash or paint over .
Lighting Maintenance		
Bulb Replacement	as needed	Replace burnt bulbs
Lens Replacement	as needed	Replace damaged lens covers
Ballast/Fixture Replacement	as needed	As needed repairs
Painting		
Spot Area Repairs	as needed	Due to vandalism, wear and tear
Whole Area Re-Painting	Every 4 years/as needed	For aesthetics
HVAC Maintenance		Preventative maintenance, Inspections, and service contract (Common Area only)
Filter Changes	4x/yr	Filter changes four times per year
Inspections and PM	4x/yr	Service Contract - 1 start up inspection prior to cooling season, 3 operating inspections
Repairs	as needed	Condenser fans and motors, belts, compressors, sensors, leaks, etc.
EMS Contract	as needed	Contract to maintain EMS System
EMS Repairs	as needed	Repairs not covered under contract
Misc. Fan Repairs	as needed	For exhaust fans, purge fans, etc.
Duct work cleaning	as needed	
Snow Removal		
Sidewalk Snow and Ice Removal	as needed	Contract to remove snow and ice, apply melters, etc
Ice Inspections	as needed	Conditions warranting, contractor to inspect for hazardous conditions
Window Washing		
Exterior Windows	2x/yr	Clean all two times per year
Elevator & Escalator		
Service Contract	Monthly	inspections as required by code, service calls to facility
Repairs	as needed	Repairs not covered under contract - Due to vandalism, water, fire, etc
OT Calls	as needed	Additional labor charges not under contract due to weekend/night/holiday service calls
Independent Consultant	1x/yr	Annual inspection by independent consultant as required by city code
Power Washing		
Sidewalk Cleaning	2x/yr	Clean sidewalks, remove gum, remove stains, etc
Façade Washing	1x/yr	Clean building façade
Concrete Repair		
Sidewalk repairs	as needed	Repair cracks, joints, flags
Loading Dock	as needed	Repairs to dock area
Utility Consumption		Lighting, vertical transportation, HVAC, ext. lights
Electrical Consumption	12x/yr	Con Edison costs for electric consumption for common area lighting, elev/esc, signs, etc
Natural Gas Consumption	12x/yr	Con Edison costs for gas consumption for common area heating and hot water
Water Consumption	as billed	Water costs as charged by NYC
Janitorial		
Common Area Janitorial	daily/nightly/project	Commercial Cleaning and Janitorial Services contract
Exterior	daily/nightly/project	Commercial Cleaning and Janitorial Services contract
Plumbing		
Waste Line Maintenance	as needed	Clear blockages, sewer jetting
Inspections	1x/yr	Back flow and meter inspections
Site Management		
Site Manager	salary	Property Manager supervision
Maintenance Mechanics	hourly rates	For repairs and maintenance
Engineers	hourly rates	For HVAC and boiler operation, per code
Trash Removal		
Waste Removal	weekly	Carting fees for common are waste removal(does not include tenant waste)
Recycling	weekly	Comprehensive Waste Management Program, including Recycling
Roof		
Repairs	as needed	For leaks, seams, etc.
Maintenance	2x/yr	Cleaning, drain clearing, etc.

George Washington Bridge Bus Station

Retail

O&M Guide

CAM Budget

Work:	Freq	Comments
Fire System Contract		
Fire Alarm Contract - Inspection	1x/yr	Central Station monitoring, annual inspection
Fire Alarm R & M	as needed	As needed repairs and system maintenance
Fire Sprinkler - Inspection	1x/yr	Annual inspection
Fire Sprinkler - R & M	as needed	As needed repairs and system maintenance
Exterminating Contract		
Rodent/Insect Control	12x/yr	Pest Management contract with services on regular basis, plus on call availability
Pigeon Control	as needed	Habitrol applications, spikes, netting, etc.
Misc. Repairs		
Doors & Glass	as needed	Repairs to doors, hinges, handles, push bars, locks, glass replacement
Carpentry Repairs	as needed	Repairs to drywall, ceilings, ceiling tiles, moldings.
Flooring Repairs	as needed	Repairs to finished flooring, expansion joint covers, stair treads, threshold covers
Graffiti Removal	as needed	Exterior Power wash or paint over .
Lighting Maintenance		
Bulb Replacement	as needed	Replace burnt bulbs
Lens Replacement	as needed	Replace damaged lens covers
Ballast/Fixture Replacement	as needed	As needed repairs
Painting		
Spot Area Repairs	*as needed*	*Due to vandalism, wear and tear*
Whole Area Re-Painting	Every 4 years/as needed	For aesthetics
HVAC Maintenance		Preventative maintenance, Inspections, and service contract (Common Area only)
Filter Changes	4x/yr	Filter changes four times per year
Inspections and PM	4x/yr	Service Contract - 1 start up inspection prior to cooling season, 3 operating inspections
Repairs	as needed	Condenser fans and motors, belts, compressors, sensors, leaks, etc
EMS Contract	as needed	Contract to maintain EMS System
EMS Repairs	as needed	Repairs not covered under contract
Misc. Fan Repairs	as needed	For exhaust fans, purge fans, etc.
Duct work cleaning	as needed	
Snow Removal		
Sidewalk Snow and Ice Removal	as needed	Contract to remove snow and ice, apply melters, etc
Ice Inspections	as needed	Conditions warranting, contractor to inspect for hazardous conditions
Window Washing		
Exterior Windows	2x/yr	Clean all two times per year
Elevator & Escalator		
Service Contract	Monthly	Inspections as required by code, service calls to facility
Repairs	as needed	Repairs not covered under contract - Due to vandalism, water, fire, etc
OT Calls	as needed	Additional labor charges not under contract due to weekend/night/holiday service calls
Independent Consultant	1x/yr	Annual inspection by independent consultant as required by city code
Power Washing		
Sidewalk Cleaning	2x/yr	Clean sidewalks, remove gum, remove stains, etc
Façade Washing	1x/yr	Clean building façade
Concrete Repair		
Sidewalk repairs	as needed	Repair cracks, joints, flags
Loading Dock	as needed	Repairs to dock area
Utility Consumption		Lighting, vertical transportation, HVAC, ext. lights
Electrical Consumption	12x/yr	Con Edison costs for electric consumption for common area lighting, elev/esc, signs, etc
Natural Gas Consumption	12x/yr	Con Edison costs for gas consumption for common area heating and hot water
Water Consumption	as billed	Water costs as charged by NYC
Janitorial		
Common Area Janitorial	daily/nightly/project	Commercial Cleaning and Janitorial Services contract
Exterior	daily/nightly/project	Commercial Cleaning and Janitorial Services contract
Plumbing		
Waste Line Maintenance	as needed	Clear blockages, sewer jetting
Inspections	1x/yr	Back flow and meter inspections
Site Management		
Site Manager	salary	Property Manager supervision
Maintenance Mechanics	hourly rates	For repairs and maintenance
Engineers	hourly rates	For HVAC and boiler operation, per code
Trash Removal		
Waste Removal	weekly	Carting fees for common are waste removal(does not include tenant waste)
Recycling	weekly	Comprehensive Waste Management Program, including Recycling
Roof		
Repairs	as needed	For leaks, seams, etc.
Maintenance	2x/yr	Cleaning, drain cleaning, etc.

George Washington Bridge Bus Station

Retail

O&M Guide

CAM Budget

Work:	Freq	Comments
Fire System Contract		
Fire Alarm Contract - Inspection	1x/yr	Central Station monitoring, annual inspection
Fire Alarm R & M	as needed	As needed repairs and system maintonance
Fire Sprinkler - Inspection	1x/yr	Annual inspection
Fire Sprinkler - R & M	as needed	As needed repairs and system maintenance
Exterminating Contract		
Rodent/Insect Control	12x/yr	Pest Management contract with services on regular basis, plus on call availability
Pigeon Control	as needed	Habitrol applications, spikes, netting, etc.
Misc. Repairs		
Doors & Glass	as needed	Repairs to doors, hinges, handles, push bars, locks, glass replacement
Carpentry Repairs	as needed	Repairs to drywall, ceilings, ceiling tiles, moldings,
Flooring Repairs	as needed	Repairs to finished flooring, expansion joint covers, stair treads, threshold covers
Graffiti Removal	as needed	Exterior Power wash or paint over .
Lighting Maintenance		
Bulb Replacement	as needed	Replace burnt bulbs
Lens Replacement	as needed	Replace damaged lens covers
Ballast/Fixture Replacement	as needed	As needed repairs
Painting		
Spot Area Repairs	as needed	Due to vandalism, wear and tear
Whole Area Re-Painting	Every 4 years/as needed	For aesthetics
HVAC Maintenance		Preventative maintenance, Inspections, and service contract (Common Area only)
Filter Changes	4x/yr	Filter changes four times per year
Inspections and PM	4x/yr	Service Contract - 1 start up inspection prior to cooling season, 3 operating inspections
Repairs	as needed	Condenser fans and motors, belts, compressors, sensors, leaks, etc
EMS Contract	as needed	Contract to maintain EMS System
EMS Repairs	as needed	Repairs not covered under contract
Misc. Fan Repairs	as needed	For exhaust fans, purge fans, etc.
Duct work cleaning	as needed	
Snow Removal		
Sidewalk Snow and Ice Removal	as needed	Contract to remove snow and ice, apply melters, etc
Ice Inspections	as needed	Conditions warranting, contractor to inspect for hazardous conditions
Window Washing		
Exterior Windows	2x/yr	Clean all two times per year
Elevator & Escalator		
Service Contract	Monthly	inspections as required by code, service calls to facility
Repairs	as needed	Repairs not covered under contract - Due to vandalism, water, fire, etc
OT Calls	as needed	Additional labor charges not under contract due to weekend/night/holiday service calls
Independent Consultant	1x/yr	Annual inspection by independent consultant as required by city code
Power Washing		
Sidewalk Cleaning	2x/yr	Clean sidewalks, remove gum, remove stains, etc
Façade Washing	1x/yr	Clean building façade
Concrete Repair		
Sidewalk repairs	as needed	Repair cracks, joints, flags
Loading Dock	as needed	Repairs to dock area
Utility Consumption		Lighting, vertical transportation, HVAC, ext. lights
Electrical Consumption	12x/yr	Con Edison costs for electric consumption for common area lighting, elev/esc, signs, etc
Natural Gas Consumption	12x/yr	Con Edison costs for gas consumption for common area heating and hot water
Water Consumption	as billed	Water costs as charged by NYC
Janitorial		
Common Area Janitorial	daily/nightly/project	Commercial Cleaning and Janitorial Services contract
Exterior	daily/nightly/project	Commercial Cleaning and Janitorial Services contract
Plumbing		
Waste Line Maintenance	as needed	Clear blockages, sewer jetting
Inspections	1x/yr	Back flow and meter inspections
Site Management		
Site Manager	salary	Property Manager supervision
Maintenance Mechanics	hourly rates	For repairs and maintenance
Engineers	hourly rates	For HVAC and boiler operation, per code
Trash Removal		
Waste Removal	weekly	Carting fees for common are waste removal(does not include tenant waste)
Recycling	weekly	Comprehensive Waste Management Program, including Recycling
Roof		
Repairs	as needed	For leaks, seams, etc.
Maintenance	2x/yr	Cleaning, drain clearing, etc.

George Washington Bridge Bus Station

Retail

O&M Guide

CAM Budget

Work:	Freq	Comments
Fire System Contract		
Fire Alarm Contract - Inspection	1x/yr	Central Station monitoring, annual inspection
Fire Alarm R & M	as needed	As needed repairs and system maintenance
Fire Sprinkler - Inspection	1x/yr	Annual inspection
Fire Sprinkler - R & M	as needed	As needed repairs and system maintenance
Exterminating Contract		
Rodent/Insect Control	12x/yr	Pest Management contract with services on regular basis, plus on call availability
Pigeon Control	as needed	Habitrol applications, spikes, netting, etc.
Misc. Repairs		
Doors & Glass	as needed	Repairs to doors, hinges, handles, push bars, locks, glass replacement
Carpentry Repairs	as needed	Repairs to drywall, ceilings, ceiling tiles, moldings,
Flooring Repairs	as needed	Repairs to finished flooring, expansion joint covers, stair treads, threshold covers
Graffiti Removal	as needed	Exterior Power wash or paint over .
Lighting Maintenance		
Bulb Replacement	as needed	Replace burnt bulbs
Lens Replacement	as needed	Replace damaged lens covers
Ballast/Fixture Replacement	as needed	As needed repairs
Painting		
Spot Area Repairs	as needed	Due to vandalism, wear and tear
Whole Area Re-Painting	Every 4 years/as needed	For aesthetics
HVAC Maintenance		Preventative maintenance, inspections, and service contract (Common Area only)
Filter Changes	4x/yr	Filter changes four times per year
Inspections and PM	4x/yr	Service Contract - 1 start up inspection prior to cooling season, 3 operating inspections
Repairs	as needed	Condenser fans and motors, belts, compressors, sensors, leaks, etc.
EMS Contract	as needed	Contract to maintain EMS System
EMS Repairs	as needed	Repairs not covered under contract
Misc. Fan Repairs	as needed	For exhaust fans, purge fans, etc
Duct work cleaning	as needed	
Snow Removal		
Sidewalk Snow and Ice Removal	as needed	Contract to remove snow and ice, apply melters, etc
Ice Inspections	as needed	Conditions warranting, contractor to inspect for hazardous conditions
Window Washing		
Exterior Windows	2x/yr	Clean all two times per year
Elevator & Escalator		
Service Contract	Monthly	Inspections as required by code, service calls to facility
Repairs	as needed	Repairs not covered under contract - Due to vandalism, water, fire, etc
OT Calls	as needed	Additional labor charges not under contract due to weekend/night/holiday service calls
Independent Consultant	1x/yr	Annual inspection by independent consultant as required by city code
Power Washing		
Sidewalk Cleaning	2x/yr	Clean sidewalks, remove gum, remove stains, etc
Façade Washing	1x/yr	Clean building façade
Concrete Repair		
Sidewalk repairs	as needed	Repair cracks, joints, flags
Loading Dock	as needed	Repairs to dock area
Utility Consumption		Lighting, vertical transportation, HVAC, ext. lights
Electrical Consumption	12x/yr	Con Edison costs for electric consumption for common area lighting, elev/esc, signs, etc
Natural Gas Consumption	12x/yr	Con Edison costs for gas consumption for common area heating and hot water
Water Consumption	as billed	Water costs as charged by NYC
Janitorial		
Common Area Janitorial	daily/nightly/project	Commercial Cleaning and Janitorial Services contract
Exterior	daily/nightly/project	Commercial Cleaning and Janitorial Services contract
Plumbing		
Waste Line Maintenance	as needed	Clear blockages, sewer jetting
Inspections	1x/yr	Back flow and meter inspections
Site Management		
Site Manager	salary	Property Manager supervision
Maintenance Mechanics	hourly rates	For repairs and maintenance
Engineers	hourly rates	For HVAC and boiler operation, per code
Trash Removal		
Waste Removal	weekly	Carting fees for common are waste removal(does not include tenant waste)
Recycling	weekly	Comprehensive Waste Management Program, including Recycling
Roof		
Repairs	as needed	For leaks, seams, etc.
Maintenance	2x/yr	Cleaning, drain clearing, etc.

NYC DEPARTMENT OF FINANCE
OFFICE OF THE CITY REGISTER

This page is part of the instrument. The City Register will rely on the information provided by you on this page for purposes of indexing this instrument. The information on this page will control for indexing purposes in the event of any conflict with the rest of the document.

2011072600276001002E690C

RECORDING AND ENDORSEMENT COVER PAGE

Document ID: 2011072600276001 Document Date: 07-21-2011 Preparation Date: 07-26-2011
Document Type: MEMORANDUM OF LEASE
Document Page Count: 12

PRESENTER:	**RETURN TO:**
ROYAL ABSTRACT OF NEW YORK LLC (PICK UP/RANDY)MB 500 5TH AVENUE SUITE 1540 NEW YORK, NY 10110 900018	ROYAL ABSTRACT OF NEW YORK LLC (PICK UP/RANDY)MB 500 5TH AVENUE SUITE 1540 NEW YORK, NY 10110 900018

PROPERTY DATA

Borough	Block	Lot	Unit	Address
MANHATTAN	2163	1	Entire Lot	4200 BROADWAY

Property Type: COMMERCIAL REAL ESTATE

Borough	Block	Lot	Unit	Address
MANHATTAN	2176	17	Entire Lot	4201 BROADWAY

Property Type: COMMERCIAL REAL ESTATE

CROSS REFERENCE DATA

CRFN_____ *or* Document ID_____ *or* _____ Year____ Reel ___ Page ____ *or* File Number_____

PARTIES

LESSOR:	**LESSEE:**
THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY 225 PARK AVENUE SOUTH, 14TH FLOOR NEW YORK, NY 10003	GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC, C/O SJM PARTNERS,, 9001 CONGRESSIONAL COURT POTOMAC, MD 20854

FEES AND TAXES

Mortgage			Filing Fee:	
Mortgage Amount:	$	0.00	$	250.00
Taxable Mortgage Amount:	$	0.00	NYC Real Property Transfer Tax:	
Exemption:			$	0.00
TAXES: County (Basic):	$	0.00	NYS Real Estate Transfer Tax:	
City (Additional):	$	0.00	$	0.00
Spec (Additional):	$	0.00		
TASF:	$	0.00		
MTA:	$	0.00		
NYCTA:	$	0.00		
Additional MRT:	$	0.00		
TOTAL:	$	0.00		
Recording Fee:	$	99.00		
Affidavit Fee:	$	0.00		

RECORDED OR FILED IN THE OFFICE OF THE CITY REGISTER OF THE CITY OF NEW YORK

Recorded/Filed 08-02-2011 16:05
City Register File No.(CRFN):
2011000271826

City Register Official Signature

MEMORANDUM OF LEASE

by and between

THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY

and

GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC

	Parcel A:		Parcel B:
Block:	2163	Block:	2176
Lot:	1	Lot:	17
County:	New York	County:	New York
Address:	4200-4218 Broadway a/k/a 100-110 Wadsworth Avenue a/k/a 651-667 West 178th Street a/k/a 650-664 West 179th Street	Address:	4201-4219 Broadway a/k/a 406-422 Fort Washington Ave. a/k/a 701-721 West 178th Street a/k/a 700-720 West 179th Street

Record and Return to:

Arent Fox LLP
1675 Broadway
New York, New York 10019
Attention: Karen F. Candreva, Esq.

90018
ROYAL ABSTRACT
500 FIFTH AVENUE SUITE 1540
NEW YORK, N.Y. 10110
(212) 376-0900

NYC/596393.1

MEMORANDUM OF LEASE

THIS MEMORANDUM OF LEASE (this "Memorandum") is made as of July 21, 2011 by and between **THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY** (the "Port Authority"), a corporation organized and existing under and by virtue of the laws of the States of New York and New Jersey, having an office at 225 Park Avenue South, New York, New York 10003, Attention: General Counsel's Office, and **GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC** (the "Lessee"), a limited liability company organized and existing under and by virtue of the laws of the State of Delaware and having an office and place of business at c/o SJM Partners, 9001 Congressional Court, Potomac, Maryland 20854, Attention: Stephen Garchik.

1. This Memorandum is made pursuant to Section 291-cc of the New York Real Property Law.

2. The Port Authority, as lessor, and Lessee, as lessee, entered into that certain Agreement of Lease dated of even date herewith (the "Lease").

3. The premises leased pursuant to the Lease constitute a portion of the real property described on Exhibit A attached hereto (as more particularly defined in the Lease, the "Leased Premises").

4. The term of the Lease commenced on the date hereof and expires at 11:59 p.m. on June 30, 2060 unless extended or terminated pursuant to the terms of the Lease.

5. The Lease contains five (5) 10-year extension options that may be exercised by the Lessee.

6. The Lease contains a right of first offer for the Lessee to purchase or lease the Reserved Premises (as defined in the Lease) portion of the West Building (as defined in the Lease).

7. In certain circumstances (as more fully set forth in the Lease), the Lessee may have a right of first offer to purchase all or portions of the Leased Premises portions of the West Building (as defined in the Lease) and/or the East Building (as defined in the Lease).

8. This Memorandum is subject to all of the terms, covenants, conditions and understandings set forth in the Lease, which Lease is incorporated herein by reference and made a part hereof, as though copied verbatim herein. This Memorandum is intended to summarize certain of the provisions of the Lease and is not intended to govern, or be used to construe, the provisions of the Lease. In the event of a conflict or inconsistency between the terms and conditions of this Memorandum and the terms and conditions of the Lease, the terms and conditions of the Lease shall prevail.

9. This Memorandum may be signed in counterparts.

IN WITNESS WHEREOF, this Memorandum has been duly executed by the Port Authority and the Lessee as of the date first written above.

THE PORT AUTHORITY OF NEW YORK
AND NEW JERSEY

By: _____

Name: Christopher O. Ward
Title: Executive Director

GEORGE WASHINGTON BRIDGE BUS
STATION DEVELOPMENT VENTURE LLC

By: GWB Development Partners, LLC
Its: Sole Member

By: Marketplace GWB LLC
Its: Managing Member

By: _____
Stephen J. Garchik
Authorized Signatory

IN WITNESS WHEREOF, this Memorandum has been duly executed by the Port Authority and the Lessee as of the date first written above.

THE PORT AUTHORITY OF NEW YORK
AND NEW JERSEY

By: _____

Name:
Title:

GEORGE WASHINGTON BRIDGE BUS
STATION DEVELOPMENT VENTURE LLC

By: GWB Development Partners, LLC
Its: Sole Member

By: Marketplace GWB LLC
Its: Managing Member

By: _____
Stephen J. Garchik
Authorized Signatory

FOR THE PORT AUTHORITY

STATE OF NEW YORK)

) ss.

COUNTY OF NEW YORK)

On the 21st day of July in the year 2011, before me, the undersigned, a Notary Public in and for said state, personally appeared Christopher O. Ward, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that she executed the same in her capacity, and that by her signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

(Notary)

DARRELL BUCHBINDER
Notary Public, State of New York
No. 60-0475475
Qualified in Westchester County
Commission Expires on April 30, 2015

SEAL

FOR THE LESSEE

STATE OF NEW YORK)

) ss.

COUNTY OF NEW YORK)

On the ___ day of in the year 2011, before me, the undersigned, a Notary Public in and for said state, personally appeared _____, personally n to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

(Notary)

FOR THE PORT AUTHORITY

STATE OF NEW YORK)
) ss.
COUNTY OF NEW YORK)

On the ___ day of in the year 2011, before me, the undersigned, a Notary Public in and for said state, personally appeared _____, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that she executed the same in her capacity, and that by her signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
(Notary)

FOR THE LESSEE

STATE OF NEW YORK)
) ss.
COUNTY OF NEW YORK)

On the 20th day of July in the year 2011, before me, the undersigned, a Notary Public in and for said state, personally appeared Stephen J. Gardink, personally n to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

Karen F. Candreva
(Notary)

SEAL

KAREN F. CANDREVA
Notary Public, State of New York
No. 02CA5045815
Qualified in Westchester County
Commission Expires 03/24/2014

NYC/596393.1

EXHIBIT A

LEGAL DESCRIPTION

AS TO PARCEL A - BLOCK 2163 LOT 1:

ALL THAT CERTAIN plot, piece or parcel of land, with the buildings and improvements thereon erected, situate, lying and being in the Borough of Manhattan, City, County and State of New York, bounded and described as follows:

BEGINNING at the corner formed by the intersection of the northerly side of West 178th Street and the easterly side of Broadway;

RUNNING THENCE northerly along the easterly side of Broadway a distance of 204 feet 2 inches to the corner formed by the intersection of the easterly side of Broadway and the southerly side of West 179th Street;

THENCE easterly along the southerly side of West 179th Street a distance of 260 feet 8 7/8 inches to the corner formed by the intersection of the southerly side of West 179th Street and the westerly side of Wadsworth Avenue;

THENCE southerly along the westerly side of Wadsworth Avenue a distance of 200 feet to the corner formed by the intersection of the westerly side of Wadsworth Avenue and the northerly side of West 178th Street;

THENCE westerly along the northerly side of West 178th Street a distance of 301 feet 9 1/2 inches to the corner formed by the intersection of the northerly side of West 178th Street and the easterly side of Broadway to the point or place of BEGINNING.

SAID premises being more particularly bounded and described as follows:

ALL THAT CERTAIN plot, piece or parcel of land, being Tax Lot 1 in Tax Block 2163, situate, lying and being in the Borough of Manhattan, City, County and State of New York, being more particularly bounded and described as follows:

BEGINNING at the corner formed by the intersection of the southeasterly side of Broadway (100 feet wide) with the southwesterly side of West 179th Street (60 feet wide), as the streets are laid out on the Borough President of Manhattan Final Sectional Map No. 30, said point having the Memorial Church coordinates of North 24122.640 East 5478.278 (NAD 83 New York East coordinates of North 734630.813 East 647889.374);

continued.....

RUNNING THENCE southeasterly along southwesterly side of West 179th Street, a distance of 260.76 feet to the corner formed by the intersection of the southwesterly side of West 179th Street with the northwesterly side of Wadsworth Avenue (80 feet wide) said line forming an interior angle of 101 degrees 36 minutes 38 seconds with the southeasterly side of Broadway;

RUNNING THENCE southwesterly along the northwesterly side of Wadsworth Avenue, a distance of 200.00 feet to the corner formed by the intersection of the northwesterly side of Wadsworth Avenue with the northeasterly side of West 178th Street (60 feet wide); said line forming an interior angle of 89 degrees 58 minutes 55 seconds with the southwesterly side of West 179th Street;

RUNNING THENCE northwesterly along the northeasterly side of West 178th Street, a distance of 301.79 feet to the corner formed by the intersection of the northeasterly side of West 178th Street with the southeasterly side of Broadway; said line forming an interior angle of 90 degrees 00 minutes 53 seconds with the northwesterly side of Wadsworth Avenue;

RUNNING THENCE northeasterly along the southeasterly side of Broadway, a distance of 204.16 feet to the place and point of BEGINNING; said line forming an interior angle of 78 degrees 23 minutes 34 seconds with the northeasterly side of West 178th Street;

Said description prepared by Vollmer Associates LLP and based upon a survey prepared by same dated 6/18/06.

For information only: Said premises are known as 4200-4218 Broadway a/k/a 110-110 Wadsworth Avenue a/k/a 651-667 West 178th Street a/k/a 650-664 West 179th Street, New York, NY and designated as Section 8 Block 2163 Lot 1 as shown on the Tax Map of the City of New York, County of New York.

continued.....

AS TO PARCEL B - BLOCK 2176 LOT 17:

ALL THAT CERTAIN plot, piece or parcel of land, with the buildings and improvements thereon erected, situate, lying and being in the Borough of Manhattan, City, County and State of New York, bounded and described as follows:

BEGINNING at the corner formed by the intersection of the northerly side of West 178th Street and the westerly side of Broadway;

RUNNING THENCE northerly along the westerly side of Broadway a distance of 206 feet 0 1/2 inches to the corner formed by the intersection of the westerly side of Broadway and the southerly side of West 179th Street;

THENCE westerly along the southerly side of West 179th Street a distance of 423 feet 9 7/8 inches to the corner formed by the intersection of the southerly side of West 179th Street and the easterly side of Fort Washington Avenue;

THENCE southerly along the easterly side of Fort Washington Avenue a distance of 185 feet 2 1/4 inches to the corner formed by the intersection of the easterly side of Fort Washington Avenue and the northerly side of West 178th Street;

THENCE easterly along the northerly side of West 178th Street a distance of 341 feet 3 1/8 inches to the corner formed by the intersection of the

northerly side of West 178th Street and the westerly side of Broadway the point or place of BEGINNING.

EXCEPTING therefrom so much of the premises that may be taken for the widening of West 178th Street and West 179th Street.

SAID premises being more particularly bounded and described as follows:

continued.....

ALL THAT CERTAIN plot, piece or parcel of land, being Tax Lot 17 in Tax Block 2176, situate, lying and being in the Borough of Manhattan, City, County and State of New York, being more particularly bounded and described as follows:

BEGINNING at a point on the southeasterly side of Fort Washington Avenue (80 feet wide) extended northeasterly 20.02 feet, distant from the corner formed by the intersection of the southeasterly side of Fort Washington Avenue with the southwesterly side of West 179th Street (60 feet wide), as the streets are laid out on the Borough President of Manhattan Final Sectional Map No. 30, said point having the Memorial Church coordinates of North 24251.823 East 4956.112 (NAD 83 New York East coordinates of North 734756.743 East 647366.432);

RUNNING THENCE southeasterly along the northerly line of said Parcel B, a distance of 423.73 feet to an angle point on the northwesterly side of Broadway (100 feet wide) extended northeasterly; said line forming an interior angle of 92 degrees 32 minutes 33 seconds with the southeasterly side of Fort Washington Avenue extended northeasterly;

RUNNING THENCE southwesterly along the northwesterly side of Broadway extended, a distance of 205.98 feet to an angle point; said line forming an interior angle of 63 degrees 52 minutes 49 seconds with the last-mentioned course;

RUNNING THENCE northwesterly along the southerly line of said Parcel B, a distance of 341.28 feet to an angle point on the southeasterly side of Fort Washington Avenue extended southwesterly; said line forming an interior angle of 116 degrees 07 minutes 57 seconds with the northwesterly side of Broadway extended southwesterly;

RUNNING THENCE northeasterly along the southeasterly side of Fort Washington Avenue extended, a distance of 185.22 feet to the place and point of BEGINNING; said line forming an interior angle of 87 degrees 26 minutes 41 seconds with the last mentioned course.

Said description prepared by Vollmer Associates LLP and based upon a survey prepared by same dated 6/18/06.

For information only: Said premises are known as 4201-4219 Broadway a/k/a 406-422 Fort Washington Avenue a/k/a 701-721 West 178th Street a/k/a 700-720 West 179th Street, New York, NY and designated as Section 8 Block 2176 Lot 17 as shown on the Tax Map of the City of New York, County of New York.

continued....

Parcel A also described as:

LEGAL DESCRIPTION – PARCEL 1 (tax LOT 1 IN BLOCK 2163)

All that certain plot, piece or parcel of land, being tax Lot 1 in tax Block 2163, situate, lying in the Borough of Manhattan, City, County, and State of New York, being more particularly bounded and described as follows:

BEGINNING at the corner formed by the intersection of the southeasterly side of Broadway (100 feet wide) with the southwesterly side of West 179th street (60 feet wide), as the streets are laid out on the Borough President of Manhattan Final Sectional Map No. 30, said point having the Memorial Church coordinates of North 24122.640 East 5478.278 (NAD 83 New York East coordinates of North 734630.813 East 647889.374);

Running thence southeasterly along southwesterly side of West 179th Street, a distance of 260.76 feet to the corner formed by the intersection of the southwesterly side of West 179th Street with the northwesterly side of Wadsworth Avenue (80 feet wide) said line forming an interior angle of 101 degrees 36 minutes 38 seconds with the southeasterly side of Broadway;

Running thence southwesterly along the northwesterly side of Wadsworth Avenue, a distance of 200.00 feet to the corner formed by the intersection of northwesterly side of Wadsworth Avenue with the northeasterly side of West 178th Street (60 feet wide); said line forming an interior angle of 89 degrees 58 minutes 55 seconds with the southwesterly side of West 179th Street;

Running thence northwesterly along the northeasterly side of West 178th Street, a distance of 301.79 feet to the corner formed by the intersection of the northeasterly side of West 178th Street with the southeasterly side of Broadway; said line forming an interior angle of 90 degrees 00 minutes 53 seconds with the northwesterly side of Wadsworth Avenue;

Running thence northeasterly along the southeasterly side of Broadway, a distance of 204.16 feet to the place and Point of Beginning; said line forming an interior angle of 78 degrees 23 minutes 34 seconds with the northeasterly side of West 178th Street.

Containing 56,250.89 square feet or 1.2913 acres more or less.

continued....

Parcel B also described as:

LEGAL DESCRIPTION – PARCEL 2 (tax LOT 17 IN BLOCK 2176)

All that certain plot, piece or parcel of land, being tax Lot 17 in tax Block 2176, situate, lying in the Borough of Manhattan, City, County, and State of New York, being more particularly bounded and described as follows:

BEGINNING at a point on the southeasterly side of Fort Washington Avenue (80 feet wide) extended northeasterly 20.02 feet distant from the corner formed by the intersection of the southeasterly side of Fort Washington Avenue with the southwesterly side of West 179th Street (60 feet wide), as the streets are laid out on the Borough President of Manhattan Final Sectional Map No. 30, said point having the Memorial Church coordinates of North 24251.823 East 4956.112 (NAD 83 New York East coordinates of North 734756.743 East 647366.432);

Running thence southeasterly along the northerly line of said Parcel 2, a distance of 423.73 feet to an angle point on the northwesterly side of Broadway (100 feet wide) extended northeasterly; said line forming an interior angle of 92 degrees 32 minutes 33 seconds with the southeasterly side of Fort Washington Avenue extended northeasterly;

Running thence southwesterly along the northwesterly side of Broadway extended, a distance of 205.98 feet to an angle point; said line forming an interior angle of 63 degrees 52 minutes 49 seconds with the last-mentioned course;

Running thence northwesterly along the southerly line of said Parcel 2, a distance of 341.28 feet to an angle point on the southeasterly side of Fort Washington Avenue extended southwesterly; said line forming an interior angle of 116 degrees 07 minutes 57 seconds with the northwesterly side of Broadway extended southwesterly;

Running thence northeasterly along the southeasterly side of Fort Washington Avenue extended, a distance of 185.22 feet to the place and Point of Beginning; said line forming an interior angle of 87 degrees 26 minutes 41 seconds with the last-mentioned course.

Containing 70,758.37 square feet or 1.6244 acres more or less

Amended and Restated Master Agreement

This Amended and Restated Master Agreement dated as of June 3, 2011 (this "Agreement") among George Washington Bridge Bus Station Development Venture LLC, GWB Development Partners, LLC, Marketplace GWB LLC ("Marketplace"), GWB Blue LLC, WMG Associates LLC, SJM Partners, Inc., GWB Ninety Nine LLC, MG GWB LLC ("MG GWB"), GWB IVY LLC ("GWB IVY"), Clearview Projects LLC, Clearview Management Services LLC, Aaron Malinsky, Paul Slayton and Benjamin Malinsky.

WITNESSETH

Whereas, the signatories to this Agreement (the "Parties") desire (i) to acknowledge that they have executed and delivered certain documents, as specified in Section 3 below and (ii) to provide for the other arrangements set forth herein;

Whereas, George Washington Bridge Bus Station Development Venture LLC (the "Project Owner") desires to execute and deliver a lease with the Port Authority of New York and New Jersey (the "Port Authority Lease") with respect to the property commonly known as Broadway Marketplace at the GW Bridge New York, New York (the "Property"); and

Whereas, the Parties acknowledge they previously executed a "Master Agreement" dated June 3, 2011 (the "Original Master Agreement") and hereby desire to, and hereby do, amend and restate in its entirety the Original Master Agreement.

AGREEMENT

Now, therefore, the Parties hereby agree as follows:

1. Definitions.

"Effective Time" means two business days after the Project Owner notifies the Parties, by e-mail notice to the e-mail addresses set forth on the signature pages hereto, that the Port Authority Lease with respect to the Property has been Executed and Delivered and is effective provided that if all Effective Time Funding Obligations are not made on the Effective Time, then (i) the Effective Time shall be deemed to not have occurred and the documents listed in Exhibit A shall not become effective, (ii) any Effective Time Funding Obligations made shall be immediately returned to the payor thereof by the recipient and the Party on whose behalf such payment was made and (iii) the Party or Parties failing to pay or make any such Effective Time Funding Obligations at the Effective Time shall be in breach of this Agreement.

"Effective Time Funding Obligations" means (i) the payment by wire transfer of immediately available funds of $208,333 by GWB Blue LLC for the benefit of Marketplace pursuant to Exhibit A-1 provided that Marketplace hereby authorizes and directs GWB Blue LLC to pay such $208,233 directly to Clearview Projects LLC in order to discharge the obligation of Marketplace to Clearview Projects LLC pursuant to Exhibit A-3, (ii) the payment by wire transfer of immediately available funds of $208,333 by GWB Ninety Nine LLC to Clearview Projects LLC pursuant to Exhibit A-5 and the delivery of a promissory note in the amount of $625,000 to Clearview Projects LLC by GWB Ninety Nine LLC pursuant to Exhibit

A-5, i.e., the Membership Interest Purchase Agreement and (iii) the payment, by wire transfer of immediately available funds, of $208,334 by MG GWB LLC to Clearview Projects LLC. With respect to all wire transfers referred to in the preceding sentence, Clearview Projects LLC shall provide applicable bank account information to all necessary parties.

"Entity" means any entity of any kind or nature.

"Executed and Delivered and is Effective" and similar terms mean, with respect to the Port Authority Lease, that the Port Authority Lease has been executed and delivered by the Port Authority and the Project Owner and (except to the extent effectiveness is conditioned on the accuracy of the representations and warranties in Section 4(a) hereof) is effective.

"Executed Documents" means each of the documents set forth in Exhibit A that are stated as having been executed and delivered and that become effective on the Effective Time.

"including", "includes" and "include" means, respectively, including without limitation, includes without limitation and include without limitation.

"Interim Project Owner Amendment" means an amendment to the operating agreement of the Project Owner in the form of Exhibit B-1, which amendment provides for an acceleration of certain contributions to the Project Owner under the circumstances and to the extent set forth in such Amendment.

"Owner" means an owner of any ownership interest of any kind or nature, beneficially and/or of record, in any Person, including as a stockholder, member, partner or other owner of any kind or nature.

"Person" means any Entity and any individual, including any Party.

"Port Authority" means the Port Authority of New York and New Jersey.

"Previously Executed Documents" means each of the documents set forth in Exhibit B that have been executed and delivered and are currently effective.

"Project" means the development on the Property of approximately 130,000 square feet of retail space and the reconstruction of a bus station for the Port Authority of New York and New Jersey.

"Transfer" means to sell, assign, give, pledge, otherwise dispose of or otherwise transfer. "Transfer" as a noun, and derivative terms such as "Transferring", each has a correlative meaning.

2. Effective Time; Termination of this Agreement; Amendment and Restatement.

(a) The Interim Project Owner Amendment shall be effective when executed and delivered.

(b) Without any further consent on the part of any Party, the Effective Time of each Executed Document shall be two business days after the Project Owner or its representatives sends to each Party a notice to the Parties by e mail (to the e-mail address listed in the signature pages) whether or not received, informing them that the Port Authority Lease has been Executed and Delivered and is Effective, subject, however, to the requirement set forth in the definition of Effective Time.

(c) Within one business day after the Port Authority Lease has been Executed and Delivered and is Effective, the Project Owner shall provide e-mail notice (to the e-mail address listed in the signature pages hereto) to each Party that the Port Authority Lease has been Executed and Delivered and is Effective. The Parties acknowledge that the purposes of providing such e mail notices are to facilitate that the transactions that are required to be effected on the Effective Time pursuant to the Executed Documents are in fact effected on the Effective Time.

(d) Notwithstanding anything to the contrary set forth in this Agreement or any document signed in connection with this Agreement, this Agreement shall be terminated without further action by any Party if the Port Authority Lease has not been Executed and Delivered and become Effective on or before November 30, 2011 (including, to avoid doubt, that the provisions of Section 4 that are effective prior to the Effective Time shall terminate if this Agreement is terminated).

(e) Clearview Projects LLC agrees to deliver to each Party on the Effective Time prompt confirmation, by e-mail notice to the e-mail addresses on the signature pages of this Agreement, of its receipt of the three wire transfers and promissory note referred to in the definition of Effective Time Funding Obligations.

(f) The Original Master Agreement is hereby amended and restated in its entirety.

3. Executed Documents; Timing and Order of Funding Obligations.

(a) The Parties acknowledge and agree that each of the documents listed in Exhibit A have been executed and delivered and shall become effective at the Effective Time. The signatories to the documents listed on Exhibit B confirm that such documents have been executed and delivered and are effective. The relevant parties agree to execute and deliver at the Effective Time the Promissory Notes in the form of Exhibit A-15 and A-16.

(b) The Parties acknowledge that there are three wire transfers that need to be effected on the Effective Time pursuant to the definition of Effective Time Funding Obligations in order for the Executed Documents to become effective. The Parties further acknowledge that they will coordinate such that (i) the wire transfer of $208,333 by GWB Blue LLC, on behalf of Marketplace, to Clearview Projects LLC shall be effected first and (ii) the two other wire transfers required to be effected pursuant to the definition of Effective Time Funding Obligations shall be thereafter effected.

4. Undertakings by Aaron Malinsky, Benjamin Malinsky and Paul Slayton.

Aaron Malinsky, Benjamin Malinsky and Paul Slayton each agree that they shall not, on and after the Effective Time, (i) have any role in the Project, (ii) have any right to acquire any role in the Project in the future or (iii) derive any benefit from the Project other than (a) Benjamin Malinsky's rights under the Benjamin Malinsky Consulting Agreement and (b) those certain Promissory Notes issued by GWB Ninety-Nine LLC to Paul Slayton listed in Exhibit A (the "Excepted Interests"). Capitalized terms used in this Section 4 and not otherwise previously defined have the meanings ascribed to such terms in Section 4(c). Notwithstanding the first sentence of this Section 4, Benjamin Malinsky may be a consultant in connection with the Project upon and subject to the terms set forth in the Consulting Agreement with GWB Ninety Nine LLC in the form attached as Exhibit A-7 (the "Benjamin Malinsky Consulting Agreements"). Without limiting the generality of the first sentence of this Section 4, from and after the Effective Time:

(a) Each Restricted Individual represents, warrants and covenants severally, and not jointly and severally, to each of the Project Stakeholders that, except for the Excepted Interests on and after the Effective Time: (i) neither he nor any other Restricted Group Member, directly or indirectly, in any Capacity, will control, beneficially own or have an interest of any kind or nature in or to any Project Stakeholder or Project Vendor, (ii) he will not at any time and will not permit any other Restricted Group Member, at any time, directly or indirectly, in any Capacity, to control, beneficially own or have an interest of any kind or nature in or to any Project Stakeholder or any Project Vendor; (iii) in any Capacity, he has no, and will not have any, direct or indirect lien, encumbrance, claim or contractual relationship of any kind or nature on, against or with respect to the Project, and (iv) in any Capacity, he will not at any time, directly or indirectly accept or permit any other Restricted Group Member from directly or indirectly accepting any payment or other benefit to the extent such payment or benefit is directly or indirectly derived from or otherwise directly or indirectly relates to the Project. Notwithstanding the preceding provisions of this Section 4, the limitations on contractual relationships in this Section 4 are intended to be limited to the Project. Accordingly, it is understood and agreed that each of George Washington Bridge Bus Station Development Venture, LLC, GWB Development Partners, LLC, Marketplace GWB, LLC, GWB Blue, LLC, WMG Associates LLC, GWB Ninety Nine LLC, MG GWB, LLC and GWB IVY, LLC, and their direct and indirect owners, may continue to be involved in existing transactions and/or may be involved in new transactions with the Restricted Individuals that are unrelated to the Project.

(b) Each Party agrees, for the benefit of each of the other Project Stakeholders, that, on and after the Effective Time, except for the Excepted Interests, it will not knowingly consent to any circumstances in which any Restricted Group Member directly or indirectly acquires, and will not knowingly permit any Restricted Group Member to directly or indirectly acquire, at any time, any right, title, interest or other role of any kind or nature in or to any Project Stakeholder or the Project. To avoid doubt, each Party severally, and not jointly and severally, agrees not to directly or indirectly knowingly Transfer any interest in any Project Stakeholder to Aaron Malinsky, Benjamin Malinsky or Paul Slayton (except, to avoid doubt, Benjamin Malinsky may retain his rights under the Benjamin Malinsky Consulting Agreement).

(c) For the purposes of this Section 4, the following terms have the following meanings:

"in any Capacity" means in the capacity of or as an individual, director, manager, member, stockholder, partner, equity holder, other Owner, employee, consultant, agent, representative or in any other capacity.

"Project Vendor" means any entity that directly or indirectly provides any goods or services of any kind or nature to the Project or any Project Stakeholder provided that Project Stakeholders referred to in Sections (i) and (j) of the definition thereof shall be limited to Project Stakeholders to the extent related to the Project.

"Project Stakeholder" means any of (a) George Washington Bridge Bus Station Development Venture LLC , (b) GWB Development Partners LLC, (c) GWB Blue, LLC, (d) Marketplace GWB LLC, (e) WMG Associates, LLC, (f) GWB Ninety Nine LLC, (g) MG GWB LLC, (h) GWB IVY, (i) The Port Authority of New York and New Jersey and (j) each beneficial owner, officer, director, representative, agent, successor and assigns of each of the foregoing entities.

"Restricted Group Member" means, as to a Restricted Individual (i) such Restricted Individual and (ii) any entity directly or indirectly controlled or beneficially owned by such Restricted Individual or in which such Restricted Individual has an interest of any kind or nature.

"Restricted Individual" means Aaron Malinsky, Benjamin Malinsky and/or Paul Slayton.

(d) Notwithstanding the preceding provisions of this Section 4, (i) neither Douglas Slayton or Douglas Slayton's children, is subject to such restrictions, (ii) Benjamin Malinsky, Aaron Malinsky's son, shall have the rights provided for in the Benjamin Malinsky Consulting Agreement and (iii) the solely passive ownership by a Restricted Individual of less than 5% of a Project Vendor that is a publicly held entity held, direct and/or through his Restricted Group Members, shall not be a breach of this Section 4, it being understood and agreed that passive ownership means that a Restricted Individual shall have no role in any Capacity in any Project Vendor that is a publicly held entity except solely in the capacity as a solely passive owner of such equity interest.

(e) If any provision of this Section 4 or the application thereof to any Person(s) or circumstance(s) is invalid or unenforceable to any extent, (i) the remainder of this Agreement and the application of such provision to other Person(s) or circumstance(s) shall not be affected thereby, and (ii) each such provision that is not wholly unenforceable shall be enforced to the greatest extent permitted by applicable law.

(f) Each Party agrees to take any action of any kind or nature (including, without limitation, the execution and delivery of documents) to immediately cure any breach by it or him of this Section 4 (as applicable, a "Section 4 Breach" or a "Section 4 Breaching Party") required or requested by the Port Authority, the Project Owner, GWB Development Partners, LLC, Marketplace or GWB Blue, LLC at the Section 4 Breaching Party's sole cost and expense. Further, each Section 4 Breaching Party agrees, in connection with any such Section 4 Breach by it or him, to take any action relating to the Project that is required by the Port Authority to cure

such Section 4 Breach or avoid the exercise of remedies by the Port Authority with respect to the Port Authority Lease arising from such Section 4 Breach, whether pursuant to this Agreement, the Port Authority Lease or otherwise. Each Party further agrees that the remaining provisions of this Section 4(f) do not in any manner of any kind or nature limit the generality of the first two sentences of this Section 4(f) and further agrees that the remainder of this Section 4(f) constitute examples of fully enforceable agreed-to remedies that the relevant parties will have in the event of a Section 4 Breach. If a Restricted Group Member directly or indirectly owns and/or acquires any ownership interest of any kind or nature that is prohibited by this Section 4 (the "Non-Permitted Interest"), then (i) any Transferring Section 4 Breaching Party shall immediately pay and provide to GWB Development Partners LLC all cash and non-cash consideration received and receivable by the Section 4 Breaching Party in connection with such Transfer and (ii) the Non-Permitted Interest (now owned and/or hereafter acquired) shall be automatically void. If a Restricted Group Member directly or indirectly receives any payment or other benefit (other than an ownership interest) that is not permitted pursuant to this Section 4 (a "Non-Permitted Payment"), the ownership of the Non-Permitted Payment shall, upon receipt, automatically, without any further action on the part of any Restricted Group Member, Transfer to GWB Development Partners, LLC and the actual Non-Permitted Payment shall be transferred to GWB Development Partners LLC on demand. Each Restricted Individual agrees to provide written confirmation, within five (5) business days of request, that neither he, nor to the best of his knowledge any of his Restricted Group Members, own any interest in or have any role in (i) a current Project Vendor or (ii) a Project Vendor that the Project Owner or GWB Development Partners, LLC desires to hereafter do business with as to the Project (except, as to such future Project Vendor, as disclosed in such confirmation). Each Restricted Individual shall cause each of his Restricted Group Members which it controls to comply with the provisions of this Section 4 and each Party agrees that the provisions of this Section 4 may be enforced against any Person that acquires a Non-Permitted Interest or receives a Non-Permitted Payment, whether or not such Person is currently a Party to this Agreement. Any Non-Permitted Payment transferred to GWB Development Partners, LLC shall be held by it for the pro rata benefit of its Members from time to time.

(g) Without limiting the generality of the other provisions of this Section 4, a Section 4 Breaching Party shall indemnify and hold harmless the other Parties for all damages and other losses, including reasonable attorneys' fees and expenses, suffered or incurred by the other Parties and their affiliates by reason of a Section 4 Breach. Each Party, other than a Section 4 Breaching Party, upon the request of either GWB Development Partners, LLC or GWB Blue LLC, agrees to take any action of any kind or nature to implement the actions described in Section 4(f), at the sole cost and expense (including, without limitation, attorneys' fees and expenses) of the Section 4 Breaching Party (provided that to the extent the Section 4 Breaching Party does not have the funds to pay such costs and expenses, then at the sole cost and expense of GWB Development Partners, LLC). Further, each Party that is an Entity shall be fully liable for a breach of this Section 4 by its beneficial owners and its and their direct or indirect transferees as fully as if such beneficial owners and transferees were a party to this Agreement.

(h) During the period from the date hereof through the Effective Time (the "Interim Period") (i) Stephen Garchik and Steven McBride will, subject to the rights and remedies of GWB Blue, LLC under the Operating Agreement, as amended, of GWB Development Partners LLC, (A) perform the roles previously performed by Aaron Malinsky and

Paul Slayton relating to the Project set forth in the Amended and Restated Operating Agreement of Marketplace-GWB, LLC (f/k/a PA-GWB LLC), the managing member of GWB Development Partners, LLC and (B) have the day to day responsibility for the management of the Project, (ii) each of Aaron Malinsky and Paul Slayton will not have the right to, and will not, directly or indirectly, exercise any management or decision-making authority with respect to the Project, including, without limitation, by exercising any such authority on behalf of the managing member of GWB Development Partners, LLC, (iii) except for promissory notes in the amounts of $625,000 and $208,333, in the forms of Exhibits A-15 and A-16, to be provided to Paul Slayton at the Effective Time and except for $625,000 in cash to be paid to Aaron Malinsky, as contemplated by Exhibits A-5 and A-6, at the Effective Time in connection with the purchase of the entire direct and/or indirect beneficial interest of Aaron Malinsky and Paul Slayton in Marketplace, neither Aaron Malinsky nor Paul Slayton will receive, directly or indirectly, any compensation relating to the Project, including, without limitation, that Clearview Management Services LLC shall not receive any payments under the existing Development Services Agreement or the existing Property and Management Leasing Agreement to be terminated on the Existing Time pursuant to Exhibits A-8 and A-11 and (iv) the compensation and value of benefits, collectively, payable or provided to Benjamin Malinsky shall not exceed $15,000 monthly.

(i) Anything in this Agreement to the contrary notwithstanding, neither the Project Owner nor GWB Development Partners, LLC, nor any Person acting on its behalf, is authorized, without the prior written consent of each of (i) Marketplace and (ii) GWB Blue LLC, to execute or deliver (y) the Port Authority Lease or (z) any amendment to the Interim Agreement between the Port Authority and the Project Owner dated as of April 5, 2010.

5. Third Party Beneficiary Status. The Port Authority and each owner, officer, member, director, representative, agent, successor or assign of the Port Authority ("Third Party Beneficiary") is a third party beneficiary of the provisions of this Agreement, including that the Port Authority and each other Person referred to in this Section 5 has the full right to enforce the provisions thereof.

6. Other Agreements.

(a) As promptly as possible, from time to time, GWB Development Partners, LLC will pay to, or reimburse, GWB Blue LLC for its legal fees and expenses payable to Sills Cummis & Gross P.C., Marketplace, for its legal fees and expenses payable to Snider & Weinstein, and Clearview Projects LLC for its legal fees and expenses payable to Davis & Gilbert, incurred in connection with or otherwise relating to this Agreement, the Port Authority Lease and the documents listed on Exhibits A and B hereto, provided further that to the extent there are outstanding invoices as of the Effective Time, copies of which are to be provided to the Manager of GWB Development Partners, LLC such outstanding invoices shall be paid on the Effective Time if reasonably practical (and if not, within two business days after the Effective Time).

(b) On the Effective Time, the Marketplace Assignment (as that term is defined in Section 1 of Exhibit A) will be deemed to have occurred immediately prior to the

consummation of the redemption of a 3.52% interest in Marketplace by Marketplace from Clearview Projects LLC.

(c) The Parties agree that without the prior written consent of each Party other than a Restricted Individual, none of the Executed Documents shall be amended prior to the Effective Time. The Parties also agree not to amend any Executed Documents without the consent of a Restricted Individual to the extent that any such amendment would in any respect adversely affect a Restricted Individual.

(d) Each Party represents and warrants that the documents they signed that are listed in Exhibit A contains, in substance, the following provision:

> "This Agreement is an Exhibit to the Master Agreement dated of even date among George Washington Bridge Bus Station Development Venture LLC, GWB Development Partners, LLC, Marketplace GWB LLC, GWB Blue LLC and the other signatories thereto. To the extent there is a conflict between the provisions of the Master Agreement and this Agreement, the provisions of the Master Agreement shall control. Anything in this Agreement to the contrary notwithstanding, this Agreement shall become effective at the Effective Time (as defined in the Master Agreement) and shall not become effective until and unless the Effective Time occurs. This Agreement shall terminate and be of no force or effect upon the termination of the Master Agreement in accordance with its terms."

7. Release. Aaron Malinsky, Paul Slayton and Clearview Projects LLC (f/k/a PA Developers LLC), each on behalf of itself, himself and his estate, heirs, representatives, agents and controlled affiliates, on the one hand, and each of the other Parties, each on behalf of himself or itself and his or its members, successors, assigns, representatives, agents and controlled affiliates, on the other hand (in such capacity all the foregoing Persons (including Aaron Malinsky and Paul Slayton) being referred to as a "Releasor")), hereby fully, forever, irrevocably and unconditionally releases and discharges each other (in such capacity, each a "Releasee") from all Released Claims (as defined below) that any one or more Releasors had or may have at any time through the date hereof against any one or more Releasees. For purposes of this Agreement:

"Claims" means all actions, causes of action, claims, interests, liabilities, damages, other obligations, grievances, disputes, demands, judgments and complaints of any kind or nature, in law, equity or otherwise, whether known or unknown, matured or unmatured, discoverable or not discoverable and/or fixed or contingent, which have arisen or are now arising or hereafter may arise, whether presently asserted or not.

"Excepted Claims" means all Claims to the extent the same are solely based on the respective rights and obligations of any one or more Releasors on the one hand, and any one or more Releasees, on the other hand, under this Agreement and each document referenced in Exhibit A hereto. For the avoidance of doubt, Excepted Claims includes, among other things,

the obligations of Aaron Malinsky and Paul Slayton under Section 4 of this Agreement (Undertakings by Aaron Malinsky, Benjamin Malinsky and Paul Slayton), Section 3 of the Membership Interest Purchase Agreement (as defined in Exhibit A)(Guaranty), and Section 5 of the Redemption Agreement (Guaranty).

"Released Claims" means all Claims to the extent the same (a) relate to the Property, GWB Development Partners, LLC, Marketplace, the Development Agreement being terminated and referenced in item 8 of Exhibit A hereto, the Property Management and Leasing Agreement being terminated and referenced in item 10 of Exhibit A hereto, or any other aspect of the Project and (b) do not constitute Excepted Claims.

8. Conflict of Interest. The Parties acknowledge that Sills Cummis & Gross, P.C. ("Sills Cummis") is acting as legal counsel on certain matters for the Project Owner and GWB Blue, LLC. Notwithstanding any conflict of interest that arises from or is on connection with such representations, each Party hereby waives all such conflicts of interest and hereby consents to the continued representation of the Project Owner and GWB Blue, LLC on certain matters by Sills Cummis; provided, however, if any claim is made or litigation arises between the Project Owner and GWB Blue, LLC, Sills Cummis shall only be permitted to continue its representation of GWB Blue, LLC and the Company will obtain separate counsel; provided further, however, the Company shall be permitted to select other counsel for any matter at any time in accordance with the provisions set forth in its organizational document and is no way prohibited by this conflict waiver from continuing to have other law firms represent the Project Owner or select counsel other than Sills Cummis in the future.

9. Other Provisions.

(a) This Agreement may be amended, at any time, in whole or in part, only by written instrument signed by the Party or Parties to be bound thereby.

(b) Notices must be in writing and will be deemed to be served and received at the time sent by e-mail at the e-mail address shown for each Party on the signature pages hereto.

(c) The waiver by any Party of a breach of any provision of this Agreement will not operate or be construed as a waiver of any subsequent breach by any Party.

(d) This Agreement will inure to the benefit of and be binding upon the parties to this Agreement, their successors, heirs, personal representatives and assigns, and will be construed in accordance with the laws of the State of New York, without giving effect to principles of conflicts of law.

(e) The failure of any Party to insist upon strict performance of a covenant hereunder or of any obligation hereunder, irrespective of the length of time for which such failure continues, shall not be a waiver of such Party's right to demand strict compliance in the future. No consent or waiver, express or implied, to or of any breach or default in the performance of any obligation hereunder, shall constitute a consent or waiver to or of any other breach or default in the performance of the same or any other obligation hereunder.

(f) This Agreement constitutes the full and complete agreement of the Parties hereto with respect to the subject matter hereof. This Agreement supersedes all prior or contemporaneous communications whether oral or written, between or among the Parties as to the subject matter hereof.

(g) Titles or captions of articles or sections contained in this Agreement are inserted only as a matter of convenience and for reference, and in no way define, limit, extend or describe the scope of this Agreement or the intent of any provision hereof.

(h) This Agreement may be executed in a number of counterparts, all of which together shall for all purposes constitute one Agreement, binding on all the Parties notwithstanding that all Parties have not signed the same counterpart. This Agreement may be executed and delivered via pdf and/or fax.

(i) Preparation of this Agreement shall for all purposes be deemed to be the joint efforts of the Parties, including that no provision shall be construed more severely against any Party.

(j) Without limiting the generality of any provision, each Party shall, from time to time, do any and all acts and things, including the execution of documents, as may reasonably be required to carry out the terms hereof and to consummate the transactions contemplated by, and to be in compliance with the agreements provided for in, this Agreement relating to him or it.

(k) If any provision or the application thereof to any Person(s) or circumstance(s) is invalid or unenforceable to any extent, (i) the remainder of this Agreement and the application of such provision to other Person(s) or circumstance(s) shall not be affected thereby, and (ii) each such provision that is not wholly unenforceable shall be enforced to the greatest extent permitted by applicable law.

(l) Each Party represents and warrants that he or it has been advised by separate counsel of their choosing in connection with their rights and obligations under this Agreement.

(m) Each Party and each Third Party Beneficiary may seek injunctive relief from any court to enjoin a breach or threatened breach and/or may seek specific performance, without proof of damages or the posting of any consideration.

(n) Except as provided in Section 5 hereof, this Agreement is solely for the benefit of the Parties and no other Person is intended to be or is a third party beneficiary of this Agreement.

(o) Except as otherwise provided herein or in any Executed Document, each Party will pay the fees and expenses of his or its attorneys or other advisors in connection with this Agreement.

(p) The Parties acknowledge and agree that none of the Exhibits to the Original Master Agreement (the "Original Exhibits") have changed. The Parties further agree

that the Original Exhibits are deemed attached, but need not be physically attached, to this Amended and Restated Master Agreement.

(q) Notwithstanding anything herein to the contrary the parties agree and acknowledge that (i) at the time the Original Master Agreement was executed, the Acadia Consent referred to as Exhibit B-4 had not been executed and (ii) if and to the extent that any representations or warranties in the Original Master Agreement or any of the documents identified in the Original Master Agreement or related to the transactions involving the Property might have been incorrect by virtue of the failure of Acadia to execute and deliver such Consent at the time the Original Master Agreement was executed, then the party making such representation or warranty at such time shall not be deemed to be in breach of such agreement or liable for the inaccuracy of such representation or warranty by virtue of such failure to obtain the Consent from Acadia at the time the Original Master Agreement was executed.

[Signature pages begin on the next page]

George Washington Bridge Bus Station Development Venture LLC

By: GWB Development Partners, LLC, sole Member

By: _____
Stephen J. Garchik, Manager
E-Mail:
sgarchik@sjmpartners.com

GWB Development Partners, LLC

By: _____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

Marketplace GWB LLC

By: _____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

By: _____
Stephen McBride, Manager
E-mail: SMcBride@sjmpartners.com

By: _____
Douglas Slayton, Manager
E-Mail: ds@fouroneequities.com

GWB BLUE LLC

By: _____
Name: _____
Title: _____
E-Mail Address: _____

George Washington Bridge Bus Station Development Venture LLC

By: GWB Development Partners, LLC,
sole Member

By: _____
Stephen J. Garchik,
Manager
E-Mail:
sgarchik@sjmpartners.com

GWB Development Partners, LLC

By: _____
Stephen J. Garchik, Manager
E-Mail:
sgarchik@sjmpartners.com

Marketplace GWB LLC

By: _____
Stephen J. Garchik, Manager
E-Mail:
sgarchik@sjmpartners.com

By: _____
Stephen McBride, Manager
E-mail:
SMcBride@sjmpartners.com

By: _____
Douglas Slayton, Manager
E-Mail: ds@fouroneequities.com

GWB BLUE LLC

George Washington Bridge Bus Station Development Venture LLC

By: GWB Development Partners, LLC, sole Member

By:_____
Stephen J. Garchik, Manager
E-Mail:
sgarchik@sjmpartners.com

GWB Development Partners, LLC

By:_____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

Marketplace GWB LLC

By:_____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

By:_____
Stephen McBride, Manager
E-mail: SMcBride@sjmpartners.com

By:_____
Douglas Slayton, Manager
E-Mail: ds@fouroneequities.com

GWB BLUE LLC

By:_____
Name: EZRA SULTAN
Title: CFO
E-Mail Address: ZSULTAN@CZ1STONES.COM

WMG Associates LLC

By: _____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

By: _____
Stephen J. Garchik, President
E-Mail: sgarchik@sjmpartners.com

GWB Ninety Nine LLC

By: _____
Doug Slayton, Manager
E-Mail: ds@fouroneequities.com

MG GWB LLC

By: _____
Stephen J. Garchik, President
E-Mail: sgarchik@sjmpartners.com

By: _____
Stephen McBride, Manager
E-mail: SMcBride@sjmpartners.com

GWB IVY LLC

By: _____
James Hyland, Manager
E-Mail: jhylands@aol.com

Clearview Projects LLC

By: _____
Paul Slayton, Manager
E-Mail: ps@slaytonventures.com

By:_____
Name:_____
Title:_____
E-Mail Address:_____

WMG Associates LLC

By:_____
Stephen J. Garchik, Manager
E-Mail:
sgarchik@sjmpartners.com

By:_____
Stephen J. Garchik, President
E-Mail:
sgarchik@sjmpartners.com

GWB Ninety Nine LLC

By:_____
Doug Slayton, Manager
E-Mail:
ds@fouroneequities.com

MG GWB LLC

By:_____
Stephen J. Garchik, President
E-Mail:
sgarchik@sjmpartners.com

By:_____
Stephen McBride, Manager
E-mail:
SMcBride@sjmpartners.com

GWB IVY LLC

By: _____
James Hyland, Manager
E-Mail: jhylands@aol.com

Clearview Projects LLC

By: _____
Paul Slayton, Manager
E-Mail: ps@slaytonventures.com

Clearview Management Services LLC

By: Clearview Projects LLC

By: _____
Paul Slayton, Manager
E-Mail:ps@slaytonventures.com

_____
Aaron Malinsky
E-Mail: am@pa-assoc.com

_____
Paul Slayton
E-Mail: ps@slaytonventures.com

_____
Benjamin Malinsky
E-Mail: bm@pa-assoc.com

<u>Exhibits</u>

Exhibits A-1 through A-14
Exhibits B-1 through B-4

By:_____
James Hyland, Manager
E-Mail: jhylands@aol.com

Clearview Projects LLC

By:_____
Paul Slayton, Manager
E-Mail: ps@slaytonventures.com

Clearview Management Services LLC

By: Clearview Projects LLC

By:_____
Paul Slayton, Manager
E-Mail:ps@slaytonventures.com

_____
Aaron Malinsky
E-Mail: am@pa-assoc.com

_____
Paul Slayton
E-Mail: ps@slaytonventures.com

_____
Benjamin Malinsky
E-Mail: bm@pa-assoc.com

Exhibits

Exhibits A-1 through A-14
Exhibits B-1 through B-4

EXHIBIT A

1. GWB Blue LLC and Marketplace have executed and delivered an Assignment Agreement in the form of Exhibit A-1 (the "Marketplace Assignment") pursuant to which GW Blue LLC will purchase from Marketplace, in exchange for $208,333, 5.25% of the total ownership interest in GWB Development Partners, LLC such that, upon the consummation of such transaction, GWB Blue LLC will own 55.25% of GWB Development Partners, LLC and Marketplace will own 44.75% of GWB Development Partners, LLC. As set forth in Section 1 hereof, Marketplace hereby authorizes and directs GWB Blue LLC to pay such $208,333 directly to Clearview Projects LLC in order to discharge Marketplace's obligation to pay $208,333 to Clearview Projects LLC in connection with the redemption of a 3.52% interest that Clearview Projects LLC holds in Marketplace.

2. Marketplace and GWB Blue LLC have executed and delivered an amendment to the Operating Agreement of GWB Development Partners, LLC in the form of Exhibit A-2 to reflect the change in the ownership interests in GWB Development Partners, LLC caused by the Marketplace Assignment. Such amendment shall be effective on the Effective Time immediately after satisfaction of all Effective Time Funding Obligations.

3. Marketplace and Clearview Projects LLC have executed and delivered a Redemption Agreement in the form of Exhibit A-3 pursuant to which Marketplace will redeem a 3.52% interest held by Clearview Projects LLC in Marketplace in exchange for $208,333 in cash. The redemption shall occur on the Effective Time immediately after satisfaction of all Effective Time Funding Obligations.

4. The owners of Marketplace have executed and delivered an Amendment to the Operating Agreement of Marketplace in the form of Exhibit A-4 to reflect the change in ownership interests caused by the redemption of a portion of the membership interest of Clearview Projects LLC in Marketplace. The Amendment to the Operating Agreement of Marketplace shall be effective immediately upon satisfaction of all Effective Time Funding Obligations.

5. Clearview Projects LLC, Marketplace, WMG Associates LLC, GWB Ninety Nine LLC, MG GWB and GWB IVY have executed and delivered a Membership Interest Purchase Agreement (the "Membership Interest Purchase Agreement") whereby Clearview Projects LLC sells its remaining interests in Marketplace (after giving effect to the redemption of a 3.52% interest referred to above) in exchange for cash and a note from GWB Ninety Nine LLC to Clearview Projects LLC, all as more set forth in the Membership Interest Purchase Agreement in the form of Exhibit A-5 pursuant to which, among other things (i) the entire direct and/or indirect beneficial interest of each of Aaron Malinsky and Paul Slayton in Marketplace will be purchased on the Effective Time and (ii) each of Aaron Malinsky and Paul Slayton will have ceased to be a director, officer, manager or employee of each of Marketplace, GWB Development Partners, LLC and the Project Owner. The transactions provided for in the Membership Interest Purchase Agreement shall be effective on the Effective Time upon the satisfaction of all Effective Time Funding Obligations.

6. Clearview Projects LLC, Aaron Malinsky, GWB Ninety Nine LLC and Paul Slayton have executed and delivered an agreement in the form of Exhibit A-6 pursuant to which Clearview Projects LLC agrees to distribute cash to Aaron Malinsky to and distribute a note issued by GWB Ninety Nine LLC to Clearview Projects LLC to Paul Slayton. Exhibit A 6 provides that the promissory note issued by GWB Ninety Nine LLC to Clearview Projects LLC in the face amount of $625,000 pursuant to Exhibit A-5 shall be distributed solely to Paul Slayton. Exhibit A-6 shall be effective immediately upon satisfaction of all Effective Time Funding Obligations.

7. GWB Ninety Nine LLC and Benjamin Malinsky have executed and delivered a Consulting Agreement in the form of Exhibit A-7.

8. The Project Owner and Clearview Management Services, LLC have executed and delivered an agreement terminating the existing Development Agreement, which termination agreement is in the form of Exhibit A-8 and The Project Owner and SJM Partners, Inc. have executed and delivered an agreement terminating the existing Construction Management Agreement, which term is in the form of Exhibit A-9.

9. The Project Owner and SJM Partners, LLC have executed and delivered a new development services and construction management agreement in the form of Exhibit A-10.

10. The Project Owner and Clearview Management Services LLC have executed and delivered an agreement terminating the current Property Management and Leasing Agreement in the form of Exhibit A-11.

11. GWB Ninety Nine LLC, as Manager, and Project Owner have executed and delivered a New Property Management and Leasing Agreement in the form of Exhibit A-12.

12. Chera release and termination letter, in the form of Exhibit A-13.

13. After giving effect to the transactions to be effected on the Effective Time, the owners of Marketplace have executed and delivered an Amended and Restated Operating Agreement of Marketplace in the form of Exhibit A-14.

14. The Promissory Note in the amount of $625,000 payable by GWB Ninety Nine LLC to Marketplace, and the Promissory Note in the amount of $208,333 payable by GWB Ninety Nine LLC to Paul Slayton, in the form of Exhibit A-15 and A-16 will be executed and delivered at the Effective Time.

EXHIBIT B

1. GW Blue LLC and Marketplace have executed and delivered the Interim Project Owner Amendment in the form of Exhibit B-1.

2. PA Developers, LLC has executed and delivered and filed an amendment to its constituent documents to effect a change of name to Clearview Projects LLC, in the form of Exhibit B-2.

3. PA - GWB, LLC has executed and delivered and filed an amendment to its constituent documents to effect a change of name to Marketplace GWB, LLC, in the form of Exhibit B-3.

4. Organizational documents of GWB IVY LLC, for the purposes of becoming a member of Marketplace, have been executed and delivered.

5. Organizational documents of MG GWB LLC, for the purposes of becoming a member of Marketplace, have been executed and delivered.

6. Acadia executed and delivered a consent in the form of Exhibit B-4.

AMENDMENT NO. 1 TO AMENDED AND RESTATED MASTER AGREEMENT

This Amendment No. 1 to the Amended and Restated Master Agreement (this "Amendment") is entered into as of June 3, 2011, among George Washington Bridge Bus Station Development Venture LLC, GWB Development Partners, LLC, Marketplace GWB LLC ("Marketplace"), GWB Blue LLC, WMG Associates LLC, SJM Partners, Inc., GWB Ninety Nine LLC, MG GWB LLC ("MG GWB"), GWB IVY LLC ("GWB IVY"), Clearview Projects LLC, Clearview Management Services LLC, Aaron Malinsky, Paul Slayton and Benjamin Malinsky. Stephen Garchik, Stephen McBride, Raymond Gindi, Douglas Slayton and James Hyland are parties solely for the purposes set forth in Section 2 hereof.

WHEREAS, certain of the signatories to this Amendment (the "Parties") have previously executed an Amended and Restated Master Agreement (the "Original Master Agreement").

WHEREAS, the Parties desire to amend the Original Master Agreement to the extent set forth in this Amendment.

NOW, THEREFORE, in consideration of the premises contained herein, the Parties agree as follows:

1. Definitions.

(a) Capitalized terms used and not defined herein and defined in the Original Master Agreement have the meanings ascribed to such terms in the Original Master Agreement.

(b) "Certification" means the certification to be provided by the Project Owner to the Port Authority, to be provided in substantially the form attached as Exhibit A.

(c) "Certification Breach" means a breach of the Certification that the Port Authority alleges has occurred, which, if such allegation is correct, may permit the Port Authority to terminate the Port Authority Lease in accordance with the terms thereof.

(d) "Certification Breach Notice" means a written notice by the Port Authority that alleges a Certification Breach occurred.

(e) "Complete Removal" or "Completely Removed" means complete removal from the Project, in all respects, of an individual or individuals that is alleged by the Port Authority to have authorized and/or committed a Certification Breach, if the Port Authority has provided written notice of such alleged breach to the Project Owner and such Certification Breach is not Cured, including, without limitation, removal from any role as a direct or indirect manager, owner or employee of GWBBSDV on terms provided in this Amendment. The term "GWBBSDV" has the meaning ascribed to such term in the Certification.

(f) "Cured" or "Cured Certification Breach" means a Certification Breach that the Port Authority unconditionally acknowledges in writing to the Project Owner (i) is cured or waived or was incorrectly alleged and (ii) is not a basis for the termination of the Port Authority Lease.

(g) "Twentieth Calendar Day" means the twentieth calendar day following the Project Owner's receipt of a Certification Breach Notice, or the next business day if the twentieth calendar day is a Saturday, Sunday or holiday on which banks in New York are required by law to be closed.

2. Amendment of the Original Master Agreement.

(a) Each Party agrees to be bound by, comply with and otherwise observe obligations relevant to it and him in the Certification (the "Certification Obligations").

(b) Each Party agrees that if they do not comply with and otherwise observe the Certification Obligations, then such breach shall be deemed to be a Section 4 Breach. Subject to Section 2(c), the Party and/or the individual owners of the Party alleged by the Port Authority as authorizing or committing a Certification Breach may be completely barred by the Project Owner from having any role in the Project.

(c) To avoid doubt, if the applicable Certification Breach is Cured prior to the Twentieth Calendar Day, the Required Purchase (herein defined) and Complete Removal relating to such Cured Certification Breach, contemplated by Section 2(e) will not be effected. If this Section 2(c) conflicts with any other provision of this Amendment, this Section 2(c) controls.

(d) Any Party alleged to have committed a Certification Breach (the "Alleged Breaching Party") shall attempt to promptly (i) demonstrate to the Port Authority that no such breach occurred or (ii) Cure such breach. The Project Owner agrees to use all commercially reasonable efforts to assist such Party in such efforts.

(e) Subject to Section 2(c), if a Certification Breach is not Cured prior to the Twentieth Calendar Day, each Party alleged by the Port Authority to have authorized and/or committed a Certification Breach agrees that (i) with respect to the Project his or its ownership interest can be completely purchased and/or caused to be completely purchased by the Project Owner and/or GWB Development Partners LLC (and such purchasing entity shall be determined by GWB Development Partners LLC) on terms contemplated by this Section 2 (collectively, the "Required Purchase") and (ii) the Alleged Breaching Party may be required by the Project Owner to cease to have, and to agree in writing that it has ceased to have, any role of any kind or nature with respect to the Project, including, without limitation, as a direct or indirect owner, manager or employee of any Party. Each Party agrees that any Required Purchase shall be effected on the Twentieth Calendar Day. Each Party shall take all actions necessary or reasonably required to effect a Complete Removal from the Project of any Alleged Breaching Party on the Twentieth Calendar Day, including, without limitation, removal from any role as a direct or indirect manager, owner or employee of such Alleged Breaching Party and his affiliates as to the Project on the terms herein required. A breach by a Party of the preceding sentence is a Section 4 Breach (including, without limitation, that the indemnification provisions in Section 4 of the Original Master Agreement shall apply thereto). Each Party also represents to the other Parties that he or it has advised its direct and indirect owners of the provisions of this Amendment. The Parties other than the Alleged Breaching Party shall have the right to effect the Required Purchase on the Twentieth Calendar Day, regardless of whether the Port Authority's allegations are correct.

(f) Without limiting the generality of the other provisions of this Section 2, if the Port Authority alleges a Certification Breach that is not Cured, such purchase shall be effected on the Twentieth Calendar Day at the Required Purchase Price. "Required Purchase Price" means (i) the invested capital of the Alleged Breaching Party or his entity until the Project is completed and Project Stabilization (as such term is defined in Section 1.7(oo) of the Operating Agreement of GWB Development Partners LLC, as amended) has occurred and (ii) after the Project is completed and Project Stabilization has occurred, at seventy percent (70%) of fair market value for such ownership interest (without regard to minority, liquidity or similar discounts) as determined by (i) agreement among the Project Owner and the Alleged Breaching Party or (ii) if there is no such agreement within fifteen (15) calendar days of the Project Owner's receipt of the Certification Breach Notice, by fair market value as determined by appraisal by one appraiser appointed by the American Arbitration Association, which appraisal shall take place after the title to the applicable interest is transferred -- i.e., after the Required Purchase is effected, provided that such appraiser must have at least 10 years commercial real estate appraisal experience. Subject to the other provisions of this Section 2(f), the purchase price will be payable pursuant to an unsecured promissory note (the "Note") containing (i) the following terms: (A) principal and interest to be paid in three equal annual installments, with the first such installment to be paid on the first anniversary of the consummation of the Required Purchase, (B) interest to be at the minimum rate required to avoid the imposition of imputed interest, and (C) principal and interest are prepayable without premium or penalty and (ii) other commercially reasonable terms provided by the issuer of the Note. The Parties confirm and agree that no payment pursuant to this Section 2(f) shall be required to be made, and the Note shall not be required to be delivered, until the purchase price is established pursuant to this Section 2(f). If the Project Owner or GWB Development Partners, LLC is the issuer of the Note, then payments provided for in this Section 2(f) shall be required to be made only from available cash of the issuer of the Note as, when and if available, including from operating cash flow and/or sale or refinancing proceeds without the obligation of the Project Owner or GWB Development Partners, LLC to seek additional financing or refinancing to be able to make such payments. In addition, no Party shall be required to make any contributions to the Project Owner and/or GWB Development Partners LLC in order to enable it to make any one or more payments under the Note.

(g) Notwithstanding the other provisions of this Section 2, the other Parties to this Agreement and their owners have the first right to elect to effect a purchase contemplated by this Section 2 so as to permit GWB Blue LLC, and Marketplace, to retain, respectively, their then current ownership interests (currently, after giving effect to the transactions contemplated by the Original Master Agreement, 55.25% and 44.75%, respectively) in GWB Development Partners LLC, all to be effected in a cooperative manner so as to facilitate consummating such purchase on the Twentieth Calendar Day. Any such purchase would be on the same terms provided for in this Agreement except that the last two sentences of Section 2(f) shall not apply to a purchase pursuant to this Section 2(g).

(h) The Parties agree to work together, and to cause their owners to work together, in effecting a Required Purchase, so as to avoid a termination of the Port Authority Lease by reason of an alleged Certification Breach by the Port Authority. Subject to the other provisions of this Amendment, the Parties agree that the Party required to sell an interest in connection with a Required Purchase may challenge whether there was in fact a Certification

Breach. However, and by example, if there is disagreement as to (i) whether a Certification Breach occurred, including any disagreement between the Port Authority and an Alleged Breaching Party and/or its owners and/or (ii) whether the terms of a Required Purchase are reasonable, the Required Purchase shall be consummated on the Twentieth Calendar Day (to avoid doubt, regardless of whether the purchase price provided for in this Section 2 has then been established) and the purchase document will provide that if it is determined by a court of competent jurisdiction that a Certification Breach did not occur, such purchase will be subsequently unwound on terms reasonably acceptable to the purchasing parties provided that, as a condition to such unwinding, (i) all consideration paid for the interest shall, simultaneously with such unwinding, be paid to the purchasing party and (ii) the purchase price shall be not less than the then fair market value of such interest, as determined consistently with the provisions of Section 2(f) and such purchase shall be effected ten (10) business days after such purchase price is established provided that if the Alleged Breaching Party commences an action to establish that it did not commit a Certification Breach within three months of the date of the consummation of the Required Purchase and continues to diligently prosecute such action until completion, then the purchase price pursuant to this clause (ii) shall be the Required Purchase Price paid to it.

(i) Without limiting the generality of Section 2(h) or Section 3 hereof, including the rights of specific performance and injunctive relief incorporated pursuant to Section 3 hereof, an Alleged Breaching Party shall not, and shall cause its owners not to, under any circumstances assert and/or attempt to assert ("Attempted Contravention") that the other Parties do not have the right to require and/or effect a Complete Removal on the Twentieth Calendar Day. It is the Parties intention that any Attempted Contravention shall be rejected in all respects by any court and immediately enjoined, without proof of actual damages and/or the obligation to post a bond or other consideration. Time is of the essence with respect to the consummation of the Required Purchase and the Complete Removal on the Twentieth Calendar Day and each day thereafter. The Parties agree that any delay in effecting a Required Purchase is to be avoided under all circumstances so as to facilitate a Complete Removal and thereby avoid a termination of the Port Authority Lease.

(j) The Required Purchase shall be effected pursuant to documents that (i) contain the terms provided for in this Amendment and (ii) contain other commercially reasonable terms the Project Owner reasonably requires. If any terms required by the Project Owner with respect to the Required Purchase are not reasonable (other than the purchase price and/or the other terms agreed to in this Amendment), the Alleged Breaching Party has the right after the Required Purchase is consummated to request that a court strike or modify any such terms that a court concludes are in fact unreasonable. To the extent commercially reasonable, the Parties agree to structure a Required Purchase in a manner reasonably required by the Project Owner.

(k) Each Party shall, from time to time, do any and all acts, including executing documents, as may reasonably be required to carry out the terms of this Amendment.

3. Incorporation of Section 9 of the Original Master Agreement. To the extent applicable, Section 9 of the Original Master Agreement applies to this Amendment and is incorporated herein by reference.

4. Limited Amendment. The Original Master Agreement remains in full force and effect. Except as expressly amended pursuant to this Amendment, the Original Master Agreement remains unamended.

[Signature Page Follows]

IN WITNESS WHEREOF, the undersigned, intending to be legally bound hereby, has duly executed this Amendment as of the date first written above.

George Washington Bridge Bus Station Development Venture LLC

By: *GWB Development Partners, LLC,* sole Member

By: _____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

GWB Development Partners, LLC

By: _____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

Marketplace GWB LLC

By: _____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

By: _____
Stephen McBride, Manager
E-mail: SMcBride@sjmpartners.com

By: _____
Douglas Slayton, Manager
E-Mail: ds@fouroneequities.com

IN WITNESS WHEREOF, the undersigned, intending to be legally bound hereby, has duly executed this Amendment as of the date first written above.

George Washington Bridge Bus Station Development Venture LLC

By: GWB Development Partners, LLC, sole Member

By:_____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

GWB Development Partners, LLC

By:_____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

Marketplace GWB LLC

By:_____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

By:_____
Stephen McBride, Manager
E-mail: SMcBride@sjmpartners.com

By:_____
Douglas Slayton, Manager
E-Mail: ds@fouroneequities.com

IN WITNESS WHEREOF, the undersigned, intending to be legally bound hereby, has duly executed this Amendment as of the date first written above.

George Washington Bridge Bus Station Development Venture LLC

By: GWB Development Partners, LLC, sole Member

By:_____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

GWB Development Partners, LLC

By:_____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

Marketplace GWB LLC

By:_____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

By:_____
Stephen McBride, Manager
E-mail: SMcBride@sjmpartners.com

By:_____
Douglas Slayton, Manager
E-Mail: ds@fouroneequities.com

GWB BLUE LLC

By:_____
Name: Raymond Gindi
Title: Authorized Signatory
E-Mail Address: rgindi@c21stores.com

WMG Associates LLC

By:_____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

By:_____
Stephen J. Garchik, President
E-Mail: sgarchik@sjmpartners.com

GWB Ninety Nine LLC

By:_____
Doug Slayton, Manager
E-Mail: ds@fouroneequities.com

MG GWB LLC

By:_____
Stephen J. Garchik, President
E-Mail: sgarchik@sjmpartners.com

By:_____
Stephen McBride, Manager
E-mail: SMcBride@sjmpartners.com

GWB IVY LLC

By:_____
James Hyland, Manager
E-Mail: jhylands@aol.com

GWB BLUE LLC

By:_____
Name:_____
Title:_____
E-Mail Address:_____

WMG Associates LLC

By:_____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

By:_____
Stephen J. Garchik, President
E-Mail: sgarchik@sjmpartners.com

GWB Ninety Nine LLC

By:_____
Doug Slayton, Manager
E-Mail: ds@fouroneequities.com

MG GWB LLC

By:_____
Stephen J. Garchik, President
E-Mail: sgarchik@sjmpartners.com

By:_____
Stephen McBride, Manager
E-mail: SMcBride@sjmpartners.com

GWB IVY LLC

By:_____
James Hyland, Manager
E-Mail: jhylands@aol.com

GWB BLUE LLC

By:_____
Name:_____
Title:_____
E-Mail Address:_____

WMG Associates LLC

By:_____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

By:_____
Stephen J. Garchik, President
E-Mail: sgarchik@sjmpartners.com

GWB Ninety Nine LLC

By:_____
Doug Slayton, Manager
E-Mail: ds@fouroneequities.com

MG GWB LLC

By:_____
Stephen J. Garchik, President
E-Mail: sgarchik@sjmpartners.com

By:_____
Stephen McBride, Manager
E-mail: SMcBride@sjmpartners.com

GWB IVY LLC

By:_____
James Hyland, Manager
E-Mail: jhylands@aol.com

GWB BLUE LLC

By:_____
Name:_____
Title:_____
E-Mail Address:_____

WMG Associates LLC

By:_____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

By:_____
Stephen J. Garchik, President
E-Mail: sgarchik@sjmpartners.com

GWB Ninety Nine LLC

By:_____
Doug Slayton, Manager
E-Mail: ds@fouroneequities.com

MG GWB LLC

By:_____
Stephen J. Garchik, President
E-Mail: sgarchik@sjmpartners.com

By:_____
Stephen McBride, Manager
E-mail: SMcBride@sjmpartners.com

GWB IVY LLC

By:_____
James Hyland, Manager
E-Mail: jhylands@aol.com

GWB BLUE LLC

By:_____
Name:_____
Title:_____
E-Mail Address:_____

WMG Associates LLC

By:_____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

By:_____
Stephen J. Garchik, President
E-Mail: sgarchik@sjmpartners.com

GWB Ninety Nine LLC

By:_____
Doug Slayton, Manager
E-Mail: ds@fouroneequities.com

MG GWB LLC

By:_____
Stephen J. Garchik, President
E-Mail: sgarchik@sjmpartners.com

By:_____
Stephen McBride, Manager
E-mail: SMcBride@sjmpartners.com

GWB IVY LLC

By: James Hyland
James Hyland, Manager
E-Mail: jhylands@aol.com

Clearview Projects LLC

By:_____
Paul Slayton, Manager
E-Mail: ps@slaytonventures.com

Clearview Management Services LLC

By: Clearview Projects LLC

By:_____
Paul Slayton, Manager
E-Mail:ps@slaytonventures.com

_____
Aaron Malinsky
E-Mail: am@pa-assoc.com

_____
Paul Slayton
E-Mail: ps@slaytonventures.com

_____
Benjamin Malinsky
E-Mail: ~~bm@pa-assoc.com~~
ben@bmstrat.com

The undersigned agree to be bound by the provisions of Section 2 hereof:

_____
Stephen Garchik
E-Mail: sgarchik@sjmpartners.com

_____
Stephen McBride
E-Mail: SMcBride@sjmpartners.com

Clearview Projects LLC

By: _____
Paul Slayton, Manager
E-Mail: ps@slaytonventures.com

Clearview Management Services LLC

By: Clearview Projects LLC

By: _____
Paul Slayton, Manager
E-Mail: ps@slaytonventures.com

_____
Aaron Malinsky
E-Mail: am@pa-assoc.com

_____
Paul Slayton
E-Mail: ps@slaytonventures.com

_____
Benjamin Malinsky
E-Mail: bm@pa-assoc.com

The undersigned agree to be bound by the provisions of Section 2 hereof:

_____
Stephen Garchik
E-Mail: sgarchik@sjmpartners.com

_____
Stephen McBride
E-Mail: SMcBride@sjmpartners.com

Clearview Projects LLC

By:_____
Paul Slayton, Manager
E-Mail: ps@slaytonventures.com

Clearview Management Services LLC

By: Clearview Projects LLC

By:_____
Paul Slayton, Manager
E-Mail:ps@slaytonventures.com

_____
Aaron Malinsky
E-Mail: am@pa-assoc.com

_____
Paul Slayton
E-Mail: ps@slaytonventures.com

_____
Benjamin Malinsky
E-Mail: bm@pa-assoc.com

The undersigned agree to be bound by the provisions of Section 2 hereof:

_____
Stephen Garchik
E-Mail: sgarchik@sjmpartners.com

_____
Stephen McBride
E-Mail: SMcBride@sjmpartners.com

Clearview Projects LLC

By:_____
Paul Slayton, Manager
E-Mail: ps@slaytonventures.com

Clearview Management Services LLC

By: Clearview Projects LLC

By:_____
Paul Slayton, Manager
E-Mail:ps@slaytonventures.com

_____
Aaron Malinsky
E-Mail: am@pa-assoc.com

_____
Paul Slayton
E-Mail: ps@slaytonventures.com

_____
Benjamin Malinsky
E-Mail: bm@pa-assoc.com

The undersigned agree to be bound by the provisions of Section 2 hereof:

_____
Stephen Garchik
E-Mail: sgarchik@sjmpartners.com

_____
Stephen McBride
E-Mail: SMcBride@sjmpartners.com

Raymond Gindi
E-Mail: rgindi@c21stores.com

Douglas Slayton
E-Mail: ds@fouroneequities.com

James Hyland
E-Mail: jh@pa-assoc.com

Raymond Gindi
E-Mail: rgindi@c21stores.com

Douglas Slayton
E-Mail: ds@fouroneequities.com

James Hyland
E-Mail: jh@pa-assoc.com

EXHIBIT A

CERTIFICATION

Raymond Gindi
E-Mail: rgindi@c21stores.com

Douglas Slayton
E-Mail: ds@fouronecquities.com

James Hyland
E-Mail: jh@pa-assoc.com

EXHIBIT A

THE PORT AUTHORITY OF NY & NJ
CERTIFICATION
GEORGE WASHINGTON BRIDGE BUS STATION
DEVELOPMENT VENTURE LLC

Whereas, The Port Authority of New York and New Jersey (the "Port Authority") is a municipal corporate entity and political subdivision of the States of New York and New Jersey, created and existing by virtue of the Compact of April 30, 1921, made by and between the two States, and thereafter, consented to by the Congress of the United States, to develop transportation, terminal, and other facilities of commerce within the statutorily defined Port District, which has its Executive Offices at 225 Park Avenue South, New York, N.Y. 10003; and,

Whereas, at the present time, pursuant to the 1921 Compact and subsequent bi-state amendatory and supplementary legislation, the Port Authority owns and/or operates forty (40) such facilities; and,

Whereas, the Port Authority is committed to protecting the public interest against fraud, waste, and abuse in all of its projects or operations, and in all of its leases, contracts and subcontracts (including sub-subcontracts and other contracts thereunder) entered into in order to effectuate such projects or operations, including the George Washington Bridge Bus Station ("GWBBS") facility; and,

Whereas, the George Washington Bridge Bus Station Development Venture LLC ("GWBBSDV," "the Company," or "the Developer")[1] is a limited liability corporation organized and existing under the laws of the State of New York, having an office and principal place of business at 9001 Congressional Court, Potomac, Maryland. GWBBSDV has been selected by the Port Authority to redevelop the GWBBS facility, and to lease the retail portion of the facility; and,

Whereas, certain information has come to the attention of the Port Authority to cause the Port Authority to review GWBBSDV's background in order to determine whether the public interest is served by allowing GWBBSDV to perform as the Developer on the GWBBS Redevelopment Project (the "GWBBS Project" or "the Project"), and for the Developer to be the Lessee of the retail portion of the Project, specifically that one of the former partners of the Developer's team, Aaron Malinsky, was charged with conspiracy to deprive New York State and its citizens of Carl Kruger's honest services and conspiracy to launder money in March 2011 by the United States Attorney's Office, Southern District of New York ("SDNY Complaint"). Aaron Malinsky is a principal, along with Paul Slayton, in an entity called PA Associates LLC, that is described in the SDNY Complaint. After the SDNY Complaint was announced in March

[1] For the purposes of this Certification, references to GWBBSDV includes all associated entities and individuals, including but not limited to the George Washington Bridge Bus Station Development Venture LLC, GWB Development Partners LLC; Marketplace GWB LLC; GWB Blue LLC; MG GWB LLC; GWB Ninety Nine LLC; WMG Associates LLC; GWB Ivy LLC; Stephen Garchik; Stephen McBride; Raymond Gindi; Douglas Slayton; James Hyland; etc.

2011, the Developer notified the Port Authority that Aaron Malinsky and Paul Slayton agreed to remove themselves any involvement in the Project, including financial, operational and decision-making functions; and,

Whereas, this Certification is made for the express purpose of inducing the Port Authority to continue to conduct business with GWBBSDV on the GWBBS Project; and,

Now, therefore, the following representations and covenants are hereby made by the undersigned on behalf of GWBBSDV:

1. Aaron Malinsky, Paul Slayton, and to the Knowledge of GWBBSDV[2,3] any entities with which they are associated, shall neither participate in, nor influence in any way, GWBBSDV's business and operations, including not influencing or providing direction on any financial, operational, and/or technical matters relating to the Project or any other Port Authority leases, contracts or subcontracts[4] during the term of this Certification. Specifically, as to Aaron Malinsky, Paul Slayton, and to the Knowledge of GWBBSDV any entities with which they are associated except as set forth in footnotes 3 and 5[5] the following shall apply.

---

[2] "References to "Knowledge of GWBBSDV" and similar terms throughout this Certification means the actual knowledge of the Key Managers; and references to "Key Managers" or "GWBBSDV Key Managers" throughout *this Certification means (i) Stephen Garchik, Stephen McBride, Raymond Gindi and Doug Slayton for as long as* each has a direct or indirect ownership interest in GWBBSDV and (ii) any other individuals, if any, that are authorized to conduct day to day operations of GWBBSDV, pursuant to the terms of the Operating Agreement of the immediate parent company of GWBBSDV for as long as such individual has a direct or indirect ownership interest in GWBBSDV (currently there are no others).

[3] Anything in this Certification to the contrary notwithstanding, (a) GWBBSDV and the direct or indirect owners of GWBBSDV and/or Benjamin Malinsky may continue to be involved in existing transactions with and/or may be involved in new transactions with Aaron Malinsky and/or Paul Slayton or their affiliates, including from the subleased space referred to in Section 1(e) hereof, and any such transactions shall not constitute a breach of this Certification, provided that, and solely to the extent that (i) such transactions are completely unrelated (A) to the GWBBS Project or (B) any other project with the Port Authority and (ii) neither Paul Slayton nor Aaron Malinsky has, directly or indirectly, any role of any kind or nature in the Project, including without limitation any ownership interest or any management role in the Project or in any Port Authority leases, contracts or subcontracts and (b) the prohibitions in Section 1 hereof shall not apply to dealings with publicly held entities in which Aaron Malinsky, or *Paul Slayton, or both hold less than a 5% ownership interest that is strictly a passive ownership interest.*

[4] References to "Port Authority leases, contracts or subcontracts" throughout this Certification means Port Authority leases, contracts or subcontracts to which GWBBSDV is a party or bound.

[5] Sections 1(c) and 1(d) of this Certification will not require GWBBSDV to breach or terminate any contract provided that GWBBSDV is required to take commercially reasonable actions the Port Authority reasonably requires to effect the objective that (except for Paul Slayton's right to receive and retain payments under the Notes pursuant to Section 1(c)) neither Aaron Malinsky nor Paul Slayton receive or retain, directly or indirectly, any payments, benefits, commissions or expenses that relate to the Project or are otherwise prohibited by this Certification. Section 1(c) will not preclude Aaron Malinsky or Paul Slayton or Clearview Projects LLC from enforcing its rights under the Master Agreement or the agreements contemplated thereby, copies of which were previously provided to the Port Authority, provided that, in no event shall such enforcement entitle or result in either Paul Slayton or Aaron Malinsky having, directly or indirectly, any role of any kind or nature in the Project,

a. Aaron Malinsky and Paul Slayton are not, and will not become a Key Person[6], consultant, or employee of GWBBSDV.

b. GWBBSDV and/or its Key People, consultants, or employees will not seek and/or obtain advice or assistance from Aaron Malinsky and Paul Slayton regarding GWBBSDV business relating to the Project or any other Port Authority leases, contracts or subcontracts during the term of this Certification.

c. GWBBSDV shall not (i) make any payments or extend any benefits, commissions, or expenses, whether directly or indirectly to Aaron Malinsky and Paul Slayton or (ii) make any payments or extend any benefits, commissions or expenses, whether directly or indirectly to any business entity as to which the individual authorizing the payment has actual knowledge that such business entity is one in which Aaron Malinsky and/or Paul Slayton is a Key Person, consultant, or employee relating to the Project or any other Port Authority leases, contracts or subcontracts during the term of this Certification. Notwithstanding the foregoing, any payments made by Douglas Slayton and GWB Ninety Nine LLC pursuant to the promissory note to Paul Slayton, and/or the payments by Doug Slayton and GWB Ninety Nine LLC pursuant to the promissory note to Clearview Projects LLC (the "Notes"), as described in the Amended and Restated Master Agreement (the "Master Agreement") among GWBBSDV, et. al., dated as of June 3, 2011, and the payment to Aaron Malinsky contemplated by the Master Agreement in respect of the purchase of all of Aaron Malinsky's direct or indirect ownership interests in GWBBDSV, are not prohibited.

d. GWBBSDV shall not (i) solicit, accept, nor receive any payments, benefits, commissions, or expenses, whether directly or indirectly, from Aaron Malinsky and/or Paul Slayton or (ii) Knowingly[7] solicit, accept, nor receive any payments, benefits, commissions or expenses, whether

---

including without limitation any ownership interest or any management role in the Project or in any Port Authority leases, contracts or subcontracts

[6] References to "Key People" or "Key Person" throughout this Certification means proprietors; owners; partners; directors; officers; shareholders or other equity owners, directly or beneficially, of five percent (5%) or more of the Company's issued stock or other issued securities, such as limited liability company interests; including owners of other securities (e.g., stock options, secured or unsecured bonds, warrants and rights, etc.) that can be converted to stock or other securities so that, if exercised, would constitute five percent (5%) of the Company's issued stock or other issued securities; any group, individual and/or entity with the right to acquire ownership of an amount of the Company's stock or other securities, pursuant to any stock option, arrangement, warrant, right, or otherwise, which, if combined with the current holdings of such group, individual and/or entity, would constitute five percent (5%) or more of the outstanding stock or other securities; each manager or individual participating in overall policy-making or overall financial decisions for the Company; and each person in a position to control and/or direct the Company's overall operations.

[7] References to "Knowingly", "Knowing", "Known", "Aware" and similar terms throughout this Certification, means the actual knowledge of, as applicable, (i) the Key Managers or (ii) the individual at issue.

directly or indirectly, from any business entity in which Aaron Malinsky and/or Paul Slayton is a Key Person, consultant, or employee relating to the Project or any other Port Authority leases, contracts or subcontracts during the term of this Certification. To avoid doubt, the preceding sentence shall not preclude (i) GWBBSDV from requiring Aaron Malinsky and/or Paul Slayton to disgorge payments or benefits they are not entitled to retain pursuant to the Master Agreement and/or to otherwise perform and/or comply with their obligations under the Master Agreement, including indemnity obligations, or the agreements contemplated thereby, copies of which were previously provided to the Port Authority or (ii) the purchasers of the direct or indirect ownership interests of Aaron Malinsky and Paul Slayton from enforcing the guarantees of Aaron Malinsky and/or Paul Slayton with respect to such purchases.

e. Subject to the other provisions of this Section 2(e), GWBBSDV shall not Knowingly share any space[8], staff[9], or equipment[10] with any business entity in which Aaron Malinsky and/or Paul Slayton is a Key Person, consultant, or employee. Notwithstanding Section 1(c) and this Section 1(e), GWB Ninety Nine LLC, an entity owned solely by Doug Slayton, may, for not more than 24 months, sublease or otherwise occupy space at 250 West 57th Street, Suite 1120, from P/A Associates LLC, an entity owned by Aaron Malinsky and Paul Slayton, at a price that is a direct pass through (without any profit), and perform the obligations under the Lease.

f. Benjamin Malinsky will not become a Key Person within GWBBSDV, and his involvement in the Project shall be strictly limited to, and be in

[8] Space shall be considered to be shared when any part of the floor space utilized by the Company at any of its sites is also utilized on a regular or intermittent basis for any purpose by any other business or not-for-profit organization, and where there is no lease or sublease in effect between the submitting business and the other business or not-for-profit organization.

[9] Staff shall be considered to be shared when any individual provides the services of an employee, whether paid or unpaid, to the Company and also, on either a regular or irregular basis, provides the services of an employee, paid or unpaid, to one or more other business(es) and/or not-for-profit organization(s), if such services are provided during any part of the same hours the individual is providing services to the bidder or if such services are provided on an alternating or interchangeable basis between the Company and the other business(es) and/or not-for-profit organization(s). "The services of an employee" should be understood to include services of any type or level, including managerial or supervisory. This type of sharing may include, but is not limited to, individuals who provide the following services: telephone answering, receptionist, delivery, custodial, and driving.

[10] Equipment shall be considered to be shared whenever the Company shares the ownership and/or the use of any equipment with any other business or not-for-profit organization. Such equipment may include, but is not limited to, telephones or telephone systems, photocopiers, computers, motor vehicles, and construction equipment. Equipment shall not be considered to be shared under the following two circumstances: when, although the equipment is owned by another business or not-for-profit organization, the bidder has entered into formal lease for the use of the equipment and exercises exclusive use of the equipment; or when the Company owns equipment that it has formerly leased to another business or not-for-profit organization, and for the duration of such lease the Company has relinquished all right to the use of such leased equipment.

accordance with, the terms of the Consulting Fee Agreement, dated June 3, 2011, between GWB Ninety-Nine LLC, and Benjamin Malinsky.

2. To the Knowledge of GWBBSDV and except as to Aaron Malinsky, Paul Slayton and James Hyland:

   a. Neither GWBBSDV nor any of its Key People, past or present, have ever been a target or subject of any criminal investigation.

   b. Neither GWBBSDV nor any of its Key People, past or present, have ever been indicted or otherwise named as an unindicted co-conspirator in any indictment or other accusatory instrument.

   c. Neither GWBBSDV nor any of its Key People, past or present, have ever been served with a subpoena or other compulsory process issued by any law enforcement agency or Grand Jury. James Hyland disclosed in his Port Authority background disclosure form, dated June 7, 2011, that he received a subpoena from SDNY relating to the SDNY investigation, which is cited in the fifth Whereas Clause.

   d. Neither GWBBSDV nor any of its Key People, past or present, have ever been notified of being the subject of court-ordered electronic surveillance.

   e. Neither GWBBSDV nor any of its Key People, directly or indirectly, have offered, given or agreed to give, or received or agreed to receive, any money, or any other benefit, to or from any, officer or employee of the Port Authority, or any other governmental agency, or private business, for any unlawful purpose pertaining to the conduct of GWBBSDV's business or for the benefit of GWBBSDV.

   f. Neither GWBBSDV nor its Key People, directly or indirectly, will offer, give or agree to give, or receive or agree to receive, any money, or any other benefit, to or from an officer or employee of the Port Authority, or any other governmental agency, or private business, for any unlawful purpose pertaining to the conduct of GWBBSDV's business or for the benefit of GWBBSDV.

   References to past or present Key People in this Section 2 and in Sections 4 and 6 are limited to Key People that a Key Manager is Aware of.

3. GWBBSDV shall report immediately to the Port Authority's Office of Inspector General ("OIG") any violation of this Certification that a Key Manager becomes Aware of.

4. GWBBSDV agrees that it shall notify the Port Authority, through its OIG, within three (3) business days in the event that any of GWBBSDV's Key Managers become Aware that GWBBSDV and/or any of its Key People are:

a. arrested, indicted, or otherwise named as an unindicted co-conspirator in any indictment or other accusatory instrument; specifically, involving or relating to a lack of honesty or business integrity, whether of a criminal, civil or administrative nature; or,

b. convicted, after trial or by plea, of any felony under state or federal law or of any misdemeanor involving business-related, tax-related, or other financial crimes; or,

c. party to a non-prosecution agreement, deferred prosecution agreement, or a consent decree, or are otherwise granted immunity from prosecution; or,

d. subpoenaed, interviewed, questioned, or otherwise contacted by any government agency, official, and/or employee in connection with any investigation, and whether or not GWBBSDV and/or said Key People are notified, are in-fact, or otherwise believed to be, the subject or target of any such investigation.

5. GWBBSDV further agrees that it shall notify the Port Authority, through its OIG, within three (3) business days in the event that any of GWBBSDV's Key Managers become Aware that any of GWBBSDV's employees or agents[11] directly engaged by GWBBSDV working on the Project who are working, or have ever worked, on any government lease, contract or subcontract are:

a. arrested, indicted, or otherwise named as an unindicted co-conspirator in any indictment or other accusatory instrument, specifically involving or relating to allegations of a lack of honesty or business integrity, whether of a criminal, civil, or administrative nature; or,

b. convicted, after trial or by plea, of any felony under state or federal law or of any misdemeanor involving business-related, tax-related, or other financial crimes, specifically involving or relating to allegations of a lack of honesty or business integrity, whether of a criminal, civil, or administrative nature; or,

c. subpoenaed, interviewed, questioned, or otherwise contacted by any government agency, official, and/or employee in connection with any investigation, specifically involving or relating to allegations of a lack of honesty or business integrity, whether of a criminal, civil, or administrative nature, and whether or not the employee or agent is notified, is in-fact, or otherwise believed to be, the subject or target of any such investigation.

[11] For purposes of this Certification, an "agent" is defined as any entity or person acting on behalf of, or for the benefit of GWBBSDV, including, but not limited to, expediters.

6. GWBBSDV further agrees that it shall notify the Port Authority, through its OIG, within three (3) business days in the event that any of GWBBSDV's Key Managers become Aware that:

   a. any of GWBBSDV's Key People, consultants, or employees or agents offer or agree to give any money, gratuity, or any other benefit to a contractor or subcontractor, public official or servant for a purpose that is corrupt, or suspected of being corrupt; or,

   b. any of GWBBSDV's Key People, consultants, or employees or agents are solicited by any contractor or subcontractor, public official or servant to give any money, gratuity, or any other benefit for a purpose that is corrupt, or suspected of being corrupt; or,

   c. any of GWBBSDV's Key People, consultants, or employees or agents make, or attempt to make, any agreement, or participate in, or attempt to participate in, any scheme, to rig bids, restrain trade by collusion or unfair trade or labor practices, or otherwise prevent the lowest responsible bidder from obtaining a contract.

7. GWBBSDV further agrees that it shall immediately notify the Port Authority, through its OIG, of the following occurrences which any of GWBBSDV's Key Managers have Knowledge, involving a lack of honesty or business integrity or unethical business activity arising out of or in direct connection with GWBBSDV's operations:

   a. any suspected or actual criminal activity on the part of GWBBSDV's employees, agents, subcontractors, suppliers or vendors; and

   b. any suspected or actual criminal activity on the part of any Port Authority or other governmental agency employees, officers, or agents.

However, GWBBSDV shall be relieved of the disclosure obligations set forth in Paragraphs 4 through and including Paragraph 7 in the event a government agency with prosecutorial authority or authority to investigate alleged criminal activity requests that the investigation or subpoena be maintained in confidence so long as it is understood that once the request for said confidence need no longer apply the disclosure obligations of GWBBSDV be fully restored.

8. GWBBSDV understands and acknowledges that this Certification shall be submitted to, and shall be relied on by, the Port Authority. GWBBSDV further understands and acknowledges that any material, false representations contained herein, or a material violation of any of the representations or covenants set forth herein, may be deemed by the Port Authority to constitute a material breach of this Certification. Should the Port Authority become aware of what it believes to be a material breach, the Port Authority agrees that it will provide notice of the alleged material breach to GWBBSDV, and that GWBBSDV will have thirty (30) days to respond in writing, and to cure or cause the cure of any material breach.

GWBBSDV agrees to use good faith efforts to endeavor to cure any such material breach, failing which, the Port Authority shall have the specific remedies expressly provided pursuant to Section 17.1(14) of the Project lease.

9. GWBBSDV understands that the Port Authority has the right to consider its responsibility status in the future and, in conformity with all applicable Port Authority regulatory due process requirements to which GWBBSDV is entitled and, subject to the cure rights provided for in, and the other provisions of, this Certification, to find it to be lacking in the requisite business integrity, in the event the facts should warrant such action. If there is a finding of a lack of the requisite business integrity, the Port Authority shall have the right to require GWBBSDV to take reasonable actions to appropriately remedy the lack of requisite business integrity.

10. GWBBSDV hereby authorizes and grants the Port Authority, including its OIG, the right to audit and/or investigate, as may be reasonable or appropriate, to ensure compliance by GWBBSDV and its Key People with the terms and conditions of this Certification. GWBBSDV further agrees that it will cooperate fully and completely with the Port Authority, including its OIG, during and in connection with any such audits and/or investigations. Such cooperation shall include, but is not limited to, granting the Port Authority, including its OIG, the right to examine all books, records, files, accounts, computer records, documents, and correspondence, including electronically-stored information (collectively, "Documents"), in the possession or control of GWBBSDV, except to the extent such grant may constitute a waiver of the attorney client privilege and/or the attorney work product doctrine. Pursuant to this Paragraph 10, GWBBSDV shall also use its commercially reasonable efforts to assist the Port Authority, including its OIG, in obtaining access to, interviews with, and information from, former, current, and future persons employed or retained by GWBBSDV, including, but not limited to, Key People, consultants, employees, and agents. Notwithstanding the other provisions of this Certification, including, without limitation, Sections 9, 10 and 11, neither GWBBSDV nor any other entity or individual has waived, or is obligated to waive or is required to take any action that may constitute a waiver of, the attorney-client privilege and/or the attorney work product doctrine or has agreed to take any action that may constitute a breach of confidentiality obligations in favor of an entity or individual other than GWBBSDV or its Key People.

11. GWBBSDV understands and acknowledges that the OIG, in its sole discretion and at periodic times, may assign an Integrity Monitor firm to conduct audits and/or investigations to determine whether GWBBSDV is in compliance with the terms of this Certification. The reasonable costs of such audits and/or investigations will be borne solely by GWBBSDV.

12. The undersigned declares and certifies that the foregoing information is true and complete to his knowledge. The covenants in this Certification shall remain in effect from and after the date written next to GWBBSDV's signature block below

until the earlier to occur of (i) the day immediately preceding the fifteenth (15th) anniversary thereof and (ii) the date on which GWBBSDV is released from this Certification pursuant to Section 13 below, if applicable (the "term of this Certification").

13. GWBBSDV may submit a request to the Port Authority, at any time after the first three years of this Certification, to modify the terms of, or to terminate this Certification. Such request must include a basis and explanation for the request. The decision to modify the terms, or to terminate this Certification, rests within the sole discretion of the Port Authority.

A violation of, and/or a failure to perform, the duties and obligations of this Certification is not intended to constitute a crime, except to the extent that such underlying conduct independently constitutes a crime. A Knowingly false representation or Knowing violation of any of the above undertakings or covenants made in connection with this Certification may prevent GWBSSDV, the individual or entity responsible for such false representation or breach (and/or the undersigned if the undersigned is Knowingly responsible for such false representation or violation) from being found to be a responsible developer, lessee, and/or bidder/proposer in connection with future leases, contracts, subcontracts, and agreements with the Port Authority. In addition, such false representations or violation may subject GWBBSDV and the undersigned to criminal charges, including charges for violation of New York State Penal Law Sections 175.35 (Offering a False Statement for Filing) and 210.40 (Sworn False Statement), New Jersey Code of Criminal Justice Title 2C:28-3 (Unsworn Falsification to Authorities), and/or Title 18 U.S.C. Sections 1001 (False or Fraudulent Statement) and 1341 (Mail Fraud).

George Washington Bridge Bus Station
Development Venture LLC

By: George Washington Development
Partners, LLC, its sole Member

Dated:_____

BY:_____
Name:
Title

STATE OF _____)
) SS:
COUNTY OF _____)

_____, being duly sworn, deposes and says that he/she is a Principal of George Washington Bridge Bus Station Development Venture LLC and that, to the best of his/her knowledge, the information provided herein is true and sufficiently complete so as not to be misleading; and that he/she has been properly authorized by George Washington Bridge Bus Station Development Venture LLC to sign this Certification, on its behalf.

Subscribed and sworn to before
me this ____ day _____ 2011,

_____
Notary Public

AMENDMENT NO. 2 TO AMENDED AND RESTATED MASTER AGREEMENT

This Amendment No. 2 to the Amended and Restated Master Agreement (this "Amendment") is entered into as of June 3, 2011, among George Washington Bridge Bus Station Development Venture LLC, GWB Development Partners, LLC, Marketplace GWB LLC ("Marketplace"), GWB Blue LLC, WMG Associates LLC, SJM Partners, Inc., GWB Ninety Nine LLC, MG GWB LLC ("MG GWB"), GWB IVY LLC ("GWB IVY"), Clearview Projects LLC, Clearview Management Services LLC, Aaron Malinsky, Paul Slayton, Benjamin Malinsky, Stephen Garchik, Stephen McBride, Raymond Gindi, Douglas Slayton and James Hyland.

WHEREAS, certain of the signatories to this Amendment (the "Parties") have previously executed and delivered an Amended and Restated Master Agreement as amended by Amendment No. 1 thereto (the "Original Master Agreement").

WHEREAS, the Parties desire to amend the Original Master Agreement to the extent set forth in this Amendment.

NOW, THEREFORE, in consideration of the premises contained herein, the Parties agree as follows:

1. Definitions.

(a) Capitalized terms used and not defined herein and defined in the Original Master Agreement have the meanings ascribed to such terms in the Original Master Agreement.

(b) "Effectiveness of the Port Authority Lease" or "Effective" means that the Port Authority Lease has been executed and delivered and is effective, including that there are no conditions that must be satisfied prior to (i) the Port Authority Lease being in full force and effect and (ii) the Project Owner having a leasehold interest to the property described in the Port Authority Lease.

(c) "Escrow Agent" means Gilbert and Davis as escrow agent under the Escrow Agreement.

(d) "Escrow Agent's Attorneys' Trust Account Check" means a check for $625,000 drawn by the Escrow Agent on the Escrow Agent's trust account.

(e) "Escrow Agreement" means an Escrow Agreement in substantially the form attached as Exhibit A.

(f) "Escrow Fund" means (i) $208,333 to be wire transferred by each Transferor ($208,334 for MG GWB) in accordance with the terms of the Original Master Agreement, i.e., an aggregate of $625,000 as amended hereby; and (ii) the Promissory Note.

(g) "Project Owner's Initial Notice" means a written notice, which may be an e-mail notice, by the Project Owner to each Transferor stating that (i) the Project Owner expects the Port Authority Lease to be executed and delivered and effective in the following two

business days, including that the Project Owner expects that there will be no conditions that must be satisfied prior to (i) the Port Authority Lease being in full force and effect and (ii) the Project Owner having a leasehold interest to the property described in the Port Authority Lease.

(h) "Promissory Note" means the promissory note to be issued pursuant to the Original Master Agreement by GWB Ninety Nine, LLC in the original face amount of $625,000, payable to Clearview Projects, LLC

(i) "Required Transfers" means the following transfers: (i) wire transfers by GWB Blue LLC, GWB Ninety Nine LLC and MG GWB for $208, 333 ($208,334 for MG GWB) required pursuant to the Original Master Agreement and (ii) the delivery by GWB Ninety Nine LLC of the Promissory Note.

(j) "Transferor" means (i) each Party obligated to wire transfer $208,333 ($208,334 for MG GWB) pursuant to the Original Master Agreement -- i.e., namely, GWB Blue, LLC, GWB Ninety Nine LLC and MG GWB in connection with the transactions contemplated thereby, and (ii) GWB Ninety Nine LLC in its capacity as the issuer of the Promissory Note.

2. Effect of the Escrow Agreement. The Parties acknowledge that certain Parties have, simultaneously with the execution and delivery of this Amendment, executed and delivered the Escrow Agreement. The Parties acknowledge and agree that the consummation of the purchases and redemptions contemplated by the Original Master Agreement will be effective prior to the effectiveness of the Port Authority Lease, and will instead be effective at the Effective Time.

3. Amendment of the Original Master Agreement.

(a) The definition of "Effective Time" is hereby amended and restated in its entirety as follows:

> "Effective Time" means the time in which the Escrow Agent's Attorneys' Trust Account Check and the Promissory Note is delivered by the Escrow Agent to Clearview Projects LLC in accordance with the terms of the Escrow Agreement provided that if all Effective Time Funding Obligations have not been made, then (i) the Effective Time shall be deemed to not have occurred and the documents listed in Exhibit A shall not become effective, (ii) any Effective Time Funding Obligations made shall be immediately returned to the payor thereof by the recipient and the Party on whose behalf such payment was made and (iii) any Party or Parties failing to pay or make any such Effective Time Funding Obligations at the time required by the terms of the Escrow Agreement shall be in breach of this Agreement.

(b) The definition of "Effective Time Funding Obligations" is hereby amended and restated in its entirety as follows:

"Effective Time Funding Obligations" means (i) the payment by wire transfer of immediately available funds of $208,333 by GWB Blue LLC for the benefit of Marketplace pursuant to Exhibit A-1 and pursuant to the Escrow Agreement, provided that Marketplace hereby authorizes and directs GWB Blue LLC to pay such $208,233 directly to the Escrow Agent for the benefit of Clearview Projects LLC in order to discharge the obligation of Marketplace to Clearview Projects LLC pursuant to Exhibit A-3, (ii) the payment by wire transfer of immediately available funds of $208,333 by GWB Ninety Nine LLC to the Escrow Agent for the benefit of Clearview Projects LLC pursuant to Exhibit A-5 and pursuant to the Escrow Agreement, and the delivery of a promissory note in the amount of $625,000 to the Escrow Agent for the benefit of Clearview Projects LLC by GWB Ninety Nine LLC pursuant to Exhibit A-5, i.e., the Membership Interest Purchase Agreement and pursuant to the Escrow Agreement and (iii) the payment, by wire transfer of immediately available funds, of $208,334 by MG GWB LLC to the Escrow Agent for the benefit of Clearview Projects LLC."

(c) Section 2(b) of the Original Master Agreement is hereby amended and restated in its entirety as follows:

"Without any further consent on the part of any Party, the Effective Time of each Executed Document shall be the time the Escrow Agent delivers the Escrow Agent's Attorneys' Trust Account Check and the Promissory Note to Clearview Projects LLC."

(d) Section 2(c) of the Original Master Agreement is hereby deleted and substituted in its place are the words "Intentionally Omitted".

(e) Section 2(e) of the Original Master Agreement is hereby amended and restated in its entirety as follows:

"Clearview Projects LLC agrees to deliver to each Party on the Effective Time prompt confirmation, by e-mail notice to the e-mail addresses on the signature pages of this Agreement, of its receipt of the Escrow Agent's Attorneys' Trust Account Check and the Promissory Note."

(f) Section 3(b) of the Original Master Agreement is hereby amended and restated in its entirety as follows:

"The Parties acknowledge that a receipt by the Escrow Agent of the Required Transfers are a necessary condition in order for the Executed Documents to become effective."

(g) All of the documents listed in Exhibit A to the Original Master Agreement shall be effective at the Effective Time, notwithstanding any provision to the contrary in Exhibit A to the Master Agreement. Any contrary provisions in such Exhibit A are hereby amended to be consistent with the preceding sentence.

(h) The Project Owner shall not provide the Project Owner's Initial Notice earlier then three business days of the expected effectiveness of the Port Authority Lease.

(i) The required payment of $625,000 to be paid pursuant to the Original Master Agreement to Clearview Projects LLC (including, without limitation, pursuant to Exhibits A-3 and A-5) shall be paid by the Escrow Agent's Attorneys' Trust Account Check to Clearview Projects LLC and not by any wire transfers.

(j) Clearview Projects, LLC and Aaron Malinsky agree that (i) the purchases and redemptions contemplated by Exhibits A-3 and A-5 to the Master Agreement will be fully complete upon its receipt of the Escrow Agent's Attorneys' Trust Account Check and (ii) even though the purchase is complete, he will not and will cause Clearview Projects LLC not to cash the Escrow Agent's Attorneys' Trust Account Check until the Project Owner notifies Aaron Malinsky's counsel, Davis & Gilbert, by e-mail that the Port Authority Lease has been executed and delivered and is Effective (and the Project Owner agrees to send that e-mail immediately after the Port Authority Lease is Effective).

(k) If the Project Lease is not Effective within three business days (the "Third Business Day") of the Escrow Agents delivering the Escrow Agent's Attorneys' Trust Account Check to Clearview Projects, LLC and the Promissory Note to Clearview Projects, LLC, then all purchases and redemptions contemplated by the Master Agreement shall be fully unwound, including, without limitation that on the business day following the Third Business Day (i) Clearview Projects LLC shall, and Aaron Malinsky shall cause Clearview Projects LLC to, return the Escrow Agent's Attorneys' Trust Account Check uncashed (or if the Escrow Agent's Attorneys' Trust Account Check has been cashed, wire transfer $208,333 to GWB Blue LLC, $208,333 to GWB Ninety Nine LLC and $208,334 to MG GWB LLC), and (ii) Clearview Projects, LLC shall, and Paul Slayton shall cause Clearaview Projects, LLC to, deliver the Promissory Note to GWB Ninety Nine LLC marked "cancelled." Without limiting the generality of Section 4 hereof, each Party shall do any and all acts as may reasonably be required to fully unwind such purchases and redemptions as provided for in this Section 3(k).

(l) The Parties acknowledge and agree the payments required to be made pursuant to the definition of "Effective Time Funding Obligations" in the Original Master Agreement, will be effectively made pursuant to the terms of the Escrow Agreement, notwithstanding that every Party hereto is not a party to the Escrow Agreement.

4. Further Assurances. Each Party shall, from time to time, do any and all acts, including executing documents, as may reasonably be required to carry out the terms of this Amendment.

5. Incorporation of Section 9 of the Original Master Agreement. To the extent applicable, Section 9 of the Original Master Agreement applies to this Amendment and is incorporated herein by reference.

6. Limited Amendment. The Original Master Agreement remains in full force and effect. Except as expressly amended pursuant to this Amendment, the Original Master Agreement remains unamended.

[Signature Page Follows]

IN WITNESS WHEREOF, the undersigned, intending to be legally bound hereby, has duly executed this Amendment No. 2 to the Amended and Restated Master Agreement as of the date first written above.

George Washington Bridge Bus Station Development Venture LLC

By: GWB Development Partners, LLC, sole Member

By: _____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

GWB Development Partners, LLC

By: _____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

Marketplace GWB LLC

By: _____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

By: _____
Stephen McBride, Manager
E-mail: SMcBride@sjmpartners.com

By: _____
Douglas Slayton, Manager
E-Mail: ds@fouroneequities.com

IN WITNESS WHEREOF, the undersigned, intending to be legally bound hereby, has duly executed this Amendment No. 2 to the Amended and Restated Master Agreement as of the date first written above.

George Washington Bridge Bus Station Development Venture LLC

By: GWB Development Partners, LLC, sole Member

By:_____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

GWB Development Partners, LLC

By:_____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

Marketplace GWB LLC

By:_____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

By:_____
Stephen McBride, Manager
E-mail: SMcBride@sjmpartners.com

By:_____
Douglas Slayton, Manager
E-Mail: ds@fouroneequities.com

IN WITNESS WHEREOF, the undersigned, intending to be legally bound hereby, has duly executed this Amendment No. 2 to the Amended and Restated Master Agreement as of the date first written above.

George Washington Bridge Bus Station Development Venture LLC

By: GWB Development Partners, LLC, sole Member

By:_____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

GWB Development Partners, LLC

By:_____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

Marketplace GWB LLC

By:_____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

By:_____
Stephen McBride, Manager
E-mail: SMcBride@sjmpartners.com

By:_____
Douglas Slayton, Manager
E-Mail: ds@fouroneequities.com

GWB BLUE LLC

By:_____
Name: Raymond Gindi
Title: Authorized Signatory
E-Mail Address: rgindi@c21stores.com

WMG Associates LLC

By:_____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

By:_____
Stephen J. Garchik, President
E-Mail: sgarchik@sjmpartners.com

GWB Ninety Nine LLC

By:_____
Doug Slayton, Manager
E-Mail: ds@fouroneequities.com

MG GWB LLC

By:_____
Stephen J. Garchik, President
E-Mail: sgarchik@sjmpartners.com

By:_____
Stephen McBride, Manager
E-mail: SMcBride@sjmpartners.com

GWB IVY LLC

By:_____
James Hyland, Manager
E-Mail: jhylands@aol.com

GWB BLUE LLC

By:_____
Name:_____
Title:_____
E-Mail Address:_____

WMG Associates LLC

By:_____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

By:_____
Stephen J. Garchik, President
E-Mail: sgarchik@sjmpartners.com

GWB Ninety Nine LLC

By:_____
Doug Slayton, Manager
E-Mail: ds@fouroneequities.com

MG GWB LLC

By:_____
Stephen J. Garchik, President
E-Mail: sgarchik@sjmpartners.com

By:_____
Stephen McBride, Manager
E-mail: SMcBride@sjmpartners.com

GWB IVY LLC

By:_____
James Hyland, Manager
E-Mail: jhylands@aol.com

GWB BLUE LLC

By:_____
Name:_____
Title:_____
E-Mail Address:_____

WMG Associates LLC

By:_____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

By:_____
Stephen J. Garchik, President
E-Mail: sgarchik@sjmpartners.com

GWB Ninety Nine LLC

By:_____
Doug Slayton, Manager
E-Mail: ds@fouroneequities.com

MG GWB LLC

By:_____
Stephen J. Garchik, President
E-Mail: sgarchik@sjmpartners.com

By:_____
Stephen McBride, Manager
E-mail: SMcBride@sjmpartners.com

GWB IVY LLC

By:_____
James Hyland, Manager
E-Mail: Jhylands@aol.com

GWB BLUE LLC

By:_____
Name:_____
Title:_____
E-Mail Address:_____

WMG Associates LLC

By:_____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

By:_____
Stephen J. Garchik, President
E-Mail: sgarchik@sjmpartners.com

GWB Ninety Nine LLC

By:_____
Doug Slayton, Manager
E-Mail: ds@fouroneequities.com

MG GWB LLC

By:_____
Stephen J. Garchik, President
E-Mail: sgarchik@sjmpartners.com

By:_____
Stephen McBride, Manager
E-mail: SMcBride@sjmpartners.com

GWB IVY LLC

By:_____
James Hyland, Manager
E-Mail: jhylands@aol.com

GWB BLUE LLC

By:_____
Name:_____
Title:_____
E-Mail Address:_____

WMG Associates LLC

By:_____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

By:_____
Stephen J. Garchik, President
E-Mail: sgarchik@sjmpartners.com

GWB Ninety Nine LLC

By:_____
Doug Slayton, Manager
E-Mail: ds@fouroneequities.com

MG GWB LLC

By:_____
Stephen J. Garchik, President
E-Mail: sgarchik@sjmpartners.com

By:_____
Stephen McBride, Manager
E-mail: SMcBride@sjmpartners.com

GWB IVY LLC

By: James Hyland
James Hyland, Manager
E-Mail: jhylands@aol.com

Clearview Projects LLC

By: _____
Paul Slayton, Manager
E-Mail: ps@slaytonventures.com

Clearview Management Services LLC

By: Clearview Projects LLC

By: _____
Paul Slayton, Manager
E-Mail: ps@slaytonventures.com

_____
Aaron Malinsky
E-Mail: am@pa-assoc.com

_____
Paul Slayton
E-Mail: ps@slaytonventures.com

_____
Benjamin Malinsky
E-Mail: bm@pa-assoc.com

_____
Stephen Garchik
E-Mail: sgarchik@sjmpartners.com

_____
Stephen McBride
E-Mail: SMcBride@sjmpartners.com

_____
Raymond Gindi
E-Mail: rgindi@c21stores.com

Clearview Projects LLC

By:_____
Paul Slayton, Manager
E-Mail: ps@slaytonventures.com

Clearview Management Services LLC

By: Clearview Projects LLC

By:_____
Paul Slayton, Manager
E-Mail:ps@slaytonventures.com

_____
Aaron Malinsky
E-Mail: am@pa-assoc.com

_____
Paul Slayton
E-Mail: ps@slaytonventures.com

_____
Benjamin Malinsky
E-Mail: ~~bm@pa-assoc.com~~
ben@bmstrat.com

_____
Stephen Garchik
E-Mail: sgarchik@sjmpartners.com

_____
Stephen McBride
E-Mail: SMcBride@sjmpartners.com

_____
Raymond Gindi
E-Mail: rgindi@c21stores.com

Clearview Projects LLC

By:_____
Paul Slayton, Manager
E-Mail: ps@slaytonventures.com

Clearview Management Services LLC

By: Clearview Projects LLC

By:_____
Paul Slayton, Manager
E-Mail:ps@slaytonventures.com

_____
Aaron Malinsky
E-Mail: am@pa-assoc.com

_____
Paul Slayton
E-Mail: ps@slaytonventures.com

_____
Benjamin Malinsky
E-Mail: bm@pa-assoc.com

_____
Stephen Garchik
E-Mail: sgarchik@sjmpartners.com

_____
Stephen McBride
E-Mail: SMcBride@sjmpartners.com

_____
Raymond Gindi
E-Mail: rgindi@c21stores.com

Clearview Projects LLC

By:_____
Paul Slayton, Manager
E-Mail: ps@slaytonventures.com

Clearview Management Services LLC

By: Clearview Projects LLC

By:_____
Paul Slayton, Manager
E-Mail:ps@slaytonventures.com

_____
Aaron Malinsky
E-Mail: am@pa-assoc.com

_____
Paul Slayton
E-Mail: ps@slaytonventures.com

_____
Benjamin Malinsky
E-Mail: bm@pa-assoc.com

_____
Stephen Garchik
E-Mail: sgarchik@sjmpartners.com

_____
Stephen McBride
E-Mail: SMcBride@sjmpartners.com

_____
Raymond Gindi
E-Mail: rgindi@c21stores.com

Clearview Projects LLC

By:_____
Paul Slayton, Manager
E-Mail: ps@slaytonventures.com

Clearview Management Services LLC

By: Clearview Projects LLC

By:_____
Paul Slayton, Manager
E-Mail:ps@slaytonventures.com

_____
Aaron Malinsky
E-Mail: am@pa-assoc.com

_____
Paul Slayton
E-Mail: ps@slaytonventures.com

_____
Benjamin Malinsky
E-Mail: bm@pa-assoc.com

_____
Stephen Garchik
E-Mail: sgarchik@sjmpartners.com

_____
Stephen McBride
E-Mail: SMcBride@sjmpartners.com

_____
Raymond Gindi
E-Mail: rgindi@c21stores.com

Douglas Slayton
E-Mail: ds@fouronoequities.com

James Hyland
E-Mail: jh@pa-assoc.com

Douglas Slayton
E-Mail: ds@fouronceequities.com

James Hyland
E-Mail: jh@pa-assoc.com

Exhibit A

Escrow Agreement

Escrow Agreement

Escrow Agreement (this "Escrow Agreement") dated as of July 18, 2011 by and among George Washington Bridge Bus Station Development Venture LLC, GWB Development Partners, LLC, Marketplace GWB LLC ("Marketplace"), GWB Blue LLC, GWB Ninety Nine LLC, MG GWB LLC ("MG GWB"), Clearview Projects LLC, Aaron Malinsky and Paul Slayton; and Davis & Gilbert LLC (the "Escrow Agent"). "Parties" means the parties to this agreement other than the Escrow Agent. "Signatories" means the Parties and the Escrow Agent.

Witnesseth:

WHEREAS, certain parties are parties to an Amended and Restated Master Agreement dated as of June 3, 2011 (as amended from time to time, the "Master Agreement"), and desire to enter into this Escrow Agreement and to simultaneously amend the Master Agreement.

Agreement

Now, therefore, the Signatories hereby agree as follows:

1. Definitions.

(a) Capitalized terms used and not defined in this Escrow Agreement have the meanings ascribed to such terms in the Master Agreement.

(b) "Escrow Fund" means (i) $208,333 to be wire transferred by each Transferor ($208,334 for MG GWB) in accordance with the terms of the Master Agreement, i.e., an aggregate of $625,000; and (ii) the Promissory Note.

(c) "Project Owner's Initial Notice" has the meaning ascribed to such term in Section 2(a).

(d) "Promissory Note" means the promissory note to be issued by GWB Ninety Nine, LLC in the original face amount of $625,000, payable to Clearview Projects, LLC.

(e) "Transferor" means (i) each Party obligated to wire transfer $208,333 ($208,334 for MG GWB) pursuant to the Master Agreement – i.e., namely, GWB Blue, LLC, GWB Ninety Nine LLC and MG GWB in connection with the transactions contemplated thereby, and (ii) GWB Ninety Nine LLC in its capacity as the issuer of the Promissory Note.

2. Transfer of the Escrow Fund to the Escrow Agent.

(a) Each Transferor agrees, for itself only and not for any other Transferor, to wire transfer $208,333 ($208,334 for MG GWB) to the Escrow Agent when the Project Owner advises via e-mail to each Transferor that it expects the Port Authority Lease to be signed and to be effective in the following two business days (the "Project Owner's Initial Notice"). Each Transferor agrees to make such wire transfer on the business day that the Project Owner provides the Project Owner's Initial Notice if the Project Owner's Initial Notice is received via e-mail prior to 10:00 A.M. EST, or the next business day if the Project Owner's Initial Notice is

received after 10:00 A.M. EST. GWB Ninety Nine LLC agrees to deliver the Promissory Note to the Escrow Agent on the same business day that it is required to wire transfer $208,333 to the Escrow Agent pursuant to the preceding sentence.

(b) Upon receipt of the entire Escrow Fund, the Escrow Agent shall acknowledge, by e-mail notice to the Parties, such receipt.

3. Release of the Escrow Fund by the Escrow Agent.

(a) Upon receipt by the Escrow Agent of e-mail notice or other written notice from the Project Owner that it expects the Port Authority Lease will be executed, delivered and effective that day (the "Release Notice"), the Escrow Agent is, subject to Section 3(b), hereby authorized and directed to (i) deliver the Promissory Note to Clearview Projects, LLC and (ii) deliver its trust account check in the amount of $625,000 to Clearview Projects LLC.

(b) Notwithstanding Section 3(a), the Escrow Agent shall not deliver any part of the Escrow Fund to Clearview Projects LLC unless it has received the entire Escrow Fund from the Transferors.

(c) If the Escrow Agent has not received, within seven (7) calendar days of its receipt of the Project Owner's Initial Notice both (i) the Release Notice from the Project Owner and (ii) the entire Escrow Fund from the Transferors, then the Escrow Agent (i) shall wire transfer $208,333 to each Transferor that has wired such $208,333 to the Escrow Agent as contemplated by this Agreement ($208,334 to MG GWB if wired by it) and (ii) shall return the Promissory Note to GWB Ninety Nine LLC.

(d) The Escrow Agent shall, in the event of a dispute relating to this Agreement, disburse the Escrow Fund, or any part thereof, in accordance with any written communications executed by all of the Transferors and the Project Owner. Such communications may be in counterparts and the same counterpart need not be executed by all of the Transferors and the Project Owner. Such communications may be provided via e-mail or fax.

4. Amendment of the Master Agreement. The Parties acknowledge that they have simultaneously executed and delivered Amendment No. 2 to the Master Agreement for several purposes, including to make the Master Agreement consistent with the provisions of Sections 1, 2 and 3 of this Agreement.

5. Provisions Relating to the Escrow Agent.

(a) If any dispute arises under this Agreement, then, prior to the resolution of any such dispute, the Escrow Agent is authorized to retain in its possession, without liability to anyone, that part of the Escrow Fund which is in dispute.

(b) The Project Owner and GWB Development Partners LLC jointly and severally agree to indemnify, defend and hold harmless the Escrow Agent against any and all liabilities, damages, claims, losses and expenses (collectively, "Damages") incurred or suffered by it relating to or arising out of its performance or non-performance under this Agreement,

except for Damages incurred or suffered by the Escrow Agent resulting from its own gross negligence, bad faith or fraud.

(c) The Escrow Agent shall not be liable for any factual mistake, error of judgment or other acts or omissions by it of any kind with respect to this Agreement unless caused by its gross negligence, bad faith or fraud.

(d) Except for the Escrow Agent's gross negligence, bad faith or fraud, the Escrow Agent shall be entitled to rely, without liability, on (i) any written notice, instrument or signature believed by it to be genuine and to have been signed or presented by the proper Party or Parties duly authorized to do so, and (ii) the advice of its counsel (which may be counsel within its own firm that has not otherwise worked on any matters contemplated by the Master Agreement).

(e) The Escrow Agent has no duties or obligations other than those specifically set forth in this Agreement.

(f) Anything to the contrary contained in this Agreement notwithstanding, the Escrow Agent may deposit the Escrow Fund with the clerk of any court of competent jurisdiction upon commencement of an action in the nature of an interpleader.

(g) The Escrow Agent shall not be paid any fees in connection with its performance as Escrow Agent under this Agreement. The preceding sentence is not intended to and shall not preclude the Escrow Agent from invoicing its fees and expenses, as counsel, in connection with this Agreement or the Master Agreement or in connection with the negotiation of this Agreement, including the Escrow Agent's review of and preparation of any revisions to this Section 5 for the benefit of its clients and itself.

(h) The Escrow Agent is not required or authorized to invest any part of the Escrow Fund.

(i) The Escrow Agent shall not be precluded from representing any party in any matters of any kind or nature by reason of being Escrow Agent pursuant to this Agreement. Any conflict of interest that would otherwise exist in connection with any matter is hereby waived.

(j) The Escrow Agent may resign at any time and thereupon shall be discharged from its duties hereunder, by giving the Parties not less than ten (10) days notice of the effective date of its resignation. If the Escrow Agent still holds the Escrow Fund on the effective date of its resignation by reason of a dispute, the Escrow Agent shall interplead the Escrow Fund with the court on the Effective Date.

6. Other Provisions. Except to the extent clearly inapplicable, the provisions in Section 9 of the Master Agreement shall apply to the provisions of this Escrow Agreement. The bank account wire transfer information with respect to the wire transfer of the Escrow Fund (excluding the Promissory Note) is set forth in Exhibit A.

In Witness Whereof, the Signatories caused this Escrow Agreement to be duly executed and delivered as of the day and year first above written.

[Signature Pages Follow]

George Washington Bridge Bus Station Development Venture LLC

By: GWB Development Partners, LLC, sole Member

By: _____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

GWB Development Partners, LLC

By: _____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

Marketplace GWB LLC

By: _____
Stephen J. Garchik, Manager

E-Mail: sgarchik@sjmpartners.com

By: _____
Stephen McBride, Manager
E-mail: SMcBride@sjmpartners.com

By: _____
Douglas Slayton, Manager
E-Mail Address: ds@fouroneequities.com

GWB BLUE LLC

By:_____
Name:_____
Title:_____
E-Mail Address:_____

GWB Ninety Nine LLC

By:_____
Name: Doug Slayton
Title: Manager
E-Mail Address:ds@fouroneequities.com

MG GWB LLC

By:_____
Name: Stephen J. Garchik, Manager
E-Mail Address:
sgarchik@simpartners.com

By:_____
Stephen McBride, Manager
E-Mail Address:
SMcBride@simpartners.com

Clearview Projects LLC

By:_____
Name: Paul Slayton
Title: Manager
E-Mail Address:ps@slaytonventures.com

_____
Aaron Malinsky
E-Mail Address:am@pa-assoc.com

Paul Slayton
E-Mail Address:ps@slaytonventures.com

EXHIBIT A

Jerry Genberg

From: Carrington, Lynette [lcarrington@dglaw.com]
Sent: Monday, July 11, 2011 10:00 AM
To: Jerry Genberg
Cc: Karin, Robert
Subject: RE: Wiring Instructions

Mr. Genberg:

Please see escrow information below:

DAVIS & GILBERT LLP ESCROW ACCOUNT
Account # 665057925
City National Bank
400 Park Avenue, 21st Floor
New York, NY 10022
ABA Number: 0260 1395 8

From: Karin, Robert
Sent: Monday, July 11, 2011 9:36 AM
To: Carrington, Lynette
Subject: FW:

Please forward to Jerry Genberg our atty escrow account information.

Thanks.

D&G | Davis & Gilbert LLP ATTORNEYS AT LAW

ROBERT A. KARIN

rkarin@dglaw.com
T: 212.468.4964
F: 212.974.6964

1740 Broadway, New York, NY 10019
www.dglaw.com

From: Jerry Genberg [mailto:JGenberg@sillscummis.com]
Sent: Monday, July 11, 2011 6:24 AM
To: Karin, Robert
Cc: Jerry Genberg
Subject:

Can you please email me your comments on the Escrow Agmts,and two Amendments to the

ARCHITECT'S CONDITIONAL ASSIGNMENT AGREEMENT

This Agreement made this 21st day of July, 2011 by and between STV Incorporated (hereinafter called the "Architect") and Port Authority of New York and New Jersey (hereinafter called the "Port Authority")

Whereas, the Architect has heretofore entered into an agreement with George Washington Bridge Bus Station Development Venture LLC dated May 18, 2010 as amended from time to time (hereinafter referred to as the "Architectural Agreement"), by the terms of which the Architect has agreed to provide professional design services with regard to the Reserved Premises (as defined in the Architectural Agreement) portion of the project known as the Redevelopment of the George Washington Bridge Bus Station Facility (hereinafter referred to as the "Project"); and

Whereas, the Port Authority has requested that the Architect consent to the conditional assignment of the Architectural Agreement to the Port Authority under certain defined circumstances as set forth herein;

Whereas, the Architect has agreed to the conditional assignment of the Architectural Agreement to the Port Authority pursuant to the terms of this Agreement.

NOW THEREFORE, in consideration of the mutual agreements set forth herein, the parties hereto agree as follows:

1. Copies of the Architectural Agreement are attached hereto as Exhibit A. The Architectural Agreement is in full force and effect and to the best knowledge of the Architect neither party thereto is in default thereunder.

2. Architect acknowledges that the Port Authority has requested the Architect's client to conditionally assign all of its right and interest under the Architectural Agreement to the Port Authority, and Architect hereby consents to such assignment.

3. Upon notice received from the Port Authority which notice includes evidence that the Port Authority has terminated the Architect's client's contract with the Port Authority for cause, the Architect shall, if requested by the Port Authority, continue to perform all its duties and obligations under the Architectural Agreement for the Port Authority's (or its designee's) account and benefit; provided that the Port Authority shall reimburse Architect within sixty days of such request for monies properly due and owing in accordance with the Architect's Agreement with the Architect's client. Thereafter, the Port Authority shall pay the Architect all monies which become due and owing to the Architect for services performed after notice from the Port Authority as provided herein.

4. Thereafter, the Port Authority may assign its rights under the Architectural Agreement to any person or entity subject to Architect's consent, provided such person or entity assumes all obligations of "the Architect's client" under the Architectural Agreement.

ARCHITECT'S CONDITIONAL ASSIGNMENT AGREEMENT

This Agreement made this 21st day of July, 2011 by and between STV Incorporated (hereinafter called the "Architect") and Port Authority of New York and New Jersey (hereinafter called the "Port Authority")

Whereas, the Architect has heretofore entered into an agreement with George Washington Bridge Bus Station Development Venture LLC dated May 18, 2010 as amended from time to time (hereinafter referred to as the "Architectural Agreement"), by the terms of which the Architect has agreed to provide professional design services with regard to the Reserved Premises (as defined in the Architectural Agreement) portion of the project known as the Redevelopment of the George Washington Bridge Bus Station Facility (hereinafter referred to as the "Project"); and

Whereas, the Port Authority has requested that the Architect consent to the conditional assignment of the Architectural Agreement to the Port Authority under certain defined circumstances as set forth herein;

Whereas, the Architect has agreed to the conditional assignment of the Architectural Agreement to the Port Authority pursuant to the terms of this Agreement.

NOW THEREFORE, in consideration of the mutual agreements set forth herein, the parties hereto agree as follows:

1. Copies of the Architectural Agreement are attached hereto as Exhibit A. The Architectural Agreement is in full force and effect and to the best knowledge of the Architect neither party thereto is in default thereunder.

2. Architect acknowledges that the Port Authority has requested the Architect's client to conditionally assign all of its right and interest under the Architectural Agreement to the Port Authority, and Architect hereby consents to such assignment.

3. Upon notice received from the Port Authority which notice includes evidence that the Port Authority has terminated the Architect's client's contract with the Port Authority for cause, the Architect shall, if requested by the Port Authority, continue to perform all its duties and obligations under the Architectural Agreement for the Port Authority's (or its designee's) account and benefit; provided that the Port Authority shall reimburse Architect within sixty days of such request for monies properly due and owing in accordance with the Architect's Agreement with the Architect's client. Thereafter, the Port Authority shall pay the Architect all monies which become due and owing to the Architect for services performed after notice from the Port Authority as provided herein.

4. Thereafter, the Port Authority may assign its rights under the Architectural Agreement to any person or entity subject to Architect's consent, provided such person or entity assumes all obligations of "the Architect's client" under the Architectural Agreement.

5. All notices required or permitted hereunder shall be in writing and shall be deemed to have been sufficiently given or served when presented personally or when deposited in the mail by first class mail, postage prepaid, return receipt requested, addressed to the Architect at 225 Park Avenue South, New York, New York 10003, Attention: Milo Riverso. All such notices shall be deemed to have been received upon the earlier of actual receipt thereof or the date of refusal or failure to accept receipt thereof, or if by mail, the third calendar day after such mailing.

6. Upon receipt of notice as provided in paragraph 3, Architect shall convey for no further consideration a fully paid, irrevocable license to the Port Authority to use and reproduce all Instruments of Service created by or on behalf of the Architect under the Architectural Agreement for the construction, use, maintenance or renovation of the Project.

7. The foregoing Paragraphs 1 through 6 are covenants that are binding on Architect, its successors and assigns, and any provision hereof that changes, alters or amends any term of the Architectural Agreement shall constitute and be deemed to be and have the force and effect of an amendment to the Architectural Agreement.

8. Facsimile signatures appearing hereon shall be deemed to be originals, and this agreement may be executed in two or more counterparts, each of which shall be deemed originals and all of which together shall constitute one and the same instrument.

[The signature page follows.]

ARCHITECT'S AGREEMENT

AND ALL AMENDMENTS, IF ANY

[See attached]

In Witness Whereof, the parties hereto cause this Agreement to be signed and sealed by their duly authorized representatives effective as of the day, month and year set forth above.

STV Incorporated

By: _____

Name: Milo E. Riverso

Title: Principal - President

THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY

By: _____

Name:

Title:

In Witness Whereof, the parties hereto cause this Agreement to be signed and sealed by their duly authorized representatives effective as of the day, month and year set forth above.

STV Incorporated

By: _____

Name: Milo E. Riverso

Title: Principal - President

THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY

By: _____

Name:

Title:

ASSIGNMENT AND ASSUMPTIONOF LEASES AND EVICTION ACTIONS

THIS ASSIGNMENT AND ASSUMPTION OF LEASES AND EVICTION ACTIONS (this "Agreement"), made as of July 21, 2011 by and among The Port Authority of New York and New Jersey (together with its successors and assigns, the "Port Authority"), a body corporate and politic created by compact between the States of New York and New Jersey with the consent of the Congress of the United States of America, having an office and place of business at 225 Park Avenue South, New York, New York 10003 (hereinafter called the "Assignor"), and George Washington Bridge Bus Station Development Venture LLC (hereinafter called the "Assignee"), a limited liability company organized and existing under and by virtue of the laws of the State of Delaware and having an office and place of business c/o SJM Partners, 9001 Congressional Court, Potomac, Maryland 20854.

WITNESSETH, THAT:

WHEREAS, the Assignor is the owner of the fee interest situated in the City of New York, County of New York, State of New York, as more particularly described on Exhibit A annexed hereto and made a part hereof;

WHEREAS, pursuant to that certain Lease Agreement being entered into herewith, Port Authority is leasing to Assignee all of Port Authority's rights of possession to the demised premises ("Premises") as defined in the Lease Agreement, subject only to the continual rights of occupancy of certain former tenants under various stipulations ("Stipulations");

WHEREAS, the Assignor desires to assign and transfer and convey, without recourse, to Assignee all of Assignor's right, title and interest as Petitioner/Landlord in those Stipulations, are in general in the underlying legal proceedings to obtain vacant possession of the Premises pursuant to Eviction Actions (defined below), and Assignee desires to assume the Eviction Actions including all rights and obligations going forward, as of the date hereof, of Petitioner/Landlord under those Stipulations, and all rights to any monies due thereunder without assuming any of the liabilities of Assignor with respect to such Eviction Actions, arising or accrued as of the date hereof, all as hereinafter more particularly set forth.

NOW, THEREFORE, in consideration of the mutual agreements hereinafter set forth, and other good and valuable consideration, the receipt and sufficiency of which are acknowledged by each of the parties hereto, Assignor and Assignee do hereby agree as follows:

1. Assignment. Assignor hereby transfers, conveys and assigns, without recourse, to Assignee all of Assignor's right, title and interest in and to any legal claims to obtain vacant possession of any portion of the Premises occupied by any occupant or tenant, including but not limited to the actions listed in the attached Exhibit B (the "Eviction Actions"), including but not limited to all rights of Petitioner/Landlord under the Stipulations and the terminated leases that are the subject thereof (the "Leases"), and specifically including all rights to any payments now due and owing, or that hereafter may become due and owing, under those Stipulations but not including any the assumption of any liabilities of Assignor to any occupant or tenants arising or accruing prior to the date hereof.

2. Further Assurance and Documents. Assignor shall execute, upon reasonable request therefore, such other and further documents as may reasonably be required in order to effectuate the assignment made herein, including, without limitation, forms of substitution of counsel or parties, any motion to amend the petition in any current summary proceedings, and shall cooperate with Assignee to substitute Assignee as Petitioner/Landlord under the Stipulations.

3. No Warranty. This Assignment is made without warranty, representation, or guaranty by, or recourse against Assignor of any kind whatsoever, except that Assignor represents that the security deposits listed on Exhibit B and being turned over herewith to Assignee constitute all of the funds (with any appropriate interest) that Assignor has been holding or would otherwise, but for this Assignment, be obligated to hold and return to any occupant of any portion of the Premises.

4. Successors and Assigns. The terms and conditions of this Assignment shall be binding upon and shall inure to the benefit of the parties hereto and their respective successors and assigns.

5. Counterparts. The Agreement may be executed in multiple counterparts, each of which shall be deemed an original but all of which taken together shall constitute one and the same instrument.

6. Limitation on Liability. Neither the Commissioners of the Port Authority nor any of them, nor any officers, agent or employee thereof, shall be charged personally with any liability or held liable under any term or provision of this Agreement, or because of its execution, or because of any breach or alleged breach thereof.

7. Miscellaneous. This Agreement shall be governed by the laws of the State of New York. This Agreement may not be amended except by a document signed by all parties hereto.

8. Prorations. The rent paid by tenants under the Leases or the Stipulations related to the period after the date hereof (e.g., prepaid rent, if any, and a *pro rata* portion of the rent paid for this month of July 2011) shall be paid by Assignor to Assingee on or promptly following the date hereof. If Assignor receives any such payments from Tenants after the date hereof, Assignor shall pay the same to Assignee within five (5) business days following receipt thereof.

[The signature page follows.]

IN WITNESS WHEREOF, the parties hereto have executed these presents as of the day and year first above written.

ASSIGNOR

THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY

By: _____
Name: Christopher O. Ward
Title: Executive Director

ASSIGNEE

GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC

By: GWB Development Partners, LLC
Its: Sole Member

By: Marketplace GWB LLC
Its: Managing Member

By: _____
Stephen J. Garchik
Authorized Signatory

IN WITNESS WHEREOF, the parties hereto have executed these presents as of the day and year first above written.

ASSIGNOR

THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY

By: _____
Name:
Title:

ASSIGNEE

GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC

By: GWB Development Partners, LLC
Its: Sole Member

By: Marketplace GWB LLC
Its: Managing Member

By: _____
Stephen J. Garchik
Authorized Signatory

STATE OF NEW YORK)
):ss:
COUNTY OF NEW YORK)

On this 21st day of July 2011, before me, the Undersigned, a Notary Public in and for said State, personally appeared Christopher O. Ward, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

Notary Public
[SEAL]

DARRELL BUCHBINDER
Notary Public, State of New York
No. 60-0475475
Qualified in Westchester County
Commission Expires on April 30, 2015

STATE OF NEW YORK)
):ss:
COUNTY OF NEW YORK)

On this _____ day of _____ 2011, before me, the Undersigned, a Notary Public in and for said State, personally appeared _____, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

Notary Public
[SEAL]

STATE OF NEW YORK)
):ss:
COUNTY OF NEW YORK)

On this 20th day of July 2011, before me, the Undersigned, a Notary Public in and for said State, personally appeared Stephen J. Gaarchik, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

Karen F. Candreva
Notary Public
[SEAL]

KAREN F. CANDREVA
Notary Public, State of New York
No. 02CA5045815
Qualified in Westchester County
Commission Expires 03/24/2014

STATE OF NEW YORK)
):ss:
COUNTY OF NEW YORK)

On this _____ day of _____ 2011, before me, the Undersigned, a Notary Public in and for said State, personally appeared _____, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public
[SEAL]

Exhibit A

Property

The following two parcels of land:

Parcel A:

Block:	2163
Lot:	1
County:	New York
Address:	4200-4218 Broadway a/k/a
	100-110 Wadsworth Avenue a/k/a
	651-667 West 178th Street a/k/a
	650-664 West 179th Street

Parcel B:

Block:	2176
Lot:	17
County:	New York
Address:	4201-4219 Broadway a/k/a
	406-422 Fort Washington Ave. a/k/a
	701-721 West 178th Street a/k/a
	700-720 West 179th Street

Exhibit B

1. The Port Authority of New York and New Jersey v. S&R Confections, Civil Court of the City of New York, County of New York. Index No. 011292/2009
2. The Port Authority of New York and New Jersey v. Bernardo H. Madera. d/b/a EZ Vision, Civil Court of the City of New York. County of New York, Index No. 011293/2009
3. The Port Authority of New York and New Jersey v. 4211 Broadway Corp., d/b/a Pizza Palace, Civil Court of the City of New York, County of New York, Index No. 011757/2007
4. The Port Authority of New York and New Jersey v. Credit Where Credit is Due and/or Neighborhood Trust Federal Credit Union. Civil Court of the City of New York. County of New York. Index No. 011285/09
5. The Port Authority of New York and New Jersey v. CENTRAL PARKING SYSTEM OF NY., INC. f/k/a Kinney Upper Manhattan. Inc., Civil Court of the City of New York. County of New York. Index No. 011290/09
6. The Port Authority of New York and New Jersey v. Washington Heights Optical, Inc. Civil Court of the City of New York, County of New York, (this action will be commenced in August 2011

[Complete rent roll (with security deposit amounts) to be attached.]

RESOLUTIONS
OF
GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC

THE UNDERSIGNED, being all of the members and manager(s) of GWB Development Partners, LLC, the sole member of George Washington Bridge Bus Station Development Venture LLC (the "Company"), hereby consent in writing to and adopt the resolutions and limited liability company actions set forth below with the same effect as if they had been duly approved at a formal, special meeting of the members and/or managers of the Company.

RESOLVED, that Stephen J. Garchik (the "Manager") be, and hereby is, authorized and directed, in the name and on behalf of George Washington Bridge Bus Station Development Venture LLC (the "Company"), to (i) execute and deliver the First Amendment to Interim Agreement (the "First Amendment") (a recent draft of which First Amendment has been made available to each of the undersigned), which modifies the Interim Agreement dated April 5, 2010 between the Company and the Port Authority (as so amended, the "Interim Agreement"); and (ii) consummate the closing on the execution and delivery of the lease with the Port Authority of New York and New Jersey (the "Port Authority") contemplated by and pursuant to the Interim Agreement (the "Lease"), which aforesaid documents provide, among other things that (a) the Company has elected for Rent Option A (as defined in Section 2.1(b) of the Interim Agreement and as set forth in Section 4.2 of the Lease) and (b) that the PA-Cost Work Fixed Price (as defined in Section 3 of the First Amendment and in Section 5.4.1 of the Lease) is established at $52,650,558.00; and (iii) execute and deliver to the Port Authority document entitled "The Port Authority of NY & NJ Certification George Washington Bridge Bus Station Development Venture LLC" (the "Certification"), a copy of which Certification has been made available to each of the undersigned. The documents described above in this paragraph are sometimes referred to herein collectively as the "Key Documents."

RESOLVED, that the Manager be, and hereby is, authorized and directed, in the name and on behalf of the Company, to execute and deliver documents contemplated by the Key Documents, in such form and containing such provisions as the Manager may in his sole discretion approve so long as such additional documents do not contain terms that are inconsistent in any material respect with the Key Documents (or by the oral agreements reached by the Company and the Port Authority prior to the execution and delivery of these Resolutions) or impose on the Company material obligations that are not contemplated by the Key Documents (or by the oral agreements reached by the Company and the Port Authority prior to the execution and delivery of these Resolutions) (collectively, "Additional Documents").

RESOLVED, that the Manager be, and hereby is, authorized and directed, in the name and on behalf of the Company to take such actions as the Manager shall deem necessary or advisable from time to time in his sole discretion (provided that such actions do not constitute a Major Decision, as such term is defined in Section 3.1(a)(ii) of the GWB Development Operating Agreement) to execute and deliver the Key Documents and the Additional Documents.

RESOLVED, that the Company is authorized and directed to perform all of its obligations under the Key Documents and the Additional Documents.

RESOLVED, that the execution and delivery of the Key Documents and the Additional Documents and the taking of any other action referred to above, shall be deemed conclusive evidence that the Manager deems such execution and delivery of the Key Documents and the Additional Documents and the taking of any such actions referred to above to be necessary or advisable.

RESOLVED, that any actions authorized above that have been taken prior to adopting these Resolutions are hereby ratified, confirmed and approved.

RESOLVED, that notwithstanding the foregoing resolutions, neither the Manager nor the Company are authorized to execute, deliver or perform any Approved Lease or any Additional Documents that provide for any Member of GWB Development having any direct or personal liability under any Key Document (except as set forth in the Certification) or any of the Additional Documents.

RESOLVED, that the Company be, and hereby is, authorized and directed to pay all the fees and expenses incurred in connection with the matters referred to herein.

RESOLVED, Each person whose name appears below has been duly authorized to execute this Resolution This Resolution may be executed in counterparts. This Resolution may be executed by facsimile, and signatures transmitted electronically may be utilized with the same force and effect as originals.

[The signature page follows.]

IN WITNESS WHEREOF, the undersigned have executed these Resolutions as of the ___ day of _____, 2011.

GWB DEVELOPMENT PARTNERS, LLC
the sole member of George Washington Bridge Bus Station Development Venture LLC

By: _____
STEPHEN J. GARCHIK, Manager

By: **MARKETPLACE GWB LLC**

By: _____
Stephen J. Garchik, Manager

By: _____
Stephen McBride, Manager

By: _____
Douglas Slayton, Manager

By: **GWB BLUE LLC**

By: _____
Name: _____
Title: Authorized Signatory

IN WITNESS WHEREOF, the undersigned have executed these Resolutions as of the ___ day of _____, 2011.

GWB DEVELOPMENT PARTNERS, LLC
the sole member of George Washington Bridge Bus Station Development Venture LLC

By: _____
STEPHEN J. GARCHIK, Manager

By: **MARKETPLACE GWB LLC**

By: _____
Stephen J. Garchik, Manager

By: _____
Stephen McBride, Manager

By: _____
Douglas Slayton, Manager

By: **GWB BLUE LLC**

By: _____
Name: Raymond Gundl
Title: Authorized Signatory

Client#: 7906 GEORWASH

ACORD™ CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 7/15/2011

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
BWD Group LLC
BWD Plaza, P.O. Box 9050
113 South Service Road
Jericho, NY 11753

CONTACT NAME: Jordan Graubard
PHONE (A/C, No, Ext): 516 327-2700 FAX (A/C, No): 516-327-2800
E-MAIL ADDRESS: jgraubard@bwd.us

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A: Nautilus Insurance Company	
INSURER B: National Union Fire Ins Co Pitt	19445
INSURER C:	
INSURER D:	
INSURER E:	
INSURER F:	

INSURED
George Washington Bridge Bus Station
Development Venture, LLC
9001 Congressional Court
Potomac, MD 20854

COVERAGES CERTIFICATE NUMBER: REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	GENERAL LIABILITY	X		NN048479	09/14/2010	09/14/2011	EACH OCCURRENCE	$1,000,000
	X COMMERCIAL GENERAL LIABILITY						DAMAGE TO RENTED PREMISES (Ea occurrence)	$100,000
	CLAIMS-MADE X OCCUR						MED EXP (Any one person)	$5,000
							PERSONAL & ADV INJURY	$1,000,000
							GENERAL AGGREGATE	$2,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						PRODUCTS - COMP/OP AGG	$Excluded
	X POLICY PRO-JECT LOC							$
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$
	ANY AUTO						BODILY INJURY (Per person)	$
	ALL OWNED AUTOS / SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	HIRED AUTOS / NON-OWNED AUTOS						PROPERTY DAMAGE (Per accident)	$
								$
B	X UMBRELLA LIAB X OCCUR			EBU019564785	09/14/2010	09/14/2011	EACH OCCURRENCE	$4,000,000
	EXCESS LIAB CLAIMS-MADE						AGGREGATE	$4,000,000
	DED X RETENTION $10,000							$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY						WC STATU-TORY LIMITS / OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y/N	N/A					E.L. EACH ACCIDENT	$
	(Mandatory in NH)						E.L. DISEASE - EA EMPLOYEE	$
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - POLICY LIMIT	$

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)
RE: Pre-construction operations - Broadway, Fort Washington Avenue 178th & 179th St., New York, NY 10033
Certificate holder is included as additional insured.

CERTIFICATE HOLDER
Port Authority of New York and
New Jersey
225 Park Avenue South, 12th FL
New York, NY 10013

CANCELLATION
SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE
Stuart B. Calkins

© 1988-2010 ACORD CORPORATION. All rights reserved.

CYREY

CERTIFICATE OF LIABILITY INSURANCE

DATE(MM/DD/YYYY) 07/19/2011

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
Aon Risk Services Northeast, Inc.
Jericho NY Broadway Office
390 North Broadway
Jericho NY 11753 USA

CONTACT NAME:
PHONE (A/C. No. Ext): FAX (A/C. No.):
E-MAIL ADDRESS:

INSURER(S) AFFORDING COVERAGE		NAIC #
INSURER A:	Zurich American Ins Co	16535
INSURER B:	American Zurich Ins Co	40142
INSURER C:	Insurance Company of the State of PA	19429
INSURER D:	National Union Fire Ins Co of Pittsburgh	19445
INSURER E:		
INSURER F:		

INSURED
Skanska USA Building, Inc.
Empire State Building
350 Fifth Avenue, 32nd Floor
New York NY 10118 USA

COVERAGES **CERTIFICATE NUMBER:** 570043293325 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS. Limits shown are as requested

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	GENERAL LIABILITY X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE X OCCUR GEN'L AGGREGATE LIMIT APPLIES PER POLICY X PRO-JECT X LOC			GL0489601804	08/31/2010	08/31/2011	EACH OCCURRENCE	$2,000,000
							DAMAGE TO RENTED PREMISES (Ea occurrence)	$2,000,000
							MED EXP (Any one person)	$10,000
							PERSONAL & ADV INJURY	$2,000,000
							GENERAL AGGREGATE	$4,000,000
							PRODUCTS - COMP/OP AGG	$4,000,000
C	AUTOMOBILE LIABILITY X ANY AUTO ALL OWNED AUTOS / SCHEDULED AUTOS X HIRED AUTOS / X NON-OWNED AUTOS			CA 8263649 AOS CA 826-36-50 MA	08/31/2010 08/31/2010	08/31/2011 08/31/2011	COMBINED SINGLE LIMIT (Ea accident)	$2,000,000
							BODILY INJURY (Per person)	
							BODILY INJURY (Per accident)	
							PROPERTY DAMAGE (Per accident)	
A	X UMBRELLA LIAB / X OCCUR EXCESS LIAB / CLAIMS-MADE DED X RETENTION $10,000			AUC489601905 SIR applies per policy terms & conditions	08/31/2010	08/31/2011	EACH OCCURRENCE	$10,000,000
							AGGREGATE	$10,000,000
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR / PARTNER / EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N N If yes, describe under DESCRIPTION OF OPERATIONS below	N/A		WC489601706	08/31/2010	08/31/2011	X WC STATUTORY LIMITS / OTHER	
							E.L. EACH ACCIDENT	$2,000,000
							E.L. DISEASE-EA EMPLOYEE	$2,000,000
							E.L. DISEASE-POLICY LIMIT	$2,000,000
A	Contractor Prof			EOC508712406 Pollution/Professional	08/31/2010	08/31/2011	Per Claim Aggregate	$25,000,000 $50,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

Pre-Construction Services - George Washington Bridge & Bus Terminal Project.
Foregoing per policy form. As required by contract or agreement with the Named Insured, Additional Insured status encompasses General Liability, Automobile, umbrella and Pollution: Port Authority of New York and New Jersey
The insurer shall not, without obtaining express advance written permission from the General Counsel of the Port Authority, raise any defense involving in any way the jurisdiction of the Tribunal over the person of the Port Authority, the immunity of the Port Authority, its Commissioners, officers, agents or employees, the governmental nature of the Port Authority, or the provisions of any statutes respecting suits against the Port Authority.

CERTIFICATE HOLDER

Port Authority of New York & New Jersey
225 Park Avenue South, 12th Floor
New York NY 10003 USA

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Aon Risk Services Northeast Inc

Holder Identifier : GLAUWCXProPoll

Certificate No : 570043293325

©1988-2010 ACORD CORPORATION. All rights reserved.
The ACORD name and logo are registered marks of ACORD

Attachment to ACORD Certificate for Skanska USA Building, Inc.

The terms, conditions and provisions noted below are hereby attached to the captioned certificate as additional description of the coverage afforded by the insurer(s). This attachment does not contain all terms, conditions, coverages or exclusions contained in the policy.

INSURED

Skanska USA Building, Inc.
Empire State Building
350 Fifth Avenue, 32nd Floor
New York NY 10118 USA

INSURER
INSURER
INSURER
INSURER
INSURER

ADDITIONAL POLICIES If a policy below does not include limit information, refer to the corresponding policy on the ACORD certificate form for policy limits.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER/ POLICY DESCRIPTION	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
	EXCESS LIABILITY							
D				BE71567307	08/31/2010	08/31/2011	Aggregate	$40,000,000
							Each Occurrence	$40,000,000

Certificate No : 570043293325

AGENCY CUSTOMER ID: 570000027144

LOC #:

ADDITIONAL REMARKS SCHEDULE

AGENCY		NAMED INSURED
Aon Risk Services Northeast, Inc.		Skanska USA Building, Inc.
POLICY NUMBER See Certificate Number: 570043293325		
CARRIER See Certificate Number: 570043293325	NAIC CODE	EFFECTIVE DATE

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,

FORM NUMBER: ACORD 25 **FORM TITLE:** Certificate of Liability Insurance

Additional Description of Operations / Locations / Vehicles

Each and every coverage herein certified (including the contractual liability coverage provided for the indemnity and hold harmless agreement herein set forth or described) is subject to the terms, conditions, exclusions and other limitation of the policy. Nothing contained in this certificate of insurance shall be deemed to have altered, waived or extended the coverage provided by the provisions of the policy.
Following Endorsements apply:
Additional Insured: CG2010 7/04 & CG2037 07/04, CA2048 02/99 *Workers Compensation Coverage Not Included in Monopolistic States - OH, ND, WA, WY and Puerto Rico*

© 2008 ACORD CORPORATION. All rights reserved.
The ACORD name and logo are registered marks of ACORD

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

CG 02 24 10 93

EARLIER NOTICE OF CANCELLATION PROVIDED BY US

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
LIQUOR LIABILITY COVERAGE PART
POLLUTION LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

This endorsement changes the policy effective on the inception date of the policy unless another date is indicated below.

Endorsement effective 12:01 A.M. standard time	Policy No. GLO 4896018-04
Named Insured Skanska USA Building, Inc.	Countersigned by: (Authorized Representative)

SCHEDULE

Number of Days' Notice: **90 days notice including non-renewal and material policy change, except 10 days for non-payment of premium. If we cancel this policy, notice shall be provided to those persons, organizations or political entitities with whom you have contractually agreed to give notice and for which you have provided mailing information to us.**

(If no entry appears above, information required to complete this Schedule will be shown in the Declarations as applicable to this endorsement.)

For any statutorily permitted reason other than nonpayment of premium, the number of days required for notice of cancellation, as provided in paragraph **2.** of either the CANCELLATION Common Policy Condition or as amended by an applicable state cancellation endorsement, is increased to the number of days shown in the Schedule above.

Copyright, Insurance Services Office, Inc., 1992

Finkle & Ross, L.L.P.
CERTIFIED PUBLIC ACCOUNTANTS
600 OLD COUNTRY ROAD
SUITE 435
GARDEN CITY, NEW YORK 11530

EDWARD ROSS, C.P.A.
MICHAEL WALSH, C.P.A.
ALVIN FINKLE, C.P.A. (1924-1996)
ROBERT ROST, C.P.A. (1959-2003)

(516) 294-0909
FAX (516) 294-3577

July 11, 2011

The Port Authority of New York and New Jersey

To Whom It May Concern;

We are the outside accountants for the George Washington Bridge Bus Station Development Venture, L.L.C., the company which is redeveloping the George Washington Bridge Bus Station and the related retail businesses which encompass an entire city block bounded by Broadway at 178th and 179th Streets and Fort Washington and Wadsworth Avenues.

We have reviewed the projected cost budget of the leased premise retail redevelopment of the George Washington Bridge Bus Station with management and have determined that the total costs to complete this Project will approximate $ 71,000,000 including debt servicing costs. Included within the project budget management has allocated $1,200,000 for the purchase of a payment and performance bond which will guarantee completion of both the leased and reserve premises in the event of a default.

As of May 31, 2011 the Partner's have contributed $ 5,750,000 and will contribute an additional $1,750,000 by the lease commencement date which will bring the total Partner's capital contributions in the project to $ 7,500,000. In addition the company has a loan commitment from the New York City Regional Center for an additional $ 72,000,000 which will be executed at the same time as the lease is signed with the Port Authority of New York and New Jersey which should occur around July 20, 2011.

In our opinion, based on the information submitted to us by management regarding the loan commitment in place with the New York City Regional Center and the total Partner's capital contributions, it would appear that the company, the George Washington Bridge Bus Station Development Venture, L.L.C. has sufficient resources to undertake the redevelopment of the leased premises of the Real Estate Facility located at the George Washington Bridge Bus Station.

Sincerely,

Michael M. Walsh CPA

Delaware

The First State

I, HARRIET SMITH WINDSOR, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY THE ATTACHED IS A TRUE AND CORRECT COPY OF THE CERTIFICATE OF FORMATION OF "GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC", FILED IN THIS OFFICE ON THE SIXTEENTH DAY OF MARCH, A.D. 2006, AT 5:17 O'CLOCK P.M.

Harriet Smith Windsor

Harriet Smith Windsor, Secretary of State

4126993 8100

060256854

AUTHENTICATION: 4598760

DATE: 03-17-06

CERTIFICATE OF FORMATION

OF

GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC

The undersigned, an authorized natural person, for the purpose of forming a limited liability company (hereinafter called the "company"), under the provisions and subject to the requirements of the Delaware Limited Liability Company Act, hereby certifies that:

1. The name of the limited liability company is **GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC**

2. The address of the registered office and the name and the address of the registered agent of the limited liability company required to be maintained by Section 18-104 of the Delaware Limited Liability Company Act are National Registered Agents, Inc., 160 Greentree Drive, Suite 101, Dover, Delaware 19904.

Executed on March 16, 2006.

GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC

By: _____
Robert Masters, Authorized Officer

CERTIFICATE OF FORMATION

OF

GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC

The undersigned, an authorized natural person, for the purpose of forming a limited liability company (hereinafter called the "company"), under the provisions and subject to the requirements of the Delaware Limited Liability Company Act, hereby certifies that:

1. The name of the limited liability company is **GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC**.

2. The address of the registered office and the name and the address of the registered agent of the limited liability company required to be maintained by Section 18-104 of the Delaware Limited Liability Company Act are National Registered Agents, Inc., 160 Greentree Drive, Suite 101, Dover, Delaware 19904.

Executed on March 16, 2006.

GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC

By: _____
Robert Masters, Authorized Officer

State of Delaware
Secretary of State
Division of Corporations
Delivered 05:25 PM 03/16/2006
FILED 05:17 PM 03/16/2006
SRV 060256854 - 4126993 FILE

X

IRS DEPARTMENT OF THE TREASURY
INTERNAL REVENUE SERVICE
P.O. BOX 9003
HOLTSVILLE NY 11742-9003

Date of this notice: 04-04-2007

Employer Identification Number:

Form: SS-4

Number of this notice: CP 575 D

GEORGE WASHINGTON BRIDGE BUS
X ROBERT MASTERS-ACADIA REALTY TRUS
1311 MAMARONECK AVENUE-STE 260
WHITE PLAINS NY 10605

For assistance you may call us at:
1-800-829-4933

001981

IF YOU WRITE, ATTACH THE
STUB OF THIS NOTICE.

WE ASSIGNED YOU AN EMPLOYER IDENTIFICATION NUMBER

Thank you for applying for an Employer Identification Number (EIN). We assigned you EIN . This EIN will identify your business account, tax returns, and documents, even if you have no employees. Please keep this notice in your permanent records.

When filing tax documents, please use the label we provided. If this isn't possible, it is very important that you use your EIN and complete name and address exactly as shown above on all federal tax forms, payments and related correspondence. Any variation may cause a delay in processing, result in incorrect information in your account or even cause you to be assigned more than one EIN. If the information isn't correct as shown above, please correct it using tear off stub from this notice and return it to us so we can correct your account.

Based on the information from you or your representative, you must file the following form(s) by the date(s) shown.

Form 1065 04/15/2007

If you have questions about the form(s) or the due date(s) shown, you can call or write to us at the phone number or address at the top of the first page of this letter. If you need help in determining what your tax year is, see Publication 536, Accounting Periods and Methods, available at your local IRS office or you can download this Publication from our Web site at www.irs.gov.

We assigned you a tax classification based on information obained from you or your representative. It is not a legal determination of your tax classification, and is not binding on the IRS. If you want a legal determination on your tax classification, you may request a private letter ruling from the IRS under the guidelines in Revenue Procedure 2004-1,2004-1 I.R.B. 1 (or superseding Revenue Procedure for the year at issue.)

(IRS USE ONLY) 575D 04-04-2007 GEOR B 1912001337 SS-4

001081

Keep this part for your records. CP 575 D (Rev. 1-2007)

Return this part with any correspondence so we may identify your account. Please correct any errors in your name or address.

CP 575 D

1912001337

Your Telephone Number
( ) -

Best Time to Call

DATE OF THIS NOTICE: 04-04-2007
EMPLOYER IDENTIFICATION NUMBER: 20-8728685
FORM: SS-4 NOBOD

INTERNAL REVENUE SERVICE
P.O. BOX 9003
HOLTSVILLE NY 11742-9003

GEORGE WASHINGTON BRIDGE BUS
STATION DEVELOPMENT VENTURE LLC
% ROBERT MASTERS-ACADIA REALTY TRUS
ROBERT MASTERS MBR
1311 MAMARONECK AVENUE-STE 260
WHITE PLAINS NY 10605

Delaware

The First State

I, JEFFREY W. BULLOCK, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY "GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC" IS DULY FORMED UNDER THE LAWS OF THE STATE OF DELAWARE AND IS IN GOOD STANDING AND HAS A LEGAL EXISTENCE SO FAR AS THE RECORDS OF THIS OFFICE SHOW, AS OF THE THIRD DAY OF JUNE, A.D. 2011.

AND I DO HEREBY FURTHER CERTIFY THAT THE SAID "GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC" WAS FORMED ON THE SIXTEENTH DAY OF MARCH, A.D. 2006.

AND I DO HEREBY FURTHER CERTIFY THAT THE ANNUAL TAXES HAVE BEEN PAID TO DATE.

Jeffrey W. Bullock, Secretary of State

4126993 8300

110686069

AUTHENTICATION: 8809082

DATE: 06-03-11

You may verify this certificate online at corp.delaware.gov/authver.shtml

State of New York
Department of State } ss:

I hereby certify, that GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC a DELAWARE Limited Liability Company filed an Application for Authority pursuant to the Limited Liability Company Law on 02/20/2007. I further certify that so far as shown by the records of this Department, such Limited Liability Company is still authorized to do business in the State of New York. I further certify the following:

A Certificate of Publication of GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC was filed on 05/21/2007.

A Biennial Statement was filed 02/26/2009.

A Biennial Statement was filed 03/08/2011.

I further certify, that no other documents have been filed by such Limited Liability Company.

STATE OF NEW YORK DEPARTMENT OF STATE

***

WITNESS my hand and the official seal of the Department of State at the City of Albany, this 02nd day of June two thousand and eleven.

First Deputy Secretary of State

201106030488 101

GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC.

FINANCIAL STATEMENTS

MAY 31, 2011

Finkle & Ross, L.L.P.
CERTIFIED PUBLIC ACCOUNTANTS

GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC.
TABLE OF CONTENTS
MAY 31, 2011

	Page Number
Accountants' Report	1
Financial Statements:	
Balance Sheet	2
Statement of Income and Partner's Capital	3
Statement of Cash Flows	4
Notes to Financial Statements	5-6

Finkle & Ross, L.L.P.
CERTIFIED PUBLIC ACCOUNTANTS
600 OLD COUNTRY ROAD
SUITE 435
GARDEN CITY, NEW YORK 11530

EDWARD ROSS, C.P.A.
MICHAEL WALSH, C.P.A.
ALVIN FINKLE, C.P.A. (1924-1996)
ROBERT ROST, C.P.A. (1959-2003)

(516) 294-0909
FAX (516) 294-3577

To the Partners of
George Washington Bridge Bus Station Development Venture, LLC.

The accompanying Balance Sheet of George Washington Bridge Bus Station Development Venture, LLC. as of May 31, 2011 and the related Statement of Operations and Partner's Capital for the five months ended May 31, 2011 has been compiled by us in accordance with Statements on Standards for Accounting and Review Services issued by the American Institute of Certified Public Accountants. .

A compilation is limited to presenting in the form of financial statements information that is the representation of management. The accompanying financial statements have not been audited or reviewed, and, accordingly, no opinion or any other form of assurance is expressed on them.

Finkle & Ross, LLP

Finkle & Ross, CPA's LLP
Garden City, New York

June 27, 2011

GEORGE WASHINGTON BRIDGE BUS SATION DEVELOPMENT VENTURE, LLC
BALANCE SHEET
AS AT MAY 31, 2011

ASSETS

CURRENT ASSETS			
Cash in Bank	$ 10,363		
Loans Receivable	1,755,323		
Construction/Development Costs in Progress	6,075,300		
Capitalized Interest	231,000		
Prepaid Expenses	1,000,000		
TOTAL CURRENT ASSETS		$ 9,071,986	
TOTAL ASSETS			$ 9,071,986

LIABILITIES AND STOCKHOLDER'S EQUITY

CURRENT LIABILITIES			
Accounts Payable & Accrued Expenses	$ 621,986		
Notes Payable	2,700,000		
TOTAL CURRENT LIABILITIES		$ 3,321,986	
PARTNER'S CAPITAL			
Partner's Capital	5,750,000		
TOTAL PARTNER'S CAPITAL		5,750,000	
TOTAL LIABILITIES AND PARTNER'S CAPITAL			$ 9,071,986

See Accountants' Compilation Letter and Notes to Financial Statements.

GEORGE WASHINGTON BRIDGE BUS SATION DEVELOPMENT VENTURE, LLC
STATEMENT OF INCOME AND PARTNER"S CAPITAL
FOR THE FIVE MONTHS ENDED MAY 31, 2011

INCOME			
Revenue	$ 0		
TOTAL INCOME		$ 0	
EXPENSES			
Development Expenses	0		
General and Administrative Expenses	0		
TOTAL EXPENSES		0	
NET INCOME FROM OPERATIONS			$ 0
PARTNER"S CAPITAL- JANUARY 1, 2011			5,750,000
PARTNER"S CAPITAL- MAY 31, 2011			$ 5,750,000

See Accountants' Compilation Letter and Notes to Financial Statements.

GEORGE WASHINGTON BRIDGE BUS SATION DEVELOPMENT VENTURE, LLC
STATEMENT OF CASH FLOWS
FOR THE FIVE MONTHS ENDED MAY 31, 2011

CASH FLOWS FROM OPERATING ACTIVITIES		
Net Income (Loss)		$ 0
ADJUSTMENTS USED TO RECONCILE NET LOSS TO NET CASH PROVIDED BY OPERATING ACTIVITIES:		
Depreciation & Amortization	$ 0	
(Increase) in Loans Receivable	(333,507)	
(Increase) in Capitalized Interest	(231,000)	
(Increase) in Construction/Development Costs in Progress	(396,722)	
(Decrease) in Accounts Payable	(597,175)	
Total Adjustments		(1,558,404)
Net Cash used in Operating Activities		(1,558,404)
Net Change in Cash for the period		(1,558,404)
Cash at January 1, 2011		1,568,767
Cash at May 31, 2011		$ 10,363
Supplemental disclosures of cash flow information		
Cash paid for:		
Interest	$ 0	
Income taxes	0	

See Accountants' Compilation Letter and Notes to Financial Statements.

Note 1: Summary of Significant Accounting Policies

Business Activity – George Washington Bridge Bus Station Development Venture LLC was established in August 2010 and is engaged in the business of redeveloping the real estate facility at the George Washington Bridge Bus Station and related retail businesses located in the east and west buildings which encompasses an entire city block bounded by Broadway at 178th and 179th Streets and Fort Washington and Wadsworth Avenues.

Accounting Method - The Company maintains its books and records on the accrual basis of accounting for both financial reporting and income tax purposes.

Use of Estimates - The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosures of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expense during the reporting period. Actual results could differ from those estimates.

Concentration of Credit Risk - The Company occasionally maintains deposits in excess of federally insured limits. Statement of Financial Accounting Standards No. 105 identifies these items as a concentration of credit risk requiring disclosure, regardless of the degree of risk. The risk is managed by maintaining all deposits in high quality financial institutions.

Deferred Interest and Financing Costs - Costs incurred in obtaining financing and the related interest payments for the project have been capitalized and will be amortized over the remaining life of the note when the redevelopment project is placed in service. The capitalized interest at May 31, 2011 was $ 231,000.

Income Taxes - Income taxes are not payable or provided for by the Company. The partnership's income is reported by the partners on their individual income tax returns.

Note 2: Notes Payable:

George Washington Bridge Bus Station Development Venture LLC has a note payable to the Acadia Strategic Opportunity Fund III, LLC in the amount of $1,950,000, with interest at 10% per annum, which represents reimbursements for construction and development costs through March 31, 2010. The note is payable on the earlier of the fifth anniversary of this note March 31, 2015 or when a construction or proper and adequate line of financing is obtained to fund all principal and accrued interest due under this note. Interest incurred to date on this note amounts to $231,000.

Note 2: Notes Payable (Continued):

George Washington Bridge Bus Station Development Venture LLC has a note payable to Crown GWB Partners, LLC in the amount of $750,000, non interest bear, which represents reimbursements for construction and development costs through April 1, 2011. The note is payable on the earlier of the first anniversary of this note April 1, 2012 or when a construction or proper and adequate line of financing is obtained to fund the principal of this note.

Note 3: Loans Receivable – Port Authority New York New Jersey

The Company is redeveloping for the Port Authority of New York and New Jersey the old George Washington Bridge Bus Terminal as well as the third floor of the West Building that occupies the entire City Block located at Broadway between 178th and 179th Street bound by Fort Washington Avenue under an interim agreement with Port Authority of New York and New Jersey. The interim agreement controls the project until a lease is signed with the The Port Authority of New York and New Jersey. Under the terms of the interim agreement the Port Authority of New York and New Jersey is liable for the project expenditures incurred to date by the company in the amount of $ 1,755,323.

Note 4: Prepaid Expenses

The company upon the signing and delivery of the interim agreement has prepaid Ground Rent to the Port Authority of New York and New Jersey in the amount of $ 1,000,000 for 2 Floors of the West Building and 3 Floors of the East Building which occupy the entire City Block located at Broadway between 178th and 179th Street bound by Fort Washington Avenue and Wadsworth Avenue which the company will lease from the Port Authority of New York and New Jersey for 99 years upon the signing of the Lease. By the project completion date the company will have pre-paid $6,440,000 which represents ten years of Ground Rent.

State of New York }
Department of State } *ss:*

I hereby certify that the annexed copy has been compared with the original document in the custody of the Secretary of State and that the same is a true copy of said original.

Witness my hand and seal of the Department of State on **May 21, 2007**

Deputy Secretary of State for
Business and Licensing Services

DOS-1268 (Rev. 03/07)

070521000253

New York State
Department of State
Division of Corporations, State Records
and Uniform Commercial Code
Albany, NY 12231
www.dos.state.ny.us

CERTIFICATE OF PUBLICATION
OF

GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC

Under Section 802 of the Limited Liability Company Law

The undersigned is the Authorized Person of
GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC

If the name of the limited liability company has changed, the name under which it was formed is:

If applicable, the fictitious name the foreign limited liability company has agreed to use in this state is:

The published notices described in the annexed affidavits of publication contain all of the information required by Section 802 Limited Liability Company Law.

The newspapers described in such affidavits of publication satisfy the requirements set forth in the Limited Liability Company Law and the designation made by the county clerk.

I certify the foregoing statements to be true under penalties of perjury.

Dated: May 18, 2007

/s/ Robert Master

Robert Master

Affidavit of Publication
Under Section 802 of the
Limited Liability Company Law

State of New York
County of Westchester, ss.:

The undersigned is the Publisher of the NEW YORK LAW JOURNAL, a Daily Newspaper published in New York, New York. A notice regarding George Washington Bridge Bus Station Development Venture LLC was published in said newspaper once in each week for six successive weeks, commencing on 03/19/07 and ending on 04/23/07. The Text of the Notice as published in said newspaper is as set forth below. This newspaper has been designated by the Clerk of Westchester County for this purpose.

George Dillehay, Publisher

By: Jennifer Hannafey, Authorized Designee of the Publisher.

SWORN TO BEFORE ME, this 26th day of April, 2007

Notary / Cynthia Byrd

Cynthia Byrd
Notary Public, State of New York
No. 01BY6056945
Qualified in Kings County
Commission Expires April 09, 2011

Notice of Qualification of George Washington Bridge Bus Station Development Venture LLC. Authority filed with Secy. of State of N.Y. (SSNY) on 2/20/07. Office location: Westchester County. LLC formed in Delaware (DE) on 3/16/06. SSNY designated as agent of LLC upon whom process against it may be served. SSNY shall mail process to: c/o National Registered Agents, Inc., (NRAI), 875 Ave. of the Americas, Ste. 501, NY, NY 10001. DE address of LLC: c/o NRAI, 160 Greentree Drive, Suite 101, Dover, DE 19904. Arts. of Org. filed with DE Secy. of State, 401 Federal Street, Dover, DE 19901. Purpose: acquisition of a leasehold estate from the Port Authority of New York and New Jersey and the development, construction, leasing, management and financing of such leasehold estate.
805031 m19 M-a23

Westchester County Business Journal
3 Gannett Drive
White Plains, New York 10604

Affidavit of Publication
Under Section 802 of the Limited Liability Company Law

State of New York
County of Westchester, ss.:

The undersigned is the Publisher of the **WESTCHESTER COUNTY BUSINESS JOURNAL**, a weekly newspaper published in the City of White Plains, county of Westchester and State of New York. A notice regarding **GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC** was published in said newspaper once in each week for six successive weeks, commencing on **3/19/2007** and ending on **4/23/2007**. The text of the notice as published in said newspaper is as set forth below. *This newspaper has been designated by the Clerk of Westchester County for this purpose.*

By: _____
BARBARA HANLON

AUTHORIZED DESIGNEE OF DELORES DELBELLO,
PUBLISHER OF THE WESTCHESTER COUNTY BUSINESS JOURNAL

sworn to before me this 23 day of April 2007

_____
Notary Public Westchester County

MARIE T. ORSER
NOTARY PUBLIC, State of New York
No. 01OR6053542
Qualified in Putnam County
Commission Expires on January 16, 2011

Notice of Qualification of George Washington Bridge Bus Station Development Venture LLC. Authority filed with Secy. of State of N.Y. (SSNY) on 2/20/07. Office location: Westchester County. LLC formed in Delaware (DE) on 3/16/06. SSNY designated as agent of LLC upon whom process against it may be served. SSNY shall mail process to: c/o National Registered Agents, Inc., (NRAI), 875 Ave. of the Americas, Ste. 501, NY, NY 10001. DE address of LLC: c/o NRAI, 160 Greentree Drive, Suite 101, Dover, DE 19904. Arts. of Org. filed with DE Secy. of State, 401 Federal Street, Dover, DE 19901. Purpose: acquisition of a leasehold estate from the Port Authority of New York and New Jersey and the development, construction, leasing, management and financing of such leasehold estate.
Ad# 53506

070521000253

CSC 45

CERTIFICATE OF PUBLICATION

OF

GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC

Under Section 802 of the Limited Liability Company Law

Filed by: Acadia Realty Trust
Suite 260
1311 Mamaroneck Avenue
White Plains, NY 10605
Cust. Ref#783652TV

DRAWDOWN

2007 MAY 21 PM 12:23

1CC

STATE OF NEW YORK
DEPARTMENT OF STATE
MAY 21 2007
FILING
TAX $
BY:

264

RECEIVED
2007 MAY 21 AM 9:07

N. Y. S. DEPARTMENT OF STATE
DIVISION OF CORPORATIONS AND STATE RECORDS ALBANY, NY 12231-0001

FILING RECEIPT

ENTITY NAME: GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC

DOCUMENT TYPE: CERTIFICATE OF PUBLICATION (FOR LLC) COUNTY: WEST

SERVICE COMPANY: CORPORATION SERVICE COMPANY - 45 SERVICE CODE: 45

FILED:05/21/2007 DURATION:********* CASH#:070521000264 FILM #:070521000253

ADDRESS FOR PROCESS

REGISTERED AGENT

FILER	FEES	110.00	PAYMENTS	110.00
	FILING	50.00	CASH	0.00
	TAX	0.00	CHECK	0.00
ACADIA REALTY TRUST	CERT	0.00	CHARGE	0.00
1311 MAMARONECK AVENUE SUITE 260	COPIES	10.00	DRAWDOWN	110.00
	HANDLING	50.00	OPAL	0.00
WHITE PLAINS, NY 10605			REFUND	0.00

783652TV DOS-1025 (11/89)

N. Y. S. DEPARTMENT OF STATE
DIVISION OF CORPORATIONS AND STATE RECORDS ALBANY, NY 12231-0001

CERTIFICATE OF AUTHORITY UNDER SEC. 805 OF THE LIMITED LIABILITY COMPANY LAW

ENTITY NAME: GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC

DOCUMENT TYPE: APPLICATION FOR AUTHORITY (FOR LLC) COUNTY: WEST

SERVICE COMPANY: CORPORATION SERVICE COMPANY - 45 SERVICE CODE: 45

FILED:02/20/2007 DURATION:********* CASH#:070220000925 FILM #:070220000887

ADDRESS FOR PROCESS	EXIST DATE
NATIONAL REGISTERED AGENTS, INC. 875 AVENUE OF THE AMERICAS SUITE 501 NEW YORK, NY 10001	02/20/2007

REGISTERED AGENT

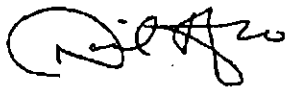
FILER	FEES		PAYMENTS	
		410.00		410.00
	FILING	250.00	CASH	0.00
	TAX	0.00	CHECK	0.00
ROBERT MASTERS	CERT	0.00	CHARGE	0.00
1311 MAMARONECK AVENUE	COPIES	10.00	DRAWDOWN	410.00
SUITE 260	HANDLING	150.00	OPAL	0.00
WHITE PLAINS, NY 10605			REFUND	0.00

764792JBA DOS-1025 (11/89)

State of New York }
Department of State } *ss:*

I hereby certify that the annexed copy has been compared with the original document in the custody of the Secretary of State and that the same is a true copy of said original.

Witness my hand and seal of the Department of State on **February 20, 2007**



Special Deputy Secretary of State

DOS-1266 (Rev. 11/05)

0702200008 87

CSC 45

New York State
Department of State
Division of Corporations, State Records
and Uniform Commercial Code
41 State Street
Albany, NY 12231
www.dos.state.ny

APPLICATION FOR AUTHORITY
OF

GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC
(Insert name of Foreign Limited Liability Company)

Under Section 802 of the Limited Liability Company Law

FIRST: The name of the limited liability company is: GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC.

If the name does not contain a required word or abbreviation pursuant to Section 204 of the Limited Liability Company Law, the following word or abbreviation is added to the name for use in this state: _____.

(Do not complete this section unless the limited liability company's true name is not available pursuant to §204 of the Limited Liability Company Law.) The fictitious name under which the limited liability company will do business in New York is: _____.

SECOND: The jurisdiction of organization of the limited liability company is: DELAWARE. The date of its organization is: MARCH 16, 2006.

THIRD: The county within this state in which the office, or if more than one office, the principal office of the limited liability company is to be located is: WESTCHESTER.
(A county in New York State must be stated. Please note that the limited liability company is not required to have an actual physical office in this state.)

FOURTH: The Secretary of State is designated as agent of the limited liability company upon whom process against it may be served. The address within or without this state to which the Secretary of State shall mail a copy of any process served against him or her is:
NATIONAL REGISTERED AGENTS, INC.
875 AVENUE OF THE AMERICAS, SUITE 501, NEW YORK, NEW YORK 10001.

DOS-1381 (Rev. 12/05)

FIFTH: (Complete the statement that applies)

The address of the office required to be maintained in the jurisdiction of its formation is: NATIONAL REGISTERED AGENTS, INC., 160 GREENTREE DRIVE, SUITE 101, DOVER, DELAWARE 19904

If no office is required to be maintained in the jurisdiction of its formation, the address of the principal office of the limited liability company is: _____

SIXTH: The foreign limited liability company is in existence in its jurisdiction of formation at the time of filing of this application.

SEVENTH: The name and address of the Secretary of State or other authorized official in its jurisdiction of organization where a copy of its articles of organization is filed is: HARRIET SMITH WINDSOR, SECRETARY OF STATE, DIVISION OF CORPORATIONS, JOHN G. TOWNSEND BUILDING, 401 FEDERAL STREET, DOVER, DELAWARE 19901

X _____
(Signature)

ROBERT MASTERS
(Type or print name)

AUTHORIZED PERSON
(Title or capacity of signer)

Please Note: A certificate of existence or, if no such certificate is issued by the jurisdiction of formation, a certified copy of the articles of organization of the limited liability company and all subsequent amendments therefore, or if no articles of organization have been filed, a certified copy of the certificate filed as its organizational base and all amendments thereto, must be attached to the application for authority when submitted for filing. If such certificate or certified copy is in a foreign language, a translation in English thereto under oath of the translator shall be attached.

070220000887

2007 FEB 20 AM 10:46

APPLICATION FOR AUTHORITY
OF

GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC

(Insert name of Foreign Limited Liability Company)

Under Section 802 of the Limited Liability Company Law

Filed by: ROBERT MASTERS
(Name)

1311 MAMARONECK AVENUE, SUITE 260
(Mailing address)

WHITE PLAINS, NEW YORK 10605
(City, State and Zip code)

CUSTOMER REF. #
764792 JRA

NOTE: This form was prepared by the New York State Department of State for filing an application for authority for a foreign limited liability company to conduct business in New York State. It does not contain all optional provisions under the law. You are not required to use this form. You may draft your own form or use forms available at legal supply stores. The Department of State recommends that legal documents be prepared under the guidance of an attorney. The certificate must be submitted with a $250 filing fee made payable to the Department of State.

(For office use only)

1CC

STATE OF NEW YORK
DEPARTMENT OF STATE
FILED FEB 20 2007
TAX $
BY: JTG

CSC 45
DRAW DOWN

JTG

2007 FEB 20 AM 9:01

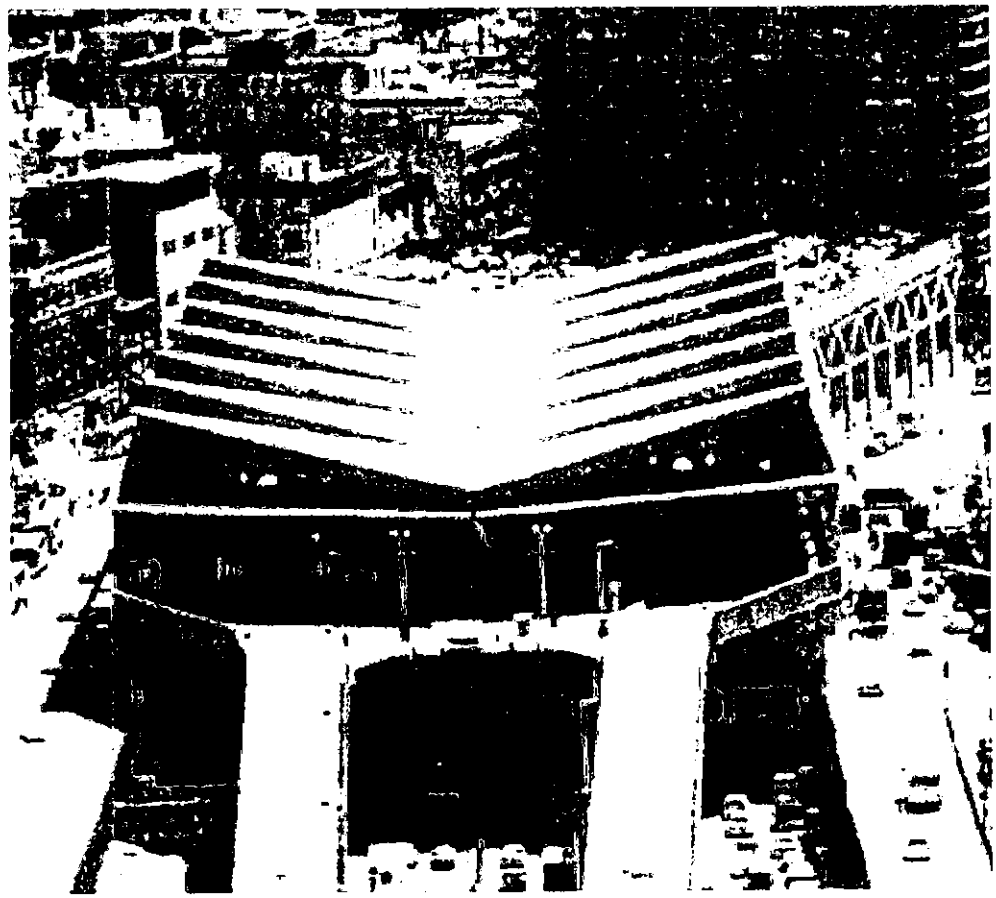
4

925

SKANSKA

GEORGE WASHINGTON BRIDGE BUS STATION REDEVELOPMENT

MINORITY/WOMEN OWNED BUSINESS ENTERPRISE (M/WBE) PLAN



Final Version dated: July 15, 2011

SKANSKA

Mission Statement

Skanska embraces diversity as a core value. We strive to excel as a global construction leader by advancing a culture of inclusion. By respecting people of diverse backgrounds and talents, we offer our employees an environment in which to thrive. We enrich our clients and communities through unique partnerships and extraordinary construction services.

Skanska has established this M/WBE (**M**inority-owned/**W**oman-owned **B**usiness **E**nterprise) Project Plan for the George Washington Bridge Bus Station Redevelopment Project based on the requirements set forth in the Lease Agreement executed between our client, the developer, the George Washington Bridge Bus Station Development Venture and the Port Authority of NY & NJ. The Project Team has established this program as an outline for the voluntary and cooperative inclusion of M/WBE firms into the construction of this project in Washington Heights, New York.

Good faith efforts to include meaningful participation by MBEs and WBEs shall include at least the following:

1. actively and affirmatively soliciting bids and proposals for contracts or subcontracts from MBEs and WBEs, including circulation of solicitations to MBEs and WBEs
2. providing prospective MBEs and WBEs with plans, specifications and other necessary background materials in sufficient time for review
3. utilizing the lists of certified MBEs and WBEs maintained by the Port Authority, the City, the State of New Jersey or the State of New York or seeking minorities, women and local business people from other sources for the purpose of soliciting contractors, subcontractors and suppliers
4. in the event that any such MBE/WBE requires advice or assistance in performing its obligations in connection with the Project, referring such MBE/WBE to available minority and women's community organizations, contractor's groups, local, State and Federal business assistance/development offices and other such non-profit and governmental or quasi-governmental organizations that provide assistance to MBE/WBEs
5. insuring that provision is made to provide progress payments to MBEs and WBEs on a timely basis, where appropriate, in the same manner that progress payments are made to other contractors or subcontractors
6. not requiring bonds from and/or providing bonds for MBEs and WBEs for contracts or subcontracts of less than $100,000.

The Primary Goal of this Targeted Business / Workforce Participation Plan is to assist M/WBE firms that would otherwise not participate fully with the bidding process. Where an M/WBE bidder is awarded a subcontract, our goal is to assist that bidder with the successful performance of the work. This program is not intended to establish quotas for participation or provide MWBE firms with a competitive advantage over other bidders for Project work. Each bid will be evaluated on its overall merits.

SKANSKA

a. Meet the Port Authority of NY & NJ expectations and requirements for M/WBE participation on the project by achieving the goal of 17% of the total value of the contracts, with a minimum goal of 12% certified minority owned business and 5% certified woman owned firms. Skanska's ultimate goal is to exceed the minimum good faith requirement.

b. Develop and maintain a program that promotes the utilization, mentoring and growth of M/WBE firms.

c. Generate opportunities for participation in all aspects of Preconstruction and Construction phases of project implementation.

d. Maximize participation for local (New York) businesses, particularly those in the Washington Heights area.

e. Develop and offer comprehensive resources and training to promote the success of M/WBE firms and to establish a platform for the long-term viability of M/WBE firms.

f. Develop and implement strategies to maximize opportunities in the workforce for *women, minorities and veterans particularly in the local communities.*

g. Establish mechanisms for monitoring, evaluating and improving the effectiveness of our M/WBE program.

h. Ensure company-wide buy-in for implementation and achievement of the M/WBE program objectives.

The M/WBE program provides increased opportunities to bid and a better chance of performing successfully on projects. From preconstruction technical assistance, to required participation in scope confirmation meetings, to M/WBE requisitioning, every effort will be made to achieve meaningful M/WBE participation in the bidding process.

The most significant result of this program is that it is a value-added program. As the M/WBE firms participate in the progressive parts of the construction process, they will gain valuable knowledge and experience, thereby enhancing their company's abilities to compete on future opportunities.

To achieve the above outlined objectives, the Skanska program utilizes a proven, **Five (5)-Step Approach** based on distinct phases of the construction project. These steps represent a progressive program that evolves during the preconstruction and construction process. It provides MWBE contractors with more than a chance to get their names on the list. It does more than hold a contracting/bidding process "fair" for minority-owned and women-owned businesses.

The following represent the Five Steps integral to our plan:

1. Project Awareness
2. Project Preparation
3. Project Procurement
4. Project Participation
5. Post Project Opportunities

SKANSKA

1. PROJECT AWARENESS:

The goal during the **Project Awareness** phase is to maximize awareness and interest in the project by utilizing various outreach vehicles to notify, inform and engage M/WBE firms regarding upcoming contract and workforce opportunities.

TACTICS: Project Awareness

- **Database of Eligible Contractors:** develop a comprehensive database of certified and certification-eligible contractors that can be targeted directly by personalized media such as fax, email, and phone. This database will be compiled by obtaining and leveraging available lists from the Port Authority's approved bid list. By leveraging existing lists of M/WBE firms, Skanska can immediately assess the available pool of contractors for a targeted awareness campaign.

  Skanska will compile and merge its available list, removing any duplicates to ensure efficiencies. Skanska will then sort the database by trade divisions in order to identify trades with the highest concentration of qualified contractors. These high concentration trades represent areas we can target for greatest participation in the bidding process.

  The database is an evolving tool that will continue to be updated and populated throughout the project, particularly as the comprehensive outreach initiatives are implemented.

  An effectively populated database will be a valuable tool for making direct, personalized contact and engaging M/WBE firms through emails, phone, conference/educational and fax campaigns. The database also allows for accurate documentation and reporting to demonstrate Skanska's earnest efforts to exceed expectations for M/WBE participation.

- **Trade & Professional Associations**: Skanska has relationships and alliances with key trade and professional associations as a vehicle for generating awareness about the project and opportunities available to members. Following is an abbreviated list of associations that can be tapped for this effort, some of which Skanska is a member or supporter:

  - NY/NJ Minority Purchasing Council
  - New York State Association of Minority Contractors
  - Manhattan Hispanic Chamber of Commerce
  - Regional Alliance for Small Contractors
  - New York & New Jersey Minority Supplier Development Council Inc.
  - Harlem Business Alliance
  - Professional Women in Construction – N.Y. and N.J. Chapters

  Skanska will make available to minority/women-focused and associations a list of subcontracting opportunities when they are identified and a list of prime bidders that subcontractors may wish to contact for subcontracting consideration.

- **Advertising:** Skanska will utilize targeted vehicles, such as email, fax, and phone, for focused and personalized messaging. Skanska will aggressively pursue qualified and energetic M/WBE firms to participate in this project.

- **Web-based Share Site:** Skanska will develop and maintain a project specific web-based site to promote fast, efficient and effective sharing of information between Skanska and potential bidders. Information regarding the project, upcoming events, bid dates, and more can be posted on the site. Pre-qualification and certification information can also be made available. Lists of interested and qualified M/WBE firms can be made available to prime contractors utilizing the website. Furthermore, the website is a valuable tool for capturing information, questions and comments from potential bidders. With today's robust internet technology, the site can be developed to be as basic or as robust as needed throughout the project.

- **Tradeshows, Conferences & Expos:** Skanska attends and participates in tradeshows, conferences and expositions as a means of disseminating information and also for expanding the database of eligible M/WBE firms.

- **Outreach:** Skanska is active in the NY Metro region with various outreach efforts, including our Building Blocks program and the ACE Mentor program. Skanska will continue to reach out to the community to elevate minority and women owned businesses. On this project in partnership with the Development Venture, Skanska intends to maintain open communication with prospective M/WBE bidders and the Washington Heights community as a means of inclusion and a positive outlook for the project.

  Following is a brief description of the types of meetings that Skanska sees as beneficial to a successful outreach program:

  - ***Kick-off meeting for Contractors***: Skanska, with GWBBSDV and Port Authority participation, anticipates hosting meetings for project information dissemination to the M/WBE community. The purpose of these meetings is to generate excitement about the project and provide general information about the scope of work, upcoming opportunities, bid requirements, and bid process.

  - ***Networking meetings***: Skanska will host networking meetings to update the M/WBE community on the status/progress of the project and available opportunities. This is also an opportunity for firms to network with Skanska and potential prime contractors.

  - ***Community Meetings*** – Skanska, along with GWBBSDV, intends to engage the local community to keep residents and businesses excited about the GWB Bus Station Redevelopment Project. Periodic community meetings are also valuable in preventing dissention in and around the communities proximal to the construction project. Furthermore, these meetings afford yet another opportunity to identify qualified M/WBE firms and workforce. It is recommended that a Community Meeting be held twice a year.

SKANSKA

- **Workforce Recruitment and Outreach:** Skanska will promote whenever possible, opportunities for community residents to acquire construction trades positions in all project related areas, including construction, technical, professional, manufacturing and assembly. We are committed to maintaining a diverse work force in all project-related areas and will encourage all our subcontractors to do the same.

  To assist in maximizing diversity on the GWB Bus Station Redevelopment Project, Skanska will implement several outreach initiatives to identify a qualified labor pool.

  - Skanska will work with local union representatives and subcontractors to formulate plans to streamline the process for entering the unions and promote, whenever possible, opportunities for community residents to acquire construction trades positions, especially in the laborer category.

  - Actively participate in local employment and career programs and fairs to identify talent.

  - Work with local colleges and organizations to generate awareness for available jobs on the project.

- **Internal Skanska Project Team Training:** to ensure awareness and buy-in at all levels of Skanska's corporate and field staff, training sessions have been and will continue to be held to educate the Skanska team on the importance of the M/WBE program. The goal is to communicate all aspects of the program and to ensure all Skanska team members understand and support the Project M/WBE participation Program/Plan.

- **Monitoring & Reporting:** during the project awareness phase, Skanska will track and document all correspondence with M/WBE firms utilizing a Project Correspondence Log. Skanska will also maintain a monthly calendar of proposed Project Awareness activities planned with a minimum six month outlook. MWBE plans and progress will be maintained and documented in Skanska's monthly construction progress report.

SKANSKA

2. PROJECT PREPARATION:

The goal of the **Project Preparation** phase is to provide the tools, education and resources necessary for the M/WBE firms to successfully participate in the GWB Bus Station Redevelopment project. Skanska's project team will assist in providing technical resources to encourage, support and assist M/WBE firms bidding on and winning Skanska subcontracts.

TACTICS: Project Preparation

- **Assessment of Bid Packages:** Skanska will conduct a comprehensive review of construction contracts and bid specifications. Furthermore, Skanska will compare the scope of work and bid packages to the database of available M/WBE firms with the goal of identifying trades that have the highest concentration of available M/WBE firms. Skanska will consider the capabilities of M/WBE firms during the pre-bidding phase and break down the trade packages (if severable) into smaller packages to increase opportunities for M/WBE firms to successfully compete for contracts.

- **Pre-qualification & Certification Assistance:** While Skanska is committed to exceeding expectations for M/WBE participation, we are equally committed to delivering a high quality, well built Bus Station and Retail destination. To do so, we must focus on recruiting the most qualified contractors to perform the work. To optimize quality control, Skanska implements a pre-qualification process that ALL contractors must complete. Skanska's pre-qualification requires all contractors to provide basic company information, relevant experience and other data that will demonstrate ability and capacity to perform.

  Understanding that such paperwork can be arduous for most, but especially for small firms with limited resources, Skanska will commit staff resources to assist M/WBE firms through this process. The following are the primary areas of focus:

  - Review of Blueprint & Related Specs
  - Estimating & Scope comparisons
  - Understanding Detailed documents in their entirety
  - Quantity takeoffs & Job buy out
  - Bid preparation
  - Checklist of documents-addendum, changes, acknowledgement, pricing and related functions.
  - Assistance with attending Pre-Bid Meetings

- **Monitoring & Reporting:** during the Project Preparation phase, monitoring and reporting will focus on tracking attendance at the various events and updating the M/WBE database and correspondence logs accordingly. Copies of all correspondence materials (invitations, letters, notices, advertisements, etc.) will be archived for record keeping purposes.

SKANSKA

3. PROJECT PROCUREMENT:

The goal of the **Project Procurement** phase is to organize potential M/WBE firms for bidding to insure that procurement requirements are understood, pre-planned and satisfactorily achieved.

TACTICS: Project Procurement

- **Outreach Events:** Skanska will continue to participate in workshops and meetings to help educate, mentor and prepare potential M/WBE bidders and broaden our pre-qualified bid list.

- **Networking & Matchmaking Events**: Skanska provides opportunities for M/WBE firms and prime contractors to network and identify potential joint ventures on our projects. Prime (non-minority) firms will be required to demonstrate "Good Faith" efforts in meeting their own M/WBE goals. Skanska's goal is to help facilitate the process on behalf of both the Prime and the smaller M/WBE firm. Furthermore, Skanska will provide lists of prospective bidders to the M/WBE firms and in parallel, a list of certified M/WBE firms to prime contractors.

- **Notification of Bids**: Skanska will contact all M/WBE firms that express interest in bidding to notify them of upcoming bid dates and encourage their participation.

- **Pre-bid meetings**: Skanska will conduct pre-bid meetings at least 14 days prior to the bid dates for each phase of construction. The M/WBE Program will be discussed and emphasized by Skanska at the pre-bid meetings. M/WBE subcontractors will be encouraged to attend in order to introduce themselves to potential bidders. Bid forms, specific scopes of work, and other bid-related information will be reviewed.

- **Technical Assistance for Bids**: Skanska's team will assist and answer questions as contractors compile their bids. Establishing this open dialogue during the bid process will promote more accurate and complete bidding.

- **Scope Review & Bid Evaluation Meetings:** At the pre-bid meeting, Skanska will perform scope reviews to ensure all contractors, including M/WBE firms, will include all aspects of scope in their bids. This exercise helps to position contractors for success from the onset. Once bids are received, Skanska will evaluate the proposals of all Prime contractors to ensure they have met the requirements for M/WBE participation.

  Skanska will select subcontractors on the basis of their acceptance of the project M/WBE program. Language that clearly outlines the M/WBE program requirements will be included in every bid package, and ultimately the subcontract's themselves, to promote participation at all subcontracting tiers.

- **Monitoring & Reporting:** during the Project Procurement phase, Skanska will track the firms invited to bid vs. those that actually submitted proposals. Follow-up calls will be placed to those M/WBE firms that did not submit bids to determine reasons why. Any feedback will be utilized to seek ways of continuously improving the program.

SKANSKA

4. PROJECT PARTICIPATION:

The primary goal during **Project Participation** is to assist M/WBE firms with the successful performance of their contracts. Skanska will provide constructive support and assistance for the purposes of execution and performance under the contract awarded to the respective M/WBE firm at the GWB Bus Station Redevelopment Project Site.

TACTICS: Project Participation

- **Pre-Construction Kick-Off Meeting**: Upon award of a contract, Skanska will conduct a kick-off meeting for each prime contractor awarded that particular scope of work. MWBE sub-subcontractor/vendors will be required to be in attendance at these meetings for contract values in excess of $50,000. During the kick-off meeting, the Skanska team will again confirm scope of work, schedules and other performance requirements. Prime contractors will be required to document how they plan to engage the M/WBE firms in their implementation plan. M/WBE firms will also be required to confirm an understanding of their role on the contract.

  M/WBE firms that are successfully awarded prime contracts will have mandatory, detailed scope review meetings. Special attention and assistance will be provided in developing a manageable implementation plan. Skanska's goal is to position the M/WBE firm for success. Schedules and milestones will be developed together with the Skanska project team. Skanska will also work to identify any potential obstacles and proactively determine viable solutions.

- **Payment Meeting**: Cash flow is critical to all subcontractors, particularly small M/WBE firms. Skanska will conduct a meeting to review payment procedures and ensure the M/WBE firms clearly comprehend how to fill out and submit their payment requisitions and understand how to complete and provide the necessary back-up documentation. The goal is to ensure accuracy and facilitate prompt payments.

- **Progress Meeting**: Skanska will conduct a progress meeting with the M/WBE firm within 30 days after start of construction. Discuss project performance, work scope, payment procedures, safety concerns, etc.

- **Weekly Project Meeting**: Skanska will conduct weekly project meetings with all Prime contractors to review status of the project. M/WBE firms will be required to attend all weekly project meetings while their work scope is underway. This forum will be utilized to proactively identify areas of concern in schedule, quality control, safety, payments, etc.

- **Payment Audits:** Skanska will conduct monthly audits to verify that Prime contractors are current in their payments and that M/WBE subcontractors are receiving timely and prompt payments from Prime contractors.

- **Monitoring & Reporting:** Skanska will prepare monthly reports on M/WBE participation. The M/WBE participation reports will track all contracts and highlight the contracts awarded to M/WBE firms.

SKANSKA

5. POST-PROJECT PARTICIPATION:

The goal of the **Post-Project Participation** phase is to encourage continued relationships and future opportunities between M/WBE firms and trade contractors established during the project.

TACTICS: Post -Project Participation

- **Project Close-out meeting:** Skanska will conduct a project completion meeting with the M/WBE firms within 30 days of contract completion to discuss project performance, outstanding pay requests, future contracting opportunities, etc. The project close-out meeting is also an opportunity for Skanska to conduct an assessment on the effectiveness of the M/WBE program.

- **Monitoring & Reporting:** During project close-out, Skanska will compile a final report of participation, outreach efforts and calendar, payment trends, and correspondence logs. Skanska will also provide an analysis of the program highlighting successes as well as lessons learned.

Diversity Success Stories

- **New Meadowlands Stadium.** The New Meadowlands Stadium project included a contractual mandate to incorporate 15 percent M/WBE's into the project. To achieve this goal, Skanska first invited prospective subcontractors to attend a training course to review the nature of working on such a large project. Secondly, large components, such as electrical, were then subdivided into smaller groupings enabling M/WBE businesses to compete for contracts on an equal footing with their larger counterparts. This effort was so successful, that the targeted percentage of M/WBE's participating on the project more than doubled to 32 percent.

- **Intermediate and High School 404.** When Skanska was awarded the contract to build one of New York City's greenest schools by the School Construction Authority, we were required to meet at least 20 percent M/WBE participation on the project. During the bidding process, Skanska received many bids from M/WBE subcontractors that we had not worked with in the past. Instead of discounting these businesses, Skanska did additional research, followed up on references and assisted them is prequalifying with our firm. Being truly vested in giving M/WBE firms a chance resulted in a more than 28 percent M/WBE participation.

- **Advanced Science Research Center.** The new Advanced Science Research Center in Harlem will serve as the entire City University of New York's hub for scientific research. To achieve the client's M/WBE goals, Skanska worked closely with project owner Dormitory Authority of the State of New York (DASNY) and its Opportunity Programs Group to attain all possible M/WBE resources available.

SKANSKA

Then, Skanska reached out to the local Harlem community by promoting its training programs in the local press. Skanska also reached out to community partners such as the Harlem Business Alliance and the New York State Chapter of National Association of Minority Contractors. We attended the Business Strategies Forum presented by Columbia University's Harlem Small Business Development Center to further encourage M/WBE participation in this project. To date, the project boasts more than a 22 percent M/WBE participation rate.

Job Site Diversity Participation Rates

- New Meadowlands Stadium 32%
- Intermediate and High School 404 28%
- Advanced Science Research Center 22%
- Brooklyn Bridge Park 20%
- World Trade Center Transit Hub 17%
- United Nations 17%
- Skanska NY Headquarters – Empire State Bldg 37%

Recognition of Skanska's National Commitment to Diversity

- **General Contractor of the Year Compadres Award**
  Hispanic Contractors Association of Georgia

- **Commitment to Diversity Award**
  National Association of Minority Contractors, Washington DC Chapter

- **Elite Award in the area of Diversity and Multiculturalism**
  Detroit's 101 Best and Brightest Companies to Work For

- **Corporate Representative of the Year - James Threalkill**
  Tennessee Minority Supplier Development Council

- **Building on a Dream Award – Rufus Van Thompson**
  Bronx Community College Foundation

Outreach Programs

Building Blocks Program
Skanska will continue its ongoing "Building Blocks Program" that is a course providing technical assistance for M/WBE firms. The course is held once per year with classes meeting twice weekly, for eight weeks in the evenings from 6:00 – 9:00PM. The goal of the program is to provide training in the fundamental areas of construction business management and an opportunity to network with other contractors, representatives from public agencies and Skanska USA Building and other relevant business organizations.

SKANSKA

The course outline addresses topics that are traditionally challenging for contractors. The course topics can be tailored to address issues and situations that are relevant to the GWB Bus Station Redevelopment project. The goal of the training is to teach some fundamental principles of operating a successful business and also to provide a forum to educate contractors on how to overcome obstacles specific to this project.

Participants will find the format to include lecture, group discussions, and hands-on demonstrations with proven business practices. Course materials will be presented by internal and external Skanska USA subject experts. Participants will receive certificates of completion. There will no cost to the participants for this program.

Workforce Green Skills Development
Skanska USA has been working with the NYC Urban Green Council to develop a series of Green Building Professional Skills training courses that set a fundamental knowledge base for green building practices and applications.

As a part of this Green Professional Skills Training Program, once the fundamentals for Green Construction have been mastered there are a series of additional trade specific courses available for Green skills training to further define what Green Jobs are. The Construction Management, Electrical, Mechanical Wet & Dry, Plumbing, and Operations & Maintenance courses have been designed to address the future green project needs and requirements of the everyday construction worker.

Skanska is working with the Urban Green Council to roll out these Green Professional Skills training classes to subcontractors, and field personnel and working to develop the training structure (GPRO Minority Advantage) of offering the courses to M/WBE contractors at a reduced or eliminated cost. This program will help develop the green building skills of all M/WBE contractors involved with the program, and will help them adapt their future business plans and bidding practices to include these green building skills as a part of their core values.

Developing our M/WBE contractor's green construction skills is an essential part of the sustainable development of this plan. This will not only help the M/WBE firms bring in future work on green projects but it will also help them reduce the risk of falling behind in this vital area of our industry

ACE Mentor Program.
Skanska is participating in the ACE Mentoring Program through both our New York and New Jersey offices. In New York, Skanska is the lead working alongside engineering firms Thornton Tomasetti and Mueser Rutledge. The architectural firm, Brandon Hall is the mentor. The current program running from October 2010 through May 2011 has approximately 20 to 25 students from various schools participating with a total of 8 mentors. The group meets every other Thursday at Skanska's Empire State Building Office. This year's program will have students competing in a national competition on March 15th and each will be awarded a scholarship in May at conclusion of program.

In New Jersey, Skanska is participating in the ACE Mentoring Program as the mentor. We are working with Parsons Brinkeroff and Gensler. The program running from November 2010 through March 2011, has approximately 17 to 20 students participating in the program. The group meets in Newark at Parsons Brinkeroff's office weekly. Highlights of this years program is a $4000 scholarship sponsored by Skanska.

NYCRC
NEW YORK CITY REGIONAL CENTER

July 20, 2011

Port Authority of New York & New Jersey
255 Park Avenue - 19th Floor
New York, New York 10003

Attention: Carol Bennett,
General Manager, Development

Re: George Washington Bridge Bus Station Redevelopment Loan

Dear Ms. Bennett:

The New York City Regional Center, LLC, through its affiliate, George Washington Bridge Bus Station and Infrastructure Development Fund, LLC ("Lender"), has approved a loan ("Loan") to George Washington Bridge Bus Station Development Venture, LLC, in the principal sum of Seventy Two Million ($72,000,000) Dollars for the development of the Broadway Marketplace at George Washington Bridge Bus Station (the "Project").

The Loan shall be secured by a Leasehold Mortgage, Security Agreement and Fixture Filing, an Assignment of Leases and Rents, filings pursuant to the Uniform Commercial Code, a payment and performance bond for construction of the bus station and the retail portion of the Project (excluding therefrom tenant improvements) from Skanska USA and a deficiency guaranty of payment to Lender executed by GWB Development Partners, LLC.

In addition to commercially standard loan terms in New York City, the Loan will be made subject to and in accordance with terms and conditions of the Agreement of Lease between The Port Authority of New York and New Jersey and George Washington Bridge Bus Station Development Venture, LLC. entered into in connection with the Project.

Very truly yours,

George L. Olsen
Managing Principal

Paul Levinsohn
Managing Principal

NEW YORK CITY REGIONAL CENTER, LLC 299 BROADWAY, STE 1220, NEW YORK, NY 10007
TEL 212-619-1270 FAX 212-577-2606 www.nycrc.com

Master Agreement

This Master Agreement dated June 3, 2011 (this "Agreement") among George Washington Bridge Bus Station Development Venture LLC, GWB Development Partners, LLC, Marketplace GWB LLC ("Marketplace"), GWB Blue LLC, WMG Associates LLC, SJM Partners, Inc., GWB Ninety Nine LLC, MG GWB LLC ("MG GWB"), GWB IVY LLC ("GWB IVY"), Clearview Projects LLC, Clearview Management Services LLC, Aaron Malinsky, Paul Slayton and Benjamin Malinsky.

WITNESSETH

Whereas, the signatories to this Agreement (the "Parties") desire (i) to acknowledge that they have executed and delivered certain documents, as specified in Section 3 below and (ii) to provide for the other arrangements set forth herein; and

Whereas, George Washington Bridge Bus Station Development Venture LLC (the "Project Owner") desires to execute and deliver a lease with the Port Authority of New York and New Jersey (the "Port Authority Lease") with respect to the property commonly known as Broadway Marketplace at the GW Bridge New York, New York (the "Property").

AGREEMENT

Now, therefore, the Parties hereby agree as follows:

1. Definitions.

"Effective Time" means two business days after the Project Owner notifies the Parties, by e-mail notice to the e-mail addresses set forth on the signature pages hereto, that the Port Authority Lease with respect to the Property has been Executed and Delivered and is effective provided that if all Effective Time Funding Obligations are not made on the Effective Time, then (i) the Effective Time shall be deemed to not have occurred and the documents listed in Exhibit A shall not become effective, (ii) any Effective Time Funding Obligations made shall be immediately returned to the payor thereof by the recipient and the Party on whose behalf such payment was made and (iii) the Party or Parties failing to pay or make any such Effective Time Funding Obligations at the Effective Time shall be in breach of this Agreement.

"Effective Time Funding Obligations" means (i) the payment by wire transfer of immediately available funds of $208,333 by GWB Blue LLC for the benefit of Marketplace pursuant to Exhibit A-1 provided that Marketplace hereby authorizes and directs GWB Blue LLC to pay such $208,233 directly to Clearview Projects LLC in order to discharge the obligation of Marketplace to Clearview Projects LLC pursuant to Exhibit A-3, (ii) the payment by wire transfer of immediately available funds of $208,333 by GWB Ninety Nine LLC to Clearview Projects LLC pursuant to Exhibit A-5 and the delivery of a promissory note in the amount of $625,000 to Clearview Projects LLC by GWB Ninety Nine LLC pursuant to Exhibit A-5, i.e., the Membership Interest Purchase Agreement and (iii) the payment, by wire transfer of immediately available funds, of $208,334 by MG GWB LLC to Clearview Projects LLC. With respect to all wire transfers referred to in the preceding sentence, Clearview Projects LLC shall provide applicable bank account information to all necessary parties.

"Entity" means any entity of any kind or nature.

"Executed and Delivered and is Effective" and similar terms mean, with respect to the Port Authority Lease, that the Port Authority Lease has been executed and delivered by the Port Authority and the Project Owner and (except to the extent effectiveness is conditioned on the accuracy of the representations and warranties in Section 4(a) hereof) is effective.

"Executed Documents" means each of the documents set forth in Exhibit A that are stated as having been executed and delivered and that become effective on the Effective Time.

"including", "includes" and "include" means, respectively, including without limitation, includes without limitation and include without limitation.

"Interim Project Owner Amendment" means an amendment to the operating agreement of the Project Owner in the form of Exhibit B-1, which amendment provides for an acceleration of certain contributions to the Project Owner under the circumstances and to the extent set forth in such Amendment.

"Owner" means an owner of any ownership interest of any kind or nature, beneficially and/or of record, in any Person, including as a stockholder, member, partner or other owner of any kind or nature.

"Person" means any Entity and any individual, including any Party.

"Port Authority" means the Port Authority of New York and New Jersey.

"Previously Executed Documents" means each of the documents set forth in Exhibit B that have been executed and delivered and are currently effective.

"Project" means the development on the Property of approximately 130,000 square feet of retail space and the reconstruction of a bus station for the Port Authority of New York and New Jersey.

"Transfer" means to sell, assign, give, pledge, otherwise dispose of or otherwise transfer. "Transfer" as a noun has a correlative meaning.

2. Effective Time; Termination of this Agreement.

(a) The Interim Project Owner Amendment shall be effective when executed and delivered.

(b) Without any further consent on the part of any Party, the Effective Time of each Executed Document shall be two business days after the Project Owner or its representatives sends to each Party a notice to the Parties by e-mail (to the e-mail address listed in the signature pages) whether or not received, informing them that the Port Authority Lease has

been Executed and Delivered and is Effective, subject, however, to the requirement set forth in the definition of Effective Time.

(c) Within one business day after the Port Authority Lease has been Executed and Delivered and is Effective, the Project Owner shall provide e-mail notice (to the e-mail address listed in the signature pages hereto) to each Party that the Port Authority Lease has been Executed and Delivered and is Effective. The Parties acknowledge that the purposes of providing such e-mail notices are to facilitate that the transactions that are required to be effected on the Effective Time pursuant to the Executed Documents are in fact effected on the Effective Time.

(d) Notwithstanding anything to the contrary set forth in this Agreement or any document signed in connection with this Agreement, this Agreement shall be terminated without further action by any Party if the Port Authority Lease has not been Executed and Delivered and become Effective on or before November 30, 2011.

(e) Clearview Projects LLC agrees to deliver to each Party on the Effective Time prompt confirmation, by e-mail notice to the e-mail addresses on the signature pages of this Agreement, of its receipt of the three wire transfers and promissory note referred to in the definition of Effective Time Funding Obligations.

3. Executed Documents; Timing and Order of Funding Obligations.

(a) The Parties acknowledge and agree that each of the documents listed in Exhibit A have been executed and delivered and shall become effective at the Effective Time. The signatories to the documents listed on Exhibit B confirm that, except as otherwise noted in Exhibit B, such documents have been executed and delivered and are effective. The relevant parties agree to execute and deliver at the Effective Time the Promissory Notes in the form of Exhibit A-15 and A-16.

(b) The Parties acknowledge that there are three wire transfers that need to be effected on the Effective Time pursuant to the definition of Effective Time Funding Obligations in order for the Executed Documents to become effective. The Parties further acknowledge that they will coordinate such that (i) the wire transfer of $208,333 by GWB Blue LLC, on behalf of Marketplace, to Clearview Projects LLC shall be effected first and (ii) the two other wire transfers required to be effected pursuant to the definition of Effective Time Funding Obligations shall be thereafter effected.

4. Undertakings by Aaron Malinsky, Benjamin Malinsky and Paul Slayton.

Aaron Malinsky, Benjamin Malinsky and Paul Slayton each agree that they shall not, on and after the Effective Time, (i) have any role in the Project, (ii) have any right to acquire any role in the Project in the future or (iii) derive any benefit from the Project other than (a) Benjamin Malinsky's rights under the Benjamin Malinsky Consulting Agreement and (b) those certain Promissory Notes issued by GWB Ninety-Nine LLC to Paul Slayton listed in Exhibit A (the "Excepted Interests"). Capitalized terms used in this Section 4 and not otherwise previously defined have the meanings ascribed to such terms in Section 4(c). Notwithstanding the first sentence of this Section 4, Benjamin Malinsky may be a consultant in connection with the

Project upon and subject to the terms set forth in the Consulting Agreement with GWB Ninety Nine LLC in the form attached as Exhibit A-7 (the "Benjamin Malinsky Consulting Agreements"). Without limiting the generality of the first sentence of this Section 4, from and after the Effective Time:

(a) Each Restricted Individual represents, warrants and covenants severally, and not jointly and severally, to each of the Project Stakeholders that, except for the Excepted Interests on and after the Effective Time: (i) neither he nor any other Restricted Group Member, directly or indirectly, in any Capacity, will control, beneficially own or have an interest of any kind or nature in or to any Project Stakeholder or Project Vendor, (ii) he will not at any time and will not permit any other Restricted Group Member, at any time, directly or indirectly, in any Capacity, to control, beneficially own or have an interest of any kind or nature in or to any Project Stakeholder or any Project Vendor; (iii) in any Capacity, he has no, and will not have any, direct or indirect lien, encumbrance, claim or contractual relationship of any kind or nature on, against or with respect to the Project, and (iv) in any Capacity, he will not at any time, directly or indirectly accept or permit any other Restricted Group Member from directly or indirectly accepting any payment or other benefit to the extent such payment or benefit is directly or indirectly derived from or otherwise directly or indirectly relates to the Project. Notwithstanding the preceding provisions of this Section 4, the limitations on contractual relationships in this Section 4 are intended to be limited to the Project. Accordingly, it is understood and agreed that each of George Washington Bridge Bus Station Development Venture, LLC, GWB Development Partners, LLC, Marketplace GWB, LLC, GWB Blue, LLC, WMG Associates LLC, GWB Ninety Nine LLC, MG GWB, LLC and GWB IVY, LLC, and their direct and indirect owners, may continue to be involved in existing transactions and/or may be involved in new transactions with the Restricted Individuals that are unrelated to the Project.

(b) Each Party agrees, for the benefit of each of the other Project Stakeholders, that, on and after the Effective Time, except for the Excepted Interests, it will not consent to any circumstances in which any Restricted Group Member directly or indirectly acquires, and will not knowingly permit any Restricted Group Member to directly or indirectly acquire, at any time, any right, title, interest or other role of any kind or nature in or to any Project Stakeholder or the Project. To avoid doubt, each Party severally, and not jointly and severally, agrees not to directly or indirectly knowingly Transfer any interest in any Project Stakeholder to Aaron Malinsky, Benjamin Malinsky or Paul Slayton (except, to avoid doubt, Benjamin Malinsky may retain his rights under the Benjamin Malinsky Consulting Agreement).

(c) For the purposes of this Section 4, the following terms have the following meanings:

"in any Capacity" means in the capacity of or as an individual, director, manager, member, stockholder, partner, equity holder, other Owner, employee, consultant, agent, representative or in any other capacity.

"Project Vendor" means any entity that directly or indirectly provides any goods or services of any kind or nature to the Project or any Project Stakeholder.

"Project Stakeholder" means any of (a) George Washington Bridge Bus Station Development Venture LLC , (b) GWB Development Partners LLC, (c) GWB Blue, LLC, (d) Marketplace GWB LLC, (e) WMG Associates, LLC, (f) GWB Ninety Nine LLC, (g) MG GWB LLC, (h) GWB IVY, (i) The Port Authority of New York and New Jersey and (j) each beneficial owner, officer, director, representative, agent, successor and assigns of each of the foregoing entities.

"Restricted Group Member" means, as to a Restricted Individual (i) such Restricted Individual and (ii) any entity directly or indirectly controlled or beneficially owned by such Restricted Individual or in which such Restricted Individual has an interest of any kind or nature.

"Restricted Individual" means Aaron Malinsky, Benjamin Malinsky or Paul Slayton.

(d) Notwithstanding the preceding provisions of this Section 4, (i) neither Douglas Slayton or Douglas Slayton's children, is subject to such restrictions and (ii) Benjamin Malinsky, Aaron Malinsky's son, shall have the rights provided for in the Benjamin Malinsky Consulting Agreement.

(e) If any provision of this Section 4 or the application thereof to any Person(s) or circumstance(s) is invalid or unenforceable to any extent, (i) the remainder of this Agreement and the application of such provision to other Person(s) or circumstance(s) shall not be affected thereby, and (ii) each such provision that is not wholly unenforceable shall be enforced to the greatest extent permitted by applicable law.

5. Third Party Beneficiary Status. The Port Authority and each owner, officer, member, director, representative, agent, successor or assign of the Port Authority ("Third Party Beneficiary") is a third party beneficiary of the provisions of this Agreement, including that the Port Authority and each other Person referred to in this Section 5 has the full right to enforce the provisions thereof.

6. Other Agreements.

(a) As promptly as possible, from time to time, GWB Development Partners, LLC will pay to, or reimburse, GWB Blue LLC for its legal fees and expenses payable to Sills Cummis & Gross P.C., Marketplace, for its legal fees and expenses payable to Snider & Weinstein, and Clearview Projects LLC for its legal fees and expenses payable to Davis & Gilbert, incurred in connection with or otherwise relating to this Agreement, the Port Authority Lease and the documents listed on Exhibits A and B hereto, provided further that to the extent there are outstanding invoices as of the Effective Time, copies of which are to be provided to the Manager of GWB Development Partners, LLC such outstanding invoices shall be paid on the Effective Time if reasonably practical (and if not, within two business days after the Effective Time).

(b) On the Effective Time, the Marketplace Assignment (as that term is defined in Section 1 of Exhibit A) will be deemed to have occurred immediately prior to the

consummation of the redemption of a 3.52% interest in Marketplace by Marketplace from Clearview Projects LLC.

(c) The Parties agree that without the prior written consent of each Party other than a Restricted Individual, none of the Executed Documents shall be amended prior to the Effective Time. The Parties also agree not to amend any Executed Documents without the consent of a Restricted Individual to the extent that any such amendment would in any respect adversely affect a Restricted Individual.

(d) Each Party represents and warrants that the documents they signed that are listed in Exhibit A contains, in substance, the following provision:

> "This Agreement is an Exhibit to the Master Agreement dated of even date among George Washington Bridge Bus Station Development Venture LLC, GWB Development Partners, LLC, Marketplace GWB LLC, GWB Blue LLC and the other signatories thereto To the extent there is a conflict between the provisions of the Master Agreement and this Agreement, the provisions of the Master Agreement shall control. Anything in this Agreement to the contrary notwithstanding, this Agreement shall become effective at the Effective Time (as defined in the Master Agreement) and shall not become effective until and unless the Effective Time occurs. This Agreement shall terminate and be of no force or effect upon the termination of the Master Agreement in accordance with its terms."

7. Release. Aaron Malinsky, Paul Slayton and Clearview Projects LLC (f/k/a PA Developers LLC), each on behalf of itself, himself and his estate, heirs, representatives, agents and controlled affiliates, on the one hand, and each of the other Parties, each on behalf of himself or itself and his or its members, successors, assigns, representatives, agents and controlled affiliates, on the other hand (in such capacity all the foregoing Persons (including Aaron Malinsky and Paul Slayton) being referred to as a "Releasor")), hereby fully, forever, irrevocably and unconditionally releases and discharges each other (in such capacity, each a "Releasee") from all Released Claims (as defined below) that any one or more Releasors had or may have at any time through the date hereof against any one or more Releasees. For purposes of this Agreement:

"Claims" means all actions, causes of action, claims, interests, liabilities, damages, other obligations, grievances, disputes, demands, judgments and complaints of any kind or nature, in law, equity or otherwise, whether known or unknown, matured or unmatured, discoverable or not discoverable and/or fixed or contingent, which have arisen or are now arising or hereafter may arise, whether presently asserted or not.

"Excepted Claims" means all Claims to the extent the same are solely based on the respective rights and obligations of any one or more Releasors on the one hand, and any one or more Releasees, on the other hand, under this Agreement and each document referenced in Exhibit A hereto. For the avoidance of doubt, Excepted Claims includes, among other things,

the obligations of Aaron Malinsky and Paul Slayton under Section 4 of this Agreement (Undertakings by Aaron Malinsky, Benjamin Malinsky and Paul Slayton), Section 3 of the Membership Interest Purchase Agreement (as defined in Exhibit A)(Guaranty), and Section 5 of the Redemption Agreement (Guaranty).

"Released Claims" means all Claims to the extent the same (a) relate to the Property, GWB Development Partners, LLC, Marketplace, the Development Agreement being terminated and referenced in item 8 of Exhibit A hereto, the Property Management and Leasing Agreement being terminated and referenced in item 10 of Exhibit A hereto, or any other aspect of the Project and (b) do not constitute Excepted Claims.

8. Conflict of Interest. The Parties acknowledge that Sills Cummis & Gross, P.C. ("Sills Cummis") is acting as legal counsel on certain matters for the Project Owner and GWB Blue, LLC. Notwithstanding any conflict of interest that arises from or is on connection with such representations, each Party hereby waives all such conflicts of interest and hereby consents to the continued representation of the Project Owner and GWB Blue, LLC on certain matters by Sills Cummis; provided, however, if any claim is made or litigation arises between the Project Owner and GWB Blue, LLC, Sills Cummis shall only be permitted to continue its representation of GWB Blue, LLC and the Company will obtain separate counsel; provided further, however, the Company shall be permitted to select other counsel for any matter at any time in accordance with the provisions set forth in its organizational document and is no way prohibited by this conflict waiver from continuing to have other law firms represent the Project Owner or select counsel other than Sills Cummis in the future.

9. Other Provisions.

(a) This Agreement may be amended, at any time, in whole or in part, only by written instrument signed by the Party or Parties to be bound thereby.

(b) Notices must be in writing and will be deemed to be served and received at the time sent by e-mail at the e-mail address shown for each Party on the signature pages hereto.

(c) The waiver by any Party of a breach of any provision of this Agreement will not operate or be construed as a waiver of any subsequent breach by any Party.

(d) This Agreement will inure to the benefit of and be binding upon the parties to this Agreement, their successors, heirs, personal representatives and assigns, and will be construed in accordance with the laws of the State of New York, without giving effect to principles of conflicts of law.

(e) The failure of any Party to insist upon strict performance of a covenant hereunder or of any obligation hereunder, irrespective of the length of time for which such failure continues, shall not be a waiver of such Party's right to demand strict compliance in the future. No consent or waiver, express or implied, to or of any breach or default in the performance of any obligation hereunder, shall constitute a consent or waiver to or of any other breach or default in the performance of the same or any other obligation hereunder.

(f) This Agreement constitutes the full and complete agreement of the Parties hereto with respect to the subject matter hereof. This Agreement supersedes all prior or contemporaneous communications whether oral or written, between or among the Parties as to the subject matter hereof.

(g) Titles or captions of articles or sections contained in this Agreement are inserted only as a matter of convenience and for reference, and in no way define, limit, extend or describe the scope of this Agreement or the intent of any provision hereof.

(h) This Agreement may be executed in a number of counterparts, all of which together shall for all purposes constitute one Agreement, binding on all the Parties notwithstanding that all Parties have not signed the same counterpart. This Agreement may be executed and delivered via pdf and/or fax.

(i) Preparation of this Agreement shall for all purposes be deemed to be the joint efforts of the Parties, including that no provision shall be construed more severely against any Party.

(j) Without limiting the generality of any provision, each Party shall, from time to time, do any and all acts and things, including the execution of documents, as may reasonably be required to carry out the terms hereof and to consummate the transactions contemplated by, and to be in compliance with the agreements provided for in, this Agreement relating to him or it.

(k) If any provision or the application thereof to any Person(s) or circumstance(s) is invalid or unenforceable to any extent, (i) the remainder of this Agreemem and the application of such provision to other Person(s) or circumstance(s) shall not be affected thereby, and (ii) each such provision that is not wholly unenforceable shall be enforced to the greatest extent permitted by applicable law.

(l) Each Party represents and warrants that he or it has been advised by separate counsel of their choosing in connection with their rights and obligations under this Agreement.

(m) Each Party and each Third Party Beneficiary may seek injunctive relief from any court to enjoin a breach or threatened breach and/or may seek specific performance, without proof of damages or the posting of any consideration.

(n) Except as provided in Section 5 hereof, this Agreement is solely for the benefit of the Parties and no other Person is intended to be or is a third party beneficiary of this Agreement.

(o) Except as otherwise provided herein or in any Executed Document, each Party will pay the fees and expenses of his or its attorneys or other advisors in connection with this Agreement.

(p) Notwithstanding anything herein to the contrary the parties agree and acknowledge the following:

i. the consent identified in Item 6 of Exhibit B (the "Consent") has not been delivered by Acadia Strategic Opportunity Fund III LLC ("Acadia");

ii. the delivery of the Consent from Acadia will not be a condition precedent to the Effective Time;

iii. the form of the Consent attached as Item 6 of Exhibit B is acceptable to all parties;

iv. if and to the extent that any representations or warranties in the Master Agreement or any of the documents identified in the Master Agreement or related to the transactions involving the Property might be incorrect by virtue of the failure of Acadia to execute and deliver such Consent, then the party making such representation or warranty shall not be deemed to be in breach of such agreement or liable for the inaccuracy of such representation or warranty by virtue of such failure to obtain the Consent from Acadia;

v. no party shall have any claim against or seek recourse against any party to the extent that the basis of such claim is the failure of Acadia to execute and deliver the Consent; and

vi. the obligations of the parties with respect to the note held by Acadia which is the subject of the Consent shall be unaffected by the absence of such Consent.

George Washington Bridge Bus Station Development Venture LLC

By: GWB Development Partners, LLC,
sole Member

By: _____
Stephen J. Garchik,
Manager
E-Mail: sgarchik@sjmpartners.com

GWB Development Partners, LLC

By: _____
Stephen J. Garchik,
Manager
E-Mail: sgarchik@sjmpartners.com

Marketplace GWB LLC

By: _____
Stephen J. Garchik, Manager

E-Mail: sgarchik@sjmpartners.com

By: _____
Stephen McBride, Manager
E-mail: SMcBride@sjmpartners.com

By: _____
Douglas Slayton, Manager
E-Mail Address: dslayton@fourpointequities.com

George Washington Bridge Bus Station Development Venture LLC

By: GWB Development Partners, LLC, sole Member

By: _____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

GWB Development Partners, LLC

By: _____
Stephen J. Garchik, Manager
E-Mail: sgarchik@sjmpartners.com

Marketplace GWB LLC

By: _____
Stephen J. Garchik, Manager

E-Mail: sgarchik@sjmpartners.com

By: _____
Stephen McBride, Manager
E-mail: SMcBride@sjmpartners.com

By: _____
Douglas Slayton, Manager
E-Mail Address: ds@fouroneequities.com

George Washington Bridge Bus Station
Development Venture LLC

By: GWB Development Partners, LLC,
sole Member

By: _____
Stephen J. Garchik,
Manager
E-Mail: sgarchik@sjmpartners.com

GWB Development Partners, LLC

By: _____
Stephen J. Garchik,
Manager
E-Mail: sgarchik@sjmpartners.com

Marketplace GWB LLC

By: _____
Stephen J. Garchik, Manager

E-Mail: sgarchik@sjmpartners.com

By: _____
Stephen McBride, Manager
E-mail: SMcBride@sjmpartners.com

By: _____
Douglas Slayton, Manager
E-Mail Address: ds@fourstreetcapital.com

Delete email: ds@fourstreetcapital.com

GWB BLUE LLC

By: _____
Name: Raymond Gindi
Title: Authorized Signatory
E-Mail Address: rgindi@c21stores.com

WMG Associates LLC

By: _____
Name: Stephen J. Garchik, Manager
E-Mail Address: sgarchik@sjmpartners.com

SJM Partners, Inc.

By: _____
Name: Stephen J. Garchik
Title: President
E-Mail Address:sgarchik@sjmpartners.com

GWB Ninety Nine LLC

By: _____
Name: Doug Slayton
Title: Manager
E-Mail Address:ds@fouronecquitics.com

MG GWB LLC

By: _____
Name: Stephen J. Garchik, Manager
E-Mail Address:
sgarchik@sjmpartners.com

By: _____
Stephen McBride, Manager
E-Mail Address:
SMcBride@sjmpartners.com

WMQ Associates LLC

By:_____
Name: Stephen J. Gurchik, Manager
E-Mail Address: sgurchik@sjmpartners.com

SJM Partners, Inc.

By:_____
Name: Stephen J. Gurchik
Title: President
E-Mail Address: sgurchik@sjmpartners.com

GWB Ninety Nine LLC

By:_____
Name: Doug Slayton
Title: Manager
E-Mail Address: ds@fourcorneqpitics.com

MG GWB LLC

By:_____
Name: Stephen J. Gurchik, Manager
E-Mail Address:
sgurchik@sjmpartners.com

By:_____
Stephen McBride, Manager
E-Mail Address:
SMcBride@sjmpartners.com

WMG Associates LLC

By:_____
Name: Stephen J. Garchik, Manager
E-Mail Address: sgarchik@sjmpartners.com

SJM Partners, Inc.

By:_____
Name: Stephen J. Garchik
Title: President
E-Mail Address:sgarchik@sjmpartners.com

GWB Ninety Nine LLC

By:_____
Name: Doug Slayton
Title: Manager
E-Mail Address:ds@fouroneequities.com

MG GWB LLC

By:_____
Name: Stephen J. Garchik, Manager
E-Mail Address:
sgarchik@sjmpartners.com

By:_____
Stephen McBride, Manager
E-Mail Address:
SMcBride@sjmpartners.com

GWB IVY LLC

By: James Hyland
Name: James Hyland
Title: Manager
E-Mail Address: jhylands@aol.com

Clearview Projects LLC

By:_____
Name: Paul Slayton
Title: Manager
E-Mail Address: ps@slaytonventures.com

GWB IVY LLC

By:_____
Name: James Hyland
Title: Manager
E-Mail Address: jhylands@aol.com

Clearview Projects LLC

By:_____
Name: Paul Slayton
Title: Manager
E-Mail Address: ps@slaytonventures.com

Clearview Management Services LLC

By: Clearview Projects LLC
Title:

By: _____
Paul Slayton, Manager
E-Mail Address:ps@slaytonventures.com

Aaron Malinsky
E-Mail Address:am@pa-assoc.com

Paul Slayton
E-Mail Address:ps@slaytonventures.com

Benjamin Malinsky
E-Mail Address:bm@pa-assoc.com

Exhibits

Exhibits A-1 through A-14
Exhibits B-1 through B-4

Aaron Malinsky
E-Mail Address:am@ps-assoc.com

Paul Slayton
E-Mail Address:ps@slaytonventures.com

Benjamin Malinsky
E-Mail Address:bm@ps-assoc.com

Exhibits

Exhibits A-1 through A-14
Exhibits B-1 through B-4

Aaron Malinsky
E-Mail Address:am@pa-assoc.com

Paul Slayton
E-Mail Address:ps@slayboventures.com

Benjamin Millinsky
E-Mail Address:bm@pa-assoc.com

Exhibits

Exhibits A-1 through A-14
Exhibits B-1 through B-4

Exhibit A

1. GWB Blue LLC and Marketplace have executed and delivered an Assignment Agreement in the form of Exhibit A-1 (the "Marketplace Assignment") pursuant to which GW Blue LLC will purchase from Marketplace, in exchange for $208,333, 5.25% of the total ownership interest in GWB Development Partners, LLC such that, upon the consummation of such transaction, GWB Blue LLC will own 55.25% of GWB Development Partners, LLC and Marketplace will own 44.75% of GWB Development Partners, LLC. As set forth in Section 1 hereof, Marketplace hereby authorizes and directs GWB Blue LLC to pay such $208,333 directly to Clearview Projects LLC in order to discharge Marketplace's obligation to pay $208,333 to Clearview Projects LLC in connection with the redemption of a 3.52% interest that Clearview Projects LLC holds in Marketplace.

2. Marketplace and GWB Blue LLC have executed and delivered an amendment to the Operating Agreement of GWB Development Partners, LLC in the form of Exhibit A-2 to reflect the change in the ownership interests in GWB Development Partners, LLC caused by the Marketplace Assignment. Such amendment shall be effective on the Effective Time immediately after satisfaction of all Effective Time Funding Obligations.

3. Marketplace and Clearview Projects LLC have executed and delivered a Redemption Agreement in the form of Exhibit A-3 pursuant to which Marketplace will redeem a 3.52% interest held by Clearview Projects LLC in Marketplace in exchange for $208,333 in cash. The redemption shall occur on the Effective Time immediately after satisfaction of all Effective Time Funding Obligations.

4. The owners of Marketplace have executed and delivered an Amendment to the Operating Agreement of Marketplace in the form of Exhibit A-4 to reflect the change in ownership interests caused by the redemption of a portion of the membership interest of Clearview Projects LLC in Marketplace. The Amendment to the Operating Agreement of Marketplace shall be effective immediately upon satisfaction of all Effective Time Funding Obligations.

5. Clearview Projects LLC, Marketplace, WMG Associates LLC, GWB Ninety Nine LLC, MG GWB and GWB IVY have executed and delivered a Membership Interest Purchase Agreement (the "Membership Interest Purchase Agreement") whereby Clearview Projects LLC sells its remaining interests in Marketplace (after giving effect to the redemption of a 3.52% interest referred to above) in exchange for cash and a note from GWB Ninety Nine LLC to Clearview Projects LLC, all as more set forth in the Membership Interest Purchase Agreement in the form of Exhibit A-5 pursuant to which, among other things (i) the entire direct and/or indirect beneficial interest of each of Aaron Malinsky and Paul Slayton in Marketplace will be purchased on the Effective Time and (ii) each of Aaron Malinsky and Paul Slayton will have ceased to be a director, officer, manager or employee of each of Marketplace, GWB Development Partners, LLC and the Project Owner. The transactions provided for in the Membership Interest Purchase

Agreement shall be effective on the Effective Time upon the satisfaction of all Effective Time Funding Obligations.

6. Clearview Projects LLC, Aaron Malinsky, GWB Ninety Nine LLC and Paul Slayton have executed and delivered an agreement in the form of Exhibit A-6 pursuant to which Clearview Projects LLC agrees to distribute cash to Aaron Malinsky to and distribute a note issued by GWB Ninety Nine LLC to Clearview Projects LLC to Paul Slayton. Exhibit A-6 provides that the promissory note issued by GWB Ninety Nine LLC to Clearview Projects LLC in the face amount of $625,000 pursuant to Exhibit A-5 shall be distributed solely to Paul Slayton. Exhibit A-6 shall be effective immediately upon satisfaction of all Effective Time Funding Obligations.

7. GWB Ninety Nine LLC and Benjamin Malinsky have executed and delivered a Consulting Agreement in the form of Exhibit A-7.

8. The Project Owner and Clearview Management Services, LLC have executed and delivered an agreement terminating the existing Development Agreement, which termination agreement is in the form of Exhibit A-8 and The Project Owner and SJM Partners, Inc. have executed and delivered an agreement terminating the existing Construction Management Agreement, which term is in the form of Exhibit A-9.

9. The Project Owner and SJM Partners, LLC have executed and delivered a new development services and construction management agreement in the form of Exhibit A-10.

10. The Project Owner and Clearview Management Services LLC have executed and delivered an agreement terminating the current Property Management and Leasing Agreement in the form of Exhibit A-11.

11. GWB Ninety Nine LLC, as Manager, and Project Owner have executed and delivered a New Property Management and Leasing Agreement in the form of Exhibit A-12.

12. Chera release and termination letter, in the form of Exhibit A-13.

13. After giving effect to the transactions to be effected on the Effective Time, the owners of Marketplace have executed and delivered an Amended and Restated Operating Agreement of Marketplace in the form of Exhibit A-14.

14. The Promissory Note in the amount of $625,000 payable by GWB Ninety Nine LLC to Marketplace, and the Promissory Note in the amount of $208,333 payable by GWB Ninety Nine LLC to Paul Slayton, in the form of Exhibit A-15 and A-16 will be executed and delivered at the Effective Time.

Exhibit B

1. GW Blue LLC and Marketplace have executed and delivered the Interim Project Owner Amendment in the form of Exhibit B-1.

2. PA Developers, LLC has executed and delivered and filed an amendment to its constituent documents to effect a change of name to Clearview Projects LLC, in the form of Exhibit B-2.

3. PA - GWB, LLC has executed and delivered and filed an amendment to its constituent documents to effect a change of name to Marketplace GWB, LLC, in the form of Exhibit B-3.

4. Organizational documents of GWB IVY LLC, for the purposes of becoming a member of Marketplace, have been executed and delivered.

5. Organizational documents of MG GWB LLC, for the purposes of becoming a member of Marketplace, have been executed and delivered.

6. As of June 3, 2011, Acadia refused to deliver a consent in the form of Exhibit B-4.

Exhibit A-1

ASSIGNMENT

OF

MEMBERSHIP INTEREST

IN

GWB Development Partners LLC

THIS ASSIGNMENT is entered into this 3rd day of June, 2011, by and between Marketplace GWB, LLC (f/k/a PA-GWB, LLC) ("Assignor") and GWB Blue LLC ("Assignee").

WITNESSETH:

WHEREAS, GWB Development Partners, LLC is a New York limited liability company formed pursuant to the Articles of Organization filed with the State of New York Department of State on June 30, 2010 and that certain Operating Agreement, dated August 23, 2010 (the "Operating Agreement;" any capitalized term used herein and not otherwise defined herein shall have the meaning ascribed to such term in the Operating Agreement);

WHEREAS, prior to giving effect to the transactions contemplated hereby, the Assignor is a Member that has a 50% Percentage Interest and the Assignee is a Member with a 50% Percentage Interest; and

WHEREAS, the Assignor desires to sell, assign and transfer to Assignee a 5.25% Percentage Interest (the "Transferred Percentage Interest") and Assignee desires to accept from the Assignor the Transferred Percentage Interest pursuant to the terms and conditions of this Assignment.

NOW, THEREFORE, in consideration of Two Hundred Eight Thousand Three Hundred Thirty-Three and xx/100 Dollars ($208,333), the mutual promises of the parties hereto, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged by each party, the parties hereto covenant and agree as follows:

1. Assignment. The Assignor hereby sells, assigns and transfers all of its right, title and interest in the Transferred Percentage Interest to Assignee free and clear of all Encumbrances (as defined below).. Assignor and Assignee acknowledge agree that after giving effect to such sale, assignment and transfer to the Transferred Percentage Interest, the Percentage Interest of Assignor and Assignee is respectively, 44.75% and 55.25%.

2. Assumption. Assignee hereby accepts the aforesaid assignment and assumes, and agrees to pay and perform, all of Assignor's obligations under the Agreement to the extent such obligations (a) related to the Transferred Percentage Interests and (b) are to be paid or performed after and relate to the period after the effectiveness of this Assignment (the "Assumed Obligations"); it being acknowledged and agreed that any of Assignor's obligations under the

Agreement that relate to the Transferred Percentage Interest and do not constitute Assumed Obligations (the "Retained Obligations") shall be the responsibility of Assignor, and Assignor shall timely perform and pay when due all the Retained Obligations.

3. Representations and Warranties of Assignor. Assignor hereby represents and warrants to Assignee as follows:

(a) Formation; Existence. Assignor is a limited liability company duly formed, validly existing and in good standing under the laws of the State of New York, and has all requisite power and authority to execute, deliver and perform its obligations under this Assignment. Assignor is not a "foreign person" within the meaning of Section 1445 of the Internal Revenue Code of 1986, as amended (the "Code"). Assignor will furnish Assignee with an affidavit that satisfies the requirements of Section 1445(b)(2) of the Code.

(b) Power and Authority. Assignor has all requisite power and authority to enter into this Assignment, to perform its obligations hereunder, and to consummate the transactions contemplated hereby. The execution, delivery and performance of this Assignment, the sale, assignment and transfer of the Transferred Percentage Interest by Assignor, and the consummation of the transactions provided for in this Assignment have been duly authorized by all necessary action on the part of Assignor. This Assignment has been duly executed and delivered by Assignor and constitutes the legal, valid and binding obligation of Assignor, enforceable against Assignor in accordance with its terms, except as such enforceability may be limited by bankruptcy, insolvency, reorganization, moratorium or other laws affecting creditors' rights and by general principles of equity (whether applied in a proceeding at law or in equity).

(c) No Conflicts. The execution, delivery and compliance with, and performance of the terms and provisions of, this Assignment, and the transfer of the Transferred Percentage Interest by Assignor will not conflict with or result in any violation of, the laws of the State of New York or the United States of America.

(d) Transferred Percentage Interest. Assignor is the sole owner and holder of the Transferred Percentage Interest and such Transferred Percentage Interest is held by Assignor free and clear of any lien, pledge, charge, security interest, encumbrance, title retention agreement, adverse claim, subscription, warrant, call, unsatisfied preemptive right, option or other agreement of any kind to purchase or otherwise to receive from Assignor the Transferred Percentage Interest and there are no instruments or agreements by which the Transferred Percentage Interest is bound or pursuant to which the Transferred Percentage Interest might be restricted or otherwise encumbered (collectively, the "Encumbrances") other than those contained in the Operating Agreement. Upon the sale, assignment and transfer of the Transferred Percentage Interest by Assignor to Assignee contemplated hereby, Assignee will receive such Transferred Percentage Interest free and clear of any Encumbrances.

(e) Litigation; Decrees. Neither Assignor nor the Transferred Percentage Interest is a party to, or subject to or bound by, any judgment, order, writ, injunction or decree of any court, arbitrator, administrative agency, or commission or other governmental authority or instrumentality, individually or in the aggregate, that is pending or, to the best knowledge of

Assignor, threatened that has or could be reasonably likely to have a material adverse effect on the ability of Assignor to consummate the transactions contemplated hereby.

4. Representations and Warranties of Assignee. Assignee hereby represents and warrants to Assignor a that this Assignment has been duly executed and delivered by Assignee and constitutes the legal, valid and binding obligation of Assignee, enforceable against Assignee in accordance with its terms, except as such enforceability may be limited by bankruptcy, insolvency, reorganization, moratorium or other laws affecting creditors' rights and by general principles of equity (whether applied in a proceeding at law or in equity).

5. Indemnification. Assignor and Assignee (each in such capacity, the "Indemnitor") hereby agrees to indemnify and hold harmless the other and such other's agents, representatives, employees, partners, members, directors, officers, successors, assigns, shareholders and affiliates (collectively, in such capacity the "Indemnitees") from and against any claims, damages, losses, liabilities, costs and expenses, including, without limitation, reasonable attorneys' fees and costs of suit (collectively, "Losses") incurred or suffered by any one or more Indemnitees to the extent such Losses arise out or result from any breach or default by such Indemnitor of any covenant, agreement, representation or warranty of such Indemnitor contained in this Assignment; provided, that, if any breach or default of the provisions of Section 2 hereof also constitutes a breach or default of or under the Operating Agreement beyond any applicable grace or cure period, then provisions of the Operating Agreement shall control and the provisions of this Section 5 shall not be applicable to such breach or default.

6. Effective Time; Termination; Etc.. This Assignment is an Exhibit to the Master Agreement, dated as of the date hereof (the "Master Agreement"), by and among. among George Washington Bridge Bus Station Development Venture LLC, GWB Development Partners, LLC, Assignor, Assignee and the other signatories thereto. To the extent there is a conflict between the provisions of the Master Agreement and this Assignment, the provisions of the Master Agreement shall control. Anything in this Assignment to the contrary notwithstanding, this Assignment shall not become effective until the Effective Time (as defined in the Master Agreement). This Assignment shall terminate and be of no force or effect upon the termination of the Master Agreement in accordance with its terms.

7. Miscellaneous. This Assignment shall be binding upon and inure to the benefit of the parties hereto and their respective permitted successors and assigns. This Assignment may be executed in counterparts, each of which shall be deemed to be an original but all of which shall be one and the same document. This Assignment shall be construed and interpreted in accordance with, and governed by, the substantive law of the State of New York, without giving effect to principles of conflicts of law.

IN WITNESS WHEREOF, the parties hereto have executed this Assignment on the date first hereinabove written.

ASSIGNOR

Marketplace-GWB, LLC
(f/k/a PA-GWB, LLC)

By: _____
Paul Slayton, Manager

By: _____
Stephen J. Garchik, Manager

ASSIGNEE:

GWB Blue LLC

By: _____
Name:
Title:

IN WITNESS WHEREOF, the parties hereto have executed this Assignment on the date first hereinabove written.

ASSIGNOR

Marketplace-GWB, LLC
(f/k/a PA-GWB, LLC)

By: _____
Aaron Malinsky, Manager

By: _____
Stephen J. Gurchik, Manager

ASSIGNEE:

GWB Blue LLC

By: _____
Name:
Title:

IN WITNESS WHEREOF, the parties hereto have executed this Assignment on the date first hereinabove written.

ASSIGNOR

Marketplace-GWB, LLC
(f/k/a PA-GWB, LLC)

By: _____
Aaron Malinsky, Manager

By: _____
Stephen J. Garchik, Manager

ASSIGNEE:

GWB Blue LLC

By: _____
Name: Raymond Gindi
Title: Authorized Signatory

Exhibit A-2

GWB Development Partners LLC

SECOND AMENDMENT TO OPERATING AGREEMENT

THIS SECOND AMENDMENT TO OPERATING AGREEMENT (this "Amendment") is entered into this 3rd day of June, 2011 by the undersigned.

RECITALS

WHEREAS, GWB Development Partners LLC (the "Company") was formed pursuant to Articles of Organization filed with the State of New York Department of State on June 30, 2010 and that certain Operating Agreement dated August 23, 2010, as amended (the "Agreement;" any capitalized term used herein and not otherwise defined herein shall have the meaning ascribed to such term in the Agreement);

WHEREAS, to reflect certain changes to the Agreement, the Members desire to enter into this Amendment, as more fully set forth herein.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, and in consideration of the agreements hereinafter set forth, the undersigned hereby agrees as follows:

1. PA-GWB LLC changed its name to Marketplace-GWB, LLC. All references in the Agreement to PA-GWB LLC shall be deemed to hereinafter refer to Marketplace-GWB, LLC.

2. Schedule A to the Agreement is hereby deleted in its entirety and Schedule A attached hereto is inserted in lieu thereof.

3. New subsections (xx), (yy) and (zz) are hereby added to Definitions, Section 1.7 of the Agreement as follows:

(xx) "Additional Capital Contribution Preferred Return" shall mean an amount equal to twelve percent (12%) annual return compounded annually on a Member's weighted average Unrecovered Additional Capital Contribution from the date such Additional Capital Contribution was made determined on a daily basis, less the aggregate distributions made to such Member under Section 2.9(a) of the Agreement.

(yy) "Additional Capital Contributions" shall mean amounts contributed by all Members pursuant to Section 2.3 that are not Default Advances.

(zz) "Unrecovered Additional Capital Contribution" shall mean for each Member at any point in time, the amount by which such Member's aggregate Additional Capital Contributions made pursuant to Section 2.2 to the Company exceed the aggregate amounts that have previously been distributed to such Member pursuant to Section 2.9(b) and excluding any amounts distributed to the Members for their respective Additional

Capital Contribution Preferred Returns pursuant to Section 2.9(a); provided, that in no event shall the Unrecovered Additional Capital Contribution for any Member be less than zero."

4. Intentionally omitted.

5. The definition of Preferred Return in Section 1.7(kk) of the Agreement is deleted and the following is inserted in lieu thereof:

"(kk) "Preferred Return," with respect to any Member, shall mean an amount equal to a seven percent (7%) annual return compounded annually on such Member's weighted average Unrecovered Capital Contributions from the date contributed determined on a daily basis, less the aggregate distributions made to such Member under Section 2.9(c) below from the date of this Agreement."

6. The definition of Unrecovered Capital Contributions in Section 1.7(ww) of the Agreement is deleted and the following is inserted in lieu thereof:

"(ww) "Unrecovered Capital Contributions" shall mean for each Member at any point in time, the amount by which such Member's aggregate Capital Contributions to the Company exceed the aggregate amounts that has previously been distributed to any Member pursuant to Section 2.9(d) and (e) and excluding any amounts distributed to the Members for their respective Preferred Returns pursuant to Section 2.9(c); provided, that in no event shall the Unrecovered Capital Contribution for any Member be less than zero."

7. Section 2.9 of the Agreement is hereby deleted and the following Section 2.9 is inserted in lieu thereof:

"2.9 Distribution of Distributable Cash.

Distributed Cash for each fiscal year shall be distributed to the Members in accordance with the following order of priority:

(a) First, to the Members in proportion to and to the extent of their respective Additional Capital Contribution Preferred Returns;

(b) Second, to the Members, in proportion to and to the extent of their respective Unrecovered Additional Capital Contributions;

(c) Third, to the Members in proportion to and to the extent of their respective Preferred Returns;

(d) Fourth, to the Investing Member, an amount equal to $2,500,000 of its Unrecovered Capital Contributions;

(e) Fifth, to the Members, in proportion to and to the extent of their respective Unrecovered Capital Contributions; and

(f) Sixth, the balance, to the Members pro rata in accordance with their respective Percentage Interests."

8. Section 3.1(d)(1) of the Agreement is revised to delete all the words appearing after the words "this Section 3.1(d)," and in lieu thereof insert:

"if (A) such Managing Member commits fraud or gross negligence in the performance of its duties and obligations as Managing Member, (B) all costs to develop and construct the Project (including, without limitation, all line item costs described in the Project Budget) exceed the Project Budget by more 15% (provided, however, that if such excess results from a force majeure, the Investing Member shall not have the right to reclassify the Managing Member's interest hereunder, (C) without duplication of the immediately preceding clause (A), the Managing Member (I) materially breaches or defaults upon, or causes, permits or authorizes the Company to materially breach or default upon, the terms of this Agreement, the Port Authority Lease (as defined in the Master Agreement), or any agreement or other instrument that memorializes a third party loan or credit facility where the GW Venture or the Company is the borrower or a guarantor, provided, however, the foregoing shall be inapplicable if the breach or default occurs due to a lack of funds of the Company (II) breaches or causes, permits or authorizes the Company or any other Person to breach Section 4(b) of the Master Agreement, dated as of the date hereof (the "Master Agreement"), by and among. among George Washington Bridge Bus Station Development Venture LLC, the Company, the Members and the other signatories thereto or (D) the Managing Member or one of its Affiliates materially breaches the Development Agreement (Exhibit F), the Property Management and Leasing Agreement (Exhibit G), the Construction Management Services Agreement (Exhibit H) or any other service agreement to which any of them is party relating to the construction, development and/or management of the Property (collectively, the "Related Party Service Agreements").

9. A new Section 3.1(e) is hereby added as follows:

"Notwithstanding any provision to the contrary in this Agreement, the New Development Agreement (herein defined), the New Property Management and Leasing Agreement (herein defined) and/or any other agreement pursuant to which the Managing Member or any of its Affiliates is a party ("Other Agreement"), in the event the Managing Member or its Affiliates is in default of any of the Other Agreements, GWB Blue LLC shall provide notice on behalf of Owner of an event of default under such Other Agreement and in the event such default is not cured in the time period provided in such Other Agreement, GWB Blue LLC may terminate such Other Agreement."

10. Section 3.5(b) is amended and restated in its entirety as follows:

"The following fees shall be paid pursuant to agreements entered into by GW Venture or the Company: (i) fees in accordance with the terms of the New Development Agreement, (ii) a leasing fee in accordance with the terms of the New Property Management and Leasing Agreement, (iii) a property management fee equal to 3% of the effective gross income payable to an affiliate or the Managing Member under the terms of the New

Property Management and Leasing Agreement and a [property management] fee equal to 1% of the effective gross income payable to an affiliate or the Investing Member. Any leasing fees to third parties shall be paid in such amounts on then-current market terms and conditions."

11. A new Section 3.5(c) is hereby added as follows:

"The parties acknowledge and agree that GW Venture has a twelve percent (12%) contingency with respect to the Reserved Premises (as such term is defined in the Port Authority Lease) and that any unused portion of the Contingency is to be retained by GW Venture."

12. Section 3.9 of the Agreement is deleted and the following is inserted in lieu thereof:

"3.9 Bank Accounts. The Managing Member shall establish and maintain at a nationally recognized banking institution (each a "Company Group Bank") one or more bank accounts in the name of the Company and the GW Venture (collectively, the "Company Group" and such bank accounts being referred to as the "Company Group Bank Accounts") consistent with the provisions of this Section 3.9. The Managing Member shall deposit or cause the Company Group to deposit all cash of Company Group in one or more of the Company Group Bank Accounts. Only an authorized representative of the Managing Member approved by the Investor Member (an "Authorized MM Signatory") or an authorized representative of the Investor Member approved by the Managing Member (an "Authorized IM Signatory" and together each Authorized MM Signatory, the "Authorized Signatories") shall have the right to sign checks or authorize withdrawals from Company Group Banks Accounts; provided, that any such checks or withdraws in excess of $50,000 shall require the signature or written authorization of one Authorized MM Signatory and one Authorized IM Signatory. The Members agree that James Hyland and Stephen McBride shall be the initial Authorized MM Signatories. Zuri Sultan and Raymond Gindi shall be the initial Authorized IM Signatories. Each Member shall have the right to (a) remove any of its corresponding Authorized Signatories by deliver of notice to such effect to the other Member, and (b) designate one or more Authorized Signatories, provided, that (I) any such designation shall be subject to the written approval of the other Member which approval shall not be unreasonably withheld, delayed or conditioned and (II) no Member shall have more than three Authorized Signatories corresponding to it at any one time. If a Member or any of its Affiliates commits fraud or gross negligence in the performance of its duties hereunder or under any Related Party Service Agreement, then the other Member shall have the right to remove or cause the Company Group to remove all Authorized Signatories corresponding to such Member. Subject to the provisions of this Agreement (including, without limitation this Article III), each Member shall have the fiduciary responsibility for safekeeping of all funds of the Company and the GW Venture. The funds of the Company Group shall not be commingled with funds of any other Person. No Member shall employ or permit or authorize the Company Group or any other Person to employ Company Group funds in any manner except for the benefit of the Company Group. Each Member shall have the right to execute, on behalf of itself, the Company or the GW

Venture, all such instruments and other documents as may be required or requested by any Company Group Bank to implement any of the provisions of this Section 3.9"

13. The Development Agreement attached as Exhibit F to the Agreement and the Property Management and Leasing Agreement attached as Exhibit G to the Agreement are replaced with the Development Service Agreements attached hereto as Exhibit F (the "New Development Agreement") and the Property Management and Leasing Agreement attached hereto as Exhibit G (the "New Property Management and Leasing Agreement").

14. Except as amended herein, the Agreement is hereby confirmed to remain in full force and effect.

15. This Amendment may be executed in counterparts, each of which shall be deemed to be an original but all of which shall be one and the same document.

16. This Amendment is an Exhibit to the Master Agreement. To the extent there is a conflict between the provisions of the Master Agreement and this Assignment, the provisions of the Master Agreement shall control. Anything in this Amendment to the contrary notwithstanding, this Amendment shall not become effective until the Effective Time (as defined in the Master Agreement). This Amendment shall terminate and be of no force or effect upon the termination of the Master Agreement in accordance with its terms.

[The remainder of this page is intentionally left blank.]

IN WITNESS WHEREOF, the Members have executed this Amendment as of the date first above written.

MEMBERS:

Marketplace-GWB, LLC

By: _____
Stephen J. Gurchik
Manager

GWB Blue LLC,
a New York limited liability company

By: _____
Name: _____
Title: _____

IN WITNESS WHEREOF, the Members have executed this Amendment as of the date first above written.

MEMBERS:

Marketplace-OWB, LLC

By:_____
Stephen J. Garchik
Manager

OWB Blue LLC,
a New York limited liability company

By: _____
Name: Raymond Gindi
Title: Authorized Signatory

EXHIBIT A

MEMBERS OF GWB DEVELOPMENT PARTNERS LLC

Members	Capital Contribution	Percentage Interest
Marketplace-GWB, LLC 250 West 57th Street, Suite 1120 New York, New York 10107	$2,500,000	44.75%
GWB Blue LLC 22 Cortlandt Street, 5th Floor New York, New York 10007	$5,000,000	55.25%

Exhibit A-3

REDEMPTION AGREEMENT

This Redemption Agreement (the "Agreement") is entered into this 3rd day of June, 2011 by and between Clearview Projects, LLC (f/k/a PA Developerss, LLC) (the "Retiring Partner") and Marketplace-GWB, LLC (f/k/a PA-GWB, LLC) (the "Company").

The Retiring Partner owns a 70% membership interest in the Company (the "Membership Interest"). The Company desires to redeem a 3.52% membership interest in the Company (the "Redeemed Interest") and the Retiring Partner desires to sell the Redeemed Interest (the "Redemption") in exchange for $208,333 under the terms and conditions set forth below.

The parties agree as follows:

1. **Redemption.** In satisfaction of the terms and conditions set forth in this Agreement, the Retiring Partner's Redeemed Interest is hereby redeemed in exchange for the payment to the Retiring Partner by the Company of Two Hundred Eight Thousand Three Hundred Thirty Three Dollars ($208,333.00).

2. **Representations of Retiring Partner.** The Retiring Partner represents and warrants to the Company that:

(a) This Agreement is a valid and binding obligation of the Retiring Partner, enforceable against the Retiring Partner in accordance with its terms, except insofar as such enforceability may be affected by bankruptcy, insolvency or similar laws affecting creditors' rights generally and the availability of any particular equitable remedy.

(b) The Retiring Partner owns the Redeemed Interest. The Retiring Partner has not sold, assigned or otherwise disposed of all or any portion of the Membership Interest and the Membership Interest is free of any liens, security interests, encumbrances or other restrictions, whether existing of record or otherwise. Following the transfer provided for in this Agreement, Retiring Partner will have no further interest in or claims against the Company with respect to the Redeemed Interest, except for the satisfaction of the terms of this Agreement and The Company hereby releases the Retiring Partner from any and all liabilities in respect of the Redeemed Interest.

(c) The execution of this Agreement by the Retiring Partner and the performance of its obligations under this Agreement will not violate any contract, mortgage, indenture, or other similar restriction to which the Retiring Partner is a party or by which its assets are bound.

(d) Neither the execution nor the delivery of this Agreement nor the consummation of the transactions contemplated in this Agreement nor fulfillment of or compliance with the terms and conditions of this Agreement (a) conflict with or will result in a breach of any of the terms, conditions or provisions of any agreement, order, judgment, decree, arbitration award, statute, regulation or instrument to which the Retiring Partner is a party or by which it or its assets are bound, or (b) constitutes or will constitute a breach, violation or default under any of the

foregoing. No consent or approval, authorization, order, regulation or qualification of any governmental entity or any other person is required for the execution and delivery of this Agreement and the consummation of the transactions contemplated by this Agreement by the Retiring Partner.

(e) The Retiring Partner has been given the opportunity to obtain all such information from the Company it deemed appropriate to make an informed decision to dispose of the Redeemed Interest, and is relying upon the advice of his own personal, legal and tax advisors with respect to the tax and other aspects of disposing of the Redeemed Interest.

(f) The Retiring Partner is not a "foreign corporation", "foreign partnership" or "foreign estate" as those terms are defined in the Internal Revenue Code of 1986, as amended, and the Retiring Partner will deliver to the Company such further assurances as the Company shall reasonably request, including a duly executed affidavit to this effect.

3. **Representations and Warranties of the Company.** The Company represents and warrants to the Retiring Partner as follows:

(a) The Company is duly organized and validly existing under the laws of the State of New York and has been duly authorized by all necessary and appropriate limited liability company action to enter into this Agreement and to consummate the transactions contemplated in this Agreement. This Agreement is a valid and binding obligation of the Company enforceable in accordance with its terms, except as such enforcement may be limited by bankruptcy, insolvency, reorganization, moratorium or similar laws affecting the enforcement of creditors' rights generally.

(b) The execution of this Agreement by the Company and the performance of its obligations under this Agreement will not violate any contract, mortgage, indenture, or other similar restriction to which the Company is a party or by which the Company is bound.

(c) Neither the execution nor the delivery of this Agreement nor the consummation of the transactions contemplated in this Agreement nor fulfillment of or compliance with the terms and conditions of this Agreement (a) conflict with or will result in a breach of any of the terms, conditions or provisions of (i) the organizational and governing documents of the Company or (ii) any agreement, order, judgment, decree, arbitration award, statute, regulation or instrument to which the Company is a party or by which it or its assets are bound, or (b) constitutes or will constitute a breach, violation or default under any of the foregoing. No consent or approval, authorization, order, regulation or qualification of any governmental entity or any other person is required for the execution and delivery of this Agreement and the consummation of the transactions contemplated by this Agreement by the Company which has not been obtained.

4. **Indemnification.**

(a) The Retiring Partner covenants and agrees to indemnify the Company and hold it harmless against and with respect to any and all damage, loss, liability, deficiency, cost and expense, including reasonable attorneys' fees, (i) resulting from any misrepresentation, breach of warranty or non-fulfillment of any agreement or covenant on the part of the Retiring Partner under this Agreement and (ii) from any and all actions, suits, proceedings, demands, assessments, judgments, costs and legal and other expenses incident to any of the foregoing.

(b) The Company covenants and agrees to indemnify the Retiring Partner and hold it harmless against and with respect to any and all damage, loss, liability, deficiency, cost and expense, including reasonable attorneys' fees, (i) resulting from any misrepresentation, breach of warranty or non-fulfillment of any agreement or covenant on the part of the Company under this Agreement and (ii) from any and all actions, suits, proceedings, demands, assessments, judgments, costs and legal and other expenses incident to any of the foregoing.

5. **Guaranty**. To induce the Company to enter into this Agreement which shall benefit the Retiring Partner, which are and will be to the direct benefit and advantage of the Guarantors (as hereinafter defined), Aaron Malinsky and Paul Slayton (the "Guarantors") hereby jointly and severally, irrevocably and unconditionally guarantee to the Company any and all damage, loss, liability, deficiency, cost and expense, including reasonable attorneys' fees, (i) resulting from any misrepresentation, breach of warranty or non-fulfillment of any agreement or covenant on the part of Retiring Partner under this Agreement and (ii) from any and all actions, suits, proceedings, demands, assessments, judgments, costs and legal and other expenses incident to the foregoing. Guarantors agree that if Retiring Partner does not pay any liability, obligation or indemnification hereunder, Guarantors shall immediately make such payment.

6. **Survival of Representations and Warranties.** All representations, warranties, covenants and agreements of any of the parties hereto made in this Agreement shall survive the execution and delivery of this Agreement, the closing, and the execution and delivery of all related instruments and documents.

7. **Integration, Interpretation and Miscellaneous.** This Agreement sets forth the entire understanding of the parties with respect to the subject matter of this Agreement and it shall not be changed or terminated orally. This Agreement shall be construed in accordance with the laws of the State of New York. This Agreement may be executed simultaneously in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. This Agreement shall be binding upon and inure to the benefit of the parties and their respective heirs, personal representatives, and successors, or successors and assigns, as the case may be. The headings in this Agreement are for reference purposes only and shall not affect the meaning or interpretation of this Agreement.

8. **Further Assurances.** The Company and the Retiring Partner hereby agree, upon reasonable request, to execute and deliver any and all further assurances, assignments, instruments, certificates and other documents, as may be reasonably necessary to effectuate the intent of this Agreement.

9. **Effective Time; Termination; Etc..** This Agreement is an Exhibit to the Master Agreement, dated as of the date hereof (the "Master Agreement"), by and among, among George Washington Bridge Bus Station Development Venture LLC, GWB Development Partners, LLC, Retiring Partner, the Company and the other signatories thereto. To the extent there is a conflict between the provisions of the Master Agreement and this Agreement, the provisions of the Master Agreement shall control. Anything in this Agreement to the contrary notwithstanding, this Agreement shall not become effective until the Effective Time (as defined in the Master Agreement). This Agreement shall terminate and be of no force or effect upon the termination of the Master Agreement in accordance with its terms.

The parties have entered into this Agreement as of the date set forth in the introductory paragraph of this Agreement.

RETIRING PARTNER:

Clearview Projects, LLC
(f/k/a PA Developers, LLC)

By: _____
Name: Paul Slayton
Title: manager

Marketplace-GWB, LLC
(f/k/a PA-GWB, LLC):

Marketplace-GWB, LLC
(f/k/a PA-GWB, LLC)

By: _____
Stephen J. Garchik, Manager

By: _____
Paul Slayton, Manager

8. **Further Assurances.** The Company and the Retiring Partner hereby agree, upon reasonable request, to execute and deliver any and all further assurances, assignments, instruments, certificates and other documents, as may be reasonably necessary to effectuate the intent of this Agreement.

9. **Effective Time; Termination; Etc.** This Agreement is an Exhibit to the Master Agreement, dated as of the date hereof (the "Master Agreement"), by and among, among George Washington Bridge Bus Station Development Venture LLC, GWB Development Partners, LLC, Retiring Partner, the Company and the other signatories thereto. To the extent there is a conflict between the provisions of the Master Agreement and this Agreement, the provisions of the Master Agreement shall control. Anything in this Agreement to the contrary notwithstanding, this Agreement shall not become effective until the Effective Time (as defined in the Master Agreement). *This Agreement shall terminate and be of no force or effect upon the termination of* the Master Agreement in accordance with its terms.

The parties have entered into this Agreement as of the date set forth in the introductory paragraph of this Agreement.

RETIRING PARTNER:

Clearview Projects, LLC
(f/k/a PA Developers, LLC)

By: _____
Name:
Title:

Marketplace-GWB, LLC
(f/k/a PA-GWB, LLC):

Marketplace-GWB, LLC
(f/k/a PA-GWB, LLC)

By: _____
Stephen J. Gurchik, Manager

By: _____
Aaron Malinsky, Manager

8. **Further Assurances.** The Company and the Retiring Partner hereby agree, upon reasonable request, to execute and deliver any and all further assurances, assignments, instruments, certificates and other documents, as may be reasonably necessary to effectuate the intent of this Agreement.

9. ***Effective Time; Termination; Etc..*** *This Agreement is an Exhibit to the Master* Agreement, dated as of the date hereof (the "Master Agreement"), by and among, among George Washington Bridge Bus Station Development Venture LLC, GWB Development Partners, LLC, Retiring Partner, the Company and the other signatories thereto. To the extent there is a conflict between the provisions of the Master Agreement and this Agreement, the provisions of the Master Agreement shall control. Anything in this Agreement to the contrary notwithstanding, this Agreement shall not become effective until the Effective Time (as defined in the Master Agreement). This Agreement shall terminate and be of no force or effect upon the termination of the Master Agreement in accordance with its terms.

The parties have entered into this Agreement as of the date set forth in the introductory paragraph of this Agreement.

RETIRING PARTNER:

Clearview Projects, LLC
(f/k/a PA Developers, LLC)

By: _____
Name:
Title:

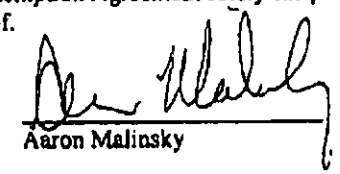
Marketplace-GWB, LLC
(f/k/a PA-GWB, LLC):

Marketplace-GWB, LLC
(f/k/a PA-GWB, LLC)

By: _____
Stephen J. Garchik, Manager

By: _____
Paul Slayton, Manager

The undersigned hereby enter into this Redemption Agreement solely for purposes of providing the guaranty set forth in Section 5 hereof.



Aaron Malinsky

Paul Slayton

The undersigned hereby enter into this Redemption Agreement solely for purposes of providing the guaranty set forth in Section 5 hereof.

Aaron Malinsky

Paul Slayton

Exhibit A-4

Marketplace-GWB, LLC

AMENDMENT TO OPERATING AGREEMENT

THIS AMENDMENT TO OPERATING AGREEMENT (the "Amendment") is made on this 3rd day of June, 2011 by the undersigned.

RECITALS

WHEREAS, PA-GWB, LLC was formed on August 12, 2009 in New York pursuant to Articles filed with the New York Department of State, as amended by an Amended and Restated Operating Agreement, dated July 16, 2010.

WHEREAS, the name was changed from PA-GWB, LLC to Marketplace-GWB, LLC on June 2, 2011;

WHEREAS, on or about the date hereof, a 3.52% membership interest in the Company owned by Clearview Projects, LLC (f/k/a PA Developers, LLC) has been redeemed by the Company in exchange for $208,333 paid by the Company to Clearview Projects, LLC (the "Redemption").

WHEREAS, the Members wish to amend the Agreement to reflect the Redemption.

NOW, THEREFORE, intending to be legally bound hereby, and for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Members agree as follows:

1. In consideration of Two Hundred Eight Thousand Three Hundred Thirty-Three Dollars ($208,333.00) paid by the Company to Clearview Projects, LLC and pursuant to the Redemption Agreement, Clearview Projects, LLC has assigned a 3.52% membership interest in the Company to the Company, such that Clearview Projects, LLC shall hereinafter own a 66.48% Membership Interest in the Company and WMG Associates LLC shall own a 33.52% Membership Interest in the Company, as set forth on Schedule A attached hereto.

2. The undersigned hereby confirm that Schedule A is hereby deleted in its entirety and Schedule A attached hereto is inserted in lieu thereof. The undersigned Members hereby consent to the Redemption.

3. Except as amended herein, the Agreement is hereby confirmed to remain in full force and effect.

4. This Amendment may be executed in counterparts, each of which shall be deemed to be an original but all of which shall be one and the same document.

5. This Amendment s an Exhibit to the Master Agreement, dated as of the date hereof (the "Master Agreement"), by and among. among George Washington Bridge Bus Station Development Venture LLC, GWB Development Partners, LLC, the Company and the other signatories thereto. To the extent there is a conflict between the provisions of the Master Agreement and this Amendment, the provisions of the Master Agreement shall control. Anything in this Amendment to the contrary notwithstanding, this Amendment shall not become effective until the Effective Time (as defined in the Master Agreement). This Amendment shall terminate and be of no force or effect upon the termination of the Master Agreement in accordance with its terms.

IN WITNESS WHEREOF, the Members have executed this Amendment as of the date first above written.

MEMBERS:

WMG Associates LLC

By: _____
Stephen J. Garchik
Manager

Clearview Projects, LLC
(f/k/a PA Developers, LLC)

By: _____
Name: _____
Title: _____

IN WITNESS WHEREOF, the Members have executed this Amendment as of the date first above written.

MEMBERS:

WMG Associates LLC

By: _____
Stephen J. Garchik
Manager

Clearview Projects, LLC
(f/k/a PA Developers, LLC)

By: _____
Name: PAUL SLAYTON
Title: MANAGER

Exhibit A-5

MEMBERSHIP INTEREST PURCHASE AGREEMENT

THIS **MEMBERSHIP INTEREST PURCHASE AGREEMENT** (this "***Agreement***") entered into on this 3rd day of June, 2011, by and between Clearview Projects LLC (f/k/a PA Developers LLC), a New York limited liability company (the "***Seller***") and GWB Ninety Nine LLC, a New York limited liability company ("GWB 99"), GWB IVY LLC, a New York limited liability company ("Hyland") and MG GWB LLC, a Virginia limited liability company ("G/M Entity") (collectively, the "***Purchasers***").

RECITALS

A. On August 12, 2009, the Seller formed Marketplace-GWB LLC (f/k/a PA-GWB, LLC), a New York limited liability company (the "***Company***"), as the sole member.

B. On July 16, 2010, the Company admitted WMG Associates LLC, a Delaware limited liability company ("***WMG***"), as a member, such that the percentage of ownership interests in the Company were owned as follows: the Seller – 70%; and WMG – 30%;

C. On the Effective Time (as defined herein), a 3.52% membership interest in the Company was redeemed by the Company from the Seller, resulting in the ownership interests in the Company being as follows: the Seller owns 66.48% and WMG owns 33.52%;

D. The Seller desires to sell, and the Purchasers desires to purchase all of Seller's Membership Interests in the Company as follows: 50.837% to GWB 99, 3.911% to Hyland, and 11.732% to G/M Entity (the "***Purchased Interests***"), pursuant to the terms and conditions of this Agreement.

AGREEMENT

The parties hereto, intending to be legally bound by this Agreement, agree as follows:

1. Purchase and Sale of Purchased Interests.

(a) Subject to the terms and conditions herein stated, the Purchasers hereby purchase the Purchased Interests from the Seller for an aggregate purchase price of $1,041,667 (the "***Purchase Price***"), paid simultaneously with the execution of this Agreement, by delivery to the Seller of the consideration set forth in Exhibit A attached hereto.

(b) The closing of the transactions contemplated by this Agreement (the "***Closing***") shall take place at the Effective Time (as defined below), by the exchange of documents and instruments by mail, courier or telecopy to the extent mutually acceptable to the parties hereto.

2. <u>Representations and Warranties of the Seller</u>. In connection with the purchase of the Purchased Interests by the Purchasers, the Seller hereby represents and warrants to the Purchasers as follows:

(a) The Seller is the lawful owner of the Purchased Interests, and such ownership is free and clear of all liens, restrictions and encumbrances, except for such matters set forth in the Company's Amended and Restated Operating Agreement, dated July 16, 2010 (the "***Operating Agreement***"), all of which have been complied with on or prior to the date hereof.

(b) The Company is a duly organized and validly existing limited liability company created under the laws of New York. Seller and the managers and/or persons executing this Agreement have full power to execute, deliver and carry out the terms and provisions of this Agreement and have taken all necessary action to authorize the execution, delivery and performance of this Agreement, which execution, delivery and performance will not conflict with, result in the creation or imposition of any lien, charge or encumbrance upon any of the assets of the Seller pursuant to the terms of, or constitute a default under, any agreement, indenture or instrument, or result in a violation of the Operating Agreement, the Articles of Organization or any order, rule or regulation of any court or governmental agency having jurisdiction over the Seller. This Agreement (assuming the due authorization, execution and delivery by the other parties hereto) constitutes the legal, valid and binding obligation of Seller and is enforceable in accordance with its terms, subject to applicable bankruptcy, insolvency, reorganization, moratorium and other laws rights and remedies, generally, and subject, as to enforceability, to general principles of equity, including principles of commercial reasonableness, good faith and fair dealing (regardless of whether enforcement is sought in a proceeding at law or in equity). No order, permission, consent, approval, license, authorization, registration or validation of, or filing with, or exemption by, any governmental agency, commission, board or public authority is required to authorize, or is required in connection with, the execution, delivery and performance of this Agreement by Seller or the taking by Seller of any action contemplated by this Agreement.

(c) The Seller is aware that the ultimate value of the Purchased Interests could increase or decrease in the future and that the Seller shall have no claim to additional payment or duty to refund any amount therefor.

(d) Intentionally omitted.

(e) Intentionally omitted.

(f) Intentionally omitted.

(g) No attachment, execution, assignment for the benefit of creditors or voluntary proceedings in bankruptcy has been commenced by the Company or Seller and, to the best of Sellers' knowledge, no such action has been contemplated or threatened, nor has any involuntary proceedings in bankruptcy been commenced against the Company or Seller.

3. Guaranty. To induce the Company to enter into this Agreement which shall benefit the Retiring Partner, which are and will be to the direct benefit and advantage of the Guarantors (as hereinafter defined), Aaron Malinsky and Paul Slayton (the "Guarantors") hereby jointly and severally, irrevocably and unconditionally guarantee to the Company any and all damage, loss, liability, deficiency, cost and expense, including reasonable attorneys' fees, (i) resulting from any misrepresentation, breach of warranty or non-fulfillment of any agreement or covenant on the part of Seller under this Agreement and (ii) from any and all actions, suits, proceedings, demands, assessments, judgments, costs and legal and other expenses incident to the foregoing. Guarantors agree that if Seller does not pay any liability, obligation or indemnification hereunder, Guarantors shall immediately make such payment.

4. Representations and Warranties of the Purchasers. In connection with the Seller's sale of the Purchased Interests, each Purchaser hereby represents and warrants to the Seller as follows:

(a) Each Purchaser has the full limited liability company power and authority to execute and deliver this Agreement, to purchase the Purchased Interests, and to carry out and perform all of its obligations hereunder. This Agreement has been duly executed and delivered by each Purchaser and (assuming the due authorization, execution and delivery by the other parties hereto) constitutes a legal, valid and binding obligation of the Purchaser enforceable against each Purchaser in accordance with its terms, subject to applicable bankruptcy, insolvency, reorganization, moratorium and similar laws affecting creditors' rights and remedies generally, and subject, as to enforceability, to general principles of equity, including principles of commercial reasonableness, good faith and fair dealing (regardless of whether enforcement is sought in a proceeding at law or in equity).

(b) Each Purchaser acknowledges and agrees that it is paying fair value for the Purchased Interest being purchased by such Purchaser. Furthermore, each Purchaser is aware that the ultimate value of the Purchased Interests could increase or decrease in the future and that each Purchaser shall have no claim to any refund of any amount paid therefor.

5. Actions at Closing.

(a) Second Amended and Restated Limited Liability Company Agreement. The Purchasers and Seller (to evidence Seller's withdrawal as a member of the Company) shall have entered into that certain Second Amended and Restated Operating Agreement of the Company (the "***Second Amended and Restated Operating Agreement***"), substantially in the form attached hereto as Exhibit B.

(b) Consideration. Each Purchaser shall provide the consideration set forth in Exhibit A to the Seller.

(c) Acadia Consent. In accordance with that certain conditional promissory note in the original principal amount of $1,950,000, dated March 31, 2010, issued by the Company to Acadia Strategic Opportunity Fund III LLC, a Delaware limited liability company ("*Acadia*"), the Seller shall have obtained the written consent of Acadia to the sale of the Purchased Interests from the Seller to the Purchasers (the "*Sale*").

(d) WMG Consent. In accordance with Section 4.1(a) of the Operating Agreement, WMG's consent to the Sale shall be evidence by its execution of this Agreement and the Second Amended and Restated Operating Agreement.

6. Release. In consideration of the Purchase Price paid hereunder by Purchasers to Seller on the date hereof, the Seller, for himself and for any and all of Seller's members, successors, assigns, representatives, agents and affiliates, hereby fully, completely and irrevocably releases and discharges Purchasers, GWB Blue LLC, WMG Associates LLC and their respective agents, affiliates, representatives, officers, employees, directors, shareholders, members, partners, successors and assigns from, and agrees not to sue in regard to, any and all claims, liabilities, losses, damages, demands, breaches of contract, breaches of duty or any relationship, costs, causes of action, debts, sums of money, accounts, compensations, controversies of every type, kind, nature, description or character and expenses of every kind whether liquidated or unliquidated and irrespective of how, why, or by what reason or what facts (whether heretofore or now known, unknown or hereafter discovered), or which could, might or may be claimed to exist, of whatever kind, name or character and which in any way arise out of, or relate to acts, omissions, negligence, misfeasance, or malfeasance prior to the date hereof related to, accruing or incurring from or in connection with the Company, the Purchased Interests, the Venture, any business relating to the Venture and any property or interest owned by the Venture.

7. Entire Agreement and Modification. This Agreement (together with the exhibits hereto) supersedes all prior agreements between the parties with respect to its subject matter and constitutes a complete and exclusive statement of the terms of the agreement between the parties with respect to its subject matter. This Agreement may not be amended except by a written agreement executed by all of the parties hereto.

8. Assignments, Successors, and No Third-Party Rights. No party may assign any of its rights under this Agreement without the prior written consent of the other parties. Subject to the preceding sentence, this Agreement will apply to, be binding in all respects upon, and inure to the benefit of the successors and permitted assigns of the parties. Nothing expressed or referred to in this Agreement will be construed to give any person other than the parties to this Agreement any legal or equitable right, remedy or claim under or with respect to this Agreement or any provision of this Agreement. This Agreement and all of its provisions and conditions are for the sole and exclusive benefit of the parties to this Agreement and their successors and assigns.

9. Severability. If any provision of this Agreement is held invalid or unenforceable by any court of competent jurisdiction, the other provisions of this Agreement will remain in full

force and effect. Any provision of this Agreement held invalid or unenforceable only in part or degree will remain in full force and effect to the extent not held invalid or unenforceable.

10. Section Headings, Construction. The headings of sections in this Agreement are provided for convenience only and will not affect its construction or interpretation. All words used in this Agreement will be construed to be of such gender or number as the circumstances require. Unless otherwise expressly provided, the word "including" does not limit the preceding words or terms.

11. Governing Law. This Agreement will be governed by the laws of the State of New York without regard to conflicts of laws principles.

12. Counterparts. This Agreement may be executed in one or more counterparts or by facsimile transmission, each of which will be deemed to be an original copy of this Agreement and all of which, when taken together, will be deemed to constitute one and the same agreement.

13. Effective Time; Termination; Etc.. This Agreement is an Exhibit to the Master Agreement, dated as of the date hereof (the "Master Agreement"), by and among. among George Washington Bridge Bus Station Development Venture LLC, GWB Development Partners, LLC, the Company, Seller, Purchasers and the other signatories thereto. To the extent there is a conflict between the provisions of the Master Agreement and this Agreement, the provisions of the Master Agreement shall control. Anything in this Agreement to the contrary notwithstanding, this Agreement shall not become effective until the Effective Time (as defined in the Master Agreement). This Agreement shall terminate and be of no force or effect upon the termination of the Master Agreement in accordance with its terms.

[REMAINDER OF PAGE INTENTIONALLY BLANK]

IN WITNESS WHEREOF, the undersigned have executed and delivered this Agreement effective as of the date first written above.

CLEARVIEW DEVELOPERS LLC
(FORMERLY KNOWN AS
PA DEVELOPERS, LLC)

By: _____
Name: Paul Slayton
Title: manager

GWB NINETY NINE LLC

By: _____
Name: _____
Title: _____

GWB IVY LLC

By: _____
Name:
Title:

MG GWB LLC

By: _____
Name:
Title:

The undersigned hereby enter into this Membership Interest Purchase Agreement for purposes of providing the guaranty set forth in Section 3 hereof.

_____
Aaron Malinsky

_____
Paul Slayton

IN WITNESS WHEREOF, the undersigned have executed and delivered this Agreement effective as of the date first written above.

CLEARVIEW DEVELOPERS LLC
(FORMERLY KNOWN AS
PA DEVELOPERS, LLC)

By:_____
Name:_____
Title:_____

GWB NINETY NINE LLC

By:_____
Name: Paul Slayton
Title: Manager

GWB IVY LLC

By: _____
Name:
Title:

MG GWB LLC

By: _____
Name:
Title:

The undersigned hereby enter into this Membership Interest Purchase Agreement for purposes of providing the guaranty set forth in Section 3 hereof.

_____
Aaron Malinsky

_____
Paul Slayton

IN WITNESS WHEREOF, the undersigned have executed and delivered this Agreement effective as of the date first written above.

CLEARVIEW DEVELOPERS LLC
(FORMERLY KNOWN AS
PA DEVELOPERS, LLC)

By:_____
Name:_____
Title:_____

GWB NINETY NINE LLC

By:_____
Name:_____
Title:_____

GWB IVY LLC

By: James Hyland
Name: JAMES HYLAND
Title: MEMBER

MG GWB LLC

By: _____
Name:
Title:

The undersigned hereby enter into this Membership Interest Purchase Agreement for purposes of providing the guaranty set forth in Section 3 hereof.

_____
Aaron Malinsky

_____
Paul Slayton

IN WITNESS WHEREOF, the undersigned have executed and delivered this Agreement effective as of the date first written above.

CLEARVIEW DEVELOPERS LLC
(FORMERLY KNOWN AS
PA DEVELOPERS, LLC)

By:_____
Name:_____
Title:_____

GWB NINETY NINE LLC

By:_____
Name:_____
Title:_____

GWB IVY LLC

By: James Hyland
Name: JAMES HYLAND
Title: MEMBER

MG GWB LLC

By: _____
Name:
Title:

The undersigned hereby enter into this Membership Interest Purchase Agreement for purposes of providing the guaranty set forth in Section 3 hereof.

_____
Aaron Malinsky

_____
Paul Slayton

IN WITNESS WHEREOF, the undersigned have executed and delivered this Agreement effective as of the date first written above.

CLEARVIEW DEVELOPERS LLC
(FORMERLY KNOWN AS
PA DEVELOPERS, LLC)

By:_____
Name:_____
Title:_____

GWB NINETY NINE LLC

By:_____
Name:_____
Title:_____

GWB IVY LLC

By: _____
Name:
Title:

MG GWB LLC

By: _____
Name:
Title:

The undersigned hereby enter into this Membership Interest Purchase Agreement for purposes of providing the guaranty set forth in Section 3 hereof.

_____
Aaron Malinsky

_____
Paul Slayton

IN WITNESS WHEREOF, the undersigned have executed and delivered this Agreement effective as of the date first written above.

CLEARVIEW DEVELOPERS LLC
(FORMERLY KNOWN AS
PA DEVELOPERS, LLC)

By:_____
Name:_____
Title:_____

GWB NINETY NINE LLC

By:_____
Name:_____
Title:_____

GWB IVY LLC

By: _____
Name:
Title:

MG GWB LLC

By: _____
Name:
Title:

The undersigned hereby enter into this Membership Interest Purchase Agreement for purposes of providing the guaranty set forth in Section 3 hereof.

Aaron Malinsky

Paul Slayton

IN WITNESS WHEREOF, the undersigned have executed and delivered this Agreement effective as of the date first written above.

CLEARVIEW DEVELOPERS LLC
(FORMERLY KNOWN AS
PA DEVELOPERS, LLC)

By:_____
Name:_____
Title:_____

GWB NINETY NINE LLC

By:_____
Name:_____
Title:_____

GWB IVY LLC

By: _____
Name:
Title:

MG GWB LLC

By: _____
Name:
Title:

The undersigned hereby enter into this Membership Interest Purchase Agreement for purposes of providing the guaranty set forth in Section 3 hereof.

_____
Aaron Malinsky

Paul Slayton

Exhibit A-6

Clearview Projects LLC
250 West 57th Street
Suite 1120
New York, NY 10107

June 3, 2011

To: Aaron Malinsky
Paul Slayton
GWB Ninety Nine LLC

Re: Distribution Agreement

Gentlemen:

This is to confirm your understanding and agreement that the (i) $208,333 of cash to be received by Clearview Projects LLC pursuant to that certain Redemption Agreement by and between Clearview Projects LLC (f/k/a PA Developers, LLC) (the "Company") and Marketplace-GWB, LLC (f/k/a PA-GWB, LLC), will be distributed by the Company to Aaron Malinsky; (ii) that the $208,333 of cash to be paid by GWB Ninety Nine, LLC to the Company in partial satisfaction of the purchase price it is paying to acquire its interest in Marketplace-GWB, LLC from the Company pursuant to that certain Membership Interest Purchase Agreement shall also be distributed by the Company to Aaron Malinsky; (iii) the Promissory Note of $625,000 to be issued by GWB Ninety Nine, LLC to the Company pursuant to the terms of the Membership Interest Purchase Agreement in satisfaction of the balance of its purchase price for the interest in Marketplace GWB, LLC shall be distributed by the Company to Paul Slayton and GWB Ninety Nine LLC consents to the assignment of such Note to Paul Slayton; and (iv) the cash of $208,333 to be received by the Company from MG GWB LLC pursuant to the terms of the Membership Interest Purchase Agreement shall be distributed by the Company to Aaron Malinsky.

This Agreement is an Exhibit to the Master Agreement, dated as of the date hereof (the "Master Agreement"), by and among George Washington Bridge Bus Station Development Venture LLC, GWB Development Partners, LLC, Owner, and the other signatories thereto. To the extent there is a conflict between the provisions of the Master Agreement and this Agreement, the provisions of the Master Agreement shall control. Anything in this Agreement to the contrary notwithstanding, this Agreement shall not become effective until the Effective Time (as defined in the Master Agreement). This Agreement shall terminate and be of no force or effect upon the termination of the Master Agreement in accordance with its terms.

Please confirm your agreement to the above by signing below.

Clearview Projects LLC

By: _____
Name: Paul Slayton
Title: Manager

_____
Aaron Malinsky

_____
Paul Slayton

GWB Ninety Nine LLC

By: _____
Name: Doug Slayton
Title: Manager

1398248v2 08668 0004-000

Please confirm your agreement to the above by signing below.

Clearview Projects LLC

By: _____
Name: Paul Slayton
Title: Manager

_____
Aaron Malinsky

_____
Paul Slayton

GWB Ninety Nine LLC

By: _____
Name: Doug Slayton
Title: Manager

Exhibit A-7

CONSULTING FEE AGREEMENT

This Consulting Fee Agreement ("Agreement") is made and entered into as of this 3rd day of June, 2011, by and between GWB Ninety-Nine LLC (the Company") and Benjamin Malinsky (the "Consultant").

RECITALS

WHEREAS, SJM Partners LLC ("SJM") is entering into a Construction Management and Development Services Agreement with George Washington Bridge Bus Station Development Venture LLC (the "Construction and Development Agreement") regarding redevelopment of property subject to a lease with The Port Authority of New York and New Jersey located at 4211 Broadway, New York, New York (the "Project");

WHEREAS, the Construction and Development Agreement anticipates that SJM, will engage the Company to assist SJM with the provision of the development and construction management services to be provided by SJM and the Company shall receive distributions from SJM from payments received under the Construction and Development Agreement;

WHEREAS, the Company is also entering into a Property Management and Leasing Agreement with George Washington Bridge Bus Station Development Venture LLC (the "Leasing Agreement") regarding the Project;

WHEREAS, the Consultant will provide assistance to the Company regarding the services being provided by the Company relating to the Project consistent with the type and level of service which the Consultant has heretofore provided in connection with the Project and contemplated by the Leasing Agreement;

WHEREAS, the Consultant will provide project management services to the Company relating to the Project consistent with the type and level of service which the Consultant has heretofore provided in connection with the Project and contemplated by the Construction and Development Agreement (collectively with the services described in the immediately preceding paragraph the "Consulting Services");

WHEREAS, the Company has agreed to compensate the Consultant for such Consulting Services as described below; and

WHEREAS, commencing at the Effective Time (defined below), the Company shall pay to the Consultant the Consulting Fees set forth below.

NOW, THEREFORE, for and in consideration of the foregoing, the sum of Ten Dollars ($10.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties, intending to be legally bound, agree as follows:

1. Term. The term of this Agreement shall commence on the Effective Time and terminate on the twenty-four (24) month anniversary of the Effective Time. The termination of this Agreement shall not affect any rights that the Consultant has to receive fees payable pursuant to this Agreement with respect to any period prior to the effective date of such

termination, nor shall any such termination affect the Consultant's rights and remedies available at law or equity to enforce the payment of such amounts, nor shall it affect the Consultant's right to receive the bonus described below, except that if the Consultant voluntarily terminates this Agreement prior to its stated term or is terminated by Company by reason of a Bad Act, then no bonus shall be payable. "Bad Act" means an act or omission by Consultant that (a) constitutes a felony, fraud, theft, misappropriation, bad faith, gross negligence or willful misconduct and (b) relates to the Project or the Company.

2. **Duties of the Consultant**. The Consultant shall provide the Consulting Services defined above. The Consultant shall devote such time to the performance of the Consulting Services as shall be necessary and appropriate for the performance of the Consulting Services and consistent with the type and level of service which the Consultant has heretofore provided in connection with the Project and contemplated by the Construction and Development Agreement and the Leasing Agreement.

3. **Compensation**. For performance of the Consulting Services, the Company shall pay the Consultant as follows:

(a) Base Fee: As of the Effective Date, the Company shall pay the Consultant a fee in the amount of $15,000 per month;

(b) Bonus: When the Project has been completed, as evidenced by issuance of a certificate of occupancy, including any preliminary or temporary certificate of occupancy, and at least 80% of the retail space at the Project has been leased, and rent payments by such tenants have commenced, the Consultant shall receive a bonus payment of $100,000.

The Consultant shall not be paid any health, retirement or other benefits or any other or additional compensation for the Consulting Services.

4. **Binding Effect**. This Agreement shall be binding upon the parties hereto, and their respective heirs, administrators, executors, successors and any permitted assigns.

5. **Entire Agreement**. This Agreement constitutes the entire agreement among the parties relating to the subject matter hereof. This Agreement may only be modified by a writing between the parties hereto.

6. **Headings**. All headings, subheadings and captions employed in this Agreement are inserted for convenience and ease of reference only and are not to be considered in the construction or interpretation of any provision of this Agreement.

7. **Governing Law**. This Agreement shall be governed by, and construed in accordance with, the laws of the State of New York without regard to its choice of law rules.

8. **Counterparts**. This Agreement may be executed in two or more counterparts, each of which shall be deemed an original but all of which together shall constitute one and the same instrument. Facsimile signatures shall be binding upon the parties.

9. **Attorney's Fees**. In the event any party is required to initiate legal or arbitration

proceedings to enforce performance of any term or condition of this Agreement, the prevailing party shall be entitled to recover such sums, in addition to any other damages or compensation received, as will reimburse the prevailing party for reasonable attorney's fees and costs incurred on account thereof notwithstanding the nature of the claim or cause of action asserted by the prevailing party.

10. **Further Assurances**. The parties shall execute and deliver all documents, provide all information and take or refrain from taking action as may be necessary or appropriate to achieve the purposes of this Agreement.

11. **Miscellaneous**.

(a) If any provision of this Agreement shall be held to be invalid, illegal or unenforceable, the validity, legality or enforceability of the remaining provisions shall not in any way be affected or impaired thereby, and such provision shall be deemed to be restated to reflect the original intentions of the parties as nearly as possible in accordance with applicable law(s).

(b) The waiver by any party of a breach of any provisions of this Agreement shall not operate or be construed as a waiver of any subsequent breach by any party. The remedies and rights of any party in the event of a default are cumulative and in addition to those given by law, and the expression of any specific right or remedy shall not be construed as limiting any party from exercising any other right or remedy it may have.

(c) Any delays in the performance of this Agreement shall be excused to the extent the delays are caused by wars, national emergencies, natural disasters, strikes, labor disputes, utility failures, governmental regulations, riots, adverse weather and other causes not within the control of the parties to this Agreement, and any period of time required for performance shall be extended accordingly, provided, however, that the foregoing shall not excuse any payment obligations hereunder.

(d) The parties do not intend to create, and this Agreement shall not be deemed or construed to create, a partnership or joint venture between the parties hereto.

(e) In no event shall the Consultant be terminated for reasons other than its failure to provide its Consulting Services as provided herein or by reason of a Bad Act.

(f) The Consultant shall be entitled to terminate this Agreement upon ten (10) days notice to the Company.

(g) This Agreement is an Exhibit to the Master Agreement dated of even date among George Washington Bridge Bus Station Development Venture LLC, GWB Development Partners, LLC, Marketplace GWB LLC, GWB Blue LLC and the other signatories thereto. To the extent there is a conflict between the provisions of the Master Agreement and this Agreement, the provisions of the Master Agreement shall control. Anything in this Agreement to the contrary notwithstanding, this Agreement shall become effective at the Effective Time (as defined in the Master Agreement) and shall not become effective until and unless the Effective Time occurs. This Agreement shall terminate and be of no force or effect upon the termination of the Master Agreement in accordance with its terms.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the date first above written.

GWB Ninety-Nine LLC

By: _____
Name: Dominic Gasperini
Title: Manager

_____
Benjamin Malinsky

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the date first above written.

GWB Ninety-Nine LLC

By: _____
Name:
Title:

Benjamin Malinsky

Exhibit A-8

TERMINATION OF DEVELOPMENT SERVICES AGREEMENT

THIS TERMINATION OF DEVELOPMENT SERVICES AGREEMENT (the "Termination Agreement") is executed on this 3rd day of June, 2011, by and between **GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC** ("**Owner**") and **CLEARVIEW MANAGEMENT SERVICES LLC** ("**Development Manager**").

WITNESSENTH:

WHEREAS, Owner and Manager executed that certain Development Services Agreement dated as of July 16, 2010 (the "**Development Agreement**"), pursuant to which Development Manager agreed to perform certain services in connection with the Leased Premises (as defined in the Agreement of Lease between The Port Authority of New York and New Jersey and George Washington Bridge Bus Station Development Venture LLC – the "Master Lease") including improvements, located at 4211 Broadway, New York, New York (the George Washington Bridge Bus Station), the Leased Premises and the other improvements thereon are referred to as the "**Property**"; and

WHEREAS, as of the date hereof, the Owner and Development Manager agree to terminate the Development Agreement.

NOW, THEREFORE, in consideration of the foregoing and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged by Development Manager, Owner and Development Manager agree and confirm that the Management Agreement is terminated as of the Effective Time (defined below), and all rights and obligations of Owner and Development Manager under the Management Agreement shall cease and terminate without any further liability of either party to the other as of the Effective Time.

This Agreement is an Exhibit to the Master Agreement, dated as of the date hereof (the "Master Agreement"), by and among George Washington Bridge Bus Station Development Venture LLC, GWB Development Partners, LLC, Owner, and the other signatories thereto. To the extent there is a conflict between the provisions of the Master Agreement and this Termination Agreement, the provisions of the Master Agreement shall control. Anything in this Termination Agreement to the contrary notwithstanding, this Termination Agreement shall not become effective until the Effective Time (as defined in the Master Agreement). This Termination Agreement shall terminate and be of no force or effect upon the termination of the Master Agreement in accordance with its terms.

IN WITNESS WHEREOF, the parties have executed this Termination Agreement, in multiple counterpart copies, as of the date first written above.

GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC

By: GWB Development Partners, LLC, Sole Member

By: Marketplace-GWB, LLC
(f/k/a PA – GWB, LLC), Member

By: _____
Name: PAUL SLAYTON
Title: MANAGER

CLEARVIEW MANAGEMENT SERVICES LLC
By: Clearview Projects LLC
(f/k/a PA Developers, LLC)

By: _____
Paul Slayton
Manager

Exhibit A-9

TERMINATION OF CONSTRUCTION MANAGEMENT SERVICES AGREEMENT

THIS TERMINATION OF CONSTRUCTION MANAGEMENT SERVICES AGREEMENT (the "Termination Agreement") is executed on this 3rd day of June, 2011, by and between **GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC** ("**Owner**") and **SJM PARTNERS, INC.** ("**Construction Manager**").

WITNESSENTH:

WHEREAS, Owner and Construction Manager executed that certain Construction Management Services Agreement dated as of July 16, 2010 (the "**Construction Services Agreement**"), pursuant to which Construction Manager agreed to perform certain services in connection with the Leased Premises (as defined in the Agreement of Lease between The Port Authority of New York and New Jersey and George Washington Bridge Bus Station Development Venture LLC – the "Master Lease") including improvements, located at 4211 Broadway, New York, New York (the George Washington Bridge Bus Station), the Leased Premises and the other improvements thereon are referred to as the "**Property**"; and

WHEREAS, as of the date hereof, the Owner and Construction Manager agree to terminate the Construction Services Agreement.

NOW, THEREFORE, in consideration of the foregoing and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged by Construction Manager, Owner and Construction Manager agree and confirm that the Construction Services Agreement is terminated as of the Effective Time (defined below), and all rights and obligations of Owner and Construction Manager under the Construction Services Agreement shall cease and terminate without any further liability of either party to the other as of the Effective Time.

This Agreement is an Exhibit to the Master Agreement, dated as of the date hereof (the "Master Agreement"), by and among George Washington Bridge Bus Station Development Venture LLC, GWB Development Partners, LLC, Owner, and the other signatories thereto. To the extent there is a conflict between the provisions of the Master Agreement and this Termination Agreement, the provisions of the Master Agreement shall control. Anything in this Termination Agreement to the contrary notwithstanding, this Termination Agreement shall not become effective until the Effective Time (as defined in the Master Agreement). This Termination Agreement shall terminate and be of no force or effect upon the termination of the Master Agreement in accordance with its terms.

IN WITNESS WHEREOF, the parties have executed this Termination Agreement, in multiple counterpart copies, as of the date first written above.

GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC

By: GWB Development Partners, LLC, Sole Member

By: Marketplace-GWB, LLC
(f/k/a PA – GWB, LLC), Member

By: _____
Name: PAUL SLAYTON
Title: MANAGER

SJM PARTNERS, INC.

By: _____
Stephen J. Garchik
President

IN WITNESS WHEREOF, the parties have executed this Termination Agreement, in multiple counterpart copies, as of the date first written above.

GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC

By: GWB Development Partners, LLC, Sole Member

By: Marketplace-GWB, LLC
(f/k/a PA – GWB, LLC), Member

By: _____
Name:
Title:

SJM PARTNERS, INC.

By: _____
Stephen J. Garchik
President

Exhibit A-10

DEVELOPMENT SERVICES AGREEMENT

THIS DEVELOPMENT SERVICES AGREEMENT (this "Agreement"), is made and entered into this 3rd day of June, 2011, by and between (i) George Washington Bridge Bus Station Development Venture LLC (the "Owner"), and (ii) SJM Partners, Inc.(the "Development Manager").

R E C I T A L S

A. Owner is the lessee of the Leased Premises (as defined in the Agreement of Lease between The Port Authority of New York and New Jersey and George Washington Bridge Bus Station Development Venture LLC- the "Lease") including improvements, located at 4211 Broadway, New York, New York (the George Washington Bridge Bus Station). These Leased Premises and the other improvements thereon are the subject of this Agreement and are hereinafter collectively referred to as the "Property".

B. The Owner desires to redevelop the Property which when complete will include all additions, renovations, and alterations necessary for the consolidated Port Authority Bus Station Premises and Leased Retail/Commercial Premises (Collectively "Improvements").

C The Owner desires to obtain the services of the Development Manager with respect to the renovation of the Property and the construction of Improvements ((collectively referred to as the "Project,"), to act as project manager with respect to the construction of the Project, and to provide the services described in this Agreement, all in accordance with, and pursuant to the terms, covenants and conditions contained in this Agreement. The Development Manager and the Owner agree that for the purposes of this Development Management Services Agreement, the Project is expected to be planned, permitted and constructed in a single phase running continuously from start to finish without material interruption as described below.

1. The adaptive reuse of the George Washington Bridge Bus Station: a complex of two three-level buildings - East and West - connected by two vehicular bridges spanning over Broadway. This existing facility straddles the Trans-Manhattan Expressway.
2. The existing West Building bus operation will be consolidated to the building's third (rooftop) level enabling the first and second levels to be renovated to accommodate retail/commercial uses. This consolidation includes vertical transportation relocation, bus gates and concourse ticketing, passenger waiting area, police and facility operations offices and restrooms.
3. The existing East Building will be renovated, enlarged and converted from mechanical/electrical uses to retail by expanding two existing structural slabs for retail use requiring an existing substation located on the first level of the building to be relocated within a new rooftop Utility Building.
4. New exterior treatments to enclose new retail venues around both buildings will be developed. The exterior improvements may require landmark supervision if required.
5. The bus station will remain operational throughout the renovation.
6. The Project includes completing retail space to the extent the tenant improvements shown in the budget are constructed per the 18 month construction schedule, per the Skanska budget dated October 9, 2009 and per the Port Authority Agreement.

7. The project schedule is expected to be 30 months and will commence on the Effective Date as defined in the Interim Agreement between The Port Authority of New York and New Jersey and George Washington Bridge Bus Station Development Venture LLC and be complete by January, 2013.
8. The Construction schedule is 18 months and will commence on or about August 1, 2011 and be complete by January, 2013.
9. Skanska has been selected as the General Contractor and STV as the Project Architect.
10. The Project scope and current construction budget consists of two separate but interdependent components; 1) Bus Station Renovation; and 2) Retail Renovation and is based on the Skanska budget dated October 9, 2009 and Port Authority Agreement.

D. The Development Manager is willing to provide the Development Services set forth in this Agreement with respect to the Project, all in accordance with, and pursuant to the terms, covenants and conditions contained in this Agreement. In addition, the Development Manager shall retain at its own expense GWB Ninety Nine LLC to assist with providing the Development Services set forth in this Agreement with respect to the Project, all in accordance with, and pursuant to the terms, covenants and conditions contained in this Agreement.

NOW, THEREFORE, in consideration of the mutual covenants and conditions herein contained and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties hereto, intending to be legally bound, hereby do covenant and agree as follows

SECTION 1. GENERAL PROVISIONS

1.1 **Relationship of Parties.** The Development Manager is acting on behalf of and as an agent for the Owner by this Agreement, and covenants with the Owner to furnish the Development Manager's reasonable skill, judgment and best efforts in the performance of its obligations under this Agreement. The Development Manager shall furnish services as set forth herein relating to the Project in an expeditious, professional and economical manner consistent with the interests of the Owner, using the degree of skill and care that the Development Manager would use if it were an Owner in rendering service under this Agreement. The term "Development Services" shall mean all services required to be performed by Development Manager under this Agreement including those provided fore in Section 2 hereof.

1.2 **Third Parties.** This Agreement is between the Development Manager and the Owner. This Agreement shall not be construed to create a contractual relationship of any kind between the Development Manager and any person or entity other than the Owner. Under no circumstances shall Development Manager be regarded as the Owner, Developer, Contractor, Architect or Engineer of the Project. The Owner expressly recognize that: (a) the Development Manager may have substantial other business and real estate activities ; (b) the Development Manager may engage for his, her, or its own account and for the accounts of others in other businesses or real estate activities, even if such businesses or activities compete directly with Company business or activities, and the Owner shall not have any rights in or to any such independent business or activity or the income or profits derived therefrom (c) the Development Manager is an independent contractor but some of its officers and/or employees are also investors, directly or indirectly in the Owner.

SECTION 2. SERVICES TO BE PERFORMED BY DEVELOPMENT MANAGER

2.1 **Obligation to Perform Services.** Subject to the provisions of Sections 2.2

and Section 2.3 of this Agreement, the Development Manager agrees to perform the services described in this Section with respect to the permitting, financing, planning, development and construction of the Project.

2.1.1 **Approval Stage of Project.** The Approval stage of the Project (the "Approval Stage") commences as of the date of this Agreement and shall continue until such time as all tasks required to be performed during the Approval Stage have been performed as provided in this Section 2.1.1. During the Approval Stage, the Development Manager shall perform such tasks as may be necessary or desirable to plan the development of the Project, and as shall be reasonably requested or approved by the Owner in connection with the financing, development and construction of the Project, including the following services when and in the manner indicated below:

(a) The Development Manager shall develop, in consultation with the Owner, the various goals and objectives of the Project, including identification of major development requirements and preparation of budgets, development timetables and construction schedules for the Project.

(b) The Development Manager, if and to the extent requested by the Owner, shall assist in the preparation of and/or review and/or negotiation of agreements securing the services of the Project Architect, the General Contractor, the civil, structural, mechanical and electrical engineers (collectively, the "Engineers") and other consultants for the Project, and all other documentation necessary to the planning, construction, permitting and use and occupancy of the Project in accordance with the proposed development plans as described in Section C of the Recitals and all applicable laws and regulations.

(c) The Development Manager, in consultation with the Owner shall be responsible for all negotiations with, assistance in the preparation of all required submissions to, and shall act as liaison to, the various governmental agencies having jurisdiction with respect to the development of the Project, as and to the extent directed by the Owner.

(d) The Development Manager, in consultation with the Owner architect, engineer and other Owner consultants, shall apply for, negotiate and use all reasonable efforts on behalf of the Owner to obtain all necessary government approvals, permits and authorizations necessary to the development of the Project.

(e) The Development Manager shall hire, pay, direct the work of, supervise, and discharge the personnel necessary to enable the Development Manager to perform the Development Services. Such personnel shall be in the sole employ of the Development Manager and not in the employ of the Owner. The Owner shall have no right to interfere with, supervise or otherwise direct such personnel. The Development Manager shall execute and file when due all forms, reports and returns required by law which relate to the employment of such personnel.

(f) The Development Manager shall review and refine the approved budget (Attachment A) as the development of the Plans proceeds, and immediately advise the Owner in writing if it appears to the Development Manager that the approved budget to include specific line item amounts including the contingency amounts as outlined in Port Authority Agreement for the cost of the Project set forth in the approved budget will not be met. The Development Manager will obtain written authorization from the Owner before proceeding with changes to the approved budget

(g) The Development Manager shall make necessary recommendations and shall otherwise assist the Owner in making decisions based on information provided by

Owner and Owner's Consultants respecting all Project development requirements, in accordance with all applicable laws and regulations, including: (1) land use planning; (2) time phasing of the development; (3) selection of site utilities and public improvements; (4) selection of structure type for all improvements; (5) selection of facade for all Improvements; (6) design of public areas in all Improvements; (7) incorporation of needed safety and environmental features in all Improvements; (8) design of all service areas in all Improvements; (9) parking facilities; (10) landscaping; (11) selection of special building features to accommodate special building needs; (12) analysis and selection of available energy sources; (13) design of electrical systems; (14) design of heating, ventilating and air conditioning systems; (15) design of plumbing system;, (16) life safety systems; (17) preparation of schematics, design development and construction contract documents, and (18) obtaining all required insurance and bonds. The Development Manager shall not be responsible for procuring or funding legal services, which unless otherwise agreed in writing shall to the extent required be provided by the Owner.

(h) The Development Manager shall, in consultation with the Owner, Owner consultants and the General Contractor, diligently undertake to prepare a final detailed cost estimate and budget (the "Final Budget") when the Plans are complete, which Final Budget shall be (1) based upon the bid-price to construct the Improvements, (2) approved by the Owner, and (3) approved by the Owner's construction lender, if required.

(i) The Development Manager shall prepare a master schedule (the "Master Schedule") which incorporates in detail key Project activities to be performed by the Owner, the Project Architect, the Engineers, the General Contractor and the Development Manager, including the obtaining of required governmental approvals, in connection with the development, construction and occupancy of the Project as described in Article C of the Recital.

(j) The Development Manager shall monitor the Master Schedule during the Approval Stage and shall advise the Owner of the status of the Master Schedule as it relates to actual progress.

(k) The Development Manager shall conduct regular meetings, on a frequent schedule provided to the Owner, with the General Contractor, the Project Architect and the Engineers in order to facilitate coordination of the work in accordance with the Master Schedule and the Plans and shall give reasonable notice to the Owner prior to each of such meetings should such schedule change.

(l) The Development Manager shall conduct a regular monthly meeting with the Owner, or more frequently if reasonably requested by the Owner, for the purpose of reporting on the progress of the Approval Stage negotiations with consultants, contractors, subcontractors and various government agencies, the preparation of the various documents required for the development of the Project and such other matters as the Owner shall reasonably request or as may be appropriate.

(m) The Development Manager shall implement and administer the financing program selected by the Owner and shall act as liaison, at the direction of the Owner, in dealing with the lender(s) selected by the Owner to provide financing for the Project. The Development Manager shall coordinate the financing with the proposed construction program and shall make recommendations to the Owner and supervise Pre-Construction Stage payment requisitions, if any.

2.1.2 **Construction Stage of Project.** During the Construction Stage, the

Development Manager shall perform such tasks that in its reasonable judgment are appropriate to effect the construction of the Improvements, and as shall be reasonably requested or approved by the Owner in connection with construction of the Improvements, including the following services when and in the manner indicated below:

(a) The Development Manager shall use reasonable efforts to supervise the construction of the Project by the General Contractor in accordance with (1) the Master Schedule as revised in accordance with Section 2.1.1(i), of this Agreement and (2) the plans and specifications, working drawings and the site plan for the Project, each as approved by the Owner, all requisite governmental authorities and, if required, the lender(s) providing construction financing (collectively, the "Plans"), provided that nothing herein shall supplant or diminish the responsibility of the Project Architect, or other Owner consultants, to administer the Project in accordance with the agreement between the Owner and the Project Architect and other Owner consultants.

(b) The Development Manager shall regularly monitor and use reasonable efforts to expedite the construction process. The Development Manager shall regularly and independently inspect the work and review the performance of the General Contractor and its subcontractors and advise the Owner if the Development Manager becomes aware of any deficiencies in the performance of the work by the General Contractor.

(c) The Development Manager shall regularly review the construction progress to render an opinion whether the actual construction schedule coincides with the Master Schedule and the CPM Schedule provided by the General Contractor, periodically review work not started or incomplete, and recommend adjustments to the Master Schedule in accordance with Section 2.1.1(i) of this Agreement and to the CPM Schedule to the Owner and the General Contractor with respect to remaining work.

(d) The Development Manager shall conduct a regular monthly meeting with the Owner, or more frequently if reasonably requested by the Owner, for the purpose of reporting on the status of the development and construction of the Project.

(e) The Development Manager shall review and recommend to the Owner necessary or desirable changes, and shall, at the written direction of the Owner, review, negotiate and make recommendations concerning any change orders with respect to any changes to scope with the General Contractor or other Owner consultants and shall maintain records of all such change orders.

(f) The Development Manager, together with the Project Architect, shall conduct regular bi-weekly meetings with the General Contractor for the purpose of reviewing with the General Contractor all unpaid requisitions and monthly draws. The Development Manager, together with the Project Architect, shall review, process and make recommendations to the Owner with respect to, all requisitions for payment received from the General Contractor in accordance with the terms of its contract. The Development Manager's review and recommendations with respect to the General Contractor's applications for payment shall be based on the Development Manager's observations and best judgment based on its review of submitted documentation and on-site inspections.

(g) The Development Manager will consult with the Owner, the Project Architect and the General Contractor to make a recommendation as to when the work on the Improvements, or designated portions thereof, is substantially complete and shall supervise the preparation by the Project Architect of a list of incomplete, unfinished and unsatisfactory items (the punchlist), together with a

schedule for their completion. The Development Manager shall supervise the re-inspection of the punchlist by the Project Architect up to two (2) additional times in a time frame not to exceed 60 days following Substantial Completion. Should the Owner and Development Manager mutually agree for the Development Manager to coordinate the punchlist completion process beyond the above they may do this through a separate agreement.

(h) The Development Manager shall coordinate assembly and delivery by the Project Architect and the General Contractor, the warranty information to the Owner for its use when the Project is substantially complete.

(i) Excluded from this Agreement are post Substantial Completion Services such as Bond Release processing, extensive punchlist completion verification, coordination and administration of warranty work. Should the Owner and Development Manager mutually agree for the Development Manager to coordinate the above excluded services, they may do this through a separate agreement.

2.1.3 **Financial Management Services.** During the Approval Stage and the Construction Stage, the Development Manager shall provide financial management services such as monitoring the Project Budget as shown on Attachment A, monitoring consultant and general contractor contractual payment status and reviewing applicable project invoices for Owner processing and payment as shall be reasonably requested by the Owner in connection with the Project. Project accounting will be the responsibility of the Owner.

2.1.4 Required Approvals. If an approval by GWB Blue, LLC to an act is required under the Operating Agreement of GWB Development Partners, LLC, as amended from time to time, the Development Manager will not take any such act without the prior written approval of GWB Blue, LLC.

2.2 Limitations on Development Manager's Responsibility.
It is not the Development Manager's responsibility to ascertain that the work to be performed by the Project Architect, the General Contractor or any other contractors or consultants retained by the Owner or the retail tenant is performed in accordance with applicable laws, statutes, ordinances, building codes, rules and regulations or the contract between the Owner and the Project Architect, the General Contractor or such other contractors or consultants, as the case may be. The Development Manager is not guaranteeing to the Owner that the Project Architect, the General Contractor or any other contractors or consultants retained by the Owner will perform its obligations under its contract with the Owner. The Development Manager shall not be obligated to perform (and shall not be liable to the Owner for damages for a failure to perform) its obligations under this Agreement if, and to the extent that, Development Manager is prevented from performing, or is delayed in performing its obligations by a material default by the Owner in performing its obligations under this Agreement or the respective contracts between the Owner and the Project Architect, the General Contractor or any other contractors or consultants retained by the Owner, or by any other circumstances beyond the reasonable control of the Development Manager. Under no circumstances shall Development Manager be responsible to Owner, Contractor, Project Architect or any other person or entity for damages, delay damages, change orders, extra work, defective design, defective work, or the violation of applicable law or regulations by Owner, Contractor or Project Architect.

2.3 **Professional Services.** The Development Manager shall not be required to provide professional services which constitute the practice of architecture,

engineering, construction contracting, brokerage or law, unless the Development Manager has specifically agreed in writing to provide such services. In such event, the Development Manager shall cause such services to be performed by appropriately licensed professionals.

SECTION 3. **OWNER'S RESPONSIBILITIES TO DEVELOPMENT MANAGER**

3.1 **Provide Information.** The Owner shall provide full and complete information regarding the Project in its possession to the Development Manager in a timely manner as required by the Development Manager to perform its obligations under this Agreement. Such information shall include, but not be limited to, the following items regarding the Project:

(a) Survey, legal description, reports (e.g., traffic, environmental, geotechnical, physical, etc. copies of easements;

(b) copies of pending and executed leases;

(c) a detailed breakdown of all costs incurred and contracts entered into by the Owner prior to and including the date of this Agreement and from the date of the Agreement until termination of the Agreement; and

(d) other reports reasonably requested by the Development Manager.

3.2 **Update Budgets.** The Owner will work with the Development Manager to establish and periodically update the Final Budget for the Project, based on consultation with the Owner, the Project Architect, the Contractor and the Owner consultants which shall include reasonable contingencies for changes in the Project and other costs which are the responsibility of the Owner.

3.3 **Environmental Review.** The Owner agrees to defend, indemnify and hold harmless the Development Manager from and against any and all claims, suits, causes of action or liability of any kind whatsoever with respect to the existence of hazardous or unsafe materials, substances or conditions on the Property, including any hazardous or unsafe materials or substances removed there from before or after the date of this Agreement, except for hazardous or unsafe materials or substances brought on the site by Development Manager or its employees or hazardous conditions at the site caused by the willful or negligent acts or omissions of Development Manager or its employees.

3.4 **Payment of Obligations.** The Owner agrees to pay all amounts payable to the General Contractor, the Project Architect and other persons who perform services or provide labor or materials in connection with the Project and construction and occupancy of the Project at the time such amounts are due and payable under the respective contracts between the Owner and the General Contractor, the Project Architect and other persons. The Owner's obligations under the preceding sentence are not conditioned on, and are independent of, the availability of funds under the Owner's development or construction loan(s) for the Project, but are conditioned on timely receipt of information from the Development Manager with respect to amounts payable to the General Contractor and other contractors whose work the Development Manager is obligated by this Agreement to supervise.

3.5 **Field Office.** The Owner and the Development Manager shall determine the requirements for a field office or on site personnel at a later date as no accommodations are included for the same in the project fee at this time. Should the Owner and Development Manager mutually determine a field office and

on site construction management personnel is required they may modify this agreement to account for these additional services.

SECTION 4. DEVELOPMENT MANAGER'S FEE

4.1 Compensation to be paid to the Development Manager.

4.1.1 Development Manager's Fee. In consideration for the scope of the Development Services as described in Recital C, the Owner shall pay to the Development Manager a fee (the "Development Manager's Fee") as described in Section 4.2 subject to the provisions of Section 4.4 (relating to delay due to litigation or arbitration) and Section 6 (relating to termination). The fee shall be paid in installments as described in Section 4.2 and shown on Attachment B when and as due, without regard to any rights of offset or recoupment, which are hereby waived by Owner. The Development Manager will be responsible for payment to GWB Ninety Nine LLC for their work associated with this Agreement out of the fees due the Development Manager

4.2 Payment of Development Manager's Fee. The Development Manager's Fee for each stage of the Project provided in Section 2.1 of this Agreement shall be payable to the Development Manager as described in Sections 4.2.1 through Section 4.2.3 and as shown on Attachment B. Should any stage duration decrease or increase as agreed upon by Development Manager and Owner, the prorata monthly fee for that stage will be adjusted accordingly. Should stages overlap due to the Project conditions, the fees for overlapping stages will be paid per their prorata amounts for the overlapping months.

4.2.1 Approval Stage. During the Approval Stage, the Development Manager's Fee shall consist of $600,000 based on current development budget as shown in Attachment A and the Development Services fee schedule shown in Attachment B. This fee shall be payable as soon as practical after the Port Authority Lease is signed.
If the Port Authority does not execute the lease and the Interim Agreement is terminated per Article 7 of the Interim Agreement, the Development Manager is not due the Developer Manager's Fee.

4.2.2 Construction Stage. During the Construction Stage (based on 18 month schedule)which will commence with signing and effectiveness of the Lease Agreement between the Port Authority and the Owner, the Development Manager's Fee shall consist of $1,715,945.00 based on current development budget as shown in Attachment A inclusive of both the Development Manager's Fee line item and the Construction Management Fee line item and the Development Services fee schedule shown in Attachment B, which shall be paid by the Owner to the Development Manager in consecutive monthly installments of $95,330.28 per month for months 1-18 of a 18 month construction schedule. Each monthly fee shall be payable on the tenth (10) day of the month commencing upon the earlier of the receipt of Approved Construction Documents per Section 5.2 of Agreement of Lease between the Port Authority and the Owner or receipt of written permission by the Port Authority and Owner to commence construction and continuing thereafter until the tenth (10) day of the eighteenth month.

4.2.2.1 Construction Stage Extension. Should the Construction Stage reach the end of the 18 month schedule and the Use and Occupancy Permit is not obtained for the Project (as described in C of the recitals) through no fault of the Development Manager, the construction stage will be automatically extended and the Development Manager shall be paid an additional Development Manager's Fee by the Owner of $26,666.67 per month for each additional month for up to twelve

additional months or until such time as the Use and Occupancy Permit is obtained for the Project as described in C of the recital whichever is earlier. This Agreement will terminate at the end of this Extension and the Development Manager will be paid any outstanding earned fees.

4.2.2.2 If the Construction Stage is terminated as described in Sections 4.2.2 and 4.2.2.1, the Owner and Development Manager may extend the Construction Stage through a separate agreement that is mutually acceptable.

4.4 **Additional Payment upon Extension Due To Litigation or Arbitration.** Notwithstanding anything in this Section 4 to the contrary, if, because of litigation or arbitration commenced by persons other than the parties hereto which delays the development and construction of the Project, final completion of the Project, as defined in the Construction Contract, shall extend beyond the date set forth for such completion in the Master Schedule adopted during the Approval Stage and approved by the Owner, Owner shall pay Development Manager $68,663.61 per month as additional fee, except to the extent that such delay or portion thereof is solely the fault of Development Manager. Additionally, the Owner shall reimburse the Development Manager on the first day of each month during such extension period for all out-of-pocket expenses pursuant to Section 4.6 hereof.

4.5 **Advances by the Development Manager.** The Development Manager shall not be obligated to make any advance to or for the account of the Owner, nor shall the Development Manager be obligated to incur any liability or obligation for the account of the Owner without assurance that the necessary funds for the payment thereof will be provided by the Owner; provided, however, that no part of the Development Manager's overhead or other expenses not specifically provided in this Agreement shall be payable by the Owner.

4.6 **Expenses to be Reimbursed.** In addition to the Development Manager's Fee, the Owner shall reimburse the Development Manager for all reasonable out-of-pocket costs and expenses paid or incurred by the Development Manager in performing its duties under this Agreement, whether or not such costs and expenses are included as line-items on the Final Budget ("Reimbursable Expenses"), without regard to any rights of offset or recoupment, which are hereby waived by Owner. The Reimbursable Expenses shall include, but are not limited to, the cost of blue prints, reproductions, travel, lodging, messenger and delivery services and any other reasonable out-of-pocket costs relating to the Project that, but for the provisions of this Agreement, would have been paid by the Owner, but shall not include insurance, the salaries and fringe benefits payable to the Development Manager's employees or any of the general overhead and administrative expenses of operating the Development Manager's main office. The Development Manager shall submit to the Owner requests for reimbursement pursuant to this Section, accompanied by copies of invoices or other documentation reasonably substantiating the amount and purpose of the expenditures for which reimbursement is being requested. All requests for reimbursement that meet the requirements of this section 4.6 shall be paid by the Owner within _10_ days from the date that such requests are submitted to Owner by Development Manager.

4.7 **The Owner's Right to Terminate.** In addition to the provisions of Section 6, the Owner shall have the right, in the event the Owner elects at its sole discretion not to proceed with the Project, to terminate this Agreement, which termination shall be effective as of the date of the written notice delivered to the Development Manager. On the effective date of such termination, the Development Manager shall be entitled to receive the earned but unpaid portion

of the Development Manager's Fee prorated to the date of termination and all Reimbursable Expenses incurred on or before the date of termination.

If the Owner recommences the Project as described in Section C of the Recitals within 24 months of the termination of this agreement as described in this section then this Agreement will be reinstituted.

SECTION 5. INSURANCE

5.1 **Development Manager's Insurance.** The Development Manager, at its sole cost and expense for which it shall not be reimbursed pursuant to Section 4.5, shall obtain and maintain in effect at all times during the term of this Agreement a policy or policies of Commercial General Liability Insurance (ISO form or equivalent), naming the Development Manager as insured and naming the Owner as an additional insured, protecting the Development Manager and the Owner against liability for bodily injury, death and property damage occurring upon, on or about the Project, with such policy or policies to afford protection to the limit of not less than $2,000,000 combined single limit annual aggregate for bodily injury, death and property damage plus an umbrella of not less than $5,000,000.

5.2 **Owner's Insurance.** The Owner, at its sole cost and expense, shall obtain and maintain in effect throughout the term of this Agreement a policy of builder's risk property damage insurance on the Project, in such amounts as shall be required by the Port Authority pursuant to the lease, and workers' compensation insurance in the amounts recommended or required by law. The Development Manager shall advise the Owner in consultation with the Owner's insurance provider, on the amounts and types of insurance required. The Owner, at its sole cost and expense, shall obtain and maintain in effect throughout the term of this Agreement a policy or policies of Commercial General Liability Insurance (ISO form or equivalent), naming the Owner as insured and naming the Development Manager as an additional insured, protecting the Owner and the Development Manager against liability for bodily injury, death and property damage occurring upon, on or about the Project, with such policy or policies to afford protection to the limit of not less than $5,000,000 combined single limit annual aggregate for bodily injury, death and property damage. If such policy or policies also cover locations other than the Project, the policy (ies) shall include a provision to the effect that the aggregate limit of $5,000,000 or more if required by the Lease shall apply separately at the Project.

5.3 **Waiver of Subrogation.** Both the Development Manager and the Owner shall include in each of its policies of property damage insurance for the Project, a waiver of the insurer's right of subrogation against the other.

5.4 **Release of Development Manager.** The Owner hereby waives any right of recovery against the Development Manager, and any of the Development Manager's officers, directors, agents or employees, for any loss or damage to the Project caused by fire or other insured peril, including loss or damage caused by the negligent acts or omissions of the Development Manager.

SECTION 6. DEFAULT AND TERMINATION

6.1 **Default and Termination.** Each of the following shall constitute an "event of default" under this Agreement:

6.1.1 If the Owner or the Development Manager consents to the appointment of a Custodian of it or for all or substantially all of its property, or (iv) make a

Development Manager's Fee which has been actually paid by the Owner to the Development Manager as of the date on which any claim arises or the date on which this Agreement is terminated whichever is earlier.

6.5 **Mediation, Litigation and Forum Selection.** In the event that a dispute or claim shall arise with respect to this Agreement or any matter arising hereunder, then, as a condition precedent to any litigation, either party may require that such dispute or claim be submitted to non-binding mediation before American Arbitration Association. If the parties are unable to resolve their dispute at mediation, then either party may institute litigation before a federal or state court of competent jurisdiction located in New York, New York. THE PARTIES AGREE THAT JURISDICTION AND VENUE SHALL LIE EXCLUSIVELY IN SUCH COURT AND NO OTHER.

SECTION 7. MISCELLANEOUS PROVISIONS

7.1 **Indemnification.**

7.1.1 **Indemnification by Development Manager.** The Development Manager hereby agrees to indemnify and hold the Owner harmless from and against any and all claims, actions, damages, losses and expense of any kind whatsoever(including reasonable attorney's fees) arising out of or in connection with the acts and omissions of the Development Manager, its officers, agents and employees, in connection with the performance of its obligations and duties under this Agreement, if and only if attributable to the gross negligence or willful misconduct of the Development Manager, subject to the provisions of Section 6.4 of this Agreement. If the Owner receives notice of any claim or action against the Owner with respect to which indemnification is to be sought from the Development Manager under this Section 7.1.1, the Owner shall promptly notify the Development Manager of the claim or action in writing.

7.1.2 **Indemnification by Owner.** The Owner hereby agrees at Owner's expense to defend, indemnify and hold the Development Manager harmless from and against any and all claims, actions, damages, losses and expense of any kind whatsoever (including reasonable attorney's fees) arising out of or in connection with claims brought by third parties for which the Development Manager is, or is alleged to be, contractually or legally responsible or for bodily injury or death suffered by such third parties in connection with the Property and the construction of the Improvements thereon, so long as such bodily injury or death is not due solely to the gross negligence or willful misconduct of the Development Manager. If the Development Manager receives notice of any claim or action against the Development Manager with respect to which indemnification is to be sought from the Owner under this Section 7.1.2, the Development Manager shall promptly notify the Owner of the claim or action in writing.

7.1.3 **Exculpation.** No constituent partner, member, shareholder or other person or entity in or agent of SJM Partners, Inc, nor any advisor, trustee, director, employee, beneficiary, shareholder, member, partner, participant, representative or agent of any partnership, limited liability company, corporation, trust or other entity that has or acquires a direct or indirect interest in SJM Partners, Inc shall have any personal liability, directly or indirectly, under or in connection with this Agreement, or any amendment or amendments to this Agreement made at any time or times, heretofore or hereafter, and [other party] and its successors and assigns shall look solely to SJM Partner Inc's assets for the payment of any claim or for any performance, and [other party], on behalf of itself and its successors and assigns, hereby waives any and all such personal liability.

general assignment for the benefit of its creditors.

6.1.2 If the Owner or the Development Manager becomes unable to pay its debts when they come due or otherwise is unable to perform its obligations under this Agreement or any Court other than a United States Bankruptcy Court (i) appoints a Custodian of the Owner or the Development Manager or for all or substantially all of its property, or (ii) orders the liquidation of the Owner or the Development Manager, and the order or decree remains unstayed and in effect for 90 days. For purposes of this Section 6.1.2, the term "Custodian" means any receiver, trustee, assignee, liquidator or similar official.

6.1.3 The failure of the Development Manager to observe or perform any covenant, condition or agreement to be observed or performed by it under this Agreement for a period of ten days after receipt of a written notice from the Owner that specifies the failure and requests that the failure be remedied, unless the Owner agrees in writing to an extension of time prior to expiration of the 10-day period, provided, however, if the failure stated in the notice cannot be corrected with reasonable diligence within the applicable cure period, the time period for curing such default shall be extended if corrective action is instituted by the Development Manager within the applicable period and is being diligently pursued until the event of default is corrected.

6.1.4 The failure of the Owner to pay any amounts due the Development Manager on account of the Development Manager's Fee; provided, however, that the Development Manager shall have delivered to the Owner a written notice of the Owner's failure to pay and the Owner shall fail to remedy or correct such non-compliance within 15 days after receipt of such notice.

6.1.5 The occurrence of a foreclosure (or deed in lieu of foreclosure) of any mortgage or deed of trust encumbering the Project or a material uncured default by Owner in any lease that encumbers the project, in which event such occurrence shall be an event of default by the Owner.

6.2 **Termination.** Upon the occurrence of an event of default defined in Section 6.1 of this Agreement, the non-defaulting party may, at its option, upon giving written notice to the defaulting party, terminate this Agreement, which termination shall be effective as of the date of the notice delivered to the defaulting party. On the effective date of Termination, the Development Manager, in addition to its rights under Section 6.3 of this Agreement, shall be entitled to receive the earned but unpaid portion of the Development Manager's Fee (the earned amount shall be based on the actual monthly fees and are to include any deferred payments and fees for the earned work) prorated to the date of termination and all Reimbursable Expenses incurred on or before the date of termination.

6.3 **Other Remedies.** Upon termination of this Agreement due to the occurrence of an event of default defined in Section 6.1 of this Agreement, in addition to the right of the non-defaulting party to terminate this Agreement, the non-defaulting party shall be entitled to pursue whatever rights it may have at law or in equity, including, without limitation, a claim for damages suffered by reason of the default, except as limited by the provisions of this Agreement, including but not limited to the limitation of the Development Manager's liability as provided in Section 6.4 of this Agreement.

6.4 **Limitation on Development Manager's Liability**. Notwithstanding any other provision of this Agreement, the liability of the Development Manager to the Owner under this Agreement, including any liability for attorneys' fees under the terms hereof or applicable law, shall not exceed the amount of the

7.2 **Independent Contractor.** The Development Manager, in accordance with its status as an independent contractor, covenants and agrees that it will conduct itself consistent with such status, that it will neither hold itself out as nor claim to be an officer or employee of the Owner by reason of this Agreement, and that it will not, by reason of this Agreement, make any claim, demand, or application to or for any right or privilege applicable to an officer or employee of the Owner, including, but not limited to, worker's compensation coverage, unemployment insurance benefits, social security coverage or retirement plan membership or credit.

7.3 **Title to Reports and Documentation; Disclosure.** As between the parties to this Agreement, title to all feasibility reports, plans, designs, architectural and engineering studies, soil and water tests, topographical studies, land surveys, market surveys, and other documents of any nature and kind developed in the course of the planning and construction of the Improvements shall be and remain exclusively vested in the Owner.

7.4 **Assignment.** The Development Manager shall not assign either its right, title and interest under this Agreement, or any of its obligations under this Agreement, either voluntarily or involuntarily, whether by operation of law or otherwise, to any other party, without the prior written consent of the Owner which will not be unreasonably withheld. The Owner shall not assign either its right, title or interest under this Agreement or any of its obligations under this Agreement, either voluntarily or involuntarily, whether by operation of law or otherwise, to any other party without the prior written consent of the Development Manager which will not be unreasonably withheld.

7.5 **Owner's Consent.** Whenever the consent or approval by the Owner is required or permitted by this Agreement, the Owner agrees as follows: (i) it will not unreasonably withhold, delay or condition its consent or approval; and (ii) if, within five Business Days after receipt of a written request from Development Manager for the Owner's approval, the Owner fails to approve or to disapprove in writing the particular matter for which its approval was requested, the Owner shall be conclusively deemed for purposes of this Agreement to have approved the matter in question. As used in this Agreement the term "Business Day" shall mean any day other than Saturday, Sunday or a day on which national banks in Washington D.C. are not open for business.

7.6 **Records.** The Development Manager shall keep complete records and implement necessary controls for proper financial management under this Agreement, except that Development Manager shall not handle or be responsible for the Owner's funds. The Owner and its authorized representatives shall be afforded access during normal business hours and upon reasonable advance notice to Development Manager's records relating to the performance of the Construction Services (including correspondence, instructions, drawings, receipts, memoranda and purchase orders) under this Agreement. The Development Manager shall preserve and maintain all such records for a period of two years after the Certificate of Occupancy for project as described in Section C of the Recital.

7.7 **Notices.** Any notice required or desired to be sent under this Agreement shall be written and hand delivered or sent by registered or certified mail, return receipt requested, postage prepaid, to the parties to this Agreement at the following addresses, or at such other address as either party hereto may designate from time to time by written notice to the other party given pursuant thereto:

Owner:
George Washington Bridge Bus Station Development Venture, LLC

c/o GWB Development Partners LLC
9001 Congressional Court
Potomac, MD 20854

With a copy to:

GWB Blue LLC
[insert address]

Development Manager:
SJM Partners, Inc.
c/o Stephen McBride
9001 Congressional Court
Potomac, MD 20854

7.8 **Development Manager and Owner Representatives.** Whenever under the provisions of this Agreement the approval of the Development Manager or the Owner is required or the Development Manager or the Owner is required to take some action at the request of the other, such approval or such request shall be given for the Development Manager by its Authorized Representative (as defined below) and for the Owner by its Authorized Representative; and any party to this Agreement shall be authorized to act on any such approval or request. "Authorized Representative" shall mean the person or persons at the time designated to act on behalf of the Development Manager or the Owner, as the case may be, by written certificate furnished to the other party specifying such person or persons and signed by a duly authorized officer or member-manager of the Development Manager or the Owner, as the case may be.

7.9 **Partial Invalidity.** In the event that any one or more of the phrases, sentences, clauses, or paragraphs contained in this Agreement shall be declared invalid by unappealable order, decree, or judgment of any court, this Agreement shall be construed as if such phrases, sentences, clauses, or paragraphs had not been inserted in this Agreement, it being intended by the parties that the remaining provisions of this Agreement shall remain in full force and effect notwithstanding such invalidation.

7.10 **Headings.** The headings in this Agreement are inserted for convenience only and are not to be used in construing or interpreting any of the provisions of this Agreement.

7.11 **Attorneys Fees.** If either party employs an attorney or attorneys to enforce any of the provisions of this Agreement, or to protect its interest in any manner arising under this Agreement, or to recover damages for the breach hereof, the non-prevailing party in any final judgment agrees to pay to the other party all reasonable costs, charges and expenses, including reasonable attorneys' fees and disbursements, expended or incurred in connection therewith at both the trial court and appellate court levels.

7.12 **Survival.** Each term, covenant and agreement contained herein shall survive any expiration or either termination of this Agreement and shall remain in full force and effect as between the Owner and the Development Manager notwithstanding any such expiration or termination to the extent that any such term, covenant and agreement (i) has not been fully performed in accordance with this Agreement prior to such expiration or termination, or
(ii) contemplates performance by either party hereto subsequent to such expiration or termination.

7.13 **Waiver of Breach**. No failure by the Development Manager or the Owner to insist upon the strict performance of any covenant, agreement, term, or condition of this Agreement, or to exercise any right or remedy consequent upon a breach thereof, shall constitute a waiver of any such breach thereof, or any subsequent breach of such covenant, agreement, term or condition. No waiver of any breach shall affect or alter this Agreement, but each and every covenant of this Agreement shall continue in full force and effect with respect to any other than existing or subsequent breach thereof.

7.14 **Entire Agreement**. This Agreement and the Attachments attached hereto constitute the entire agreement between the Owner and the Development Manager with respect to the subject matter hereof, and supersedes and replaces all prior or contemporaneous discussions, negotiations, letters, memoranda or other communications, oral or written, with respect to the subject matter hereof. This Agreement may only be subsequently modified or amended in a writing signed by both the Owner and the Development Manager.

7.15 Effective Time; Termination. This Agreement is an Exhibit to the Master Agreement dated of even date among George Washington Bridge Bus Station Development Venture LLC, GWB Development Partners, LLC, Marketplace GWB LLC, GWB Blue LLC and the other signatories thereto. To the extent there is a conflict between the provisions of the Master Agreement and this Agreement, the provisions of the Master Agreement shall control. Anything in this Agreement to the contrary notwithstanding, this Agreement shall become effective at the Effective Time (as defined in the Master Agreement) and shall not become effective until and unless the Effective Time occurs. This Agreement shall terminate and be of no force or effect upon the termination of the Master Agreement in accordance with its terms.

7.15 **Governing Law**. This Agreement shall be construed in accordance with and governed by the laws of the State of New York, without regard to the conflicts of laws principles thereof

Development Manager: SJM Partners, Inc.

By: _____

Title:

Owner: George Washington Bridge Bus Station Venture LLC

By: GWB Development Partners, LLC, its sole member

By: Marketplace-GWB, LLC (f/k/a PA-GWB, LLC),

Managing Member

By: _____

Stephen J. Garchik, Manager

By: _____

Douglas Slayton, Manager

Cc:

7.13 Waiver of Breach. No failure by the Development Manager or the Owner to insist upon the strict performance of any covenant, agreement, term, or condition of this Agreement, or to exercise any right or remedy consequent upon a breach thereof, shall constitute a waiver of any such breach thereof, or any subsequent breach of such covenant, agreement, term or condition. No waiver of any breach shall affect or alter this Agreement, but each and every covenant of this Agreement shall continue in full force and effect with respect to any other then existing or subsequent breach thereof.

7.14 Entire Agreement. This Agreement and the Attachments attached hereto constitute the entire agreement between the Owner and the Development Manager with respect to the subject matter hereof, and supersedes and replaces all prior or contemporaneous discussions, negotiations, letters, memoranda or other communications, oral or written, with respect to the subject matter hereof. This Agreement may only be subsequently modified or amended in a writing signed by both the Owner and the Development Manager.

7.15 Effective Time; Termination. This Agreement is an Exhibit to the Master Agreement dated of even date among George Washington Bridge Bus Station Development Venture LLC, GWB Development Partners, LLC, Marketplace GWB LLC, GWB Blue LLC and the other signatories thereto. To the extent there is a conflict between the provisions of the Master Agreement and this Agreement, the provisions of the Master Agreement shall control. Anything in this Agreement to the contrary notwithstanding, this Agreement shall become effective at the Effective Time (as defined in the Master Agreement) and shall not become effective until and unless the Effective Time occurs. This Agreement shall terminate and be of no force or effect upon the termination of the Master Agreement in accordance with its terms.

7.15 Governing Law. This Agreement shall be construed in accordance with and governed by the laws of the State of New York, without regard to the conflicts of laws principles thereof

Development Manager: SJM Partners, Inc.

By: _____

Title:

Owner: George Washington Bridge Bus Station Venture LLC
By: GWB Development Partners, LLC, its sole member
By: Marketplace-GWB, LLC (f/k/a PA-GWB, LLC),
Managing Member

By: _____
Stephen J. Garchik, Manager

By: _____
Douglas Sleyton, Manager

Co:

Exhibit A-11

TERMINATION OF PROPERTY MANAGEMENT AND LEASING AGREEMENT

THIS TERMINATION AGREEMENT OF PROPERTY MANAGEMENT AND LEASING AGREEEMENT (the "Termination Agreement") is executed on this 3rd day of June, 2011, by and between **GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC ("Owner")** and **CLEARVIEW MANAGEMENT SERVICES LLC ("Manager")**.

WITNESSENTH:

WHEREAS, Owner and Manager executed that certain Property Management and Leasing Agreement dated as of July 16, 2010 (the "**Management Agreement**"), pursuant to which Manager agreed to provide certain services in connection with the Leased Premises (as defined in the Agreement of Lease between The Port Authority of New York and New Jersey and George Washington Bridge Bus Station Development Venture LLC – the "Master Lease") including improvements, located at 4211 Broadway, New York, New York (the George Washington Bridge Bus Station), the Leased Premises and the other improvements thereon are referred to as the "**Property**"; and

WHEREAS, as of the date hereof, the Owner and Manager agree to terminate the Management Agreement.

NOW, THEREFORE, in consideration of the foregoing and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged by Manager, Owner and Manager agree and confirm that the Management Agreement is terminated as of the Effective Time (defined below), and all rights and obligations of Owner and Manager under the Management Agreement shall cease and terminate without any further liability of either party to the other as of the Effective Time.

This Agreement is an Exhibit to the Master Agreement, dated as of the date hereof (the "Master Agreement"), by and among George Washington Bridge Bus Station Development Venture LLC, GWB Development Partners, LLC, Owner, and the other signatories thereto. To the extent there is a conflict between the provisions of the Master Agreement and this Termination Agreement, the provisions of the Master Agreement shall control. Anything in this Termination Agreement to the contrary notwithstanding, this Termination Agreement shall not become effective until the Effective Time (as defined in the Master Agreement). This Termination Agreement shall terminate and be of no force or effect upon the termination of the Master Agreement in accordance with its terms.

IN WITNESS WHEREOF, the parties have executed this Termination Agreement, in multiple counterpart copies, as of the date first written above.

GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC

By: GWB Development Partners, LLC, Sole Member

By: Marketplace-GWB, LLC
(f/k/a PA – GWB, LLC), Member

By: _____
Name: PAUL SLAYTON
Title: MANAGER

CLEARVIEW MANAGEMENT SERVICES LLC

By: Clearview Projects LLC
(f/k/a PA Developers, LLC)

By: _____
Paul Slayton
Manager

Exhibit A-12

PREMISES:

BROADWAY MARKEPLACE
4211 BROADWAY, NEW YORK, NEW YORK

PROPERTY MANAGEMENT AND LEASING AGREEMENT

TABLE OF CONTENTS

Page

ARTICLE I APPOINTMENT AND TERM 1

1.1 Appointment 1
1.2 Term 2

ARTICLE II DUTIES OF MANAGING AGENT 2

2.1 Budgets and Schedules 2
2.2 Operations; Building Services 7
2.3 Maintenance 8
2.4 Enforcement of Leases 8
2.5 Compliance with Laws, Contracts 8
2.6 Records. 8
2.7 Reports and Statements 9
2.8 Annual Financial Statements and Tax Returns 10
2.9 Legal Requirements 10
2.10 Employment of Personnel 11
2.11 Tax Certiorari, Abatements and Condemnation 12
2.12 Leasing Agent 12
2.13 Submission of Reports 12
2.14 Improvements 12
2.15 Supervision of Tenants 13
2.16 General Duties 13

ARTICLE III BANK ACCOUNTS, DISBURSEMENTS, ADVANCES 13

3.1 Operating Account 13
3.2 Tenant Security Deposit Account 13
3.3 Advances 13

ARTICLE IV AUTHORITY OF MANAGER 14

4.1 Implementation of Budgets 14
4.2 Contracts for Services 14
4.3 Purchase of Supplies 14
4.4 Insurance Claims 15
4.5 Management Signature 15
4.6 Limitation of Authority 15

ARTICLE V COMPENSATION AND REIMBURSEMENT 16

5.1 Management Fee. 16

5.2 Payment of Management Fee. 16
5.3 Leasing Commissions. 16
5.4 Restrictions Associated with Payment of Leasing Commissions. 16
5.5 Sole Compensation 18

ARTICLE VI THIRD PARTY CONTRACT STANDARDS 18

6.1 Value 18
6.2 Contracts with Related Parties 18
6.3 Exculpation 18

ARTICLE VII INSURANCE, INDEMNIFICATION AND EXCULPATION 19

7.1 Property and Liability-Insurance 19
7.2 Indemnification by Owner 19
7.3 Manager Insurance 20
7.4 Exculpation 20
7.5 Indemnification by Manager 21
7.6 Settlement of Claims 21

ARTICLE VIII DURATION, TERMINATION AND DEFAULT 21

8.1 On Sale 21
8.2 Sale of Interest or Termination 21
8.3 Default and For Cause 21
8.4 Notices of Default and Termination 22
8.5 Obligations upon Termination 22

ARTICLE IX GENERAL 23

9.1 Notices 23
9.2 Non-Discrimination 24
9.3 No Advertising 24
9.4 Further Assurances 24
9.5 Status Report 24
9.6 Successors and Assigns 24
9.7 Waiver 24
9.8 Additional Remedies 24
9.9 Attorneys' Fees 24
9.10 Entire Agreement 25
9.11 Severability 25
9.12 Terminology 25
9.13 Amendment 25
9.14 Counterparts 25
9.15 Governing Law 25
9.16 Effective Time; Termination. 25
9.17 Required Approvals. 25

PROPERTY MANAGEMENT AND LEASING AGREEMENT

PROPERTY LOCATION: 4211 Broadway, New York, New York

This Management and Leasing Agreement ("Agreement") is dated as of the 3rd day of June, 2011, by and between George Washington Bridge Bus Station Development Venture LLC, ("Owner"), and GWB Ninety Nine LLC ("Manager").

WITNESSETH:

WHEREAS, Owner is the lessee of the Leased Premises (as defined in the Agreement of Lease between The Port Authority of New York and New Jersey and George Washington Bridge Bus Station Development Venture LLC- the "Master Lease") including improvements, located at 4211 Broadway, New York, New York (the George Washington Bridge Bus Station). These Master Leased Premises and the other improvements thereon are the subject of this Agreement and are hereinafter collectively referred to as the "Property" or the "Project".

WHEREAS, as at the Effective Time (as defined below), the Property Management and Leasing Agreement, dated as of July 16, 2010 (the "Old Agreement"), by and between Owner and Clearview Management Services (the "Old Manager") was terminated; and, to replace to the Old Agreement and the Old Manager, the Owner desires to enter into this Agreement with Manager.

WHEREAS, Owner desires to have the Property managed and operated in a first class, professional manner. Manager has the commercial real estate management and operational expertise and capability to perform the services described herein and to administer the Property in a first class, professional manner.

NOW, THEREFORE, incorporating the foregoing recitals, in consideration of the mutual promises and covenants herein contained and for other valuable consideration, the receipt and adequacy of which are hereby acknowledged, Owner hereby engages Manager, on the terms and conditions contained herein, to rent, lease, manage, and direct the operations of the Property, and Manager hereby accepts said engagement on the terms and conditions contained herein. The management by Manager provided for under this Agreement shall extend to the Property, managing the obligations set forth in the Master Lease and to any equipment and mechanical systems which are or shall be used or operated in connection therewith.

ARTICLE I

APPOINTMENT AND TERM

1.1 Appointment.

(a) Manager hereby acknowledges that the Property is owned by the Port Authority of New York and New Jersey. As at the Effective Time, Owner is the lessee of the Property. Owner hereby appoints Manager, as an independent contractor for the operation, management, improvement, leasing of the Property and complying with the reporting, maintenance, capital repair, insurance, notice obligations as well as other management

obligations more fully described in the Master Lease upon the terms hereinafter set forth. Manager hereby accepts such appointment on the terms hereinafter set forth, and agrees to furnish or arrange for and manage the services of its organization or other organizations for the operation and management of the Property.

(b) This Agreement shall not be construed to create a contractual relationship of any kind between the Manager and any person or entity other than the Owner. Under no circumstances shall Manager be regarded as the Owner, developer, contractor, architect or engineer of the Project. The Owner expressly recognize that the Manager is an independent contractor but is also an indirect equity owner of Owner.

1.2 Term. This Agreement shall be effective as of the first business day following the date on which the Effective Time occurs, and shall continue in full force and effect through the third anniversary of the date hereof. Thereafter, this Agreement shall be subject to annual renewal by Owner on the terms and conditions hereof, subject to termination on the terms provided in Article VIII hereof.

ARTICLE II

DUTIES OF MANAGING AGENT

2.1 Budgets and Schedules. (a) On or before November 1 of each year, Manager shall prepare and submit to Owner for its consideration and approval (i) a proposed operating budget (the "Operating Budget"), (ii) a proposed capital improvement budget (the "Capital Improvement Budget") and (iii) a proposed Leasing Schedule and Tenant Improvement Schedule (as those terms are hereinafter defined) for the next succeeding calendar year.

(b) The format of the Operating Budget shall contain at least the following information:

(i) the projected income and receipts from the Property;

(ii) operating expenses (including without limitation, advertising and promotional expense) with (A) each such operating expense set forth in reasonable detail, (B) each category of expense listed as a separate line and (C) each Non-Recurring Controllable Expense listed on a separate line and labeled as a Non-Recurring Controllable Expense. "Non-Recurring Controllable Expenses" shall mean each Controllable Expense (items of expense other than the following uncontrollable expenses: real estate taxes, assessments, utility charges, insurance premiums for insurance approved by Owner, interest on borrowings of Owner, and leasing commissions and management fees pursuant to this Agreement or other agreements approved by Owner ("Uncontrollable Expenses")), which is not incurred on a weekly, monthly, semiannual or other regular basis, but which, during any calendar year is anticipated to be incurred once or on an irregular basis.

(c) The Capital Improvement Budget shall be in a format that shall contain at least the following information:

(i) reasonably detailed description of all Capital Improvements (which term shall mean all alterations, replacements, additions or improvements of or to the Property the cost of which for Federal income tax purposes may not be deducted as an expense but must be capitalized and amortized over (A) the life of such alteration, replacement, addition or improvement or (B) in the case of any such improvement made to prepare space in the Property for occupancy by the tenant of such space (a "Tenant Improvement"), over the term of such tenant's lease), other than Tenant Improvements which Manager desires to make to the Property during the next succeeding calendar year and the estimated cost thereof;

(ii) Each Capital Improvement shall be listed on a separate line;

(iii) A separate line item for a contingency allowance, if appropriate; and

(iv) A separate line item for such insurance as is generally obtained in connection with comparable construction projects, if appropriate.

(d) The Leasing Schedule and the Tenant Improvement Schedule shall be in a format that shall contain at least the following information:

(i) The leasing schedule (the "Leasing Schedule") shall set forth (A) all space at the Property which is then vacant or the leases of which will expire during the ensuing calendar year, (B) a minimum annual Effective Rent (as hereinafter defined) for such space (computed on a rentable square foot basis), (C) the maximum amount of any concessions or free rent to be offered to prospective tenants of such space, (D) the maximum rate of any leasing commissions to be incurred in leasing such space (expressed as a percentage of a year's rents), and (E) the maximum lease term(s) to be offered to prospective tenants of such space; and

(ii) A schedule (the "Tenant Improvement Schedule") showing the maximum amount per rentable square foot to be expended by Owner for Tenant Improvements in respect of such space.

As used herein, the term "Effective Rent" shall mean the rent for such space, calculated by taking into account not only the stated fixed annual rent but also, to the extent applicable, percentage rent, escalations, pass-throughs and increases based on porter's wage rates or a consumer price index (with operating expense and real estate tax bases or, if no such bases are provided for, operating expenses and real estate taxes for the year in which the term of the lease in question commences, subtracted from base rents in making such calculation, so that rents under different leases may be compared without regard to differing base years and/or base amounts), rent concessions, free rent and the cost per rentable square foot of any Tenant Improvements made or to be made to such space (such rent concessions, free rent, and the cost of such Tenant Improvements to be amortized over the term (not including extension or renewal terms) of the lease in question).

(e) Manager shall consult with Owner as to the assumptions used in preparing the budgets, and shall make revisions or updates as required by Owner or by changes in assumptions. Owner shall review the budgets submitted by Manager and revisions or updates thereto, and shall use good faith efforts to notify Manager of Owner's approval of the budgets, or

direction to Manager to revise one or more of the budgets, within thirty (30) days after submission of same to Owner; provided, in no event will Owner be deemed to have approved the budgets in the absence of actual approval thereof. Manager shall promptly make such revisions as directed and resubmit the revised budget(s) to Owner for its review and approval. All budgets as are approved by Owner are referred to as the "Approved Budgets".

(f) Upon Owner's approval of the Operating Budget (each such budget, an "Approved Operating Budget") (as the same may be revised or updated in accordance with Section 2.1 (e) hereof), Manager may make the expenditures provided for therein. Manager shall obtain the prior written approval of Owner for any expenditure or expenditures that:

(i) in the case of a Controllable Expense that is not a Non-Recurring Controllable Expense ("Recurring Controllable Expense"), would cause the amount of such expenditure taken together with the aggregate of all other expenditures made prior to or simultaneously with such expenditure during the then current calendar year on account of Recurring Controllable Expenses to exceed by more than 5% the aggregate amount of Recurring Controllable Expenses provided for in such Operating Budget for the period commencing on January 1 of such calendar year, or

(ii) in the case of a Non-Recurring Controllable Expense, would cause the expenditure for that particular expense to exceed by more than 5% the amount budgeted therefore.

(g) Upon Owner's approval of the Capital Improvement Budget (as the same may be revised or updated in accordance with Section 2.1 (e) hereof), Manager may make the Capital Improvements set forth in said budget and pay the cost thereof. Manager shall obtain the prior written approval of Owner before commencing or proceeding with such Capital Improvement if the cost of making same, together with the cost of making all other Capital Improvements to the Property which are provided for in such budget and which are actually undertaken by Owner would exceed by more than 5% the aggregate budgeted cost for all such Capital Improvements. Upon request of Owner, Manager shall also submit to Owner for its approval, prior to undertaking a Capital Improvement (except if such Capital Improvement constitutes a Tenant Improvement within the Tenant Improvement Schedule or an Emergency Expense (as hereinafter defined)) (A) the plans and specifications therefore, (B) the identity of the contractor(s) and/or construction manager engaged by Manager to perform such Capital Improvement, and (C) the construction contract(s) and/or construction management agreement to be entered into by Manager and such contractor(s) and/or construction manager. If Owner so requests, then after Owner approves any such plans and specifications, such plans and specifications (as the same may be modified, subject to the prior written consent of Owner with respect to any material modification) shall be used in performing such Capital Improvement and shall be delivered to the general contractor or construction manager performing or supervising the same and incorporated into the contract between Manager and such general contractor or construction manager.

(h) If at the beginning of any calendar year, the Capital Improvement Budget or the Operating Budget, or the amount provided for any Non-Recurring Controllable Expense in

the Operating Budget, or any item in the Capital Improvement Budget shall not have been approved by Owner, then:

(i) any items in the Capital Improvement Budget, and the amount of the Non-Recurring Controllable Expenses in such Operating Budget, which have been so approved shall become operative immediately;

(ii) with respect to such Operating Budget, Manager shall be entitled to expend, in respect of the Recurring Controllable Expenses in the then current calendar year, an amount equal to the budgeted amount for the immediately preceding calendar year (as adjusted by the percentage of increase, if any, in the Consumer Price Index for New York-New Jersey, All Urban Consumers, between the current year and the immediately preceding calendar year); provided, however, that if any contract approved by Owner provides for an automatic increase in costs after the beginning of the then current calendar year, then Manager shall be entitled to expend the amount of such increase.

(i) Owner's prior written consent shall not be required to pay Uncontrollable Expenses, notwithstanding that such expenses may exceed the amount budgeted therefore in the Approved Operating Budget; provided, however, that Manager shall promptly submit to Owner for its approval a revision to the Approved Operating Budget to reflect properly the actual amount of Uncontrollable Expenses.

(j) Upon Owner's approval of the Leasing Schedule and Tenant Improvement Schedule, Manager may, subject to Section 2.12(a) hereof, negotiate leases on behalf of Owner for the space provided for therein and make Tenant Improvements thereto, if any, pursuant to such schedules. Manager shall not, without the prior written consent of Owner:

(i) Offer for rent any such space at an Effective Rent which is less than the minimum Effective Rent provided for in the approved Leasing Schedule; or

(ii) Offer for rent any spaces under leases which do not provide for either annual real estate tax and operating expense escalation, or increases based on consumer price index, and, if applicable, percentage rent; or

(iii) (A) offer concessions or free rent to prospective tenants thereof in excess of the amounts provided therefore in the approved Leasing Schedule, or (B) agree to perform Tenant Improvements for such space costing more than the maximum amount therefore in the approved Tenant Improvement Schedule; or

(iv) incur leasing commissions in respect of such space at rates which exceed those set forth in the approved Leasing Schedule; or

(v) negotiate a lease for such space or portion thereof for a term, including renewal terms, either shorter or longer than that provided therefore in the approved Leasing Schedule; or

(vi) negotiate a lease upon terms that do not comply with the requirements of Owner's mortgage financing for the Property.

(k) Upon Owner's approval of the Tenant Improvement Schedule and the other items required to be approved by Owner pursuant to Section 2.1(g) with respect to Capital Improvements, Manager may commence the Tenant Improvements provided for therein pursuant to the lease providing for such Tenant Improvements:

(l) If in the reasonable judgment of Manager, any Capital Improvement must be undertaken, or any operating cost incurred, immediately in order to protect the Property or any portion thereof from imminent harm, to avoid accident or imminent injury to individuals or to cure any immediately hazardous violations of law, Manager shall use diligent efforts to notify Owner at least 24 hours in advance of the necessity of undertaking such Capital Improvement or incurring such operating cost; provided, however, that Manager shall be authorized to make such Capital Improvement or to incur such operating expense, without regard to the Approved Budget and without first securing the approval of Owner, provided that the aggregate amount incurred or to be incurred is less than $100,000 (each such expenditure being hereinafter referred to as an "Emergency Expense"). Manager shall in all events notify Owner promptly after the incurrence of any Emergency Expense.

(m) The budgets, schedules and proposals provided for in this Article 2, after approval by Owner, may be periodically revised with the prior written approval of Owner.

(n) With respect to any specific space at the Property that is then vacant or that is about to become vacant, Manager shall submit to Owner for its review and written approval proposed leasing terms, if such terms would differ in any respect from the Leasing Schedule and Tenant Improvement Schedule then in effect ("Owner's Lease Proposal"). The Owner's Lease Proposal shall contain the following information:

(i) (A) the minimum annual Effective Rent for such space (computed on a rentable per square foot basis), (B) the maximum amount of any concessions or free rent to be offered to prospective tenants of such space, (C) the maximum rate of any leasing commissions to be incurred in such space (expressed as a percentage of first year's rents), and (D) the maximum lease term(s), including renewal terms, to be offered to prospective tenants of such space; and

(ii) all the information required to be contained in a Tenant Improvement Schedule pursuant to Section 2.1(d) (ii) hereof.

(o) Upon Owner's approval of the Owner's Lease Proposal, Manager may, subject to Section 2.12(a) hereof, offer for lease the space in question pursuant thereto, and the Owner's Lease Proposal will constitute the standard for the leasing of such space and the provisions of Section 2.1(j)(i), (ii), (iii), (iv) and (v) hereof shall apply thereto, with the term "Lease Proposal" substituted for the terms "Leasing Schedule" and "Tenant Improvement Schedule."

(p) Upon request by Owner with reasonable advance notice, Manager will make available to Owner or any of its authorized representatives, at Manager's home office or at the Property, all books and records maintained by Manager in connection with the Property, including without limitation the following information:

(i) the rental and other income received by Manager from the Property;

(ii) the status of Manager's efforts to rent vacant space or to extend expiring leases at the Property (including rents per-square-foot then being obtained; the names of prospective tenants with whom Manager is then in the course of active negotiations for the lease of any portion of the Property; the terms of any active proposals for the lease of all or any portion of the Property; the amount of any concessions or free rent being granted; the amounts of any leasing commissions being paid or incurred; and, the Tenant Improvement expense per-square-foot being incurred); and

(iii) a schedule of any vacancies which occurred at the Property during the calendar year in question which were not set forth on the approved Leasing Schedule (also including all such information in respect of such space that would have been included in the Leasing Schedule and Tenant Improvement Schedule if such space had been vacant prior to the preparation of such schedules).

(q) Manager shall be responsible for (a) safekeeping all leases, (b) providing written lease summaries which specify Owner's and tenant's obligations thereunder, (c) providing Owner with timely prior written notice of landlord's obligations under the leases as and when such obligations arise and (d) such other matters as Owner shall reasonably require.

(r) Manager shall prepare, or provide all such other information or documents (including copies of executed leases) to Owner promptly after request therefore.

(s) Manager shall use diligent and professional efforts to cause the Property to be maintained and operated in accordance with the terms of this Agreement, the Approved Budgets and the Master Lease.

(t) Notwithstanding section 2.1.(j), Manager can lease vacant space month to month in a lease format approved by Owner without prior written approval by Owner and to extent Tenant Improvements are not required

2.2 Operations; Building Services. Manager shall continually operate the Property in a first class manner, at least equal to that standard then currently followed by first class management firms in connection with other comparable buildings in New York, New York, and shall perform all acts necessary or desirable for the efficient operation of the Property. In connection with its operation of the Property, Manager shall provide or arrange for the provision to tenants of only those services stipulated in leases in existence as of the date of this Agreement, those stipulated in the standard form of lease approved by Owner, additional services customarily provided to tenants at additional charge to such tenants and such other services as Owner may approve in writing. Manager shall collect from tenants the charges for such services in accordance with the schedule established by Manager and approved by Owner or otherwise as provided in the leases. No charge for any other services shall be made without Owner's prior approval. If, in Owner's sole opinion, any such service is not customarily furnished or rendered in connection with the rental of real property in the area in which the Property is located, such service shall, at Owner's direction, be discontinued by Manager.

2.3 Maintenance. Manager shall maintain or cause the Property to be maintained, at Owner's cost, in accordance with standards required from time to time by Owner and/or by the applicable terms of leases in effect for portions of the Property, including but without being limited thereto, repairs to improvements, maintenance of mechanical systems and equipment, landscaping of the Property and such other normal maintenance, alteration and repair work as may be reasonably advisable or necessary, provided, however, that subject to Section 2.1 hereof, the expense to be incurred for such maintenance, alteration or repair shall be such expense, which is provided in the Approved Budget or is an Emergency Expense as provided in Section 2.1(m). Manager shall provide regular and systematic inspections of the Property in order to comply with any requirements concerning the management or maintenance of the Property imposed upon the Property or Owner by law, ordinance or regulation of governmental authority, or any obligation of which Manager has notice contained in insurance policies or other leases.

2.4 Enforcement of Leases. Manager shall take all proper and necessary action to enforce the terms of all leases and to timely and diligently collect all rents and other charges due from or payable by tenants and others in accordance with the leases and the authorized use of the Property, including promptly instituting any legal proceedings for the non-payment of rent. Owner authorizes Manager to request, demand, collect, receive and receipt for all such rent and other charges and, subject in each instance to the prior written approval of Owner, to settle or compromise the payment of such amounts. For individual settlements or compromises where the disputed amount is less than $50,000.00 Manager need not obtain the prior approval of Owner, but shall report such settlements on the next tenant report required to be submitted under Section 2.7(a). Manager shall see that all tenants of the Property are informed of any rules, regulations or notices which may be promulgated by Owner or Manager from time to time.

2.5 Compliance with Laws, Contracts. Unless Owner has notified Manager of Owner's intention to contest any of the following matters (in which event Manager shall assist Owner in undertaking such contest), Manager shall comply with and cause the Property to be kept, maintained, used and occupied in compliance with the following, as now in effect or as may be hereafter in effect: (i) all applicable laws, statutes and ordinances; (ii) all applicable rules, regulations and orders of any governmental authority or board of insurance underwriters (specifically including, but not by way of limitation, changes in building codes and fire regulations); (iii) any direction or occupancy certificate issued pursuant to any law, regulation or rule by any public officer; (iv) the provisions of any fire and casualty insurance policy or policies insuring Owner's interest in the Property of which Manager has notice (so as to not affect the insurance coverage or increase the premium rate therefore); and (v) the provisions of any mortgage, lease, agreement, or other instrument affecting the Property of which Manager has notice.

2.6 Records.

(a) Manager shall maintain in a manner customary and consistent with good accounting principles, practices and procedures, a comprehensive system of office records, books and accounts (which records, books and accounts shall be and remain the property of Owner); to the extent that particular items of expenditure or escalation thereof with respect to the Property

are billed separately to tenants of the Property, Manager shall maintain the Property books and records in a manner as to enable Manager to separately account for such items of expenditure on a calendar year basis and with respect to any other fiscal or calendar year period pursuant to any lease. The Property books, records, bills, receipts, vouchers, and time records shall be maintained at the principal office of Manager in New York, New York or at such other place as Manager and Owner shall mutually agree, and Owner shall at all reasonable times have access to such books, records and accounts and to all vouchers, files and other material pertaining to the Property and to the transactions contemplated by this Agreement. Manager shall maintain the records, books and accounts in a safe manner and separate from any records not having to do directly with the Property. Such books shall be kept on a calendar year basis and based on the accrual method of accounting (except as Owner may otherwise direct). No disclosure of financial data concerning the Property shall be made by Manager to any other persons unless specifically authorized in writing by Owner.

(b). Manager shall bear all costs of central accounting, personnel, accounting forms, off site data processing and other off-site accounting functions.

(c) Owner, its members and their representatives, shall have the right to audit such books, records and accounts during the period of this Agreement and for six years after termination of this Agreement. The cost of any such audit shall be borne by Owner. Any adjustments in amounts due and owing by either Owner or Manager shall be paid within thirty (30) days following receipt of the audit.

2.7 Reports and Statements. Manager shall prepare and submit to Owner the following reports and statements and shall include such supplementary statements as Owner shall reasonably request, which reports and statements shall be certified by Manager to be accurate in accordance with Manager's records.

(a) A tenant report, not later than twenty-one (21) days after the close of each calendar quarter, to include the space leased and vacated during the preceding calendar quarter, all the space leased and the tenants thereof, as of the end of the preceding calendar quarter, and the rental rate and status of rental payments of all the space leased as of the end of the preceding calendar quarter, direct and sublet space available for lease a list of tenant bankruptcies, and a list of pending litigation. Attached thereto if available, or subsequent to the submission of such tenant report, but in all events within 60 days after any lease or amendment is entered into, or renewal notice is received, shall be submitted true, correct and complete copies of (A) all leases, (B) abstracts of all leases, (C) all amendments to leases and (D) all notices renewing or extending leases received or entered into during the preceding quarter.

(b) A cash flow statement, not later than twenty-one (21) days after the close of each calendar quarter, for the preceding calendar quarter and the current year to date, with a comparison to the annual Operating Budget, the Capital Improvement Budget and the Tenant Improvement Budgets, as applicable, and an explanation of all major variances. The cash flow statement shall be supported by:

(i) a rent roll showing, by tenant, security deposits if any, cash collected and prepaid or accrued rents;

(ii) a cash disbursement journal;

(iii) a reconciliation of advanced operating funds;

(iv) a reconciliation of cash receipts to deposits;

(v) a reconciliation of security deposit accounts, if any;

(vi) a schedule of Capital Improvements.

(c) Promptly upon receipt thereof, a copy of all notices or statements received with respect to the bank accounts or insurance policies respecting the Property, or received from any governmental agency; provided, however, that items submitted shall exclude copies of any items that Owner agrees, in writing, may be excluded and copies of information bulletins, questionnaires and similar materials of general distribution.

(d) Prompt notification of all significant occurrences and circumstances affecting the Property, its operation or, in any manner, the interest of Owner in and to the Property. Manager shall promptly investigate and make a full written report as to all accidents or claims for damages relating to ownership, operation and maintenance of the Property which reports shall include any damage or destruction to the Property and the estimated cost of repair, and shall cooperate and make any and all reports required by an insurance company representing Owner or Owner's lenders or mortgagees in connection therewith.

(e) Promptly upon request therefore, any reports required to be delivered to Owner's mortgage lenders.

2.8 Annual Financial Statements and Tax Returns. Manager shall, at the expense of Owner, have an annual statement in compilation format prepared of the Property's books, records and accounts, and reviewed by a firm of certified public accountants selected by Owner. Manager shall furnish Owner with a copy of such annual compilation and review and a management letter, together with related financial statements and tax returns, as soon as reasonably practicable after the close of the calendar year. Upon request of Owner, Manager shall cooperate with Owner's certified public accountants in the preparation by such accountants of an audited annual statement of Property books, records and accounts. Such audit will be conducted at Owner's cost and expense; provided, that Manager's cooperation shall be without extra charge.

Manager shall prepare or cause to be prepared all returns and statements, if any, which must be filed on behalf of the Property with any taxing authority, and shall submit such returns and statements to Owner for approval prior to filing, and when approved by Owner make timely filing thereof. In addition, Manager will furnish Owner with a report setting forth in sufficient detail all such data and information regarding the business of the Property as shall enable Owner to prepare its federal, state and local tax returns.

2.9 Legal Requirements. Manager shall execute and timely file all forms, reports and returns required by law relating to the employment of personnel employed by Manager in connection with the Property. Manager shall cause to be filed each year appropriate

the extent the same are included in the Operating Budget approved by Owner or are otherwise approved by Owner in writing. Notwithstanding anything contained herein, if any such reimbursable personnel perform activities for properties other than the Property, the compensation for such personnel shall be fairly allocated between the Property and such other properties.

2.11 Tax Certiorari, Abatements and Condemnation. Manager shall, without charge or reimbursement, except for out-of-pocket expenses, and upon the request of Owner, render advice and assistance to Owner in the negotiation and prosecution of all claims for the increase, abatement or reduction of property taxes and other taxes affecting the Property and for awards for takings by eminent domain affecting the Property, including providing information as required to the taxing authorities and to attorneys and other consultants retained by Owner in connection therewith, but all condemnation and taxation matters shall be within the control and direction of Owner.

2.12 Leasing Agent. Owner hereby appoints Manager as the exclusive leasing agent for the Property. In connection therewith, Manager agrees to develop and implement strategies for the leasing of the Property and, in connection therewith:

(a) To negotiate leases and renewals of leases at appropriate times, it being understood that all inquiries with respect to leasing any portion of the Property shall be referred to Manager but it also being understood that all leases and renewals, and all amendments to leases, shall be approved by Owner and executed by Owner. No agreement with any prospective tenant shall be binding upon Owner until and unless specifically consented to by Owner in writing. In no event shall Owner's lender's consent to a lease be deemed to have been granted unless Onwer's loan documents specifically provide for deemed consent by the lender. In the event Manager shall have a prospective tenant reference from another property in which Manager or any affiliate of Manager has a beneficial interest or which Manager or any affiliate of Manager manages, Manager shall declare its potential conflict of interest to Owner, and Owner shall determine if negotiations shall be undertaken by Manager, Owner, or an appointed third party. References of prospective tenants shall be investigated carefully by Manager;

(b) to prepare and submit to Owner for its approval, Lease Proposals as provided in Section 2.1(o) hereof;

(c) with Owner's prior approval and at Owner's expense, subject to the applicable Operating Budget therefore, to actively advertise and market the Property or portions thereof for rent, by means of periodicals, signs, plans, brochures and other means appropriate to the Property; and

(d) to arrange and conduct personal presentations and tours of the Property.

2.13 Submission of Reports. Each report required to be submitted hereunder by Manager to Owner shall be submitted to each of the members of Owner.

2.14 Improvements. Manager shall supervise and coordinate the making of all improvements and additions of or to the Property (including Capital Improvements and Tenant

and timely real, personal, and other property tax returns for the Property. Manager shall promptly cause the issuance (or transfer, as the case may be) of any necessary business licenses and permits in the name of the Property and the maintenance thereof throughout the term of this Agreement. Manager shall notify Owner within three (3) Business Days of receipt of notification of any noncompliance, discovery of any noncompliance, or the taking of any action with respect to any noncompliance, whichever is earlier. If the action required to remedy any violation requires Owner's approval or if the violation might expose Owner or Manager to a fine, penalty or criminal liability, Manager shall immediately communicate with Owner in person, by telegram or telephone, so that arrangements may be promptly made to effect compliance.

2.10 Employment of Personnel.

(a) Manager shall have the duty, subject to the limitations set forth in Article VI of this Agreement, to investigate, hire, pay, supervise and discharge the personnel necessary to be employed in order properly to maintain and operate the Property in accordance with the obligations of Manager under this Agreement. Such personnel shall in every instance be deemed employees of Manager and not of Owner. Owner shall have the right to disapprove any such personnel. Manager shall be responsible for the compensation and fringe benefits for such employees and for all payroll taxes, F.I.C.A. and similar items with respect to such employees. Manager shall obtain and maintain Workmen's Compensation Insurance (including Employer's Liability Insurance for an amount not less than statutory limits) covering all employees of Manager employed in, on or about the Property to provide all statutory benefits under the Workers' Compensation Law of the state in which the Property is located, if any. Manager shall directly control the time and manner of the work and services to be performed by the employees of Manager, and Manager shall comply with all applicable federal, state and local laws, ordinances, and regulations and union contracts applicable to such employees. Manager and each of the employees of Manager who handles or who is responsible for handling Owner's moneys shall be bonded by a fidelity bond (commercial blanket) in favor of, and in an amount specified by Owner, issued by a Company and in form reasonably acceptable to Owner, the copies of which bonds shall be promptly delivered to Owner, and the originals of which bonds shall be held by Manager.

(b) Manager shall make all necessary payroll deductions for disability and unemployment insurance, social security, withholding taxes and other applicable taxes, and prepare, maintain and file all necessary reports with respect to such taxes or deductions, and all other necessary statements and reports pertaining to labor employed in or about the Property.

(c) As part of the annual Operating Budget, Manager shall provide a schedule of employees to be employed "on-site" in the direct management of the Property, setting forth the number of employees and their titles and indicating which employees are bonded or are covered under Manager's comprehensive crime insurance policy.

(d) Notwithstanding the fact that personnel employed in or about the Property are to be employees of Manager, all wages, salaries, and other compensation paid to or on behalf of such personnel (except the compensation for personnel for their leasing activities and/or for secretarial, accounting, data processing or other "home office" type activities, which shall be deemed to be an expense of Manager), shall be considered operating expenses of the Property to

Improvements), and shall assist Owner in determining which Capital Improvements shall be made at the Property.

2.15 Supervision of Tenants. Manager shall plan and coordinate the moving in and moving out of tenants and all construction, alteration and decoration work performed by tenants in order to insure minimum disturbance to the operation of the Property and to other parties then occupying or preparing to occupy space in the Property. Manager shall handle promptly complaints and requests from tenants and shall notify Owner of any material complaints made by tenants.

2.16 General Duties. In addition to the duties more particularly described in this Article II, Manager shall be responsible for the implementation of any and all decisions of Owner, upon its request, and for initiating and taking such other actions (not inconsistent with this Agreement) in the management and administration of the Property. Manager shall conform to the policies and programs of Owner and the scope of Manager's authority shall be limited to said policies.

ARTICLE III

BANK ACCOUNTS, DISBURSEMENTS, ADVANCES

3.1. Operating Account. All rents and other moneys received or collected by Manager with respect to the Property, other than tenants' security deposits, shall be deposited in an account ("Operating Account") in a bank or other money market fund approved by Owner. Expenditures which Manager is authorized to make by the terms of this Agreement or by other authorization of Owner may be made from the Operating Account.

3.2 Tenant Security Deposit Account. All tenant security deposits collected by Manager shall be deposited in a separate security deposit account (commingled among all tenants) in a commercial bank in an interest bearing account if required by law or by the terms of any lease. Manager shall withdraw the statutory 1% fee from any interest-bearing account and shall remit the same to the Operating Account. Checks drawn against the security deposit account may be made upon the signature of a duly authorized and bonded employee of Manager and shall be made only (a) to refund security deposits to tenants or (b) to deposit to the Operating Account any security deposit or any portion thereof that Owner shall be entitled to retain or apply under the applicable lease.

3.3 Advances. At the end of each month, Manager will remit to Owner from the Operating Account all amounts by which the balance in the Operating Account exceeds the anticipated shortfall, if any, of operating income as compared with operating expenses projected over the next month. In the event that there is a shortfall in the Operating Account projected for the next succeeding month and funds are not available in the Operating Account to cover such shortfall, Owner shall deposit in the Operating Account an amount equal to such projected shortfall, if approved by Owner in its sole discretion. Nothing in this Section 3.3 shall be construed to require Owner to advance to Manager any funds for costs or expenses in excess of, or not approved in, the Operating Budget, Capital Improvement Budget or Tenant Improvement

Budget or otherwise authorized pursuant to this Agreement. Manager shall have no obligation to advance funds for the account of Owner.

ARTICLE IV

AUTHORITY OF MANAGER

4.1 Implementation of Budgets. Manager shall, subject to Section 4.2 with respect to service contracts, and to the provisions of Section 2.1(g) with respect to contracts for Capital Improvements, have the power and authority to enter into contracts on behalf of Owner and make expenditures as are required to implement the Approved Operating, Capital Improvement or Tenant Improvement Budgets, without the need for further approval by Owner, but only to the extent that any such expenditures and amounts required to be paid by Owner under such contracts are not in excess of the amounts provided therefore in the Approved Budget.

4.2 Contracts for Services. Manager shall have the power and authority, subject to the provisions of Section 2.1 hereof, to make service contracts on behalf of Owner and at Owner's expense for vermin extermination, trash collection, cleaning service, security and utility services, or such of them as shall be necessary or advisable in the care, operation and maintenance of the Property or portions thereof. For all such service contracts with an annual amount in excess of $100,000, Manager shall seek competitive bids from at least three (3) qualified service contractors approved by Owner, and shall select the lowest responsible bid. For all service contracts with an annual amount of $100,000 or less, Manager shall not be required to seek bids on an annual basis but shall enter into contracts with qualified service providers from a list pre-approved by Owner. Notwithstanding the foregoing, Manager shall seek bids from at least three (3) qualified service providers from a list pre-approved by Owner for all such service contracts, regardless of size, at least once every three (3) years, and at least once every five (5) years with respect to the elevator service contract. Manager shall include in each such contract (i) that such contract shall be terminable by Owner and/or Manager with or without cause on not more than 30-day notice, and shall be automatically terminated on the sale of the Property and (ii) a provision that the contractor shall carry Workers Compensation Insurance in accordance with the laws of the State of New York and Employer's Liability Insurance applicable to and covering all persons engaged in the performance of work at the Property and Manager shall satisfy itself that such insurance is in force and effect at all times under each such contract. Owner's prior written approval shall be required for (x) any service contracts proposed to be entered into with an affiliate of Manager, all of which shall be on arms'-length terms at rates not exceeding rates then generally charged by other qualified service providers for comparable services in the marketplace in which the Building is located, shall be terminable on not more than thirty (30) days notice and shall terminated automatically upon the termination of this Agreement, (y) all such contracts which cannot be terminated upon thirty (30) days notice, and/or (z) any such contract the entering into of which would require Owner's approval pursuant to Section 2.1.

4.3 Purchase of Supplies. Manager shall have the power and authority to purchase on behalf of Owner and at Owner's expense all equipment, tools, appliances, materials and supplies reasonably necessary or desirable for the care, maintenance and operation of the

Property, all of which purchases shall be subject to the prior review and written approval of Owner if such purchases are not included in the Approved Operating Budget, and shall be used solely in connection with the Property. Manager shall maintain appropriate records for all such supplies, tools and equipment purchased hereunder by Manager for use in the care, maintenance and operation of the Property.

4.4 Insurance Claims. Manager shall promptly investigate and report to Owner and to the appropriate insurance carrier all accidents and claims for damage relating to or arising out of the ownership, operation or maintenance of the Property of which Manager shall become aware. Manager shall cooperate with Owner's insurance company in the settling of any insurance claims covered under Owner's insurance policies.

4.5 Management Signature. Unless otherwise directed by Owner, Manager shall have the power and authority to utilize substantially the following form in executing any documents or agreements which Manager is empowered to execute on behalf of Owner pursuant to powers granted in this Agreement or pursuant to other authorization by Owner:

_____

as Manager for _____,
for Property

By: _____
Name:
Title:

Owner shall execute all leases directly in the name of Owner rather than through execution by Manager.

4.6 Limitation of Authority. Notwithstanding any provision in this Article IV to the contrary, without the prior written approval of Owner: (a) Manager shall not enter into any contract or other binding arrangement (collectively "Contract") with any person or entity under or pursuant to which the Owner will have any liability or obligation of any kind or nature, except for service contracts pursuant to Section 4.2 and Contracts for the purchase of supplies pursuant to Section 4.3 or (b) without duplication or limitation of the provisions of the immediately preceding clause (a), (i) convey or otherwise transfer or pledge or encumber any property or other asset of Owner; (ii) retain attorneys on behalf of Owner, (iii) institute or defend lawsuits or other legal proceedings on behalf of Owner; (iv) terminate or accept the surrender of leases (except in accordance with any guidelines approved by Owner for the enforcement of leases); (v) pledge the credit of Owner except for purchases made in the ordinary course of business of operating the Property or as otherwise contemplated pursuant to this Agreement; (vi) obligate Owner for the payment of any fee or commission to any Outside Broker (as defined below); or (vii) borrow money or execute any promissory note or other obligation or security deed, security agreement, mortgage or other encumbrance in the name of or on behalf of Owner. The limitations set forth in the preceding sentence shall be in addition to all other restrictions on the authority of Manager set forth in this Agreement.

ARTICLE V

COMPENSATION AND REIMBURSEMENT

5.1 Management Fee. In consideration of the services to be rendered by Manager pursuant to this Agreement, and so long as this Agreement is in effect, or has not been previously terminated pursuant to the terms hereof, Manager shall receive as compensation for Manager's services hereunder an annual management fee (the "Management Fee") equal to percent (3%) of Owner's gross receipts from the Property.

5.2 Payment of Management Fee. The Management Fee shall be paid by Owner in equal monthly installments of one-twelfth of the Management Fee, and shall be payable out of the current month's receipts after the payment of all other operating expenses for such month. For any period of less than one month, the monthly payment shall be computed on a pro rata basis, based upon a thirty (30) day month. To the extent the installment of the Management Fee due for any month is not collectible out of the current month's receipts, the unpaid portion of such fee shall accrue and be paid out of future months' receipts after payment of all other operating expenses, and interest shall accrue and be payable thereon at that rate which is equal to the rate announced from time to time by CITIBANK, N.A., at its main office in New York, New York, as its "prime or base rate" (including any successor to such rate, the "Prime Rate").

5.3 Leasing Commissions. Subject to Section 5.4, the Manager shall receive as compensation for Manager's leasing services pursuant to this Agreement a leasing commission (y) with respect to each tenant lease for space at the Property approved by Owner and fully executed and delivered by Owner and the corresponding tenant (each a "Tenant" and each such lease being referred to herein as a "Tenant Lease") and (z) calculated and payable in accordance with leasing commission schedule set forth in **Exhibit A** (the "Leasing Commission Schedule" and each such leasing commission being referred to herein as a a "Leasing Commission").

5.4 Restrictions Associated with Payment of Leasing Commissions. The obligation of Owner to pay Leasing Commissions to Owner pursuant to Section 5.3 shall be subject to all the foregoing limitations, qualifications and restrictions:

(a) Subject to the immediately succeeding clauses (b) through (i), inclusive, the aggregate of all Leasing Commissions payable under this Agreement shall be an amount equal to $2,832,369.

(b) Manager shall deliver a Owner a notice (an "Outside Broker Payment Notice") that sets forth a schedule of the aggregate amount of all commissions, fees, reimbursement and other payments of any kind or nature payable to any broker, agent of other similar person or entity (each an "Outside Broker") in respect of or in relation to such Tenant Lease (collectively, "Outside Broker Payments"). From such Leasing Commission otherwise payable to Manager with respect to such Tenant Lease, Owner shall retain an amount equal to all Outside Broker Payments (the "Outside Broker Payment Retainage Amount" and the remaining Lease Commission in respect of such Tenant Lease being referred to as the "Net Leasing

Commission"). From the Outside Broker Payment Retainage Amount corresponding to each Tenant Lease, the Owner shall pay to the corresponding Outside Broker the Outside Broker Payments due and owing such Outside Broker in accordance with the related Contract with such Outside Broker, provided, that, to the extent the aggregate Outside Broker Payments under such Contract exceeds the related Outside Broker Payment Retainage Amount set forth on the related Outside Broker Payment Notice, then Manager shall be solely responsible for paying such Outside Broker such excess.

(c) Anything in this Section 5.4, Section 5.3 or the Leasing Commission Schedule to the contrary notwithstanding, prior to Project Stabilization, no Leasing Commission (or any portion thereof) with respect to any Tenant Lease shall be due and payable to Manager until at least $10 million has been advanced to Owner pursuant to its credit facility with George Washington Bridge Development Project, LLC, a lender funded from persons who desire to participate in the EB-5 Immigrant Investor Program.

(d) Anything in this Section 5.4, Section 5.3 or the Leasing Commission Schedule to the contrary notwithstanding, only the amount of available cash of Owner at any time in excess of cash to be used to fund (i) all "hard costs' and "soft costs" then due and owing for the Project and (ii) adequate reserves for the Project shall be used to pay Leasing Commissions then due and owing; it being acknowledged and agreed that to the extent Leasing Commissions then due and owing cannot be paid on such basis, the obligation of Owner to pay such Leasing Commission shall be deferred until such time when sufficient excess cash is available.

(e) Until such time when (x) the construction at the Property has been completed as evidenced by the issuance by each appropriate governmental entity of a certificate or occupancy or a temporary certificate of occupancy (or similar certificate) for the Property, and (y) 80 percent of the retail space at the Property has been leased under one or more Tenant Leases pursuant to which each such Tenant has commenced rent payments thereunder (such time being referred to as "Project Stabilization"), Owner shall retain, and Manager shall have no right to receive with respect to each Tenant Lease, 50 percent of all Net Leasing Commissions otherwise payable to Manager prior to Project Stabilization (the "Retained Net Leasing Commissions Amount").

(f) Within ten business days following Project Stabilization, Owner shall pay to Manager the entire Retained Net Leasing Commissions Amount.

(g) If by the three year anniversary of the date hereof Project Stabilization has occurred and the aggregate amount of all Outside Broker Payments paid or payable to all Outside Brokers in respect of all Tenant Leases and all Net Leasing Commissions paid or payable to the Manager in respect of all Tenant Leases are less than $2,832,369, then within ten business days after such three-year anniversary, the Owner shall pay to the Manager the difference.

(h) Anything in this Agreement to the contrary notwithstanding, in no event shall the Owner have an obligation to pay to Manager pursuant to Section 5.3 and this Section 5.4 an amount more than (i) $2,832,369 minus (ii) the aggregate amount of all Outside Broker

Payments paid and payable to all Outside Brokers in respect of all Tenant Leases during the term of this Agreement, provided, that no Outside Broker Payment derived from the renewal of a Tenant Lease shall be included for the purposes of this clause (ii).

(i) Manager shall pay to SJM Partners, Inc. ("SJM") (or direct Owner to pay to pay to SJM) 50 percent of all Net Leasing Commissions paid to it (and the Manager acknowledges and agrees that SJM is a third party beneficiary of this clause (h) and shall have the right to enforce this provision).

5.5 Sole Compensation. The fees and reimbursements provided for in this Article shall be the sole compensation to Manager and the Manager shall not be entitled to any other compensation for performing its services hereunder.

ARTICLE VI

THIRD PARTY CONTRACT STANDARDS

6.1 Value. The price, compensation or other consideration paid for any goods or services obtained for the Property shall not exceed the amount ordinarily paid for such goods or services in the area where the Property is located and shall not exceed expenditures authorized pursuant to the approved Budget. When taking bids, issuing purchase orders or otherwise arranging for any such goods or services, Manager shall act at all times in the best interest of Owner and shall be under a duty to secure for and credit to Owner any rebates, discounts or commissions obtainable with respect to such purchases or other transactions.

6.2 Contracts with Related Parties. Manager shall not employ any entity in which Manager or any beneficial owner of Owner (including any subsidiary, affiliated and related entity to Manager or Owner) shall have a financial interest, for the purpose of making alterations, repairs, decorations, replacements, equipment or installations in or on the Property, or for any other purpose, without Owner's prior written approval and on terms set forth in Section 4.2. However, if such work is to be done or made or installed at a tenant's request and sole expense (such installations are hereinafter referred to as "Tenant Work"), then Manager (including either any subsidiary, affiliated or related entity to Manager or an independent contractor working under the supervision of Manager) is authorized to make and install such Tenant Work and to collect from such tenant for Manager's sole account, Manager's charge for supervisory overhead on all such Tenant Work as is agreed to by such tenant, but Manager shall hold Owner harmless from any claims which may be advanced by any such tenant in connection with any Tenant Work. For purposes of this Section 6.2, Tenant Work shall not include work done for a tenant at the commencement of the lease term, or any other time during the term of the lease, if such work is an obligation of Owner under the lease.

6.3 Exculpation. Manager shall use its reasonable efforts to include in agreements with third parties an exculpatory clause similar to that set forth in Section 7.4 limiting Owner's obligation to Owner's interest in the Property.

ARTICLE VII

INSURANCE, INDEMNIFICATION AND EXCULPATION

7.1 Property and Liability-Insurance.

(a) Property Insurance. Manager shall carry for the protection of Owner's interest in the Property commercial general property insurance from carriers approved by Owner in amount equal to the full replacement cost of the Property, with such deductibles, endorsements and coverages as shall be required by Owner and shall be necessary to comply with the provisions of Owner's mortgage financing of the Property. All property insurance carried for the Property shall name Owner's lender as a mortgagee under a standard New York form of mortgage endorsement.

(b) Liability Insurance. Manager shall carry for the protection of Owner comprehensive general liability insurance from carriers approved by Owner and such other insurance as Owner shall deem necessary for the protection of Owner's interests and as shall be necessary to comply with the provisions of Owner's mortgage financing of the Property. Policies of comprehensive general liability insurance so carried shall include Manager as an additional insured party. Comprehensive general liability insurance policies shall contain coverage for contractual liability and personal injury liability.

7.2 Indemnification by Owner. Owner agrees (1) to hold and save Manager, its officers, partners and employees, by reason or any cause whatsoever, free and harmless from any claim for damages or injuries to persons or property when Manager is carrying out the provisions of this Agreement or acting under the express or implied direction of Owner, or by reason of Owner's failure (other than by reason of Manager's default hereunder) or refusal to comply with or abide by any rule, order, determination, ordinance or law of any federal, state or municipal authority; and (2) to defend promptly and diligently, at Owner's sole expense, any claim, action or proceeding brought against Manager or Manager and Owner, jointly or severally, arising out of or connected with any of the foregoing, and to hold harmless and fully indemnify Manager from any judgment, loss or settlement on account thereof. The foregoing provisions of this paragraph shall survive the termination of this Agreement, but this shall not be construed to mean that Owner's liability shall survive as to other provisions of this Agreement except as expressly therein provided.

Owner's obligation to indemnify, defend and hold Manager harmless is on the condition, that as to any particular event:

(i) Manager shall notify Owner in writing as soon as practicable after notice of an injury or claim is received; and

(ii) Manager takes no action (such as admission of liability) which might bar Owner from obtaining any protection afforded by any policy Owner may hold or which might prejudice Owner in its defense to a claim based on such loss, damage or injury; and

(iii) Manager agrees that Owner shall have the exclusive right, at its option, to conduct the defense to any claim, demand or suit within limits prescribed by the policy or policies of insurance.

Nothing contained in this Article shall require Owner to indemnify Manager or defend or hold Manager harmless from any claims or actions resulting from acts or omissions which constitute negligence, willful misconduct or fraud on the part of Manager or any of Manager's employees or agents or which are outside the scope of Manager's authority or responsibility hereunder or which are in breach of Manager's duties hereunder. Nothing contained in this Article shall relieve Manager from responsibility to Owner for the negligence, willful misconduct or fraud of Manager or any of Manager's employees or agents.

Notwithstanding anything to the contrary contained in this Article, Owner's obligation hereunder to indemnify or otherwise hold Manager harmless from any claim shall be limited to Owner's interest in the Property, including without limitation the proceeds of insurance carried hereunder.

If Owner shall consent thereto, the insurance required under Section 7.1 may be carried at Owner's cost under a blanket policy maintained by Manager naming Owner as an additional insured party.

7.3 Manager Insurance. At Owner expense, Manager shall maintain throughout the term of this Agreement Worker's Compensation, automobile liability and employee dishonesty insurance in form and in amounts reasonably acceptable to Owner; provided, however, that nothing contained herein shall obligate Manager to obtain automobile liability insurance covering the act or omission of any person or entity other than Manager, Manager's directors, officer, employees, contractors and agents. Such insurance shall provide for sending Owner at least thirty (30) days' prior written notice of cancellation of, non-renewal of or any material change in such policies. Manager shall obtain an "alternate employer endorsement" naming Owner on its worker's compensation insurance. Employee dishonesty insurance shall be for an amount not less than $500,000, and shall name Owner as an additional insured. Automobile liability insurance shall name Owner as an additional insured. Owner shall not reimburse Manager for Manager's cost of such insurance or for any and all coverages that Manager obtains for its own account. Manager shall, promptly after the execution of this Agreement, and thereafter annually furnish Owner with a certificate evidencing the insurance required by this Section 7.3.

7.4 Exculpation. No officer, director, manager, member, general or limited partner, shareholder or other holder of an equity interest in Owner (or any assignee under Section 9.6) shall be personally liable for the performance of Owner's obligations under this Agreement. The liability of Owner (including an assignee under Section 9.6 hereof) for Owner's obligations under this Agreement shall be limited to its interest in the Property and Manager shall not look to any of Owner's other assets (or the assets of any member, partner, shareholder or other holder of an equity interest therein) in seeking either to enforce Owner's obligations under this Agreement or to satisfy a judgment for Owner's failure to perform such obligations.

No constituent partner, member, shareholder or other person or entity in or agent of Manager, nor any advisor, trustee, director, employee, beneficiary, shareholder, member, partner, participant, representative or agent of any partnership, limited liability company, corporation, trust or other entity that has or acquires a direct or indirect interest in Manager shall have any personal liability, directly or indirectly, under or in connection with this Agreement, or any amendment or amendments to this Agreement made at any time or times, heretofore or hereafter, and Owner and its successors and assigns shall look solely to Manager's assets for the payment of any claim or for any performance, and Owner, on behalf of itself and its successors and assigns, hereby waives any and all such personal liability.

7.5 Indemnification by Manager. Manager agrees to indemnify, defend, and hold Owner harmless from any and all claims, demands, liability, loss, cost or expense incurred by reason of any act or omission of or any negligent or tortuous act or other act in contravention of this Agreement by Manager; provided, that this indemnity shall not be applicable with respect to acts of Manager duly authorized and performed in accordance with the terms and provisions of this Agreement.

7.6 Settlement of Claims. Owner shall have the right, in its sole discretion, but without being required so to do, to adjust, settle, or compromise any claim, obligation, debt, demand, suit or judgment against the Property, Owner or Manager concerning the Property provided that no such adjustment, settlement or compromise shall subject Manager to any uninsured liability or obligation. Manager shall assist and cooperate with Owner in the adjustment, settlement or compromise of any such claim.

ARTICLE VIII

DURATION, TERMINATION AND DEFAULT

8.1 On Sale. This Agreement shall terminate automatically, without notice, upon the sale or other transfer of the Property to a third party.

8.2 Sale of Interest or Termination. This Agreement shall terminate automatically, without notice, upon the direct or indirect transfer, sale, gifting, encumbrance, assignment, pledge or other disposition (collectively "Transfer") of all or any part of any equity interests in Manager by the sole holder of such interest as at the date hereof (the "Current Sole Member") to any person or entity other than a Permitted Transferee without the prior written consent of Owner, which consent may be given or withheld in its sole and absolute discretion. For the purposes hereof, "Permitted Transferee" means (i) the spouse or biological or adopted descendant of the Current Sole Member or (ii) a trust established for the benefit of the individuals referenced in the immediately preceding clause (i) to facilitate estate planning.

8.3 Default and For Cause. Either party may terminate this Agreement for cause on not less than thirty (30) days' written notice, which notice shall specify the event of cause. This Agreement shall be terminated on the date specified in the notice, provided the party to whom such termination notice is furnished shall have failed to cure such event of cause (or, if such event of cause is not possible of being cured within said period, has not undertaken the cure

of same and proceeded expeditiously and diligently in the curing of same). Events of cause include, but are not limited to the following:

(a) the filing by or against either party of a petition in bankruptcy, or in the event that either shall make an assignment for the benefit of creditors or take advantage of any insolvency act or fail to discharge its obligations promptly when due or, a petition having been filed against such party, failing to obtain the discharge of same within thirty (30) days of such filing;

(b) Manager's dishonesty or gross mismanagement of the Property;

(c) Manager's act, willful omission or gross neglect which may subject Owner or the Property to actual or criminal prosecution or to substantial penalty (civil or criminal) or fine;

(d) Manager's repeated failure to comply with Owner's written instructions or directions in connection with the operation, maintenance and management of the Property; or

(e) Manager's material breach of its obligations under this Agreement.

8.4 Notices of Default and Termination. Notices of events of cause and/or termination given on behalf of Owner shall only be effective if signed by GWB Blue LLC on behalf of the Owner.

8.5 Obligations upon Termination. (a) Upon termination of this Agreement, each party shall promptly pay to the other, as soon as the same is determinable after the effective date of termination, all amounts due such other party under the terms of this Agreement (pro rated to the effective date of termination), and upon such payment, neither party shall have any further claim or right against the' other, except as expressly provided herein. In no event will Manager be entitled to receive any final compensation from Owner pursuant to this Section 8.5(a) until Manager shall have delivered to Owner all of the items described in Section 8.5(b) and shall have paid over to Owner all amounts due to Owner including without limitation all amounts on deposit in the Operating Account and all funds in the Security Deposit Account.

(b) Upon the effective date of termination, Manager shall deliver to Owner or Owner's duly appointed agent the originals of all books, permits, plans, records, leases, licenses, contracts and other documents pertaining to the Property and its operation, insurance policies, bills of sale or other documents evidencing title or rights of Owner, and any and all other records or documents pertaining to the Property, whether or not enumerated herein, which are necessary or desirable for ownership and operation of the Property. Manager further agrees to do all of the things reasonably necessary to cause an orderly transition of the management of the Property without detriment to the rights of Owner or to the continued management of the Property, including the furnishing of notices to tenants of the Property of the expiration or termination of this Agreement, by hand delivery or certified or registered mail, as may be requested by Owner.

(c) Following the expiration or termination of this Agreement for any reason other than an event of cause or default of Manager hereunder or pursuant to Section 8.1 hereof, Owner shall recognize Manager as the broker in any pending negotiation for a lease of space in

the Property in all cases where (i) Manager is the procuring cause of such lease, or if an Outside Broker is the procuring cause of such lease, Manager substantially negotiated on behalf of Owner the material terms of such lease, and (ii) such lease is actually executed and delivered within four months following the date of termination or expiration. Within ten (10) days after any such termination or expiration, Manager shall submit to Owner a list of those prospective tenants with whom Manager had been negotiating, stating whether or not any of such negotiations were through an Outside Broker and if so, identifying such Outside Broker. Such list shall contain information as to the status of the negotiations with such prospective tenants and shall indicate in detail the amount, extent and nature of all discussions and negotiations had by Manager with, and information submitted to, such prospective tenants. Owner shall not be obligated to recognize Manager as broker in respect of any pending negotiations if Manager fails to submit the aforementioned list within the time above set forth, or, if such list is submitted as aforesaid, with respect to any pending negotiations not set forth in such list, or with respect to any pending negotiations set forth in such list as to which a lease is not executed and delivered within four months following the date of termination or expiration of this Agreement. In addition, following the expiration or termination of this Agreement for any reason including the default of Manager hereunder, Owner shall pay to Manager a commission in respect of any lease actually executed and delivered by Owner and the tenant thereunder prior to the date of termination. Any commissions payable to Manager pursuant to this Section 8.5(c) shall be computed at the rates and payable as set forth in Section 5.3.

ARTICLE IX

GENERAL

9.1 Notices. All notices, demands, elections, consents, requests or other communications (collectively, "notices") which either party to this Agreement may desire or be required to give hereunder shall be in writing unless expressly otherwise provided herein. All written notices shall be given by registered or certified mail, postage prepaid, return receipt requested, or by reputable overnight delivery service, or by personal delivery, addressed as follows:

(a) To Owner by delivering a copy to each party listed as notice party in the This Agreement, or at such other address or addresses as may be designated by Owner by notice given to Manager as provided in this Section 9.1.

(b) To Manager at its address first set forth above, or at such other address or addresses as may be designated by Manager by notice given to Owner as provided in this Section 9.1.

Notwithstanding the foregoing, routine communications may be sent by first-class mail, postage prepaid.

All notices given pursuant to this Section 9.1 shall be deemed to have been given or served three business days after the mailing thereof (in the case of notices sent by mail) or upon delivery thereof (in all other cases), with failure to accept delivery constituting delivery for this purpose.

9.2 Non-Discrimination. Manager will not discriminate against any employee or applicant for employment by Manager because of race, creed, color, age, sex, national origin or any other protected class under applicable law, and shall comply with all applicable laws regarding non-discrimination in employment.

9.3 No Advertising. No publication, announcement or other public advertisement of Owner's name in connection with the Property shall be made by Manager, except as may be required by applicable law. It is understood and agreed, prior to any release, approvals must be obtained from Owner.

9.4 Further Assurances. Owner and Manager agree to execute such other documents and perform such other acts as may be necessary or desirable to carry out the purposes of this Agreement.

9.5 Status Report. Recognizing that each party may find it necessary from time to time to establish to third parties such as accountants, banks, mortgagees or the like, the then current status of performance hereunder, each party agrees, upon the written request of the other party, made from time to time by notice, to furnish promptly a written statement on the status of any matter pertaining to this Agreement to the best of the knowledge and belief of the party making such statement.

9.6 Successors and Assigns. This Agreement shall not be assignable by either party without the prior written consent thereto of the other party to this Agreement and any attempted assignment of this Agreement in violation of this Section 9.6 shall be void and of no effect.. For purposes of the immediately preceding sentence, this Agreement shall be deemed to have been assigned by Manager if Manager ceases, through a transfer of ownership interests or a change in personnel or by any other means, to be 100 percent owned by Douglas Slayton.

9.7 Waiver. No consent or waiver, express or implied, by any party to or of any breach or default by the other party in the performance by such other party of the obligations thereof under this Agreement shall be deemed or construed to be a consent or waiver to or of any other breach or default in the performance by such other party of the same or any other obligations of such other party under this Agreement. Failure on the part of either party to complain of any act or failure to act of the other party or to declare the other party in default, irrespective of how long such failure continues, shall not constitute a waiver by such party of the rights thereof under this Agreement.

9.8 Additional Remedies. The rights and remedies of the parties under this Agreement, at law or in equity, shall not be mutually exclusive; that is, the exercise of one or more of the provisions hereof shall not preclude the exercise of any other provisions hereof or otherwise available at law or in equity.

9.9 Attorneys' Fees. In the event of any controversy, claim or action being filed between the parties respecting this Agreement or in connection with the Property, the prevailing party shall be entitled to reimbursement of reasonable legal fees and expenses from the non-prevailing party.

9.10 Entire Agreement. This document represents the entire Agreement between the parties with respect to the subject matter hereof.

9.11 Severability. If any provisions of this Agreement or the application thereof to any entity or circumstances shall be invalid or unenforceable to any extent, the remainder of this Agreement and the application of such provisions to any other entity or circumstance shall not be affected thereby and shall be enforced to the greatest extent permitted by law.

9.12 Terminology. All personal pronouns used in thus Agreement, whether used in the masculine, feminine or neuter gender, shall include all other genders; the singular shall include the plural; and the plural shall include the singular. Titles of Articles and Sections in this Agreement are for convenience only, and neither limit nor amplify the provisions of this Agreement, and all references in this Agreement to Articles, Sections or Subsections thereof shall refer to the corresponding Article, Section or Subsection of this Agreement unless specific reference is made to the articles, sections or subsections of another document or instrument.

9.13 Amendment. Neither this Agreement nor any provision hereof may be changed, waived, discharged or terminated orally, but only by an instrument in writing signed by the party against whom enforcement of the change, waiver, discharge or termination is sought.

9.14 Counterparts. This Agreement may be executed in any number of counterparts, each of which shall be deemed to be an original and all of which shall comprise but a single instrument.

9.15 Governing Law. This Agreement and the obligations of Owner and Manager shall be interpreted, construed and enforced in accordance with the laws of the State of New York.

9.16 Effective Time; Termination. This Agreement is an Exhibit to the Master Agreement, dated as of the date hereof (the "Master Agreement"), by and among George Washington Bridge Bus Station Development Venture LLC, GWB Development Partners, LLC, Owner, and the other signatories thereto. To the extent there is a conflict between the provisions of the Master Agreement and this Agreement, the provisions of the Master Agreement shall control. Anything in this Agreement to the contrary notwithstanding, this Termination Agreement shall not become effective until the Effective Time (as defined in the Master Agreement). This Termination Agreement shall terminate and be of no force or effect upon the termination of the Master Agreement in accordance with its terms.

9.17 Required Approvals. Anything in this Agreement to the contrary notwithstanding, if an approval by GWB Blue, LLC to an act is required under the Operating Agreement of GWB Development Partners, LLC, as amended from time to time, the Manager will not take any such act without the prior written approval of GWB Blue, LLC.

[signature page follows]

IN WITNESS WHEREOF, Owner and Manager have caused this Agreement to be executed as of the day and year first above written.

Manager

GWB Ninety Nine LLC

By: _____
Name: Douglas Slayton
Title: Manager

Owner:

George Washington Bridge Bus Station
Development Venture, LLC

By: _____
Name: Stephen J. Garchik
Title: Manager

IN WITNESS WHEREOF, Owner and Manager have caused this Agreement to be executed as of the day and year first above written.

Manager

GWB Ninety Nine LLC

By: _____
Name: Douglas Slayton
Title: Manager

Owner:

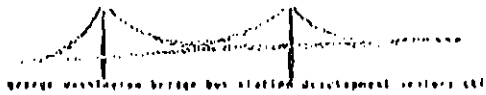
George Washington Bridge Bus Station
Development Venture, LLC

By: _____
Name: Stephen J. Garchik
Title: Manager

Exhibit A
Leasing Commission Schedule

As soon as practicable after the date hereof, Owner and Manager shall negotiate in good faith with a view of agreeing upon the Leasing Commission Schedule; it being acknowledged and agreed that such Leasing Commission Schedule shall be subject to the prior written of GWB Blue LLC who shall be a third party beneficiary of this sentence.

Exhibit A-13



April 27, 2011

Mr. Stanley I. Chera
Crown GWB Partners, LLC
C/o Stanley Chera Investments
362 Fifth Avenue, Suite 1201
New York, NY 10018

Re: George Washington Bridge Bus Station Development Venture LLC
New York, New York

Dear Mr. Chera:

This letter confirms our agreement to terminate and mutually release each other and all related parties from the agreement letter dated April 26, 2006 ("the Letter"). This release covers any and all matters relating to the George Washington Bridge Bus Stations Development Venture LLC; Acadia - PA GWB LLC; the redevelopment of the George Washington Bridge Bus Station and retail stores to be redeveloped at the George Washington Bridge Bus Station.

In consideration for this release and termination, George Washington Bridge Bus Station Development Venture LLC will reimburse Crown GWB Partners, LLC $750,000 upon receipt of the construction loan proceeds for the redevelopment of the George Washington Bridge Bus Station from New York City Regional Centers. In the event that the entire $750,000 is not reimbursed to Crown GWB Partners, LLC on or before April 1, 2012, this letter and the termination of the Letter and the releases contained herein may be terminated by Crown GWB Partners, LLC upon written notice to the George Washington Bridge Bus Station Development Ventures LLC at any time after April 1, 2012. If so terminated this letter and the termination of the Letter and the releases contained herein shall be void ab initio and of no force or effect, and all parties to the Letter shall have all rights and remedies under the Letter at law or in equity as though this letter and the releases contained herein had never been provided.

Subject to the payment of the $750,000 on or before April 1, 2012, this letter agreement is the final and complete termination of any and all rights, duties and obligation of the undersigned and their affiliates relating to the Letter, and a release of any and all obligations among each party and their affiliates, except for the funding of the conditional $750,000 payment described above.

Very truly yours,

The George Washington Bridge Bus Stations Development Venture LLC

By: _____
Stephen Charchik, Manager

Agreed and Accepted:

Crown GWB Partners, LLC

By: _____
Stanley I. Chera

250 West 57th St, Suite 1120 New York, NY 10107 tel 212-748-8718 fax 212-748-7951

Exhibit A-14

SECOND AMENDED AND RESTATED OPERATING AGREEMENT
OF MARKETPLACE GWB, LLC,
(formerly known as PA-GWB, LLC)

THIS SECOND AMENDED AND RESTATED OPERATING AGREEMENT (this "**Agreement**") is made and entered into on this 3rd day of June, 2011, by and among the undersigned parties. Defined terms shall have the meanings given them in this Agreement and are capitalized in the text. Any term not defined herein has the meaning ascribed to it in the Act (as hereinafter defined).

WITNESSETH

WHEREAS, PA-GWB, LLC (the "Company") was formed on August 12, 2009 in New York pursuant to Articles filed with the New York Department of State, as amended by an Amended and Restated Operating Agreement, dated July 16, 2010.

WHEREAS, Clearview Projects LLC (formerly known as PA Developers LLC) has assigned a 3.911% membership interest in the Company to GWB IVY LLC ("GWB IVY"), a 50.837% membership interest in the Company to GWB Ninety Nine LLC and a 11.732% membership interest in the Company to MG GWB LLC and has withdrawn as a Member of the Company;

WHERAS, the parties hereto desire to change the name of the Company from PA-GWB, LLC to Marketplace GWB, LLC.

WHEREAS, undersigned parties desire to join together to continue Marketplace GWB, LLC, pursuant to the Act (as herein defined) for the purposes and upon the terms and conditions hereinafter set forth.

NOW, THEREFORE, in consideration of the mutual covenants and agreements herein contained and other good and valuable consideration, the receipt, adequacy and sufficiency of which are hereby acknowledged, the parties hereto, intending legally to be bound, hereby agree as follows:

ARTICLE I
ORGANIZATIONAL MATTERS

1.1 Continuation of Company.

The Members (as herein defined) hereby agree to continue the limited liability company to be known as Marketplace GWB, LLC (the "**Company**"), pursuant to the provisions of the New York Limited Liability Company Act, as may be amended from time to time (the "**Act**"), and upon the terms and conditions set forth in this Agreement. Except as expressly provided herein to the contrary, the rights and obligations of the Members and the administration and termination of the Company shall be governed by the Act. Each Member hereby executes and adopts this Agreement as the Operating Agreement of the Company, pursuant to the Act.

1.2 Name.

The name of the Company is hereafter Marketplace GWB, L.L.C. The Company's business may be conducted under any other name or names deemed advisable by the Managers (as hereinafter defined). The words "Limited Liability Company," "L.L.C.," or similar words or letters shall be included in the Company's name where necessary for purposes of complying with the laws of any jurisdiction that so requires. The Managers in their sole and absolute discretion may change the name of the Company at any time and from time to time and shall notify the Members of such change in the regular communication to the Members next succeeding the effectiveness of the change of name.

1.3 Principal Office and Registered Agent.

The post office address of the principal office of the Company where the records shall be maintained pursuant to the Act is: c/o Jim Hyland, 250 West 57th Street, Suite 1120, New York, N.Y. 10107, or at such other place as the Managers may designate by notice to the Members. The Company's agent for service of process is the Secretary of State of New York, or such other Person (as hereinafter defined) as the Managers may from time to time designate and the Secretary of State shall mail a copy of any process against the Company served upon him/her to the aforementioned principal office of the Company. The Company may maintain offices at such other place or places within or outside the State of New York as the Managers may deem advisable.

1.4 Articles of Organization.

Prior to the date hereof articles of organization for the Company containing the provisions required by the Act have been filed of record in the manner and place provided in the Act.

1.5 Purpose.

The Company's business and purpose shall be to be a 44.75% member in GWB Development Partners, LLC, a New York limited liability company ("**GWB Development Partners**"), the business of which shall consist of owning a 100% membership interest in George Washington Bridge Bus Station Development Venture, LLC, which entity shall lease, develop, redevelop, finance, operate and manage the real estate project known as Broadway Marketplace at The GW Bridge, located at 4211 Broadway, New York, New York, and consisting of the following (the "**Property**"): that certain parcel of land more particularly described on Exhibit B attached hereto and improvements located thereon. The Company intends to develop on the Property approximately 129,275 square feet of retail space and reconstruct a bus station for the Port Authority of New York and New Jersey (the "**Project**"). The Company's purpose shall include such activities as are necessary, incidental or appropriate in connection with the foregoing.

1.6 Definitions.

The following capitalized terms shall have the meanings set forth below:

(a) **"AAA"** shall mean the American Arbitration Association.

(b) **"Act"** shall have the meaning set forth in Section 1.1.

(c) **"Affiliate"** shall mean, as to any Person, any other Person that directly or indirectly Controls, is under common Control with, or is Controlled by such Person.

(d) **"Annual Operating Budget"** shall have the meaning set forth in Section 3.5(a).

(e) **"Appraisal Method"** shall have the meaning set forth in Section 4.3.

(f) **"Arbitration"** shall have the meaning set forth in Section 3.13(a)(1).

(g) **"Bankrupt Member"** shall have the meaning set forth in Section 4.3.

(h) **"Bankruptcy"** shall mean and refer to an adjudication of bankruptcy under Title II of the United States Code, as amended, an assignment for the benefit of creditors and/or an adjudication of insolvency under any state or local insolvency statute or procedure or the occurrence of any other event of bankruptcy or insolvency set forth under the Act.

(i) **"Capital Account"** shall have the meaning set forth in Section 2.5(a).

(j) **"Capital Contributions"** shall have the meaning set forth in Section 2.2.

(k) **"Carrying Value"** shall have the meaning set forth in Section 2.5(b)(1).

(l) **"Code"** shall have the meaning set forth in Section 2.5(a).

(m) **"Company Nonrecourse Liabilities"** shall have the meaning set forth in Section 2.10(a).

(n) **"Continuing Members"** shall have the meaning set forth in Section 4.3.

(o) **"Contributing Member"** shall have the meaning set forth in Section 2.3.

(p) **"Control"** shall mean possession, directly or indirectly, of power to direct or cause the direction of management or policies of a Person.

(q) **"Day-to-Day Manager"** shall have the meaning set forth in Section 3.1(b).

(r) **"Default Advance"** shall have the meaning set forth in Section 2.3.

(s) **"Distributable Cash"** shall mean, with respect to any fiscal period, the excess of all cash receipts of the Company from any source whatsoever, including without limitation cash generated from normal operations, sales of assets, proceeds of borrowings, capital contributions of the Members, proceeds from a capital transaction, and any and all other sources over the sum of the following amounts:

(i) any cash disbursements for items which are customarily considered to be "operating expenses";

(ii) payments of interest, principal and premium and points and other costs of borrowing under any third party indebtedness of the Company, including, without limitation, any indebtedness owed to a Member;

(iii) payments made to purchase capital assets and for capital construction, rehabilitation, acquisitions, alterations and improvements;

(iv)the difference, if any, between the projected versus actual cost of the bus terminal renovation portion of the Project; and

(v) amounts set aside as reserves for working capital, contingent liabilities, replacements or for any of the expenditures described in clauses (i), (ii) and (iii), above, which are deemed by the Managers to be necessary to meet the current and anticipated future needs of the Company.

(t) "**Distribution Amount**" shall have the meaning set forth in Section 2.3.

(u) "**Event of Dissolution**" shall have the meaning set forth in Section 5.2.

(v) "**Gain Adjusted Capital Account**" shall have the meaning set forth in Section 2.11(a).

(w) "**GWB IVY Member**" shall have the meaning set forth in Section 2.1(a).

(x) "**GWB Development Partners**" shall have the meaning set forth in Section 1.5.

(y) "**GWB Ninety-Nine Manager**" shall have the meaning set forth in Section 3.1(a).

(z) "**GWB Ninety-Nine Member**" shall have the meaning set forth in Section 2.1(a).

(aa) "**Initial Member**" shall mean Clearview Developers LLC.

(bb) "**IRS**" shall mean the Internal Revenue Service.

(cc) "**Invested Capital**" shall mean for each Member at any point in time, the amount by which such Member's aggregate Capital Contributions to the Company exceed the aggregate amounts previously distributed to such Member pursuant to Section 2.9(b); provided, that in no event shall the Invested Capital for any Member be less than zero.

(dd) "**Major Decisions**" shall have the meaning set forth in Section 3.1(c)(3).

(ee) "**Managers**" shall have the meaning set forth in Section 3.1(a).

(ff) **"Members"** shall have the meaning set forth in Section 2.1(a).

(gg) **"Member Nonrecourse Debt"** means **"partner nonrecourse debt"** as defined in Regulations Section 1.704-2(b)(4).

(hh) **"MG Member"** shall have the meaning set forth in Section 2.1(a).

(ii) **"Minimum Gain"** shall have the meaning set forth in Section 2.11(a).

(jj) **"Non-Contributing Member"** shall have the meaning set forth in Section 2.3.

(kk) **"Non-Transferring Manager"** shall have the meaning set forth in Section 4.1 (a).

(ll) **"Officers"** shall have the meaning set forth in Section 3.1(f).

(mm) **"Percentage Interest"** shall have the meaning set forth in Section 2.1(b).

(nn) **"Permitted Transferee"** shall have the meaning set forth in Section 4.1(b).

(oo) **"Person"** shall mean any individual, partnership, corporation, trust or other entity.

(pp) **"Preferred Return,"** with respect to any Member, shall mean an annual return equal to the same rate paid to the other member of GWB Development Partners but in no event less than 7% compounded annually on such such Member's weighted average Invested Capital from the date contributed, less the aggregate distributions made to such Member under Section 2.9(a) below from the date of this Agreement.

(qq) **"Project"** shall have the meaning set forth in Section 1.5.

(rr) **"Project Budget"** shall have the meaning set forth in Section 3.5.

(ss) **"Project Financing Plan"** shall have the meaning set forth in Section 3.1(c)(4).

(tt) **"Project Stabilization"** shall mean the date upon which the Project has been completed, as evidenced by issuance of a certificate of occupancy, including any preliminary or temporary certificate of occupancy, and at least 80% of the retail space at the Project has been leased and rent payments by such tenants have commenced.

(uu) **"Property"** shall have the meaning set forth in Section 1.5.

(vv) **"TMM"** shall have the meaning set forth in Section 2.10(g).

(ww) **"Tax Allocation"** shall have the meaning set forth in Section 2.9(c).

(xx) **"Tax Distribution"** shall have the meaning set forth in Section 2.9(c).

(yy) **"Tax Shortfall"** shall have the meaning set forth in Section 2.9(c).

(zz) **"Unrealized Gain"** shall have the meaning set forth in Section 2.5(b)(3).

(aaa) **"Unrealized Loss"** shall have the meaning set forth in Section 2.5(b)(3).

(bbb) **"WMG"** means WMG Associates LLC, a Delaware limited liability company.

(ccc) **"WMG Managers"** shall have the meaning set forth in Section 3.1(a)

(ddd) **"WMG Member"** shall have the meaning set forth in Section 2.1(a).

ARTICLE II
MEMBERS; CAPITAL CONTRIBUTIONS; AND ALLOCATION OF PROFITS AND LOSSES

2.1 Members; Percentage Interests.

(a) The "Members" of the Company are set forth on Exhibit A attached hereto and made a part hereof. GWB Ninety Nine LLC shall be referred to as the "GWB Ninety Nine Member". WMG Associates LLC shall be referred to as the "WMG Member". GWB IVY LLC shall be referred to as the "GWB IVY Member". MG GWB LLC shall be referred to as the "MG Member".

(b) Each Member's percentage of ownership interest in the Company (including all economic, management and other rights with respect to such ownership interest) (hereinafter referred to generally as a **"Percentage Interest"**) shall be as set forth on Exhibit A.

(c) The Percentage Interest of each Member shall be personal property for all purposes.

(d) All property owned by the Company shall be owned by the Company as an entity and, insofar as permitted by applicable law, no Member shall have any ownership interest in any Company property in its individual name or right.

2.2 Capital Contributions.

Each Member has contributed, or simultaneously with the execution and delivery of this Agreement shall contribute, to the capital of the Company the amount set forth opposite its respective name on Exhibit A (collectively, with any other Capital Contributions made to the Company by such Member, the **"Capital Contributions"**). No Member shall be obligated to contribute any additional capital to the Company other than as expressly set forth herein.

2.3 Additional Funds.

If the Managers unanimously determine any funds or property (other than the Capital Contributions) are required by the Company at any time to pay expenses or liabilities of the Company, then the Managers shall endeavor on behalf of the Company to borrow such funds from third parties on commercially reasonable terms, as reasonably determined by the Managers. If the Managers unanimously determine that such funds are not available on such terms from third parties, the Managers shall deliver written notice to the Members notifying them of the amount of additional capital required by the Company, and each Member shall be required, within ten (10) days after delivery of such notice, to contribute such amount to the Company, pro rata in accordance with the Members' Percentage Interests. In the event that any Member fails to contribute the additional capital required of it pursuant to the preceding sentence (such Member being referred to herein as the "**Non-Contributing Member**"), then the other Member (the "**Contributing Member**") shall have the right but not the obligation to advance to the Company on behalf of the Non-Contributing Member the amount of additional capital required pursuant to the preceding sentence which the Non-Contributing Member failed to contribute. Any advance made by a Contributing Member pursuant to the preceding sentence is referred to herein as a "**Default Advance.**" If any Default Advance is made by a Contributing Member, the amount of any subsequent cash distribution by the Company to the Non-Contributing Member which would otherwise be distributable to the Non-Contributing Member pursuant to Section 2.9 if it had contributed the required additional capital (the "**Distribution Amount**") shall as of the date of such cash distribution be reduced by subtracting therefrom an amount equal to such Distribution Amount multiplied by a fraction, the numerator of which is the product of the Default Advance multiplied by 1.5 and the denominator of which is the total of any contributions which the Non-Contributing Member has previously made to the Company plus any contributions which it is required to make to the Company but has failed to make. The amount by which the Non-Contributing Member's Distribution Amount is so reduced shall be allocated to the Contributing Member.

2.4 No Third Party Beneficiary Rights.

The provisions of this Article II are not intended to be for the benefit of any creditor or any other person (other than a Member in its capacity as such) to whom any debts, liabilities or obligations are owed by or who otherwise has any claim against the Company or any of the Members; and no such creditor or other person shall obtain any right under any of such provisions or shall by reason of any of such provisions make any claim in respect of any debt, liability or obligation against the Company or any of the Members.

2.5 Capital Accounts.

(a) The Company shall establish and maintain a capital account (the "**Capital Account**") for each Member in accordance with the provisions of section 704(b) of the United States Internal Revenue Code of 1986, as amended (the "**Code**"), and the regulations promulgated thereunder.

(b) For purposes of computing the amount of any item of income, gain, deduction or loss to be reflected in the Members' Capital Accounts, the determination, recognition and

classification of each such item shall be the same as its determination, recognition and classification for federal income tax purposes, subject to the following qualifications:

(1) Any deductions for depreciation, cost recovery, amortization or expense in lieu of depreciation attributable to contributed (or revalued) property shall be determined as if the adjusted basis of the contributed (or revalued) property on the date it was acquired by the Company was equal to the "Carrying Value" of the contributed (or revalued) property on such date ("**Carrying Value**" being defined, as of the time of determination, as (i) in the case of contributed (or revalued) property, the fair market value of such property at the time of contribution, reduced (but not below zero) by all deductions for depreciation, amortization, cost recovery and expense in lieu of depreciation (determined as aforesaid) thereafter charged to the Capital Accounts of the Members in respect of such contributed (or revalued) property, and (ii) in the case of other Company property, the adjusted basis of such property for federal income tax purposes);

(2) Any income, gain or loss attributable to a taxable disposition of contributed (or revalued) property shall be determined as if the adjusted basis of the contributed (or revalued) property on the date of disposition was equal to the Carrying Value of such contributed (or revalued) property on such date, and any such income, gain or loss shall be allocated in accordance with the provisions hereof; and

(3) Immediately before the distribution of any property of the Company in liquidation of the Company pursuant to the terms of this Agreement or otherwise, any Unrealized Gain (hereinafter defined) or Unrealized Loss (hereinafter defined) attributable to such property shall, for purposes of this Agreement, be deemed to be gain or loss recognized by the Company and shall be allocated among the Members in accordance with the provisions of Section 2.11(a) below, as if such property were sold for its fair market value in connection with the liquidation of the Company instead of distributed to the Members. "**Unrealized Gain**" is defined as the excess, if any, of the fair market value of any property of the Company on the date of determination over the Carrying Value of the property on the same date. "**Unrealized Loss**" is defined as the excess, if any, of the Carrying Value of any property of the Company on the date of determination over the fair market value of the property on the same date.

(c) Any transferee of a Percentage Interest permitted pursuant to this Agreement shall succeed to the Capital Account relating to the Percentage Interest transferred.

2.6 Interest and Earnings on Capital Contributions; Return of Capital Contributions.

No Member shall be entitled to interest on its Capital Contribution other than as set forth herein. No Member shall be entitled to demand the return of its Capital Contribution at any particular time, except upon termination of the Company, and then only to the extent provided herein. In no event shall a Member be entitled to demand or receive property other than cash. Unless otherwise provided by law, no Member shall be personally liable for the return or repayment of all or any part of any other Member's Capital Account or Capital Contribution, it being expressly agreed that any such return of capital pursuant to this Agreement shall be made solely from the assets (which shall not include any right of contribution from a Member) of the Company.

2.7 Loans.

If unanimously approved by the Managers and provided for in the Project Financing Plan, the Company may from time to time borrow all necessary funds, other than Capital Contributions, from banks or other lending institutions on commercially available terms or from a Member or Members. Unless approved by the Managers in writing, all sums received by the Company from a Member shall be deemed Capital Contributions. Funds from Members that have been approved as loans by the Managers, if any, shall be deemed demand loans, shall be repaid prior to any distributions to Members, shall bear interest at an annual rate equal to 10%, compounded quarterly, and shall be made upon such other terms and conditions as are acceptable to the Managers and to the Member(s) making such loan(s). If more than one Member wishes to make an approved loan, then the total loan amount shall be allocated among the Members in proportion to such lending Members' respective Percentage Interests. Approved loans by any Member to the Company shall not be considered Capital Contributions and shall not increase the Capital Account balance of the lending Member. No Member shall be required to make any loans to the Company.

2.8 No Preemptive Rights.

No Member shall have any preemptive, preferential or other similar right with respect to additional contributions or loans to the Company (except as set forth in Section 2.7 above) or the issuance or sale of any Percentage Interests.

2.9 Distribution of Distributable Cash.

Distributable Cash for each fiscal year shall be distributed to the Members in accordance with the following order of priority:

(a) First, to the Members in proportion to and to the extent of their respective Preferred Returns;

(b) Second, to the Members, in proportion to and to the extent of their respective Invested Capital; and

(c) Third, the balance, to the Members pro rata in accordance with their respective Percentage Interests.

2.10 Tax Distributions. During each fiscal year of the Company prior to the fiscal year in which the Company is dissolved, the Company will use reasonable efforts to make cash distributions out of available funds, if any (each a "**Tax Distribution**") to each Member in an amount equal to the excess, if any, of (i) the product of (a) the sum of the maximum federal, state, and county income tax rates applicable to individuals for that fiscal year (based on the highest applicable rate for any Member), multiplied by (b) the amount of net income of the Company allocated to such Member for such fiscal year (the "**Tax Allocation**"), over (ii) the aggregate net cash distributions made to such Member by the Company with respect to such fiscal year or portion thereof (such excess of (i) over (ii) is hereinafter referred to as the "**Tax Shortfall**"). For the purposes of the preceding sentence, the Tax Allocation for a fiscal year or portion thereof shall be reduced by any net losses of the same character previously allocated by

the Company to such Member, to the extent such losses were not previously taken into account under this sentence. The Company may make Tax Distributions on an annual basis or on a quarterly basis. To the extent that there is insufficient cash to make Tax Distributions in the full amount of the Tax Shortfall of each Member, Tax Distributions shall be made to the Members on a pro rata basis in proportion to their respective Tax Shortfall amounts. Any Tax Distributions made pursuant to this Section 2.10 shall be treated as advance payments of amounts otherwise payable under Section 2.9 and shall be considered to have been distributed under the provisions of Section 2.9 which correspond to the allocation of net income for such Member.

2.11 Allocation of Income, Gain, Loss and Deduction.

(a) Capital Accounts. For purposes of maintaining Capital Accounts, items of income, gain, loss and deduction of the Company for each year shall be allocated among the Members in a manner such that, to the extent possible, the Capital Account of each Member, immediately after making such allocation, is equal to the amount that would be distributable to such Member if an amount equal to the sum of (1) the positive Gain-Adjusted Capital Account balances (as hereinafter defined) of all Members, determined prior to any allocation under this Section 2.11(a) for such year (but after taking into account all distributions of Distributable Cash made to the Members during such year), increased (or reduced, as applicable) by (2) the items of income, gain, loss and deduction of the Company for such year to be allocated among the Members under this Section 2.11(a) with respect to such year, were distributed among the Members in accordance with Section 2.9 hereof. The **"Gain-Adjusted Capital Account"** balance of a Member shall mean the Capital Account balance of such Member, provided that for any year prior to the year in which the Company is liquidated, such Capital Account balance shall be increased by such Member's share of any Minimum Gain. **"Minimum Gain"** shall mean (a) with respect to nonrecourse liabilities, as set forth in Regulations Section 1.752-1(a)(2) (**"Company Nonrecourse Liabilities"**) the amount of gain that would be realized by the Company if it disposed of (in a taxable transaction) all Company properties that are subject to Company Nonrecourse Liabilities in full satisfaction of such liabilities, computed in accordance with applicable Treasury Regulations or (b) with respect to each Member Nonrecourse Debt (as herein defined), the amount of gain that would be realized by the Company if it disposed of (in a taxable transaction) the Company property that is subject to such Member Nonrecourse Debt in full satisfaction of such debt, computed in accordance with applicable Treasury Regulations. "Nonrecourse deductions," as determined for purposes of Treasury Regulations Section 1.704-2(b), for any period, shall be allocated to the Members, pro rata in proportion to their respective Percentage Interests.

(b) Income Tax Elections. In the event of a transfer of all or part of a Percentage Interest, the Company shall make the election described in section 754 of the Code.

(c) Income Tax Allocations.

(1) For purposes of sections 702 and 704 of the Code, or the corresponding sections of any future Federal internal revenue law, or any similar tax law of any state or other jurisdiction, Company profits, gains and losses for federal income tax purposes, and each item of income, gain, loss or deduction entering into the computation thereof, shall, except as provided in section 704(c) of the Code, be allocated as nearly as possible among the

Members in the same proportions as the corresponding "book" items are allocated pursuant to the preceding portions of this Section 2.11 and 2.11(f) hereof. Notwithstanding the foregoing, for federal income tax purposes, each item of income, gain, loss, and deduction with respect to property contributed by a Member to the Company shall be allocated in accordance with section 704(c) of the Code so as to take into account any variation between the adjusted tax basis of the property and its fair market value at the time of contribution. In making such allocations the Company shall apply any method or convention required by section 704(c) and the regulations thereunder, or any reasonable method or convention permitted by section 704(c) and the regulations thereunder that the Managers may select.

(2) If any portion of any gain allocated among the Members pursuant to this Section 2.11 is characterized as ordinary income under the recapture provisions of the Code, each Member's distributive share of taxable gain from the sale of the Company property (to the extent possible) shall include a proportionate share of this recapture income, as determined in accordance with Treasury Regulations sections 1.1245-1(e) and 1.1250-1(f).

(d) Transfers during Fiscal Year. In the event of the transfer of all or any part of a membership interest at any time other than at the end of a fiscal year, the share of profit or loss in respect of the membership interest so transferred shall be allocated between the transferor and the transferee in the same ratio as the number of days in such fiscal year before and after such transfer. The provisions of this subsection shall not apply to gain or loss or to extraordinary non-recurring items. Gain and loss shall be allocated in accordance with the provisions of Section 2.11(a) above to those Members who own membership interests on the date of the closing of the sale, computed by reference to those Members' membership interests on the date of the closing of the sale. Similarly, extraordinary or nonrecurring items shall be allocated in accordance with the provisions of Section 2.11(a) above, as the case may be, to those Members who are Members on the date the gain is realized or the loss incurred, as the case may be.

(e) Amortization and Allocation of Organization and Start-up Expenses. The Company shall elect to amortize over a period of 60 months: (1) all organization expenses in accordance with the provisions of section 709(b) of the Code; and (2) all start-up expenses in accordance with the provisions of section 195 of the Code.

(f) Special Capital Account "Book" Allocations to Comply with Section 704 Regulations. The Company shall make the special "book" allocations to the Capital Accounts of the Members as required under Code Sections 704(b) and 704(c) and the Regulations promulgated thereunder. Such special allocations shall be made before any allocations under Section 2.11(a) above.

(g) Tax Matters Member.

(1) Stephen J. Garchik is hereby appointed to act as the tax matters member (the "TMM"), who shall act in the same capacity as a "tax matters partner" of a partnership as referred to in section 6231(a)(7)(A) of the Code. Pursuant to section 6223(c)(3) of the Code, upon receipt of notice from the IRS of the beginning of an administrative proceeding with respect to the Company, the TMM shall furnish the IRS with the name, address and profits

interest of each of the Members, provided that such information is provided to the Company by the Members.

(2) The TMM is authorized, but not required:

(A) To enter into any settlement with the IRS with respect to any administrative or judicial proceedings for the adjustment of Company items required to be taken into account by a Member for income tax purposes (such administrative proceedings being referred to as a "tax audit" and such judicial proceedings being referred to as "judicial review"), and in the settlement agreement the TMM may expressly state that such agreement shall bind all Members, except that such settlement agreement shall not bind any Member (i) who (within the time prescribed pursuant to the Code and Treasury Regulations) files a statement with the IRS providing that the TMM shall not have the authority to enter into a settlement agreement on behalf of such Member or (ii) who is a "notice partner" (as defined in section 6231 of the Code) or a member of a "notice group" (as defined in section 6223(b)(2) of the Code);

(B) In the event that a notice of a final administrative adjustment at the Company level of any item required to be taken into account by a Member for tax purposes (a "final adjustment") is mailed to the TMM, to seek judicial review of such final adjustment, including the filing of a petition for readjustment with the Tax Court or the United States Claims Court, or the filing of a complaint for refund with the District Court of the United States for the district in which the Company's principal place of business is located;

(C) To intervene in any action brought by any other Member for judicial review of a final adjustment;

(D) To file a request for an administrative adjustment with the IRS at any time and, if any part of such request is not allowed by the IRS, to file an appropriate pleading (petition or complaint) for judicial review with respect to such request;

(E) To enter into an agreement with the IRS to extend the period for assessing any tax which is attributable to any item required to be taken into account by a Member for tax purposes, or an item affected by such item; and

(F) To take any other action on behalf of the Members of the Company in connection with any tax audit or judicial review proceeding to the extent permitted by applicable law or regulations.

(3) The taking of any action and the incurring of any expense by the TMM in connection with any such proceeding, except to the extent required by law, is a matter in the sole and absolute discretion of the TMM and the provisions relating to indemnification of the Managers set forth in Section 3.9 of this Agreement shall be fully applicable to the TMM in its capacity as such.

(4) The Company shall pay for the cost of any outside auditor or accountant hired by the TMM in connection with this Agreement. The TMM shall not be liable,

responsible or accountable to the Company or to the Members in damages or otherwise for any acts performed, or for any failure to act, in good faith, provided, however, that the TMM shall not be relieved of its fiduciary obligations to the Company and the Members for fraud, bad faith, gross negligence, willful misconduct, misrepresentation or breach of fiduciary duty.

ARTICLE III
MANAGEMENT AND RIGHTS OF MEMBERS

3.1 Management by Managers; Rights of Members.

(a) Manager Designation. The WMG Member shall have the authority to appoint two managers ("Manager(s)") of the Company and the GWB Ninety Nine Member shall have the authority to appoint one manager ("**Manager(s)**") of the Company. The initial Managers appointed by WMG Member are Stephen J. Garchik and Stephen McBride. The initial Manager appointed by GWB Ninety Nine Member is Douglas Slayton. Each Manager appointed by a Member shall serve and continue in office throughout the entire term of the Company unless sooner removed by (1) its appointing Member upon written notice to the other Members and Managers, (2) by operation of law, (3) by order or decree of any court of competent jurisdiction, (4) by voluntary resignation, (5) upon the death, incompetency or bankruptcy of the Manager, or (6) as otherwise provided in this Agreement. Without the prior written approval of the WMG Member, the GWB Ninety Nine Manager shall not be a person other than Douglas Slayton. Without the prior written approval of the GWB Ninety Nine Member, the WMG Manager shall not be a person other than Stephen McBride and Stephen J. Garchik.

(b) Each of the Members is hereby irrevocably constituted and appointed by the Manager appointed by such Member(s) with full power of substitution, to be its true and lawful attorney-in-fact, in its name, place and stead, to make, execute, certify, acknowledge, deliver, file and record any certificate or other instruments, or amendments or modifications thereof, which may be required to be filed by the Company under applicable law to reflect the removal and replacement of the Member's Manager. Each of the Managers hereby acknowledge that the power of attorney granted herein (i) is coupled with an interest, (ii) is irrevocable, and (3) survives the death, incompetency, or adjudication of insanity or bankruptcy of any such Manager who is an individual.

(c) Power and Authority of the Managers.

(1) The Managers shall have the complete and exclusive control of the management of the Company's business and affairs. The Members shall not have any power or authority to act for or on behalf of the Company in any respect whatsoever, except as otherwise specifically provided in this Agreement or the Act.

(2) Either of the WMG Managers, acting singly or together, shall be generally responsible for day-to-day matters (i.e., those matters that are not Major Decisions). The vote or signature of the **Day-to-Day Manager** (or either of them if more than one) shall be required to act on, consent to or approve day-to-day matters. The Manager responsible for the day-to-day management of the Company shall be hereinafter referred to as the "**Day-to-Day Manager**."

(3) The affirmative and unanimous vote or signature of all Managers shall be required for the Managers to act on, consent to or approve Major Decisions. Subject to Section 3.1(c)(4) below, the term "**Major Decisions**" shall mean any of the following:

(A) Sale, pledge, or other disposition of any of the assets of the Company or any Percentage Interest in the Company, or the acquisition by the Company of any assets not set forth in the Project Budget or the Annual Operating Budget (as hereinafter defined), and the terms and conditions thereof.

(B) Terms and conditions of any financing, refinancing or recapitalization obtained by the Company or of any guaranty by anyone for the benefit of the Company.

(C) Approval of and revisions to the Project Budget and the Annual Operating Budget, operating statements, and other financial documents, and any expenditures in excess of the amount shown on the Project Budget or the Annual Operating Budget or, if not in such budget, in excess of $200,000 at any one time or $1,000,000 in the aggregate with respect to the Project Budget, and in excess of $50,000 at any one time or $250,000 in the Aggregate with respect to the Annual Operating Budget; provided that, in the event of an inability to agree upon an Annual Operating Budget, then the Company shall operate under the previous year's Annual Operating Budget as escalated annually by CPI until the dispute is resolved.

(D) Determination of the need for additional capital beyond any budgeted shortfall or emergency repair.

(E) Selection and replacement of general contractors, architects, engineers, property managers, real estate brokers, attorneys, accountants, and other consultants and the terms of engagement thereof.

(F) Approval of the Company's tax elections and annual tax returns.

(G) Admission of new Members or the creation of any new class of Percentage Interest.

(H) Change of Managers other than as provided in Section 3.1(a).

(I) Approval of and material departures from the Project design features set forth in Exhibit C attached hereto.

(J) Approval of any easement, restrictive covenant or other encumbrance hereafter placed on the Property or any other matter hereafter affecting title to the Property, and the terms and conditions of any of the foregoing.

(K) Initiating any legal or alternative dispute resolution proceedings by or on behalf of the Company, or agreeing to any settlement or proposed resolution of such proceedings.

(L) Termination or dissolution of the Company.

(M) Amendment of this Agreement; provided, however, that if any such Amendment is to reflect the fact that any Member has had its Percentage Interest purchased by the other Members pursuant to Section 3.13, then the vote or signature of the Managers(s) appointed by the Member being diluted or purchased shall not be required.

(N) Any other action specifically requiring the unanimous consent of the Managers pursuant to the terms of this Agreement.

(O) The approval of any leases for space at the Project.

(d) Delegation of Authority by Managers. From time to time, pursuant to a written authorization, a Manager may delegate authority to certain employees, representatives or agents of the delegating Manager, and the power and authority of any such designee shall be limited to that specified in writing and approved by the delegating Manager.

(e) Rights and Votes of Members. The Members, in their capacity as Members and not as Managers, shall not take part in the day-to-day management of the business or transact any business for the Company in their capacity as Members (and not as Managers), nor shall they have power to sign for or to bind the Company, except that one of them (as designated in Section 2.11 above) shall act as the TMM of the Company; provided, however, that the Managers and/or any Member may not, without the prior written approval of the applicable Member, except as permitted by Section 3.13, create any new class of Percentage Interest or issue any additional Percentage Interest to existing or new Members, to the extent that such action would dilute the Member's Percentage Interest or would have a material adverse impact on the timing or priority of such Member's distributions.

(f) Officers. The Managers unanimously may designate one or more Persons to be officers of the Company ("**Officers**"), and any Officers so designated shall have such titles, authorities, duties, and salaries as the Managers may delegate to them. Any Officer may be removed as such, either with or without cause, by the Managers.

3.2 Third Party Reliance.

Third parties dealing with the Company shall be entitled to rely conclusively upon the power and authority of the Managers as set forth in this Agreement

3.3 No Duty to Consult.

Except as otherwise provided in this Agreement, the Managers shall have no duty or obligation to consult with or seek advice of the Members.

3.4 Outside Activities of Managers.

The Members expressly recognize that: (a) a Manager may have substantial other business and real estate activities; (b) each Manager shall devote such time, effort and skill to the Company's business affairs as he, she, or it deems necessary and proper for the Company's welfare and success and shall not be bound to devote all of his, her, or its business time to the affairs of the Company; and (c) each Manager may engage for his, her, or its own account and for the accounts of others in other businesses or real estate activities, even if such businesses or activities compete directly with Company business or activities, and neither the Company nor any Member shall have any rights in or to any such independent business or activity or the income or profits derived therefrom.

3.5 Day-to-Day Manager to Develop Budgets.

(a) Attached hereto as Exhibit E is the initial project budget (the "**Project Budget**"), which has been prepared for GWB Development Partners. At least six months after Project Stabilization, and thereafter on or before November 15th of each calendar year, the Company shall provide to the Members an operating budget, a capital expenditures budget and a business plan for the ensuing calendar year (plus any partial year from Project Stabilization to the next calendar year) (collectively, the "**Annual Operating Budget**").

(b) The Annual Operating Budget shall apply to the operations of the Property for the following calendar year (plus any partial year from the end of the construction period to the next calendar year). The Managers shall conduct the operations of the Company business in accordance with the then-current Annual Operating Budget. The Day-to-Day Manager agrees to notify all Managers and obtain their prior approval of any such contemplated changes before the same are made.

(c) Within thirty (30) days after the end of each calendar quarter, the Company shall furnish the Members with quarterly operating statements for the Company, including budget versus actual statements, showing any variances from the Project Budget or Annual Operating Budget and for the previous calendar month and year to date.

(d) Within ninety (90) days after the end of each calendar year, the Company shall furnish the Members with compiled financial statements of the Company consisting of a balance sheet, an income statement and a statement of cash flows for such fiscal year. Within ninety (90) days after the end of each fiscal year, the Managing Member shall cause the Company to send the Members such information as shall be necessary to prepare the Federal income tax return and any state and local tax return required of the Members as a result of the operations of the Company. The cost of all such reporting shall be paid by the Company as a Company expense.

3.6 Fiduciary Relationship.

Each Manager shall at all times act in a fiduciary capacity for the Company and discharge its duties as Manager in accordance with the best interests of the Company and its Members. No Manager shall have any hidden or concealed earnings from any activity of the Company. No Manager or Member shall be liable, responsible or accountable to the Company or to the Members in damages or otherwise for any acts performed, or for any failure to act in good faith; provided, however, that no Manager or Member shall be relieved of its fiduciary obligations to the Members and to the Company for fraud, bad faith, gross negligence, willful misconduct, misrepresentation or breach of fiduciary duty.

3.7 Reimbursement and Fees.

All expenses incurred with respect to the operation and management of the Company shall be borne by the Company. The Managers shall be entitled to reimbursement from the Company for reasonable, third-party, out-of-pocket expenses allocable to the operation and management of the Company to the extent such expenses are reflected on the Project Budget or the Annual Operating Budgets or are otherwise agreed upon unanimously by the Managers. Except for the foregoing reimbursements, the Managers shall not be entitled to any compensation or other remuneration for services performed as Managers.

3.8 Managers and Affiliates Dealing with the Company.

The Managers may appoint, employ, contract or otherwise deal with any person, including individuals with whom a Manager is related, and with business entities in which such Manager has a financial interest, for transacting Company business, including any acts or services for the Company as the Managers may approve; provided, however, that, except as provided in Section 3.7(b) above, fees or other payments and terms of any contract with such parties shall not be in excess of prevailing competitive rates for such transactions. In the event any such related person is appointed, employed or contracted to transact Company business, the Manager appointed by the Member Group that is not related to such service provider shall act on behalf of the Company with respect to enforcing the Company's rights pursuant to the related service contract or otherwise dealing with such service provider.

3.9 Indemnification of Managers and Members.

The Managers and Members shall be indemnified by the Company to the fullest extent permitted by the Act for any action taken by the Managers or Members within the scope of the authority conferred on him, her, or it by this Agreement, except for acts of fraud, bad faith, gross negligence, willful misconduct, misrepresentation, breach of fiduciary duty or breach of the representation set forth in Section 6.11.

3.10 Company Meetings.

The Managers shall meet for the transaction of Company business at such places and times as are mutually convenient to them. Nothing in this Agreement shall be construed as limiting the ability of the Managers to transact Company business by written consent without a formal meeting.

3.11 Books and Records.

The books and records of the Company shall be kept by James Hyland at the address set forth in Section 1.3 hereof.

3.12 Bank Accounts.

The Managers shall be responsible for establishing and maintaining a bank checking account or accounts on behalf of the Company with such signature authority being vested in Stephen McBride and James Hyland, any one of whom may act.

3.13 Deadlock.

If a deadlock occurs in voting between the Managers or the Members on those matters where the Managers or the Members are entitled to vote, or if a dispute arises between the Managers or the Members with respect to any matter arising under this Agreement, and if that deadlock or dispute cannot be resolved by mutual agreement within a period of 30 days, then, unless the parties to such deadlock or dispute mutually agree otherwise, any such deadlock or dispute shall be determined as follows:

(1) If the deadlock or dispute involves an event described in Section 3.1(c)(3)(A) through (M), then the deadlock or dispute shall be resolved by arbitration in New York, New York under the AAA Commercial Arbitration Rules with Expedited Procedures in effect on the date hereof, as modified by this Agreement ("**Arbitration**"). Each party shall be required to state in writing in reasonable detail its position on the deadlocked or disputed matter and the reasons why such position in such Manager's good faith business judgment is in the best interests of the Company. There shall be one arbitrator selected by the parties within 10 days of the arbitration demand or if not, by the AAA from its Large Complex Case Panel (or an arbitrator with similar professional credentials), who shall be an attorney with at least 15 years commercial law experience. Any issue about whether a deadlock or dispute is covered by this Agreement shall be determined by the arbitrator. At the request of either party made not later than 75 days after the arbitration demand, the parties agree to submit the dispute to nonbinding mediation which shall not delay the arbitration hearing date; provided that either party may decline to mediate and proceed with arbitration. There shall be no substantive motions or discovery, except the arbitrator shall authorize such discovery and enter such prehearing orders as may be appropriate to insure a fair private hearing, which hearing shall be held within 120 days of the demand and concluded within 3 days. These time limits are not jurisdictional. The arbitrator shall apply substantive law of the State of New York and may award injunctive relief or any other remedy available from a judge including attorney's fees and costs to the prevailing party. The parties hereby acknowledge and agree that the arbitrator shall be required to resolve such deadlock or dispute by choosing the position of the Manager that most closely comports with the standard of conduct required pursuant to law.

(2) If the deadlock or dispute involves any Major Decision described in Section 3.1(c)(3)(N), then the deadlock or dispute shall be resolved only by the unanimous consent of the Managers pursuant to the terms of this Agreement.

3.14 Power of Attorney.

Each of the Members hereby irrevocably constitutes and appoints each of the Managers appointed by such Member's Member Group with full power of substitution, to be its true and lawful attorney-in-fact, in its name, place and stead, to make, execute, certify, acknowledge, deliver, file and record: (a) any certificate or other instruments, or amendments or modifications thereof, which may be required to be filed by the Company under applicable law; (b) any documents, certificates or other instruments, including any and all modifications and amendments of this Agreement and the Articles of Organization of the Company, that may be required or deemed desirable by the Managers to effectuate (i) the provisions of any part of this Agreement including, without limitation, any purchase and sale pursuant to Article IV hereof, and (ii) any amendment of this Agreement made in accordance with the terms hereof (including, for example but not by way of limitation, to amend this Agreement to provide for the withdrawal of a Member or admission to the Company of substituted Members pursuant to the terms of Section 4.1 below); (c) all documents, certificates or other instruments which may be required to effectuate the dissolution and termination of the Company; provided that the power of attorney granted herein shall be fully subject to all the terms and conditions of this Agreement, and (d) any document, consent, acknowledgment, resolution, pledge or other instrument or agreement required of all Managers, e.g. to obtain a loan to the Company, or otherwise. Each of the Members hereby acknowledges that the power of attorney granted herein (1) is coupled with an interest, (2) is irrevocable, and (3) survives the death, incompetency, or adjudication of insanity or bankruptcy of any such Member who is an individual.

3.15 Members Entitled to Receive Reports.

All Members of the Company shall be entitled to receive a copy of any or all reports prepared by the Managers or third parties on behalf of the Company and upon request of any Member, the Day-to-Day Manager shall cause a copy of any such requested report to be delivered to the requesting Member.

ARTICLE IV
TRANSFER OF MEMBERSHIP INTERESTS

4.1 Transfers; Treatment of Assignees; Substituted Members.

(a) No Member shall, directly or indirectly, transfer, sell, give, encumber, assign, pledge, or otherwise deal with or dispose of all or any part of the Percentage Interests now owned or subsequently acquired by him, her or it, other than to a Permitted Transferee, and no assignee or transferee shall be admitted as a Member, without first obtaining the consent of the Manager(s) representing the Member Group not transferring its interest (the "**Non-Transferring Manager**"), which consent may be given or withheld in the sole and absolute discretion of the Non-Transferring Manager . No Member shall, directly or indirectly, transfer sell, give encumber, assign, pledge, or otherwise deal with or dispose of all or any part of the Percentage Interests now owned or subsequently acquired by him, her or it to Aaron Malinsky or any spouse or biological or adopted descendent of Aaron Malinsky, Paul Slayton or anyone who is a "Prohibited Person" as defined in the Agreement of Lease between The Port Authority of New York and New Jersey and George Washington Bus Station Development Venture LLC.

(b) A "**Permitted Transferee**" is: (i) any existing Member as of the date of such transfer, or a member, partner or shareholder of any existing Member, or an Affiliate thereof; or (ii) the spouse or biological or adopted descendant of any Member, or any direct member, partner or shareholder of any Member, (iii) a trust established for the benefit thereof to facilitate estate planning, or (iv) only in the case of the WMG Member, one or more employees of the WMG Member or an Affiliate of the WMG Member, which such employee(s) shall have been designated in writing by the WMG Member.

(c) No Member shall be permitted to resign, retire, or otherwise voluntarily withdraw from the Company, and any Member who attempts to do so in violation of this Agreement shall be liable to the other Members and to the Company for any loss or damage sustained as a result of such attempted resignation.

(d) Any purported transfer, sale, gift, encumbrance, assignment, pledge, or other disposition of a Percentage Interest of a Member in violation of this Section 4.1 shall be deemed null and void.

(e) If a Percentage Interest has been assigned or transferred in accordance with the provisions of this Agreement, as required by law or court order, or otherwise as consented to by the Non-Transferring Manager, then such assignee or transferee, including a Permitted Transferee, shall not be a Member and shall not be entitled to vote or participate in the affairs and management of the Company or to exercise any right of a Member, including, without limitation, no right to appoint a Manager, unless such assignee or transferee is admitted as a substituted Member, as set forth below. The Percentage Interest of such assignee shall be deemed to be voted on all matters in the same proportion as the remaining Percentage Interests are voted. An assignee or transferee is entitled, to the extent of the Percentage Interest assigned, only to allocations of tax items and distributions pursuant to this Agreement.

(f) If a Percentage Interest has been assigned or transferred in contravention of this Agreement or as required by law or court order, then, for a period of 180 days after receipt of notice of such event by the Non-Transferring Manager, the assignee or transferee shall, at the option of the Non-Transferring Manager, in its sole and absolute discretion, be required to sell to the Company or its designate all of such assignee's or transferee's Percentage Interests for a price equal to its fair market value, which fair market value shall be determined by the Non-Transferring Manager in the exercise of its good faith discretion.

(g) In the event that the Non-Transferring Manager consents in writing to the admission as a substitute Member of a successor-in-interest to a Percentage Interest, such admission shall, in addition to such consent, be contingent upon: (i) the agreement of such successor-in-interest to be bound by the terms and conditions of this Agreement and the execution by such successor-in-interest of a written document or restatement of this Agreement evidencing the same; and (ii) the agreement of such successor-in-interest to become personally obligated to the same extent as any other Member with respect to obligations of the Company by executing such guarantees of the Company indebtedness as may have been executed previously by Members, if any.

4.2 Death, Insanity or Incompetency, or Trust Termination of a Member.

(a) In the event of the death, adjudication of insanity or incompetency of a Member who is an individual, or in the event of the termination of a Member that is a trust, the estate, trustee or other legal representative of such withdrawing Member shall have the right to transfer the Percentage Interest of such withdrawing Member to the heirs, beneficiaries, distributees or other successor party of such withdrawing Member, subject to the provisions of Article IV hereof. Any transferee of the Percentage Interest of a withdrawing Member shall be deemed to be an assignee of the withdrawing Member's Percentage Interest but shall not be a Member hereunder, nor have any right to vote on Company decisions, unless the Managers consent to such transferee's or assignee's admission as a Member and such transferee or assignee agrees to be bound by this Agreement, in accordance with Section 4.1(g).

(b) On or before the second anniversary of an event described in Section 4.2(a) with respect to a Member, the representatives of that Member or any person to whom the Member has transferred Percentage Interests pursuant to the provisions of this Agreement (i) may ask the Company to purchase all of such Member's Percentage Interests or (ii) at the option of the Non-Transferring Manager, shall be required to sell to the Company or its designate all of such Member's and such transferee's Percentage Interests. Within 90 days after receiving such request or exercise of such option, the Company shall purchase, and the Member or transferee shall sell, all such Percentage Interests for a price equal to the value of such Member or transferee's equity in the Company. The value of such Member or transferee's equity in the Company shall be mutually agreed upon by the Member or transferee and the Non-Transferring Manager; provided, however, that, if the Member or transferee and the Non-Transferring Manager are unable to reach a mutual agreement, then the value shall be determined using the Appraisal Method (hereinafter defined). Unless otherwise agreed to by the parties, the terms of payment shall be all cash.

4.3 Bankruptcy of a Member.

In the event of the Bankruptcy (as herein defined) of a Member (the "**Bankrupt Member**"), then the Members other than the Bankrupt Member (the "**Continuing Members**"), pro rata, in proportion to their respective Percentage Interests (unless they agree upon another proportion), shall have the option (exercisable by giving notice thereof to the Bankrupt Member or to its trustee in Bankruptcy, guardian, receiver or other legal representative) to purchase all (but not less than all) of the Bankrupt Member's Percentage Interest, within 90 days after the adjudication of such Bankruptcy, at a price equal to 90% of the fair market value thereof, as mutually agreed upon by the Continuing Members and the legal representative of the Bankrupt Member, provided, however, that, if the Continuing Members and the legal representative of the Bankrupt Member are unable to reach such mutual agreement within 30 days after the adjudication of such Bankruptcy (the "**Agreement Date**"), the Continuing Members and the legal representative of the Bankrupt Member shall each, within five (5) business days of the Agreement Date, appoint an appraiser to determine the fair market value of the Bankrupt Member's Percentage Interest, for purposes of a cash sale in accordance with the procedures set forth in this Section (the "**Appraisal Method**"). In the event one party timely appoints an appraiser and the other party fails to timely appoint an appraiser, then the appraiser which was timely appointed shall determine the fair market value for all purposes. If the two appraisers

agree upon the fair market value of such Percentage Interest, they shall jointly render a single written report of their opinion thereon. If the two appraisers cannot agree upon the fair market value of the Bankrupt Member's Percentage Interest, they shall each render a separate written report and shall together appoint a third appraiser, who or which shall appraise such Percentage Interest, and shall render a written report of its opinion thereon. All appraisers appointed shall be qualified by experience and ability to appraise the Bankrupt Member's Percentage Interest; and the fees and other costs of each of the first two appraisers shall be borne by the group appointing each such appraiser, with the fees and other costs of the third appraiser being shared equally by both such groups. The agreed appraised value or the appraised value contained in the aforesaid joint written report or written report of the third appraiser (as the case may be) shall be used to determine the purchase price of the Bankrupt Member's Percentage Interest; provided, however, that, if the fair market value contained in the appraisal report of the third appraiser is more than the higher of the first two appraisals, the higher of the first two appraisals shall govern; and provided, further, that if the fair market value contained in the appraisal report of the third appraiser is less than the lower of the first two appraisals, the lower of the first two appraisals shall govern. Within 60 days after the aforesaid joint written report or written report of the third appraiser (as the case may be) has been rendered, the Continuing Members shall give notice to the legal representative of the Bankrupt Member of their decision as to the exercise of the aforesaid option. If such option is exercised, settlement shall be held within 30 days from the date of such exercise. Unless otherwise agreed to by the parties, the terms of payment, at the election of the Continuing Members, shall be (x) all cash or (y) up to 20% in cash with the remainder due five (5) years thereafter in accordance with a note to be executed by the Continuing Members.

4.4 Right to Effect Transfers.

(a) The Company shall have the right to effect the transfers contemplated in this Article without actually receiving a written assignment of a Member's Percentage Interest, and it is agreed that transfers of Percentage Interests may be made on the books of the Company for this purpose, which transfers shall be deemed effective upon payment in accordance with the terms of this Article.

(b) In addition, the Non-Transferring Manager shall have the right to reflect the transfers contemplated in this Article by written amendment to this Agreement signed by the Non-Transferring Manager.

ARTICLE V
TERM; DISSOLUTION

5.1 Term.

The term of the Company shall be perpetual until the occurrence of an Event of Dissolution (hereinafter defined).

5.2 Events Resulting in Dissolution.

The Company shall be dissolved upon the earliest to occur of any of the following events (an "**Event of Dissolution**"), it being understood and agreed that the death, resignation,

Day-to-Day Manager shall have the authority to execute and record a Certificate of Cancellation of the Company, as well as any and all other documents required to effectuate the dissolution and termination of the Company.

ARTICLE VI

REPRESENTATIONS AND WARRANTIES RELATING TO INITIAL MEMBER

Douglas Slayton, to his knowledge, and GWB Ninety Nine LLC (based solely on the knowledge of Douglas Slayton) hereby represent and wawrrant to WMB and the MG Member as follows:

(a) Clearview Member, which was the initial Member of the Company (referred to herein as the "initial Member" or "Clearview"), was the Initial Member and prior to July 16, 2010 was the sole member of the Company and owned a 100% interest in the Company (the "Membership Interest") and owned and held good and marketable title to its Membership Interest free and clear of any and all liens, encumbrances, charges, options, rights of first refusal or other similar matters of any kind whatsoever and the Membership Interest is subject to no restrictions on transfer other than as set forth in the Amended and Restated Operating Agreement of the Company, dated July 16, 2010. Prior to July 16, 2010, no Person other than the Initial Member had any ownership interest in the Company.

(b) After July 16, 2010, Clearview owned and held good and marketable title to a 70% interest in the Company and owned and held good and marketable title to said 70% interest in the Company free and clear of any and all liens, encumbrances, charges, options, rights of firs refusal or other similar matters of any kind whatsoever and such 70% Membership Interest is subject to no restrictions on transfer other than as set forth in the Amended and Restated Operating Agreement of the Company, dated July 16, 2010.

(c) The Amended and Restated Operating Agreement did not, with or without the giving of notice or the passage of time, conflict with or violate the terms of any agreement, restriction, order, judgment or decree to which the Initial Member or the Company was a party or by which the Initial Member, the Company or the Membership Interests of Initial Member was bound.

(d) Consents, if any, necessary for the Amended and Restated Agreement and the admission of WMG, as a Member thereof had been obtained, including consents that may be required for the Port Authority per the terms of the Lease.

retirement, expulsion, Bankruptcy or dissolution of a Member, or the occurrence of any other event that terminates the continued membership of a Member in the Company under the Act, shall not constitute an Event of Dissolution:

(a)The unanimous written consent of the Members or the Managers; or

(b) The entry of a decree of judicial dissolution under the Act; or

(c)The occurrence of any other event causing the dissolution of a limited liability company under the laws of the State of New York.

5.3 Conclusion of Affairs.

In the event of the dissolution of the Company for any reason, the Managers shall proceed promptly to wind up the affairs of and liquidate the Company. Except as otherwise provided in this Agreement, the Members shall continue to share distributions and tax allocations during the period of liquidation in the same manner as before the dissolution. The Managers shall have reasonable discretion to determine the time, manner and terms of any sale or sales or distributions of Company property pursuant to such liquidation having due regard to the activity and the condition and relevant market general financial and economic conditions consistent with its fiduciary obligations to the Members.

5.4 Order of Priority in Liquidation.

If the Company is terminated or dissolved, the Day-to-Day Manager shall proceed with the liquidation of the Company as provided in Section 5.3 above, and the proceeds from the liquidation shall be applied as follows:

(a) First, to the payment of debts and liabilities of the Company, other than loans and advances that may have been made by the Members to the Company, and the expenses of liquidation;

(b) Second, to establish reserves that the Managers determine to be reasonably necessary to provide for any contingent or unforeseen liabilities or obligations of the Company;

(c) Third, to the payment of any loans or advances that may have been made by any Member to the Company, but if the amount available for repayment is insufficient, then payment shall be made in the inverse order of when the loans or advances were made (with the newest loans or advances being repaid first, both as to principal and interest); and

(d) Fourth, in accordance with the priorities described in Section 2.9.

5.5 Termination.

Within a reasonable time following the completion of the liquidation of the Company, the Day-to-Day Manager shall supply to each of the Members a statement setting forth the assets and the liabilities of the Company as of the date of complete liquidation and each Member's portion of the distributions pursuant to this Agreement. Upon completion of the liquidation of the Company and the distributions of all Company assets, the Company shall terminate, and the

(e) No bankruptcy, insolvency, reorganization or similar action or proceeding, whether voluntary or involuntary is pending or threatened against the Initial Member or the Company.

(f) The Initial Member and the Company are duly formed, validly existing and in good standing under the laws of Delaware and New York.

(g) No action, suit or proceeding is pending or has been threatened that concerns or involves the Initial Member, the Company or the Membership Interests.

(h) Neither Initial Member nor the Company has received written notice from any governmental authority of any violation of any federal, state, county or municipal laws, ordinances, orders or regulations.

(i) Intentionally Deleted.

(j) Intentionally Deleted.

(k) Intentionally Deleted

(l) The Company has filed or obtained extensions of all federal, state and local income franchise, real estate, sales and use and other Tax Returns heretofore required by law to be filed by the Company and such Tax Returns are true, correct and complete in all material respects.

GWB Ninety Nine LLC shall indemnify and defend WMG and its affiliates, officers, managers, owners, members, successors and assigns (the "Indemnitees") against and hold harmless from all claims, demands, liabilities, losses, damages, judgments, deficiencies, costs and expenses, including reasonable attorneys' fees and disbursements that may be suffered or incurred by WMG as to any Retained Liability (as herein defined). "Retained Liability" shall mean any obligation, liability (fixed or continent or known or unknown), costs or expenses: (1) under or with respect to the Membership Interests or (2) resulting from any breadh of any representation or warranty expressly made in Article VI in this Agreement. As security for the aforementioned indemnification, GWB Ninety Nine LLC shall pledge its interest in 50.837% membership interest in Marketplace GWB, LLC, which pledge shall not be effective until that certain Promissory Note issued by the Company to Acadia Strategic Opportunity Fund III LLC, in the principal amount of $1,950,000 on March 31, 2010 (the "Acadia Loan") has been satisfied in full. Any liability Douglas Slayton may have in connection with the representations made by him in this Article VI shall be limited solely to his interest in the Company.

ARTICLE VII
MISCELLANEOUS

7.1 Amendment.

Except as otherwise specifically set forth to the contrary herein, this Agreement may be amended, at any time, in whole or in part, only by written instrument signed by both Managers. The parties agree to execute any amendment to this Agreement as may be considered necessary

by legal counsel to the Company in order for it to be treated as a partnership for federal and state income tax purposes, or as may be required to carry out the interest and purpose of any specific provision of this Agreement.

7.2 Notices.

For purposes of this Agreement, notices, offers and acceptances must be in writing and will be deemed to be served and received at the time mailed by United States registered or certified mail or sent overnight by FedEx or UPS to the address shown for each Member on Exhibit A or Manager, if different or not shown, to the last known address of the party involved.

7.3 Enforceability.

The waiver by any party to this Agreement of a breach of any provision of this Agreement will not operate or be construed as a waiver of any subsequent breach by any party. The invalidity or unenforceability of any provision of this Agreement will not affect the validity or enforceability of any other provision.

7.4 Binding Effect.

This Agreement will inure to the benefit of and be binding upon the parties to this Agreement, their successors, heirs, personal representatives and assigns, and will be construed in accordance with the laws of the State of New York. This Agreement may be executed in counterparts.

7.5 Partition.

The Members hereby agree that no Member nor any successor-in-interest to any Member, shall have the right while this Agreement remains in effect to have the property of the Company partitioned, or to file a complaint or institute any proceeding at law or in equity to have the property of the Company partitioned, and each Member, on behalf of himself, his successors, representatives, heirs, and assigns, hereby waives any such right. It is the intention of the Members that during the term of this Agreement, the rights of the Members and their successors-in-interest, as among themselves, shall be governed by the terms of this Agreement, and that the right of any Member or successor-in-interest to assign, transfer, sell or otherwise dispose of his interest in the Company shall be subject to the limitations and restrictions of this Agreement.

7.6 No Waiver.

The failure of any Member to insist upon strict performance of a covenant hereunder or of any obligation hereunder, irrespective of the length of time for which such failure continues, shall not be a waiver of such Member's right to demand strict compliance in the future. No consent or waiver, express or implied, to or of any breach or default in the performance of any obligation hereunder, shall constitute a consent or waiver to or of any other breach or default in the performance of the same or any other obligation hereunder.

7.7 Entire Agreement.

This Agreement constitutes the full and complete agreement of the parties hereto with respect to the subject matter hereof.

7.8 Captions.

Titles or captions of articles or sections contained in this Agreement are inserted only as a matter of convenience and for reference, and in no way define, limit, extend or describe the scope of this Agreement or the intent of any provision hereof.

7.9 Counterparts.

This Agreement may be executed in a number of counterparts, all of which together shall for all purposes constitute one Agreement, binding on all the Members notwithstanding that all Members have not signed the same counterpart.

7.10 Member Representations.

Each Member represents to the other and to the Company that each is an "accredited investor" within the meaning of Rule 501 promulgated under the Securities Act of 1933, as amended. Each Member has substantial investment experience with respect to transactions of the type contemplated hereby. Each Member has had access to such information concerning the Company as it has requested and has had the opportunity to discuss the investment with the Company and the other Members and ask questions of appropriate representatives of the Company, and to obtain any additional information which the Company possesses or can acquire without unreasonable effort or expense that is necessary to verify the information provided to such Member. Each Member agrees to complete, submit and maintain such VENDEX questionnaires as may be required under 6-116.2 of the New York City Administrative Code and applicable regulations and ordinances, or similar requirement of the Port Authority of New York and New Jersey.

ARTICLE VIII
EFFECTIVE TIME; TERMINATION; ETC..

8.1 Effective Time; Termination; Etc.

This Amendment is an Exhibit to the Master Agreement, dated as of the date hereof (the "Master Agreement"), by and among. among George Washington Bridge Bus Station Development Venture LLC, GWB Development Partners, LLC, the Company, each Member and the other signatories thereto. To the extent there is a conflict between the provisions of the Master Agreement and this Amendment, the provisions of the Master Agreement shall control Anything in this Amendment to the contrary notwithstanding, this Amendment shall not become effective until the Effective Time (as defined in the Master Agreement). This Amendment shall terminate and be of no force or effect upon the termination of the Master Agreement in accordance with its terms.

IN WITNESS WHEREOF, the undersigned have executed this Agreement, or caused this Agreement to be executed by a duly authorized officer, as of the day and year above written.

WITHDRAWING INTIAL MEMBER:

CLEARVIEW PROJECTS LLC

By: _____
Paul Slayton

[signatures continue on following page]

EXISTING MEMBER:

WMG ASSOCIATES LLC

By: _____
Stephen J. Gurchik
Manager

NEW MEMBER:

OWB NINETY NINE LLC

By: _____
Douglas Slayton
Sole Member

NEW MEMBER:

GWB IVY LLC

By: _____
Name: James Hyland
Title: Sole Member

NEW MEMBER:

GWB IVY LLC

By: James Hyland

Name: James Hyland
Title: Sole Member

NEW MEMBER:

MG OWB LLC

By: _____
Name: Stephen J. Garchik, Manager

Agreed as to Article VI

_____
Douglas Slayton

NEW MEMBER:

MO OWB LLC

By: _____
Name: Stephen J. Garchik, Manager

Agreed as to Article VI

Douglas Slayton

EXHIBIT A

MEMBERS OF MARKETPLACE GWB, LLC

Members	Capital Contribution	Percentage Interest
GWB Ninety Nine LLC	$	50.837%
WMG Associates LLC c/o SJM Partners 1930 Isaac Newton Square Suite 207 Reston, VA 20190	$	33.52%
GWB IVY LLC		3.911%
MG GWB LLC c/o SJM Partners 1930 Isaac Newton Square Suite 207 Reston, VA 20190		11.732%

EXHIBIT B

PROPERTY DESCRIPTION

EXHIBIT C

PROJECT DESIGN

EXHIBIT D

PROJECT FINANCING PLAN

The Managing Member of GWB Development Partners is authorized to procure financing for the Project from such government programs and on such terms as it shall determine in its sole discretion, including without limitation Upper Manhattan Empowerment Zone Development Corporation financing, the EB5 Program Funding New York City Regional Center or any other government financing program.

EXHIBIT E

PROJECT BUDGET

EXHIBIT F
PROMISSORY NOTE

EXHIBIT G
LETTER AGREEMENT WITH CROWN GWB PARTNERS, LLC

EXHIBIT H

OPERATING AGREEMENT OF GWB DEVELOPMENT PARTNERS LLC

Exhibit A-15

D&G Draft
5/26/11

PROMISSORY NOTE

$625,000.00 _____ __, 2011

FOR VALUE RECEIVED, the undersigned, **GWB NINETY NINE LLC**, a New York limited liability company with an address at _____ (the "**Payor**"), hereby unconditionally promises to pay, in lawful money of the United States and in immediately available funds, to the order of **CLEARVIEW PROJECTS LLC**, a New York limited liability company with an address at c/o Davis & Gilbert LLP, 1740 Broadway, New York, New York 10022, Attention: Robert Karin (the "**Payee**"), the principal sum of SIX HUNDRED TWENTY-FIVE THOUSAND DOLLARS ($625,000.00), or such lesser amount as may be outstanding (the "**Principal Amount**"), together with interest on the unpaid Principal Amount calculated from the date hereof at the rate of 2.49% per annum, compounded annually, pursuant to the terms and conditions contained below. All computations of interest shall be made on the basis of a 365-day year.

1. Maturity Date. The entire outstanding Principal Amount and all accrued and unpaid interest under this promissory note (this "**Note**") shall become due and payable on the earlier of (a) _____ __, 2019 or (b) the sale of (i) the Payor's ownership interest in Marketplace GWB LLC, a New York limited liability company, or (ii) the project being constructed and owned by George Washington Bridge Bus Station Development Venture LLC, a Delaware limited liability company (the "**Maturity Date**").

1. Scheduled Payments. The Payor shall make payments to the Payee or its designee of accrued interest under this Note on an annual basis on _____ of each calendar year, commencing on _____, 2016.

3. Event of Default. The Principal Amount and any accrued and unpaid interest thereon, shall become immediately due and payable upon the occurrence of an Event of Default (as hereinafter defined). Each of the following shall constitute an "**Event of Default**" under this Note: if (i) the Payor shall fail to make any payment under this Note when such payment is due; (ii) the Payor makes a general assignment for the benefit of creditors or commences a case in bankruptcy or any proceeding under any other insolvency law; (iii) a case in bankruptcy or any proceeding under any other insolvency law is commenced against the Payor; or (iv) a trustee, receiver or agent is appointed or authorized to take charge of substantially all of the property of the Payor for the purpose of general administration of such property for the benefit of creditors. After the occurrence of an Event of Default, all amounts due hereunder shall thereafter bear interest at the default interest rate of 18% per annum.

4. Prepayments. The Payor shall have the right to prepay, in whole or in part, the Principal Amount at any time on the following terms and conditions: (a) the interest accrued on the aggregate amount prepaid shall be due and payable on the date of prepayment, and (b)

each of the Payor's obligations under this Note shall continue in full force and effect until the entire Principal Amount and all accrued interest have been paid in full.

5. Amendments and Modifications. This Note may only be amended or modified with the prior written consent of the Payor and the Payee.

6. Costs of Collection. The Payor agrees to promptly pay all fees, charges, costs and expenses (including reasonable attorneys' fees and expenses) incurred by the Payee in connection with any Event of Default, work out or action to enforce this Note or any document related hereto or to collect any payments due from the Payor.

7. Waiver of Presentment, Demand and Dishonor. The Payor hereby waives presentment for payment, protest, demand, notice of protest, notice of nonpayment and diligence with respect to this Note.

8. Notice. Any demand, notice or other communication to be given hereunder shall be in writing and shall be delivered to the Payee or the Payor at the respective addresses set forth above, or to such other address as shall be designated by the Payee or the Payor, as the case may be.

9. Severability. If one or more of the provisions of this Note are determined to be unenforceable, in whole or in part, for any reason, the remaining provisions shall remain fully operative.

10. Cancellation. Upon the payment of the entire Principal Amount and all accrued interest under this Note, the Payee shall surrender this Note to the Payor for cancellation.

11. Business Days. If any payment is due, or any time period for giving notice or taking action expires, on a day which is a Saturday, Sunday or legal holiday in the State of New York, the payment shall be due and payable on, and the time period shall automatically be extended to, the next business day immediately following such Saturday, Sunday or legal holiday.

12. Automatic Interest Rate Change. In the event that this Note is found or may be found to be usurious or any usury claim is asserted in connection with this Note, then and in that event, the interest rate with respect to this Note or in connection with this Note is deemed to be automatically reduced to the maximum allowable interest rate permitted by law.

13. Governing Law. This Note shall be governed by, enforced under, and construed according to the laws of the State of New York.

[REMAINDER OF PAGE INTENTIONALLY BLANK]

IN WITNESS WHEREOF, the undersigned has executed this Note as of the day and year first written above.

PAYOR:

GWB NINETY NINE LLC

By:_____
Name:_____
Title:_____

Exhibit A-16

D&G Draft
5/27/11

PROMISSORY NOTE

$208,333.00 _____ __, 2011

FOR VALUE RECEIVED, the undersigned, **GWB NINETY NINE LLC**, a New York limited liability company with an address at _____ (the "**Payor**"), hereby unconditionally promises to pay, in lawful money of the United States and in immediately available funds, to the order of **PAUL SLAYTON**, with an address at _____ (the "**Payee**"), the principal sum of TWO HUNDRED EIGHT THOUSAND THREE HUNDRED THIRTY-THREE DOLLARS ($208,333.00), or such lesser amount as may be outstanding (the "**Principal Amount**"), together with interest on the unpaid Principal Amount calculated from the date hereof at the rate of 2.49% per annum, compounded annually, pursuant to the terms and conditions contained below. All computations of interest shall be made on the basis of a 365-day year.

1. Maturity Date. The entire outstanding Principal Amount and all accrued and unpaid interest under this promissory note (this "**Note**") shall become due and payable on the earlier of (a) _____ __, 2019 or (b) the sale of (i) the Payor's ownership interest in Marketplace GWB LLC, a New York limited liability company, or (ii) the project being constructed and owned by George Washington Bridge Bus Station Development Venture LLC, a Delaware limited liability company (the "**Maturity Date**").

1. Scheduled Payments. The Payor shall make payments to the Payee or his designee of accrued interest under this Note on an annual basis on _____ of each calendar year, commencing on _____, 2016.

3. Event of Default. The Principal Amount and any accrued and unpaid interest thereon, shall become immediately due and payable upon the occurrence of an Event of Default (as hereinafter defined). Each of the following shall constitute an "**Event of Default**" under this Note: if (i) the Payor shall fail to make any payment under this Note when such payment is due; (ii) the Payor makes a general assignment for the benefit of creditors or commences a case in bankruptcy or any proceeding under any other insolvency law; (iii) a case in bankruptcy or any proceeding under any other insolvency law is commenced against the Payor; or (iv) a trustee, receiver or agent is appointed or authorized to take charge of substantially all of the property of the Payor for the purpose of general administration of such property for the benefit of creditors. After the occurrence of an Event of Default, all amounts due hereunder shall thereafter bear interest at the default interest rate of 18% per annum.

4. Prepayments. The Payor shall have the right to prepay, in whole or in part, the Principal Amount at any time on the following terms and conditions: (a) the interest accrued on the aggregate amount prepaid shall be due and payable on the date of prepayment, and (b)

each of the Payor's obligations under this Note shall continue in full force and effect until the entire Principal Amount and all accrued interest have been paid in full.

5. Amendments and Modifications. This Note may only be amended or modified with the prior written consent of the Payor and the Payee.

6. Costs of Collection. The Payor agrees to promptly pay all fees, charges, costs and expenses (including reasonable attorneys' fees and expenses) incurred by the Payee in connection with any Event of Default, work out or action to enforce this Note or any document related hereto or to collect any payments due from the Payor.

7. Waiver of Presentment, Demand and Dishonor. The Payor hereby waives presentment for payment, protest, demand, notice of protest, notice of nonpayment and diligence with respect to this Note.

8. Notice. Any demand, notice or other communication to be given hereunder shall be in writing and shall be delivered to the Payee or the Payor at the respective addresses set forth above, or to such other address as shall be designated by the Payee or the Payor, as the case may be.

9. Severability. If one or more of the provisions of this Note are determined to be unenforceable, in whole or in part, for any reason, the remaining provisions shall remain fully operative.

10. Cancellation. Upon the payment of the entire Principal Amount and all accrued interest under this Note, the Payee shall surrender this Note to the Payor for cancellation.

11. Business Days. If any payment is due, or any time period for giving notice or taking action expires, on a day which is a Saturday, Sunday or legal holiday in the State of New York, the payment shall be due and payable on, and the time period shall automatically be extended to, the next business day immediately following such Saturday, Sunday or legal holiday.

12. Automatic Interest Rate Change. In the event that this Note is found or may be found to be usurious or any usury claim is asserted in connection with this Note, then and in that event, the interest rate with respect to this Note or in connection with this Note is deemed to be automatically reduced to the maximum allowable interest rate permitted by law.

13. Governing Law. This Note shall be governed by, enforced under, and construed according to the laws of the State of New York.

[REMAINDER OF PAGE INTENTIONALLY BLANK]

IN WITNESS WHEREOF, the undersigned has executed this Note as of the day and year first written above.

PAYOR:

GWB NINETY NINE LLC

By:_____
Name:_____
Title:_____

Exhibit B-1

GWB Development Partners LLC

FIRST AMENDMENT TO OPERATING AGREEMENT

THIS FIRST AMENDMENT TO OPERATING AGREEMENT (the "Amendment") is made effective as of the 3rd day of June, 2011by the undersigned.

RECITALS

WHEREAS, GWB Development Partners LLC (the "Company") was formed pursuant to Articles of Organization filed with the State of New York Department of State on June 30, 2010 and that certain Operating Agreement dated August 23, 2010 (the "Agreement");

WHEREAS, to reflect certain changes to the Agreement, the members desire to enter into this Amendment, as more fully set forth herein.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, and in consideration of the agreements hereinafter set forth, the undersigned hereby agrees as follows:

1. The Investing Member's Capital Contributions shall be accelerated, such that the final remaining $1,750,000 due from the Investing Member pursuant to Section 2 of the Agreement shall be due and payable as follows: (i) $910,000 shall be due and payable no later than ten (10) days from written request by the Managing Member, which written request shall include a list of Company and GW Venture expenses or other uses for which proceeds of such Capital Contribution will be used and, to the extent applicable, a copy of the invoices or other supporting documentation relative to the expenses or other uses for the Capital Contribution and (ii) $840,000 shall be due and payable at the time of the execution of the Agreement of Lease between The Port Authority of New York and New Jersey and George Washington Bus Station Development Venture LLC (the "Funding Milestone Date") which amount shall be used to pay the Port Authority of New York and New Jersey pursuant to Section 4.2(a)(i) of the aforementioned lease; provided, however, that prior to the Funding Milestone Date, the Investing Member shall have no obligation to make Capital Contributions in the aggregate amount in excess of $910,000.

2. Except as amended herein, the Agreement is hereby confirmed to remain in full force and effect.

3. This Amendment may be executed in counterparts, each of which shall be deemed to be an original but all of which shall be one and the same document.

[The remainder of this page is intentionally left blank.]

IN WITNESS WHEREOF, the Members have executed this Amendment as of the date first above written.

MEMBERS:

MARKETPLACE-GWB, LLC
(f/k/a PA-GWB, LLC)

By: _____
Stephen J. Gorchik
Manager

GWB Blue LLC,
a New York limited liability company

By: _____
Name: _____
Title: _____

IN WITNESS WHEREOF, the Members have executed this Amendment as of the date first above written.

MEMBERS:

MARKETPLACE-GWB, LLC
(f/k/a PA-GWB, LLC)

By: _____
Stephen J. Garchik
Manager

GWB Blue LLC,
a New York limited liability company

By: _____
Name: Raymond Gindi
Title: Authorized Signatory

Exhibit B-2

N. Y. S. DEPARTMENT OF STATE
DIVISION OF CORPORATIONS AND STATE RECORDS ALBANY, NY 12231-0001

FILING RECEIPT

ENTITY NAME: CLEARVIEW PROJECTS LLC

DOCUMENT TYPE: AMENDMENT (DOM LLC) COUNTY: NEWY
PROCESS NAME

FILED:06/02/2011 DURATION:********* CASH#:110602000255 FILM #:110602000248

FILER:

DAVIS & GILBERT LLP
1740 BROADWAY

NEW YORK, NY 10019

ADDRESS FOR PROCESS:

DAVIS & GILBERT LLP
ATTN: ROBERT KARIN 1740 BROADWAY
NEW YORK, NY 10019

REGISTERED AGENT:

SERVICE COMPANY: UNITED CORPORATE SERVICES - 37 SERVICE CODE: 37

FEES	370.00	PAYMENTS	370.00
FILING	60.00	CASH	0.00
TAX	0.00	CHECK	0.00
CERT	0.00	CHARGE	0.00
COPIES	10.00	DRAWDOWN	370.00
HANDLING	300.00	OPAL	0.00
		REFUND	0.00

CLEAR33911 DOS-1025 (04/2007)

STATE OF NEW YORK

DEPARTMENT OF STATE

I hereby certify that the annexed copy has been compared with the original document in the custody of the Secretary of State and that the same is a true copy of said original.

WITNESS my hand and official seal of the Department of State, at the City of Albany, on June 2, 2011.

Daniel E. Shapiro
First Deputy Secretary of State

Rev. 06/07

110602000241

CERTIFICATE OF AMENDMENT

OF THE

ARTICLES OF ORGANIZATION

OF

PA DEVELOPERS LLC

Under section 211 of the Limited Liability Company Law

FIRST: The name of the Limited Liability Company is PA DEVELOPERS LLC.

SECOND: The date of filing of the Articles of Organization is November 6, 2008.

THIRD: The amendments effected by this certificate of amendment are as follows:

Paragraph FIRST of the articles of the organization dealing with the name of the limited liability company is hereby amended to read as follows:

"FIRST: The name of the Limited Liability Company is: "Clearview Projects LLC".

Paragraph THIRD of the articles of the organization dealing with the post office address *within or without the State of New York to which the Secretary of State shall mail a copy* of any process against the Company is hereby amended to read as follows:

"THIRD: The Secretary of State is designated as the agent of the limited liability company upon whom process against it may be served. The post office address within or without this state to which the Secretary of State shall mail a copy of any process against the limited liability company served upon him or her is: Davis & Gilbert LLP, 1740 Broadway, New York, New York 10019, Attention: Robert Karin."

IN WITNESS WHEREOF, this certificate has been subscribed as of this 1st day of June, 2011, by the undersigned who affirms that the statements made herein are true under the penalties of perjury.

PA DEVELOPERS LLC

S/Paul Slayton

Paul Slayton , Authorized Person

UNI-37

110602000 248

CERTIFICATE OF AMENDMENT

OF THE

ARTICLES OF ORGANIZATION

OF

PA DEVELOPERS LLC

Under section 211 of the Limited Liability Company Law

1CC

STATE OF NEW YORK
DEPARTMENT OF STATE
FILED JUN 02 2011
TAX $
BY:

FILED
2011 JUN -2 AM 9:46

DAVIS & GILBERT LLP
1740 BROADWAY
NEW YORK, NEW YORK 10019
Customer Ref.# CLEAR33911

RECEIVED
2011 JUN -2 AM 9:06

DRAWDOWN

258

Exhibit B-3

N. Y. S. DEPARTMENT OF STATE
DIVISION OF CORPORATIONS AND STATE RECORDS ALBANY, NY 12231-0001

FILING RECEIPT

ENTITY NAME: MARKETPLACE GWB LLC

DOCUMENT TYPE: AMENDMENT (DOM LLC) COUNTY: NEWY
PROCESS NAME

FILED:06/02/2011 DURATION:********* CASH#:110602000267 FILM #:110602000258

FILER:

DAVIS & GILBERT LLP
1740 BROADWAY

NEW YORK, NY 10019

ADDRESS FOR PROCESS:

DAVIS & GILBERT LLP
ATTN: ROBERT KARIN 1740 BROADWAY
NEW YORK, NY 10019

REGISTERED AGENT:

SERVICE COMPANY: UNITED CORPORATE SERVICES - 37 SERVICE CODE: 37

FEES	370.00	PAYMENTS	370.00
FILING	60.00	CASH	0.00
TAX	0.00	CHECK	0.00
CERT	0.00	CHARGE	0.00
COPIES	10.00	DRAWDOWN	370.00
HANDLING	300.00	OPAL	0.00
		REFUND	0.00

MARKE33910 DOS-1025 (04/2007)

STATE OF NEW YORK

DEPARTMENT OF STATE

I hereby certify that the annexed copy has been compared with the original document in the custody of the Secretary of State and that the same is a true copy of said original.

WITNESS my hand and official seal of the Department of State, at the City of Albany, on June 2, 2011.

Daniel E. Shapiro
First Deputy Secretary of State

Rev. 06/07

CERTIFICATE OF AMENDMENT 110602000 258

OF THE

ARTICLES OF ORGANIZATION

OF

PA-GWB, LLC

Under section 211 of the Limited Liability Company Law

FIRST: The name of the Limited Liability Company is PA-GWB, LLC.

SECOND: The date of filing of the Articles of Organization is August 12, 2009.

THIRD: The amendments effected by this certificate of amendment are as follows:

Paragraph FIRST of the articles of the organization dealing with the name of the limited liability company is hereby amended to read as follows:

"FIRST: The name of the Limited Liability Company is: "Marketplace GWB LLC".

Paragraph THIRD of the articles of the organization dealing with the address within the State of New York to which the Secretary of State shall mail a copy of any process against the Company is hereby amended to read as follows:

"THIRD: The Secretary of State is designated as the agent of the limited liability company upon whom process against it may be served. The post office address within or without this state to which the Secretary of State shall mail a copy of any process against the limited liability company served upon him or her is: Davis & Gilbert LLP, 1740 Broadway, New York, New York 10019, Attention: Robert Karin."

IN WITNESS WHEREOF, this certificate has been subscribed as of this 1st day of June, 2011, by the undersigned who affirms that the statements made herein are true under the penalties of perjury.

PA-GWB, LLC

Paul Slayton

Paul Slayton, Manager

UNI-37

110602000258

CERTIFICATE OF AMENDMENT

OF THE

ARTICLES OF ORGANIZATION

OF

PA-GWB, LLC

Under section 211 of the Limited Liability Company Law

FILED
2011 JUN -2 AM 9:46

1 CC

STATE OF NEW YORK
DEPARTMENT OF STATE
FILED JUN 02 2011
TAX $
BY:

DAVIS & GILBERT LLP
1740 BROADWAY
NEW YORK, NEW YORK 10019
Customer Ref. # MARKE33910

2011 JUN -2 AM 9:06
RECEIVED

DRAWDOWN

267

Exhibit B-4

PA-GWB, LLC
250 West 57th Street
New York, New York

June 1, 2011

Acadia Strategic Opportunity Fund III LLC
c/o Acadia Realty Trust
1311 Mamaroneck Avenue, Suite 260
White Plains, New York 10605
Attention: Robert Masters, Esq.

Re: Conditional Promissory Note issued by PA-GWB, LLC to Acadia Strategic Opportunity Fund III LLC, dated March 31, 2010

Dear Robert:

I am writing to inform you that, in order to obtain the approval of the Port Authority of New York and New Jersey, to move forward with the project known as Broadway Marketplace at the GW Bridge, it will be necessary to engage in the restructuring identified on the two organizational charts attached to this letter pursuant to which PA Developers, LLC will convey its interest in the Company. This restructuring will also involve, among other things, (i) name changes to PA-GWB, LLC and PA Developers, LLC, (ii) amendments to the operating agreement of GWB Development Partners, LLC, and (iii) the amendment and restatement of the operating agreement of PA-GWB, LLC (the "Company").

Pursuant to the Conditional Promissory Note issued by the Company to Acadia Strategic Opportunity Fund III LLC ("Acadia") in the amount of $1,950,000, dated March 31, 2010 (the "Note"), consent of Acadia is required in connection with certain aspects of this restructuring, including the conveyance of PA Developers, LLC's interest in the Company and the amendment and restatement of the operating agreement described above (collectively, the "Restructuring").

We reconfirm our obligation to honor the terms and conditions of the Note, including payment thereunder, as provided in and subject to the terms and conditions of the Note.

By your signature hereunder, please acknowledge your consent to the Restructuring. Your consent may be sent in a counterpart and facsimile copies of our signatures shall be binding.

Sincerely,

PA-GWB, LLC

_____
Name: Paul Slayton
Title: Manager

Acknowledged and Agreed
as of the 1st day of June, 2011:

Acadia Strategic Opportunity Fund III LLC

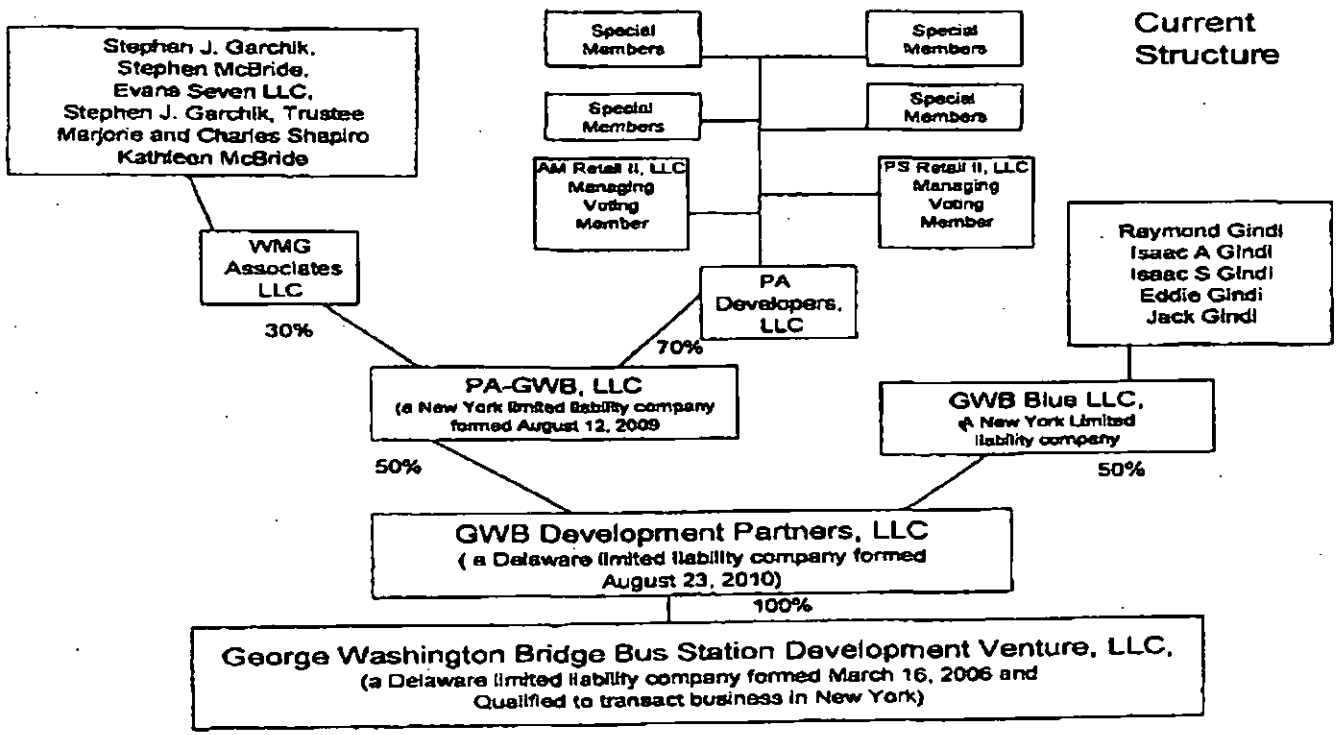
By:_____
Name:
Title:

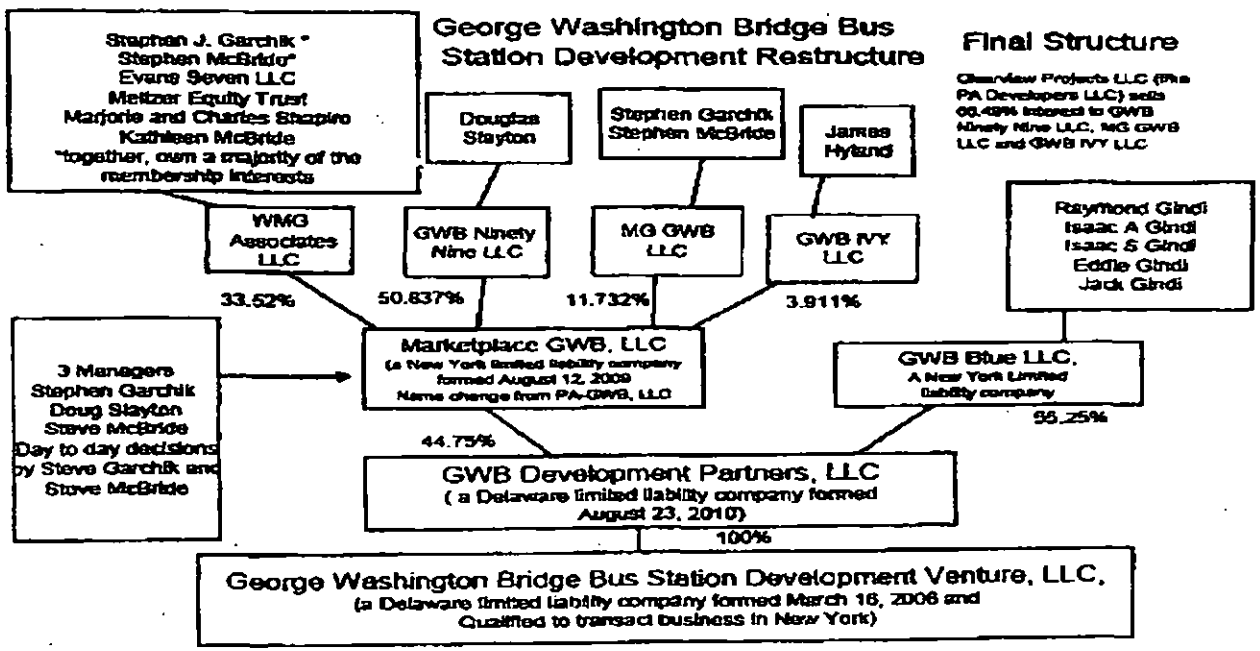
The undersigned hereby affirms its Guaranty dated as of March 31, 2010, in favor of Acadia Strategic Opportunity Fund III LLC relating to the Note:

George Washington Bus Station Development Venture LLC

By: GWB Development Partners, LLC, sole Member

By: _____
Name: Paul Slayton
Title: Authorized Representative


Current Structure
Stephen J. Garchik,
Stephen McBride,
Evana Seven LLC,
Stephen J. Garchik, Trustee
Marjorie and Charles Shapiro
Kathleen McBride
Special Members
Special Members
Special Members
Special Members
AM Retail II, LLC
Managing
Voting
Member
PS Retail II, LLC
Managing
Voting
Member
Raymond Gindi
Isaac A Gindi
Isaac S Gindi
Eddie Gindi
Jack Gindi
WMG Associates LLC
30%
PA Developers, LLC
70%
PA-GWB, LLC
(a New York limited liability company formed August 12, 2009
GWB Blue LLC,
(A New York Limited liability company
50%
50%
GWB Development Partners, LLC
(a Delaware limited liability company formed August 23, 2010)
100%
George Washington Bridge Bus Station Development Venture, LLC,
(a Delaware limited liability company formed March 16, 2006 and Qualified to transact business in New York)


George Washington Bridge Bus Station Development Restructure
Final Structure
Clearview Projects LLC (fka PA Developers LLC) sells 99.49% interest to GWB Ninety Nine LLC, MG GWB LLC and GWB IVY LLC
Stephen J. Garchik *
Stephen McBride*
Evans Seven LLC
Meltzer Equity Trust
Marjorie and Charles Shapiro
Kathleen McBride
*together, own a majority of the membership interests
Douglas Stayton
Stephen Garchik
Stephen McBride
James Hyland
Raymond Gindi
Isaac A Gindi
Isaac S Gindi
Eddie Gindi
Jack Gindi
WMG Associates LLC
GWB Ninety Nine LLC
MG GWB LLC
GWB IVY LLC
33.52%
50.837%
11.732%
3.911%
3 Managers
Stephen Garchik
Doug Stayton
Steve McBride
Day to day decisions by Steve Garchik and Steve McBride
Marketplace GWB, LLC
(a New York limited liability company formed August 12, 2009
Name change from PA-GWB, LLC
GWB Blue LLC,
A New York Limited liability company
55.25%
44.75%
GWB Development Partners, LLC
(a Delaware limited liability company formed August 23, 2010)
100%
George Washington Bridge Bus Station Development Venture, LLC,
(a Delaware limited liability company formed March 16, 2006 and Qualified to transact business in New York)

THE PORT AUTHORITY OF NY & NJ
CERTIFICATION
GEORGE WASHINGTON BRIDGE BUS STATION
DEVELOPMENT VENTURE LLC

Whereas, The Port Authority of New York and New Jersey (the "Port Authority") is a municipal corporate entity and political subdivision of the States of New York and New Jersey, created and existing by virtue of the Compact of April 30, 1921, made by and between the two States, and thereafter, consented to by the Congress of the United States, to develop transportation, terminal, and other facilities of commerce within the statutorily defined Port District, which has its Executive Offices at 225 Park Avenue South, New York, N.Y. 10003; and,

Whereas, at the present time, pursuant to the 1921 Compact and subsequent bi-state amendatory and supplementary legislation, the Port Authority owns and/or operates forty (40) such facilities; and,

Whereas, the Port Authority is committed to protecting the public interest against fraud, waste, and abuse in all of its projects or operations, and in all of its leases, contracts and subcontracts (including sub-subcontracts and other contracts thereunder) entered into in order to effectuate such projects or operations, including the George Washington Bridge Bus Station ("GWBBS") facility; and,

Whereas, the George Washington Bridge Bus Station Development Venture LLC ("GWBBSDV," "the Company," or "the Developer")[1] is a limited liability corporation organized and existing under the laws of the State of New York, having an office and principal place of business at 9001 Congressional Court, Potomac, Maryland. GWBBSDV has been selected by the Port Authority to redevelop the GWBBS facility, and to lease the retail portion of the facility; and,

Whereas, certain information has come to the attention of the Port Authority to cause the Port Authority to review GWBBSDV's background in order to determine whether the public interest is served by allowing GWBBSDV to perform as the Developer on the GWBBS Redevelopment Project (the "GWBBS Project" or "the Project"), and for the Developer to be the Lessee of the retail portion of the Project, specifically that one of the former partners of the Developer's team, Aaron Malinsky, was charged with conspiracy to deprive New York State and its citizens of Carl Kruger's honest services and conspiracy to launder money in March 2011 by the United States Attorney's Office, Southern District of New York ("SDNY Complaint"). Aaron Malinsky is a principal, along with Paul Slayton, in an entity called PA Associates LLC, that is described in the SDNY Complaint. After the SDNY Complaint was announced in March

[1] For the purposes of this Certification, references to GWBBSDV includes all associated entities and individuals, including but not limited to the George Washington Bridge Bus Station Development Venture LLC, GWB Development Partners LLC; Marketplace GWB LLC; GWB Blue LLC; MG GWB LLC; GWB Ninety Nine LLC; WMG Associates LLC; GWB Ivy LLC; Stephen Garchik; Stephen McBride; Raymond Gindi; Douglas Slayton; James Hyland; etc.

2011, the Developer notified the Port Authority that Aaron Malinsky and Paul Slayton agreed to remove themselves any involvement in the Project, including financial, operational and decision-making functions; and,

Whereas, this Certification is made for the express purpose of inducing the Port Authority to continue to conduct business with GWBBSDV on the GWBBS Project; and,

Now, therefore, the following representations and covenants are hereby made by the undersigned on behalf of GWBBSDV:

1. Aaron Malinsky, Paul Slayton, and to the Knowledge of GWBBSDV[2,3] any entities with which they are associated, shall neither participate in, nor influence in any way, GWBBSDV's business and operations, including not influencing or providing direction on any financial, operational, and/or technical matters relating to the Project or any other Port Authority leases, contracts or subcontracts[4] during the term of this Certification. Specifically, as to Aaron Malinsky, Paul Slayton, and to the Knowledge of GWBBSDV any entities with which they are associated except as set forth in footnotes 3 and 5[5] the following shall apply.

---

[2] "References to "Knowledge of GWBBSDV" and similar terms throughout this Certification means the actual knowledge of the Key Managers; and references to "Key Managers" or "GWBBSDV Key Managers" throughout this Certification means (i) Stephen Garchik, Stephen McBride, Raymond Gindi and Doug Slayton for as long as each has a direct or indirect ownership interest in GWBBSDV and (ii) any other individuals, if any, that are authorized to conduct day to day operations of GWBBSDV, pursuant to the terms of the Operating Agreement of the immediate parent company of GWBBSDV for as long as such individual has a direct or indirect ownership interest in GWBBSDV (currently there are no others).

[3] Anything in this Certification to the contrary notwithstanding, (a) GWBBSDV and the direct or indirect owners of GWBBSDV and/or Benjamin Malinsky may continue to be involved in existing transactions with and/or may be involved in new transactions with Aaron Malinsky and/or Paul Slayton or their affiliates, including from the subleased space referred to in Section 1(e) hereof, and any such transactions shall not constitute a breach of this Certification, provided that, and solely to the extent that (i) such transactions are completely unrelated (A) to the GWBBS Project or (B) any other project with the Port Authority and (ii) neither Paul Slayton nor Aaron Malinsky has, directly or indirectly, any role of any kind or nature in the Project, including without limitation any ownership interest or any management role in the Project or in any Port Authority leases, contracts or subcontracts and (b) the prohibitions in Section 1 hereof shall not apply to dealings with publicly held entities in which Aaron Malinsky, or Paul Slayton, or both hold less than a 5% ownership interest that is strictly a passive ownership interest.

[4] References to "Port Authority leases, contracts or subcontracts" throughout this Certification means Port Authority leases, contracts or subcontracts to which GWBBSDV is a party or bound.

[5] Sections 1(c) and 1(d) of this Certification will not require GWBBSDV to breach or terminate any contract provided that GWBBSDV is required to take commercially reasonable actions the Port Authority reasonably requires to effect the objective that (except for Paul Slayton's right to receive and retain payments under the Notes pursuant to Section 1(c)) neither Aaron Malinsky nor Paul Slayton receive or retain, directly or indirectly, any payments, benefits, commissions or expenses that relate to the Project or are otherwise prohibited by this Certification. Section 1(c) will not preclude Aaron Malinsky or Paul Slayton or Clearview Projects LLC from enforcing its rights under the Master Agreement or the agreements contemplated thereby, copies of which were previously provided to the Port Authority, provided that, in no event shall such enforcement entitle or result in either Paul Slayton or Aaron Malinsky having, directly or indirectly, any role of any kind or nature in the Project,

a. Aaron Malinsky and Paul Slayton are not, and will not become a Key Person[6], consultant, or employee of GWBBSDV.

b. GWBBSDV and/or its Key People, consultants, or employees will not seek and/or obtain advice or assistance from Aaron Malinsky and Paul Slayton regarding GWBBSDV business relating to the Project or any other Port Authority leases, contracts or subcontracts during the term of this Certification.

c. GWBBSDV shall not (i) make any payments or extend any benefits, commissions, or expenses, whether directly or indirectly to Aaron Malinsky and Paul Slayton or (ii) make any payments or extend any benefits, commissions or expenses, whether directly or indirectly to any business entity as to which the individual authorizing the payment has actual knowledge that such business entity is one in which Aaron Malinsky and/or Paul Slayton is a Key Person, consultant, or employee relating to the Project or any other Port Authority leases, contracts or subcontracts during the term of this Certification. Notwithstanding the foregoing, any payments made by Douglas Slayton and GWB Ninety Nine LLC pursuant to the promissory note to Paul Slayton, and/or the payments by Doug Slayton and GWB Ninety Nine LLC pursuant to the promissory note to Clearview Projects LLC (the "Notes"), as described in the Amended and Restated Master Agreement (the "Master Agreement") among GWBBSDV, et. al., dated as of June 3, 2011, and the payment to Aaron Malinsky contemplated by the Master Agreement in respect of the purchase of all of Aaron Malinsky's direct or indirect ownership interests in GWBBDSV, are not prohibited.

d. GWBBSDV shall not (i) solicit, accept, nor receive any payments, benefits, commissions, or expenses, whether directly or indirectly, from Aaron Malinsky and/or Paul Slayton or (ii) Knowingly[7] solicit, accept, nor receive any payments, benefits, commissions or expenses, whether

---

including without limitation any ownership interest or any management role in the Project or in any Port Authority leases, contracts or subcontracts

[6] References to "Key People" or "Key Person" throughout this Certification means proprietors; owners; partners; directors; officers; shareholders or other equity owners, directly or beneficially, of five percent (5%) or more of the Company's issued stock or other issued securities, such as limited liability company interests; including owners of other securities (e.g., stock options, secured or unsecured bonds, warrants and rights, etc.) that can be converted to stock or other securities so that, if exercised, would constitute five percent (5%) of the Company's issued stock or other issued securities; any group, individual and/or entity with the right to acquire ownership of an amount of the Company's stock or other securities, pursuant to any stock option, arrangement, warrant, right, or otherwise, which, if combined with the current holdings of such group, individual and/or entity, would constitute five percent (5%) or more of the outstanding stock or other securities; each manager or individual participating in overall policy-making or overall financial decisions for the Company; and each person in a position to control and/or direct the Company's overall operations.

[7] References to "Knowingly", "Knowing", "Known", "Aware" and similar terms throughout this Certification, means the actual knowledge of, as applicable, (i) the Key Managers or (ii) the individual at issue.

directly or indirectly, from any business entity in which Aaron Malinsky and/or Paul Slayton is a Key Person, consultant, or employee relating to the Project or any other Port Authority leases, contracts or subcontracts during the term of this Certification. To avoid doubt, the preceding sentence shall not preclude (i) GWBBSDV from requiring Aaron Malinsky and/or Paul Slayton to disgorge payments or benefits they are not entitled to retain pursuant to the Master Agreement and/or to otherwise perform and/or comply with their obligations under the Master Agreement, including indemnity obligations, or the agreements contemplated thereby, copies of which were previously provided to the Port Authority or (ii) the purchasers of the direct or indirect ownership interests of Aaron Malinsky and Paul Slayton from enforcing the guarantees of Aaron Malinsky and/or Paul Slayton with respect to such purchases.

e. Subject to the other provisions of this Section 2(e), GWBBSDV shall not Knowingly share any space[8], staff[9], or equipment[10] with any business entity in which Aaron Malinsky and/or Paul Slayton is a Key Person, consultant, or employee. Notwithstanding Section 1(c) and this Section 1(e), GWB Ninety Nine LLC, an entity owned solely by Doug Slayton, may, for not more than 24 months, sublease or otherwise occupy space at 250 West 57th Street, Suite 1120, from P/A Associates LLC, an entity owned by Aaron Malinsky and Paul Slayton, at a price that is a direct pass through (without any profit), and perform the obligations under the Lease.

f. Benjamin Malinsky will not become a Key Person within GWBBSDV, and his involvement in the Project shall be strictly limited to, and be in

[8] Space shall be considered to be shared when any part of the floor space utilized by the Company at any of its sites is also utilized on a regular or intermittent basis for any purpose by any other business or not-for-profit organization, and where there is no lease or sublease in effect between the submitting business and the other business or not-for-profit organization.

[9] Staff shall be considered to be shared when any individual provides the services of an employee, whether paid or unpaid, to the Company and also, on either a regular or irregular basis, provides the services of an employee, paid or unpaid, to one or more other business(es) and/or not-for-profit organization(s), if such services are provided during any part of the same hours the individual is providing services to the bidder or if such services are provided on an alternating or interchangeable basis between the Company and the other business(es) and/or not-for-profit organization(s). "The services of an employee" should be understood to include services of any type or level, including managerial or supervisory. This type of sharing may include, but is not limited to, individuals who provide the following services: telephone answering, receptionist, delivery, custodial, and driving.

[10] Equipment shall be considered to be shared whenever the Company shares the ownership and/or the use of any equipment with any other business or not-for-profit organization. Such equipment may include, but is not limited to, telephones or telephone systems, photocopiers, computers, motor vehicles, and construction equipment. Equipment shall not be considered to be shared under the following two circumstances: when, although the equipment is owned by another business or not-for-profit organization, the bidder has entered into formal lease for the use of the equipment and exercises exclusive use of the equipment; or when the Company owns equipment that it has formerly leased to another business or not-for-profit organization, and for the duration of such lease the Company has relinquished all right to the use of such leased equipment.

accordance with, the terms of the Consulting Fee Agreement, dated June 3, 2011, between GWB Ninety-Nine LLC, and Benjamin Malinsky.

2. To the Knowledge of GWBBSDV and except as to Aaron Malinsky, Paul Slayton and James Hyland:

   a. Neither GWBBSDV nor any of its Key People, past or present, have ever been a target or subject of any criminal investigation.

   b. Neither GWBBSDV nor any of its Key People, past or present, have ever been indicted or otherwise named as an unindicted co-conspirator in any indictment or other accusatory instrument.

   c. Neither GWBBSDV nor any of its Key People, past or present, have ever been served with a subpoena or other compulsory process issued by any law enforcement agency or Grand Jury. James Hyland disclosed in his Port Authority background disclosure form, dated June 7, 2011, that he received a subpoena from SDNY relating to the SDNY investigation, which is cited in the fifth Whereas Clause.

   d. Neither GWBBSDV nor any of its Key People, past or present, have ever been notified of being the subject of court-ordered electronic surveillance.

   e. Neither GWBBSDV nor any of its Key People, directly or indirectly, have offered, given or agreed to give, or received or agreed to receive, any money, or any other benefit, to or from any, officer or employee of the Port Authority, or any other governmental agency, or private business, for any unlawful purpose pertaining to the conduct of GWBBSDV's business or for the benefit of GWBBSDV.

   f. Neither GWBBSDV nor its Key People, directly or indirectly, will offer, give or agree to give, or receive or agree to receive, any money, or any other benefit, to or from an officer or employee of the Port Authority, or any other governmental agency, or private business, for any unlawful purpose pertaining to the conduct of GWBBSDV's business or for the benefit of GWBBSDV.

   References to past or present Key People in this Section 2 and in Sections 4 and 6 are limited to Key People that a Key Manager is Aware of.

3. GWBBSDV shall report immediately to the Port Authority's Office of Inspector General ("OIG") any violation of this Certification that a Key Manager becomes Aware of.

4. GWBBSDV agrees that it shall notify the Port Authority, through its OIG, within three (3) business days in the event that any of GWBBSDV's Key Managers become Aware that GWBBSDV and/or any of its Key People are:

a. arrested, indicted, or otherwise named as an unindicted co-conspirator in any indictment or other accusatory instrument; specifically, involving or relating to a lack of honesty or business integrity, whether of a criminal, civil or administrative nature; or,

b. convicted, after trial or by plea, of any felony under state or federal law or of any misdemeanor involving business-related, tax-related, or other financial crimes; or,

c. party to a non-prosecution agreement, deferred prosecution agreement, or a consent decree, or are otherwise granted immunity from prosecution; or,

d. subpoenaed, interviewed, questioned, or otherwise contacted by any government agency, official, and/or employee in connection with any investigation, and whether or not GWBBSDV and/or said Key People are notified, are in-fact, or otherwise believed to be, the subject or target of any such investigation.

5. GWBBSDV further agrees that it shall notify the Port Authority, through its OIG, within three (3) business days in the event that any of GWBBSDV's Key Managers become Aware that any of GWBBSDV's employees or agents[11] directly engaged by GWBBSDV working on the Project who are working, or have ever worked, on any government lease, contract or subcontract are:

a. arrested, indicted, or otherwise named as an unindicted co-conspirator in any indictment or other accusatory instrument, specifically involving or relating to allegations of a lack of honesty or business integrity, whether of a criminal, civil, or administrative nature; or,

b. convicted, after trial or by plea, of any felony under state or federal law or of any misdemeanor involving business-related, tax-related, or other financial crimes, specifically involving or relating to allegations of a lack of honesty or business integrity, whether of a criminal, civil, or administrative nature; or,

c. subpoenaed, interviewed, questioned, or otherwise contacted by any government agency, official, and/or employee in connection with any investigation, specifically involving or relating to allegations of a lack of honesty or business integrity, whether of a criminal, civil, or administrative nature, and whether or not the employee or agent is notified, is in-fact, or otherwise believed to be, the subject or target of any such investigation.

[11] For purposes of this Certification, an "agent" is defined as any entity or person acting on behalf of, or for the benefit of GWBBSDV, including, but not limited to, expediters.

6. GWBBSDV further agrees that it shall notify the Port Authority, through its OIG, within three (3) business days in the event that any of GWBBSDV's Key Managers become Aware that:

   a. any of GWBBSDV's Key People, consultants, or employees or agents offer or agree to give any money, gratuity, or any other benefit to a contractor or subcontractor, public official or servant for a purpose that is corrupt, or suspected of being corrupt; or,

   b. any of GWBBSDV's Key People, consultants, or employees or agents are solicited by any contractor or subcontractor, public official or servant to give any money, gratuity, or any other benefit for a purpose that is corrupt, or suspected of being corrupt; or,

   c. any of GWBBSDV's Key People, consultants, or employees or agents make, or attempt to make, any agreement, or participate in, or attempt to participate in, any scheme, to rig bids, restrain trade by collusion or unfair trade or labor practices, or otherwise prevent the lowest responsible bidder from obtaining a contract.

7. GWBBSDV further agrees that it shall immediately notify the Port Authority, through its OIG, of the following occurrences which any of GWBBSDV's Key Managers have Knowledge, involving a lack of honesty or business integrity or unethical business activity arising out of or in direct connection with GWBBSDV's operations:

   a. any suspected or actual criminal activity on the part of GWBBSDV's employees, agents, subcontractors, suppliers or vendors; and

   b. any suspected or actual criminal activity on the part of any Port Authority or other governmental agency employees, officers, or agents.

However, GWBBSDV shall be relieved of the disclosure obligations set forth in Paragraphs 4 through and including Paragraph 7 in the event a government agency with prosecutorial authority or authority to investigate alleged criminal activity requests that the investigation or subpoena be maintained in confidence so long as it is understood that once the request for said confidence need no longer apply the disclosure obligations of GWBBSDV be fully restored.

8. GWBBSDV understands and acknowledges that this Certification shall be submitted to, and shall be relied on by, the Port Authority. GWBBSDV further understands and acknowledges that any material, false representations contained herein, or a material violation of any of the representations or covenants set forth herein, may be deemed by the Port Authority to constitute a material breach of this Certification. Should the Port Authority become aware of what it believes to be a material breach, the Port Authority agrees that it will provide notice of the alleged material breach to GWBBSDV, and that GWBBSDV will have thirty (30) days to respond in writing, and to cure or cause the cure of any material breach.

GWBBSDV agrees to use good faith efforts to endeavor to cure any such material breach, failing which, the Port Authority shall have the specific remedies expressly provided pursuant to Section 17.1(14) of the Project lease.

9. GWBBSDV understands that the Port Authority has the right to consider its responsibility status in the future and, in conformity with all applicable Port Authority regulatory due process requirements to which GWBBSDV is entitled and, subject to the cure rights provided for in, and the other provisions of, this Certification, to find it to be lacking in the requisite business integrity, in the event the facts should warrant such action. If there is a finding of a lack of the requisite business integrity, the Port Authority shall have the right to require GWBBSDV to take reasonable actions to appropriately remedy the lack of requisite business integrity.

10. GWBBSDV hereby authorizes and grants the Port Authority, including its OIG, the right to audit and/or investigate, as may be reasonable or appropriate, to ensure compliance by GWBBSDV and its Key People with the terms and conditions of this Certification. GWBBSDV further agrees that it will cooperate fully and completely with the Port Authority, including its OIG, during and in connection with any such audits and/or investigations. Such cooperation shall include, but is not limited to, granting the Port Authority, including its OIG, the right to examine all books, records, files, accounts, computer records, documents, and correspondence, including electronically-stored information (collectively, "Documents"), in the possession or control of GWBBSDV, except to the extent such grant may constitute a waiver of the attorney client privilege and/or the attorney work product doctrine. Pursuant to this Paragraph 10, GWBBSDV shall also use its commercially reasonable efforts to assist the Port Authority, including its OIG, in obtaining access to, interviews with, and information from, former, current, and future persons employed or retained by GWBBSDV, including, but not limited to, Key People, consultants, employees, and agents. Notwithstanding the other provisions of this Certification, including, without limitation, Sections 9, 10 and 11, neither GWBBSDV nor any other entity or individual has waived, or is obligated to waive or is required to take any action that may constitute a waiver of, the attorney-client privilege and/or the attorney work product doctrine or has agreed to take any action that may constitute a breach of confidentiality obligations in favor of an entity or individual other than GWBBSDV or its Key People.

11. GWBBSDV understands and acknowledges that the OIG, in its sole discretion and at periodic times, may assign an Integrity Monitor firm to conduct audits and/or investigations to determine whether GWBBSDV is in compliance with the terms of this Certification. The reasonable costs of such audits and/or investigations will be borne solely by GWBBSDV.

12. The undersigned declares and certifies that the foregoing information is true and complete to his knowledge. The covenants in this Certification shall remain in effect from and after the date written next to GWBBSDV's signature block below

until the earlier to occur of (i) the day immediately preceding the fifteenth (15th) anniversary thereof and (ii) the date on which GWBBSDV is released from this Certification pursuant to Section 13 below, if applicable (the "term of this Certification").

13. GWBBSDV may submit a request to the Port Authority, at any time after the first three years of this Certification, to modify the terms of, or to terminate this Certification. Such request must include a basis and explanation for the request. The decision to modify the terms, or to terminate this Certification, rests within the sole discretion of the Port Authority.

A violation of, and/or a failure to perform, the duties and obligations of this Certification is not intended to constitute a crime, except to the extent that such underlying conduct independently constitutes a crime. A Knowingly false representation or Knowing violation of any of the above undertakings or covenants made in connection with this Certification may prevent GWBSSDV, the individual or entity responsible for such false representation or breach (and/or the undersigned if the undersigned is Knowingly responsible for such false representation or violation) from being found to be a responsible developer, lessee, and/or bidder/proposer in connection with future leases, contracts, subcontracts, and agreements with the Port Authority. In addition, such false representations or violation may subject GWBBSDV and the undersigned to criminal charges, including charges for violation of New York State Penal Law Sections 175.35 (Offering a False Statement for Filing) and 210.40 (Sworn False Statement), New Jersey Code of Criminal Justice Title 2C:28-3 (Unsworn Falsification to Authorities), and/or Title 18 U.S.C. Sections 1001 (False or Fraudulent Statement) and 1341 (Mail Fraud).

George Washington Bridge Bus Station Development Venture LLC

By: GWB Development Partners, LLC
Its: Sole Member

By: Marketplace GWB LLC
Its: Managing Member

Dated: July 20, 2011

By: _____
Stephen J. Garchik
Authorized Signatory

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

On the 20th day of July in the year 2011, before me, the undersigned, a Notary Public in and for said state, personally appeared Stephen J. Garhcik, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that she executed the same in her capacity, and that by her signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument. Further, Stephen J. Garchik, being duly sworn, deposes and says that, to the best of his/her knowledge, the information provided herein is true and sufficiently complete so as not to be misleading; and that he/she has been properly authorized by George Washington Bridge Bus Station Development Venture LLC to sign this Certification, on its behalf.

Subscribed and sworn to before
me this 20th day July 2011,

Karen F. Candreva
Notary Public

KAREN F. CANDREVA
Notary Public, State of New York
No. 02CA5045815
Qualified in Westchester County
Commission Expires 03/24/2014

AFFIDAVIT OF TITLE

Dated: July 20, 2011

STATE OF NEW YORK)
) ss:
COUNTY OF NEW YORK)

Title No: 900018

Premises: See Exhibit A attached hereto

The undersigned, in his or her capacity of The Port Authority of New York and New Jersey ("Owner"), and not individually, being duly sworn, deposes and says:

IDENTIFICATION:

1. I am the Executive Director of the Owner, which is leasing a certain portion of the premises described on Exhibit A attached hereto pursuant to the Lease (as hereinafter defined) and in Title Report No. 900018 of Royal Abstract of New York LLC, as agent for Stewart Title Insurance Company. Simultaneously with the execution hereof, Owner, as lessor, and George Washington Bridge Bus Station Development Venture LLC, as lessee, are entering into that certain Agreement of Lease (the "Lease") for a portion of the real property described on Exhibit A (as more particularly defined and described in the Lease, the "Leased Premises").

TENANCY:

2. No person known to Owner is entitled to occupy the Leased Premises other than (i) the Owner, its subsidiaries, affiliates, agents, licensees, contractors, employees, servants, permitees, invitees, and concessionaires and (ii) the tenants set forth on Exhibit B attached hereto, and persons or entities claiming by, through or under them. No tenant set forth on Exhibit B has the right of first refusal or option to purchase the premises.

THIS AFFIDAVIT IS EXECUTED TO INDUCE ROYAL ABSTRACT OF NEW YORK LLC, AS AGENT FOR STEWART TITLE INSURANCE COMPANY ("THE INSURER") TO ISSUE ITS POLICY OF TITLE INSURANCE COVERING SAID PREMISES FREE AND CLEAR OF THE AFORESAID, KNOWING THAT IT WILL RELY UPON THE STATEMENTS HEREIN MADE.

THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY

By: _____
Name: Christopher O. Ward
Title: Executive Director

Sworn to before me this 21st day of July, 2011

_____
Notary Public

DARRELL BUCHBINDER
Notary Public, State of New York
No. 60-0475475
Qualified in Westchester County
Commission Expires on April 30, 2015

EXHIBIT A

THE PREMISES

Parcel A:

Block: 2163
Lot: 1
County: New York

Parcel B:

Block: 2176
Lot: 17
County: New York

EXHIBIT B

Tenancies

1. S&R Confections
2. 4211 Broadway (d/b/a Pizza Palace)
3. Credit Where Credit is Due
4. Bernardo Madera (d/b/a EZ Vision)
5. Washington Heights Optical
6. Central Parking System of NY, Inc. (f/k/a Kinney Upper Manhattan, Inc.)

UNDERTAKING REGARDING JUDGMENTS

TITLE NUMBER: 900018

STATE OF New York)
) ss.:
COUNTY OF New York)

WHEREAS, the Stewart Title Insurance Company, either directly or through its agent, Royal Abstract of New York, LLC, hereinafter referred to as "the Company," is about to issue its title insurance policy or policies or commitments therefore, all hereinafter referred to as "the Title Insurance Policy," in respect to the land therein described as follows:

Parcel A – 4200-4218 Broadway, New York, NY – Block 2163 Lot 1
Parcel B – 4201-4219 Broadway, New York, NY – Block 2176 Lot 17

AND WHEREAS, the Company in its search and examination preparatory to fulfilling said request has determined that title to said property appears to be subject to the following items

a) Unsatisfied judgments for which a creditor(s) may seek enforcement.

b) Unpaid and outstanding fire prevention inspection fees, illuminated sign fees and utility charges.

AND WHEREAS, the Company has been requested to issue the Title Insurance Policy, and may hereafter in the ordinary course of its business issue title insurance policy or policies or commitments therefore in the form or forms now or then commonly used by the Company in respect to the land or to some part of parts thereof, or interest therein, all of the foregoing being hereafter referred to as "Future Policies or Commitments, " either free and clear of all mention of the aforesaid items or insuring against loss or damage because of said items set out above.

The Port Authority shall undertake to satisfy any and all judgments and pay any and all outstanding charges assessed against Parcels A and B in the ordinary course of business, which are listed as of the date of the title commitment which are enforceable and for which a collection action is timely and actually brought to execute against the judgments or charges, subject to any legal defenses and/or immunities the Port Authority may have regarding any such collection action(s).

Nothing contained herein shall be construed so as to obligate the Company to issue its Title Insurance Policy, in the form requested herein. However, should the Company issue any such Title Insurance Policy, it will do so in reliance upon the undertaking of the undersigned and the issuance of such Title Insurance Policy shall be the consideration for the above undertakings by the undersigned.

The Company shall have the right at any time hereinafter, after notice to the undersigned below, when it shall deem necessary, expedient, desirable or of interest to do so, in its sole discretion, to pay, discharge, satisfy or remove from the title to said real estate all or any of the items set out above. The undersigned covenants and agrees to pay to the Company all amounts so expended on demand.

[signature page follows]

THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY

By: _____
Name: Christopher O. Ward
Title: Executive Director

Sworn to before me this 21st
day of July, 2011

_____
Notary Public

DARRELL BUCHBINDER
Notary Public, State of New York
No. 60-0475475
Qualified in Westchester County
Commission Expires on April 30, 2015

CERTIFICATION

I, Linda C. Handel, Deputy Secretary of The Port Authority of New York and New Jersey (hereinafter called the "Port Authority"), a body corporate and politic and a municipal corporate instrumentality of the States of New York and New Jersey created and existing by virtue of the Compact of April 30, 1921, made by and between said States and thereafter consented to by the Congress of the United States, HEREBY CERTIFY THAT:

1. annexed hereto are true and correct copies of resolutions, now in full force and effect, entitled:

(a) "George Washington Bridge Bus Station (GWBBS) – Agreements For The Redevelopment Of The GWBBS With George Washington Bridge Bus Station Development Venture LLC adopted by the Board of Commissioners of the Authority on October 2, 2008, and

(b) "George Washington Bridge Bus Station Redevelopment Project – George Washington Bridge Bus Station Development Venture LLC - Increase In Reimbursable Amount For Facility Improvements" adopted by the Board of Commissioners of the Authority on June 30, 2011.

2. Christopher O. Ward is the Executive Director of the Port Authority and has full power and authority to execute the Agreement of Lease between The Port Authority of New York and New Jersey and George Washington Bridge Bus Station Development Venture LLC and any and all documents associated with this transaction.

IN WITNESS WHEREOF, I have hereunto set my hand as Deputy Secretary of and on behalf of The Port Authority of New York and New Jersey this 19th day of July, 2011.

DEPUTY SECRETARY
THE PORT AUTHORITY
OF NEW YORK AND NEW JERSEY

GEORGE WASHINGTON BRIDGE BUS STATION REDEVELOPMENT PROJECT – GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC – INCREASE IN REIMBURSABLE AMOUNT FOR FACILITY IMPROVEMENTS

It was recommended that the Board authorize the Executive Director, in connection with the George Washington Bridge Bus Station (GWBBS) Redevelopment Project, to: (1) increase the amount to be reimbursed by the Port Authority to George Washington Bridge Bus Station Development Venture LLC (Developer), a joint venture of GWB Ninety Nine LLC, WMG Associates, LLC, and GWB Blue LLC, for its costs for the redevelopment and construction of a new bus station facility, from an amount not to exceed $49.5 million to an amount not to exceed $52.7 million; (2) increase the amount of the Port Authority's internal costs in connection with the GWBBS Redevelopment Project, from $28.7 million to $30.5 million, for financial expense and Port Authority construction design review and oversight, including program management, cost control, and auditing both design and construction of the new Bus Level Pavilion and the Developer's leased space; and (3) take related actions consistent with the terms outlined to the Board.

On October 2, 2008, the Board authorized the execution of agreements for the redevelopment of the GWBBS with the Developer, including, among other agreements, an Interim Agreement that serves as a contract to subsequently enter into a lease agreement with the Developer upon the satisfaction of certain conditions precedent set forth therein. At that time, only conceptual drawings for the improvements to the GWBBS were available, which were used to develop the original budget for the improvements, at an estimated amount of $49.5 million. The Interim Agreement was executed on April 5, 2010, and provides that during the term of the Interim Agreement, in the event that the cost estimate to redevelop and construct improvements to the GWBBS exceeded $49.5 million, the Port Authority retained the right either to terminate the Interim Agreement or increase the budget for the improvements to the GWBBS, subject to further Board authorization.

The proposed increase in the amount to be reimbursed to the Developer is a result of the revised cost estimates for improvements to the GWBBS by Port Authority staff and the Developer after due diligence, including further analysis based on refinements to the preliminary design and scope of work. In addition, the internal Port Authority costs in connection with the GWBBS Redevelopment Project, including construction design review, oversight and financial expense, would be increased from an estimated amount of $28.7 million to an estimated amount of $30.5 million, bringing the total authorized project cost to $83.2 million. Given the nature of this project, staff will provide critical oversight throughout the project's duration. The project team will be responsible for program management, cost control, and auditing of both design and construction of the new Bus Level Pavilion and Developer's leased space.

Increasing the amount to be reimbursed to the Developer for the redevelopment and construction of the GWBBS improvements, from an amount not to exceed $49.5 million to an amount not to exceed $52.7 million, and increasing the overall budget for the GWBBS Redevelopment Project to $83.2 million, would facilitate the development of the GWBBS into a state-of-the-art transportation facility, providing benefits to those who use the GWBBS, the Port Authority and the region that were reported to the Board at its October 2, 2008 meeting.

Pursuant to the foregoing report, the Board adopted the following resolution, with Commissioners Coscia, Holmes, Lynford, Pocino, Rechler, Samson, Sartor and Steiner voting in favor. General Counsel confirmed that sufficient affirmative votes were cast for the action to be taken, a quorum of the Board being present.

RESOLVED, that the Executive Director be and hereby is authorized, for and on behalf of the Port Authority, in connection with the George Washington Bridge Bus Station (GWBBS) Redevelopment Project, to: (1) increase the amount to be reimbursed by the Port Authority to George Washington Bridge Bus Station Development Venture LLC (Developer), a joint venture of GWB Ninety Nine LLC, WMG Associates, LLC, and GWB Blue LLC, for its costs for the redevelopment and construction of the improvements to the GWBBS, from an amount not to exceed $49.5 million to an amount not to exceed $52.7 million; (2) increase the amount of the Port Authority's internal costs in connection with the GWBBS Redevelopment Project, from $28.7 million to $30.5 million, for financial expense and Port Authority construction design review and oversight, including program management, cost control, and auditing of both design and construction of the new Bus Level Pavilion and the Developer's leased space; and (3) take related actions consistent with the terms outlined to the Board, after execution of the agreement with the Developer for the lease of the GWBBS; and it is further

RESOLVED, that the Executive Director be and he hereby is authorized, for and on behalf of the Port Authority, to enter into any contracts and agreements necessary or appropriate in connection with the foregoing; and it is further

RESOLVED, that the form of all contracts and agreements in connection with the foregoing shall be subject to the approval of General Counsel or his authorized representative.

GEORGE WASHINGTON BRIDGE BUS STATION (GWBBS) – AGREEMENTS FOR THE REDEVELOPMENT OF THE GWBBS WITH GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC

It was recommended that the Board authorize the Executive Director, in connection with the proposed redevelopment of the George Washington Bridge Bus Station (GWBBS) facility (the Project), to enter into agreements with George Washington Bridge Bus Station Development Venture LLC (Development Venture), including: (1) an agreement to enter into a lease (Interim Agreement), and (2) an agreement of lease (Net Lease). If, after satisfaction of the conditions in the Interim Agreement, the material terms of the Net Lease are consistent with the terms outlined to the Board, the Net Lease would be executed and commenced without further Board approval; provided, however, that if the material terms of the Net Lease are modified, the modified terms would be submitted to the Board for approval. These proposed agreements relate to the "Request for Proposal (RFP) for the Redevelopment of the George Washington Bridge Bus Station," issued by the Port Authority on February 24, 2006.

The Interim Agreement would serve as a contract to enter into the Net Lease, provided certain conditions are satisfied by the Port Authority and/or Development Venture, as applicable. The Interim Agreement would be for an initial period of nine months, with a nine-month extension, followed by a six-month extension upon satisfaction of certain conditions (Interim Period). Each extension would be dependent upon satisfaction of certain conditions during the previous period. During the Interim Period, among Development Venture's obligations would be to deliver to the Port Authority satisfactory evidence of all required financing for the Project and the final construction documents (TAA) for the Project, as approved by the Port Authority. In the event satisfactory evidence of financing has been delivered to the Port Authority, but the TAA has not been approved, the Interim Agreement would be extended for a six-month period. The Port Authority's obligation during the Interim Period would be to (1) review and approve the TAA submitted by Development Venture in a timely manner, and (2) use commercially reasonable efforts to vacate the GWBBS of all existing holdover retail tenants; however, Development Venture would be required to accept the premises to be leased subject to any remaining holdover tenants, upon payment by the Port Authority of up to $200,000 to Development Venture.

Under the Net Lease, Development Venture would lease and develop approximately 119,000 square feet of new first-class retail space (Leased Premises). The Net Lease would be for a 49-year term and provide for five ten-year extensions, at Development Venture's option. The total aggregate guaranteed base rent amount for the initial 49-year term would be approximately $53 million. The Net Lease would provide for a prepaid guaranteed base rental of $6.44 million for the first 10 years, with annual guaranteed base rent payments of $1 million for years 11 through 49, subject to five-percent increases every five years, beginning in year 16. Development Venture would be responsible for all costs related to financing, designing, construction, operation and maintenance of the Leased Premises, including the relocation and/or modification of existing systems and utilities at the GWBBS, as necessary to develop the Leased Premises, at an estimated cost of approximately $102 million. The Net Lease also would obligate Development Venture, on behalf of the Port Authority and in accordance with Port Authority design criteria, to redevelop and construct new consolidated spaces for the GWBBS areas not leased to Development Venture, including spaces for bus and support operations, at a fixed cost to the Port Authority not to exceed $49.5 million (or such other amount as the Board may authorize). Additional costs of approximately $28.7 million would be incurred for Port Authority

construction design review and oversight and financial expense, bringing the total project cost to $78.2 million.

Development Venture is a joint venture of Acadia – P/A GWB LLC (Acadia-P/A) and Crown GWB LLC.

In December 2006, following the RFP issued in February 2006, the Board authorized a 120-day exclusivity period to allow Development Venture to complete due diligence and to allow the Port Authority to negotiate a number of business terms to optimize the return to the Port Authority. Briefing memos were provided to the Board, advising that staff members have engaged in productive negotiations beyond the May 14, 2007 expiration of the initial term of the exclusivity agreement on a wide range of issues, including safety and security requirements, retail layout and the development of a conceptual plan that would balance the efficiency of the bus operations with the proposed development. Development Venture's original proposal to add to, and build over, the entire East Building to create 385,000 square feet of retail space, after diligent analysis, was determined to be cost prohibitive to meet the required life safety standards to comply with National Fire Protection Association standards. Accordingly, Development Venture was required to find a cost-effective approach to comply with its redevelopment plans. Staff worked closely with Development Venture to identify a more cost-effective approach to address the life safety issues. As a result, Development Venture reduced the scope of the originally proposed approximately 385,000 square feet of first-class retail development, to approximately 119,000 square feet of first-class retail space, distributed between and contained within the existing East and West Buildings.

The GWBBS redevelopment project would improve the efficiency of the bus operations, bring new construction and permanent jobs to the community, and bring new retail to the underserved area, Washington Heights, surrounding the GWBBS. Commuters would benefit from higher quality service, including access required by the Americans with Disabilities Act via enhanced vertical circulation, improved electronic communications, air-conditioned interior spaces, new transit-oriented retail at the facility and an enhanced architectural quality compared to the existing space. This redevelopment would have a positive environmental impact, as the redevelopment would comply with Port Authority sustainability goals. Overall, this redevelopment would be viewed favorably by elected and community leaders who are concerned about the Port Authority's ongoing commitment to maintain this important facility in the Washington Heights neighborhood.

Pursuant to the foregoing report, the following resolution was adopted with Commissioners Bauer, Blakeman, Chasanoff, Coscia, Hochberg, Holmes, Pocino, Sartor, Silverman and Steiner voting in favor; none against:

> **RESOLVED**, that the Executive Director be and hereby is authorized, for and on behalf of the Port Authority, in connection with the George Washington Bridge Bus Station facility, to enter into agreements with George Washington Bridge Bus Station Development Venture LLC, including: (1) an Agreement to Enter Into Lease (Interim Agreement), and (2) an Agreement of Lease (Net Lease); if, after satisfaction of the conditions of the Interim Agreement, the material terms of the Net Lease are consistent with the terms outlined to the Board, the Net Lease will be executed and commenced without further Board approval; provided, however, that if the material terms of the Net Lease are modified, the modified terms will be

submitted to the Board for approval; each agreement substantially in accordance with the terms outlined to the Board; and it is further

RESOLVED, that the Executive Director be and he hereby is authorized, for and on behalf of the Port Authority, to enter into any other contracts and agreements necessary or appropriate in connection with the foregoing; and it is further

RESOLVED, that the form of all contracts and agreements in connection with the foregoing shall be subject to the approval of General Counsel or his authorized representative.

SKANSKA

GEORGE WASHINGTON BRIDGE BUS STATION REDEVELOPMENT
PRELIMINARY BIDDERS LIST
JULY 15, 2011

DEMOLITION

1. **Brandenburg Industrial Service Co.**
   2217 Spillman Drive
   Bethlehem PA 18015
   Timothy Smith/ Greg Hornung
   610-691-1800

2. **Titan Demolition**
   66-00 Long Island Express
   Way Maspeth NY 11378
   Danny Caoulissimo
   718-424-0300

3. **Hazardous Elimination Corporation**
   195 H Central Avenue
   Farmingdale NY 11735
   John Burt
   631-752-2898

4. **Breeze National, Inc.**
   31 Bay Street
   Brooklyn NY 11231
   Dyal Ramcharan
   718-254-8070

5. **LVI Services Inc.**
   462 Getty Avenue
   Clifton NJ 07011
   Peter Demeropoulos
   973-772-3660

6. **PAL Environmental Safety Corp.**
   11-02 Queens Plaza South
   Long Island City, NY 11101
   Joe Catalfamo
   Tel: 718-349-0900

7. **NASDI Demolition**
   1600 Harrison Avenue
   Bay Shore, NY 11706
   Charlie Spinella
   Tel: 631-243-3100

SKANSKA

ASBESTOS ABATEMENT

1. **PAL Environmental Safety Corp.**
   11-02 Queens Plaza South
   Long Island City, NY 11101
   Tel: 718-349-0900
   Joe Catalfamo

2. **Pinnacle Environmental Corp.**
   200 Broad Street
   Carlstadt, NJ 07072
   Kevin Moriarty
   201-939-6565

3. **Trio Asbestos**
   14-20 129th Street
   College Point, NY
   Chris Horan
   Tel: 718-961-4100

4. **Hazardous Elimination Corporation**
   195 H Central Avenue
   Farmingdale NY 11735
   John Burt
   631-752-2898

5. **Breeze National, Inc.**
   31 Bay Street
   Brooklyn NY 11231
   Dyal Ramcharan
   718-254-8070

6. **CTSI**
   622 Georges Road, Suite 301
   North Brunswick NJ 08902
   Farhood Salamie
   732-729-1800

SKANSKA

CONCRETE:

1. **Commodore Construction Corp.**
   230 South Fifth Avenue
   Mount Vernon NY 10550
   Gerald Sammarco
   914-297-3000

2. **EuroTech (M/WBE)**
   532 West 30th Street, 5th Floor
   New York NY 10001
   Noel Woods/Lucy
   212-594-7474

3. **Daurio & Russo Concrete Construction**
   4415 Glenwood Road
   Brooklyn NY 11203
   Philiph Russo/Doug Schwartz
   718-434-3566

4. **Island Foundations Corp.**
   84 Winant Place
   Staten Island NY 10309
   Mike Davidov
   718-967-6062

5. **Darcon Construction Inc.**
   360 Meacham Avenue
   Elmont NY 11003
   Angelo Caiazzo
   516-358-2533

6. **RCC**
   123 Forst St Suite 106
   Westbury, NY 11206
   Sales
   516-279-6787

7. **Prima Paving**
   1 Burns Avenue
   Hicksville NY 11801
   John Bradley
   718-592-0302

SKANSKA

MASONRY:

1. **Navillus Contracting, Inc**
   53-18 11th Street
   Long Island City, NY 11101
   Tel: 718-784-0500
   Fax: 718-784-7357
   Attn: Peter Downes

2. **Kelly Masonry**
   266 Sagamore Avenue
   Mineola, NY 11501
   Tel: 516-739-8110
   Fax: 516-747-7824
   Attn: Robert G Massina

3. **New Town**
   711 S. Columbus Avenue
   Mount Vernon NY 10550
   Mark LaSala
   914-664-5100

4. **Commodore Construction**
   230 South Fifth Ave
   Mount Vernon, NY 10550
   Attn: Tamara Stewart
   Tel: 212-685-9121
   Fax: 914-297-3033

5. **Minnelli Construction Company Inc**
   300 Corporate Plaza Ste 302
   Central Islip, NY 11749
   Attn: Joe
   Tel: 631-232-0222
   Fax: 631-232-0303

6. **Eurotech (M/WBE)**
   532 West 30th Street, 5th Floor
   New York NY 10001
   Noel Woods/Lucy
   212-594-7474

SKANSKA

STRUCTURAL STEEL & MISCELLANEOUS METALS

1. **Altus Metal & Marble (WBE)**
   One Flowerfield, Suite 45
   St. James, NY 11780
   Attn: Lina Gottesman (President)
   Phone: 212-629-1089
   Fax: 631-689-9114

2. **Transcontinental Steel**
   256 Pacific Street
   Newark NJ 7114
   Joel Rosenthal
   973-202-9942

3. **Weir Welding**
   316 12th Street, P.O. Box 311
   Carlstadt NJ 07072
   Charlie Weir/Thomas Weir
   201 939-2284

4. **Post Road Iron Works**
   345 West Putnam Avenue
   Greenwich CT 06830
   Jim Reisick
   203-869-6322

5. **FMB, Inc.**
   70 Supor Blvd
   Harrison, NJ 07029
   Attn: Boris Kromas
   Phone: 973-347-2058

6. **North Eastern Fabricators Inc**
   1759 West Farms Road
   Bronx, N.Y. 10460
   Attn: John Fisher
   Tel: 718-542-0450

7. **Ment Brothers Iron Work Company**
   150 West Street, 10th Floor
   New York, NY 10011
   Attn: Cordell Reid
   Phone: 212-217-6504

SKANSKA

ROUGH CARPENTRY/DRYWALL/CEILINGS/TEMPORARY PROTECTION

1. **Component Assembly Systems**
   620 Fifth Ave
   Pelham, NY 10803
   Attn: Lew Rappaport
   914-738-5400

2. **Donaldson Acoustics, Co**
   150 Wireless Blvd
   Hauppauge, NY 11788
   Attn: Bob Donaldson
   631-952-0800

3. **East Hills Metro.**
   192 County Line Road
   Massapequa, NY 11758
   Attn: Mitchell Benov
   516-795-2697

4. **Island Acoustics**
   518 Johnson Avenue
   Bohemia, NY
   631-234-4500

5. **Eurotech (M/WBE)**
   532 West 30th Street, 5th Floor
   New York, NY 10001
   Attn: Noel Woods/Lucy
   212-594-7474

6. **New England Construction (MBE)**
   75 Rockerfeller Plaza, 26th Floor
   New York, NY 10019
   Attn: Chris Black
   212-245-1950

SKANSKA

CURTAIN WALL

1. **W&W Glass**
   302 Airport Executive Park
   Nanuet, NY 10954
   Attn: Jeff Haber
   Tel: 800-452-7925

2. **Enclos**
   604 Hogan's Valley Way
   Cary, NC 27513
   919-465-1951
   Attn: Michael Kaisersatt

3. **Permasteelisa**
   123 Day Hill Rd.
   Windsor, CT 06095-0767
   860-298-2000

4. **Whitestone Construction**
   50-52 49th Street
   Woodside, NY 11377
   718-392-1800

5. **Gama**
   5600 NW 37th Ave
   Miami, FL 33142
   Mathew Baum
   305-633-2422

6. **Glass Wall**
   3550 NW 49th St
   Miami FL 33142
   Frederico Balestrazzi
   305-633-5151

SKANSKA

ELEVATORS AND ESCALATORS

1. **Otis Elevators**
   516 West 34th Street
   New York, NY 10001
   Attention: Mike Boles
   Tel: 917-339-9600

2. **ThyssenKrupp Elevator**
   519 8th Avenue, 12th Floor
   New York, NY 10018
   Attention: William Hind
   Tel: 212-947-8800

3. **Heights Elevator**
   1766 Front Street
   Yorktown Heights, NY 10598-4608
   Phone: (914) 962-4860

4. **Kone Inc**
   47-36 36th Street
   Long Island City, NY 11101
   Attention: Neal Mullance
   Tel: 718-361-9078

5. **Schindler Elevator**
   1211 Avenue of the Americas
   New York, NY 10036
   Attention: Monte Lukov and Bob Corcoran
   Tel: 212-708-1054

6. **Action Elevator**
   963 Van Duzer Street
   Staten Island, NY 10304
   917-299-5710

SKANSKA

FIRE PROTECTION:

1. **Active Fire Sprinkler Corp**
   Brooklyn Navy Yard Building 50
   Brooklyn, NY 11205
   Attn: Morton Hirsch
   Phone: 718-834-8300
   Fax: 718-834-4887

2. **Expert Sprinkler Maintenance Co**
   2291 ½ Second Avenue
   New York, NY 10035
   Attn: Esley Porteous
   Phone: 212-534-0915
   Fax: 212-860-8553

3. **Rael Automatic Sprinkler Inc**
   601 Merrick Road
   Lynbrook, NY 11563
   Attn:
   Phone: 516-593-2000
   Fax: 516-593-9634

4. **Sirina Fire Protection Corp**
   151 Ferricks Road
   Garden City Park, NY 11040
   Attn: Peter Peterson
   Phone: 516-942-0400
   Fax: 516-942-0415

5. **Par Plumbing**
   60 N. Prospect Ave.
   Lynbrook, NY 11563-1395
   Tel: (516) 887-4000

6. **Federated Fire Protection Systems Corp.**
   1177 Grinnell Place
   Bronx, NY 10474
   Attn: Peter Coletti/Vincent Ambrosio
   (718) 378-3400

SKANSKA

HVAC:

1. **Dart Mechanical Corp**
   74 Marine Street
   Farmingdale, NY 11735
   Attn: Doug Karol
   Tel: 631-420-9797

2. **JDP Mechanical**
   24-39 44th Street
   Astoria, NY 11103
   Attn: Ralph Spinnato
   Tel: 718-267-6767

3. **KSW Mechanical Services**
   37-16 23rd Street
   Long Island City, NY 11101
   Attn: Floyd Warkol
   Tel: 718-361-6500

4. **P.J. Mechanical Corp**
   135 West 18th Street
   New York, NY 1011
   Attn: James Pappas
   Tel: 212-243-2555

5. **JT&T Air Conditioning(MBE)**
   64-54 Maurice Avenue
   Maspeth, NY 11378
   Tel: (718) 416-1660
   Fax: (718) 416-1661

6. **Botto Mechanical Corp**
   95 Commercial Street
   Plainview, NY 11803
   Attn: Leon Molsky
   Tel: 516-349-9000

7. **United Air Conditioning**
   52-16 34th Street
   Long Island City, NY 11101
   Attn: Peter Unrath
   Tel: 718-392-5622

8. **Fresh Meadows Mechanical Corp.**
   65-01 Fresh Meadow Lane
   Fresh Meadows, New York 11365
   Attn: Mike Russo
   Tel: 718-961-6634

SKANSKA

PLUMBING:

1. **Par Plumbing**
   60 N. Prospect Ave.
   Lynbrook, NY 11563-1395
   Tel: (516) 887-4000

2. **Robert W. Parchment Plumbing and Heating (MBE)**
   533 W 145th Street
   New York, NY 10031
   Attn: Robert W. Parchment
   Tel: 212-694-2537
   Fax: 212-694-2539

3. **Almar Plumbing and Heating Corp**
   50 Bethpage Road
   Hicksville, NY 11801
   Attn: Alexander Vecchinoe

4. **Botto Mechanical Corp**
   95 Commercial Street
   Plainview, NY 11803
   Attn: Leon Molsky
   Tel: 516-349-9000

5. **Cardoza Plumbing (MBE)**
   514 Grand Blvd
   Westbury, NY 11590
   Attn: Gene Cardoza
   Tel: 516-876-6900

6. **Lafata Corallo**
   1414 65th St
   Brooklyn, NY 11219-5794
   Attn: Enzo Ciofalo
   (718) 232-0972

7. **Giachetti Plumbing & Heating Corp.**
   2266 Tillotson Avenue
   Bronx, NY 10475
   Attn: Anthony Giachetti
   Tel: 718-231-1259

SKANSKA

ELECTRICAL:

1. **Kleinberg Electric, Inc. (WBE)**
   437 West 16th Street,
   New York, NY 10011
   Attn: Paul Kleinberg
   Tel: (212) 206-1140
   Fax: (212) 255-1679

2. **Five Star Electric**
   101-32 101st Street
   Ozone Park, NY 11416
   Attn: Malkiat Gosal
   Tel: (718) 641-5000
   Fax: (718) 845-4661

3. **Egg Electric, Inc. (WBE)**
   24 West 25th Street, 8th Floor
   New York, NY 10010
   Attn: Steve Konkowski
   Tel: (212) 633-9551
   Fax: (212) 675-6408

4. **KND Contracting & Services Corp. (WBE)**
   50 C Brook Avenue
   Deer Park, NY 11729
   Attn: Kristine DeNapoli
   Tel: (631) 242-1708
   Fax: (631) 242-1746

5. **E-J Electric Installation Company**
   46-41 Vernon Boulevard
   Long Island City, NY 11101-5378
   Attn: Mark Jackson
   Tel: (718) 786-9400
   Fax: (718) 937-9120

6. **Nead Electric**
   175 Broad Street
   Carlstadt, NJ 07072
   Attn: Eric Gil
   Tel: (201) 460-5200

GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE, LLC

SECOND AMENDED AND RESTATED OPERATING AGREEMENT

THIS SECOND AMENDED AND RESTATED OPERATING AGREEMENT (the "Agreement") is made effective as of the 24th day of August, 2010, by its Member (as defined below).

RECITALS

WHEREAS, George Washington Bridge Bus Station Development Venture LLC (the "Company") was formed under the Delaware Limited Liability Company Act, as such act may from time to time be amended, including any successor statute (the "Act") pursuant to a Certificate of Formation, dated March 16, 2006 and filed with the Delaware Secretary of State on March 16, 2006.

WHEREAS, the initial member of the Company was Acadia-P/A GWB LLC and on March 31, 2010 Acadia P/A GWB LLC assigned its 100% membership interest in the Company to PA-GWB LLC, a New York limited liability company ("PA-GWB").

WHEREAS, the Company had conducted its business pursuant to a verbal Operating Agreement and the Company entered into a First Amended and Restated Operating Agreement on the 16th day of July, 2010;

WHEREAS, PA-GWB, LLC has contributed its interest in the Company to GWB Development Partners LLC, a Delaware limited liability company. Accordingly, GWB Development Partners LLC has become the sole member of the Company and hereby desires to set forth the terms, conditions and agreements with respect to the Company and certain other arrangement, all as more fully set forth herein.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, and in consideration of the agreements hereinafter set forth, the undersigned hereby agrees as follows:

ARTICLE 1

GENERAL PROVISIONS

1.1 Continuation of Limited Liability Company; Foreign Qualification. The Member hereby agrees to continue the Company as a limited liability company under the Act. The term of the Company commenced upon the filing of the Certificate of Formation with the Secretary of State. The party hereto agrees that, notwithstanding any references contained herein to multiple Members of the Company, there shall be a single Member of the Company.

Prior to the Company's conducting business in any jurisdiction other than the State of Delaware, the Company shall comply, to the extent procedures are available, with all requirements necessary to qualify the Company as a foreign limited liability company in each such jurisdiction where foreign qualification is either necessary or appropriate. The Member shall execute, acknowledge, swear to and deliver all certificates and other instruments conforming to this Agreement that are necessary or appropriate to qualify, or, as appropriate, to continue or terminate such qualification of, the Company as a foreign limited liability company in all such jurisdictions in which the Company may conduct business.

1.2 Name of the Company. The name of the Company is George Washington Bridge Bus Station Development Venture, LLC.

1.3 Business of the Company. The sole business of the Company and its sole purpose are to lease, develop, redevelop, finance, operate and manage the real estate project known as Broadway Marketplace at The GW Bridge, located at 4211 Broadway, New York, New York, and consisting of that certain parcel of land more particularly described on Exhibit A attached hereto and improvements located thereon (the "Property"). The Company intends to develop on the Property approximately 129,275 square feet of retail space and reconstruct a bus station for the Port of Authority of New York and New Jersey and to engage in any lawful act or activity relating thereto.

1.4 Place of Business of the Company; Resident Agent. The principal place of business of the Company shall be located at c/o PA Developers, LLC, 250 West 57th Street, Suite 1120, New York, New York 10107. The Company's initial registered office and registered agent for service of process in the State of Delaware shall be National Registered Agents, Inc., 160 Greentree Drive, Suite 101, Dover, Delaware 19904.

1.5 Duration of the Company. The term of the Company shall commence upon the filing of the Certificate of Formation, and shall continue until terminated in accordance with Article 7 hereof.

1.6 Member's Name and Address. The name and business address of the Member is set forth on Schedule A. Additional Members may be admitted in accordance with the procedures specified in Article 6. A Member may not resign from the Company. A Member may terminate its membership interest only by an assignment of his entire interest in the Company as provided in Article 6.

1.7 No Partnership The Member intends that the Company not be a general partnership, limited partnership or joint venture, and that no Member be considered to be a partner or joint venturer of any other Member, for any purposes other than foreign and domestic federal, state, provincial and local income tax purposes, and this Agreement shall not be construed to suggest otherwise.

1.8 Title to Company Property. All property owned by the Company, whether real or personal, tangible or intangible, shall be deemed to be owned by the Company as an entity, and no Member, individually, shall have any ownership of such property. The Company may hold any of its assets in its own name or in the name of its nominee, which nominee may be one or

more trusts. Any property held by a nominee trust for the benefit of the Company shall, for purposes of this Agreement, be treated as if such property were directly owned by the Company.

1.9 Nature of Member's Interest. The interests of the Member in the Company are personal property and shall not, under any circumstances, be considered real property.

ARTICLE 2

CAPITAL CONTRIBUTIONS, PROFITS AND LOSSES

2.1 Capital, Percentage Interest; Allocation of Profits and Losses. The Member owns one hundred percent (100%) of the interest in the Company, and shall contribute capital of the company in such amounts and at such times as the Member may determine, provided, however, the Member shall be obligated to contribute amounts necessary to pay the Company's costs incurred and related to its ownership, operation, improvement, financing, leasing and management of its interest in the Property, including, without limitation, those amounts required to be paid by the Company in the Agreements attached hereto as Exhibits B, C and D. All items of income, gain, loss, deduction and credit shall be allocated one hundred percent (100%) to the Member.

ARTICLE 3

CASH DISTRIBUTIONS

3.1 Distributions. Distributions shall be made to the Member at such times and in such amounts as are determined by the Member.

ARTICLE 4

MANAGEMENT

4.1 Management of the Company. The management of the Company shall be vested solely and exclusively in the Member. The Member has the authority to bind the Company.

4.2 Exculpation and Indemnification. The Member shall not be liable to the Company for any loss, damage or claim incurred by reason of any act or omission performed or omitted by Member in good faith on behalf of the Company and in a manner reasonably believed to be within the scope of the authority conferred on the Member by this Agreement, except that the Member shall be liable for any such loss, damage or claim incurred by reason of the Member's willful misconduct or gross negligence. To the fullest extent permitted by applicable law, the Member shall be entitled to indemnification from the Company for any loss, damage or claim incurred by the Member by reason of any act or omission performed or omitted by the Member in good faith on behalf of the Company and in a manner reasonably believed to be

within the scope of the authority conferred on the Member by this Agreement, except that the Member shall not be entitled to be indemnified in respect of any loss, damage or claim incurred by the Member by reason of willful misconduct or gross negligence with respect to such acts or omissions; provided, however, that any indemnity under this Section 4.2 shall be provided out of an to the extent of Company assets only, and the Member shall not have personal liability on account thereof.

4.3 Other Activities. The Member may engage in and possess interests in other business Venture and investment opportunities of every kind and description, independently or with others, including serving as directors, officers, stockholders, manager, members and general or limited partners of corporations, partnerships or other limited liability companies with purposes similar to or the same as those of the Company. Neither the Company nor any other Member shall have any rights in or to such Venture or opportunities or the income or profits therefrom.

4.4 Fees to be Paid by the Company. The following fees shall be paid pursuant to agreements entered into by the Company: (i) a development fee of $1,835,945 in accordance with the terms of the Development Agreement in the form attached hereto at Exhibit B, (ii) a leasing fee of $2,832,369 in accordance with the terms of the Property Management and Leasing Agreement in the form attached hereto as Exhibit C, of which 50% shall be paid when due as provided in the Property Management and Leasing Agreement and the remaining 50% shall be paid upon Project Stabilization (as defined in the Amended and Restated Operating Agreement of GWB Development Partners, LLC), (iii) a property management fee equal to 4% of the effective gross income in accordance with the terms of the Property Management and Leasing Agreement (with 3% being paid to an affiliate of the Managing Member of GWB Development Partners, LLC; and (iv) a construction management services fee in accordance with the terms of the Construction Management Services Agreement in the form attached hereto as Exhibit D. Any leasing fees to third parties shall be paid in such amounts on then-current market terms and conditions.

The Members hereby acknowledge and confirm the obligations set forth in that certain conditional Promissory Note in the original principal amount of $1,950,000 by and between PA GWB LLC to the order of Acadia Strategic Opportunity Fund III LLC attached hereto as Exhibit E and that certain Proposed Letter Agreement with Crown GWB Partners, LLC, the liability for which shall be borne by PA GWB LLC attached hereto as Exhibit F.

4.5 The Member is hereby authorized, for and on behalf of the Company, to procure financing for the Project from such government programs and on such terms as it shall determine in its sole discretion, including without limitation Upper Manhattan Empowerment Zone Development Corporation financing, EB5 Program Funding New York City Regional Center or any other government financing program.

ARTICLE 5

BOOKS, RECORDS AND BANK ACCOUNTS

5.1 Books and Records. The Member shall keep just and true books of account with respect to the operations of the Company. Such books shall be maintained at the Company's principal place of business, or at such other place as the Member shall determine, and the Member, its duly authorized representatives, shall at all reasonable times have access to such books as well as any information required to be made available to the Members under the Act. The Member shall not be required to deliver or mail copies of the Company's Certificate of Formation or copies of certificates of amendment thereto or cancellation thereof to the Members, although such documents shall be available for review and/or copying by the Members at the Company's principal place of business.

5.2 Accounting Basis and Fiscal Year. The Company's books shall be kept on the accrual method of accounting, or on such other method of accounting as the Member may from time to time determine, and shall be closed and balanced at the end of each fiscal year of the Company. The same method of accounting shall be used for both Company accounting and tax purposes. The fiscal year of the Company shall be the calendar year, or such other fiscal year as the Member may from time to time determine.

5.3 Bank Accounts. The Member shall be responsible for causing one or more accounts to be maintained in a bank (or banks), which accounts shall be used for the payment of the expenditures incurred by the Member in connection with the business of the Company, and in which shall be deposited any and all cash receipts. All deposits and funds not needed for the operations of the Company may be invested in such short-term investments as the Member may determine. All such amounts shall be and remain the property of the Company, and shall be received, held and disbursed by the Member for the purposes specified in this Agreement. There shall not be deposited in any of said accounts any funds other than funds belonging to the Company, and no other funds shall in any way be commingled with such funds.

ARTICLE 6

TRANSFERS OF INTERESTS OF MEMBERS

6.1 Additional Members. Additional Members may be admitted to the Company at any time upon the written consent of the Member and any additional Members shall be entitled to such interest in the Company as the Member may determine. The Member hereby acknowledges that, as a result of an admission of any additional Member, the interests of the Member shall be diluted or, if more than one Member, the interests of all Members shall be diluted proportionately, based on their respective interests immediately prior to any such admission. Without in any way limiting the foregoing, the interest of any third party admitted to the Company pursuant to this Section 6.1 in the Net Profits, Net Losses and distributions of cash or property of any nature may have such priority or priorities in relationship to the interests therein of the Member as the Member may in its discretion determine, provided that, the relative priorities of the Members in the Net Profits, Net Losses and cash distributions of any nature of the Company shall not be altered as a result of the admission of any such third party.

Each Member, and each person who is hereinafter admitted to the Company as a Member, hereby (i) consents to the admission of any such third party on such terms as the Member may determine, and to any amendment to this Agreement which may be necessary or appropriate to reflect the admission of any such third party and the terms on which it is admitted to the Company, and (ii) acknowledges that, in connection with any admission of any such third party, such Member's interest in allocations of Net Profits and Losses and distributions of cash of the Company, and net proceeds upon liquidation of the Company, may be diluted or otherwise altered.

6.2 Substitution and Assignment of Member's Interest.

(a) No Member may sell, transfer, assign, pledge, hypothecate or otherwise dispose of all or any part of its interest in the Company (whether voluntarily, involuntarily or by operation of law) unless Members owning a majority in interest of the membership interests in the Company (the "Required Consent of Members") shall have previously consented to such assignment in writing, the granting or denying of which consent shall be in the other Members' absolute discretion.

(b) No assignment of the interest of a Member shall be made if, in the opinion of counsel to the Company, such assignment (i) may not be effected without registration under the Securities Act of 1933, as amended, (ii) would result in the violation of any applicable state securities laws, (iii) unless consented to by the Required Consent of Members, would result in a termination of the Company under Section 708 of the Internal Revenue Code of 1986, as amended or re-codified, or (iv) unless consented to by the Required Consent of Members, would result in the treatment of the Company as an association taxable as a corporation or as a "publicly-traded limited partnership" for tax purposes. The Company shall not be required to recognize any such assignment until the instrument conveying such interest has been delivered to the Company for recordation on the books of the Company. Unless an assignee becomes a substituted Member in accordance with the provisions of Section 6.2(c), it shall not be entitled to any of the rights granted to a Member hereunder, other than the right to receive all or part of the share of the Net Profits, Net Losses, cash distributions or returns of capital to which his assignor would otherwise be entitled.

(c) An assignee of the interest of a Member, or any portion thereof, shall become a substituted Member entitled to all the rights of a Member if, and only if:

(i) the assignor gives the assignee such right;

(ii) the Members, by the Required Consent of Members, consent to such substitution, the granting or denying of which consent shall be in the other Members' absolute discretion;

(iii) the assignee or the assignor pays to the Company all costs and expenses incurred in connection with such substitution, including specifically, without limitation,

costs incurred in the review and processing of the assignment and in amending this Agreement; and

(iv) the assignee executes and delivers such instruments, in form and substance satisfactory to the Company, as may be necessary or desirable to effect such substitution and to confirm the agreement of the assignee to be bound by all of the terms and provisions of this Agreement.

(d) The Company shall be entitled to treat the record owner of any interest in the Company as the absolute owner thereof in all respects, and shall incur no liability for distributions of cash or other property made in good faith to such owner until such time as a written assignment of such interest has been received and accepted by the Members and recorded on the books of the Company. The Members, by Required Consent of Members, may refuse to accept an assignment until the end of the next successive quarterly accounting period. In no event shall any interest in the Company, or any portion thereof, be sold, transferred or assigned to a minor or incompetent, and any such attempted sale, transfer or assignment shall be void and ineffectual and shall not bind the Company.

(e) If a Member who is an individual dies or a court of competent jurisdiction adjudges him to be incompetent to manage his person or his property, the Member's executor, administrator, guardian, conservator or other legal representative may exercise all of the Member's rights for the purpose of settling his estate or administering his property. If a Member is a corporation, trust or other entity, and is dissolved or terminated, the powers of that Member may be exercised by its legal representative or successor.

ARTICLE 7

DISSOLUTION AND TERMINATION

7.1 Events of Dissolution.

(a) The Company shall be dissolved:

(i) on a date designated in writing by the Member;

(ii) upon the death, retirement, resignation, expulsion, bankruptcy or dissolution of a Member;

(iii) upon the sale or other disposition of all of the Company's assets; or

(iv) upon the entry of a decree of judicial dissolution under the Act.

(b) Notwithstanding the occurrence of an event specified in Section 7.1(a)(ii), the Company shall not be dissolved and its business and affairs shall not be discontinued, and the Company shall remain in existence as a limited liability company under the laws of the State of Delaware, if all of the remaining Members, if any, elect within 90 days after such occurrence to continue the Company and the Company's business.

litigation or bankruptcy proceeding against the Lessee other than litigation to enforce any such conversion right), (4) obligations assumed on the Lease Commencement Date under the Lease from the Port Authority, (5) obligations incurred and related to its ownership, operation, improvement, financing, leasing and management of its interest in the Property, and (6) obligations otherwise incurred in accordance with the terms of the Lease. The Company (i) shall maintain its own separate books and records and its own accounts, in each case which are separate and apart from the books and records and accounts of any other Person, (ii) holds itself out as being a Person, separate and apart from any other Person, (iii) does not and will not commingle its fund or assets with those of any other Person, (iv) conducts its own business in its own name, (v) shall maintain separate financial statements, (vi) pays its own liabilities out of its own funds, (vii) observes limited liability company formalities, (viii) maintains an arm's-length relationship with its Affiliates, (ix) pays the salaries of its own employees, if any, and maintains a sufficient number of employees in lights of its contemplated business operations, (x) does not guarantee or otherwise obligate itself with respect to the debts of any other Person or hold out its credit as being available to satisfy the obligations of any other Person, other than "take-over" or similar obligations, (xi) does not acquire obligations or securities of its members, (xii) allocates and shall allocate fairly and reasonably shared expenses, including, without limitation, any overhead for shared office space, if any, (xiii) uses separate stationery, invoices and checks, (xiv) does not and will not pledge its assets for the benefit of any other Person or make any loans or advances to any other Person, in each case other than as permitted pursuant to the terms of the lease with the Port Authority or any agreement applicable to the ownership, operation, management, improvement or financing of its interest in the Property, (xv) takes all reasonable steps and actions to correct any known misunderstanding regarding its separate identity, and (xvi) maintains, or has reasonable access to, reasonably adequate capital in light of its contemplated business operations. The Company shall not dissolve upon the bankruptcy of its managing member unless a new managing member or new sole member shall not be appointed upon any such bankruptcy (or as otherwise provided under Section 18-802 of the Delaware Limited Liability Company Act). The Company, without the unanimous consent of all of the members has not and will not with respect to itself or to any other Person in which it has a direct or indirect legal or beneficial interest (i) seek or consent to the appointment of a receiver, liquidator, assignee, trustee, sequestrator, custodian or other similar official for such Person or all or any portion of such Person's properties, or (ii) take any action that would cause such Person to become insolvent. The Company shall obtain the consent of all its members to (i) fie a bankruptcy or insolvency petition or otherwise institute insolvency proceedings or to authorize it to do so, or (ii) consent to or acquiesce in the filing of an involuntary bankruptcy or insolvency proceeding, and the organizational documents of each of them shall expressly prohibit the taking of any action to (x) dissolve or liquidate or (y) amend its organizational documents with respect to any Single Purpose Entity requirements as set forth herein.

ARTICLE 9

MISCELLANEOUS

(c) Dissolution of the Company shall be effective on the day on which the event occurs giving rise to the dissolution, but the Company shall not terminate until the Company's Certificate of Formation shall have been cancelled and the assets of the Company shall have been distributed as provided herein. Notwithstanding the dissolution of the Company, prior to the termination of the Company, as aforesaid, the business of the Company and the affairs of the Members, as such, shall continue to be governed by this Agreement. The Member or a liquidator appointed by the Required Consent of Members, shall liquidate the assets of the Company, and distribute the proceeds thereof as contemplated by this Agreement and cause the cancellation of the Company's Certificate of Formation.

7.2 Distributions Upon Liquidation.

(a) After payment of liabilities owing to creditors, the Member or liquidator shall set up such reserves as it deems reasonably necessary for any contingent or unforeseen liabilities or obligations of the Company. Said reserves may be paid over by such Member or liquidator to a bank, to be held in escrow for the purpose of paying any such contingent or unforeseen liabilities or obligations and, at the expiration of such period as such Member or liquidator may deem advisable, such reserves shall be distributed to the Members or their assigns in the manner set forth in paragraph (b) below.

(b) After paying such liabilities and providing for such reserves, the Member or liquidator shall cause the remaining net assets of the Company to be distributed to all Members with positive Capital Account balances (after such balances have been adjusted to reflect the allocation of Net Profits or Net Losses arising from such event pursuant to Section 2.1 in proportion to and to the extent of such positive balances. In the event that any part of such net assets consists of notes or accounts receivable or other non-cash assets, the Member or liquidator may take whatever steps it deems appropriate to convert such assets into cash or into any other form which would facilitate the distribution thereof. If any assets of the Company are to be distributed in kind, such assets shall be distributed on the basis of their fair market value net of any liabilities.

ARTICLE 8

SINGLE PURPOSE ENTITY PROVISIONS

The Company does not and shall not engage in any business unrelated to its ownership of the leasehold estate created by the lease to be entered into by the Company and the Port Authority of New York and New Jersey (the "Lease") and its operation, improvement, financing, leasing and management of the Property and/or its activities hereunder with respect to the Property. The Company has not and will not have (A) any assets other than those related to its business as described in Section 1.3 and (B) any indebtedness other than (1) indebtedness which is not prohibited to be incurred y the terms of the Lease, (2) trade payables incurred in the ordinary course of business, (3) partner or member loans (pursuant to which the lender thereunder has no enforcement rights against the Property whatsoever other than the right to convert into direct or indirect equity ownership in the Lessee and no rights to initiate any

8.1 Notices. Any and all notices, requests, elections, consents or demands permitted or required to be made under this Agreement shall be in writing, signed by the Member giving such notice, request, election, consent or demand, and shall be delivered personally, or sent by registered or certified mail, or by overnight mail, Federal Express or other similar commercial overnight courier, to the other Member or Members at their addresses set forth in Schedule A, and, in the case of a notice to the Company, at the address of its principal office as set forth in Article 1 hereof, or at such other address as may be supplied by written notice given in conformity with the terms of this Section 8.1. The date of personal delivery, three days after the date of mailing or the day after delivery to an overnight courier, as the case may be, shall be the date of such notice.

8.2 Successors and Assigns. Subject to the restrictions on transfer set forth herein, this Agreement, and each and every provision hereof, shall be binding upon and shall inure to the benefit of the Members, their respective successors, successors-in-title, heirs and assigns, and each and every successor-in-interest to any Member, whether such successor acquires such interest by way of gift, purchase, foreclosure, or by any other method, shall hold such interest subject to all of the terms and provisions of this Agreement.

8.3 Amendments. Amendments may be made to this Agreement from time to time by a writing duly executed by all Members.

8.4 Partition. The Member hereby agrees that no Member nor any successor-in-interest to any Member, shall have the right while this Agreement remains in effect to have the property of the Company partitioned, or to file a complaint or institute any proceeding at law or in equity to have the property of the Company partitioned, and each Member, on behalf of himself, his successors, representatives, heirs, and assigns, hereby waives any such right. It is the intention of the Members that during the term of this Agreement, the rights of the Members and their successors-in-interest, as among themselves, shall be governed by the terms of this Agreement, and that the right of any Member or successor-in-interest to assign, transfer, sell or otherwise dispose of his interest in the Company shall be subject to the limitations and restrictions of this Agreement.

8.5 No Waiver. The failure of any Member to insist upon strict performance of a covenant hereunder or of any obligation hereunder, irrespective of the length of time for which such failure continues, shall not be a waiver of such Member's right to demand strict compliance in the future. No consent or waiver, express or implied, to or of any breach or default in the performance of any obligation hereunder, shall constitute a consent or waiver to or of any other breach or default in the performance of the same or any other obligation hereunder.

8.6 Entire Agreement. This Agreement constitutes the full and complete agreement of the parties hereto with respect to the subject matter hereof.

8.7 Captions. Titles or captions of Articles or Sections contained in this Agreement are inserted only as a matter of convenience and for reference, and in no way define, limit, extend or describe the scope of this Agreement or the intent of any provision hereof.

8.8 Applicable Law. This Agreement and the rights and obligations of the parties hereunder shall be governed by and interpreted, construed and enforced in accordance with the laws of the State of New York.

8.9 Gender, Etc. In the case of all terms used in this Agreement, the singular shall include the plural and the masculine gender shall include the feminine and neuter, and vice versa, as the context requires.

8.10 Creditors. None of the provisions of this Agreement shall be for the benefit of or enforceable by any creditor of any Member or of the Company other than a Member who is such a creditor of the Company.

IN WITNESS WHEREOF, the Member has executed this Agreement as of the date first above written.

WITHDRAWING MEMBER:

PA-GWB, LLC,
Managing Member

By: _____
Stephen J. Garchik
Manager

By: _____
Aaron Malinsky
Manager

8.8 Applicable Law. This Agreement and the rights and obligations of the parties hereunder shall be governed by and interpreted, construed and enforced in accordance with the laws of the State of New York.

8.9 Gender, Etc. In the case of all terms used in this Agreement, the singular shall include the plural and the masculine gender shall include the feminine and neuter, and vice versa, as the context requires.

8.10 Creditors. None of the provisions of this Agreement shall be for the benefit of or enforceable by any creditor of any Member or of the Company other than a Member who is such a creditor of the Company.

IN WITNESS WHEREOF, the Member has executed this Agreement as of the date first above written.

WITHDRAWING MEMBER:

PA-GWB, LLC,
Managing Member

By: _____
Stephen J. Garchik
Manager

By: _____
Aaron Malinsky
Manager

SUBSTITUTE MEMBER:

GWB Development Partners, LLC

By: PA-GWB, LLC,
Managing Member

By: _____
Stephen J. Garchik
Manager

By: _____
Aaron Malinsky
Manager

SUBSTITUTE MEMBER:

GWB Development Partners, LLC

By: PA-GWB, LLC,
Managing Member

By: _____
Stephen J. Garchik
Manager

By: _____
Aaron Malinsky
Manager

GWB Development Partners, LLC

By: GWB Blue LLC, a New York
Limited liability company
Investing Member

By: _____
Name: Raymond Gind
Title: Member

GWB Development Partners, LLC

By: GWB Blue LLC, a New York
Limited liability company
Investing Member

By: _____
Name:
Title:

George Washington Bridge Bus Station Venture, LLC

SCHEDULE A

Member Name and Business Address	Capital Contribution	Membership Interest
GWB Development Partners, LLC c/o PA Developers, LLC 250 West 57th Street, Suite 1120 New York, New York 10107	$100	100%

Exhibit A

Legal Description of the Property

LEGAL DESCRIPTION – PARCEL 1 (tax LOT 1 IN BLOCK 2163)

All that certain plot, piece or parcel of land, being tax Lot 1 in tax Block 2163, situate, lying in the Borough of Manhattan, City, County, and State of New York, being more particularly bounded and described as follows:

BEGINNING at the corner formed by the intersection of the southeasterly side of Broadway (100 feet wide) with the southwesterly side of West 179th street (60 feet wide), as the streets are laid out on the Borough President of Manhattan Final Sectional Map No. 30, said point having the Memorial Church coordinates of North 24122.640 East 5478.278 (NAD 83 New York East coordinates of North 734630.813 East 647889.374);

Running thence southeasterly along southwesterly side of West 179th Street, a distance of 260.76 feet to the corner formed by the intersection of the southwesterly side of West 179th Street with the northwesterly side of Wadsworth Avenue (80 feet wide) said line forming an interior angle of 101 degrees 36 minutes 38 seconds with the southeasterly side of Broadway;

Running thence southwesterly along the northwesterly side of Wadsworth Avenue, a distance of 200.00 feet to the corner formed by the intersection of northwesterly side of Wadsworth Avenue with the northeasterly side of West 178th Street (60 feet wide); said line forming an interior angle of 89 degrees 58 minutes 55 seconds with the southwesterly side of West 179th Street;

Running thence northwesterly along the northeasterly side of West 178th Street, a distance of 301.79 feet to the corner formed by the intersection of the northeasterly side of West 178th Street with the southeasterly side of Broadway; said line forming an interior angle of 90 degrees 00 minutes 53 seconds with the northwesterly side of Wadsworth Avenue;

Running thence northeasterly along the southeasterly side of Broadway, a distance of 204.16 feet to the place and Point of Beginning; said line forming an interior angle of 78 degrees 23 minutes 34 seconds with the northeasterly side of West 178th Street.

Containing 56,250.89 square feet or 1.2913 acres more or less.

LEGAL DESCRIPTION – PARCEL 2 (tax LOT 17 IN BLOCK 2176)

All that certain plot, piece or parcel of land, being tax Lot 17 in tax Block 2176, situate, lying in the Borough of Manhattan, City, County, and State of New York, being more particularly bounded and described as follows:

BEGINNING at a point on the southeasterly side of Fort Washington Avenue (60 feet wide) extended northeasterly 20.02 feet distant from the corner formed by the intersection of the southeasterly side of Fort Washington Avenue with the southwesterly side of West 179th Street (60 feet wide), as the streets are laid out on the Borough President of Manhattan Final Sectional Map No. 30, said point having the Memorial Church coordinates of North 24251.823 East 4956.112 (NAD 83 New York East coordinates of North 734756.743 East 647366.432);

Running thence southeasterly along the northerly line of said Parcel 2, a distance of 423.73 feet to an angle point on the northwesterly side of Broadway (100 feet wide) extended northeasterly; said line forming an interior angle of 92 degrees 32 minutes 33 seconds with the southeasterly side of Fort Washington Avenue extended northeasterly;

Running thence southwesterly along the northwesterly side of Broadway extended, a distance of 205.96 feet to an angle point; said line forming an interior angle of 63 degrees 52 minutes 49 seconds with the last-mentioned course;

Running thence northwesterly along the southerly line of said Parcel 2, a distance of 341.28 feet to an angle point on the southeasterly side of Fort Washington Avenue extended southwesterly; said line forming an interior angle of 116 degrees 07 minutes 57 seconds with the northwesterly side of Broadway extended southwesterly;

Running thence northeasterly along the southeasterly side of Fort Washington Avenue extended, a distance of 185.22 feet to the place and Point of Beginning; said line forming an interior angle of 87 degrees 26 minutes 41 seconds with the last-mentioned course.

Containing 70,758.37 square feet or 1.6244 acres more or less

Exhibit B

Form of Development Agreement

DEVELOPMENT SERVICES AGREEMENT

THIS DEVELOPMENT SERVICES AGREEMENT (this "Agreement"), is made and entered into as of July 16, 2010, by and between (i) George Washington Bridge Bus Station Development Venture LLC (the "Owner"), and (ii) Clearview Management Services LLC(the "Development Manager").

R E C I T A L S

A. Owner is the lessee of the Leased Premises (as defined in the Agreement of Lease between The Port Authority of New York and New Jersey and George Washington Bridge Bus Station Development Venture LLC- the "Lease") including improvements, located at 4211 Broadway, New York, New York (the George Washington Bridge Bus Station). These Leased Premises and the other improvements thereon are the subject of this Agreement and are hereinafter collectively referred to as the "Property".

B. The Owner desires to redevelop the Property which when complete will include all additions, renovations, and alterations necessary for the consolidated Port Authority Bus Station Premises and Leased Retail/Commercial Premises (Collectively "Improvements").

C The Owner desires to obtain the services of the Development Manager with respect to the renovation of the Property and the construction of Improvements ((collectively referred to as the "Project,"), to act as project manager with respect to the construction of the Project, and to provide the services described in this Agreement, all in accordance with, and pursuant to the terms, covenants and conditions contained in this Agreement. The Development Manager and the Owner agree that the for the purposes of this Development Management Services Agreement, the Project is expected to be planned, permitted and constructed in a single phase running continuously from start to finish without material interruption as described below.

1. The adaptive reuse of the George Washington Bridge Bus Station: a complex of two three-level buildings - East and West - connected by two vehicular bridges spanning over Broadway. This existing facility straddles the Trans-Manhattan Expressway.
2. The existing West Building bus operation will be consolidated to the building's third (rooftop) level enabling the first and second levels to be renovated to accommodate retail/commercial uses. This consolidation includes vertical transportation relocation, bus gates and concourse ticketing, passenger waiting area, police and facility operations offices and restrooms.
3. The existing East Building will be renovated, enlarged and converted from mechanical/electrical uses to retail by expanding two existing structural slabs for retail use requiring an existing substation located on the first level of the building to be relocated within a new rooftop Utility Building.
4. New exterior treatments to enclose new retail venues around both buildings will be developed. The exterior improvements may require landmark supervision if required.
5. The bus station will remain operational throughout the renovation.
6. The Project includes completing retail space to the extent the tenant improvements shown in the budget are constructed per the 18 month construction schedule, per the Skanska budget dated October 9, 2009 and per the Port Authority Agreement.

7. The project schedule is expected to be 30 months and will commence on the Effective Date as defined in the Interim Agreement between The Port Authority of New York and New Jersey and George Washington Bridge Bus Station Development Venture LLC and be complete by June, 2012.
8. Skanska has been selected as the General Contractor and STV as the Project Architect.
9. The Project scope and current construction budget consists of two separate but interdependent components; 1) Bus Station Renovation; and 2) Retail Renovation and is based on the Skanska budget dated October 9, 2009 and Port Authority Agreement.

D. The Development Manager is willing to provide the Development Management Services set forth in this Agreement with respect to the Project, all in accordance with, and pursuant to the terms, covenants and conditions contained in this Agreement.

NOW, THEREFORE, in consideration of the mutual covenants and conditions herein contained and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties hereto, intending to be legally bound, hereby do covenant and agree as follows

SECTION 1. GENERAL PROVISIONS

1.1 **Relationship of Parties.** The Development Manager is acting on behalf of and as an agent for the Owner by this Agreement, and covenants with the Owner to furnish the Development Manager's reasonable skill, judgment and best efforts in the performance of its obligations under this Agreement. The Development Manager shall furnish services as set forth herein relating to the Project in an expeditious, professional and economical manner consistent with the interests of the Owner, using the degree of skill and care that the Development Manager would use if it were an Owner in rendering service under this Agreement. The term "Development Services" shall mean all project management services required to be performed by Development Manager under this Agreement.

1.2 **Third Parties.** This Agreement is between the Development Manager and the Owner. This Agreement shall not be construed to create a contractual relationship of any kind between the Development Manager and any person or entity other than the Owner. Under no circumstances shall Development Manager be regarded as the Owner, Developer, Contractor, Architect or Engineer of the Project. The Owner expressly recognize that: (a) the Development Manager may have substantial other business and real estate activities ; (b) the Development Manager may engage for his, her, or its own account and for the accounts of others in other businesses or real estate activities, even if such businesses or activities compete directly with Company business or activities, and the Owner shall not have any rights in or to any such independent business or activity or the income or profits derived therefrom (c) the Development Manager is an independent contractor but some of its officers and/or employees are also investors, directly or indirectly in the Owner.

SECTION 2. SERVICES TO BE PERFORMED BY DEVELOPMENT MANAGER

2.1 **Obligation to Perform Services.** Subject to the provisions of Sections 2.2 and Section 2.3 of this Agreement, the Development Manager agrees to perform the services described in this Section with respect to the permitting, financing, planning, development and construction of the Project.

2.1.1 **Approval Stage of Project.** The Approval stage of the Project (the "Approval Stage") commences as of the date of this Agreement and shall continue

until such time as all tasks required to be performed during the Approval Stage have been performed as provided in this Section 2.1.1. During the Approval Stage, the Development Manager shall perform such tasks as may be necessary or desirable to plan the development of the Project, and as shall be reasonably requested or approved by the Owner in connection with the financing, development and construction of the Project, including the following services when and in the manner indicated below:

(a) The Development Manager shall develop, in consultation with the Owner, the various goals and objectives of the Project, including identification of major development requirements and preparation of budgets, development timetables and construction schedules for the Project.

(b) The Development Manager, if and to the extent requested by the Owner, shall assist in the preparation of and/or review and/or negotiation of agreements securing the services of the Project Architect, the General Contractor, the civil, structural, mechanical and electrical engineers (collectively, the "Engineers") and other consultants for the Project, and all other documentation necessary to the planning, construction, permitting and use and occupancy of the Project in accordance with the proposed development plans as described in Section C of the Recitals and all applicable laws and regulations.

(c) The Development Manager, in consultation with the Owner shall be responsible for all negotiations with, assistance in the preparation of all required submissions to, and shall act as liaison to, the various governmental agencies having jurisdiction with respect to the development of the Project, as and to the extent directed by the Owner.

(d) The Development manager, in consultation with the Owner architect, engineer and other Owner consultants, shall apply for, negotiate and use all reasonable efforts on behalf of the Owner to obtain all necessary government approvals, permits and authorizations necessary to the development of the Project.

(e) The Development Manager shall hire, pay, direct the work of, supervise, and discharge the personnel necessary to enable the Development Manager to perform the Development Services. Such personnel shall be in the sole employ of the Development Manager and not in the employ of the Owner. The Owner shall have no right to interfere with, supervise or otherwise direct such personnel. The Development Manager shall execute and file when due all forms, reports and returns required by law which relate to the employment of such personnel.

(f) The Development Manager shall review and refine the approved budget (Attachment A) as the development of the Plans proceeds, and immediately advise the Owner in writing if it appears to the Development Manager that the approved budget to include specific line item amounts including the contingency amounts as outlined in Port Authority Agreement for the cost of the Project set forth in the approved budget will not be met. The Development Manager will obtain written authorization from the Owner before proceeding with changes to the approved budget

(g) The Development Manager shall make necessary recommendations and shall otherwise assist the Owner in making decisions based on information provided by Owner and Owner's Consultants respecting all Project development requirements, in accordance with all applicable laws and regulations, including: (1) land use planning; (2) time phasing of the development; (3) selection of site utilities and public improvements; (4) selection of structure type for all improvements; (5) selection of facade for all Improvements; (6) design of public areas in all Improvements; (7) incorporation of needed safety and environmental features in

all Improvements; (8) design of all service areas in all Improvements; (9) parking facilities; (10) landscaping; (11) selection of special building features to accommodate special building needs; (12) analysis and selection of available energy sources; (13) design of electrical systems; (14) design of heating, ventilating and air conditioning systems; (15) design of plumbing system;, (16) life safety systems; (17) preparation of schematics, design development and construction contract documents, and (18) obtaining all required insurance and bonds. The Development Manager shall not be responsible for procuring or funding legal services, which unless otherwise agreed in writing shall to the extent required shall be provided by the Owner.

(h) The Development Manager shall, in consultation with the Owner, Owner consultants and the General Contractor, diligently undertake to prepare a final detailed cost estimate and budget (the "Final Budget") when the Plans are complete, which Final Budget shall be (1) based upon the bid-price to construct the Improvements, (2) approved by the Owner, and (3) approved by the Owner's construction lender, if required.

(i) The Development Manager shall prepare a master schedule (the "Master Schedule") which incorporates in detail key Project activities to be performed by the Owner, the Project Architect, the Engineers, the General Contractor and the Development Manager, including the obtaining of required governmental approvals, in connection with the development, construction and occupancy of the Project as described in Article C of the Recital.

(j) The Development Manager shall monitor the Master Schedule during the Approval Stage and shall advise the Owner of the status of the Master Schedule as it relates to actual progress.

(k) The Development Manager shall conduct regular meetings, on a frequent schedule provided to the Owner, with the General Contractor, the Project Architect and the Engineers in order to facilitate coordination of the work in accordance with the Master Schedule and the Plans and shall give reasonable notice to the Owner prior to each of such meetings should such schedule change.

(l) The Development Manager shall conduct a regular monthly meeting with the Owner, or more frequently if reasonably requested by the Owner, for the purpose of reporting on the progress of the Approval Stage negotiations with consultants, contractors, subcontractors and various government agencies, the preparation of the various documents required for the development of the Project and such other matters as the Owner shall reasonably request or as may be appropriate.

(m) The Development Manager shall implement and administer the financing program selected by the Owner and shall act as liaison, at the direction of the Owner, in dealing with the lender(s) selected by the Owner to provide financing for the Project. The Development Manager shall coordinate the financing with the proposed construction program and shall make recommendations to the Owner and supervise Pre-Construction Stage payment requisitions, if any.

2.1.2 Construction Stage of Project. During the Construction Stage, the Development Manager shall perform such tasks that in its reasonable judgment are appropriate to effect the construction of the Improvements, and as shall be reasonably requested or approved by the Owner in connection with construction of the Improvements, including the following services when and in the manner indicated below:

(a) The Development Manager shall use reasonable efforts to supervise the construction of the Project by the General Contractor in accordance with (1) the Master Schedule [as revised in accordance with Section 2.1.1(n), of this Agreement] and (2) the plans and specifications, working drawings and the site plan for the Project, each as approved by the Owner, all requisite governmental authorities and, if required, the lender(s) providing construction financing (collectively, the "Plans"), provided that nothing herein shall supplant or diminish the responsibility of the Project Architect, or other Owner consultants, to administer the Project in accordance with the agreement between the Owner and the Project Architect and other Owner consultants.

(b) The Development Manager shall regularly monitor and use reasonable efforts to expedite the construction process. The Development Manager shall regularly and independently inspect the work and review the performance of the General Contractor and its subcontractors and advise the Owner if the Development Manager becomes aware of any deficiencies in the performance of the work by the General Contractor.

(c) The Development Manager shall regularly review the construction progress to render an opinion whether the actual construction schedule coincides with the Master Schedule and the CPM Schedule provided by the General Contractor, periodically review work not started or incomplete, and recommend adjustments to the Master Schedule in accordance with Section 2.1.1(n) of this Agreement and to the CPM Schedule to the Owner and the General Contractor with respect to remaining work.

(d) The Development Manager shall conduct a regular monthly meeting with the Owner, or more frequently if reasonably requested by the Owner, for the purpose of reporting on the status of the development and construction of the Project.

(e) The Development Manager shall review and recommend to the Owner necessary or desirable changes, and shall, at the written direction of the Owner, review, negotiate and make recommendations concerning any change orders with respect to any changes to scope with the General Contractor or other Owner consultants and shall maintain records of all such change orders.

(f) The Development Manager, together with the Project Architect, shall conduct regular bi-weekly meetings with the General Contractor for the purpose of reviewing with the General Contractor all unpaid requisitions and monthly draws. The Development Manager, together with the Project Architect, shall review, process and make recommendations to the Owner with respect to, all requisitions for payment received from the General Contractor in accordance with the terms of its contract. The Development Manager's review and recommendations with respect to the General Contractor's applications for payment shall be based on the Development Manager's observations and best judgment based on its review of submitted documentation and on-site inspections.

(g) The Development Manager will consult with the Owner, the Project Architect and the General Contractor to make a recommendation as to when the work on the Improvements, or designated portions thereof, is substantially complete and shall supervise the preparation by the Project Architect of a list of incomplete, unfinished and unsatisfactory items (the punchlist), together with a schedule for their completion.

(h) The Development Manager shall coordinate assembly and delivery by the Project Architect and the General Contractor, the warranty information to the Owner for its use when the Project is substantially complete.

2.1.3 **Financial Management Services.** During the Approval Stage and the Construction Stage, the Development Manager shall provide financial management services such as monitoring the Project Budge as shown on Attachment A t, monitoring consultant and general contractor contractual payment status and reviewing applicable project invoices for Owner processing and payment as shall be reasonably requested by the Owner in connection with the Project. Project accounting will be the responsibility of the Owner.

2.2 **Limitations on Development Manager's Responsibility.**
It is not the Development Manager's responsibility to ascertain that the work to be performed by the Project Architect, the General Contractor or any other contractors or consultants retained by the Owner or the retail tenant is performed in accordance with applicable laws, statutes, ordinances, building codes, rules and regulations or the contract between the Owner and the Project Architect, the General Contractor or such other contractors or consultants, as the case may be. The Development Manager is not guaranteeing to the Owner that the Project Architect, the General Contractor or any other contractors or consultants retained by the Owner will perform its obligations under its contract with the Owner. The Development Manager shall not be obligated to perform (and shall not be liable to the Owner for damages for a failure to perform) its obligations under this Agreement if, and to the extent that, Development Manager is prevented from performing, or is delayed in performing its obligations by a material default by the Owner in performing its obligations under this Agreement or the respective contracts between the Owner and the Project Architect, the General Contractor or any other contractors or consultants retained by the Owner, or by any other circumstances beyond the reasonable control of the Development Manager. Under no circumstances shall Development Manager be responsible to Owner, Contractor, Project Architect or any other person or entity for damages, delay damages, change orders, extra work, defective design, defective work, or the violation of applicable law or regulations by Owner, Contractor or Project Architect.

2.3 **Professional Services.** The Development Manager shall not be required to provide professional services which constitute the practice of architecture, engineering, construction contracting, brokerage or law, unless the Development Manager has specifically agreed in writing to provide such services. In such event, the Development Manager shall cause such services to be performed by appropriately licensed professionals.

SECTION 3. OWNER'S RESPONSIBILITIES TO DEVELOPMENT MANAGER

3.1 **Provide Information.** The Owner shall provide full and complete information regarding the Project in its possession to the Development Manager in a timely manner as required by the Development Manager to perform its obligations under this Agreement. Such information shall include, but not be limited to, the following items regarding the Project:

(a) Survey, legal description, reports (e.g., traffic, environmental, geotechnical, physical, etc. copies of easements;

(b) copies of pending and executed leases;

(c) a detailed breakdown of all costs incurred and contracts entered into by the Owner prior to and including the date of this Agreement and from the date of the Agreement until termination of the Agreement; and

(d) other reports reasonably requested by the

Development Manager.

3.2 Update Budgets. The Owner will work with the Development Manager to establish and periodically update the Final Budget for the Project, based on consultation with the Owner, the Project Architect, the Contractor and the Owner consultants which shall include reasonable contingencies for changes in the Project and other costs which are the responsibility of the Owner.

3.3 Environmental Review. The Owner agrees to defend, indemnify and hold harmless the Development Manager from and against any and all claims, suits, causes of action or liability of any kind whatsoever with respect to the existence of hazardous or unsafe materials, substances or conditions on the Property, including any hazardous or unsafe materials or substances removed there from before or after the date of this Agreement, except for hazardous or unsafe materials or substances brought on the site by Development Manager or its employees or hazardous conditions at the site caused by the willful or negligent acts or omissions of Development Manager or its employees.

3.4 Payment of Obligations. The Owner agrees to pay all amounts payable to the General Contractor, the Project Architect and other persons who perform services or provide labor or materials in connection with the Project and construction and occupancy of the Project at the time such amounts are due and payable under the respective contracts between the Owner and the General Contractor, the Project Architect and other persons. The Owner's obligations under the preceding sentence are not conditioned on, and are independent of, the availability of funds under the Owner's development or construction loan(s) for the Project, but are conditioned on timely receipt of information from the Development Manager with respect to amounts payable to the General Contractor and other contractors whose work the Development Manager is obligated by this Agreement to supervise.

3.5 Field Office. The Owner and the Development Manager shall determine the requirements for a field office at a later date as no accommodations are included for the same in the project fee at this time.

SECTION 4. DEVELOPMENT MANAGER'S FEE

4.1 Compensation to be paid to the Development Manager.

4.1.1 Development Manager's Fee. In consideration for the scope of the Development Services as described in Recital C, the Owner shall pay to the Development Manager a fee (the "Development Manager's Fee") as described in 4.2 subject to the provisions of Section 4.4 (relating to delay due to litigation or arbitration) and Section 6 (relating to termination). The fee shall be paid in installments as described on the Section 4.2 and shown on Attachment D when and as due, without regard to any rights of offset or recoupment, which are hereby waived by Owner

4.2 Payment of Development Manager's Fee. The Development Manager's Fee for each stage of the Project provided in Section 2.1 of this Agreement shall be payable to the Development Manager as described in Sections 4.2.1 through Section 4.2.3 and as shown on Attachment B. Should any stage duration decrease or increase as agreed upon by Development Manager and Owner, the prorata monthly fee for that stage will be adjusted accordingly. Should stages overlap due to the Project conditions, the fees for overlapping stages will be paid during per their prorata amounts for the overlapping months.

4.2.1 Approval Stage. During the Approval Stage, the Development Manager's Fee shall consist of $600,000 based on current development budget as shown in

Attachment A and the Development Services fee schedule shown in Attachment B. This fee shall be paid in a lump sum of $600,000.00 by the Owner to the Development Manager upon the signing of the Lease. The fee shall be payable no later than the tenth (10) day after the signing of the Lease.
If the Port Authority does not execute the lease and the Interim Agreement is terminated per Article 7 of the Interim Agreement, the Development Manager is not due the Approval Stage Fee.

4.2.2 **Construction Stage.** During the Construction Stage (based on 18 month schedule)which will commence with signing of the Lease Agreement between the Port Authority and the Owner, the Development Manager's Fee shall consist of $1,235,945.00 based on current development budget as shown in Attachment B and the Development Services fee schedule shown in Attachment E, which shall be paid by the Owner to the Development Manager in consecutive monthly installments of $68,663.61 per month for months 1-18 of a 18 month construction schedule. Each monthly fee shall be payable on the tenth (10) day of the month commencing upon the earlier of the receipt of Approved Construction Documents per Section 5.2 of Agreement of Lease between the Port Authority and the Owner or receipt of written permission by the Port Authority and Owner to commence construction and continuing thereafter until the tenth (10) day of the eighteenth month. The Development Services Agreement shall terminate at the end of the eighteenth month of the Construction Stage except as described in 4.2

4.4 **Additional Payment upon Extension Due To Litigation or Arbitration.** Notwithstanding anything in this Section 4 to the contrary, if, because of litigation or arbitration commenced by persons other than the parties hereto which delays the development and construction of the Project, final completion of the Project, as defined in the Construction Contract, shall extend beyond the date set forth for such completion in the Master Schedule adopted during the Approval Stage and approved by the Owner, Owner shall pay Development Manager $68,663.61 per month as additional fee, except to the extent that such delay or portion thereof is solely the fault of Development Manager. Additionally, the Owner shall reimburse the Development Manager on the first day of each month during such extension period for all out-of-pocket expenses pursuant to Section 4.6 hereof.

4.5 **Advances by the Development Manager.** The Development Manager shall not be obligated to make any advance to or for the account of the Owner, nor shall the Development Manager be obligated to incur any liability or obligation for the account of the Owner without assurance that the necessary funds for the payment thereof will be provided by the Owner; provided, however, that no part of the Development Manager's overhead or other expenses not specifically provided in this Agreement shall be payable by the Owner.

4.6 **Expenses to be Reimbursed.** In addition to the Development Manager's Fee, the Owner shall reimburse the Development Manager for all reasonable out-of-pocket costs and expenses paid or incurred by the Development Manager in performing its duties under this Agreement, whether or not such costs and expenses are included as line-items on the Final Budget ("Reimbursable Expenses"), without regard to any rights of offset or recoupment, which are hereby waived by Owner. The Reimbursable Expenses shall include, but are not limited to, the cost of blue prints, reproductions, travel, lodging, messenger and delivery services and any other reasonable out-of-pocket costs relating to the Project that, but for the provisions of this Agreement, would have been paid by the Owner, but shall not include insurance, the salaries and fringe benefits payable to the Development Manager's employees or any of the general overhead and administrative expenses

of operating the Development Manager's main office. The Development Manager shall submit to the Owner requests for reimbursement pursuant to this Section, accompanied by copies of invoices or other documentation reasonably substantiating the amount and purpose of the expenditures for which reimbursement is being requested. All requests for reimbursement that meet the requirements of this section 4.6 shall be paid by the Owner within _10_ days from the date that such requests are submitted to Owner by Development Manager.

4.7 **The Owner's Right to Terminate.** In addition to the provisions of Section 6, the Owner shall have the right, in the event the Owner elects at its sole discretion not to proceed with the Project, to terminate this Agreement, which termination shall be effective as of the date of the written notice delivered to the Development Manager. On the effective date of such termination, the Development Manager shall be entitled to receive the earned but unpaid portion of the Development Manager's Fee prorated to the date of termination and all Reimbursable Expenses incurred on or before the date of termination.

If the Owner recommences the Project as described in Section C of the Recitals within 24 months of the termination of this agreement as described in this section then this Agreement will be reinstituted.

SECTION 5. INSURANCE

5.1 **Development Manager's Insurance.** The Development Manager, at its sole cost and expense for which it shall not be reimbursed pursuant to Section 4.5, shall procure, obtain and maintain in effect throughout the term of this Agreement the insurance coverage for the Development Manager per section 5.13 of the Agreement of Lease between the Port Authority and the Owner

5.2 **Owner's Insurance.** The Owner or General Contractor through its agreement with the Owner, at its sole cost and expense, shall procure, obtain and maintain in effect throughout the term of this Agreement the insurance coverage per section 5.13 of the Agreement of Lease between the Port Authority and the Owner.

5.3 **Waiver of Subrogation.** Both the Development Manager and the Owner shall include in each of its policies of property damage insurance for the Project, a waiver of the insurer's right of subrogation against the other.

5.4 **Release of Development Manager.** The Owner hereby waives any right of recovery against the Development Manager, and any of the Development Manager's officers, directors, agents or employees, for any loss or damage to the Project caused by fire or other insured peril, including loss or damage caused by the negligent acts or omissions of the Development Manager.

SECTION 6. DEFAULT AND TERMINATION

6.1 **Default and Termination.** Each of the following shall constitute an "event of default " under this Agreement:

6.1.1 If the Owner or the Development Manager consents to the appointment of a Custodian of it or for all or substantially all of its property, or (iv) make a general assignment for the benefit of its creditors.

6.1.2 If the Owner or the Development Manager becomes unable to pay its debts when they come due or otherwise unable to perform its obligations under this Agreement or any Court other than a United States Bankruptcy Court (i) appoints a Custodian of the Owner or the Development Manager or for all or substantially all of its property, or (ii) orders the liquidation of the Owner or the

Development Manager, and the order or decree remains unstayed and in effect for 90 days. For purposes of this Section 6.1.2, the term "Custodian" means any receiver, trustee, assignee, liquidator or similar official.

6.1.3 The failure of the Development Manager to observe or perform any covenant, condition or agreement to be observed or performed by it under this Agreement for a period of ten days after receipt of a written notice from the Owner that specifies the failure and requests that the failure be remedied, unless the Owner agrees in writing to an extension of time prior to expiration of the 10-day period, provided, however, if the failure stated in the notice cannot be corrected with reasonable diligence within the applicable cure period, the time period for curing such default shall be extended if corrective action is instituted by the Development Manager within the applicable period and is being diligently pursued until the event of default is corrected.

6.1.4 The failure of the Owner to pay any amounts due the Development Manager on account of the Development Manager's Fee; provided, however, that the Development Manager shall have delivered to the Owner a written notice of the Owner's failure to pay and the Owner shall fail to remedy or correct such non-compliance within 15 days after receipt of such notice.

6.1.5 The occurrence of a foreclosure (or deed in lieu of foreclosure) of any mortgage or deed of trust encumbering the Project or a default in any lease that encumbers the project, in which event such occurrence shall be an event of default by the Owner.

6.2 **Termination.** Upon the occurrence of an event of default defined in Section 6.1 of this Agreement, the non-defaulting party may, at its option, upon giving written notice to the defaulting party, terminate this Agreement, which termination shall be effective as of the date of the notice delivered to the defaulting party. On the effective date of Termination, the Development Manager, in addition to its rights under Section 6.3 of this Agreement, shall be entitled to receive the earned but unpaid portion of the Development Manager's Fee (the earned amount shall be based on the actual monthly fees and are to include any deferred payments and fees for the earned work) prorated to the date of termination and all Reimbursable Expenses incurred on or before the date of termination.

6.3 **Other Remedies.** Upon termination of this Agreement due to the occurrence of an event of default defined in Section 6.1 of this Agreement, in addition to the right of the non-defaulting party to terminate this Agreement, the non-defaulting party shall be entitled to pursue whatever rights it may have at law or in equity, including, without limitation, a claim for damages suffered by reason of the default, except as limited by the provisions of this Agreement, including by not limited to the limitation of the Development Manager's liability as provided in Section 6.4 of this Agreement.

6.4 **Limitation on Development Manager's Liability**. Notwithstanding any other provision of this Agreement, the liability of the Development Manager to the Owner under this Agreement, including any liability for attorneys' fees under the terms hereof or applicable law, shall not exceed the amount of the Development Manager's Fee which has been actually paid by the Owner to the Development Manager as of the date on which any claim arises or the date on which this Agreement is terminated whichever is earlier.

6.5 **Mediation, Litigation and Forum Selection.** In the event that a dispute or claim shall arise with respect to this Agreement or any matter arising hereunder, then, as a condition precedent to any litigation, either party may

require that such dispute or claim be submitted to non-binding mediation before American Arbitration Association. If the parties are unable to resolve their dispute at mediation, then either party may institute litigation before a federal or state court of competent jurisdiction located in New York, New York. THE PARTIES AGREE THAT JURISDICTION AND VENUE SHALL LIE EXCLUSIVELY IN SUCH COURT AND NO OTHER.

SECTION 7. MISCELLANEOUS PROVISIONS

7.1 Indemnification.

7.1.1 Indemnification by Development Manager. The Development Manager hereby agrees to indemnify and hold the Owner harmless from and against any and all claims, actions, damages, losses and expense of any kind whatsoever(including reasonable attorney's fees) arising out of or in connection with the acts and omissions of the Development Manager, its officers, agents and employees, in connection with the performance of its obligations and duties under this Agreement, if and only if attributable to the gross negligence or willful misconduct of the Development Manager, subject to the provisions of Section 6.4 of this Agreement. If the Owner receives notice of any claim or action against the Owner with respect to which indemnification is to be sought from the Development Manager under this Section 7.1.1, the Owner shall promptly notify the Development Manager of the claim or action in writing.

7.1.2 Indemnification by Owner. The Owner hereby agrees at Owner's expense to defend, indemnify and hold the Development Manager harmless from and against any and all claims, actions, damages, losses and expense of any kind whatsoever (including reasonable attorney's fees) arising out of or in connection with claims brought by third parties for which the Development Manager is, or is alleged to be, contractually or legally responsible or for bodily injury or death suffered by such third parties in connection with the Property and the construction of the Improvements thereon, so long as such bodily injury or death is not due solely to the gross negligence or willful misconduct of the Development Manager. If the Development Manager receives notice of any claim or action against the Development Manager with respect to which indemnification is to be sought from the Owner under this Section 7.1.2, the Development Manager shall promptly notify the Owner of the claim or action in writing.

7.1.3 Exculpation. No constituent partner, member, shareholder or other person or entity in or agent of PA Developers LLC , Inc, nor any advisor, trustee, director, employee, beneficiary, shareholder, member, partner, participant, representative or agent of any partnership, limited liability company, corporation, trust or other entity that has or acquires a direct or indirect interest in PA Developers LLC, Inc shall have any personal liability, directly or indirectly, under or in connection with this Agreement, or any amendment or amendments to this Agreement made at any time or times, heretofore or hereafter, and [other party] and its successors and assigns shall look solely to PA Developers LLC assets for the payment of any claim or for any performance, and [other party], on behalf of itself and its successors and assigns, hereby waives any and all such personal liability.

7.2 Independent Contractor. The Development Manager, in accordance with its status as an independent contractor, covenants and agrees that it will conduct itself consistent with such status, that it will neither hold itself out as nor claim to be an officer or employee of the Owner by reason of this Agreement, and that it will not, by reason of this Agreement, make any claim, demand, or application to or for any right or privilege applicable to an officer or employee of the Owner, including, but not limited to, worker's compensation coverage, unemployment insurance benefits, social security coverage or

retirement plan membership or credit.

7.3 Title to Reports and Documentation; Disclosure. As between the parties to this Agreement, title to all feasibility reports, plans, designs, architectural and engineering studies, soil and water tests, topographical studies, land surveys, market surveys, and other documents of any nature and kind developed in the course of the planning and construction of the Improvements shall be and remain exclusively vested in the Owner.

7.4 Assignment. The Development Manager shall not assign either its right, title and interest under this Agreement, or any of its obligations under this Agreement, either voluntarily or involuntarily, whether by operation of law or otherwise, to any other party, without the prior written consent of the Owner which will not be unreasonably withheld. The Owner shall not assign either its right, title or interest under this Agreement or any of its obligations under this Agreement, either voluntarily or involuntarily, whether by operation of law or otherwise, to any other party without the prior written consent of the Development Manager which will not be unreasonably withheld.

7.5 Owner's Consent. Whenever the consent or approval by the Owner is required or permitted by this Agreement, the Owner agrees as follows: (i) it will not unreasonably withhold, delay or condition its consent or approval; and (ii) if, within five Business Days after receipt of a written request from Development Manager for the Owner's approval, the Owner fails to approve or to disapprove in writing the particular matter for which its approval was requested, the Owner shall be conclusively deemed for purposes of this Agreement to have approved the matter in question. As used in this Agreement the term "Business Day" shall mean any day other than Saturday, Sunday or a day on which national banks in Washington D.C. are not open for business.

7.6 Records. The Development Manager shall keep complete records and implement necessary controls for proper financial management under this Agreement, except that Development Manager shall not handle or be responsible for the Owner's funds. The Owner and its authorized representatives shall be afforded access during normal business hours and upon reasonable advance notice to Development Manager's records relating to the performance of the Construction Services (including correspondence, instructions, drawings, receipts, memoranda and purchase orders) under this Agreement. The Development Manager shall preserve and maintain all such records for a period of two years after the Certificate of Occupancy for project as described in Section C of the Recital.

7.7 Notices. Any notice required or desired to be sent under this Agreement shall be written and hand delivered or sent by registered or certified mail, return receipt requested, postage prepaid, to the parties to this Agreement at the following addresses, or at such other address as either party hereto may designate from time to time by written notice to the other party given pursuant thereto:

Owner: Development Manager:

7.8 Development Manager and Owner Representatives. Whenever under the provisions of this Agreement the approval of the Development Manager or the Owner is required or the Development Manager or the Owner is required to take some action at the request of the other, such approval or such request shall be given for the Development Manager by its Authorized Representative (as defined below) and for the Owner by its Authorized Representative; and any party to this Agreement shall be authorized to act on any such approval or request. "Authorized Representative" shall mean the person or persons at the time designated to act

on behalf of the Development Manager or the Owner, as the case may be, by written certificate furnished to the other party specifying such person or persons and signed by a duly authorized officer or member-manager of the Development Manager or the Owner, as the case may be.

7.9 **Partial Invalidity.** In the event that any one or more of the phrases, sentences, clauses, or paragraphs contained in this Agreement shall be declared invalid by unappealable order, decree, or judgment of any court, this Agreement shall be construed as if such phrases, sentences, clauses, or paragraphs had not been inserted in this Agreement, it being intended by the parties that the remaining provisions of this Agreement shall remain in full force and effect notwithstanding such invalidation.

7.10 **Headings.** The headings in this Agreement are inserted for convenience only and are not to be used in construing or interpreting any of the provisions of this Agreement.

7.11 **Attorneys Fees.** If either party employs an attorney or attorneys to enforce any of the provisions of this Agreement, or to protect its interest in any manner arising under this Agreement, or to recover damages for the breach hereof, the non-prevailing party in any final judgment agrees to pay to the other party all reasonable costs, charges and expenses, including reasonable attorneys' fees and disbursements, expended or incurred in connection therewith at both the trial court and appellate court levels.

7.12 **Survival.** Each term, covenant and agreement contained herein shall survive any expiration or either termination of this Agreement and shall remain in full force and effect as between the Owner and the Development Manager notwithstanding any such expiration or termination to the extent that any such term, covenant and agreement (i) has not been fully performed in accordance with this Agreement prior to such expiration or termination, or
(ii) contemplates performance by either party hereto subsequent to such expiration or termination.

7.13 **Waiver of Breach**. No failure by the Development Manager or the Owner to insist upon the strict performance of any covenant, agreement, term, or condition of this Agreement, or to exercise any right or remedy consequent upon a breach thereof, shall constitute a waiver of any such breach thereof, or any subsequent breach of such covenant, agreement, term or condition. No waiver of any breach shall affect or alter this Agreement, but each and every covenant of this Agreement shall continue in full force and effect with respect to any other then existing or subsequent breach thereof.

7.14 **Entire Agreement**. This Agreement and the Exhibits attached hereto constitute the entire agreement between the Owner and the Developer with respect to the subject matter hereof, and supersedes and replaces all prior or contemporaneous discussions, negotiations, letters, memoranda or other communications, oral or written, with respect to the subject matter hereof. This Agreement may only be subsequently modified or amended in a writing signed by both the Owner and the Development Manager.

7.15 **Governing Law**. This Agreement shall be construed in accordance with and governed by the laws of the State of New York, without regard to the conflicts of laws principles thereof

Development Manager: Clearview Management Services LLC
By: RA Developers, LLC, Sole Member
By: _____
Aaron Malinsky Manager

next page
Signatures continue

Title:

Development Services Agreement. July 16, 2010

Owner: George Washington Bridge Bus Station Venture LLC

By: PA-GW B, LLC, sole Member

By: _____

Aaron Malinskyi, Manager

Title:

Cc:

Attachment A

REDEVELOPMENT BUDGET - BROADWAY MARKETPLACE							
SITE ACQUISITION	Matrix	West ($)	West (/sf)	East ($)	East (/sf)	TOTAL ($)	Total (/sf)
Rentable Square Footage		*98,350*		*30,925*		*129,275*	
		76.1%		23.9%			
Brokers Fee (Port Authority)		$342,552	$3.48	$107,648	$3.48	$450,000	$3.48
Equity Fee to Investor		$0	$0.00	$0	$0.00	$0	$0.00
Ground Lease Payments							
Payable at Signing of Interim Agreement		$760,781	$7.74	$239,219	$7.74	$1,000,000	$7.74
Payable on Lease Execution		$639,056	$6.50	$200,944	$6.50	$840,000	$6.50
Payable 6 Months after Lease Exec.		$1,574,817	$16.01	$495,183	$16.01	$2,070,000	$16.01
Payable 18 Months after Lease Exec.		$1,574,817	$16.01	$495,183	$16.01	$2,070,000	$16.01
Payable at CofO		$349,959	$3.56	$110,041	$3.56	$460,000	$3.56
Total Ground Lease Advance Payment		$4,899,431	$49.82	$1,540,569	$49.82	$6,440,000	$49.82
Port Authority Administrative Fee		$426,038	$4.33	$133,962	$4.33	$560,000	$4.33
Total Site Acquisition Costs		$5,667,821	$57.63	$1,782,179	$57.63	$7,450,000	$57.63
HARD COSTS							
General Requirements		$155,600	$1.58	$48,927	$1.58	$204,527	$1.58
Environmental Abatement		$517,719	$5.26	$162,791	$5.26	$680,510	$5.26
Demolition		$745,109	$7.58	$234,291	$7.58	$979,400	$7.58
Structural		$2,148,611	$21.85	$675,606	$21.85	$2,824,217	$21.85
Misc Metal		$361,143	$3.67	$113,557	$3.67	$474,700	$3.67
Thermal and Moisture Protection		$184,946	$1.88	$58,154	$1.88	$243,100	$1.88
Exterior Wall		$3,608,077	$36.69	$1,134,518	$36.69	$4,742,595	$36.69
Interior Partitions		$578,379	$5.88	$181,865	$5.88	$760,244	$5.88
Specialties		$110,313	$1.12	$34,687	$1.12	$145,000	$1.12
Vertical Transportation		$365,175	$3.71	$114,825	$3.71	$480,000	$3.71
Plumbing		$926,744	$9.42	$291,404	$9.42	$1,218,148	$9.42
Sprinklers		$925,621	$9.41	$291,051	$9.41	$1,216,672	$9.41
HVAC		$3,803,906	$38.68	$1,196,094	$38.68	$5,000,000	$38.68
Electrical		$3,505,030	$35.64	$1,102,116	$35.64	$4,607,146	$35.64
Indirect		$217,844	$2.21	$68,498	$2.21	$286,342	$2.21
Upgrade Subway Entrance		$76,078	$0.77	$23,922	$0.77	$100,000	$0.77
Total Base Building Costs		$18,230,298	$185.36	$5,732,303	$185.36	$23,962,601	$185.36
Gym/Retail 3rd Floor East Building		$0	$0.00	$3,090,920	$99.95	$3,090,920	$23.91
Sub-Total Retail		$18,230,298		$8,823,223		$27,053,521	
Tenant Improvements - Marshall's		$3,560,190	$36.20	$0	$0.00	$3,560,190	$27.54
DV Contribution to PANYNJ Vertical Transportation		$1,944,140	$19.77	$611,312	$19.77	$2,555,452	$19.77
Common Area Construction		$1,190,915	$12.11	$374,469	$12.11	$1,565,384	$12.11
Contribution from PANYNJ for Common Areas		-$380,391	-$3.87	-$119,609	-$3.87	-$500,000	-$3.87
Allowances		$1,107,698	$11.26	$348,302	$11.26	$1,456,000	$11.26
Value Engineering (see VE Tab)		-$1,066,216	-$10.84	-$335,259	-$10.84	-$1,401,475	-$10.84
Tenant Improvements - Retail		$1,671,615	$17.00	$1,391,625	$45.00	$3,108,240	$24.04
Tenant Allowance - Retail		$0	$0.00	$0	$0.00	$0	$0.00
Sub-total Retail Improvements/Other		$8,027,950		$2,270,840		$10,343,791	
Sub-total Hard Costs		$26,258,249		$11,094,063		$37,397,312	$289.28
General Conditions		$1,115,261	$11.34	$350,681	$11.34	$1,465,942	$11.34
S/M - Construction Management fee		$365,175	$3.71	$114,825	$3.71	$480,000	$3.71
Insurance - Subguard (Bonding Costs)	1.25%	$354,027	$3.60	$111,320	$3.60	$465,347	$3.60
CCIP	3.20%	$906,310	$9.22	$284,978	$9.22	$1,191,288	$9.22
Construction Management Fee		-$1,246,505	-$12.67	-$391,949	-$12.67	-$1,638,454	-$12.67
Builder's Risk - Developer	0.20%	$56,644	$0.58	$17,811	$0.58	$74,455	$0.58
Payment & Performance Bond (P&P)	1.20%	$339,866	$3.46	$106,867	$3.46	$446,733	$3.46
Surveying/Existing		$100,000	$1.02	$100,000	$3.23	$200,000	$1.55
Sub-Total Construction Soft Costs		$1,990,778	$20.24	$594,533	$22.46	$2,685,311	$20.77
Contingencies							
Hard cost contingency		$1,524,705	$15.50	$479,426	$15.50	$2,004,131	$15.50
Contingency		$1,524,705	$15.50	$479,426	$15.50	$2,004,131	$15.50
TOTAL HARD COSTS		$29,773,782	$302.73	$12,268,021	$396.70	$42,086,754	$325.56
SOFT COSTS							
Architectural & Engineering		$4,379,039	$44.53	$1,376,937	$44.53	$5,755,976	$44.53
Skanska preconstruction work		$164,012	$1.67	$51,571	$1.67	$215,583	$1.67
Marketing		$118,858	$1.21	$37,374	$1.21	$156,232	$1.21
Legal		$980,436	$9.97	$308,287	$9.97	$1,288,723	$9.97
Leasing Commissions		$2,154,813	$21.91	$677,556	$21.91	$2,832,369	$21.91
Developers Fee		$1,396,753	$14.20	$439,192	$14.20	$1,835,945	$14.20
Pre-Development General Liability Insurance		$29,218	$0.30	$9,187	$0.30	$38,405	$0.30
Title Insurance		$0	$0.00	$0	$0.00	$0	$0.00
Closing Costs		$1,198,231	$12.18	$376,769	$12.18	$1,575,000	$12.18
recordation fees	3.00%	$1,483,523	$15.08	$466,477	$15.08	$1,950,000	$15.08
Soft Cost Contingency		$595,244	$6.05	$187,168	$6.05	$782,412	$6.05
TOTAL SOFT COSTS		$12,500,127	$127.10	$3,930,518	$127.10	$16,430,645	$127.10
FINANCING COSTS							
Debt Service During Construction	$4,967,487	$3,779,171	$38.43	$1,188,316	$38.43	$4,967,487	$38.43
Debt Service Reserves		$0	$0.00	$0	$0.00	$0	$0.00
TOTAL FINANCING COSTS		$3,779,171	$38.43	$1,188,316	$38.43	$4,967,487	$38.43
TOTAL PROJECT COST		$51,720,852	$526	$19,169,034	$620	$70,934,885	$548.71

George Washington Bridge Bus Station Redevelopment
Attachment B

Development Manager			
Fee Schedule			
			Cumulative accrued amount
Approval Stage	1	$ 600,000.00	$ 600,000.00
Total		$ 600,000.00	
	month	$ / month	Cumulative amount
Construction	1	$ 68,663.61	$ 68,663.61
Stage	2	$ 68,663.61	$ 137,327.22
	3	$ 68,663.61	$ 205,990.83
	4	$ 68,663.61	$ 274,654.44
	5	$ 68,663.61	$ 343,318.05
	6	$ 68,663.61	$ 411,981.66
	7	$ 68,663.61	$ 480,645.27
	8	$ 68,663.61	$ 549,308.88
	9	$ 68,663.61	$ 617,972.49
	10	$ 68,663.61	$ 686,636.10
	11	$ 68,663.61	$ 755,299.71
	12	$ 68,663.61	$ 823,963.32
	13	$ 68,663.61	$ 892,626.93
	14	$ 68,663.61	$ 961,290.54
	15	$ 68,663.61	$ 1,029,954.15
	16	$ 68,663.61	$ 1,098,617.76
	17	$ 68,663.61	$ 1,167,281.37
	18	$ 68,663.63	$ 1,235,945.00
Total		$ 1,235,945.00	

Exhibit C

Form of Property Management and Leasing Agreement

PREMISES:

BROADWAY MARKEPLACE
4211 BROADWAY, NEW YORK, NEW YORK

PROPERTY MANAGEMENT AND LEASING AGREEMENT

TABLE OF CONTENTS

Page

ARTICLE I APPOINTMENT AND TERM 31

1.1 Appointment 31
1.2 Term 52

ARTICLE II DUTIES OF MANAGING AGENT 52

2.1 Budgets and Schedules 52
2.2 Operations; Building Services 227
2.3 Maintenance 228
2.4 Enforcement of Leases 228
2.5 Compliance with Laws, Contracts 228
2.6 Records. 228
2.7 Reports and Statements 229
2.8 Annual Financial Statements and Tax Returns 2210
2.9 Legal Requirements 2210
2.10 Employment of Personnel 2211
2.11 Tax Certiorari, Abatements and Condemnation 2212
2.12 Leasing Agent 2212
2.13 Submission of Reports 2213
2.14 Improvements 2213
2.15 Supervision of Tenants 2213
2.16 The Port Authority of New York and New Jersey 13
2.17 General Duties 2213

ARTICLE III BANK ACCOUNTS, DISBURSEMENTS, ADVANCES 2213

3.1 Operating Account 2213
3.2 Tenant Security Deposit Account 2213
3.3 Advances 2214

ARTICLE IV AUTHORITY OF MANAGER 2214

4.1 Implementation of Budgets 2214
4.2 Contracts for Services 2214
4.3 Purchase of Supplies 2215
4.4 Insurance Claims 2215
4.5 Management Signature 2215
4.6 Limitation of Authority 2215

ARTICLE V COMPENSATION AND REIMBURSEMENT 2216

5.1 Management Fee ..... 22~~16~~
5.2 Payment of Management Fee ..... 22~~16~~
5.3 Leasing Commissions ..... 22~~16~~
5.4 Sole Compensation ..... 22~~16~~

ARTICLE VI THIRD PARTY CONTRACT STANDARDS ..... 22~~16~~

6.1 Value ..... 22~~16~~
6.2 Contracts with Related Parties ..... 22~~17~~
6.3 Exculpation ..... 22~~17~~

ARTICLE VII INSURANCE, INDEMNIFICATION AND EXCULPATION ..... 22~~17~~

7.1 Property and Liability-Insurance ..... 22~~17~~
7.2 Indemnification by Owner ..... 22~~18~~
7.3 Manager Insurance ..... 22~~18~~
7.4 Exculpation ..... 22~~19~~
7.5 Indemnification by Manager ..... 22~~19~~
7.6 Settlement of Claims ..... 22~~19~~

ARTICLE VIII DURATION, TERMINATION AND DEFAULT ..... 22~~20~~

8.1 On Sale ..... 22~~20~~
8.2 Sale of Interest or Termination ..... 22~~20~~
8.3 Default and For Cause ..... 22~~20~~
8.4 Notices of Default and Termination ..... 22~~20~~
8.5 Obligations Upon Termination ..... 22~~20~~

ARTICLE IX GENERAL ..... 22~~21~~

9.1 Notices ..... 22~~21~~
9.2 Non-Discrimination 22
9.3 No Advertising 22
9.4 Further Assurances 22
9.5 Status Report 22
9.6 Successors and Assigns 22
9.7 Waiver ..... 22~~23~~
9.8 Additional Remedies ..... 22~~23~~
9.9 Attorneys' Fees ..... 22~~23~~
9.10 Entire Agreement ..... 22~~23~~
9.11 Severability ..... 22~~23~~
9.12 Terminology ..... 22~~23~~
9.13 Amendment ..... 22~~23~~
9.14 Counterparts ..... 22~~23~~
9.15 Governing Law ..... 22~~23~~

PROPERTY MANAGEMENT AND LEASING AGREEMENT

PROPERTY LOCATION: 4211 Broadway, New York, New York

This Management and Leasing Agreement ("Agreement") is dated as of the 16th day of July 2010, by and between George Washington Bridge Bus Station Development Venture LLC, ("Owner"), and Manager: Clearview Management Services

WITNESSETH:

WHEREAS, Owner is the lessee of the Leased Premises (as defined in the Agreement of Lease between The Port Authority of New York and New Jersey and George Washington Bridge Bus Station Development Venture LLC- the "Master Lease") including improvements, located at 4211 Broadway, New York, New York (the George Washington Bridge Bus Station). These Master Leased Premises and the other improvements thereon are the subject of this Agreement and are hereinafter collectively referred to as the "Property".

WHEREAS, Owner desires to have the Property managed and operated in a first class, professional manner. Manager has the commercial real estate management and operational expertise and capability to perform the services described herein and to administer the Property in a first class, professional manner.

NOW, THEREFORE, incorporating the foregoing recitals, in consideration of the mutual promises and covenants herein contained and for other valuable consideration, the receipt and adequacy of which are hereby acknowledged, Owner hereby employs Manager, on the terms and conditions contained herein, to rent, lease, manage, and direct the operations of the Property, and Manager hereby accepts said employment on the terms and conditions contained herein. The management by Manager provided for under this Agreement shall extend to the Property, managing the obligations set forth in the Master Lease and to any equipment and mechanical systems which are or shall be used or operated in connection therewith.

ARTICLE I

APPOINTMENT AND TERM

1.1 Appointment.

(a) Manager hereby acknowledges that the Property is owned by the Port Authority of New York and New Jersey. As of the date hereof, Owner is the lessee of the Property. Owner hereby appoints Manager, as an independent contractor for the operation, management, improvement, leasing of the Property and complying with the reporting, maintenance, capital repair, insurance, notice obligations as well as other management obligations more fully described in the Master Lease upon the terms hereinafter set forth. Manager hereby accepts such appointment on the terms hereinafter set forth, and agrees to furnish or arrange for and manage the services of its organization or other organizations for the operation and management of the Property.

(b) This Agreement shall not be construed to create a contractual relationship of any kind between the Manager and any person or entity other than the Owner. Under no circumstances shall Manager be regarded as the Owner, Developer, Contractor, Architect or Engineer of the Project. The Owner expressly recognize that: (a) the Manager may have substantial other business and real estate activities ; (b) the Manager may engage for his, her, or its own account and for the accounts of others in other businesses or real estate activities, even if such businesses or activities compete directly with Company business or activities, and the Owner shall not have any rights in or to any such independent business or activity or the income or profits derived therefrom (c) the Manager is an independent contractor but some of its officers and/or employees are also investors directly or indirectly in the Owner.

1.2 Term. This Agreement shall be effective as of the first business day following the date hereof, and shall continue in full force and effect through the third anniversary of the date hereof. Thereafter, this Agreement shall be subject to annual renewal by Owner on the terms and conditions hereof, subject to termination on the terms provided in Article VIII hereof.

ARTICLE II

DUTIES OF MANAGING AGENT

2.1 Budgets and Schedules. (a) On or before November 1 of each year, Manager shall prepare and submit to Owner for its consideration and approval (i) a proposed operating budget (the "Operating Budget"), (ii) a proposed capital improvement budget (the "Capital Improvement Budget") and (iii) a proposed Leasing Schedule and Tenant Improvement Schedule (as those terms are hereinafter defined) for the next succeeding calendar year.

(b) The format of the Operating Budget shall contain at least the following information:

(i) the projected income and receipts from the Property;

(ii) operating expenses (including without limitation, advertising and promotional expense) with (A) each such operating expense set forth in reasonable detail, (B) each category of expense listed as a separate line and (C) each Non-Recurring Controllable Expense listed on a separate line and labeled as a Non-Recurring Controllable Expense. "Non-Recurring Controllable Expenses" shall mean each Controllable Expense (items of expense other than the following uncontrollable expenses: real estate taxes, assessments, utility charges, insurance premiums for insurance approved by Owner, interest on borrowings of Owner, and leasing commissions and management fees pursuant to this Agreement or other agreements approved by Owner ("Uncontrollable Expenses")), which is not incurred on a weekly, monthly, semiannual or other regular basis, but which, during any calendar year is anticipated to be incurred once or on an irregular basis.

(c) The Capital Improvement Budget shall be in a format that shall contain at least the following information:

(i) reasonably detailed description of all Capital Improvements (which term shall mean all alterations, replacements, additions or improvements of or to the Property the cost of which for Federal income tax purposes may not be deducted as an expense but must be capitalized and amortized over (A) the life of such alteration, replacement, addition or improvement or (B) in the case of any such improvement made to prepare space in the Property for occupancy by the tenant of such space (a "Tenant Improvement"), over the term of such tenant's lease), other than Tenant Improvements which Manager desires to make to the Property during the next succeeding calendar year and the estimated cost thereof;

(ii) Each Capital Improvement shall be listed on a separate line;

(iii) A separate line item for a contingency allowance, if appropriate; and

(iv) A separate line item for such insurance as is generally obtained in connection with comparable construction projects, if appropriate.

(d) The Leasing Schedule and the Tenant Improvement Schedule shall be in a format that shall contain at least the following information:

(i) The leasing schedule (the "Leasing Schedule") shall set forth (A) all space at the Property which is then vacant or the leases of which will expire during the ensuing calendar year, (B) a minimum annual Effective Rent (as hereinafter defined) for such space (computed on a rentable square foot basis), (C) the maximum amount of any concessions or free rent to be offered to prospective tenants of such space, (D) the maximum rate of any leasing commissions to be incurred in leasing such space (expressed as a percentage of a year's rents), and (E) the maximum lease term(s) to be offered to prospective tenants of such space; and

(ii) A schedule (the "Tenant Improvement Schedule") showing the maximum amount per rentable square foot to be expended by Owner for Tenant Improvements in respect of such space.

As used herein, the term "Effective Rent" shall mean the rent for such space, calculated by taking into account not only the stated fixed annual rent but also, to the extent applicable, percentage rent, escalations, pass-throughs and increases based on porter's wage rates or a consumer price index (with operating expense and real estate tax bases or, if no such bases are provided for, operating expenses and real estate taxes for the year in which the term of the lease in question commences, subtracted from base rents in making such calculation, so that rents under different leases may be compared without regard to differing base years and/or base amounts), rent concessions, free rent and the cost per rentable square foot of any Tenant Improvements made or to be made to such space (such rent concessions, free rent, and the cost of such Tenant Improvements to be amortized over the term (not including extension or renewal terms) of the lease in question).

(e) Manager shall consult with Owner as to the assumptions used in preparing the budgets, and shall make revisions or updates as required by Owner or by changes in assumptions. Owner shall review the budgets submitted by Manager and revisions or updates thereto, and shall use good faith efforts to notify Manager of Owner's approval of the budgets, or

direction to Manager to revise one or more of the budgets, within thirty (30) days after submission of same to Owner; provided, in no event will Owner be deemed to have approved the budgets in the absence of actual approval thereof. Manager shall promptly make such revisions as directed and resubmit the revised budget(s) to Owner for its review and approval. All budgets as are approved by Owner are referred to as the "Approved Budgets".

(f) Upon Owner's approval of the Operating Budget (each such budget, an "Approved Operating Budget") (as the same may be revised or updated in accordance with Section 2.1 (e) hereof), Manager may make the expenditures provided for therein. Manager shall obtain the prior written approval of Owner for any expenditure or expenditures that:

(i) in the case of a Controllable Expense that is not a Non-Recurring Controllable Expense ("Recurring Controllable Expense"), would cause the amount of such expenditure taken together with the aggregate of all other expenditures made prior to or simultaneously with such expenditure during the then current calendar year on account of Recurring Controllable Expenses to exceed by more than 5% the aggregate amount of Recurring Controllable Expenses provided for in such Operating Budget for the period commencing on January 1 of such calendar year, or

(ii) in the case of a Non-Recurring Controllable Expense, would cause the expenditure for that particular expense to exceed by more than 5% the amount budgeted therefore.

(g) Upon Owner's approval of the Capital Improvement Budget (as the same may be revised or updated in accordance with Section 2.1 (e) hereof), Manager may make the Capital Improvements set forth in said budget and pay the cost thereof. Manager shall obtain the prior written approval of Owner before commencing or proceeding with such Capital Improvement if the cost of making same, together with the cost of making all other Capital Improvements to the Property which are provided for in such budget and which are actually undertaken by Owner would exceed by more than 5% the aggregate budgeted cost for all such Capital Improvements. Upon request of Owner, Manager shall also submit to Owner for its approval, prior to undertaking a Capital Improvement (except if such Capital Improvement constitutes a Tenant Improvement within the Tenant Improvement Schedule or an Emergency Expense (as hereinafter defined)) (A) the plans and specifications therefore, (B) the identity of the contractor(s) and/or construction manager engaged by Manager to perform such Capital Improvement, and (C) the construction contract(s) and/or construction management agreement to be entered into by Manager and such contractor(s) and/or construction manager. If Owner so requests, then after Owner approves any such plans and specifications, such plans and specifications (as the same may be modified, subject to the prior written consent of Owner with respect to any material modification) shall be used in performing such Capital Improvement and shall be delivered to the general contractor or construction manager performing or supervising the same and incorporated into the contract between Manager and such general contractor or construction manager.

(h) If at the beginning of any calendar year, the Capital Improvement Budget or the Operating Budget, or the amount provided for any Non-Recurring Controllable Expense in

the Operating Budget, or any item in the Capital Improvement Budget shall not have been approved by Owner, then:

(i) any items in the Capital Improvement Budget, and the amount of the Non-Recurring Controllable Expenses in such Operating Budget, which have been so approved shall become operative immediately;

(ii) with respect to such Operating Budget, Manager shall be entitled to expend, in respect of the Recurring Controllable Expenses in the then current calendar year, an amount equal to the budgeted amount for the immediately preceding calendar year (as adjusted by the percentage of increase, if any, in the Consumer Price Index for New York-New Jersey, All Urban Consumers, between the current year and the immediately preceding calendar year); provided, however, that if any contract approved by Owner provides for an automatic increase in costs after the beginning of the then current calendar year, then Manager shall be entitled to expend the amount of such increase.

(i) Owner's prior written consent shall not be required to pay Uncontrollable Expenses, notwithstanding that such expenses may exceed the amount budgeted therefore in the Approved Operating Budget; provided, however, that Manager shall promptly submit to Owner for its approval a revision to the Approved Operating Budget to reflect properly the actual amount of Uncontrollable Expenses.

(j) Upon Owner's approval of the Leasing Schedule and Tenant Improvement Schedule, Manager may, subject to Section 2.12(a) hereof, negotiate leases on behalf of Owner for the space provided for therein and make Tenant Improvements thereto, if any, pursuant to such schedules. Manager shall not, without the prior written consent of Owner:

(i) Offer for rent any such space at an Effective Rent which is less than the minimum Effective Rent provided for in the approved Leasing Schedule; or

(ii) Offer for rent any spaces under leases which do not provide for either annual real estate tax and operating expense escalation, or increases based on consumer price index, and, if applicable, percentage rent; or

(iii) (A) offer concessions or free rent to prospective tenants thereof in excess of the amounts provided therefore in the approved Leasing Schedule, or (B) agree to perform Tenant Improvements for such space costing more than the maximum amount therefore in the approved Tenant Improvement Schedule; or

(iv) incur leasing commissions in respect of such space at rates which exceed those set forth in the approved Leasing Schedule; or

(v) negotiate a lease for such space or portion thereof for a term, including renewal terms, either shorter or longer than that provided therefore in the approved Leasing Schedule; or

(vi) negotiate a lease upon terms that do not comply with the requirements of Owner's mortgage financing for the Property.

(k) Upon Owner's approval of the Tenant Improvement Schedule and the other items required to be approved by Owner pursuant to Section 2.1(g) with respect to Capital Improvements, Manager may commence the Tenant Improvements provided for therein pursuant to the lease providing for such Tenant Improvements:

(l) If in the reasonable judgment of Manager, any Capital Improvement must be undertaken, or any operating cost incurred, immediately in order to protect the Property or any portion thereof from imminent harm, to avoid accident or imminent injury to individuals or to cure any immediately hazardous violations of law, Manager shall use diligent efforts to notify Owner at least 24 hours in advance of the necessity of undertaking such Capital Improvement or incurring such operating cost; provided, however, that Manager shall be authorized to make such Capital Improvement or to incur such operating expense, without regard to the Approved Budget and without first securing the approval of Owner, provided that the aggregate amount incurred or to be incurred is less than $100,000 (each such expenditure being hereinafter referred to as an "Emergency Expense"). Manager shall in all events notify Owner promptly after the incurrence of any Emergency Expense.

(m) The budgets, schedules and proposals provided for in this Article 2, after approval by Owner, may be periodically revised with the prior written approval of Owner.

(n) With respect to any specific space at the Property that is then vacant or that is about to become vacant, Manager shall submit to Owner for its review and written approval proposed leasing terms, if such terms would differ in any respect from the Leasing Schedule and Tenant Improvement Schedule then in effect ("Owner's Lease Proposal"). The Owner's Lease Proposal shall contain the following information:

(i) (A) the minimum annual Effective Rent for such space (computed on a rentable per square foot basis), (B) the maximum amount of any concessions or free rent to be offered to prospective tenants of such space, (C) the maximum rate of any leasing commissions to be incurred in such space (expressed as a percentage of first year's rents), and (D) the maximum lease term(s), including renewal terms, to be offered to prospective tenants of such space; and

(ii) all the information required to be contained in a Tenant Improvement Schedule pursuant to Section 2.1(d) (ii) hereof.

(o) Upon Owner's approval of the Owner's Lease Proposal, Manager may, subject to Section 2.12(a) hereof, offer for lease the space in question pursuant thereto, and the Owner's Lease Proposal will constitute the standard for the leasing of such space and the provisions of Section 2.1(j)(i), (ii), (iii), (iv) and (v) hereof shall apply thereto, with the term "Lease Proposal" substituted for the terms "Leasing Schedule" and "Tenant Improvement Schedule."

(p) Upon request by Owner with reasonable advance notice, Manager will make available to Owner or any of its authorized representatives, at Manager's home office or at the Property, all books and records maintained by Manager in connection with the Property, including without limitation the following information:

(i) the rental and other income received by Manager from the Property;

(ii) the status of Manager's efforts to rent vacant space or to extend expiring leases at the Property (including rents per-square-foot then being obtained; the names of prospective tenants with whom Manager is then in the course of active negotiations for the lease of any portion of the Property; the terms of any active proposals for the lease of all or any portion of the Property; the amount of any concessions or free rent being granted; the amounts of any leasing commissions being paid or incurred; and, the Tenant Improvement expense per-square-foot being incurred); and

(iii) a schedule of any vacancies which occurred at the Property during the calendar year in question which were not set forth on the approved Leasing Schedule (also including all such information in respect of such space that would have been included in the Leasing Schedule and Tenant Improvement Schedule if such space had been vacant prior to the preparation of such schedules).

(q) Manager shall be responsible for (a) safekeeping all leases, (b) providing written lease summaries which specify Owner's and tenant's obligations thereunder, (c) providing Owner with timely prior written notice of landlord's obligations under the leases as and when such obligations arise and (d) such other matters as Owner shall reasonably require.

(r) Manager shall prepare, or provide all such other information or documents (including copies of executed leases) to Owner promptly after request therefore.

(s) Manager shall use diligent and professional efforts to cause the Property to be maintained and operated in accordance with the terms of this Agreement, the Approved Budgets and the Master Lease.

(t) Notwithstanding section 2.1.(j), Manager can lease vacant space month to month in a lease format approved by Owner without prior written approval by Owner and to extent Tenant Improvements are not required

2.2 Operations; Building Services. Manager shall continually operate the Property in a first class manner, at least equal to that standard then currently followed by first class management firms in connection with other comparable buildings in New York, New York, and shall perform all acts necessary or desirable for the efficient operation of the Property. In connection with its operation of the Property, Manager shall provide or arrange for the provision to tenants of only those services stipulated in leases in existence as of the date of this Agreement, those stipulated in the standard form of lease approved by Owner, additional services customarily provided to tenants at additional charge to such tenants and such other services as Owner may approve in writing. Manager shall collect from tenants the charges for such services in accordance with the schedule established by Manager and approved by Owner or otherwise as provided in the leases. No charge for any other services shall be made without Owner's prior approval. If, in Owner's sole opinion, any such service is not customarily furnished or rendered in connection with the rental of real property in the area in which the Property is located, such service shall, at Owner's direction, be discontinued by Manager.

2.3 Maintenance. Manager shall maintain or cause the Property to be maintained, at Owner's cost, in accordance with standards required from time to time by Owner and/or by the applicable terms of leases in effect for portions of the Property, including but without being limited thereto, repairs to improvements, maintenance of mechanical systems and equipment, landscaping of the Property and such other normal maintenance, alteration and repair work as may be reasonably advisable or necessary, provided, however, that subject to Section 2.1 hereof, the expense to be incurred for such maintenance, alteration or repair shall be such expense, which is provided in the Approved Budget or is an Emergency Expense as provided in Section 2.1(m). Manager shall provide regular and systematic inspections of the Property in order to comply with any requirements concerning the management or maintenance of the Property imposed upon the Property or Owner by law, ordinance or regulation of governmental authority, or any obligation of which Manager has notice contained in insurance policies or other leases.

2.4 Enforcement of Leases. Manager shall take all proper and necessary action to enforce the terms of all leases and to timely and diligently collect all rents and other charges due from or payable by tenants and others in accordance with the leases and the authorized use of the Property, including promptly instituting any legal proceedings for the non-payment of rent. Owner authorizes Manager to request, demand, collect, receive and receipt for all such rent and other charges and, subject in each instance to the prior written approval of Owner, to settle or compromise the payment of such amounts. For individual settlements or compromises where the disputed amount is less than $50,000.00 Manager need not obtain the prior approval of Owner, but shall report such settlements on the next tenant report required to be submitted under Section 2.7(a). Manager shall see that all tenants of the Property are informed of any rules, regulations or notices which may be promulgated by Owner or Manager from time to time.

2.5 Compliance with Laws, Contracts. Unless Owner has notified Manager of Owner's intention to contest any of the following matters (in which event Manager shall assist Owner in undertaking such contest), Manager shall comply with and cause the Property to be kept, maintained, used and occupied in compliance with the following, as now in effect or as may be hereafter in effect: (i) all applicable laws, statutes and ordinances; (ii) all applicable rules, regulations and orders of any governmental authority or board of insurance underwriters (specifically including, but not by way of limitation, changes in building codes and fire regulations); (iii) any direction or occupancy certificate issued pursuant to any law, regulation or rule by any public officer; (iv) the provisions of any fire and casualty insurance policy or policies insuring Owner's interest in the Property of which Manager has notice (so as to not affect the insurance coverage or increase the premium rate therefore); and (v) the provisions of any mortgage, lease, agreement, or other instrument affecting the Property of which Manager has notice.

2.6 Records.

(a) Manager shall maintain in a manner customary and consistent with good accounting principles, practices and procedures, a comprehensive system of office records, books and accounts (which records, books and accounts shall be and remain the property of Owner); to the extent that particular items of expenditure or escalation thereof with respect to the Property

are billed separately to tenants of the Property, Manager shall maintain the Property books and records in a manner as to enable Manager to separately account for such items of expenditure on a calendar year basis and with respect to any other fiscal or calendar year period pursuant to any lease. The Property books, records, bills, receipts, vouchers, and time records shall be maintained at the principal office of Manager in New York, New York or at such other place as Manager and Owner shall mutually agree, and Owner shall at all reasonable times have access to such books, records and accounts and to all vouchers, files and other material pertaining to the Property and to the transactions contemplated by this Agreement. Manager shall maintain the records, books and accounts in a safe manner and separate from any records not having to do directly with the Property. Such books shall be kept on a calendar year basis and based on the accrual method of accounting (except as Owner may otherwise direct). No disclosure of financial data concerning the Property shall be made by Manager to any other persons unless specifically authorized in writing by Owner.

(b) Manager shall bear all costs of central accounting, personnel, accounting forms, off site data processing and other off-site accounting functions.

(c) Owner, its members and their representatives, shall have the right to audit such books, records and accounts during the period of this Agreement and for six years after termination of this Agreement. The cost of any such audit shall be borne by Owner. Any adjustments in amounts due and owing by either Owner or Manager shall be paid within thirty (30) days following receipt of the audit.

2.7 Reports and Statements. Manager shall prepare and submit to Owner the following reports and statements and shall include such supplementary statements as Owner shall reasonably request, which reports and statements shall be certified by Manager to be accurate in accordance with Manager's records.

(a) A tenant report, not later than twenty-one (21) days after the close of each calendar quarter, to include the space leased and vacated during the preceding calendar quarter, all the space leased and the tenants thereof, as of the end of the preceding calendar quarter, and the rental rate and status of rental payments of all the space leased as of the end of the preceding calendar quarter, direct and sublet space available for lease a list of tenant bankruptcies, and a list of pending litigation. Attached thereto if available, or subsequent to the submission of such tenant report, but in all events within 60 days after any lease or amendment is entered into, or renewal notice is received, shall be submitted true, correct and complete copies of (A) all leases, (B) abstracts of all leases, (C) all amendments to leases and (D) all notices renewing or extending leases received or entered into during the preceding quarter.

(b) A cash flow statement, not later than twenty-one (21) days after the close of each calendar quarter, for the preceding calendar quarter and the current year to date, with a comparison to the annual Operating Budget, the Capital Improvement Budget and the Tenant Improvement Budgets, as applicable, and an explanation of all major variances. The cash flow statement shall be supported by:

(i) a rent roll showing, by tenant, security deposits if any, cash collected and prepaid or accrued rents;

(ii) a cash disbursement journal;

(iii) a reconciliation of advanced operating funds;

(iv) a reconciliation of cash receipts to deposits;

(v) a reconciliation of security deposit accounts, if any;

(vi) a schedule of Capital Improvements.

(c) Promptly upon receipt thereof, a copy of all notices or statements received with respect to the bank accounts or insurance policies respecting the Property, or received from any governmental agency; provided, however, that items submitted shall exclude copies of any items that Owner agrees, in writing, may be excluded and copies of information bulletins, questionnaires and similar materials of general distribution.

(d) Prompt notification of all significant occurrences and circumstances affecting the Property, its operation or, in any manner, the interest of Owner in and to the Property. Manager shall promptly investigate and make a full written report as to all accidents or claims for damages relating to ownership, operation and maintenance of the Property which reports shall include any damage or destruction to the Property and the estimated cost of repair, and shall cooperate and make any and all reports required by an insurance company representing Owner or Owner's lenders or mortgagees in connection therewith.

(e) Promptly upon request therefore, any reports required to be delivered to Owner's mortgage lenders.

2.8 Annual Financial Statements and Tax Returns. Manager shall, at the expense of Owner, have an annual statement in compilation format prepared of the Property's books, records and accounts, and reviewed by a firm of certified public accountants selected by Owner. Manager shall furnish Owner with a copy of such annual compilation and review and a management letter, together with related financial statements and tax returns, as soon as reasonably practicable after the close of the calendar year. Upon request of Owner, Manager shall cooperate with Owner's certified public accountants in the preparation by such accountants of an audited annual statement of Property books, records and accounts. Such audit will be conducted at Owner's cost and expense; provided, that Manager's cooperation shall be without extra charge.

Manager shall prepare or cause to be prepared all returns and statements, if any, which must be filed on behalf of the Property with any taxing authority, and shall submit such returns and statements to Owner for approval prior to filing, and when approved by Owner make timely filing thereof. In addition, Manager will furnish Owner with a report setting forth in sufficient detail all such data and information regarding the business of the Property as shall enable Owner to prepare its federal, state and local tax returns.

2.9 Legal Requirements. Manager shall execute and timely file all forms, reports and returns required by law relating to the employment of personnel employed by Manager in connection with the Property. Manager shall cause to be filed each year appropriate

and timely real, personal, and other property tax returns for the Property. Manager shall promptly cause the issuance (or transfer, as the case may be) of any necessary business licenses and permits in the name of the Property and the maintenance thereof throughout the term of this Agreement. Manager shall notify Owner within three (3) Business Days of receipt of notification of any noncompliance, discovery of any noncompliance, or the taking of any action with respect to any noncompliance, whichever is earlier. If the action required to remedy any violation requires Owner's approval or if the violation might expose Owner or Manager to a fine, penalty or criminal liability, Manager shall immediately communicate with Owner in person, by telegram or telephone, so that arrangements may be promptly made to effect compliance.

2.10 Employment of Personnel.

(a) Manager shall have the duty, subject to the limitations set forth in Article VI of this Agreement, to investigate, hire, pay, supervise and discharge the personnel necessary to be employed in order properly to maintain and operate the Property in accordance with the obligations of Manager under this Agreement. Such personnel shall in every instance be deemed employees of Manager and not of Owner. Owner shall have the right to disapprove any such personnel. Manager shall be responsible for the compensation and fringe benefits for such employees and for all payroll taxes, F.I.C.A. and similar items with respect to such employees. Manager shall obtain and maintain Workmen's Compensation Insurance (including Employer's Liability Insurance for an amount not less than statutory limits) covering all employees of Manager employed in, on or about the Property to provide all statutory benefits under the Workers' Compensation Law of the state in which the Property is located, if any. Manager shall directly control the time and manner of the work and services to be performed by the employees of Manager, and Manager shall comply with all applicable federal, state and local laws, ordinances and regulations and union contracts applicable to such employees. Manager and each of the employees of Manager who handles or who is responsible for handling Owner's moneys shall be bonded by a fidelity bond (commercial blanket) in favor of, and in an amount specified by Owner, issued by a Company and in form reasonably acceptable to Owner, the copies of which bonds shall be promptly delivered to Owner, and the originals of which bonds shall be held by Manager.

(b) Manager shall make all necessary payroll deductions for disability and unemployment insurance, social security, withholding taxes and other applicable taxes, and prepare, maintain and file all necessary reports with respect to such taxes or deductions, and all other necessary statements and reports pertaining to labor employed in or about the Property.

(c) As part of the annual Operating Budget, Manager shall provide a schedule of employees to be employed "on-site" in the direct management of the Property, setting forth the number of employees and their titles and indicating which employees are bonded or are covered under Manager's comprehensive crime insurance policy.

(d) Notwithstanding the fact that personnel employed in or about the Property are to be employees of Manager, all wages, salaries, and other compensation paid to or on behalf of such personnel (except the compensation for personnel for their leasing activities and/or for secretarial, accounting, data processing or other "home office" type activities, which shall be deemed to be an expense of Manager), shall be considered operating expenses of the Property to

the extent the same are included in the Operating Budget approved by Owner or are otherwise approved by Owner in writing. Notwithstanding anything contained herein, if any such reimbursable personnel perform activities for properties other than the Property, the compensation for such personnel shall be fairly allocated between the Property and such other properties.

2.11 Tax Certiorari, Abatements and Condemnation. Manager shall, without charge or reimbursement, except for out-of-pocket expenses, and upon the request of Owner, render advice and assistance to Owner in the negotiation and prosecution of all claims for the increase, abatement or reduction of property taxes and other taxes affecting the Property and for awards for takings by eminent domain affecting the Property, including providing information as required to the taxing authorities and to attorneys and other consultants retained by Owner in connection therewith, but all condemnation and taxation matters shall be within the control and direction of Owner.

2.12 Leasing Agent. Owner hereby appoints Manager as the exclusive leasing agent for the Property. In connection therewith, Manager agrees to develop and implement strategies for the leasing of the Property and, in connection therewith:

(a) To negotiate leases and renewals of leases at appropriate times, it being understood that all inquiries with respect to leasing any portion of the Property shall be referred to Manager but it also being understood that all leases and renewals, and all amendments to leases, shall be approved by Owner and executed by and in the name of Owner in form previously approved by Owner. No agreement with any prospective tenant shall be binding upon Owner until and unless specifically consented to by Owner in writing, or unless Owner is deemed to have consented thereto, as follows: For any proposed lease which either (i) is not in accordance with the Leasing Schedule or (ii) demises premises in excess of 7,500 square feet, Manager shall submit to Owner for approval such proposed lease or amendment thereto executed by a proposed tenant, together with the commission schedule, if an outside broker is involved. Owner shall have a period of three (3) business days (or such longer period as shall be necessary if consent or a nondisturbance agreement is required to be obtained from Owner's lender) to notify Manager whether Owner consents to or rejects the lease and/or the commission schedule so submitted. If Owner fails to respond within such three (3) business day period, or such longer period as applicable, or if such lease is not required to be submitted to Owner pursuant to clauses (i) or (ii) above, then Owner's consent to the lease and the commission schedule shall be deemed to have been granted so long as the lease terms and the commission schedule are within the Leasing Schedule, and shall be deemed not to have been granted if the lease terms or the commission schedule are not within the Leasing Schedule. In no event shall Owner's lender's consent to a lease be deemed to have been granted unless Owner's loan documents specifically provide for deemed consent by the lender. Manager shall be authorized to execute in the name of and on behalf of Owner any lease and commission agreement as to which Owner's consent has been granted or deemed granted as set forth above. In the event Manager shall have a prospective tenant reference from another property in which Manager or any affiliate of Manager has a beneficial interest or which Manager or any affiliate of Manager manages, Manager shall declare its potential conflict of interest to Owner, and Owner shall determine if negotiations shall be undertaken by Manager, Owner, or an appointed third party. References of prospective tenants shall be investigated carefully by Manager;

(b) to prepare and submit to Owner for its approval, Lease Proposals as provided in Section 2.1(o) hereof;

(c) with Owner's prior approval and at Owner's expense, subject to the applicable Operating Budget therefore, to actively advertise and market the Property or portions thereof for rent, by means of periodicals, signs, plans, brochures and other means appropriate to the Property; and

(d) to arrange and conduct personal presentations and tours of the Property.

2.13 Submission of Reports. Each report required to be submitted hereunder by Manager to Owner shall be submitted to each of the Members.

2.14 Improvements. Manager shall supervise and coordinate the making of all improvements and additions of or to the Property (including Capital Improvements and Tenant Improvements), and shall assist Owner in determining which Capital Improvements shall be made at the Property.

2.15 Supervision of Tenants. Manager shall plan and coordinate the moving in and moving out of tenants and all construction, alteration and decoration work performed by tenants in order to insure minimum disturbance to the operation of the Property and to other parties then occupying or preparing to occupy space in the Property. Manager shall handle promptly complaints and requests from tenants and shall notify Owner of any material complaints made by tenants.

2.16 General Duties. In addition to the duties more particularly described in this Article II, Manager shall be responsible for the implementation of any and all decisions of Owner, upon its request, and for initiating and taking such other actions (not inconsistent with this Agreement) in the management and administration of the Property. Manager shall conform to the policies and programs of Owner and the scope of Manager's authority shall be limited to said policies.

ARTICLE III

BANK ACCOUNTS, DISBURSEMENTS, ADVANCES

3.1 Operating Account. All rents and other moneys received or collected by Manager with respect to the Property, other than tenants' security deposits, shall be deposited in an account ("Operating Account") in a bank or other money market fund approved by Owner entitled "_____" Expenditures which Manager is authorized to make by the terms of this Agreement or by other authorization of Owner may be made from the Operating Account.

3.2 Tenant Security Deposit Account. All tenant security deposits collected by Manager shall be deposited in a separate security deposit account (commingled among all tenants) in a commercial bank in an interest bearing account if required by law or by the terms of any lease, entitled "_____" Manager shall withdraw the statutory 1% fee from any interest-bearing account and shall remit the same to the Operating Account. Checks

drawn against the security deposit account may be made upon the signature of a duly authorized and bonded employee of Manager and shall be made only (a) to refund security deposits to tenants or (b) to deposit to the Operating Account any security deposit or any portion thereof that Owner shall be entitled to retain or apply under the applicable lease.

3.3 Advances. At the end of each month, Manager will remit to Owner from the Operating Account all amounts by which the balance in the Operating Account exceeds the anticipated shortfall, if any, of operating income as compared with operating expenses projected over the next month. In the event that there is a shortfall in the Operating Account projected for the next succeeding month and funds are not available in the Operating Account to cover such shortfall, Owner shall deposit in the Operating Account an amount equal to such projected shortfall, if approved by Owner in its sole discretion. Nothing in this Section 3.3 shall be construed to require Owner to advance to Manager any funds for costs or expenses in excess of, or not approved in, the Operating Budget, Capital Improvement Budget or Tenant Improvement Budget or otherwise authorized pursuant to this Agreement. Manager shall have no obligation to advance funds for the account of Owner.

ARTICLE IV

AUTHORITY OF MANAGER

4.1 Implementation of Budgets. Manager shall, subject to Section 4.2 with respect to service contracts, and to the provisions of Section 2.1(g) with respect to contracts for Capital Improvements, have the power and authority to enter into contracts on behalf of Owner and make expenditures as are required to implement the Approved Operating, Capital Improvement or Tenant Improvement Budgets, without the need for further approval by Owner, but only to the extent that any such expenditures and amounts required to be paid by Owner under such contracts are not in excess of the amounts provided therefore in the Approved Budget.

4.2 Contracts for Services. Manager shall have the power and authority, subject to the provisions of Section 2.1 hereof, to make contracts on behalf of Owner and at Owner's expense for vermin extermination, trash collection, cleaning service, security and utility services, or such of them as shall be necessary or advisable in the care, operation and maintenance of the Property or portions thereof. For all service contracts with an annual amount in excess of $100,000, Manager shall seek competitive bids from at least three (3) qualified service contractors approved by Owner, and shall select the lowest responsible bid. For all service contracts with an annual amount of $100,000 or less, Manager shall not be required to seek bids on an annual basis but shall enter into contracts with qualified service providers from a list pre-approved by Owner. Notwithstanding the foregoing, Manager shall seek bids from at least three (3) qualified service providers from a list pre-approved by Owner for all service contracts, regardless of size, at least once every three (3) years, and at least once every five (5) years with respect to the elevator service contract. Manager shall include in each such contract (i) that such contract shall be terminable by Owner and/or Manager with or without cause on not more than 30-day notice, and shall be automatically terminated on the sale of the Property and (ii) a provision that the contractor shall carry Workers Compensation Insurance in accordance with the laws of the State of New York and Employer's Liability Insurance applicable to and

covering all persons engaged in the performance of work at the Property and Manager shall satisfy itself that such insurance is in force and effect at all times under each such contract. Owner's prior written approval shall be required for (x) any service contracts proposed to be entered into with an affiliate of Manager, all of which shall be on arms'-length terms at rates not exceeding rates then generally charged by other qualified service providers for comparable services in the marketplace in which the Building is located, shall be terminable on not more than thirty (30) days notice and shall terminated automatically upon the termination of this Agreement; (y) all contracts which cannot be terminated upon thirty (30) days notice, and/or (z) any contract the entering into of which would require Owner's approval pursuant to Section 2.1.

4.3 Purchase of Supplies. Manager shall have the power and authority to purchase on behalf of Owner and at Owner's expense all equipment, tools, appliances, materials and supplies reasonably necessary or desirable for the care, maintenance and operation of the Property, all of which purchases shall be subject to the prior review and written approval of Owner if such purchases are not included in the Approved Operating Budget, and shall be used solely in connection with the Property. Manager shall maintain appropriate records for all such supplies, tools and equipment purchased hereunder by Manager for use in the care, maintenance and operation of the Property.

4.4 Insurance Claims. Manager shall promptly investigate and report to Owner and to the appropriate insurance carrier all accidents and claims for damage relating to or arising out of the ownership, operation or maintenance of the Property of which Manager shall become aware. Manager shall cooperate with Owner's insurance company in the settling of any insurance claims covered under Owner's insurance policies.

4.5 Management Signature. Unless otherwise directed by Owner, Manager shall have the power and authority to utilize substantially the following form in executing any documents or agreements which Manager is empowered to execute on behalf of Owner pursuant to powers granted in this Agreement or pursuant to other authorization by Owner:

_____

as Manager for _____,
for Property

By: _____
Name:
Title:

At Manager's request, Owner shall execute leases directly in the name of Owner rather than through execution by Manager.

4.6 Limitation of Authority. Notwithstanding any provision in this Article IV to the contrary, Manager shall not, without the prior written approval of Owner: (i) convey or otherwise transfer or pledge or encumber any property or other asset of Owner; (ii) retain attorneys on behalf of Owner, (iii) institute or defend lawsuits or other legal proceedings on behalf of Owner; (iv) terminate or accept the surrender of leases (except in accordance with any

guidelines approved by Owner for the enforcement of leases); (v) pledge the credit of Owner except for purchases made in the ordinary course of business of operating the Property or as otherwise contemplated pursuant to this Agreement; (vi) obligate Owner for the payment of any fee or commission to any real estate agent or broker except as set forth in Section 2.12(a); or (vii) borrow money or execute any promissory note or other obligation or security deed, security agreement, mortgage or other encumbrance in the name of or on behalf of Owner. The limitations set forth in the preceding sentence shall be in addition to all other restrictions on the authority of Manager set forth in this Agreement.

ARTICLE V

COMPENSATION AND REIMBURSEMENT

5.1 Management Fee. In consideration of the services to be rendered by Manager pursuant to this Agreement, and so long as this Agreement is in effect, or has not been previously terminated pursuant to the terms hereof, Manager shall receive as compensation for Manager's services hereunder an annual management fee (the "Management Fee") equal to percent (3 %) of Owner's gross receipts from the Property.

5.2 Payment of Management Fee. The Management Fee shall be paid by Owner in equal monthly installments of one-twelfth of the Management Fee, and shall be payable out of the current month's receipts after the payment of all other operating expenses for such month. For any period of less than one month, the monthly payment shall be computed on a pro rata basis, based upon a thirty (30) day month. To the extent the installment of the Management Fee due for any month is not collectible out of the current month's receipts, the unpaid portion of such fee shall accrue and be paid out of future months' receipts after payment of all other operating expenses, and interest shall accrue and be payable thereon at that rate which is equal to the rate announced from time to time by CITIBANK, N.A., at its main office in New York, New York, as its "prime or base rate" (including any successor to such rate, the "Prime Rate").

5.3 Leasing Commissions. Manager shall receive as compensation for Manager's leasing services pursuant to this Agreement leasing commissions with respect to the Property calculated in accordance with guidelines provided by the New York State Real Estate Board (REBNY).

5.4 Sole Compensation. The fees and reimbursements provided for in this Article shall be the sole compensation to Manager and the Manager shall not be entitled to any other compensation for performing its services hereunder.

ARTICLE VI

THIRD PARTY CONTRACT STANDARDS

6.1 Value. The price, compensation or other consideration paid for any goods or services obtained for the Property shall not exceed the amount ordinarily paid for such goods

or services in the area where the Property is located and shall not exceed expenditures authorized pursuant to the approved Budget. When taking bids, issuing purchase orders or otherwise arranging for any such goods or services, Manager shall act at all times in the best interest of Owner and shall be under a duty to secure for and credit to Owner any rebates, discounts or commissions obtainable with respect to such purchases or other transactions.

6.2 Contracts with Related Parties. Manager shall not employ any entity in which Manager (including any subsidiary, affiliated and related entity to Manager) shall have a financial interest, for the purpose of making alterations, repairs, decorations, replacements, equipment or installations in or on the Property, or for any other purpose, without Owner's prior written approval and on terms set forth in Section 4.2. However, if such work is to be done or made or installed at a tenant's request and sole expense (such installations are hereinafter referred to as "Tenant Work"), then Manager (including either any subsidiary, affiliated or related entity to Manager or an independent contractor working under the supervision of Manager) is authorized to make and install such Tenant Work and to collect from such tenant for Manager's sole account, Manager's charge for supervisory overhead on all such Tenant Work as is agreed to by such tenant, but Manager shall hold Owner harmless from any claims which may be advanced by any such tenant in connection with any Tenant Work. For purposes of this Section 6.2, Tenant Work shall not include work done for a tenant at the commencement of the lease term, or any other time during the term of the lease, if such work is an obligation of Owner under the lease.

6.3 Exculpation. Manager shall use its reasonable efforts to include in agreements with third parties an exculpatory clause similar to that set forth in Section 7.4 limiting Owner's obligation to Owner's interest in the Property.

ARTICLE VII

INSURANCE, INDEMNIFICATION AND EXCULPATION

7.1 Property and Liability Insurance.

(a) Property Insurance. Manager shall carry for the protection of Owner's interest in the Property commercial general property insurance from carriers approved by Owner in amount equal to the full replacement cost of the Property, with such deductibles, endorsements and coverages as shall be required by Owner and shall be necessary to comply with the provisions of Owner's mortgage financing of the Property. All property insurance carried for the Property shall name Owner's lender as a mortgagee under a standard New York form of mortgage endorsement.

(b) Liability Insurance. Manager shall carry for the protection of Owner comprehensive general liability insurance from carriers approved by Owner and such other insurance as Owner shall deem necessary for the protection of Owner's interests and as shall be necessary to comply with the provisions of Owner's mortgage financing of the Property. Policies of comprehensive general liability insurance so carried shall include Manager as an additional insured party. Comprehensive general liability insurance policies shall contain coverage for contractual liability and personal injury liability.

7.2 Indemnification by Owner. Owner agrees (1) to hold and save Manager, its officers, partners and employees, by reason or any cause whatsoever, free and harmless from any claim for damages or injuries to persons or property when Manager is carrying out the provisions of this Agreement or acting under the express or implied direction of Owner, or by reason of Owner's failure (other than by reason of Manager's default hereunder) or refusal to comply with or abide by any rule, order, determination, ordinance or law of any federal, state or municipal authority; and (2) to defend promptly and diligently, at Owner's sole expense, any claim, action or proceeding brought against Manager or Manager and Owner, jointly or severally, arising out of or connected with any of the foregoing, and to hold harmless and fully indemnify Manager from any judgment, loss or settlement on account thereof. The foregoing provisions of this paragraph shall survive the termination of this Agreement, but this shall not be construed to mean that Owner's liability shall survive as to other provisions of this Agreement except as expressly therein provided.

Owner's obligation to indemnify, defend and hold Manager harmless is on the condition, that as to any particular event:

(i) Manager shall notify Owner in writing as soon as practicable after notice of an injury or claim is received; and

(ii) Manager takes no action (such as admission of liability) which might bar Owner from obtaining any protection afforded by any policy Owner may hold or which might prejudice Owner in its defense to a claim based on such loss, damage or injury; and

(iii) Manager agrees that Owner shall have the exclusive right, at its option, to conduct the defense to any claim, demand or suit within limits prescribed by the policy or policies of insurance.

Nothing contained in this Article shall require Owner to indemnify Manager or defend or hold Manager harmless from any claims or actions resulting from acts or omissions which constitute negligence, willful misconduct or fraud on the part of Manager or any of Manager's employees or agents or which are outside the scope of Manager's authority or responsibility hereunder or which are in breach of Manager's duties hereunder. Nothing contained in this Article shall relieve Manager from responsibility to Owner for the negligence, willful misconduct or fraud of Manager or any of Manager's employees or agents.

Notwithstanding anything to the contrary contained in this Article, Owner's obligation hereunder to indemnify or otherwise hold Manager harmless from any claim shall be limited to Owner's interest in the Property, including without limitation the proceeds of insurance carried hereunder.

If Owner shall consent thereto, the insurance required under Section 7.1 may be carried at Owner's cost under a blanket policy maintained by Manager naming Owner as an additional insured party.

7.3 Manager Insurance. At Owner expense, Manager shall maintain throughout the term of this Agreement Worker's Compensation, automobile liability and employee dishonesty insurance in form and in amounts reasonably acceptable to Owner;

provided, however, that nothing contained herein shall obligate Manager to obtain automobile liability insurance covering the act or omission of any person or entity other than Manager, Manager's directors, officer, employees, contractors and agents. Such insurance shall provide for sending Owner at least thirty (30) days' prior written notice of cancellation of, non-renewal of or any material change in such policies. Manager shall obtain an "alternate employer endorsement" naming Owner on its worker's compensation insurance. Employee dishonesty insurance shall be for an amount not less than $500,000, and shall name Owner as an additional insured. Automobile liability insurance shall name Owner as an additional insured. Owner shall not reimburse Manager for Manager's cost of such insurance or for any and all coverages that Manager obtains for its own account. Manager shall, promptly after the execution of this Agreement, and thereafter annually furnish Owner with a certificate evidencing the insurance required by this Section 7.3.

7.4 Exculpation. No officer, director, manager, member, general or limited partner, shareholder or other holder of an equity interest in Owner (or any assignee under Section 9.6) shall be personally liable for the performance of Owner's obligations under this Agreement. The liability of Owner (including an assignee under Section 9.6 hereof) for Owner's obligations under this Agreement shall be limited to its interest in the Property and Manager shall not look to any of Owner's other assets (or the assets of any member, partner, shareholder or other holder of an equity interest therein) in seeking either to enforce Owner's obligations under this Agreement or to satisfy a judgment for Owner's failure to perform such obligations.

No constituent partner, member, shareholder or other person or entity in or agent of Clearview Management Services, nor any advisor, trustee, director, employee, beneficiary, shareholder, member, partner, participant, representative or agent of any partnership, limited liability company, corporation, trust or other entity that has or acquires a direct or indirect interest in Clearview shall have any personal liability, directly or indirectly, under or in connection with this Agreement, or any amendment or amendments to this Agreement made at any time or times, heretofore or hereafter, and [other party] and its successors and assigns shall look solely to Clearview assets for the payment of any claim or for any performance, and [other party], on behalf of itself and its successors and assigns, hereby waives any and all such personal liability.

7.5 Indemnification by Manager. Manager agrees to indemnify, defend, and hold Owner harmless from any and all claims, demands, liability, loss, cost or expense incurred by reason of any act or omission of or any negligent or tortuous act or other act in contravention of this Agreement by Manager; provided, that this indemnity shall not be applicable with respect to acts of Manager duly authorized and performed in accordance with the terms and provisions of this Agreement.

7.6 Settlement of Claims. Owner shall have the right, in its sole discretion, but without being required so to do, to adjust, settle, or compromise any claim, obligation, debt, demand, suit or judgment against the Property, Owner or Manager concerning the Property provided that no such adjustment, settlement or compromise shall subject Manager to any uninsured liability or obligation. Manager shall assist and cooperate with Owner in the adjustment, settlement or compromise of any such claim.

ARTICLE VIII

DURATION, TERMINATION AND DEFAULT

8.1 On Sale. This Agreement shall terminate automatically, without notice, upon the sale or other transfer of the Property to a third party.

8.2 Sale of Interest or Termination. This Agreement shall terminate automatically, without notice, upon the sale or transfer by PA Developers LLC of more than 49% of its ownership interest in Clearview Management Services LLC unless prior written consent of Owner is obtained to said sale or transfer.

8.3 Default and For Cause. Either party may terminate this Agreement for cause on not less than thirty (30) days' written notice, which notice shall specify the event of cause. This Agreement shall be terminated on the date specified in the notice, provided the party to whom such termination notice is furnished shall have failed to cure such event of default (or, if such default is not possible of being cured within said period, has not undertaken the cure of same and proceeded expeditiously and diligently in the curing of same) including, but not limited to the following:

(a) the filing by or against either party of a petition in bankruptcy, or in the event that either shall make an assignment for the benefit of creditors or take advantage of any insolvency act or fail to discharge its obligations promptly when due or, a petition having been filed against such party, failing to obtain the discharge of same within thirty (30) days of such filing;

(b) Manager's dishonesty or gross mismanagement of the Property;

(c) Manager's act, willful omission or gross neglect which may subject Owner or the Property to actual or criminal prosecution or to substantial penalty (civil or criminal) or fine;

(d) Manager's repeated failure to comply with Owner's written instructions or directions in connection with the operation, maintenance and management of the Property; or

(e) Manager's material breach of its obligations under this Agreement.

8.4 Notices of Default and Termination. Notices of default and termination given on behalf of Owner without the signature or consent of [_____] or its affiliate as the [Managing Member] of _____ shall be fully effective and binding as against Manager under the circumstances described in Sections 8.1, 8.2 and 8.3 hereof.

8.5 Obligations upon Termination. (a) Upon termination of this Agreement, each party shall promptly pay to the other, as soon as the same is determinable after the effective date of termination, all amounts due such other party under the terms of this Agreement (pro rated to the effective date of termination), and upon such payment, neither party shall have any

further claim or right against the' other, except as expressly provided herein. In no event will Manager be entitled to receive any final compensation from Owner pursuant to this Section 8.5(a) until Manager shall have delivered to Owner all of the items described in Section 8.5(b) and shall have paid over to Owner all amounts due to Owner including without limitation all amounts on deposit in the Operating Account and all funds in the Security Deposit Account.

(b) *Upon the effective date of termination, Manager shall deliver to Owner or* Owner's duly appointed agent the originals of all books, permits, plans, records, leases, licenses, contracts and other documents pertaining to the Property and its operation, insurance policies, bills of sale or other documents evidencing title or rights of Owner, and any and all other records or documents pertaining to the Property, whether or not enumerated herein, which are necessary or desirable for ownership and operation of the Property. Manager further agrees to do all of the things reasonably necessary to cause an orderly transition of the management of the Property without detriment to the rights of Owner or to the continued management of the Property, including the furnishing of notices to tenants of the Property of the expiration or termination of this Agreement, by hand delivery or certified or registered mail, as may be requested by Owner.

(c) Following the expiration or termination of this Agreement for any reason other than the default of Manager hereunder, Owner shall recognize Manager as the broker in any pending negotiation for a lease of space in the Property in all cases where (i) Manager is the procuring cause of such lease, or if an Outside Broker (as defined in Exhibit A) is the procuring cause of such lease, Manager substantially negotiated on behalf of Owner the material terms of such lease, and (ii) such lease is actually executed and delivered within four months following the date of termination or expiration. Within ten (10) days after any such termination or expiration, Manager shall submit to Owner a list of those prospective tenants with whom Manager had been negotiating, stating whether or not any of such negotiations were through an Outside Broker and if so, identifying such Outside Broker. Such list shall contain information as to the status of the negotiations with such prospective tenants and shall indicate in detail the amount, extent and nature of all discussions and negotiations had by Manager with, and information submitted to, such prospective tenants. Owner shall not be obligated to recognize Manager as broker in respect of any pending negotiations if Manager fails to submit the aforementioned list within the time above set forth, or, if such list is submitted as aforesaid, with respect to any pending negotiations not set forth in such list, or with respect to any pending negotiations set forth in such list as to which a lease is not executed and delivered within four months following the date of termination or expiration of this Agreement. In addition, following the expiration or *termination of this Agreement for any reason including the default of Manager* hereunder, Owner shall pay to Manager a commission in respect of any lease actually executed and delivered by Owner and the tenant thereunder prior to the date of termination. Any commissions payable to Manager pursuant to this Section 8.5(c) shall be computed at the rates and payable as set forth in Exhibit A.

ARTICLE IX

GENERAL

9.1 Notices. *All* notices, demands, elections, consents, requests or other communications (collectively, "notices") which either party to this Agreement may desire or be

required to give hereunder shall be in writing unless expressly otherwise provided herein. All written notices shall be given by registered or certified mail, postage prepaid, return receipt requested, or by reputable overnight delivery service, or by personal delivery, addressed as follows:

(a) To Owner by delivering a copy to each party listed as notice party in the This Agreement, or at such other address or addresses as may be designated by Owner by notice given to Manager as provided in this Section 9.1.

(b) To Manager at its address first set forth above, or at such other address or addresses as may be designated by Manager by notice given to Owner as provided in this Section 9.1.

Notwithstanding the foregoing, routine communications may be sent by first-class mail, postage prepaid.

All notices given pursuant to this Section 9.1 shall be deemed to have been given or served three business days after the mailing thereof (in the case of notices sent by mail) or upon delivery thereof (in all other cases), with failure to accept delivery constituting delivery for this purpose.

9.2 Non-Discrimination. Manager will not discriminate against any employee or applicant for employment by Manager because of race, creed, color, age, sex, national origin or any other protected class under applicable law, and shall comply with all applicable laws regarding non-discrimination in employment.

9.3 No Advertising. No publication, announcement or other public advertisement of Owner's name in connection with the Property shall be made by Manager, except as may be required by applicable law. It is understood and agreed, prior to any release, approvals must be obtained from Owner.

9.4 Further Assurances. Owner and Manager agree to execute such other documents and perform such other acts as may be necessary or desirable to carry out the purposes of this Agreement.

9.5 Status Report. Recognizing that each party may find it necessary from time to time to establish to third parties such as accountants, banks, mortgagees or the like, the then current status of performance hereunder, each party agrees, upon the written request of the other party, made from time to time by notice, to furnish promptly a written statement on the status of any matter pertaining to this Agreement to the best of the knowledge and belief of the party making such statement.

9.6 Successors and Assigns. Thus Agreement shall not be assignable by either party without the prior written consent thereto of the other party to this Agreement. For purposes of the immediately preceding sentence, this Agreement shall be deemed to have been assigned by Manager if Manager ceases, through a transfer of ownership interests or a change in personnel or by any other means, to be an affiliate of the [_____].

9.7 Waiver. No consent or waiver, express or implied, by any party to or of any breach or default by the other party in the performance by such other party of the obligations thereof under this Agreement shall be deemed or construed to be a consent or waiver to or of any other breach or default in the performance by such other party of the same or any other obligations of such other party under this Agreement. Failure on the part of either party to complain of any act or failure to act of the other party or to declare the other party in default, irrespective of how long such failure continues, shall not constitute a waiver by such party of the rights thereof under this Agreement.

9.8 Additional Remedies. The rights and remedies of the parties under this Agreement, at law or in equity, shall not be mutually exclusive; that is, the exercise of one or more of the provisions hereof shall not preclude the exercise of any other provisions hereof or otherwise available at law or in equity.

9.9 Attorneys' Fees. In the event of any controversy, claim or action being filed between the parties respecting this Agreement or in connection with the Property, the prevailing party shall be entitled to reimbursement of reasonable legal fees and expenses from the non-prevailing party.

9.10 Entire Agreement. This document represents the entire Agreement between the parties with respect to the subject matter hereof.

9.11 Severability. If any provisions of this Agreement or the application thereof to any entity or circumstances shall be invalid or unenforceable to any extent, the remainder of this Agreement and the application of such provisions to any other entity or circumstance shall not be affected thereby and shall be enforced to the greatest extent permitted by law.

9.12 Terminology. All personal pronouns used in thus Agreement, whether used in the masculine, feminine or neuter gender, shall include all other genders; the singular shall include the plural; and the plural shall include the singular. Titles of Articles and Sections in this Agreement are for convenience only, and neither limit nor amplify the provisions of this Agreement, and all references in this Agreement to Articles, Sections or Subsections thereof shall refer to the corresponding Article, Section or Subsection of this Agreement unless specific reference is made to the articles, sections or subsections of another document or instrument.

9.13 Amendment. Neither this Agreement nor any provision hereof may be changed, waived, discharged or terminated orally, but only by an instrument in writing signed by the party against whom enforcement of the change, waiver, discharge or termination is sought.

9.14 Counterparts. This Agreement may be executed in any number of counterparts, each of which shall be deemed to be an original and all of which shall comprise but a single instrument.

9.15 Governing Law. This Agreement and the obligations of Owner and Manager shall be interpreted, construed and enforced in accordance with the laws of the State of New York

IN WITNESS WHEREOF, Owner and Manager have caused this Agreement to be executed as of the day and year first above written.

Manager: Clearview Management Services LLC
By: AA Dev Venture, LLC, Sole Member

By: _____

Name: Aaron Malinsky

Title: Manager

Owner: George Washington Bridge Bus Station Development Venture, LLC
By: AA-GWB LLC, Sole Member

By: _____
Aaron Malinsky

Title: Manager

Exhibit D

Form of Construction Management Services Agreement

THIS CONSTRUCTION MANAGEMENT SERVICES AGREEMENT (this "Agreement"), is made and entered into as of 16 May July, 2010, by and between (i) George Washington Bridge Bus Station Development Venture, LLC (the "Owner"), and (ii) SJM Partners, Inc. (the "Construction Manager").

R E C I T A L S

A. Owner is the lessee of the Leased Premises (as defined in the Agreement of Lease between The Port Authority of New York and New Jersey and George Washington Bridge Bus Station Development Venture LLC- the "Lease") including improvements, located at 4211 Broadway, New York, New York (the George Washington Bridge Bus Station). Those Leased Premises and the other improvements thereon are the subject of this Agreement and are hereinafter collectively referred to as the "Property".

B. The Owner desires to redevelop the Property which when complete will include all additions, renovations, and alterations necessary for the consolidated Port Authority Bus Station Premises and Leased Retail/Commercial Premises (Collectively "Improvements").

C The Owner desires to obtain the services of the Construction Manager with respect to the renovation of the Property and the construction of Improvements ((collectively referred to as the "Project,"), to act as project manager with respect to the construction of the Project, and to provide the services described in this Agreement, all in accordance with, and pursuant to the terms, covenants and conditions contained in this Agreement. The Construction Manager and the Owner agree that the for the purposes of this Construction Management Services Agreement, the Project is expected to be planned, permitted and constructed in a single phase running continuously from start to finish without material interruption as described below.

1. The adaptive reuse of the George Washington Bridge Bus Station: a complex of two three-level buildings - East and West - connected by two vehicular bridges spanning over Broadway. This existing facility straddles the Trans-Manhattan Expressway.
2. The existing West Building bus operation will be consolidated to the building's third (rooftop) level enabling the first and second levels to be renovated to accommodate retail/commercial uses. This consolidation includes vertical transportation relocation, bus gates and concourse ticketing, passenger waiting area, police and facility operations offices and restrooms.
3. The existing East Building will be renovated, enlarged and converted from mechanical/electrical uses to retail by expanding two existing structural slabs for retail use requiring an existing substation located on the first level of the building to be relocated within a new rooftop Utility Building.
4. New exterior treatments to enclose new retail venues around both buildings will be developed. The exterior improvements may require landmark supervision if required.
5. The bus station will remain operational throughout the renovation.
6. The Project includes completing retail space to the extent the tenant improvements shown in the budget are constructed per the 18 month construction schedule, per the Skanska budget dated October 9, 2009 and per the Port Authority Agreement.
7. The Construction schedule is 18 months and will commence on or about January 1, 2011 and be complete by June, 2012.

8. Skanska has been selected as the General Contractor and STV as the Project Architect.
9. The Project scope and current construction budget consists of two separate but interdependent components; 1) Bus Station Renovation; and 2) Retail Renovation and is based on the Skanska budget dated October 9, 2009 and Port Authority Agreement.

D. The Construction Manager is willing to provide the Construction Management Services set forth in this Agreement with respect to the Project, all in accordance with, and pursuant to the terms, covenants and conditions contained in this Agreement.

NOW, THEREFORE, in consideration of the mutual covenants and conditions herein contained and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties hereto, intending to be legally bound, hereby do covenant and agree as follows

SECTION 1. GENERAL PROVISIONS

1.1 **Relationship of Parties.** The Construction Manager is acting on behalf of and as an agent for the Owner by this Agreement, and covenants with the Owner to furnish the Construction Manager's reasonable skill, judgment and best efforts in the performance of its obligations under this Agreement. The Construction Manager shall furnish services as set forth herein relating to the Project in an expeditious, professional and economical manner consistent with the interests of the Owner, using the degree of skill and care that the Construction Manager would use if it were an Owner in rendering service under this Agreement. The term "Construction Management Services" shall mean all project management services required to be performed by Construction Manager under this Agreement.

1.2 **Third Parties.** This Agreement is between the Construction Manager and the Owner. This Agreement shall not be construed to create a contractual relationship of any kind between the Construction Manager and any person or entity other than the Owner. Under no circumstances shall Construction Manager be regarded as the Owner, Developer, Contractor, Architect or Engineer of the Project. The Owner expressly recognize that: (a) the Construction Manager may have substantial other business and real estate activities ; (b) the Construction Manager may engage for his, her, or its own account and for the accounts of others in other businesses or real estate activities, even if such businesses or activities compete directly with Company business or activities, and the Owner shall not have any rights in or to any such independent business or activity or the income or profits derived therefrom (c) the Construction Manager is an independent contractor but some of its officers and/or employees are also investors, directly or indirectly in the Owner.

SECTION 2. SERVICES TO BE PERFORMED BY CONSTRUCTION MANAGER

2.1 **Obligation to Perform Services.** Subject to the provisions of Sections 2.2 and Section 2.3 of this Agreement, the Construction Manager agrees to perform the services described in this Section with respect to the construction of the Project.

2.1.1 **Construction Stage of Project.** During the Construction Stage, the Construction Manager shall perform such tasks that in its reasonable judgment are appropriate to effect the construction of the Improvements, and as shall be reasonably requested or approved by the Owner in connection with construction of the Improvements, including the following services when and in the manner

indicated below:

(a) The Construction Manager shall use reasonable efforts to supervise the construction of the Project by the General Contractor in accordance with (1) the development managers Master Schedule and (2) the plans and specifications, working drawings and the site plan for the Project, each as approved by the Owner, all requisite governmental authorities and, if required, the lender(s) providing construction financing (collectively, the "Plans"), provided that nothing herein shall supplant or diminish the responsibility of the Project Architect, or other Owner consultants, to administer the Project in accordance with the agreement between the Owner and the Project Architect and other Owner consultants.

(b) The Construction Manager shall regularly monitor and use reasonable efforts to expedite the construction process. The Construction Manager shall regularly and independently inspect the work and review the performance of the General Contractor and its subcontractors and advise the Owner if the Construction Manager becomes aware of any deficiencies in the performance of the work by the General Contractor.

(c) The Construction Manager shall regularly review the construction progress to render an opinion whether the actual construction schedule coincides with the Master Schedule and the CPM Schedule provided by the General Contractor, periodically review work not started or incomplete, and recommend adjustments to the Master Schedule and to the CPM Schedule prepared by the development manager to the Owner and the General Contractor with respect to remaining work.

(d) The Construction Manager shall conduct a regular monthly meeting with the Owner, or more frequently if reasonably requested by the Owner, for the purpose of reporting on the status of the construction of the Project.

(e) The Construction Manager shall review and recommend to the Owner necessary or desirable changes, and shall, at the written direction of the Owner, review, negotiate and make recommendations concerning any change orders with respect to any changes to scope with the General Contractor or other Owner consultants and shall maintain records of all such change orders.

(f) The Construction Manager, together with the Project Architect, shall conduct regular bi-weekly meetings with the General Contractor for the purpose of reviewing with the General Contractor all unpaid requisitions and monthly draws. The Construction Manager, together with the Project Architect, shall review, process and make recommendations to the Owner with respect to, all requisitions for payment received from the General Contractor in accordance with the terms of its contract. The Construction Manager's review and recommendations with respect to the General Contractor's applications for payment shall be based on the Construction Manager's observations and best judgment based on its review of submitted documentation and on-site inspections.

(g) The Construction Manager will consult with the Owner, the Project Architect and the General Contractor to make a recommendation as to when the work on the Improvements, or designated portions thereof, is substantially complete and shall supervise the preparation by the Project Architect of a list of incomplete, unfinished and unsatisfactory items (the punchlist), together with a schedule for their completion. The Construction Manager shall supervise the re-inspection of the punchlist by the Project Architect up to two (2) additional times in a time frame not to exceed 60 days following Substantial Completion. Should the Owner and Construction Manager mutually agree for the Construction Manager to coordinate the punchlist completion process beyond the above they may

do this through a separate agreement.

(h) The Construction Manager shall coordinate assembly and delivery by the Project Architect and the General Contractor, the warranty information to the Owner for its use when the Project is substantially complete.

(i) Excluded from this Agreement are post Substantial Completion Services such as Bond Release processing, extensive punchlist completion verification, coordination and administration of warranty work. Should the Owner and Construction Manager mutually agree for the Construction Manager to coordinate the above excluded services, they may do this through a separate agreement.

2.1.2 **Financial Management Services.** During the Construction Stage, the Construction Manager shall provide financial management services such as monitoring the Project Budget for the retail as shown on Attachment A and the final approved Port Authority budget, monitoring consultant and general contractor contractual payment status and reviewing applicable project invoices for Owner processing and payment as shall be reasonably requested by the Owner in connection with the Project. Project accounting will be the responsibility of the Owner.

2.2 **Limitations on Construction Manager's Responsibility.**
It is not the Construction Manager's responsibility to ascertain that the work to be performed by the Project Architect, the General Contractor or any other contractors or consultants retained by the Owner, the Port Authority or the retail tenant is performed in accordance with applicable laws, statutes, ordinances, building codes, rules and regulations or the contract between the Owner and the Project Architect, the General Contractor or such other contractors or consultants, as the case may be. The Construction Manager is not guaranteeing to the Owner that the Project Architect, the General Contractor or any other contractors or consultants retained by the Owner will perform its obligations under its contract with the Owner. The Construction Manager shall not be obligated to perform (and shall not be liable to the Owner for damages for a failure to perform) its obligations under this Agreement if, and to the extent that, Construction Manager is prevented from performing, or is delayed in performing its obligations by a material default by the Owner in performing its obligations under this Agreement or the respective contracts between the Owner and the Project Architect, the General Contractor or any other contractors or consultants retained by the Owner, or by any other circumstances beyond the reasonable control of the Construction Manager. Under no circumstances shall Construction Manager be responsible to Owner, Contractor, Project Architect or any other person or entity for damages, delay damages, change orders, extra work, defective design, defective work, or the violation of applicable law or regulations by Owner, Contractor or Project Architect.

2.3 **Professional Services.** The Construction Manager shall not be required to provide professional services which constitute the practice of architecture, engineering, construction contracting, brokerage or law, unless the Construction Manager has specifically agreed in writing to provide such services. In such event, the Construction Manager shall cause such services to be performed by appropriately licensed professionals.

SECTION 3. OWNER'S RESPONSIBILITIES TO CONSTRUCTION MANAGER

3.1 **Provide Information.** The Owner shall provide full and complete information regarding the Project in its possession to the Construction Manager in a timely manner as required by the Construction Manager to perform its obligations under this Agreement. Such information shall include, but not be limited to, the

following items regarding the Project:

(a) Survey, legal description, reports (e.g., traffic, environmental, geotechnical, physical, etc. copies of easements;

(b) copies of pending and executed leases;

(c) a detailed breakdown of all costs incurred and contracts entered into by the Owner prior to and including the date of this Agreement and from the date of the Agreement until termination of the Agreement; and

(d) other reports reasonably requested by the Construction Manager.

3.2 Update Budgets. The Owner will work with the Construction Manager to establish and periodically update the Construction Budget for the Project, based on consultation with the Owner, the Project Architect, the Contractor and the Owner consultants which shall include reasonable construction contingencies for changes in the Project and other costs which are the responsibility of the Owner during the construction stage.

3.3 Environmental Review. The Owner agrees to defend, indemnify and hold harmless the Construction Manager from and against any and all claims, suits, causes of action or liability of any kind whatsoever with respect to the existence of hazardous or unsafe materials, substances or conditions on the Property, including any hazardous or unsafe materials or substances removed there from before or after the date of this Agreement, except for hazardous or unsafe materials or substances brought on the site by Construction Manager or its employees or hazardous conditions at the site caused by the willful or negligent acts or omissions of Construction Manager or its employees.

3.4 Payment of Obligations. The Owner agrees to pay all amounts payable to the General Contractor, the Project Architect and other persons who perform services or provide labor or materials in connection with the Project and construction and occupancy of the Project at the time such amounts are due and payable under the respective contracts between the Owner and the General Contractor, the Project Architect and other persons. The Owner's obligations under the preceding sentence are not conditioned on, and are independent of, the availability of funds under the Owner's development or construction loan(s) for the Project, but are conditioned on timely receipt of information from the Construction Manager with respect to amounts payable to the General Contractor and other contractors whose work the Construction Manager is obligated by this Agreement to supervise.

3.5 Field Office. The Owner and the Construction Manager shall determine the requirements for a field office or on site personnel at a later date as no accommodations are included for the same in the project fee at this time. Should the Owner and Construction Manager mutually determine a field office and on site construction management personnel is required they may modify this agreement to account for these additional services.

SECTION 4. CONSTRUCTION MANAGER'S FEE

4.1 Compensation to be paid to the Construction Manager.

4.1.1 Construction Manager's Fee. In consideration for the scope of the Construction Management Services as described in Recital C, the Owner shall pay to the Construction Manager a fee (the "Construction Manager's Fee") as

described in 4.2 subject to the provisions of Section 4.4 (relating to delay due to litigation or arbitration) and Section 6 (relating to termination). The fee shall be paid in installments as described on the Section 4.2 and shown on Attachment B when and as due, without regard to any rights of offset or recoupment, which are hereby waived by Owner

4.2 **Payment of Construction Manager's Fee.** The Construction Manager's Fee for each stage of the Project provided in Section 2.1 of this Agreement shall be payable to the Construction Manager as described in Sections 4.2.1 through Section 4.2.3 and as shown on Attachment B. Should any stage duration decrease as agreed upon by Construction Manager and Owner, the prorata monthly fee for that stage will be adjusted accordingly. Should stages overlap due to the Project conditions, the fees for overlapping stages will be paid during per their prorata amounts for the overlapping months.

4.2.1 **Construction Stage.** During the Construction Stage (based on 18 month schedule), the Construction Manager's Fee shall consist of $480,000 (18 month at $26,666.67 per month) based on current development budget as shown in Attachment C and Attachment D, which shall be paid by the Owner to the Construction Manager in consecutive monthly installments of 26,666.67 per month for months 1-18 of a 18 month construction schedule. Each monthly fee shall be payable on the tenth (10) day of the month, commencing upon the earlier of the receipt of Approved Construction Documents per Section 5.2 of Agreement of Lease between the Port Authority and the Owner or receipt of written permission by the Port Authority and Owner to commence construction and continuing thereafter until the tenth (10th) day of the eighteenth month. The Construction Management Services Agreement shall terminate at the end of the eighteenth month of the Construction Stage except as described in 4.2.1.1.

4.2.1.1 **Construction Stage Extension.** Should the Construction Stage reach the end of the 18 month schedule and the Use and Occupancy Permit is not obtained for the Project (as described in C of the recitals) through no fault of the Construction Manager, the construction stage will be automatically extended and the Construction Manager shall be paid an additional Construction Manager's Fee by the Owner of $26,666.67 per month for each additional month for up to twelve additional months or until such time as the Use and Occupancy Permit is obtained for the Project as described in C of the recital whichever is earlier. This Construction Management Services Agreement will terminate at the end of this Extension and the Construction Manager will be paid any outstanding earned fees.

4.2.1.2 If the Construction Stage is terminated as described in Sections 4.2.1 and 4.2.1.1, the Owner and Construction Manager may extend the Construction Stage through a separate agreement that is mutually acceptable.

4.4 **Additional Payment upon Extension Due To Litigation or Arbitration.** Notwithstanding anything in this Section 4 to the contrary, if, because of litigation or arbitration commenced by persons other than the parties hereto which delays the development and construction of the Project, final completion of the Project, as defined in the Construction Contract, shall extend beyond the date set forth for such completion in the Master Schedule adopted during the Approval Stage and approved by the Owner, Owner shall pay Construction Manager $26,666.67 per month as additional fee, except to the extent that such delay or portion thereof is solely the fault of Construction Manager. Additionally, the Owner shall reimburse the Construction Manager on the first day of each month during such extension period for all out-of-pocket expenses pursuant to Section 4.6 hereof.

4.5 Advances by the Construction Manager. The Construction Manager shall not be obligated to make any advance to or for the account of the Owner, nor shall the Construction Manager be obligated to incur any liability or obligation for the account of the Owner without assurance that the necessary funds for the payment thereof will be provided by the Owner; provided, however, that no part of the Construction Manager's overhead or other expenses not specifically provided in this Agreement shall be payable by the Owner.

4.6 Expenses to be Reimbursed. In addition to the Construction Manager's Fee, the Owner shall reimburse the Construction Manager for all reasonable out-of-pocket costs and expenses paid or incurred by the Construction Manager in performing its duties under this Agreement, whether or not such costs and expenses are included as line-items on the Final Budget ("Reimbursable Expenses"), without regard to any rights of offset or recoupment, which are hereby waived by Owner. The Reimbursable Expenses shall include, but are not limited to, the cost of blue prints, reproductions, travel, lodging, messenger and delivery services and any other reasonable out-of-pocket costs relating to the Project that, but for the provisions of this Agreement, would have been paid by the Owner, but shall not include insurance, the salaries and fringe benefits payable to the Construction Manager's employees or any of the general overhead and administrative expenses of operating the Construction Manager's main office. The Construction Manager shall submit to the Owner requests for reimbursement pursuant to this Section, accompanied by copies of invoices or other documentation reasonably substantiating the amount and purpose of the expenditures for which reimbursement is being requested. All requests for reimbursement that meet the requirements of this section 4.6 shall be paid by the Owner within _10_ days from the date that such requests are submitted to Owner by Construction Manager.

4.7 The Owner's Right to Terminate. In addition to the provisions of Section 6, the Owner shall have the right, in the event the Owner elects at its sole discretion not to proceed with the Project, to terminate this Agreement, which termination shall be effective as of the date of the written notice delivered to the Construction Manager. On the effective date of such termination, the Construction Manager shall be entitled to receive the earned but unpaid portion of the Construction Manager's Fee prorated to the date of termination and all Reimbursable Expenses incurred on or before the date of termination.

If the Owner recommences the Project as described in Section C of the Recitals within 24 months of the termination of this agreement as described in this section then this Agreement will be reinstituted.

SECTION 5. INSURANCE

5.1 Construction Manager's Insurance. The Construction Manager, at its sole cost and expense for which it shall not be reimbursed pursuant to Section 4.5, shall obtain and maintain in effect at all times during the term of this Agreement a policy or policies of Commercial General Liability Insurance (ISO form or equivalent), naming the Construction Manager as insured and naming the Owner as an additional insured, protecting the Construction Manager and the Owner against liability for bodily injury, death and property damage occurring upon, on or about the Project, with such policy or policies to afford protection to the limit of not less than $2,000,000 combined single limit annual aggregate for bodily injury, death and property damage plus an umbrella of not less than $5,000,000.

5.2 Owner's Insurance. The Owner, at its sole cost and expense, shall obtain and

maintain in effect throughout the term of this Agreement a policy of builder's risk property damage insurance on the Project, in such amounts as shall be required by the lender financing the construction of the Project, and workers' compensation insurance in the amounts recommended or required by law. The Construction Manager shall advise the Owner in consultation with the Owner's insurance provider, on the amounts and types of insurance required. Tho Owner, at its sole cost and expense, shall obtain and maintain in effect throughout the term of this Agreement a policy or policies of Commercial General Liability Insurance (ISO form or equivalent), naming the Owner as insured and naming the Construction Manager as an additional insured, protecting the Owner and the Construction Manager against liability for bodily injury, death and property damage occurring upon, on or about the Project, with such policy or policies to afford protection to the limit of not less than $5,000,000 combined single limit annual aggregate for bodily injury, death and property damage. If such policy or policies also cover locations other than the Project, the policy (ies) shall include a provision to the effect that the aggregate limit of $5,000,000 shall apply separately at the Project.

5.3 **Waiver of Subrogation.** Both the Construction Manager and the Owner shall include in each of its policies of property damage insurance for the Project, a waiver of the insurer's right of subrogation against the other.

5.4 **Release of Construction Manager.** The Owner hereby waives any right of recovery against the Construction Manager, and any of the Construction Manager's officers, directors, agents or employees, for any loss or damage to the Project caused by fire or other insured peril, including loss or damage caused by the negligent acts or omissions of the Construction Manager.

SECTION 6. DEFAULT AND TERMINATION

6.1 **Default and Termination.** Each of the following shall constitute an "event of default " under this Agreement:

6.1.1 If the Owner or the Construction Manager consents to the appointment of a Custodian of it or for all or substantially all of its property, or (iv) make a general assignment for the benefit of its creditors.

6.1.2 If the Owner or the Construction Manager becomes unable to pay its debts when they come due or otherwise unable to perform its obligations under this Agreement or any Court other than a United States Bankruptcy Court (i) appoints a Custodian of the Owner or the Construction Manager or for all or substantially all of its property, or (ii) orders the liquidation of the Owner or the Construction Manager, and the order or decree remains unstayed and in effect for 90 days. For purposes of this Section 6.1.2, the term "Custodian" means any receiver, trustee, assignee, liquidator or similar official.

6.1.3 The failure of the Construction Manager to observe or perform any covenant, condition or agreement to be observed or performed by it under this Agreement for a period of ten days after receipt of a written notice from the Owner that specifies the failure and requests that the failure be remedied, unless the Owner agrees in writing to an extension of time prior to expiration of the 10-day period, provided, however, if the failure stated in the notice cannot be corrected with reasonable diligence within the applicable cure period, the time period for curing such default shall be extended if corrective action is instituted by the Construction Manager within the applicable period and is being diligently pursued until the event of default is corrected.

6.1.4 The failure of the Owner to pay any amounts due the Construction Manager

on account of the Construction Manager's Fee; provided, however, that the Construction Manager shall have delivered to the Owner a written notice of the Owner's failure to pay and the Owner shall fail to remedy or correct such non-compliance within 15 days after receipt of such notice.

6.1.5 The occurrence of a foreclosure (or deed in lieu of foreclosure) of any mortgage or deed of trust encumbering the Project or a default in any lease that encumbers the project, in which event such occurrence shall be an event of default by the Owner.

6.2 Termination. Upon the occurrence of an event of default defined in Section 6.1 of this Agreement, the non-defaulting party may, at its option, upon giving written notice to the defaulting party, terminate this Agreement, which termination shall be effective as of the date of the notice delivered to the defaulting party. On the effective date of Termination, the Construction Manager, in addition to its rights under Section 6.3 of this Agreement, shall be entitled to receive the earned but unpaid portion of the Construction Manager's Fee (the earned amount shall be based on the actual monthly fees and are to include any deferred payments and fees for the earned work) prorated to the date of termination and all Reimbursable Expenses incurred on or before the date of termination.

6.3 Other Remedies. Upon termination of this Agreement due to the occurrence of an event of default defined in Section 6.1 of this Agreement, in addition to the right of the non-defaulting party to terminate this Agreement, the non-defaulting party shall be entitled to pursue whatever rights it may have at law or in equity, including, without limitation, a claim for damages suffered by reason of the default, except as limited by the provisions of this Agreement, including by not limited to the limitation of the Construction Manager's liability as provided in Section 6.4 of this Agreement.

6.4 Limitation on Construction Manager's Liability. Notwithstanding any other provision of this Agreement, the liability of the Construction Manager to the Owner under this Agreement, including any liability for attorneys' fees under the terms hereof or applicable law, shall not exceed the amount of the Construction Manager's Fee which has been actually paid by the Owner to the Construction Manager as of the date on which any claim arises or the date on which this Agreement is terminated whichever is earlier.

6.5 Mediation, Litigation and Forum Selection. In the event that a dispute or claim shall arise with respect to this Agreement or any matter arising hereunder, then, as a condition precedent to any litigation, either party may require that such dispute or claim be submitted to non-binding mediation before American Arbitration Association. If the parties are unable to resolve their dispute at mediation, then either party may institute litigation before a federal or state court of competent jurisdiction located in New York, New York. THE PARTIES AGREE THAT JURISDICTION AND VENUE SHALL LIE EXCLUSIVELY IN SUCH COURT AND NO OTHER.

SECTION 7. MISCELLANEOUS PROVISIONS

7.1 Indemnification.

7.1.1 Indemnification by Construction Manager. The Construction Manager hereby agrees to indemnify and hold the Owner harmless from and against any and all claims, actions, damages, losses and expense of any kind whatsoever(including reasonable attorney's fees) arising out of or in connection with the acts and omissions of the Construction Manager, its officers, agents and employees, in

connection with the performance of its obligations and duties under this Agreement, if and only if attributable to the gross negligence or willful misconduct of the Construction Manager, subject to the provisions of Section 6.4 of this Agreement. If the Owner receives notice of any claim or action against the Owner with respect to which indemnification is to be sought from the Construction Manager under this Section 7.1.1, the Owner shall promptly notify the Construction Manager of the claim or action in writing.

7.1.2 **Indemnification by Owner.** The Owner hereby agrees at Owner's expense to defend, indemnify and hold the Construction Manager harmless from and against any and all claims, actions, damages, losses and expense of any kind whatsoever (including reasonable attorney's fees) arising out of or in connection with claims brought by third parties for which the Construction Manager is, or is alleged to be, contractually or legally responsible or for bodily injury or death suffered by such third parties in connection with the Property and the construction of the Improvements thereon, so long as such bodily injury or death is not due solely to the gross negligence or willful misconduct of the Construction Manager. If the Construction Manager receives notice of any claim or action against the Construction Manager with respect to which indemnification is to be sought from the Owner under this Section 7.1.2, the Construction Manager shall promptly notify the Owner of the claim or action in writing.

7.1.3 **Exculpation.** No constituent partner, member, shareholder or other person or entity in or agent of SJM Partners, Inc, nor any advisor, trustee, director, employee, beneficiary, shareholder, member, partner, participant, representative or agent of any partnership, limited liability company, corporation, trust or other entity that has or acquires a direct or indirect interest in SJM Partners, Inc shall have any personal liability, directly or indirectly, under or in connection with this Agreement, or any amendment or amendments to this Agreement made at any time or times, heretofore or hereafter, and [other party] and its successors and assigns shall look solely to SJM Partner Inc's assets for the payment of any claim or for any performance, and [other party], on behalf of itself and its successors and assigns, hereby waives any and all such personal liability.

7.2 **Independent Contractor.** The Construction Manager, in accordance with its status as an independent contractor, covenants and agrees that it will conduct itself consistent with such status, that it will neither hold itself out as nor claim to be an officer or employee of the Owner by reason of this Agreement, and that it will not, by reason of this Agreement, make any claim, demand, or application to or for any right or privilege applicable to an officer or employee of the Owner, including, but not limited to, worker's compensation coverage, unemployment insurance benefits, social security coverage or retirement plan membership or credit.

7.3 **Title to Reports and Documentation; Disclosure.** As between the parties to this Agreement, title to all feasibility reports, plans, designs, architectural and engineering studies, soil and water tests, topographical studies, land surveys, market surveys, and other documents of any nature and kind developed and paid for in the course of the planning and construction of the Improvements shall be and remain exclusively vested in the Owner.

7.4 **Assignment.** The Construction Manager shall not assign either its right, title and interest under this Agreement, or any of its obligations under this Agreement, either voluntarily or involuntarily, whether by operation of law or otherwise, to any other party, without the prior written consent of the Owner which will not be unreasonably withheld. The Owner shall not assign either its right, title or interest under this Agreement or any of its obligations under

this Agreement, either voluntarily or involuntarily, whether by operation of law or otherwise, to any other party without the prior written consent of the Construction Manager which will not be unreasonably withheld.

7.5 Owner's Consent. Whenever the consent or approval by the Owner is required or permitted by this Agreement, the Owner agrees as follows: (i) it will not unreasonably withhold, delay or condition its consent or approval; and (ii) if, within five Business Days after receipt of a written request from Construction Manager for the Owner's approval, the Owner fails to approve or to disapprove in writing the particular matter for which its approval was requested, the Owner shall be conclusively deemed for purposes of this Agreement to have approved the matter in question. As used in this Agreement the term "Business Day" shall mean any day other than Saturday, Sunday or a day on which national banks in Washington D.C. are not open for business.

7.6 Records. The Construction Manager shall keep complete records and implement necessary controls for proper financial management under this Agreement, except that Construction Manager shall not handle or be responsible for the Owner's funds. The Owner and its authorized representatives shall be afforded access during normal business hours and upon reasonable advance notice to Construction Manager's records relating to the performance of the Construction Services (including correspondence, instructions, drawings, receipts, memoranda and purchase orders) under this Agreement. The Construction Manager shall preserve and maintain all such records for a period of two years after the Certificate of Occupancy for project as described in Section C of the Recital.

7.7 Notices. Any notice required or desired to be sent under this Agreement shall be written and hand delivered or sent by registered or certified mail, return receipt requested, postage prepaid, to the parties to this Agreement at the following addresses, or at such other address as either party hereto may designate from time to time by written notice to the other party given pursuant thereto:

Owner: Construction Manager:

7.8 Construction Manager and Owner Representatives. Whenever under the provisions of this Agreement the approval of the Construction Manager or the Owner is required or the Construction Manager or the Owner is required to take some action at the request of the other, such approval or such request shall be given for the Construction Manager by its Authorized Representative (as defined below) and for the Owner by its Authorized Representative; and any party to this Agreement shall be authorized to act on any such approval or request. "Authorized Representative" shall mean the person or persons at the time designated to act on behalf of the Construction Manager or the Owner, as the case may be, by written certificate furnished to the other party specifying such person or persons and signed by a duly authorized officer or member-manager of the Construction Manager or the Owner, as the case may be.

7.9 Partial Invalidity. In the event that any one or more of the phrases, sentences, clauses, or paragraphs contained in this Agreement shall be declared invalid by unappealable order, decree, or judgment of any court, this Agreement shall be construed as if such phrases, sentences, clauses, or paragraphs had not been inserted in this Agreement, it being intended by the parties that the remaining provisions of this Agreement shall remain in full force and effect notwithstanding such invalidation.

7.10 Headings. The headings in this Agreement are inserted for convenience only and are not to be used in construing or interpreting any of the provisions of

this Agreement.

7.11 **Attorneys Fees.** If either party employs an attorney or attorneys to enforce any of the provisions of this Agreement, or to protect its interest in any manner arising under this Agreement, or to recover damages for the breach hereof, the non-prevailing party in any final judgment agrees to pay to the other party all reasonable costs, charges and expenses, including reasonable attorneys' fees and disbursements, expended or incurred in connection therewith at both the trial court and appellate court levels.

7.12 **Survival.** Each term, covenant and agreement contained herein shall survive any expiration or either termination of this Agreement and shall remain in full force and effect as between the Owner and the Construction Manager notwithstanding any such expiration or termination to the extent that any such term, covenant and agreement (i) has not been fully performed in accordance with this Agreement prior to such expiration or termination, or

(ii) contemplates performance by either party hereto subsequent to such expiration or termination.

7.13 **Waiver of Breach.** No failure by the Construction Manager or the Owner to insist upon the strict performance of any covenant, agreement, term, or condition of this Agreement, or to exercise any right or remedy consequent upon a breach thereof, shall constitute a waiver of any such breach thereof, or any subsequent breach of such covenant, agreement, term or condition. No waiver of any breach shall affect or alter this Agreement, but each and every covenant of this Agreement shall continue in full force and effect with respect to any other then existing or subsequent breach thereof.

7.14 **Entire Agreement.** This Agreement and the Exhibits attached hereto constitute the entire agreement between the Owner and the Construction Manager with respect to the subject matter hereof, and supersedes and replaces all prior or contemporaneous discussions, negotiations, letters, memoranda or other communications, oral or written, with respect to the subject matter hereof. This Agreement may only be subsequently modified or amended in a writing signed by both the Owner and the Construction Manager.

7.15 **Governing Law.** This Agreement shall be construed in accordance with and governed by the laws of the State of New York, without regard to the conflicts of laws principles thereof

Construction Manager: SJM Partners, Inc.

By: [signature]

Title: President

Owner: George Washington Bridge Bus Station Development Venture, LLC
by: PA GWB LLC, its sole member

By: [signature]

Title: Manager

Cc:

Attachment A

REDEVELOPMENT BUDGET - BROADWAY MARKETPLACE							
SITE ACQUISITION	Matrix	West ($)	West (/sf)	East ($)	East (/sf)	TOTAL ($)	Total (/sf)
Rentable Square Footage		98,350		30,925		129,275	
		76.1%		23.9%			
Brokers Fee (Port Authority)		$342,352	$3.48	$107,648	$3.48	$450,000	$3.48
Equity Fee to Investor		$0	$0.00	$0	$0.00	$0	$0.00
Ground Lease Payments							
Payable at Signing of Interim Agreement		$760,781	$7.74	$239,219	$7.74	$1,000,000	$7.74
Payable on Lease Execution		$639,056	$6.50	$200,944	$6.50	$840,000	$6.50
Payable 6 Months after Lease Exec.		$1,574,817	$16.01	$495,183	$16.01	$2,070,000	$16.01
Payable 18 Months after Lease Exec.		$1,574,817	$16.01	$495,183	$16.01	$2,070,000	$16.01
Payable at CofO		$349,959	$3.56	$110,041	$3.56	$460,000	$3.56
Total Ground Lease Advance Payment		$4,899,431	$49.82	$1,540,569	$49.82	$6,440,000	$49.82
Port Authority Administrative Fee		$426,038	$4.33	$133,962	$4.33	$560,000	$4.33
Total Site Acquisition Costs		$5,667,821	$57.63	$1,782,179	$57.63	$7,450,000	$57.63
HARD COSTS							
General Requirements		$155,600	$1.58	$48,927	$1.58	$204,527	$1.58
Environmental Abatement		$517,719	$5.26	$162,791	$5.26	$680,510	$5.26
Demolition		$745,109	$7.58	$234,191	$7.58	$979,400	$7.58
Structural		$2,148,611	$21.85	$675,606	$21.85	$2,824,217	$21.85
Misc Metal		$361,143	$3.67	$113,557	$3.67	$474,700	$3.67
Thermal and Moisture Protection		$184,946	$1.88	$58,154	$1.88	$243,100	$1.88
Exterior Wall		$3,608,077	$36.69	$1,134,518	$36.69	$4,742,595	$36.69
Interior Partitions		$578,379	$5.88	$181,865	$5.88	$760,244	$5.88
Specialties		$110,313	$1.12	$34,687	$1.12	$145,000	$1.12
Vertical Transportation		$365,175	$3.71	$114,825	$3.71	$480,000	$3.71
Plumbing		$926,744	$9.42	$291,404	$9.42	$1,218,148	$9.42
Sprinklers		$925,621	$9.41	$291,051	$9.41	$1,216,672	$9.41
HVAC		$3,803,906	$38.68	$1,196,094	$38.68	$5,000,000	$38.68
Electrical		$3,505,030	$35.64	$1,102,116	$35.64	$4,607,146	$35.64
Indirect		$217,844	$2.21	$68,498	$2.21	$286,342	$2.21
Upgrade Subway Entrance		$76,078	$0.77	$23,922	$0.77	$100,000	$0.77
Total Base Building Costs		$18,230,298	$185.36	$5,732,303	$185.36	$23,962,601	$185.36
Gym/Retail 3rd Floor East Building		$0	$0.00	$3,090,920	$99.95	$3,090,920	$23.91
Sub-Total Retail		$18,230,298		$8,823,223		$27,053,521	
Tenant Improvements - Marshall's		$3,560,190	$36.20	$0	$0.00	$3,560,190	$27.54
DV Contribution to PANYNJ Vertical Transportation		$1,944,140	$19.77	$611,312	$19.77	$2,555,452	$19.77
Common Area Construction		$1,190,915	$12.11	$374,469	$12.11	$1,565,384	$12.11
Contribution from PANYNJ for Common Areas		-$380,391	-$3.87	-$119,609	-$3.87	-$500,000	-$3.87
Allowances		$3,107,698	$11.26	$348,302	$11.26	$1,456,000	$11.26
Value Engineering (see VE Tab)		-$1,066,216	-$10.84	-$335,259	-$10.84	-$1,401,475	-$10.84
Tenant Improvements - Retail		$1,671,615	$17.00	$1,391,625	$45.00	$3,108,240	$24.04
Tenant Allowance - Retail		$0	$0.00	$0	$0.00	$0	$0.00
Sub-total Retail Improvements/Other		$8,027,950		$2,270,840		$10,343,791	
Sub-total Hard Costs		$26,258,249		$11,094,063		$37,397,312	$289.28
General Conditions		$1,115,261	$11.34	$350,681	$11.34	$1,465,942	$11.34
SJM - Construction Management fee		$365,175	$3.71	$114,825	$3.71	$480,000	$3.71
Insurance - Subguard (Bonding Costs)	1.25%	$354,027	$3.60	$111,320	$3.60	$465,347	$3.60
CCIP	3.20%	$906,310	$9.22	$284,978	$9.22	$1,191,288	$9.22
Construction Management Fee		-$1,246,505	-$12.67	-$391,949	-$12.67	-$1,638,454	-$12.67
Builder's Risk - Developer	0.20%	$56,644	$0.58	$17,811	$0.58	$74,455	$0.58
Payment & Performance Bond (P&P)	1.20%	$339,866	$3.46	$106,867	$3.46	$446,733	$3.46
Surveying/Existing		$100,000	$1.02	$100,000	$3.23	$200,000	$1.55
Sub-Total Construction Soft Costs		$1,990,778	$20.26	$694,533	$22.46	$2,685,311	$20.77
Contingencies							
Hard cost contingency		$1,524,705	$15.50	$479,426	$15.50	$2,004,131	$15.50
Contingency		$1,524,705	$15.50	$479,426	$15.50	$2,004,131	$15.50
TOTAL HARD COSTS		$29,773,732	$302.73	$12,268,021	$396.70	$42,086,754	$325.56
SOFT COSTS							
Architectural & Engineering		$4,379,039	$44.53	$1,376,937	$44.53	$5,755,976	$44.53
Skanska preconstruction work		$164,012	$1.67	$51,571	$1.67	$215,583	$1.67
Marketing		$118,858	$1.21	$37,374	$1.21	$156,232	$1.21
Legal		$980,436	$9.97	$308,287	$9.97	$1,288,723	$9.97
Leasing Commissions		$2,154,813	$21.91	$677,556	$21.91	$2,832,369	$21.91
Developers Fee		$1,396,753	$14.20	$439,192	$14.20	$1,835,945	$14.20
Pre-Development General Liability Insurance		$29,218	$0.30	$9,187	$0.30	$38,405	$0.30
Title Insurance		$0	$0.00	$0	$0.00	$0	$0.00
Closing Costs		$1,198,231	$12.18	$376,769	$12.18	$1,575,000	$12.18
recordation fees	3.00%	$1,483,523	$15.08	$466,477	$15.08	$1,950,000	$15.08
Soft Cost Contingency		$595,294	$6.05	$187,168	$6.05	$782,432	$6.05
TOTAL SOFT COSTS		$12,500,127	$127.10	$3,930,518	$127.10	$16,430,645	$127.10
FINANCING COSTS							
Debt Service During Construction	$4,967,487	$3,779,171	$38.43	$1,188,316	$38.43	$4,967,487	$38.43
Debt Service Reserves		$0	$0.00	$0	$0.00	$0	$0.00
TOTAL FINANCING COSTS		$3,779,171	$38.43	$1,188,316	$38.43	$4,967,487	$38.43
TOTAL PROJECT COST		$51,720,852	$526	$19,169,034	$620	$70,934,885	$548.71

George Washington Bridge Bus Station Redevelopment
Attachment B

Construction Manager			
Fee Schedule			
	month	$ / month	Cumulative amount
Construction	1	$ 26,666.67	$ 26,666.67
Stage	2	$ 26,666.67	$ 53,333.34
	3	$ 26,666.67	$ 80,000.01
	4	$ 26,666.67	$ 106,666.68
	5	$ 26,666.67	$ 133,333.35
	6	$ 26,666.67	$ 160,000.02
	7	$ 26,666.67	$ 186,666.69
	8	$ 26,666.67	$ 213,333.36
	9	$ 26,666.67	$ 240,000.03
	10	$ 26,666.67	$ 266,666.70
	11	$ 26,666.67	$ 293,333.37
	12	$ 26,666.67	$ 320,000.04
	13	$ 26,666.67	$ 346,666.71
	14	$ 26,666.67	$ 373,333.38
	15	$ 26,666.67	$ 400,000.05
	16	$ 26,666.67	$ 426,666.72
	17	$ 26,666.67	$ 453,333.39
	18	$ 26,666.61	$ 480,000.00
Total		$ 480,000.00	

Exhibit E

Acadia Loan

PROMISSORY NOTE

$1,950,000 March 31, 2010

FOR VALUE RECEIVED, and upon the terms and conditions set forth herein, P/A GWB LLC, a Delaware limited liability company ("Borrower"), promises to pay to the order of ACADIA STRATEGIC OPPORTUNITY FUND III LLC, a Delaware limited liability company (the "Lender"), at Lender's office located at 1311 Mamaroneck Avenue, Suite 260, White Plains, New York, or at such other place as Lender may designate to Borrower in writing from time to time, the principal sum of ONE MILLION NINE HUNDRED FIFTY THOUSAND DOLLARS ($1,950,000) or so much thereof as is outstanding and unpaid, together with interest thereon at the rate of ten percent (10%) per annum ("Interest Rate"), in lawful money of the United States of America, which, at the time of payment, shall be legal tender in payment of all debts and dues, public and private.

1. COMPUTATION OF INTEREST. Interest under this Note shall accrue and shall be calculated based on a 360-day year and paid for the actual number of days elapsed for any whole or partial month in which interest is being calculated. Interest shall accrue from the date hereof through and including the day on which funds are repaid.

2. PAYMENT OF PRINCIPAL AND INTEREST.

2.01 Principal and Interest Payments. Beginning on the first day after the Borrower closes a construction loan or other form of financing to be used in the redevelopment of the George Washington Bridge facility, including its retail components (the "Project") which contains a proper and adequate line item to fund all principal and accrued interest due under this Note as pre-development costs and expenses on or before the Maturity Date (as that term is defined below) (the "Redevelopment Financing"), and on and periodically through the Maturity Date (as hereinafter defined), Borrower shall pay principal and interest due under this Note.

2.02 Payment Upon Maturity Date. On or before the Maturity Date, which shall be defined as the earlier of (i) payoff of the Redevelopment Financing; or (ii) the fifth anniversary hereof, the entire outstanding principal balance hereof, together with all accrued but unpaid interest thereon and any other amounts due under the Note shall be due and payable in full.

2.03 Method of Payment. The payment due hereunder shall not be deemed paid to Lender until received on a Business Day (as hereafter defined) in Federal funds immediately available to Lender prior to 2:00 p.m. local time at the place then designated by Lender. Any payment received on a Business Day after the time established by the preceding sentence, shall be deemed to have been received on the immediately following Business Day for all purposes, including, without limitation, the accrual of interest on principal, provided, however, that whenever any payment to be made under this Note shall be stated to be due on a Saturday, Sunday or a public holiday or the equivalent for banks generally under the laws of the State of New York (any other day being a "Business Day"), such payment may be made on the next succeeding Business Day, and such extension of time shall in such case be included in the computation of payment of interest.

2.04 Application of Payments. Payments under this Note shall be applied first to the payment of late fees and other costs and charges due in connection with this Note, as Lender determines in its sole discretion, then to the payment of accrued but unpaid interest, and then to reduction of the outstanding principal balance. No principal amount repaid may be reborrowed. All amounts due under this Note shall be payable without setoff, counterclaim or any other deduction whatsoever.

2.05 Prepayment. This Note may be prepaid in whole or in part, but in no event in increments of less that $25,000, unless it is a prepayment in full, at anytime upon no less than ten days' notice provided that any prepayment of principal shall be accompanied by all accrued but unpaid interest and any other amounts then due. Any accrued but unpaid interest may be paid by Borrower at any time without premium or penalty.

2.06 FAILURE TO CLOSE ON THE REDEVELOPMENT FINANCING. NOTWITHSTANDING ANYTHING TO THE CONTRARY CONTAINED HEREIN, IN THE EVENT BORROWER FAILS TO CLOSE ON THE REDEVELOPMENT FINANCING ON OR BEFORE THREE YEARS OF THE DATE HEREOF, NEITHER THE PRINCIPAL AMOUNT DUE HEREUNDER NOR ANY ACCRUED INTEREST SHALL BE DUE OR PAYABLE AND ALL OBLIGATIONS OF THE BORROWER HEREUNDER SHALL TERMINATE.

3. DEFAULT.

3.01 Event of Default. The occurrence of any of the following shall constitute an event of default ("Event of Default") under this Note:

(a) if any payment of principal and interest or any other payment required under this Note is not received by Lender on or before the date such payment is due;

(b) if default shall be made in the due observance or performance of any covenant, term or agreement on the part of the Borrower, and such default shall have continued for a period of twenty (20) days after written notice specifying such default shall have been given to the Borrower by the Lender, (i) unless such term, covenant or agreement cannot be complied with or such default be cured in such period and (ii) the Borrower shall commence compliance with such term, covenant or agreement or curing such default and shall continue to diligently prosecute such compliance or curing such default; or

(c) if any representation or warranty of Borrower, or any member, general partner, principal or beneficial owner of any of the foregoing, made herein, or in any certificate, report, financial statement or other instrument or document furnished to Lender shall have been false or misleading in any material respect when made;

(d) if final judgment for the payment of money in excess of the sum of $250,000 in the aggregate shall be rendered against the Borrower and the Borrower shall not discharge the same or cause it to be discharged or bonded within sixty (60) days from the entry thereof, or shall not appeal therefrom or from the order, decree or process upon which or

pursuant to which said judgment was granted, based or entered, and secure a stay of execution pending such appeal; or

(e) if Borrower shall make an assignment for the benefit of creditors or if Borrower shall generally not be paying its debts as they become due; or

(f) if (i) Borrower shall commence any case, proceeding or other action (A) under any existing or future law of any jurisdiction, domestic or foreign, relating to bankruptcy, insolvency, reorganization, conservatorship or relief of debtors, seeking to have an order for relief entered with respect to it, or seeking to adjudicate it a bankrupt or insolvent, or seeking reorganization, arrangement, adjustment, winding-up, liquidation, dissolution, composition or other relief with respect to it or its debts, or (B) seeking appointment of a receiver, trustee, custodian, conservator or other similar official for it or for all or any substantial part of its assets, or the Borrower shall make a general assignment for the benefit of its creditors; or (ii) there shall be commenced against Borrower any proceeding or other action of a nature referred to in clause (i) above which (A) results in the entry of an order for relief or any such adjudication or appointment or (B) remains undismissed, undischarged or unbonded for a period of sixty (60) days; or (iii) there shall be commenced against the Borrower any case, proceeding or other action seeking issuance of a warrant of attachment, execution, distraint or similar process against all or any substantial part of its assets which results in the entry of any order for any such relief which shall not have been vacated, discharged, or stayed or bonded pending appeal within sixty (60) days from the entry thereof; or (iv) the Borrower shall take any action in furtherance of, or indicating its consent to, approval of, or acquiescence in, any of the acts set forth in clause (i), (ii), or (iii) above; or (v) the Borrower shall generally not, or shall be unable to, or shall admit in writing its inability to, pay its debts as they become due; or

(g) if the Borrower sells, transfers, assigns, conveys or encumbers its leasehold interest in the George Washington Bridge retail facility or any part thereof or any interest therein without the prior written consent of the Lender except for the Redevelopment Financing, and any other financing which is used to develop the Project; or

(h) if any default occurs after applicable grace periods, if any, under any other loan of the Borrower and that lender accelerates its loan; or

(i) if the Borrower defaults under any other agreement with the Lender; or

(j) if any membership interest in the Borrower, if the Borrower is a limited liability company, shall be sold, assigned, transferred, conveyed, mortgaged, pledged, hypothecated or alienated without the prior written consent of the Lender unless it is pledged to support financings referenced in Section 3.01(g) above; or

(k) if the operating agreement of Borrower shall be materially amended without the prior written consent of Lender.

3.02 Default Interest Rate. If this Note is not paid in full on or before the Maturity Date or the date on which the due date of the indebtedness has been accelerated pursuant to the provisions hereof, the unpaid principal and accrued interest and other amounts then due shall bear interest at a rate per annum ("Default Interest Rate") equal to the lesser of (a) eighteen percent (18%) in excess of the Interest Rate or (b) the maximum rate of interest, if any, which

may be charged or collected from Borrower under applicable law. Interest at the Default Interest Rate shall be immediately due and payable from the due date specified herein and shall accrue until all Events of Default have been fully cured or full payment is received, as applicable.

3.03 Interest on Judgments. Interest shall accrue on any judgment obtained by Lender in connection with the enforcement or collection of this Note until such judgment amount is paid in full at a rate equal to the greater of (a) the Default Interest Rate or (b) the legal rate applicable to judgments within such jurisdiction; provided, however, that interest shall not accrue at a rate in excess of the maximum rate of interest, if any, which may be charged or collected from Borrower under applicable law.

3.04 Cumulative Remedies; Attorney Fees. The remedies of Lender in this Note, or at law or in equity, shall be cumulative and concurrent, and may be pursued singly, successively or together in Lender's sole discretion and as often as occasion therefor shall arise. If Borrower's obligations under this Note are enforced by Lender through an attorney-at-law, or any payment due under this Note is collected by or through an attorney-at-law or collection agency, Borrower agrees to pay all costs incurred by Lender in connection therewith, including, but not limited to, reasonable fees and disbursements of legal counsel (whether with respect to a retained firm or Lender's in-house staff) and collection agency costs, whether or not suit be brought. No provision of this Section 3 shall be construed as an agreement or privilege to extend the Maturity Date, nor as a waiver of any other right or remedy accruing to Lender by reason of the occurrence of an Event of Default. The payments required under this Section 3 shall be in addition to, and shall in no way limit, any other rights and remedies provided for in this Note or any other remedies provided by law or in equity, and shall be added to the principal evidenced by this Note.

4. RECOURSE.

4.01 Non-Recourse. The Lender agrees that, for payment under this Note, that no property or assets of the Borrower or any other person, firm or entity, disclosed or undisclosed (other than a person, firm or entity who or which has expressly guaranteed the Borrower's obligations under this Note) shall be subject to levy, execution or other enforcement procedure for the satisfaction of the remedies of the Lender, or for any payment required to be made under this Note or for the performance of any of the covenants or warranties contained herein; provided that the foregoing provisions of this paragraph shall not constitute a waiver of any obligation evidenced by this Note.

4.02 Non-recourse Carveouts. Notwithstanding Section 4.01 above, Borrower shall liable to Lender for any loss, damage, cost, expense, liability, claim or other obligation incurred by Lender (including attorneys' fees and costs reasonably incurred) arising out of or in connection with the following:

(i) fraud or intentional misrepresentation by Borrower or any principal of, investor in or parent of Borrower in connection with the making of the loan evidenced by this Note (the "Loan");

(ii) the gross negligence or willful misconduct of Borrower;

(iii) the misappropriation, misapplication or conversion by Borrower of (A) funds or other personal property, (B) any insurance proceeds paid by reason of any loss, damage or destruction to any property, now owned or hereafter acquired and whether now existing or hereafter coming into existence, by George Washington Bridge Bus Station Development Venture LLC ("GWB") (the "Property"), (C) any awards or other amounts received in connection with the condemnation of all or a portion of the Property, (D) any rents collected from any tenant at the Property ("Rents") following an Event of Default, or (E) any Rents paid more than one month in advance; or

(iv) failure to pay charges for labor or materials or other charges that can create liens on any portion of the Property unless such liens are bonded, discharged or stayed within 30 days of notice thereof;

(v) physical waste;

(vi) failure to maintain insurance;

(vii) any distribution is made by GWB to any member of GWB without the prior, written consent of Lender;

(viii) failure of Borrower to ensure that the Redevelopment Financing includes a line item to fund all principal and accrued interest on this Note by the Maturity Date;

(ix) criminal acts; and

(ix) transfers in violation of this Note.

5. NO USURY. This Note is subject to the express condition that at no time shall Borrower be required or obligated to pay interest (or any other amount agreed to be paid hereunder which shall be deemed to be interest) at a rate which would subject Lender to either civil or criminal liability as a result of being in excess of the maximum interest rate which Borrower is permitted by applicable law to pay. If, from any circumstance whatsoever, Borrower is at any time required or obligated to pay interest (or any other amount agreed to be paid hereunder shall be deemed to be interest) at a rate in excess of such maximum rate, then the amount to be paid immediately shall be reduced to such maximum rate, and, as required by applicable law, all previous payments in excess of such maximum shall be deemed to have been payments in reduction of the principal balance owing under this Note in the inverse order of maturity (whether or not then due) or, at the option of Lender, be paid over to Borrower and not to the payment of interest. All sums paid or agreed to be paid to Lender for the use, forbearance or detention of the indebtedness evidenced hereby shall, to the extent permitted by applicable law, be amortized, prorated, allocated and spread throughout the full stated term of this Note until payment in full so that the rate or amount of interest on account of said indebtedness does not exceed the maximum lawful rate of interest from time to time in effect and applicable to this Note for so long as the Note is outstanding. This Section will control all agreements between Borrower and Lender in connection with this Note.

6. GENERAL CONDITIONS.

6.01 No Waiver by Lender. No failure to accelerate the debt evidenced hereby nor failure or delay in exercising any other right or remedy upon the occurrence of an Event of Default hereunder, or any acceptance of a partial or past due payment, or indulgences granted from time to time shall be construed (a) as a novation of this Note or as a reinstatement of the indebtedness evidenced hereby, (b) as a waiver or impairment of Lender's right of acceleration or any other right or remedy available to Lender upon the occurrence of an Event of Default, or (c) as a waiver of Lender's right thereafter to insist upon strict compliance with the terms of this Note; and Borrower hereby expressly waives the benefit of any statute or rule of law or equity now provided, or which may hereafter be provided, which would produce a result contrary to or in conflict with the foregoing. No extension of the time for payment of any amount due under this Note made by Lender's agreement with any person now or hereafter liable for the payment thereof shall operate to release, discharge, modify, change or affect the original liability of Borrower under this Note or any such other person, either in whole or in part unless Lender agrees otherwise in writing.

6.02 Borrower's Waivers. Borrower, for itself and all others who may become liable for payment of all or any part of the indebtedness evidenced by this Note, hereby waives presentment for payment, demand, protest, and notice of dishonor, protest, nonpayment, demand, intent to accelerate, and acceleration, except as expressly permitted by the terms of this Note. Borrower, for itself and all others who may become liable for payment of all or any part of the indebtedness evidenced by this Note, hereby further waives and renounces, to the fullest extent permitted by law, all rights to the benefits of any moratorium, reinstatement, marshalling, forbearance, valuation, stay, extension, redemption, appraisement, exemption and homestead now or hereafter provided by the Constitution and laws of the United States of America and of each state thereof, both as to party and property (real and personal), against the enforcement and collection of the obligations evidenced by this Note.

6.03 Unconditional Payment. If any payment received by Lender hereunder shall be deemed by a court of competent jurisdiction to have been a voidable preference or fraudulent conveyance under any bankruptcy, insolvency or other debtor relief law, then the obligation to make such payment shall survive any cancellation or satisfaction of this Note or return thereof to Borrower and shall not be discharged or satisfied with any prior payment thereof or cancellation of this Note, but shall remain a valid and binding obligation enforceable in accordance with the terms and provisions hereof, and such payment shall be immediately due and payable upon demand. No release of any security for this Note or any party liable for payment of this Note shall release or affect the liability of Borrower or any other party who may become liable for payment of all or any part of the indebtedness evidenced by this Note. Lender may release any guarantor, surety or indemnitor of this Note from liability, in every instance without the consent of Borrower hereunder and without waiving any rights which Lender may have hereunder or under applicable law or in equity.

6.04 Authority. Borrower represents that Borrower has full power, authority and legal right to execute, deliver and perform its obligations pursuant to this Note, that the execution,

delivery and performance of this Note has been duly authorized, that the person executing this Note on Borrower's behalf has authority to do so, and that this Note, once executed by Borrower, constitutes the valid and binding obligation of Borrower, enforceable in accordance with its terms.

6.05 Negotiable Instrument. Borrower agrees that this Note shall be deemed a negotiable instrument, even though this Note, absent this paragraph, may not otherwise qualify as a negotiable instrument under applicable law.

7. MISCELLANEOUS.

7.01 Notices. All notices and other communications under this Note are to be in writing, addressed to the respective party as set forth in this section, and shall be deemed to have been duly given (a) upon delivery, if delivered in person with receipt acknowledged by the recipient thereof, (b) one (1) Business Day after having been deposited for overnight delivery, fee prepaid, with any reputable overnight courier service, or (c) three (3) Business Days after having been deposited in any post office or mail depository regularly maintained by the U.S. Postal Service and sent by registered or certified mail, postage prepaid, return receipt requested. Initial addresses for each party are as follows:

Borrower: P/A GWB LLC
250 West 57th Street
Suite 1120
New York, New York 10107
Attention: Aaron Malinsky
Fax: (212) 748-7951
e-mail: am@pa-assoc.com

Lender: Acadia Strategic Opportunity Fund III LLC
c/o Acadia Realty Trust
1311 Mamaroneck Avenue
Suite 260
White Plains, New York 10605
Attention: Robert Masters, Esq.
Fax: (914) 288-2139
e-mail: rmasters@acadiarealty.com

Each party may establish a new address from time to time by written notice to the other given in accordance with this section; provided, however, that no such change of address will be effective until written notice thereof is actually received by the party to whom such change of address is sent. Notice to additional parties now or hereafter designated by a party entitled to notice are for convenience only and are not required for notice to a party to be effective in accordance with this section.

7.02 Entire Agreement; Time of Essence. This Note contains the entire agreement between Borrower and Lender relating to the subject matter hereof and thereof, and supersedes

all prior discussions and agreements (oral or written) relative hereto and thereto which are not contained herein or therein. Borrower represents and warrants that it is not relying on any promises, covenants, representations or agreements in connection with this Note, other than as expressly set forth herein or therein. Time is of the essence with respect to all provisions of this Note.

7.03 Modification. This Note may not be changed, waived, supplemented, discharged or terminated orally or by any act or failure to act on the part of Borrower or Lender, but only by an agreement in writing signed by the party against whom enforcement thereof is sought and then only to the extent expressly set forth in such writing. No person other than a duly authorized officer or agent of Lender shall be deemed an agent of Lender nor have any authority to waive, modify, supplement or terminate in any manner whatsoever any of the terms of this Note.

7.04 Binding Effect; Joint and Several Obligations. The terms and provisions of this Note shall be binding upon and inure to the benefit of Borrower and Lender and their respective heirs, executors, legal representatives, successors, successors and assigns, whether by voluntary action of the parties or by operation of law. If Borrower consists of more than one person or entity, each shall be jointly and severally liable to perform the obligations of Borrower under this Note and the other Loan Documents.

7.05 Unenforceable Provisions. Any provision of this Note which may be determined by competent authority to be prohibited or unenforceable in any jurisdiction shall, as to such jurisdiction, be ineffective only to the extent of such prohibition or unenforceability without invalidating the remaining provisions hereof, and any such prohibition or unenforceability in any jurisdiction shall not invalidate or render unenforceable such provision in any other jurisdiction.

7.06 Ambiguity and Construction of Certain Terms. Neither this Note nor any uncertainty or ambiguity herein shall be construed or resolved against Lender by virtue of the fact that such document has originated with Lender as drafter. Borrower acknowledges that it has reviewed this Note and has had the opportunity to consult with counsel on same. This Note, therefore, shall be construed and interpreted according to the ordinary meaning of the words used so as to fairly accomplish the purposes and intentions of the parties hereto. All personal pronouns used herein, whether used in the masculine, feminine or neuter gender, shall be deemed to include all other genders; the singular shall include the plural and vice versa. Titles of articles and sections are for convenience only and in no way define, limit, amplify or describe the scope or intent of any provisions hereof. "Herein," "hereof" and "hereunder" and other words of similar import refer to this Note as a whole and not to any particular section, paragraph or other subdivision; "Section" refers to the entire section and not to any particular subsection, paragraph of other subdivision. Reference to days for performance shall mean calendar days unless Business Days are expressly indicated.

7.07 Governing Law. This Note shall be interpreted, construed and enforced according to the laws of the State of New York.

7.08 Consent to Jurisdiction. Borrower and Lender, by its acceptance of this Note, agree and consent to the exclusive jurisdiction and venue of any state or federal court sitting in New York County, New York with respect to any legal action, proceeding, or controversy between them and hereby expressly waive any and all rights under applicable law or in equity to object to the jurisdiction and venue of said courts. Borrower further irrevocably consents to service of process by certified mail, return receipt requested, to Borrower at the address for Borrower last provided to Lender in accordance with the notice provision of this Note and agrees that such service shall be effective ten (10) days after mailing. Nothing herein shall, however, preclude or prevent Lender from bringing any one or more actions against Borrower in any other jurisdiction as may be necessary to enforce or realize upon the Security or other collateral provided for this Note.

7.09 WAIVER OF JURY TRIAL. BORROWER AND LENDER (BY ITS ACCEPTANCE OF THIS NOTE) HEREBY WAIVE, TO THE FULLEST EXTENT PERMITTED BY LAW, ANY RIGHT THAT EITHER MAY HAVE TO TRIAL BY JURY IN ANY LEGAL ACTION, PROCEEDING, OR COUNTERCLAIM, WHETHER IN CONTRACT, TORT OR OTHERWISE, RELATING DIRECTLY OR INDIRECTLY TO THE INDEBTEDNESS EVIDENCED BY THIS NOTE; THE APPLICATION OR COMMITMENT FOR THE LOAN EVIDENCED BY THIS NOTE; THE INTERPRETATION, CONSTRUCTION, VALIDITY, ENFORCEMENT OR PERFORMANCE OF THIS NOTE; OR ANY ACTS OR OMISSION OF THE OTHER PARTY, ITS OFFICERS, EMPLOYEES, DIRECTORS OR AGENTS IN CONNECTION WITH ANY OF THE FOREGOING.

[SIGNATURE PAGE FOLLOWS]

IN WITNESS WHEREOF, Borrower has executed this Note under seal as of the date first above written.

BORROWER:

P/A GWB LLC

By: _____
Name:
Title:

GUARANTY

THIS GUARANTY (this "Guaranty") is executed as of March 31, 2010, by **GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC**, a Delaware limited liability company, having an address at 250 West 57th Street, New York, New York 10107 (the "Guarantor"), for the benefit of **ACADIA STRATEGIC OPPORTUNITY FUND III, LLC** a Delaware limited liability company, having an address at c/o Acadia Realty Trust, 1311 Mamaroneck Avenue, Suite 260, White Plains, New York 10605 ("Lender").

WITNESSETH:

WHEREAS, pursuant to that certain Promissory Note, dated of even date herewith, executed by P/A GWB LLC, a Delaware limited liability company ("Borrower") in favor of Lender in the original principal amount of ONE MILLION NINE HUNDRED FIFTY THOUSAND and 00/100 DOLLARS ($1,950,000) (as the same may hereafter be amended, restated, renewed, supplemented, replaced, extended or otherwise modified from time to time, the "Note"), Borrower has become indebted to Lender with respect to a loan (the "Loan") which is evidenced by such other instruments and documents executed in connection with the Loan (together with the Note, hereinafter collectively referred to as the "Loan Documents"); and

WHEREAS, Lender is not willing to make the Loan, or otherwise extend credit, to Borrower unless Guarantor unconditionally guarantees payment and performance to Lender of the Guaranteed Obligations (as herein defined); and

WHEREAS, Guarantor is the owner of direct or indirect interests in Borrower, and Guarantor will directly benefit from the Lender making the Loan to Borrower.

NOW, THEREFORE, as an inducement to Lender to make the Loan to Borrower, and to extend such additional credit as Lender may from time to time agree to extend under the Loan Documents, and for other good and valuable consideration, the receipt and legal sufficiency of which are hereby acknowledged, the parties do hereby agree as follows:

ARTICLE I

NATURE AND SCOPE OF GUARANTY

1.1 Guaranty of Obligations. Guarantor hereby irrevocably and unconditionally guarantees to Lender and its successors and assigns the payment and performance of the Guaranteed Obligations, as that term is hereinafter defined, as and when the same shall be due and payable, whether by lapse of time, by acceleration of maturity or otherwise. Guarantor hereby irrevocably and unconditionally covenants and agrees that it is liable for the Guaranteed Obligations as a primary obligor.

1.2 Definition of Guaranteed Obligations. As used herein, the term "Guaranteed Obligations" means (a) the obligations or liabilities of Guarantor to Lender for any

loss, damage, cost, expense, liability, claim or other obligation incurred by Lender (including attorneys' fees and costs reasonably incurred) arising out of or in connection with the following:

(i) any distribution made by Guarantor to any member of Guarantor without the prior, written consent of Lender; or

(ii) failure of Borrower to ensure that the Redevelopment Financing (as defined in the Note) include a line item to fund all principal and accrued interest due under the Note by the Maturity Date (as defined in the Note); or

(iii) a transfer of any membership interest in Guarantor without the prior, written consent of Lender, except in connection with the Redevelopment Financing.

1.3 Nature of Guaranty. This Guaranty is an irrevocable, absolute, continuing guaranty of payment and performance and not a guaranty of collection. This Guaranty may not be revoked by Guarantor and shall continue to be effective with respect to any Guaranteed Obligations arising or created after any attempted revocation by Guarantor. The fact that at any time or from time to time the Guaranteed Obligations may be increased or reduced shall not release or discharge the obligation of Guarantor to Lender with respect to the Guaranteed Obligations. This Guaranty may be enforced by Lender and any subsequent holder of the Note and shall not be discharged by the assignment or negotiation of all or part of the Note.

1.4 Guaranteed Obligations Not Reduced by Offset. The Guaranteed Obligations and the liabilities and obligations of Guarantor to Lender hereunder, shall not be reduced, discharged or released because or by reason of any existing or future offset, claim or defense of Guarantor, or any other party, against Lender or against payment of the Guaranteed Obligations, whether such offset, claim or defense arises in connection with the Guaranteed Obligations (or the transactions creating the Guaranteed Obligations) or otherwise.

1.5 Payment By Guarantor. If all or any part of the Guaranteed Obligations shall not be punctually paid when due, whether at demand, maturity, acceleration or otherwise, Guarantor shall, immediately upon demand by Lender, and without presentment, protest, notice of protest, notice of non-payment, notice of intention to accelerate the maturity, notice of acceleration of the maturity, or any other notice whatsoever, pay in lawful money of the United States of America, the amount due on the Guaranteed Obligations to Lender at Lender's address as set forth herein. Such demand(s) may be made at any time coincident with or after the time for payment of all or part of the Guaranteed Obligations, and may be made from time to time with respect to the same or different items of Guaranteed Obligations. Such demand shall be deemed made, given and received in accordance with the notice provisions hereof.

1.6 No Duty To Pursue Others. It shall not be necessary for Lender (and Guarantor hereby waives any rights which Guarantor may have to require Lender), in order to enforce the obligations of Guarantor hereunder, first to (i) institute suit or exhaust its remedies against Guarantor or others, if any, liable under the Loan Documents or the Guaranteed Obligations or any other person, (ii) enforce Lender's rights against any collateral which shall ever have been given to secure the Loan, (iii) enforce Lender's rights against any other guarantors of the Guaranteed Obligations, (iv) join Guarantor or any others liable on the

Guaranteed Obligations in any action seeking to enforce this Guaranty, (v) exhaust any remedies available to Lender against any collateral which shall ever have been given to secure the Loan, or (vi) resort to any other means of obtaining payment of the Guaranteed Obligations. Lender shall not be required to mitigate damages or take any other action to reduce, collect or enforce the Guaranteed Obligations.

1.7 Waivers. Guarantor agrees to the provisions of the Loan Documents, and hereby waives notice of (i) any loans or advances made by Lender to Borrower, (ii) acceptance of this Guaranty, (iii) any amendment or extension of the Note or of any other Loan Documents, (iv) the execution and delivery by Borrower and Lender of any other loan or credit agreement or of Borrower's execution and delivery of any promissory notes or other documents arising under the Loan Documents or in connection with the Property, (v) the occurrence of any breach by Borrower or an Event of Default, (vi) Lender's transfer or disposition of the Guaranteed Obligations, or any part thereof, (vii) sale or foreclosure (or posting or advertising for sale or foreclosure) of any collateral for the Guaranteed Obligations, (viii) protest, proof of non-payment or default by Borrower, or (ix) any other action at any time taken or omitted by Lender, and, generally, all demands and notices of every kind in connection with this Guaranty, the Loan Documents, any documents or agreements evidencing, securing or relating to any of the Guaranteed Obligations and the obligations hereby guaranteed.

1.8 Payment of Expenses. In the event that Guarantor should breach or fail to timely perform any provisions of this Guaranty, Guarantor shall, immediately upon demand by Lender, pay Lender all costs and expenses (including court costs and attorneys' fees) incurred by Lender in the enforcement hereof or the preservation of Lender's rights hereunder. The covenant contained in this Section 1.8 shall survive the payment and performance of the Guaranteed Obligations.

1.9 Effect of Bankruptcy. In the event that, pursuant to any insolvency, bankruptcy, reorganization, receivership or other debtor relief law, or any judgment, order or decision thereunder, Lender must rescind or restore any payment, or any part thereof, received by Lender in satisfaction of the Guaranteed Obligations, as set forth herein, any prior release or discharge from the terms of this Guaranty given to Guarantor by Lender shall be without effect, and this Guaranty shall remain in full force and effect. It is the intention of Guarantor and Lender that Guarantor's obligations hereunder shall not be discharged except by Guarantor's performance of such obligations and then only to the extent of such performance.

1.10 Waiver of Subrogation, Reimbursement and Contribution. Notwithstanding anything to the contrary contained in this Guaranty, Guarantor hereby unconditionally and irrevocably waives, releases and abrogates any and all rights it may now or hereafter have under any agreement, at law or in equity (including, without limitation, any law subrogating the Guarantor to the rights of Lender), to assert any claim against or seek contribution, indemnification or any other form of reimbursement from Guarantor or any other party liable for payment of any or all of the Guaranteed Obligations for any payment made by Guarantor under or in connection with this Guaranty or otherwise.

ARTICLE II

EVENTS AND CIRCUMSTANCES NOT REDUCING OR DISCHARGING GUARANTOR'S OBLIGATIONS

Guarantor hereby consents and agrees to each of the following, and agrees that Guarantor's obligations under this Guaranty shall not be released, diminished, impaired, reduced or adversely affected by any of the following, and waives any common law, equitable, statutory or other rights (including without limitation rights to notice) which Guarantor might otherwise have as a result of or in connection with any of the following:

2.1 Modifications. Any renewal, extension, increase, modification, alteration or rearrangement of all or any part of the Guaranteed Obligations, the Note, the other Loan Documents, or any other document, instrument, contract or understanding between the Borrower and Lender, or any other parties, pertaining to the Guaranteed Obligations or any failure of Lender to notify Guarantor of any such action.

2.2 Adjustment. Any adjustment, indulgence, forbearance or compromise that might be granted or given by Lender to Borrower or any Guarantor.

2.3 Condition of Guarantor or Guarantor. The insolvency, bankruptcy, arrangement, adjustment, composition, liquidation, disability, dissolution or lack of power of Borrower, any Guarantor or any other party at any time liable for the payment of all or part of the Guaranteed Obligations; or any dissolution of Borrower, or any sale, lease or transfer of any or all of the assets of Borrower or Guarantor, or any changes in the shareholders, partners or members of Borrower; or any reorganization of Borrower.

2.4 Invalidity of Guaranteed Obligations. The invalidity, illegality or unenforceability of all or any part of the Guaranteed Obligations, or any document or agreement executed in connection with the Guaranteed Obligations, for any reason whatsoever, including without limitation the fact that (i) the Guaranteed Obligations, or any part thereof, exceeds the amount permitted by law, (ii) the act of creating the Guaranteed Obligations or any part thereof is ultra vires, (iii) the officers or representatives executing the Note or the other Loan Documents or otherwise creating the Guaranteed Obligations acted in excess of their authority, (iv) the Guaranteed Obligations violate applicable usury laws, (v) the Guarantor has valid defenses, claims or offsets (whether at law, in equity or by agreement) which render the Guaranteed Obligations wholly or partially uncollectible from Guarantor, (vi) the creation, performance or repayment of the Guaranteed Obligations (or the execution, delivery and performance of any document or instrument representing part of the Guaranteed Obligations or executed in connection with the Guaranteed Obligations, or given to secure the repayment of the Guaranteed Obligations) is illegal, uncollectible or unenforceable, or (vii) the Note or any of the other Loan Documents have been forged or otherwise are irregular or not genuine or authentic, it being agreed that Guarantor shall remain liable hereon regardless of whether Guarantor or any other person be found not liable on the Guaranteed Obligations or any part thereof for any reason.

2.5 Release of Obligors. Any full or partial release of the liability of Guarantor on the Guaranteed Obligations, or any part thereof, or of any co-guarantors, or any

other person now or hereafter liable, whether directly or indirectly, jointly, severally, or jointly and severally, to pay, perform, guarantee or assure the payment of the Guaranteed Obligations, or any part thereof, it being recognized, acknowledged and agreed by Guarantor that Guarantor may be required to pay the Guaranteed Obligations in full without assistance or support of any other party, and Guarantor has not been induced to enter into this Guaranty on the basis of a contemplation, belief, understanding or agreement that other parties will be liable to pay or perform the Guaranteed Obligations, or that Lender will look to other parties to pay or perform the Guaranteed Obligations.

2.6 Other Collateral. The taking or accepting of any other security, collateral or guaranty, or other assurance of payment, for all or any part of the Guaranteed Obligations.

2.7 Release of Collateral. Any release, surrender, exchange, subordination, deterioration, waste, loss or impairment (including without limitation negligent, willful, unreasonable or unjustifiable impairment) of any collateral, property or security at any time existing in connection with, or assuring or securing payment of, all or any part of the Guaranteed Obligations.

2.8 Care and Diligence. The failure of Lender or any other party to exercise diligence or reasonable care in the preservation, protection, enforcement, sale or other handling or treatment of all or any part of any collateral, property or security, including but not limited to any neglect, delay, omission, failure or refusal of Lender (i) to take or prosecute any action for the collection of any of the Guaranteed Obligations or (ii) to foreclose, or initiate any action to foreclose, or, once commenced, prosecute to completion any action to foreclose upon any security therefor, or (iii) to take or prosecute any action in connection with any instrument or agreement evidencing or securing all or any part of the Guaranteed Obligations.

2.9 Unenforceability. The fact that any collateral, security, security interest or lien contemplated or intended to be given, created or granted as security for the repayment of the Guaranteed Obligations, or any part thereof, shall not be properly perfected or created, or shall prove to be unenforceable or subordinate to any other security interest or lien, it being recognized and agreed by Guarantor that Guarantor is not entering into this Guaranty in reliance on, or in contemplation of the benefits of, the validity, enforceability, collectibility or value of any of the collateral for the Guaranteed Obligations.

2.10 Offset. The Note, the Guaranteed Obligations and the liabilities and obligations of the Guarantor to Lender hereunder shall not be reduced, discharged or released because of or by reason of any existing or future right of offset, claim or defense of Borrower against Lender, or any other party, or against payment of the Guaranteed Obligations, whether such right of offset, claim or defense arises in connection with the Guaranteed Obligations (or the transactions creating the Guaranteed Obligations) or otherwise.

2.11 Merger. The reorganization, merger or consolidation of Borrower into or with any other person or entity.

2.12 Preference. Any payment by Guarantor to Lender is held to constitute a preference under bankruptcy laws, or for any reason Lender is required to refund such payment or pay such amount to Guarantor or someone else.

2.13 Other Actions Taken or Omitted. Any other action taken or omitted to be taken with respect to the Loan Documents, the Guaranteed Obligations, or the security and collateral therefor, whether or not such action or omission prejudices Guarantor or increases the likelihood that Guarantor will be required to pay the Guaranteed Obligations pursuant to the terms hereof, it is the unambiguous and unequivocal intention of Guarantor that Guarantor shall be obligated to pay the Guaranteed Obligations when due, notwithstanding any occurrence, circumstance, event, action, or omission whatsoever, whether contemplated or uncontemplated, and whether or not otherwise or particularly described herein, which obligation shall be deemed satisfied only upon the full and final payment and satisfaction of the Guaranteed Obligations.

ARTICLE III

REPRESENTATIONS AND WARRANTIES

To induce Lender to enter into the Loan Documents and extend credit to Borrower, Guarantor represents and warrants to Lender as follows:

3.1 Benefit. Guarantor has received, or will receive, direct benefit from the making of this Guaranty with respect to the Guaranteed Obligations.

3.2 Familiarity and Reliance. Guarantor is familiar with, and has independently reviewed books and records regarding, the financial condition of the Borrower and is familiar with the value of any and all collateral intended to be created as security for the payment of the Note or Guaranteed Obligations; however, Guarantor is not relying on such financial condition or the collateral as an inducement to enter into this Guaranty.

3.3 No Representation By Lender. Neither Lender nor any other party has made any representation, warranty or statement to Guarantor in order to induce the Guarantor to execute this Guaranty.

3.4 Legality. The execution, delivery and performance by Guarantor of this Guaranty and the consummation of the transactions contemplated hereunder do not, and will not, contravene or conflict with any law, statute or regulation whatsoever to which Guarantor is subject or constitute a default (or an event which with notice or lapse of time or both would constitute a default) under, or result in the breach of, any indenture, mortgage, deed of trust, charge, lien, or any contract, agreement or other instrument to which Guarantor is a party or which may be applicable to Guarantor. This Guaranty is a legal and binding obligation of Guarantor and is enforceable in accordance with its terms, except as limited by bankruptcy, insolvency or other laws of general application relating to the enforcement of creditors' rights.

3.5 Litigation. There are no actions, suits or proceedings at law or in equity by or before any governmental authority or other agency now pending or threatened against or affecting Guarantor.

3.6 Survival. All representations and warranties made by Guarantor herein shall survive the execution hereof.

ARTICLE IV

MISCELLANEOUS

4.1 Waiver. No failure to exercise, and no delay in exercising, on the part of Lender, any right hereunder shall operate as a waiver thereof, nor shall any single or partial exercise thereof preclude any other or further exercise thereof or the exercise of any other right. The rights of Lender hereunder shall be in addition to all other rights provided by law. No modification or waiver of any provision of this Guaranty, nor consent to departure therefrom, shall be effective unless in writing and no such consent or waiver shall extend beyond the particular case and purpose involved. No notice or demand given in any case shall constitute a waiver of the right to take other action in the same, similar or other instances without such notice or demand.

4.2 Notices. Any notice, demand, statement, request or consent made hereunder shall be in writing and shall be deemed to be received by the addressee on the third day following the day such notice is deposited with the United States Postal Service first class certified mail, return receipt requested, addressed to the address, as set forth below, of the party to whom such notice is to be given, or to such other address as either party shall in like manner designate in writing. The addresses of the parties hereto are as follows:

Guarantor: Aaron Malinsky
c/o P/A Associates LLC
250 West 57th Street
Suite 1120
New York, NY 10107
Facsimile No. (212) 748-7951

with a copy to: Akerman Senterfitt LLP
335 Madison Avenue, Suite 2600
New York, New York 10017
Attention: Kenneth Gordon, Esq.
Facsimile No. (212) 980-9578

Guarantor:	Paul Slayton c/o P/A Associates LLC 250 West 57th Street Suite 1120 New York, NY 10107 Facsimile No. (212) 748-7951
with a copy to:	Akerman Senterfitt LLP 335 Madison Avenue, Suite 2600 New York, New York 10017 Attention: Kenneth Gordon, Esq. Facsimile No. (212) 980-9578
Lender:	Acadia Strategic Opportunity Fund III, LLC c/o Acadia Realty Trust 1311 Mamaroneck Avenue, Suite 260 White Plains, New York 10605 Attention: Robert Masters, Esq Facsimile No. (914) 288-2139

4.3 Governing Law. **THIS GUARANTY SHALL BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW YORK AND THE APPLICABLE LAWS OF THE UNITED STATES OF AMERICA. ANY LEGAL SUIT, ACTION OR PROCEEDING AGAINST LENDER OR GUARANTOR ARISING OUT OF OR RELATING TO THIS GUARANTY MAY AT LENDER'S OPTION BE INSTITUTED IN ANY FEDERAL OR STATE COURT IN THE CITY OF NEW YORK, COUNTY OF NEW YORK, PURSUANT TO SECTION 5-1402 OF THE NEW YORK GENERAL OBLIGATIONS LAW, AND GUARANTOR WAIVES ANY OBJECTIONS WHICH IT MAY NOW OR HEREAFTER HAVE BASED ON VENUE AND/OR FORUM NON CONVENIENS OF ANY SUCH SUIT, ACTION OR PROCEEDING, AND GUARANTOR AND HEREBY IRREVOCABLY SUBMITS TO THE JURISDICTION OF ANY SUCH COURT IN ANY SUIT, ACTION OR PROCEEDING.**

4.4 Invalid Provisions. If any provision of this Guaranty is held to be illegal, invalid, or unenforceable under present or future laws effective during the term of this Guaranty, such provision shall be fully severable and this Guaranty shall be construed and enforced as if such illegal, invalid or unenforceable provision had never comprised a part of this Guaranty, and the remaining provisions of this Guaranty shall remain in full force and effect and shall not be affected by the illegal, invalid or unenforceable provision or by its severance from this Guaranty, unless such continued effectiveness of this Guaranty, as modified, would be contrary to the basic understandings and intentions of the parties as expressed herein.

4.5 Amendments. This Guaranty may be amended only by an instrument in writing executed by the party or an authorized representative of the party against whom such amendment is sought to be enforced.

4.6 Parties Bound; Assignment; Joint and Several. This Guaranty shall be binding upon and inure to the benefit of the parties hereto and their respective successors, assigns and legal representatives; provided, however, that Guarantor may not, without the prior written consent of Lender, assign any of its rights, powers, duties or obligations hereunder. If Guarantor consists of more than one person or party, the obligations and liabilities of each such person or party shall be joint and several.

4.7 Headings. Section headings are for convenience of reference only and shall in no way affect the interpretation of this Guaranty.

4.8 Recitals. The recital and introductory paragraphs hereof are a part hereof, form a basis for this Guaranty and shall be considered prima facie evidence of the facts and documents referred to therein.

4.9 Counterparts. To facilitate execution, this Guaranty may be executed in as many counterparts as may be convenient or required. It shall not be necessary that the signature of, or on behalf of, each party, or that the signature of all persons required to bind any party, appear on each counterpart. All counterparts shall collectively constitute a single instrument. It shall not be necessary in making proof of this Guaranty to produce or account for more than a single counterpart containing the respective signatures of, or on behalf of, each of the parties hereto. Any signature page to any counterpart may be detached from such counterpart without impairing the legal effect of the signatures thereon and thereafter attached to another counterpart identical thereto except having attached to it additional signature pages.

4.10 Rights and Remedies. If Guarantor becomes liable for any indebtedness owing by Guarantor to Lender, by endorsement or otherwise, other than under this Guaranty, such liability shall not be in any manner impaired or affected hereby and the rights of Lender hereunder shall be cumulative of any and all other rights that Lender may ever have against Guarantor. The exercise by Lender of any right or remedy hereunder or under any other instrument, or at law or in equity, shall not preclude the concurrent or subsequent exercise of any other right or remedy.

4.11 Other Defined Terms. Any capitalized term utilized herein shall have the meaning as specified in the Loan Documents, unless such term is otherwise specifically defined herein.

4.12 Entirety. **THIS GUARANTY EMBODIES THE FINAL, ENTIRE AGREEMENT OF GUARANTOR AND LENDER WITH RESPECT TO GUARANTOR'S GUARANTY OF THE GUARANTEED OBLIGATIONS AND SUPERSEDES ANY AND ALL PRIOR COMMITMENTS, AGREEMENTS, REPRESENTATIONS, AND UNDERSTANDINGS, WHETHER WRITTEN OR ORAL, RELATING TO THE SUBJECT MATTER HEREOF. THIS GUARANTY IS INTENDED BY GUARANTOR AND LENDER AS A FINAL AND COMPLETE EXPRESSION OF THE TERMS OF THE GUARANTY, AND NO COURSE OF DEALING BETWEEN GUARANTOR AND LENDER, NO COURSE OF PERFORMANCE, NO TRADE PRACTICES, AND NO EVIDENCE OF PRIOR, CONTEMPORANEOUS OR SUBSEQUENT ORAL AGREEMENTS OR DISCUSSIONS**

OR OTHER EXTRINSIC EVIDENCE OF ANY NATURE SHALL BE USED TO CONTRADICT, VARY, SUPPLEMENT OR MODIFY ANY TERM OF THIS GUARANTY AGREEMENT. THERE ARE NO ORAL AGREEMENTS BETWEEN GUARANTOR AND LENDER.

4.13 Waiver of Right To Trial By Jury. **GUARANTOR HEREBY AGREES NOT TO ELECT A TRIAL BY JURY OF ANY ISSUE TRIABLE OF RIGHT BY JURY, AND WAIVES ANY RIGHT TO TRIAL BY JURY FULLY TO THE EXTENT THAT ANY SUCH RIGHT SHALL NOW OR HEREAFTER EXIST WITH REGARD TO THIS GUARANTY, THE NOTE OR THE OTHER LOAN DOCUMENTS, OR ANY CLAIM, COUNTERCLAIM OR OTHER ACTION ARISING IN CONNECTION THEREWITH. THIS WAIVER OF RIGHT TO TRIAL BY JURY IS GIVEN KNOWINGLY AND VOLUNTARILY BY GUARANTOR, AND IS INTENDED TO ENCOMPASS INDIVIDUALLY EACH INSTANCE AND EACH ISSUE AS TO WHICH THE RIGHT TO A TRIAL BY JURY WOULD OTHERWISE ACCRUE. LENDER IS HEREBY AUTHORIZED TO FILE A COPY OF THIS PARAGRAPH IN ANY PROCEEDING AS CONCLUSIVE EVIDENCE OF THIS WAIVER BY GUARANTOR.**

4.14 Reinstatement in Certain Circumstances. If at any time any payment of the principal of or interest under the Note or any other amount payable by the Guarantor under the Loan Documents is rescinded or must be otherwise restored or returned upon the insolvency, bankruptcy or reorganization of the Guarantor or otherwise, the Guarantor's obligations hereunder with respect to such payment shall be reinstated as though such payment has been due but not made at such time.

This Guaranty is executed as of the day and year first above written.

GUARANTOR:

GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC

By: _____

Name: Aaron Malynsky

Title: President

Exhibit F

Crown Proposed Letter

george washington bridge bus station development venture llc

June 21 , 2010

Mr. Haim S. Chera
Crown GWB Partners, LLC
c/o Stanley Chera Investments
362 Fifth Avenue, Suite 1201
Ne York, NY 10018

Re: George Washington Bridge Bus Station Development Venture LLC
New York, NY

Dear Mr. Chera:

This letter confirms our agreement to terminate and mutually release each other and all related parties from the agreement letter dated April 26, 2006 ("the Letter"). This release covers any and all matters relating to the George Washington Bridge Bus Stations Development Venture LLC; Acadia – P/A GWB LLC; and the redevelopment of the George Washington Bridge Bus Station and retail stores.

In consideration for this release and termination, we will reimburse you $750,000. The payment will coincide with the execution of the "lease" with the Port Authority of New York and New Jersey and receipt of construction loan proceeds for the redevelopment of the George Washington Bridge Bus Station and retail stores.

This letter agreement is a final and complete termination of any and all rights, duties and obligations of the undersigned and their affiliates relating to "the Letter", and a release of any and all obligations among each party, except for the funding of the conditional $750,000 payment described above.

Very Truly Yours,

The George Washington Bridge Bus Stations Development Venture LLC

By: _____
Paul Slayton, Member

Agreed and Accepted:
Crown GWB Partners, LLC

By: _____
Haim Chera

250 West 57th St. Suite 1120 New York, NY 10107 tel 212-748-8718 fax 212-748-7951

EXHIBIT A

ACADIA-P/A GWB LLC

ROBERT MASTERS
Senior Vice President
General Counsel

Direct Line (914) 288-8139
Facsimile: (914) 288-2139

April 26, 2006

Mr. Haim S. Chera
Stanley Chera Investments
362 Fifth Avenue, Suite 1201
New York, NY 10018

Re: George Washington Bridge Bus Terminal Venture LLC
New York, New York

Dear Mr. Chera:

We are excited about the opportunity of forming a Joint Venture (the "JV") between Acadia-P/A GWB LLC ("APA") and an affiliate of Crown Acquisition, Inc. ("Crown") for the development of The George Washington Bridge Bus Terminal (the "Development"). The basic terms of the JV would be as follows:

1. PRE-DEVELOPMENT VENTURE.

   A. The parties will jointly respond to the Port Authority Request For Proposal ("RFP") for the leasehold acquisition of the above-referenced site.

   B. APA and Crown shall each contribute pre-development capital (hereinafter referred to as the "Risk Capital") in a ratio of 50/50 when requested by APA to cover the costs set forth below. The Risk Capital will be used for and is necessary to pursue the RFP and Pre-Development activities more particularly set forth on the Pre-Development Budget annexed hereto as Exhibit A. Upon the mutual execution of this letter of intent, the parties shall each fund $250,000 as the initial Risk Capital, to be used to pay ongoing costs, fees and expenses of the RFP, and other related items.

   Pre-Development costs shall include all costs associated with pursuing the RFP and the Pre-Development, such as legal, architectural and engineering fees, environmental consultants, surveys and title fees and other third party

professional fees, all costs for the preparation of the RFP, including all costs and any deposits required to submit/or be awarded the RFP. It is the understanding of the parties that such Risk Capital is estimated at between $450,000 and $600,000, plus the deposit made in connection with the submission of the RFP, although the actual amount may be in excess of the above.

C. The Risk Capital shall be reimbursed upon the closing of the construction financing to bring the parties into the ratio of equity investment described in Section 2C. All Risk Capital shall earn the Preferred Cumulative Return referred to in Section 3 below.

2. DEVELOPMENT VENTURE. If the JV is successful in winning the RFP, the parties will complete a Joint Venture Agreement, structured as follows:

A. Ownership Structure. The JV shall be structured as a single purpose, two member, limited liability company. APA shall be the Managing Member, with an ownership interest of 75% and Crown shall be a Special Member with an ownership of 25%, and shall have the rights listed below.

B. Major Decisions. APA shall prepare the plan of the Development. APA shall have control over all major decisions such as sale, refinancing, leasing and capital improvements as follows:

1. Sale. APA shall have the right to sell the Development 24 months after Stabilization, (defined as 80% leased, occupied and paying rent).

2. Refinancing. APA shall have the right to finance and refinance the Development at any time during the JV at commercially reasonable rates and terms, with the understanding that the financing shall not exceed a 75% Loan to Value ("LTV") based upon the proposed lender's value.

3. Leasing. APA shall be responsible for final approval of all leases but the parties shall work together to approach tenants, in accordance with their skills and contacts.

4. Governance. The operating agreement of the Company shall contain certain other provisions set forth on Exhibit A.

C. Initial Capital. APA shall be responsible to provide 90% and Crown shall be responsible to provide 10% of the capital to bring the Development to Stabilization. For the purpose of Section 3 below, any partner making an initial equity investment shall be an "Equity Partner".

D. Additional Capital Contributions. If the Development requires capital after stabilization, Additional Capital Contributions shall be made by APA and Crown pro rata in accordance with their ownership interest. In the event either party fails

to make its Additional Capital Contribution, the other party shall have the option of loaning the JV the shortfall at 15% and, after eighteen (18) months, shall have the option to convert such loan to an additional interest based on a pro rata cram down.

E. Development. APA shall be in charge of the pre-development phase of the Development and shall receive $35,000 per month in fees, for a maximum of 18 months, commencing on the signing of the Conditional Designation Letter with the City and ending upon the commencement of construction.

F. Construction. APA shall be in charge of the construction phase of the Development. APA shall select all contractors on an arms length, third party basis and shall oversee all aspects of the construction and development of the project. The JV shall pay $35,000 per month to APA in construction fees, commencing on the closing of the initial construction loan and ending upon substantial completion.

G. Leasing. Leasing shall be handled by APA. Leasing fees shall equal 4% of the net rental for the initial term up to 10 years, not to exceed a "market rate". In the event an outside broker is utilized, the fee shall be 6% for both the outside broker and APA.

H. Construction Financing. APA shall be responsible to obtain the construction financing and shall provide any construction guarantees, completion guarantees or other recourse associated with the financing and development.

I. Permanent Financing. APA shall be responsible for obtaining non-recourse permanent financing; however the parties shall jointly consult prior to committing to any financing.

J. Management. Upon Stabilization, APA shall be responsible for the management of the Development and shall receive a fee of 4% of gross revenues collected.

3. DISTRIBUTIONS. The JV Agreement shall provide for the following distributions, which shall be made monthly:

A. Distribution of Net Cash Flow:

1. First, payment to the parties of interest on the Additional Capital Contributions;

2. Second, a 10% Preferred Cumulative Return compounded annually on all outstanding equity capital;

3. Third, 100% towards repayment of Additional Capital Contributions;

4. Thereafter, 75% to APA and 25% to Crown or in accordance with their ownership interests.

B. Distribution of Capital Event Proceeds- Defined as Financing, Refinancing or Sale:

1. First, payment to the parties of all accrued and unpaid interest on the Additional Capital Contributions;

2. Second, 100% to the parties until payment of any unpaid Preferred Cumulative Return;

3. Third 100%, towards repayment of Additional Capital Contributions;

4. Fourth, 100% to the parties until a return of all outstanding equity capital;

5. Thereafter, 75% to APA and 25% to Crown or in accordance with their ownership interests.

4. IRR LOOKBACK. In the event that the Equity Partners do not receive an 18% Internal Rate of Return on their invested equity, then the Equity Partner's distribution from a sale event shall be increased until the 18% IRR is achieved prior to the distribution described in 3.B.5.

5. The Parties will provide all personal and financial information required and/or requested by the Port Authority.

6. BUY-SELL. Either party may elect to exercise a buy-sell after the date which is 24 months after Stabilization.

This Letter of Intent does not constitute a binding contractual agreement between the parties except for Paragraph 1B. It merely sets forth the understanding in principle and the present intention of the parties to enter into one or more agreements incorporating the terms as set forth above and upon terms and conditions mutually acceptable to the parties and their respective counsels.

Very truly yours,

AGREED AND ACCEPTED:

~~Crown Acquisition, Inc~~
CROWN GWB PARTNERS, LLC

By: _____ Date
Its:

cc: Mr. Paul Slayton
Mr. Aaron Malinsky
Mr. Kenneth F. Bernstein
Mr. Joel Braun

1311 Mamaroneck Avenue / White Plains, NY 10605/ Tel: 914.288.8100 / Fax: 914.428.3646

EXHIBIT A

Additional Items to be included in the Operating Agreement

1. Merger or consolidation of the Company into any other entity;

2. Modifying, amending or waiving, in any material respect, the terms and conditions of the Operating Agreement;

3. Dissolving or voluntarily terminating the Company except in connection with the sale of the Property;

4. Admitting a new Member other than in accordance with the provisions of Article ---of this Agreement except the Members may make appropriate transfers for estate planning;

5. The pledge, hypothecation or collateral assignment, in whole or in part, of any Member's ownership interest in the Company, whether directly or indirectly, voluntarily, by operation of law or otherwise, in one or more related or unrelated transactions;

6. The acquisition, directly or indirectly, by the Company of any other real property or any interests therein;

7. Filing by the Company, or causing the filing by the Company, of a voluntary petition seeking liquidation, reorganization, arrangement or readjustment, in any form, of its debts under Title 11 of the United States Code or any other federal or state insolvency law; filing by the Company, or causing the filing by the Company, of an answer consenting to or acquiescing in any such petition; or the making by the Company of any assignment for the benefit of its creditors with respect to substantially all of the assets of the Company.

8. Issuing additional interests in the Company.

FINANCE NEW • YORK
THE CITY OF NEW YORK
DEPARTMENT OF FINANCE

NYC RPT

NEW YORK CITY DEPARTMENT OF FINANCE

REAL PROPERTY TRANSFER TAX RETURN

(Pursuant to Title 11, Chapter 21, NYC Administrative Code)

GRANTOR

Name: THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY

Grantor is a(n) (check one): ☐ individual ☐ partnership (must complete Schedule 3) ☐ corporation ☑ other _____

Telephone Number:

Permanent mailing address after transfer (number and street): 225 PARK AVENUE SOUTH, 14TH FLOOR

City and State: NEW YORK, NY

Zip Code: 10003

EMPLOYER IDENTIFICATION NUMBER: 13-6400654 OR

SOCIAL SECURITY NUMBER: ___-___-___

DO NOT WRITE IN THIS SPACE FOR OFFICE USE ONLY

RETURN NUMBER ▲

GRANTEE

Name: GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT

Grantee is a(n) (check one): ☐ individual ☐ partnership (must complete Schedule 3) ☐ corporation ☑ other _____

Telephone Number:

Permanent mailing address after transfer (number and street): VENTURE LLC, C/O SJM PARTNERS, 9001 CONGRESSIONAL COURT

City and State: POTOMAC, MD

Zip Code: 20854

EMPLOYER IDENTIFICATION NUMBER: 20-8728685 OR

SOCIAL SECURITY NUMBER: ___-___-___

DEED SERIAL NUMBER ▲

NYC REAL ESTATE TRANSFER TAX PAID ▲

PROPERTY LOCATION

LIST EACH LOT SEPARATELY. ATTACH A RIDER IF ADDITIONAL SPACE IS REQUIRED

Address (number and street)	Apt No.	Borough	Block	Lot	# of Floors	Square Feet	Assessed Value of Property
4200 BROADWAY		MANHATTAN	2163	1	3	60,031	3,837,600.00
4201 BROADWAY		MANHATTAN	2176	17	3	141,600	19,374,300.00

DATE OF TRANSFER TO GRANTEE: 7/21/2011

PERCENTAGE OF INTEREST TRANSFERRED: 60 %

CONDITION OF TRANSFER (See instructions)

Check (✓) all of the conditions that apply and fill out the appropriate schedules on pages 5-11 of this return. Additionally, Schedules 1 and 2 must be completed for all transfers.

- a ☑ Arms length transfer
- b ☐ Transfer in exercise of option to purchase
- c ☐ Transfer from cooperative sponsor to cooperative corporation
- d ☐ Transfer by referee or receiver (complete Schedule A, page 5)
- e ☐ Transfer pursuant to marital settlement agreement or divorce decree
- f ☐ Deed in lieu of foreclosure (complete Schedule C, page 6)
- g ☐ Transfer pursuant to liquidation of an entity (complete Schedule D, page 6)
- h ☐ Transfer from principal to agent, dummy, straw man or conduit or vice-versa (complete Schedule E, page 7)
- i ☐ Transfer pursuant to trust agreement or will (attach a copy of trust agreement or will)
- j ☐ Gift transfer not subject to indebtedness
- k ☐ Gift transfer subject to indebtedness
- l ☐ Transfer to a business entity in exchange for an interest in the business entity (complete Schedule F, page 7)
- m ☐ Transfer to a governmental body
- n ☐ Correction deed
- o ☑ Transfer by or to a tax exempt organization (complete Schedule G, page 8)
- p ☐ Transfer of property partly within and partly without NYC
- q ☐ Transfer of successful bid pursuant to foreclosure
- r ☐ Transfer by borrower solely as security for a debt or a transfer by lender solely to return such security
- s ☐ Transfer wholly or partly exempt as a mere change of identity or form of ownership (complete Schedule M, page 9)
- t ☐ Transfer to a REIT or to a corporation or partnership controlled by a REIT (Complete Schedule R, pages 10 and 11)
- u ☐ Other transfer in connection with financing (describe): _____
- v ☑ Other (describe): MEMORANDUM OF LEASE

201107180022910106

TYPE OF PROPERTY (✓)

- a ☐ 1-3 family house
- b ☐ Individual residential condominium unit
- c ☐ Individual cooperative apartment
- d ☐ Commercial condominium unit
- e. ☐ Commercial cooperative
- f. ☐ Apartment building
- g. ☐ Office building
- h ☐ Industrial building
- i ☐ Utility
- j ☑ OTHER. (describe): COMMERCIAL REAL ESTATE

TYPE OF INTEREST (✓)

Check box at LEFT if you intend to record a document related to this transfer. Check box at RIGHT if you do not intend to record a document related to this transfer.

REC.		NON REC.
a ☐	Fee	☐
b ☑	Leasehold Grant	☐
c ☐	Leasehold Assignment or Surrender	☐
d ☐	Easement	☐
e ☐	Development Rights	☐
f. ☐	Stock	☐
g ☐	Partnership Interest	☐
h ☐	OTHER. (describe):	☐

SCHEDULE 1 - DETAILS OF CONSIDERATION

COMPLETE THIS SCHEDULE FOR ALL TRANSFERS AFTER COMPLETING THE APPROPRIATE SCHEDULES ON PAGES 5 THROUGH 11. ENTER "ZERO" ON LINE 11 IF THE TRANSFER REPORTED WAS WITHOUT CONSIDERATION.

1.	Cash	1.	7,500,000 00
2	Purchase money mortgage	2	0 00
3	Unpaid principal of pre-existing mortgage(s)	3.	0 00
4	Accrued interest on pre-existing mortgage(s)	4.	0 00
5	Accrued real estate taxes	5.	0 00
6	Amounts of other liens on property	6	0 00
7	Value of shares of stock or of partnership interest received	7	0 00
8	Value of real or personal property received in exchange	8.	0 00
9	Amount of Real Property Transfer Tax and/or other taxes or expenses of the grantor which are paid by the grantee	9.	0 00
10	Other (describe):	10	0 00
11	**TOTAL CONSIDERATION** (add lines 1 through 10 - must equal amount entered on line 1 of Schedule 2) (see instructions)	11	7,500,000 00

See instructions for special rules relating to transfers of cooperative units, liquidations, marital settlements and transfers of property to a business entity in return for an interest in the entity.

SCHEDULE 2 - COMPUTATION OF TAX

A. Payment	Pay amount shown on line 14 - *See Instructions*		Payment Enclosed
1.	Total Consideration (from line 11, above)	1.	7,500,000 00
2.	Excludable liens (see instructions)	2	0 00
3.	Consideration (Line 1 less line 2)	3	7,500,000 00
4	Tax Rate (see instructions)	4	0 %
5	Percentage change in beneficial ownership *(see instructions)*	5.	100 %
6.	Taxable consideration (multiply line 3 by line 5)	6.	7,500,000 00
7.	Tax (multiply line 6 by line 4)	7.	0 00
8.	Credit (see instructions)	8.	0 00
9	Tax due (line 7 less line 8) (if the result is negative, enter zero)	9	0 00
10	Interest (see instructions)	10.	0 00
11.	Penalty (see instructions)	11.	0 00
12	**Total Tax Due** (add lines 9, 10 and 11)	12	0 00

GRANTOR'S ATTORNEY

Name of Attorney	DORIS LUM-MAZUR	Telephone Number	(212) 435-3420
Address (number and street)	225 PARK AVENUE SOUTH, 14TH FLOOR	City and State NEW YORK , NY	Zip Code 10003
EMPLOYER IDENTIFICATION NUMBER	-	OR SOCIAL SECURITY NUMBER	- -

GRANTEE'S ATTORNEY

Name of Attorney	KAREN F. CANDREVA, ESQ.	Telephone Number	(212) 484-3953
Address (number and street)	C/O ARENT FOX LLP, 1675 BROADWAY	City and State NEW YORK , NY	Zip Code 10019
EMPLOYER IDENTIFICATION NUMBER	-	OR SOCIAL SECURITY NUMBER	- -

CERTIFICATION

I swear or affirm that this return, including any accompanying schedules, affidavits and attachments, has been examined by me and is, to the best of my knowledge, a true and complete return made in good faith, pursuant to Title 11, Chapter 21 of the Administrative Code and the regulations issued thereunder.

GRANTOR

Sworn to and subscribed to before me on this 21st day of July 2011.

13-6400654
EMPLOYER IDENTIFICATION NUMBER OR SOCIAL SECURITY NUMBER

The Port Authority of New York & NJ
Name of Grantor

The Port Authority of NY & NJ

Signature of Notary

Signature of Grantor
Christopher O. Ward

Notary's stamp or seal

DARRELL BUCHBINDER
Notary Public, State of New York
No. 60-0475475
Qualified in Westchester County
Commission Expires on April 30, 2015

GRANTEE

Sworn to and subscribed to before me on this _____ day of _____, _____.

EMPLOYER IDENTIFICATION NUMBER OR SOCIAL SECURITY NUMBER

Name of Grantee

Signature of Notary

Signature of Grantee

Notary's stamp or seal

GRANTEE: To ensure that your property and waterfrewer tax bills are sent to the proper address you must complete the Registration forms included in this packet. Owner's Registration Cards can also be obtained by calling the Department of Finance at (718) 935-6500.

2011071800229101

GRANTOR'S ATTORNEY

Name of Attorney	DORIS LUM-MAZUR	Telephone Number	(212) 435-3420
Address (number and street)	225 PARK AVENUE SOUTH, 14TH FLOOR	City and State NEW YORK , NY	Zip Code 10003
EMPLOYER IDENTIFICATION NUMBER	-	OR SOCIAL SECURITY NUMBER	- -

GRANTEE'S ATTORNEY

Name of Attorney	KAREN F. CANDREVA, ESQ.	Telephone Number	(212) 484-3953
Address (number and street)	C/O ARENT FOX LLP, 1675 BROADWAY	City and State NEW YORK , NY	Zip Code 10019
EMPLOYER IDENTIFICATION NUMBER	-	OR SOCIAL SECURITY NUMBER	- -

CERTIFICATION

I swear or affirm that this return, including any accompanying schedules, affidavits and attachments, has been examined by me and is, to the best of my knowledge, a true and complete return made in good faith, pursuant to Title 11, Chapter 21 of the Administrative Code and the regulations issued thereunder.

GRANTOR

Sworn to and subscribed to

before me on this _____ day

of _____, _____

EMPLOYER IDENTIFICATION NUMBER OR SOCIAL SECURITY NUMBER

Name of Grantor

Signature of Notary

Signature of Grantor

Notary's stamp or seal

GRANTEE

Sworn to and subscribed to

before me on this 20th day

of July 2011

EMPLOYER IDENTIFICATION NUMBER OR SOCIAL SECURITY NUMBER

GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT VENTURE LLC

Name of Grantee

Signature of Notary

Signature of Grantee by STEPHEN GOMERIK, Auth. Sig

Notary's stamp or seal

KAREN F. CANDREVA
Notary Public, State of New York
No. 02CA5045815
Qualified in Westchester County
Commission Expires 03/24/2014

By GWB Development Partners, LLC Member

By Manhattan GWB LLC Mng. Member

GRANTEE: To ensure that your property and water/sewer tax bills are sent to the proper address you must complete the Registration forms included in this packet. Owner's Registration Cards can also be obtained by calling the Department of Finance at (718) 935-6500.

SCHEDULE G: TRANSFER BY OR TO A TAX EXEMPT ORGANIZATION

NONPROFIT ORGANIZATIONS PLEASE REFER TO THE INSTRUCTIONS "EXEMPTIONS FROM THE TRANSFER TAX"

NOTE	A transfer by or to an eligible tax exempt organization is exempt from the Real Property Transfer Tax. To be eligible, an organization must be operated exclusively for religious, charitable or educational purposes and must provide proof of the organization's tax exempt status. If claiming tax exempt status, please answer questions 1 and 2. Additionally, the organization must provide copies of any letters granting an IRS or New York State sales tax exemption or New York City exemption and ATTACH AN AFFIDAVIT stating whether such an exemption remains in effect

1. Is the grantor or grantee an organization exempt from taxation pursuant to IRS Code Section 501(c)(3)? (✓) ☑ YES ☐ NO
   If "YES", attach a copy of of the letter from the U. S. Treasury Department granting the exemption.
2. Has the grantor or grantee received an exemption from sales tax from the NYS Department of Taxation and Finance? (✓) ☑ YES ☐ NO
   If "YES", attach a copy of the letter from the NYS Department of Taxation and Finance granting the exemption.

SCHEDULE H: TRANSFER OF CONTROLLING ECONOMIC INTEREST

A Name, address and Employer Identification Number (EIN) of entity with respect to which a controlling economic interest has been transferred:

Name :

Address: Zip Code:

EIN -

NOTE	If the real property that is the subject of this transfer is owned by an entity other than the entity listed above, check (✓) the box and attach a schedule listing the name, address and Employer Identification Number of the entity.	☐

B. Total percentage of economic interest transferred in this transaction	B.	%
C Total percentage of economic interest transferred by this grantor(s) or others in related transfers or pursuant to plan (including this transaction)	C.	%
D. Total percentage of economic interest transferred by this grantor(s) or others within the preceding three years (including this transaction)	D.	%
E. Total percentage of economic interest acquired by this grantee(s) or others in related transfers or pursuant to plan (including this transaction)	E	%
F. Total percentage of economic interest acquired by this grantee(s) or others within the preceding three years (including this transaction)	F	%

NOTE	If any of the above percentages is 50% or more, complete lines 1 and 2 below and Schedules 1 and 2. Attach a rider explaining apportionment of consideration.

COMPUTATION OF CONSIDERATION

1. Total consideration for this transfer	1.	
2. Amount apportioned to item of NYC real property or interest therein (see instructions)	2.	

SCHEDULE L - TRANSFERS PURSUANT TO A SEPARATION AGREEMENT, MARITAL SETTLEMENT AGREEMENT OR DIVORCE DECREE

NOTE: The consideration for a transfer pursuant to a separation agreement, marital settlement agreement or divorce decree includes the value of any marital rights exchanged for the property or economic interest as well as any other types of consideration paid by the grantee for the transfer. The consideration will be presumed to be equal to the fair market value of the portion of the property or interest transferred, unless you establish the consideration to be a different amount.

1. What was the fair market value of property at the time of transfer? ..... $ 0.00
2. Is the property a 1, 2 or 3 family house, residential condominium or residential cooperative apartment? . ☐ YES ☑ NO

   If yes, was there a mortgage on the property at the time of transfer? ..... ☐ YES ☐ NO

   If yes, what was the balance due? (Enter also on Schedule 2, line 2) ..... $ 0.00
3. What was the Grantor's percentage of ownership at the time of the transfer? ..... 0 %

   If the transfer was between husband and wife jointly as Grantor and either husband or wife individually as Grantee it is presumed that the percentage of ownership transferred will be 50% unless the deed specifies another percentage.
4. *Rebuttable Presumption of Fair Market Value:* If the marital settlement agreement, separation agreement or divorce decree specifies a value for the portion of the property or interest transferred that is different from fair market value, enter that value here. You may choose to submit relevant portions of your separation agreement, marital settlement agreement or divorce decree, or any other information in support of the value attributed to the transferred property if you have evidence that the consideration was other than fair market value ..... $ 0.00

PLEASE LIST AND ATTACH ANY ADDITIONAL INFORMATION SUBMITTED

SCHEDULE M - MERE CHANGE OF FORM TRANSFERS

For transfers occurring on or after June 9, 1994, a transfer that represents a mere change in identity or form of ownership or organization is not taxable to the extent the beneficial ownership of the real property or economic interest therein remains the same. *(See instructions)* ATTACH COPIES OF ALL RELEVANT DOCUMENTS

- For each person or entity who, prior to the transaction being reported on this Schedule M, owned a beneficial interest in the property or economic interest therein transferred, report above the percentage of beneficial interest in that real property or economic interest therein owned by that owner before and after the transfer, and describe the relationship of each beneficial owner to the grantor and grantee. Attach additional pages, if necessary.
- If, for any owner, the amount reported in column D is less than the amount reported in column E, enter zero in column F.

A 1. NAME OF BENEFICIAL OWNER	B (attach rider if necessary) RELATIONSHIP TO GRANTOR	C RELATIONSHIP TO GRANTEE	D PERCENTAGE INTEREST BEFORE	E PERCENTAGE INTEREST AFTER	F CHANGE D minus E
			%	%	
2 TOTAL CHANGE (total of column F) Enter here and on Schedule 2, line 3					

WORKSHEET FOR CONDITIONS 1(a) and 1(b)

1.	*Add* lines 1, 2, 7, 8, 9 and 10 from Form NYC-RPT, Schedule 1 and enter total here	1. $ 7,500,000.00	
2a.	*Enter* total number of REIT shares received	a 0	
b.	*Enter* maximum number of REIT shares into which ownership interests may be converted	b 0	
c	*Add* lines a and b	c 0	
d.	*Enter* offering price per share of REIT shares on the date of the transaction reported	d 0.00	
e.	*Multiply* line 2c by line 2d	e. 0.00	
f.	*Enter* value of ownership interests received not convertible into REIT shares	f. 0.00	
g.	*Add* lines e and f		2g. 0.00
3.	*Multiply* line 1 by .40 for condition 1(a) or .50 for condition 1(b)		3. 0.00

- If line 3 is greater than line 2g, the transaction does not qualify as a REIT transfer. DO NOT FILE THIS SCHEDULE. You must file Form NYC-RPT and compute your tax due on Schedule 2.
- If line 3 is less than or equal to line 2g, the transaction will qualify as a REIT Transfer, provided the other conditions are met. You should complete Form NYC-RPT substituting on line 4 of Schedule 2:
  - .5% instead of 1%;
  - .7125% instead of 1.425%;
  - 1.3125% instead of 2.625%

SEE INSTRUCTIONS TO DETERMINE WHICH TAX RATE APPLIES

Instructions for Completing Worksheet

LINE 1

Where the value of the underlying property transferred or interest therein is used in determining the consideration for a REIT Transfer, you may, but are not required to, report as the value of the real property or interest therein (Form NYC-RPT, Schedule 1, line 7), the estimated market value as determined by the Department of Finance as reflected on the most recent Notice of Assessment issued by the Department. *(See Statements of Audit Procedure 93-2-GCT/RPTT, 3/1/93 and 95-1-GCT/RPTT, 7/28/95)* Add to the amount reported on line 1 the amount of any mortgages and other liens and encumbrances created in contemplation of the formation of the REIT in the case of condition 1(a) or in contemplation of the transaction reported on this Schedule R in the case of condition 1(b).

LINE 2

If the grantor received REIT shares as consideration for the transfer, enter on line 2a the number of REIT shares received. If the grantor received interests in a partnership or corporation controlled by the REIT that may be converted into REIT shares, enter on line 2b the maximum number of REIT shares into which such interests may be converted and attach an explanation of the terms of the conversion. If the grantor received interests that may be converted into REIT shares but you believe that the offering price for the REIT shares into which such interests may be converted is not a proper measurement of the value of the interests received, do not complete line 2b. Instead, attach an explanation of the terms of the conversion and enter on line 2f the fair market value of the interests received. If the grantor received interests in a partnership or corporation controlled by the REIT that cannot be converted into REIT shares at any time, enter on line 2f the fair market value of the interests received. If you enter an amount on line 2f, attach an explanation of the method used for determining the value of the interests received.

CERTIFICATION

I swear or affirm under penalties of perjury that the grantor has no present intention to transfer or convey the REIT shares or interests in a partnership or corporation controlled by the REIT received by the grantor as consideration in the transaction reported on this Schedule R within two years of the date of the transfer, other than a distribution of such shares or interests to the partners or shareholders of the grantor, and that, to the best of my knowledge, condition 3 above regarding the use of the cash proceeds of the REIT offering will be satisfied, if applicable. I further swear or affirm that I will file an amended Form NYC-RPT and pay any additional tax due if any such transfer or conveyance occurs within such two-year period or if condition 3 above, if applicable, ceases to be met.

GRANTOR		GRANTEE	
Sworn to and subscribed to before me on this _____ day of _____, _____	_____ Name of Grantor	Sworn to and subscribed to before me on this _____ day of _____, _____	_____ Name of Grantee
_____ Signature of Notary	_____ Signature of Grantor	_____ Signature of Notary	_____ Signature of Grantee
Notary's Stamp or Seal		Notary's Stamp or Seal	

900018

TP-584 (3/07)

Recording office time stamp

New York State Department of Taxation and Finance

Combined Real Estate Transfer Tax Return, Credit Line Mortgage Certificate, and Certification of Exemption from the Payment of Estimated Personal Income Tax

See Form TP-584, Instructions for Form TP-584, before completing this form. Please print or type.

Schedule A — Information relating to conveyance

Grantor/Transferor ☐ Individual ☐ Corporation ☐ Partnership ☐ Estate/Trust ☑ Other	Name *(if individual: last first middle initial)* THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY			Social security number
	Mailing address 225 PARK AVENUE SOUTH, 14TH FLOOR			Social security number
	City NEW YORK	State NY	ZIP code 10003	Federal employer ident. number 13 6400654
Grantee/Transferee ☐ Individual ☐ Corporation ☐ Partnership ☐ Estate/Trust ☑ Other	Name *(if individual: last, first middle initial)* GEORGE WASHINGTON BRIDGE BUS STATION DEVELOPMENT			Social security number
	Mailing address VENTURE LLC, C/O S/M PARTNERS, 9001 CONGRESSIONAL COURT			Social security number
	City POTOMAC	State MD	ZIP code 20854	Federal employer ident. number 20 8728685

Location and description of property conveyed

Tax map designation			Address	City/village	Town	County
Section	Block	Lot				
1	2163	1	4200 BROADWAY	NEW YORK		MANHATTAN / NEW YORK

Type of property conveyed *(check applicable box)*

1 ☐ One- to three-family house
2 ☐ Residential cooperative
3 ☐ Residential condominium
4 ☐ Vacant land
6 ☑ Commercial/Industrial
6 ☐ Apartment building
7 ☐ Office building
8 ☐ Other _____

Date of conveyance: 7 (month) 21 (day) 2011 (year)

Percentage of real property conveyed which is residential real property 0 % *(see instructions)*

Condition of conveyance *(check all that apply)*

a. ☐ Conveyance of fee interest
b. ☐ Acquisition of a controlling interest (state percentage acquired _____ %)
c ☐ Transfer of a controlling interest (state percentage transferred _____ %)
d. ☐ Conveyance to cooperative housing corporation
e. ☐ Conveyance pursuant to or in lieu of foreclosure or enforcement of security interest *(attach Form TP-584.1, Schedule E)*
f. ☐ Conveyance which consists of a mere change of identity or form of ownership or organization *(attach Form TP-584.1, Schedule F)*
g. ☐ Conveyance for which credit for tax previously paid will be claimed *(attach Form TP-584.1, Schedule G)*
h. ☐ Conveyance of cooperative apartment(s)
i. ☐ Syndication
j ☐ Conveyance of air rights or development rights
k. ☐ Contract assignment
l ☐ Option assignment or surrender
m. ☐ Leasehold assignment or surrender
n. ☑ Leasehold grant
o. ☐ Conveyance of an easement
p. ☑ Conveyance for which exemption from transfer tax claimed *(complete Schedule B, Part III)*
q. ☐ Conveyance of property partly within and partly outside the state
r. ☐ Other *(describe)* _____

For recording officer's use	Amount received	Date received	Transaction number
	Schedule B., Part I $ _____ Schedule B., Part II $		

201107180022930107

TP - 584 Location and description of property conveyed

ATTACHMENT

Tax map designation			Address	City/village	Town	County
Section	Block	Lot				
1	2176	17	4231 BROADWAY	NEW YORK		MANHATTAN / NEW YORK

20110718002293010 7

Schedule B — Real estate transfer tax return (Tax Law, Article 31)

Part I – Computation of tax due

1 Enter amount of consideration for the conveyance *(If you are claiming a total exemption from tax, check the exemption claimed box, enter consideration and proceed to Part III)* ☑ **Exemption claimed**	1.	7,500,000 00
2 Continuing lien deduction *(see instructions if property is taken subject to mortgage or lien)*	2.	0 00
3 Taxable consideration *(subtract line 2 from line 1)*	3.	0 00
4 Tax: $2 for each $500, or fractional part thereof, of consideration on line 3	4.	0 00
5 Amount of credit claimed *(see instructions and attach Form TP-584.1, Schedule G)*	5.	0 00
6 Total tax due* *(subtract line 5 from line 4)*	6.	0 00

Part II – Computation of additional tax due on the conveyance of residential real property for $1 million or more

1 Enter amount of consideration for conveyance *(from Part I, line 1)*	1.	0 00
2 Taxable consideration *(multiply line 1 by the percentage of the premises which is residential real property, as shown in Schedule A)*	2.	0 00
3 Total additional transfer tax due* *(multiply line 2 by 1% (.01))*	3.	0 00

Part III – Explanation of exemption claimed on Part 1, line 1 *(check any boxes that apply)*

The conveyance of real property is exempt from the real estate transfer tax for the following reason:

a. Conveyance is to the United Nations, the United States of America, the state of New York, or any of their instrumentalities, agencies, or political subdivisions (or any public corporation, including a public corporation created pursuant to agreement or compact with another state or Canada) a ☑

b Conveyance is to secure a debt or other obligation b ☐

c Conveyance is without additional consideration to confirm, correct, modify, or supplement a prior conveyance c ☐

d. Conveyance of real property is without consideration and not in connection with a sale, including conveyances conveying realty as bona fide gifts d ☐

e. Conveyance is given in connection with a tax sale e ☐

f. Conveyance is a mere change of identity or form of ownership or organization where there is no change in beneficial ownership. (This exemption cannot be claimed for a conveyance to a cooperative housing corporation of real property comprising the cooperative dwelling or dwellings.) Attach Form TP-584.1, Schedule F f ☐

g. Conveyance consists of deed of partition g ☐

h. Conveyance is given pursuant to the federal Bankruptcy Act h ☐

i Conveyance consists of the execution of a contract to sell real property, without the use or occupancy of such property, or the granting of an option to purchase real property, without the use or occupancy of such property i ☐

j. Conveyance of an option or contract to purchase real property with the use or occupancy of such property where the consideration is less than $200,000 and such property was used solely by the grantor as the grantor's personal residence and consists of a one-, two-, or three-family house, an individual residential condominium unit, or the sale of stock in a cooperative housing corporation in connection with the grant or transfer of a proprietary leasehold covering an individual residential cooperative apartment j ☐

k. Conveyance is not a conveyance within the meaning of Tax Law, Article 31, section 1401(e) *(attach documents supporting such claim)* k ☐

l Other *(attach explanation)* l ☐

*Please make check(s) payable to the county clerk where the recording is to take place. If the recording is to take place in New York City, make check(s) payable to the ***NYC Department of Finance***. If a recording is not required, send this return and your check(s) made payable to the ***NYS Department of Taxation and Finance***, directly to the NYS Tax Department, RETT Return Processing, PO Box 5045, Albany NY 12205-5045

Schedule C — Credit Line Mortgage Certificate (Tax Law, Article 11)

Complete the following only if the interest being transferred is a fee simple interest.
I (we) certify that: *(check the appropriate box)*

1. ☑ The real property being sold or transferred is not subject to an outstanding credit line mortgage.

2. ☐ The real property being sold or transferred is subject to an outstanding credit line mortgage. However, an exemption from the tax is claimed for the following reason:
   - ☐ The transfer of real property is a transfer of a fee simple interest to a person or persons who held a fee simple interest in the real property (whether as a joint tenant, a tenant in common or otherwise) immediately before the transfer.
   - ☐ The transfer of real property is (A) to a person or persons related by blood, marriage or adoption to the original obligor or to one or more of the original obligors or (B) to a person or entity where 50% or more of the beneficial interest in such real property after the transfer is held by the transferor or such related person or persons (as in the case of a transfer to a trustee for the benefit of a minor or the transfer to a trust for the benefit of the transferor).
   - ☐ The transfer of real property is a transfer to a trustee in bankruptcy, a receiver, assignee, or other officer of a court.
   - ☐ The maximum principal amount secured by the credit line mortgage is $3,000,000 or more, and the real property being sold or transferred is not principally improved nor will it be improved by a one- to six-family owner-occupied residence or dwelling.

     Please note: for purposes of determining whether the maximum principal amount secured is $3,000,000 or more as described above, the amounts secured by two or more credit line mortgages may be aggregated under certain circumstances. See TSB-M-98(6)-R for more information regarding these aggregation requirements.
   - ☐ Other *(attach detailed explanation)*.

3. ☐ The real property being transferred is presently subject to an outstanding credit line mortgage. However, no tax is due for the following reason:
   - ☐ A certificate of discharge of the credit line mortgage is being offered at the time of recording the deed.
   - ☐ A check has been drawn payable for transmission to the credit line mortgagee or his agent for the balance due, and a satisfaction of such mortgage will be recorded as soon as it is available.

4. ☐ The real property being transferred is subject to an outstanding credit line mortgage recorded in _____ (insert liber and page or reel or other identification of the mortgage). The maximum principal amount of debt or obligation secured by the mortgage is _____. No exemption from tax is claimed and the tax of _____ is being paid herewith. *(Make check payable to county clerk where deed will be recorded or, if the recording is to take place in New York City, make check payable to the **NYC Department of Finance**.)*

Signature (both the grantor(s) and grantee(s) must sign)

The undersigned certify that the above information contained in schedules A, B, and C, including any return, certification, schedule, or attachment, is to the best of his/her knowledge, true and complete, and authorize the person(s) submitting such form on their behalf to receive a copy for purposes of recording the deed or other instrument effecting the conveyance.

Grantor signature	Title	Grantee signature	Title
The Port Authority of NY & NJ By: Christopher O. Ward	Executive Director		

Reminder: Did you complete all of the required information in Schedules A, B, and C? Are you required to complete Schedule D? If you checked *e*, *f*, or *g* in Schedule A, did you complete Form TP-584.1? Have you attached your check(s) made payable to the county clerk where recording will take place or, if the recording is in New York City, to the ***NYC Department of Finance***? If no recording is required, send your check(s), made payable to the ***Department of Taxation and Finance***, directly to the NYS Tax Department, RETT Return Processing, PO Box 5045, Albany NY 12205-5045.

Schedule C — Credit Line Mortgage Certificate (Tax Law, Article 11)

Complete the following only if the interest being transferred is a fee simple interest.
I (we) certify that: *(check the appropriate box)*

1. ☑ The real property being sold or transferred is not subject to an outstanding credit line mortgage.

2. ☐ The real property being sold or transferred is subject to an outstanding credit line mortgage. However, an exemption from the tax is claimed for the following reason:
   - ☐ The transfer of real property is a transfer of a fee simple interest to a person or persons who held a fee simple interest in the real property (whether as a joint tenant, a tenant in common or otherwise) immediately before the transfer.
   - ☐ The transfer of real property is (A) to a person or persons related by blood, marriage or adoption to the original obligor or to one or more of the original obligors or (B) to a person or entity where 50% or more of the beneficial interest in such real property after the transfer is held by the transferor or such related person or persons (as in the case of a transfer to a trustee for the benefit of a minor or the transfer to a trust for the benefit of the transferor).
   - ☐ The transfer of real property is a transfer to a trustee in bankruptcy, a receiver, assignee, or other officer of a court.
   - ☐ The maximum principal amount secured by the credit line mortgage is $3,000,000 or more, and the real property being sold or transferred is **not** principally improved nor will it be improved by a one- to six-family owner-occupied residence or dwelling.

     Please note: for purposes of determining whether the maximum principal amount secured is $3,000,000 or more as described above, the amounts secured by two or more credit line mortgages may be aggregated under certain circumstances. See TSB-M-96(6)-R for more information regarding these aggregation requirements.
   - ☐ Other *(attach detailed explanation)*.

3. ☐ The real property being transferred is presently subject to an outstanding credit line mortgage. However, no tax is due for the following reason:
   - ☐ A certificate of discharge of the credit line mortgage is being offered at the time of recording the deed.
   - ☐ A check has been drawn payable for transmission to the credit line mortgagee or his agent for the balance due, and a satisfaction of such mortgage will be recorded as soon as it is available.

4. ☐ The real property being transferred is subject to an outstanding credit line mortgage recorded in _____ (insert liber and page or reel or other identification of the mortgage). The maximum principal amount of debt or obligation secured by the mortgage is _____. No exemption from tax is claimed and the tax of _____ is being paid herewith. *(Make check payable to county clerk where deed will be recorded or, if the recording is to take place in New York City, make check payable to the **NYC Department of Finance**.)*

Signature (both the grantor(s) and grantee(s) must sign)

The undersigned certify that the above information contained in schedules A, B, and C, including any return, certification, schedule, or attachment, is to the best of his/her knowledge, true and complete, and authorize the person(s) submitting such form on their behalf to receive a copy for purposes of recording the deed or other instrument effecting the conveyance.

Grantor signature	Title	Grantee signature	Title
		George Washington Bridge Bus Station Development Venture LLC	
Grantor signature	Title	Grantee signature by Stephen Gaccioli, Authorized Sig.	Title

Reminder: Did you complete all of the required information in Schedules A, B, and C? Are you required to complete Schedule D? If you checked *e*, *f*, or *g* in Schedule A, did you complete Form TP-584.1? Have you attached your check(s) made payable to the county clerk where recording will take place or, if the recording is in New York City, to the ***NYC Department of Finance***? If no recording is required, send your check(s), made payable to the ***Department of Taxation and Finance***, directly to the NYS Tax Department, RETT Return Processing, PO Box 5045, Albany NY 12205-5045.

by GWB Development Partners, LLC member
by Marketplace GWB LLC member

2011071800229301

Signature (both the grantor(s) and grantee(s) must sign)

The undersigned certify that the above information contained in schedules A, B, and C, including any return, certification, schedule, or attachment, is to the best of his/her knowledge, true and complete, and authorize the person(s) submitting such form on their behalf to receive a copy for purposes of recording the deed or other instrument effecting the conveyance.

Grantor signature	Title	Grantee signature	Title
Grantor signature	Title	Grantee signature	Title

Signature (both the grantor(s) and grantee(s) must sign)

The undersigned certify that the above information contained in schedules A, B, and C, including any return, certification, schedule, or attachment, is to the best of his/her knowledge, true and complete, and authorize the person(s) submitting such form on their behalf to receive a copy for purposes of recording the deed or other instrument effecting the conveyance.

Grantor signature	Title	Grantee signature	Title
		Gooney Washington Bldr/Dev Bus Stroyin Development * Venture LLC	
Grantor signature	Title	Grantee signature	Title
		by: Stephen Gurchik, Attorney/Sig.	

*

by GWB Development Partners, LLC member

by: Mankuttplus GWB LLC Mng. Member

2011071800229301

Schedule D - Certification of exemption from the payment of estimated personal income tax (Tax Law, Article 22, section 663)

Complete the following only if a fee simple interest or a cooperative unit is being transferred by an individual or estate or trust.

Part I - New York State residents

If you are a New York State resident transferor(s)/seller(s) listed in Schedule A of Form TP-584 (or an attachment to Form TP-584), you must sign the certification below. If one or more transferors/sellers of the real property or cooperative unit is a resident of New York State, each resident transferor/seller must sign in the space provided. If more space is needed, please photocopy this Schedule D and submit as many schedules as necessary to accommodate all resident transferors/sellers.

Certification of resident transferor(s)/seller(s)

This is to certify that at the time of the sale or transfer of the real property or cooperative unit, the transferor(s)/seller(s) as signed below was a resident of New York State, and therefore is not required to pay estimated personal income tax under Tax Law, section 663(a) upon the sale or transfer of this real property or cooperative unit.

Signature	Print full name	Date
Signature	Print full name	Date
Signature	Print full name	Date
Signature	Print full name	Date

Note: A resident of New York State may still be required to pay estimated tax under Tax Law, section 685(c), but not as a condition of recording a deed

Part II - Nonresidents of New York State

If you are a nonresident of New York State listed as a transferor/seller in Schedule A of Form TP-584 (or an attachment to Form TP-584) but are not required to pay estimated personal income tax because one of the exemptions below applies under Tax Law, section 663(c), check the box of the appropriate exemption below. If any one of the exemptions below applies to the transferor(s)/seller(s), that transferor(s)/seller(s) is not required to pay estimated personal income tax to New York State under Tax Law, section 663. Each nonresident transferor/seller who qualifies under one of the exemptions below must sign in the space provided. If more space is needed, please photocopy this Schedule D and submit as many schedules as necessary to accommodate all nonresident transferors/sellers.

If none of these exemption statements apply, you must complete Form IT-2663, *Nonresident Real Property Estimated Income Tax Payment Form*, or Form IT-2664, *Nonresident Cooperative Unit Estimated Income Tax Payment Form*. For more information, see *Payment of estimated personal income tax*, on page 1 of Form TP-584-I.

Exemption for nonresident transferor(s)/seller(s)

This is to certify that at the time of the sale or transfer of the real property or cooperative unit, the transferor(s)/seller(s) (grantor) of this real property or cooperative unit was a nonresident of New York State, but is not required to pay estimated personal income tax under Tax Law, section 663 due to one of the following exemptions:

☐ The real property or cooperative unit being sold or transferred qualifies in total as the transferor's/seller's principal residence (within the meaning of Internal Revenue Code, section 121) from _____ (Date) to _____ (Date) *(see instructions)*.

☐ The transferor/seller is a mortgagor conveying the mortgaged property to a mortgagee in foreclosure, or in lieu of foreclosure with no additional consideration.

☐ The transferor or transferee is an agency or authority of the United States of America, an agency or authority of the state of New York, the Federal National Mortgage Association, the Federal Home Loan Mortgage Corporation, the Government National Mortgage Association, or a private mortgage insurance company.

Signature	Print full name	Date
Signature	Print full name	Date
Signature	Print full name	Date
Signature	Print full name	Date

Certification of resident transferor(s)/seller(s)

This is to certify that at the time of the sale or transfer of the real property or cooperative unit, the transferor(s)/seller(s) as signed below was a resident of New York State, and therefore is not required to pay estimated personal income tax under Tax Law, section 663(a) upon the sale or transfer of this real property or cooperative unit

Signature	Print full name	Date
Signature	Print full name	Date
Signature	Print full name	Date
Signature	Print full name	Date

Exemption for nonresident transferor(s)/seller(s)

This is to certify that at the time of the sale or transfer of the real property or cooperative unit, the transferor(s)/seller(s) (grantor) of this real property or cooperative unit was a nonresident of New York State, but is not required to pay estimated personal income tax under Tax Law, section 663 due to one of the following exemptions:

☐ The real property or cooperative unit being sold or transferred qualifies in total as the transferor's/seller's principal residence (within the meaning of Internal Revenue Code, section 121) from _____ (Date) to _____ (Date) *(see instructions).*

☐ The transferor/seller is a mortgagor conveying the mortgaged property to a mortgagee in foreclosure, or in lieu of foreclosure with no additional consideration.

☐ The transferor or transferee is an agency or authority of the United States of America, an agency or authority of the state of New York, the Federal National Mortgage Association, the Federal Home Loan Mortgage Corporation, the Government National Mortgage Association, or a private mortgage insurance company.

Signature	Print full name	Date
Signature	Print full name	Date
Signature	Print full name	Date
Signature	Print full name	Date

DIVISION 8

SECTION 08307

ACCESS DOORS - CEILING TYPE

PART 1. GENERAL

1.01 SUMMARY

This Section specifies requirements for ceiling type access doors.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

Underwriters Laboratories Inc. (UL)
Classified Building Materials Index.

1.03 QUALITY ASSURANCE

A. Fire-Resistance Ratings

Wherever a fire-resistance classification is shown on the Contract Drawings, provide access door assembly with panel door, frame, hinge and latch from the manufacturer listed in UL "Classified Building Materials Index" for rating shown.

B. Size Variations

Obtain the Engineer's approval of the manufacturer's standard size units which may vary slightly from nominal sizes shown on the Contract Drawings.

1.04 SUSTAINABLE DESIGN REQUIREMENTS

A. Sustainable Design General Requirements

1. The Authority requires the Contractor to implement practices and procedures to meet the sustainable requirements. The Contractor shall ensure that the requirements related to these goals, as defined in Division 1 - GENERAL PROVISIONS and the articles below, are implemented to the fullest extent. Substitutions, or other changes to the Work proposed by the Contractor, will not be allowed if such changes compromise the stated Sustainable Design Performance Criteria.

B. Sustainable Design Performance Criteria

1. All field-applied adhesives, sealants, paints and coatings relating to Work of this Section shall meet the requirements of Division 1 - GENERAL PROVISIONS.

2. The post-industrial and/or post-consumer recycled content (by weight) of the ceiling type access doors shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section

3. The manufacturing location (final assembly) of the ceiling type access doors shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

1.05 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MANUFACTURERS

A. Non Fire Rated and Fire Resistive

Subject to compliance with the requirements of this Section, furnish and install access doors by one of the following, or approved equal:

B. J.L. Industries; Bloomington, MN
Karp Associates, Inc.; Maspeth, NY
Milcor Div; Inryco, Inc.; Milwaukee, WI
Wilkinson Co.; Stow, OH

C. Fire Rated

Subject to compliance with the requirements of this Section, furnish and install access doors by one of the following, or approved equal:

D. Karp Associates, Inc.; Maspeth, NY
Williams Brothers Corp.; Scarborough, ON, Canada

2.02 MATERIALS AND FABRICATION

A. General

Furnish each access door assembly manufactured as an integral unit complete with all parts and ready for installation. Grind welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners to secure door assembly to types of adjacent construction shown on Contract Drawings.

B. Non-Fire Rated and Fire Resistive Access Doors

Fabricate 13 gage frame and 16 gage recessed door to receive acoustic tile, drywall or plaster as shown on the Contract Drawings. Provide factory applied baked enamel prime paint over protective phosphate coating.

1. Hinge: Continuous type, set to allow free panel opening.
2. Locking Device

   Screwdriver-operated cam locks of number required to hold door in flush smooth plane when closed, with steel sleeve and plastic end grommet.
3. At plaster applications, provide galvanized metal lath welded to recessed door.

C. Fire Rated Access Doors

Fabricate 16 gage frame and minimum 22 gage insulated sandwich door, with factory applied baked enamel prime paint over protective phosphate coating.

1. Frame

Exposed 1-inch perimeter flange. Where plaster applications are shown on the Contract Drawings provide exposed plaster ground.

2. Hinge: Continuous piano type with self closing mechanism.

3. Locking Device

Flush, screwdriver-operated cam locks of number required to hold door in flush, smooth plane when closed, with steel sleeve and plastic end grommets.

PART 3. EXECUTION

3.01 INSTALLATION

A. Coordinate installation with Work of other Sections of these Specifications.

B. Set frame accurately in position to provide convenient access to concealed Work requiring access, with face panels plumb or level in relation to adjacent finish surfaces.

3.02 ADJUSTING

A. Adjust hardware and panels after installation for proper operation.

B. Remove and replace panels or frames which are warped, bowed or otherwise damaged.

C. At exposed face painted units, touch up abraded and marred prime paint with primer to match and be compatible with original factory applied primer.

END OF SECTION

SECTION 08307

ACCESS DOORS - CEILING TYPE

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts and Samples" of Division 1 - GENERAL PROVISIONS:

A. Product Data

Manufacturer's technical data and installation and care instructions for each access door assembly, including dimensioned installation drawings and templates.

B. Sustainable Design Submittal Requirements:

The Contractor shall submit the Sustainable Design certification items listed herein. Sustainable Design submittals shall include the following:

1. A completed Sustainable Design Materials Certification Form (SDMCF), appended to Division 1 - GENERAL PROVISIONS. Information to be supplied for this form shall include:

   a. Cost breakdowns for the materials included in the Contractor's Work. Cost breakdowns shall include total cost plus itemized material costs.

   b. Where required by the Sustainable Design Performance Criteria of this Section, the following information shall also be supplied:

      (1) The amount of post-consumer and/or post-industrial recycled content in the supplied product(s).

      (2) The manufacturing location of the supplied product(s).

      (3) The location (source) of the raw materials used to manufacture the supplied product(s).

      (4) The VOC content of all adhesives, sealants, paints, and coatings applied on site as part of this Work.

2. Published product literature or letters of Certification, provided from the product manufacturer on the manufacturer's letterhead, to verify the product information supplied for the SDMCF.

3. Product cut sheets for materials that meet the SDMCF.

4. Material Safety Data Sheets (MSDS), for applicable products. Applicable products include, but are not limited to field-applied adhesives, sealants, carpets, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).

5. The Sustainable Design submittal information shall be assembled into one (1) package per Section or trade, and sent to the Engineer.

END OF APPENDIX "A"

DIVISION 8

SECTION 08306

ACCESS DOORS - FLOOR TYPE

PART 1. GENERAL

1.01 SUMMARY

This Section specifies requirements for floor type access doors.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

American Society for Testing and Materials (ASTM)

ASTM A 36	Structural Steel.
ASTM A 123	Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.

1.03 DESIGN AND PERFORMANCE REQUIREMENTS

A. Capable of supporting a live load of not less than 300 pounds per square foot, unless otherwise shown on the Contract Drawings.

B. Capable of being opened and closed by one person.

C. Size as shown on the Contract Drawings.

1.04 SUSTAINABLE DESIGN REQUIREMENTS

A. Sustainable Design General Requirements

1. The Authority requires the Contractor to implement practices and procedures to meet the sustainable requirements. The Contractor shall ensure that the requirements related to these goals, as defined in Division 1 - GENERAL PROVISIONS and the articles below, are implemented to the fullest extent. Substitutions, or other changes to the Work proposed by the Contractor, will not be allowed if such changes compromise the stated Sustainable Design Performance Criteria.

B. Sustainable Design Performance Criteria

1. All field-applied adhesives, sealants, paints and coatings relating to Work of this Section shall meet the requirements of Division 1 - GENERAL PROVISIONS.

2. The post-industrial and/or post-consumer recycled content (by weight) of the floor type access doors shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section

3. The manufacturing location (final assembly) of the floor type access doors shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

1.05 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MANUFACTURERS

Subject to compliance with the requirements of this Section, furnish and install Type J single leaf or Type JD double leaf unit(s) as manufactured by The Bilco Co., New Haven, CT, or approved equal.

2.02 MATERIALS

A. Door leaves shall be not less than one-quarter inch thick steel, with a diamond pattern plate.

B. Channel frame shall be not less than one-quarter inch thick steel with an anchor flange around the perimeter.

C. Steel frame and leaves shall conform to the requirements of ASTM A 36.

D. Furnish doors with:

1. Heavy forged brass hinges.
2. Stainless steel pins.
3. Spring operations.
4. Automatic hold-open arm with release handle.
5. Snap lock with removable handle.
6. Safety chain.

E. Drainage coupling, 1-1/2 inch, for drain pipe.

F. Hardware: Cadmium plated.

G. Steel protective coating shall be hot-dip galvanizing, G90, conforming to the requirements of ASTM A 123.

PART 3. EXECUTION

3.01 INSTALLATION

Install in accordance with approved shop drawings and manufacturer's printed instructions.

END OF SECTION

SECTION 08306

ACCESS DOORS - FLOOR TYPE

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts and Samples" of Division 1 - GENERAL PROVISIONS:

A. Product Data

Manufacturer's technical data and installation and care instructions for each access door assembly, including dimensioned installation drawings and templates.

B. Shop Drawings

Shop drawings indicating dimensions, material thickness, finish, operating hardware and installation details.

C. Sustainable Design Submittal Requirements:

The Contractor shall submit the Sustainable Design certification items listed herein. Sustainable Design submittals shall include the following:

1. A completed Sustainable Design Materials Certification Form (SDMCF), appended to Division 1 - GENERAL PROVISIONS. Information to be supplied for this form shall include:

   a. Cost breakdowns for the materials included in the Contractor's Work. Cost breakdowns shall include total cost plus itemized material costs.

   b. Where required by the Sustainable Design Performance Criteria of this Section, the following information shall also be supplied:

      (1) The amount of post-consumer and/or post-industrial recycled content in the supplied product(s).

      (2) The manufacturing location of the supplied product(s).

      (3) The location (source) of the raw materials used to manufacture the supplied product(s).

      (4) The VOC content of all adhesives, sealants, paints, and coatings applied on site as part of this Work.

2. Published product literature or letters of Certification, provided from the product manufacturer on the manufacturer's letterhead, to verify the product information supplied for the SDMCF.

3. Product cut sheets for materials that meet the SDMCF.

4. Material Safety Data Sheets (MSDS), for applicable products. Applicable products include, but are not limited to field-applied adhesives, sealants, carpets, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).

5. The Sustainable Design submittal information shall be assembled into one (1) package per Section or trade, and sent to the Engineer.

END OF APPENDIX "A"

DIVISION 8

SECTION 08305

ACCESS DOORS - WALL TYPE

PART 1. GENERAL

1.01 SUMMARY

A. This Section specifies requirements for wall type access doors.

B. Coordinate furnishing of inserts and anchoring devices which must be built into other Work for the installation of access doors.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

Underwriters Laboratories Inc. (UL)

Classified Building Materials Index.

1.03 QUALITY ASSURANCE

A. Fire-Resistance Ratings

Wherever a fire-resistance classification is shown on the Contract Drawings, provide access door assembly with panel door, frame hinges and latch from a manufacturer listed in UL "Classified Building Materials Index" for rating shown on the Contract Drawings.

B. Size Variations

Obtain Engineer's approval of manufacturer's standard size units which may vary slightly from nominal sizes shown on the Contract Drawings.

1.04 SUSTAINABLE DESIGN REQUIREMENTS

A. Sustainable Design General Requirements

1. The Authority requires the Contractor to implement practices and procedures to meet the sustainable requirements. The Contractor shall ensure that the requirements related to these goals, as defined in Division 1 - GENERAL PROVISIONS and the articles below, are implemented to the fullest extent. Substitutions, or other changes to the Work proposed by the Contractor, will not be allowed if such changes compromise the stated Sustainable Design Performance Criteria.

B. Sustainable Design Performance Criteria

1. All field-applied adhesives, sealants, paints and coatings relating to Work of this Section shall meet the requirements of Division 1 - GENERAL PROVISIONS.

2. The post-industrial and/or post-consumer recycled content (by weight) of the wall type access doors shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section

3. The manufacturing location (final assembly) of the wall type access doors shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

1.05 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MANUFACTURERS

Subject to compliance with requirements of this Section, furnish and install access doors by one of the following, or approved equal:

Karp Associates, Inc.; Maspeth, NY
Milcor Div.; Inryco, Inc.; Milwaukee, WI
Nystrom, Inc.; Minneapolis, MN
Wilkinson Co.; Stow, OH

2.02 MATERIALS AND FABRICATION

A. General

Furnish each access door assembly manufactured as an integral unit complete with all parts and ready for installation. Grind welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners of type listed below to secure door assembly to types of adjacent construction shown on the Contract Drawings.

B. Flush Panel Door and Frame

Fabricate 16-gage frame and 14-gage door of material and finish shown on the Contract Drawings.

1. Frame

Exposed 1-inch perimeter flange. Where plaster applications are shown on the Contract Drawings provide exposed plaster ground.

2. Hinge: Concealed spring or piano type set to open at least 130 degrees.

3. Locking Device

Flush screwdriver-operated cam locks of number required to hold door in flush smooth plane when closed.

C. Fire Rated Access Doors and Frames

Fabricate 16-gauge frame and minimum 22-gage insulated sandwich door, of material and finish shown on Contract Drawings.

1. Frame

Exposed 1-inch perimeter flange. Where plaster applications are shown on the Contract Drawings provide exposed plaster ground.

2. Hinge: Continuous piano type with self closing mechanism.

3. Locking Device

Flush, self-latching cylinder lock of number required to hold door in flush smooth plane when closed. Key all locks alike. Furnish 2 keys per lock.

D. Finish: Where shown on the Contract Drawings:

1. Painted Steel: Factory applied baked enamel prime paint over protective phosphate coating.

2. Stainless Steel: Buff exposed surfaces to No. 4 satin finish.

E. Attachment Devices

1. For masonry construction use masonry anchors.

2. For drywall construction use self-drilling, self-tapping metal screw, or wood screw, as required to suit adjacent construction.

3. For plaster construction use galvanized expanded metal lath wings factory welded to frame, with machine bolts or wood screw as required, for jamb fastening.

PART 3. EXECUTION

3.01 INSTALLATION

A. Coordinate installation with Work of other Sections of these Specifications.

B. Set frame accurately in position to provide convenient access to concealed Work requiring access, with face panels plumb or level in relation to adjacent finish surfaces.

C. Secure rigidly in place in accordance with the manufacturer's instructions.

3.02 ADJUSTMENTS

A. Adjust hardware and panels after installation for proper operation.

B. Remove and replace panels or frames which are warped, bowed or otherwise damaged.

C. At painted units, touch up abraded and marred prime paint with primer to match and be compatible with original factory applied primer.

END OF SECTION

SECTION 08305

ACCESS DOORS - WALL TYPE

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts and Samples" of Division 1 - GENERAL PROVISIONS:

A. Product Data

Manufacturer's technical data and installation and care instructions for each access door assembly, including dimensioned installation drawings and templates.

B. Sustainable Design Submittal Requirements:

The Contractor shall submit the Sustainable Design certification items listed herein. Sustainable Design submittals shall include the following:

1. A completed Sustainable Design Materials Certification Form (SDMCF), appended to Division 1 - GENERAL PROVISIONS. Information to be supplied for this form shall include:

   a. Cost breakdowns for the materials included in the Contractor's Work. Cost breakdowns shall include total cost plus itemized material costs.

   b. Where required by the Sustainable Design Performance Criteria of this Section, the following information shall also be supplied:

      (1) The amount of post-consumer and/or post-industrial recycled content in the supplied product(s).

      (2) The manufacturing location of the supplied product(s).

      (3) The location (source) of the raw materials used to manufacture the supplied product(s).

      (4) The VOC content of all adhesives, sealants, paints, and coatings applied on site as part of this Work.

2. Published product literature or letters of Certification, provided from the product manufacturer on the manufacturer's letterhead, to verify the product information supplied for the SDMCF.

3. Product cut sheets for materials that meet the SDMCF.

4. Material Safety Data Sheets (MSDS), for applicable products. Applicable products include, but are not limited to field-applied adhesives, sealants, carpets, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).

5. The Sustainable Design submittal information shall be assembled into one (1) package per Section or trade, and sent to the Engineer.

END OF APPENDIX "A"

DIVISION 8

SECTION 08520

ALUMINUM WINDOWS

PART 1. GENERAL

1.01 SUMMARY

A. This Section specifies requirements for fixed, projected, casement, awning pivoted or sliding aluminum windows.

B. Extent of each type, grade and classification of aluminum window unit is shown on the Contract Drawings or window schedules..

C. Refer to "Glass and Glazing" Sections of these Specifications for glazing of window units.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

<u>American National Standards Institute/American Architectural Manufacturers Association (ANSI/AAMA)</u>	
ANSI/AAMA 101-85	Voluntary Specifications for Aluminum Sliding Glass Doors.
ANSI A 39.1	Safety Requirements for Window Cleaning.
<u>American Architectural Manufacturers Association (AAMA)</u>	
AAMA GS-001	Guide Specification for Aluminum Architectural Windows.
AAMA 1502	Test Method for Condensation Resistance.
AAMA 1503	Test Method for Thermal Transmission.
<u>American Association of Testing and Materials (ASTM)</u>	
ASTM A 386	Zinc Coating (Hot Dip) on Assembled Steel Products.
ASTM B 221	Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes and Tubes.
ASTM C 509	Cellular Elastomeric Preformed Gasket and Sealing Material.
ASTM D 2000	Classification System for Rubber Products in Automotive Applications.
ASTM D 2287	Nonrigid Vinyl Chloride Polymer and Copolymer Molding and Extrusion Compounds.
ASTM E 90	Method for Laboratory Measurement of Airborne - Sound Transmission Loss of Building Partitions.
ASTM E 413	Classification for Determination of Sound Transmission Class.
<u>Federal Specifications (FS)</u>	
FS RR-W-365	Wire Fabric (Insect Screening).

1.03 DESIGN AND PERFORMANCE REQUIREMENTS

A. General

Except as shown otherwise on the Contract Drawing, comply with air infiltration tests, water resistance tests, uniform load deflection tests, and uniform load structural tests specified in ANSI/AAMA 101-85 for type and classification of window units required in each case.

B. High Performance Requirements

Where window units are indicated as high performance windows (suffix "-HC"), comply with the requirements of ANSI/AAMA 101-85. Where required uniform load structural test pressure (STP) exceeds minimum specified for high performance, the required value is shown on the Contract Drawings.

1. Heights of window units above grade (to centerline) are indicated on or can be calculated from the Contract Drawings.

2. Design wind velocity for Work of this Section is 100 mph.

3. Condensation Resistance

   Where window units are shown to be of "thermal-break construction", provide units which have been tested for thermal performance (AAMA 1503.1) and which have a condensation resistance factor (CRF) per AAMA 1502.7 of at least 45.

C. Sound Insulation Construction

When shown on the Contract Drawings, fabricate aluminum window units which have been certified to provide a sound transmission class (STC) rating of at least 40 when tested in accordance with ASTM E 90 and classified according to ASTM E 413.

D. Low Air Infiltration

When such requirement is shown on the Contract Drawings, provide reduced construction tolerances and improved weatherstripping, as required to provide air infiltration test results for operable sash to 0.10 cu. ft. per minute per ft. of crack length.

E. Testing

Where manufacturer's standard window units comply with the requirements of this Section and have been tested in accordance with specified tests, provide certification by manufacturer showing compliance with such tests; otherwise, perform required tests through a recognized testing laboratory or agency and provide certified test results to the Engineer.

1.04 QUALITY ASSURANCE

A. Design Criteria

The Contract Drawings show design and performance requirements, sizes, profiles and dimensional requirements of aluminum windows. Window units having minor deviations from dimensions and profiles shown on the Contract Drawings may be approved by the Engineer, provided such deviations do not materially detract from design concept or intended performance.

B. Warranty

Submit written warranty executed by manufacturer, installer and Contractor, agreeing to replace aluminum window units that fail in materials or workmanship within four (4) years of date of issuance of the Certificate of Final Completion. Failure of materials or workmanship shall include (but not be limited to) excessive leakage or air infiltration, excessive deflections, faulty operation of sash, deterioration of finish or metal in excess of normal weathering, and defects in hardware, weatherstripping and other components of Work as determined by the Engineer. Such warranty shall be in addition to, and not a limitation of, other rights the Authority may have under the Contract.

1.05 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MANUFACTURERS

A. Manufacturer

Subject to compliance with the specified requirements of this Section, furnish and install window unit by one of the following, or approved equal:

1. Casement Windows

Acorn Building Components, Inc.; Detroit MI
Alpana Aluminum Products Inc.; Hamel, MN
Disco Aluminum Products Co.; Inc., Selma, AL
Efco Corp.; Monett, MO
Hopes/Roblin Architectural Products Co.; Jamestown, NY
Kawneer Co., Inc.; Norcross, GA
Marmet Corporation; Wausau, WI
Ware Aluminum Windows, Inc./Div. Yale Ogron; Miami, FL
Wausau Metals Corp.; Wausau, WI
Winco Manufacturing Co.; St. Louis, MO

2. Horizontal Rolling/Sliding Windows

Acorn Building Components, Inc.; Detroit, MI
Alenco Div./Redman Industries, Inc.; Bryan, TX
Capitol Windows; Harrisburg, PA
Fisher-Insley Corp.; Marine City , MI
Four Seasons Window Corp.; New Hudson, MN
Milco Div./Wausau Metals Corp.; Wausau, WI
Peterson Window Corp.; Ferndale, MN
Wausau Metals Corp.; Wausau, WI
Winco Manufacturing Co.; St. Louis, MI

3. Pivoting (Horizontal and Vertical) Windows

Alpana Aluminum Products, Inc.; Hamel, MN
Disco Aluminum Products Co., Inc.; Selma, AL
Hopes/Roblin Architectural Products Co.; Jamestown, NY
Kawneer Company, Inc.; Norcross, GA
Marmet Corp.; Wausau, WI
Wausau Metals Corp.; Wausau, WI

4. Awning Windows

V.E. Anderson Mfg. Co.; Rome, GA
William Bayley Co.; Springfield, OH
Superior Window Corp.; Miami, FL

2.02 MATERIALS

A. Aluminum Extrusions

Alloy and temper recommended by window manufacturer for strength, corrosion resistance and application of required finish, but not less than 22,000 psi ultimate tensile strength and not less than 0.062-inch thickness at any location for main frame and sash members. Comply with ASTM B 221.

B. Fasteners

Aluminum, non-magnetic stainless steel, or other materials warranted by manufacturer to be non-corrosive and compatible with aluminum window members, trim, hardware, anchors and other components of window units.

1. Reinforcement

Where fasteners screw-anchor into aluminum less than 0.125-inch thick, reinforce interior with aluminum or non-magnetic stainless steel to receive screw threads, or provide standard non-corrosive pressed-in splined grommet nuts.

2. Do not use exposed fasteners except where unavoidable for application of hardware. Match finish of adjoining metal.

3. Provide Phillips flat-head machine screws for exposed fasteners.

C. Anchors, Clips and Window Accessories

Fabricate units of aluminum, non-magnetic stainless steel, or hot-dip zinc coated steel or iron complying with ASTM A 386 as shown on the Contract Drawings.

D. Compression Glazing Strips and Weatherstripping

At manufacturer's option, provide molded neoprene gaskets complying with ASTM D 2000 Designation 2BC415 to 3BC620, molded PVC gaskets complying with ASTM D 2287, or molded expanded neoprene gaskets complying with ASTM C 509, Grade 4.

E. Sliding Weatherstripping

Provide woven pile weatherstripping of wool, polypropylene or nylon pile and resin-impregnated backing fabric, and aluminum backing strip; comply with AAMA 701.

F. Sealant

Unless otherwise shown on the Contract Drawings, provide sealant type recommended by window manufacturer for joint size and movement, to remain permanently elastic, non-shrinking and non-migrating. Comply with Division 7 Sections of these Specifications for installation of sealants.

G. Wire fabric (Insect)

18 x 18, 18 x 16, or 18 x 14 mesh of 0.013-inch diameter aluminum wire, complying with FS RR-W-365, Type VII.

H. Friction Shoes

Nylon or other non-abrasive non-metallic, non-staining, non-corrosive durable material.

2.03 CONSTRUCTION FEATURES

A. Window Grades

1. Provide windows of grade designated on the Contract Drawings complying with the following requirements:

   a. Commercial (C) per ANSI/AAMA 101-85.

   b. Heavy Commercial (HC) per ANSI/AAMA 101-85.

   c. High Performance (HC) per ANSI/AAMA 101-85.

B. General

The following paragraphs define operating arrangements for types of sash (ventilators) required in window units and specify minimum provisions for each type. Contract Drawings show size, and which panels of each window unit are operable sash and which are fixed. Where 2 or more types of operating sash are included in same window unit, operation of each is shown on the Contract Drawings and the unit is considered a "Combination Aluminum Window".

1. Hopper Vents

(Swing-in, bottom-hinged, or pivoted) as shown on the Contract Drawings included in fixed or other types of window units; provide concealed 4-bar stainless steel balance-support arms, pivots with friction shoes, and camlatch or other standard latching hardware equipped with lever handle or pull or, if higher than 6 feet above floor, equipped with eye for pole operation. Match hardware of other operating sash, if any. Provide two latches on units 3 feet 6 inches wide and greater. Provide a pole for each, separate space containing pole operated units.

2. Fixed Windows

Except for vent bars or hopper vents (if any), or special provisions as indicated for maintenance, cleaning and removal, no operating hardware or equipment is required.

3. Projected Windows

Units containing swing-out, top-hinged or pivoted vent sash requiring two 4-bar stainless steel balance-support arms, pivots with friction shoes, and (unless otherwise shown on the Contract Drawings) cam latch or other standard latching hardware with lever handle or pull. Provide two latches on units 3 feet 6 inches wide and greater. Provide sash operation that permits inside cleaning of outside glass face from interior.

4. Casement Windows

Units containing side-hinged or pivoted vent sash require the following equipment and hardware:

a. Roto-type operators and hook/cam-type latch and lever.

b. Concealed 4-point (2-bar stainless steel) projecting mechanism (non-friction type), two per sash, to provide access for cleaning.

5. Awning Windows

Units containing 2 or more swing-out, top-hinged or projected sash, arranged in a vertical stack and operated by a common control device; requiring 2 balance-support arms and pivots with friction shoes for each sash, and a concealed roto-operator system which forces each side of each vent in closed position without additional latches or other devices. Provide sash operation which permits inside cleaning of outside glass face.

a. Provide torsion-type rack and pinion system, complete with shafts, brackets, levers, rods, oil-encased gearboxes and standard fittings and accessories for operation as shown on the Contract Drawings.

6. Pivoting Windows

Window units which are provided with cleaning access (vertically or horizontally); requiring pivots for operation, double-row weatherstripping, and limited-access locks for latches (for maintenance personnel only) which are of adequate strength for complete support of sash under full design loading, and which latch in partially open and fully open positions.

a. Double Glazing

Provide pivoting unit for double glazing, constructed with one sheet of glass in a removable sash for access to interior of unit, installed with nominally air-tight gaskets.

7. Hinged-Access Windows

Window units hinged for swing-in access (top-hinged or side-hinged) for cleaning access, requiring hinges or pivots for adequate swing to permit safe cleaning operation, double-contact weatherstripping, and limited-access locks or latches (for maintenance personnel only) capable of complete sash support under full design loading.

8. Horizontal Sliding Windows

Units containing one or more horizontally sliding sash; requiring track for horizontal movement, with rollers in sash or with friction shoes if size of sash does not require use of rollers to provide ease of operation, with combination pull and latch unit which will prevent removal of sash when latched.

a. Provide sash which can be removed from inside without use of tools.

2.04 FABRICATION AND ACCESSORIES

A. General

Provide manufacturers standard fabrication and accessories which comply with referenced standards and are reglazable without dismantling of sash framing, except to extent more specific or more stringent requirements are shown on the Contract Drawings or specified in this Section. Include complete system for assembly of components and anchorage of window units, and prepare sash for glazing except where preglazing at factory is shown on the Contract Drawings.

B. Sizes and Profiles

Sizes for window units and profile requirements are shown on the Contract Drawings. Variable dimensions (if any) are shown along with maximum and minimum dimensions as required to achieve design requirements and coordination with other Work.

1. Details on the Contract Drawings are based upon standard details by one or more manufacturers. It is intended that similar details by other manufacturers will be acceptable, provided they comply with size requirements, minimum/maximum profile requirements, performance standards as shown and specified.

C. Thermal-Break Construction

Where shown on the Contract Drawings, fabricate aluminum window units with an integrally concealed low conductance thermal barrier, located between exterior materials and window members exposed on interior, in manner which eliminates direct metal-to metal contact. Provide manufacturer's standard construction which has been in use on similar window units for period of not less than 5 years, has been tested to demonstrate resistance to thermal conductance and condensation per AAMA 1503.1 and 1502.7, and has been tested to show adequate strength and security of glass retention.

D. Coordination of Fabrication

Where possible, check actual window openings in construction by accurate field measurement before fabrication, and show recorded measurements on shop drawings. However, coordinate fabrication schedule with construction progress as directed by the Engineer to avoid delay of Work. Where necessary, proceed with fabrication without field measurements, and coordinate installation tolerances to ensure proper fit of window units.

E. Preglazed Fabrication

Preglaze window units at factory except as shown otherwise on the Contract Drawings. Comply with the requirements of the "Glass and Glazing" Section of these Specifications, in addition to requirements of ANSI/AAMA 101-85.

F. Provide means of drainage for water and condensation that may accumulate in members of window units.

G. Weatherstripping

Provide compression-type neoprene or PVC weatherstripping at perimeter of each operating sash, except provide sliding woven pile weatherstripping at all locations where sash rails slide horizontally or vertically along frame of units.

H. Provide subframes with anchors for window units where shown on the Contract Drawings of profile and dimensions shown but not less than 0.062 inch thickness extruded aluminum; with mitered or coped corners, welded and dressed smooth or with concealed mechanical joint fasteners. Finish to match window units.

I. Provide mullions and cover plates as shown on the Contract Drawings, matching window units, and complete with anchors for support and installation. Allow for erection tolerances and provide for movement of window units due to thermal expansion and building deflections.

J. Provide an insect screen unit for each operable exterior sash, except as shown otherwise on the Contract Drawings. Locate screen units on either inside or outside of sash, depending upon window type and as shown on the Contract Drawings. Where possible, design window units and hardware to accommodate screens in a tight-fitting removable arrangement, with a minimum of exposed fasteners and latches, and without necessity of wickets for hardware access. Where wickets are necessary, provide either sliding or hinged type, framed and trimmed for durability during handling, and for tight fit.

1. Fabricate screen frames of either extruded or formed aluminum tubular-shaped members of 0.040-inch minimum wall thickness, with mitered or coped joints and concealed mechanical fasteners, with removable PVC spline-anchor concealing edge of screen fabric. Fabricate frames so that screen may be removed and replaced when worn.

K. Provide window cleaner's bolts of standard design, complying with governing regulations and ANSI A 39.1. Fabricate bolts of non-magnetic stainless steel, unless shown otherwise on the Contract Drawings. Reinforce window units or mullions to receive bolts, and provide additional anchorage of units at locations of bolts.

2.05 SHOP FINISH

A. Natural Anodized Finish, where shown on the Contract Drawings

NAAMM AA-C22A41, Class I (minimum thickness of 0.7 mil), natural aluminum color. Apply protective coating of clear acrylic lacquer; comply with AAMA recommendations.

B. Color Anodized Finish where shown on the Contract Drawings

NAAMM AA-C22A42/44, Class I (minimum thickness of 0.7 mil), integral or electrolytically deposited color anodized finish as follows:

1. Provide color shown on the Contract Drawings or, if not shown, as selected by the Engineer from the manufacturer's standard colors.

2. Apply protective coating of clear acrylic lacquer; comply with AAMA recommendations.

PART 3. EXECUTION

3.01 EXAMINATION

Examine prepared window openings to assure that the opening is true to size, level and contains the necessary built-in flashings shown on the Contract Drawings. Notify the Engineer, in writing, of defects. Do not proceed with installation until defects have been corrected.

3.02 INSTALLATION

A. Comply with manufacturer's specifications and recommendations for installation of window units, hardware, operations and other components of the Work.

B. Set units plumb, level and true to line, without warp or rack of frames or sash. Anchor securely in place. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action.

C. Set sill members in a bed of compound as shown on the Contract Drawings, or with joint fillers or gaskets as shown on the Contract Drawings, to provide weathertight construction. Refer to Division 7 sealant Sections of these Specifications for compounds, fillers and gaskets to be installed with window units. Coordinate installation with wall flashings and other components of the Work.

3.03 ADJUSTING

A. Adjust operating sash hardware to provide a tight fit at contact points and at weatherstripping and to ensure smooth operation and weathertight closure.

B. Clean aluminum surfaces promptly after installation of windows, exercising care to avoid damage to protective coatings and finishes. Remove excess glazing and sealant compounds, dirt and other substance. Lubricate hardware and moving parts.

C. Clean glass of preglazed units promptly after installation of windows; comply with the requirements of the "Glass and Glazing" Section of these Specifications for cleaning and maintenance.

3.04 PROTECTION

Initiate and maintain protection and other precautions required to ensure that window units will not be damaged or deteriorated (other than normal weathering) at time of issuance of the Certificate of Final Completion.

END OF SECTION

SECTION 08520

ALUMINUM WINDOWS

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts and Samples" of Division 1 - GENERAL PROVISIONS:

A. Product Data

Submit manufacturer's technical product data, recommendations and standard details for aluminum window units, including certified laboratory test reports as necessary to show compliance with the requirements of this Section.

B. Shop Drawings

Submit shop drawings, including wall elevations at 1/4" = 1'0" scale, typical unit elevations at 3/4" = 1'-0" scale, and full size detail sections of every typical composite member. Show anchors, hardware, operators and other components not included in manufacturer's standard data. Include glazing details.

C. Samples

Submit 2 samples of each required aluminum finish, on 12-inch long sections of extrusion shapes showing fabrication techniques, workmanship of component parts, and design hardware and other exposed auxiliary items.

1. The Engineer reserves the right to require additional samples that will show fabrication techniques, workmanship of component parts, and design hardware and other exposed auxiliary items.

D. Warranty

Submit warranty as required by 1.04 B.

END OF APPENDIX "A"

DIVISION 2

SECTION 02081

ASBESTOS REMOVAL AND DISPOSAL FOR PORT AUTHORITY OF NEW YORK AND NEW JERSEY

PART 1. GENERAL

1.01 SUMMARY.

A. This Section specifies requirements for removal and disposal of asbestos-containing materials and/or asbestos-contaminated objects from facilities owned and/or operated by the Port Authority of New York and New Jersey or The Port Authority Trans-Hudson Corporation (PATH), hereinafter called the "Authority" at facilities in the States of New York and/or New Jersey.

B. This Section is organized as follows:

Parts 1 through 3 represent the general portions of the specification. These sections are supplemented with Appendixes "A", "B" and "C" based on project specific abatement tasks for the State in which the work is to be performed (New York or New Jersey).

C. In accordance with Appendixes "A", "B" and "C" herein and the Contract Drawings, perform the following:

1. Prepare the "Work Area" for the removal of asbestos materials.
2. Remove, package, transport and dispose of the type(s) of asbestos-containing materials and/or asbestos-contaminated objects from the "Work Area(s)".
3. Decontaminate and seal surfaces in contact with asbestos-containing materials.
4. If removed materials are to be replaced, new materials shall be approved non-asbestos materials.
5. Re-establish "Work Area" and/or "Work Site" systems and objects.

D. Transport asbestos-containing materials and/or asbestos contaminated objects in accordance with 1.04 A.2 herein.

E. Dispose of asbestos-containing materials and/or asbestos contaminated objects at an approved landfill in accordance with 1.04 A.3 herein.

1.02 REGULATORY COMPLIANCE

A. Unless specifically directed otherwise by the Engineer, the Authority shall be sole entity to administer the regulatory compliance, the Work of this Section, and enforce the provisions herein.

B. Notifications

1. The Authority will notify the U.S. EPA for Work of this Section in accordance with 40 CFR Part 61, Section 65 (a)(b), for asbestos-containing materials.

2. The Contractor shall make arrangements for, and ensure that, the entity performing the Work of this Section performs the following:

   a. As directed by the Engineer, comply with the notification and re-notification requirements for the State in which Work is being performed and provide proof of notification and renotification prior to starting or continuing with Work.

C. In accordance with the requirements of the Section of Division 1 - GENERAL PROVISIONS, Entitled "Laws and Ordinances," Work under this Section shall conform to the provisions of the following codes and regulations, except where otherwise noted herein or on the Contract Drawings. Where the requirements of this Section or the Contract Drawings and the following codes and regulations differ, the stricter requirements shall control. Where methods or procedures are specified, they shall constitute minimum measures and shall in no way relieve the contractor of sole responsibility for the means, methods, techniques, sequences, or safety measures in connection with the work.

1. For Work of this Section performed in New York State:

   a. Part 56 of Title 12 of the Official Compilation of Codes, Rules and Regulations of the State of New York: (12 NYCRR, Part 56) - Industrial Code Rule 56 ASBESTOS.

   b. 6 NYCRR Chapter II Title, 10, Part 73 - Asbestos Safety Program Requirements.

   c. 6 NYCRR, Part 364 - Waste Transporter Permits.

   d. 6 NYCRR, Part 360 - Solid Waste Management Facilities (if disposal site is in New York State).

   e. Administrative Code of the City of New YorkSection 755 (2) - 6.3 - Transport, Storage and Disposal of Waste Containing Asbestos, and Section B32 - 267.0 et. SEQ. - Commercial Refuse Removal.

2. For Work of this Section performed in New Jersey:

   a. New Jersey Administrative Code (N.J.A.C.): Section 5:23-8, Subchapter 8 - Asbestos Hazard Abatement Subcode.

   b. Section 7:26 - Division of Waste Management Rules.

   c. Section 8:60 - Department of Labor Asbestos Certifications.

   d. Section 12:120 - Safety and Health Standards.

3. For Work of this Section performed in New York State and/or New Jersey:

   a. 29 CFR (Code of Federal Regulations) Part 1926.1101, U.S. Occupational Safety and Health Administration (OSHA) - Asbestos Standard for the Construction Industry.

   b. 29 CFR 1910.134 – OSHA, Respiratory Protection

   c. 29 CFR 1910.146 - OSHA, Confined Space Entry.

   d. 29 CFR 1926.20 – OSHA, General Safety and Health Provisions.

e. 29 CFR 1926.21 – OSHA, Safety Training and Education.

f. 29 CFR 1926.22 – OSHA, Recording and Reporting of Injuries.

g. 29 CFR 1926.23 – OSHA First Aid and Medical Attention.

h. 29 CFR 1926.24 – OSHA, Fire Protection and Prevention.

i. 29 CFR 1926.25 – OSHA, Housekeeping.

j. 29 CFR 1926.26 – OSHA, Illumination.

k. 29 CFR 1926.27 – OSHA, Sanitation.

l. 29 CFR 1926.28 – OSHA, Personal Protective Equipment.

m. 29 CFR 1926.32 – OSHA, Definitions.

n. 29 CFR 1926.35 - OSHA, Employee Emergency Action Plans.

o. 29 CFR 1926.56 - OSHA, Illumination.

p. 29 CFR 1926.59 - OSHA, Hazard Communications.

q. 29 CFR 1926.95 – OSHA, Criteria for Personal Protective Equipment.

r. 29 CFR 1926.96 – OSHA, Occupational Foot Protection.

s. 29 CFR 1926.100 – OSHA, Head Protection.

t. 29 CFR 1926.101 – OSHA, Hearing Protection.

u. 29 CFR 1926.102 – OSHA, Eye and Face Protection.

v. 29 CFR 1926.103 – OSHA, Respiratory Protection.

w. 29 CFR 1926.104 – OSHA, Safety Belts, Lifelines, and Lanyards.

x. 29 CFR 1926.105 – OSHA, Safety Nets.

y. 29 CFR 1926.106 – OSHA, Working Over or Near Water.

z. 29 CFR 1926.107 – OSHA, Definitions Applicable to this Subpart.

aa. 29 CFR 1926.150 - OSHA, Fire Protection.

bb. 29 CFR 1926.151 – OSHA, Fire Prevention.

cc. 29 CFR 1926.152 – OSHA, Flammable and Combustible Liquids.

dd. 29 CFR 1926.153 – OSHA, Liquified Petroleum Gas.

ee. 29 CFR 1926.154 – OSHA, Temporary Heating Devices.

ff. 29 CFR 1926.153 – OSHA, Definitions Applicable to this Subpart.

gg. 29 CFR Part 1926 Subpart G OSHA, Signs, Signals and Barricades.

hh. 29 CFR Part 1926 Subpart K - OSHA, Electrical.

ii. 29 CFR 1926 Subpart L - OSHA, Scaffolding.

jj. 29 CFR 1926 Subpart X - OSHA, Stairways and Ladders.

kk. 40 CFR Part 61, Subparts A and M, U.S. Environmental Protection Agency (EPA), National Emission Standards for Hazardous Air Pollutants (NESHAP) - Asbestos.

ll. National Fire Protection Association (NFPA), Standard 701 - Standard Methods of Fire Tests for Flame Propagation of Textiles and Films.

mm. The American National Standard Institute (ANSI) Practices for Respiratory Protection ANSI 88.2-1980.

D. References in this Section to laws, codes, ordinances, regulations, standards or other Federal, state, municipal, local or departmental legal requirements shall be deemed to mean the latest version or revision thereof or successor thereto, notwithstanding any change in numbering, designation or titles in effect at the time of bid opening.

E. Unless specifically directed otherwise by the Engineer, the Authority will be the sole entity to monitor the project.

1.03 DEFINITIONS

A. Definitions and other terms used in this Section shall have the meanings set forth in 29 CFR 1910.1101; and for Work in New York State, as set forth in 12 NYCRR Part 56: Subpart 56-1.4, and for Work in New Jersey, as set forth in N.J.A.C. 5:23-8.2; and the following:

1. "Asbestos Abatement Permit Placard" shall mean a permit issued by the Port Authority authorizing the entity performing Work of this Section to commence with such Work

2. Authorized Person" shall mean a person provided by the Authority in accordance with U.S. EPA NESHAP, 40 CFR Part 61, Section 61.145 (c)(8).

3. "Certified Project Designer" shall mean a U.S. EPA Asbestos Hazardous Emergency Response Act (AHERA) Certified Project Designer for Work in New Jersey, or a New York State Department of Labor Certified Project Designer for Work in New York State.

4. "Emergency Exit" or "Egress" shall mean an area on the isolation barrier (i.e.: door or kick-out panel) that may be opened or broken for the immediate egress of people from the work area in case of an emergency.

5. "Initial Exposure Assessment", including "Negative Initial Exposure Assessment" are terms used in the OSHA construction standards. It means a required assessment by a "competent person" concerning the exposure potential of a specific asbestos job, or series of similar asbestos jobs. A "Negative Initial Exposure Assessment" is such an assessment in which it is concluded that employee exposures during the job are likely to be consistently below the Permissible Exposure Level (PEL). Assessments must be based on information and data which are allowed pursuant to criteria in OSHA Standard 1926.1101.

6. "Site Security/Fire Watch" shall mean an employee of the entity performing Work of the Section, who shall at a minimum possess the appropriate, valid state certification as an asbestos handler, who shall be on the "Work Site" at all times during periods of non-Work of this Section to ensure "Work Area" containment integrity, continuous operation of negative air filtration devices, security of the "Work Area" and security of asbestos waste stored at the "Work Site". In addition, when the operation of the existing fire protection system is impaired, deactivated, or compromised, the "Site Security/Fire Watch" person shall, in addition to being familiar with responsibilities of maintaining "Work Area" integrity, be familiar with the emergency response plans and procedures, and the use of the fire extinguisher provided at the "Work Site" for Work of this Section.

7. "Support Structures" shall mean any temporary structure constructed to reach, inspect, or perform Work of this Section.

8. "Work Area" shall mean the designated area within a "Work Site" where Work of this Section occurs which is isolated as required and to which access is restricted.

9. "Work Site" shall mean the construction site location(s) where Work of this Section is being performed.

1.04 QUALITY ASSURANCE

A. QUALIFICATIONS:

1. The entity performing Work of this Section shall be approved by the Authority prior to the commencement of Work of this Section and shall:

   a. Possess valid licenses, permits and certificates for the State in which the Work is to be performed.

   b. Employ for Work of this Section "Certified Project Designers", asbestos abatement handlers, restricted handlers, supervisors and air compressor operators who possess valid certifications and licenses for the State in which the Work is to be performed.

   c. Provide at the "Work Area" a "Competent Person" conforming to the requirements of 29 CFR 1926.32 (f), 1926.1101 (b), 40 CFR 61 Subpart M, and in addition, such person shall have at least three years of experience on asbestos abatement projects as an asbestos abatement supervisor in the State in which Work of this Section is being performed.

   d. Provide a Certified Industrial Hygienist (CIH) with at least three years of applicable experience in asbestos abatement, and with a certification by the American Board of Industrial Hygiene.

   e. Employ an environmental laboratory, approved by the Authority, that conforms to the Quality Control Procedures of 29 CFR 1926.1101 Appendix A, participates in a national sampling testing scheme such as the Proficiency Analytical Testing Program (PAT) or the Asbestos Registry sponsored by the American Industrial Hygiene Association.

f. All subcontractors shall be approved by the Engineer or shall submit subcontractor(s) qualifications with the bid for all proposed Subcontractor(s). Any proposed subcontractor(s) performing work under this specification shall have appropriate qualifications. Subcontractor qualifications submitted shall be in such form and number as may be required by the Authority.

2. The asbestos waste transporter providing transportation services for Work of this Section shall be approved by the Authority prior to the commencement of Work of this Section, and hold the appropriate transporter permits, licenses and certifications for each State in which asbestos transportation is to take place. Such transporter shall transport asbestos-containing materials and/or asbestos-contaminated objects by licensed motor vehicle operators, in vehicles with valid motor vehicle registrations.

3. The landfill disposal site for the asbestos-containing materials and/or asbestos-contaminated objects shall be a site or a facility with valid municipal, state, federal permits (where applicable) and approved by the Authority prior to the commencement of Work at the "Work Area".

1.05 WORK AREA CONDITIONS

A. The Authority will perform the following air monitoring and analysis, and will provide analytical results of such air monitoring to the entity performing Work of this Section:

1. Baseline sample results collected within and adjacent to the "Work Area(s)" during normal occupancy conditions prior to the commencement of asbestos abatement activities.

2. Pre-abatement (area preparation) sample results collected within and adjacent to the "Work Areas" during asbestos abatement preparation activities (applicable to work performed in New York State only).

3. Sample results taken outside the "Work Area(s)" during abatement activities.

   a. If during the performance of abatement Work, area air sample results taken outside the "Work Area" exceed normal occupancy baseline levels or fiber concentrations in air at or in excess of 0.01 fibers per cubic centimeter (whichever is greater), the entity performing Work of this Section shall take the appropriate corrective action until acceptable levels are achieved, as determined solely by the Engineer.

4. Post-abatement air clearance results.

B. The Entity Performing Work of This Section Shall:

1. Perform initial employee exposure air monitoring in accordance with 29 CFR 1926.1101 (f)(2).

2. Perform full shift daily monitoring for a minimum of twenty (20%) percent of the workers performing a particular task within the "Work Area" each working shift in accordance with 29 CFR 1926.1101 (f)(3).

3. Throughout Work of this Section, the CIH, or the CIH's authorized representative, shall review and sign all air monitoring reports prior to the release of the data to the Contractor. Based upon employee exposure monitoring and analysis of airborne fiber concentration levels, the CIH shall determine the required level of respiratory protection established in accordance with 29 CFR 1926.1101(h).

a. If based upon the results of employee exposure air monitoring the entity performing Work of this Section requests that monitoring be suspended in accordance with 29 CFR 1926.1101 (f)(4), the CIH shall determine if full shift monitoring accurately represented the airborne exposure to asbestos for the Work, and submit to the Engineer in writing for approval, a recommendation with reasons why monitoring may be suspended.

b. Report results of employee exposure air monitoring analyses to the Engineer not more than twenty-four (24) hours after the collection of the sample, and post written laboratory results, signed by the CIH, or the CIH's authorized representative, in accordance with 3.01 E.3 herein within two (2) business days.

4. For post-abatement air clearance sampling provide, install, maintain and operate aggressive forced air equipment, e.g., fans, leaf blowers, in accordance with the requirements of the State in which Work is being performed.

5. Re-cleaning, if the "Work Area" fails the Post-abatement air clearance test on the first attempt, shall be performed by the entity performing Work of this Section at no additional cost to the Authority.

6. Ensure that the "Competent Person" stipulated in 1.04 A.1.c attend all meetings related to Work of this Section.

7. Perform Work in accordance with the Contract Documents.

C. Unless otherwise stipulated in Appendix "B" to this Section or as shown on the Contract Drawings, utilities and services, such as water, gas, sewers, electricity, steam heating/cooling ventilation, elevators, fire protection systems, sprinklers and smoke detectors, passing through the "Work Area(s)" shall continue service to areas outside of the "Work Area(s)". Where stipulated in Appendix "B" herein, or shown on the Contract Drawings shutdown and lock-out as necessary to perform Work of this Section. The Contractor shall provide that the entity performing Work of this Section shall coordinate with the Engineer prior to interrupting, re-routing or otherwise affecting any operating system, utility or service. The Authority will perform, and provide certification of utility and service shutdown(s), lockouts, and of required pressurization of ventilation duct systems. Notify the Engineer prior to the impairment or deactivation of the existing "Work Area(s)" and/or "Work Site" fire protection system.

1.06 SUBMITTALS

A. See Appendix "A"

PART 2. PRODUCTS

2.01 EQUIPMENT

A. Ensure that the entity performing Work of this Section provides, maintains, and/or uses the following equipment as required:

1. Respirators selected by the CIH based upon airborne fiber concentrations determined in accordance with 1.05 B. herein.

2. Daily employee exposure air monitoring equipment for not less than twenty percent (20%) of workers employed in each particular task per work shift in accordance with 1.05 B. herein.

3. Protective clothing and equipment for personnel exposed to airborne concentrations of asbestos fibers, including but not limited to whole body disposable covering, gloves, head covering, foot covering, hard-hats and eye protection.

4. The Contractor shall maintain stocked first aid kits in the clean room of the decontamination unit and in the work area including, but not limited to bandages, antiseptic wipes, burn cream, eye flushing solution, and tourniquet.

5. Dedicated respirators and personal protective clothing and equipment for the Engineer, and a maximum of three (3) for "Authorized Visitors".

6. Twenty-pound A-B-C multipurpose dry chemical fire extinguishers located in the clean and equipment rooms of the personnel and waste decontamination enclosure, emergency egress locations, and the "Work Area".

7. Negative pressure air filtration equipment.

8. Continuous chart recording manometers to measure differential air pressure.

9. Forced air equipment, e.g., leaf blowers and fans, for use during post-abatement air clearance sampling.

10. Fully enclosed and lockable waste dumpsters, trailers, or roll-offs, with the interior walls and floors lined with one (1) layer of 6-mil fire retardant polyethylene.

11. Asbestos warning signs, leak-tight containers, and transportation labels conforming to 29 CFR 1926.1101(k), and 40 CFR Part 61, Section 61.1(a).

12. Spare containers and labels at the "Work Site", and on the waste transport vehicle for use in case of accidental loss or breakage.

13. HEPA vacuums, rubber or plastic dustpans, squeegees or non-metallic shovels with rounded edges, hand tools, OSHA approved ladders and scaffolds, and inclined chutes where required for Work at heights ten (10) feet or greater above the floor or adjacent ground surface.

14. When "Work Site" electricity is furnished from an existing electrical system, provide temporary electric and lighting from a panel outside of the "Work Area". Furnish and install a temporary electric panel equipped with ground fault circuit interrupters conforming to the National Electric Code for Work in New Jersey, and to the Electrical Code of the City of New York for Work in New York State. Temporary lighting level within the "Work Area" shall at a minimum conform to 29 CFR 1926.56, Illumination.

15. Battery operated emergency lighting within the "Work Area", personnel and waste decontamination enclosures, and emergency egress locations. Self-luminous emergency fire exit and directional signs identifying the path to, and location of, the personnel and waste decontamination enclosures, and emergency egress locations.

2.02 MATERIALS

A. Ensure that the entity performing Work of this Section provides, maintains, and/or uses the following materials as required for Work of this Section:

1. Leak-tight containment waste bags of clear or colored plastic, at least 6-mil in thickness with approved warning and transportation labels.
2. Commercially available glove bags of at least 6-mil transparent polyethylene with approved asbestos warning labels.
3. Surfactant, lock-down sealant, and encapsulating products which are recommended by the manufacturers for the specific type of asbestos being abated, and approved by the Engineer.
4. Lumber having a U.L. rating of FR-S. Lumber for temporary support structures shall be U.L. rated FR-S.
5. Minimum 6-mil polyethylene and reinforced polyethylene, with a fire retardant rating conforming to the requirements set forth by the NFPA Standard 701.
6. Other materials such as water-resistant duct tape, adhesives, caulking, nails, fasteners and hardware, as required to perform the Work of this Section.

PART 3. EXECUTION

3.01 PRE-ASBESTOS REMOVAL MEETING AND WORK SITE PREPARATION

A. Prior to the start of Work of this Section at the "Work Site", and after the submission and approval of the information required under 1.04 A and and Appendix "A", the Engineer will schedule a pre-asbestos removal meeting.

B. The following will be performed at the "Work Area" and "Work Site" by the Authority:

1. Post the U.S. EPA notification letter, and if applicable, all re-notifications.
2. Post the Authority "Asbestos Abatement Permit Placard".
3. Post bulk sampling results.
4. As required, isolate, shutdown, pressurize, de-energize and lockout those utilities and services listed in applicable appendices herein.
5. Inspect and evaluate waste container(s) upon arrival at the "Work Site". Damaged, improperly sealing or locking waste container(s) shall be rejected.
6. Place locks on all waste containers.
7. Field-verify the efficiency of the negative air units utilizing velometers and/or manometers.

C. If Appendix "B" to this Section stipulates that a "Work Area" is a Confined Space as defined by 29 CFR 1926.21 and 29 CFR 1910.146, the Contractor shall ensure that entity performing Work of this Section shall be responsible for and shall take the appropriate safety measures stipulated therein.

D. The Contractor shall ensure that the entity performing Work of this Section notifies the building occupants who may be impacted by Work of this Section with a letter, prepared by the Authority, a minimum of ten (10) days prior to the start of Work.

1. The Contractor shall ensure that entity performing Work of this Section posts the "Notice of Abatement Project" signs, provided by the Authority, ten (10) days prior to the start of Work; posted at locations determined by the Engineer.

E. Ensure that the entity performing Work of Section posts the following items on a notification board located at the entrance to the clean room of the personal decontamination enclosure:

1. A copy of the Abatement Contractor's State license.
2. Copies of the air-sampling technician's, project monitor's, supervisor's, handler's and restricted handler's State certificates.
3. OSHA air monitoring results (Within 48 hours of Sample Collection).
4. Emergency first aid procedures and notification telephone numbers.
5. If applicable, air compressor operator certificates of approval or fitness.
6. Name of the Work Site "Competent Person", and a list of names of workers who are authorized to enter the "Work Area(s)".
7. Chain-of-command and telephone numbers in accordance with Appendix "A" (C)(8) herein.
8. Copies of all required City and State asbestos transporter licenses, certificates, and permits.
9. Signs as required by 29 CFR 1926.1101(k) at all entrances to the "Work Area".
10. "No Smoking" signs.
11. A copy of this Specification Section and Appendices.
12. A copy of approved applicable, or project-specific, state variances pertinent to the project.
13. Laboratory results of environmental air samples as defined in Section 1.05 B.3.b.

F. The Contractor shall ensure that the following items shall be available at the "Work Area" and/or "Work Site" by the entity performing Work of this Section for inspection by the Authority or their duly appointed representative:

1. The Contract booklet and Contract Drawings and in addition, a copy of all approved submitted drawings and procedures.
2. Copies of applicable City, State and Federal regulations.
3. Material Safety Data Sheets.
4. NESHAP asbestos generator shipping labels.
5. The record of all manometer recordings.

3.02 WORK AREA PREPARATION

A. Work of this Section at the "Work Area" and/or "Work Site" shall not commence until all submittals are approved, and an "Asbestos Abatement Placard" has been issued by the Authority.

B. Work at the "Work Area" shall proceed only when the "Competent Person" and Authority "Authorized Person" are present at the "Work Area".

C. If the scheduled starting date cannot be met, the Contractor shall ensure that the entity performing Work of this Section requests a start date change in writing to the Engineer at least seventy-two (72) hours before the initial notice start date. Schedule changes are subject to the approval of the Engineer. Regulatory re-notifications shall be performed in accordance with 1.02 B.1 and B.2.

1. In the event of failure to commence with Work of this Section on the approved date without the consent of the Engineer to a start date change, the Contractor shall be responsible for the payment of all Authority administrative fees, including, but not limited to, preparation of and courier service for the hand delivery of the U.S. EPA re-notification letter.

D. Submit staging procedures and shift schedules. Notify the Engineer in writing of any shift changes not less than forty-eight (48) hours in advance. Such shift changes shall be subject to the approval of the Engineer.

E. The Contractor shall provide that the entity performing Work of this Section shall perform the following in accordance with Contract Drawings and Appendix "B" herein:

1. After utility shutdown in accordance with 1.05 C., remove filters from the HVAC system, double bag, store and dispose of as asbestos-contaminated waste. Seal all openings in the HVAC and other utility systems within the "Work Area(s)" with at least two (2) layers of 6-mil fire-retardant polyethylene sheeting.

2. Prior to the construction of the decontamination enclosure(s), remove asbestos that may be disturbed by such installation utilizing an approved isolation tent removal procedure to remove a one-foot wide strip at the locations where asbestos may be disturbed.

3. Pre-clean the location where the decontamination enclosure(s) will be constructed using HEPA vacuuming and/or wet cleaning in accordance with Appendix "B" herein.

4. Construct the decontamination enclosure(s) in accordance with the Contract Drawings, Appendix "B" herein, and/or approved Contractor submittals. Provide electric, water, and drainage to make the decontamination enclosure(s) and sanitary facility unit(s) operational.

5. Pre-clean the "Work Area" using HEPA vacuuming and/or wet cleaning methods.

6. Establish the "Isolation Barrier Partitions", "Critical Barriers", "Surface Barriers", or demarcate an area, and seal all openings. Stationary equipment within the "Work Area(s)" shall be enclosed, protected, and ventilated, as required in accordance with the Contract Drawings and/or applicable appendices herein.

7. Pre-clean fixed objects within the "Work Area(s)" and enclose objects to remain in accordance with the Contract Drawings and Appendix "B" herein. Pre-clean movable items before removal from the "Work Area" in accordance with the Contract Drawings and Appendix "B" herein.

8. Paint, or apply tape, in a fluorescent color at the fire extinguisher locations, door frames(s) of the personal and waste decontamination enclosures, emergency egress locations, kick-out panels and along wall bases showing direction towards the nearest exit.

9. Install and continuously operate the negative air filtration system in accordance with the Contract Drawings and/or applicable appendices herein.

10. Provide temporary lighting and power in accordance with 2.01 (A)(14) and Appendix "B" herein.

F. Notify the Engineer in writing that asbestos removal is ready to commence. No less than twenty-four (24) hours after such notification, a pre-removal inspection will be performed by the Engineer.

1. After a successful pre-removal inspection and approval of the Engineer, commence with asbestos removal.

3.03 ASBESTOS REMOVAL

A. The Contractor shall provide that the "Competent Person" employed by the entity performing Work of this Section performs the following:

1. Ensures that workers are equipped with respiratory protection and personnel protective equipment in accordance with Section 1.05 B.3.

2. Ensures that the negative air filtration system and manometers are maintained and continuously operated throughout "Work Area" preparation, asbestos removal, clean up, and post-abatement air clearance sampling in accordance with Appendix "B" and the Contract Drawings herein.

3. Ensures that the procedures of 29 CFR 1926.1101, Appendix "F" - "Wetting Agents" are complied with.

4. Ensures that "Site Security/Fire Watch" personnel to keep watch during non-work hours are utilized in accordance with Appendix "B" herein.

5. Ensures that prior to asbestos removal, all asbestos-containing materials are adequately wetted as regulated by the state in which the work occurs and as specified by the manufacturer.

6. Ensures that the removal of the asbestos-containing material is in accordance with Appendix "B" herein, and the Contractor's approved submittals.

7. Ensures that debris and water does not remain or pond on the floor and/or temporary "Support Structures". Adequately wet down, remove, and bag material while wet, concurrently during removal operations utilizing HEPA vacuums, rubber or plastic dustpans, squeegees or plastic shovels for continuous water and debris removal.

8. Ensures that disposal of waste water from the "Work Area" is performed in accordance with Appendix "B" herein.

9. Ensures that a permanently bound entry logbook for each "Work Area" is maintained and made available for the Engineer's inspection signed by all individuals who enter and leave the "Work Area(s)". The log shall identify the abatement contractor, the Authority contract and job number, and the respiratory protection used.

10. Ensures that the permanently bound daily log book for each "Work Area" is maintained with records of the Engineer's inspections and all findings, events, and required corrective action regarding, but not limited to daily inspections, integrity of the decontamination enclosure system(s), "Isolation Barrier Partitions", "Critical Barriers", "Surface Barriers", the negative air filtration system, and all "Work Area" cleanings.

11. Unless directed by the Engineer to do otherwise, ensures that the condition of the waste container is examined by the "Site Security/Fire Watch" person (or "Competent Person" in the event that a Site Security/Fire Watch Person is not required) at least once every twenty-four (24) hours during non-work periods, and that repairs of torn or missing signs on the waste container, or damage affecting the integrity of the waste container are performed or that replacement containers are provided.

12. Ensures that for Work in New York State, the cleaning and surface lock-down encapsulation procedures in Subpart 56-12.1(i) of Industrial Code 56 are complied with.

13. Ensures that for Work in New Jersey, the cleaning and surface lock-down encapsulation procedure in 5:23-8.15(h) of the Asbestos Hazard Abatement Subcode is complied with.

14. Whenever possible, gross removal, packaging and cleaning shall proceed generally from the top downward.

15. Ensures that gross removal, packaging and cleaning shall proceed from locations which are remote from the HEPA units toward the areas of the units.

16. Ensures that wire brushes are not used for asbestos removal.

17. Ensures that compressed air and high-pressure water or steam are not used for asbestos removal.

3.04 DISPOSAL

A. Notify the Engineer in writing at least twenty-four (24) hours in advance of any bag out operations or waste container removal.

B. Remove asbestos waste from the "Work Site" only with the approval from the Engineer and an accompanying, properly signed Asbestos Waste Shipping Document issued by the Authority (Waste Shipment Record).

C. Transport the waste consignment to the landfill designated in the Contractor's approved submittals, U.S. EPA notification letter, and indicated on the Waste Shipment Record in accordance with 1.04 A.

D. The collection, co-mingling and transport of generated Authority asbestos waste with the asbestos waste from other generator sources is prohibited. Temporary storage or secondary transfer of the asbestos waste before final disposal is prohibited unless otherwise approved in writing by the Engineer prior to the waste leaving the "Work Site".

3.05 FINAL REPORT

A. This final report shall not be a substitute for the requirements of the Section of Division 1 entitled "Asbestos Cost Summary Submittal".

B. Final payment will not be approved prior to the Contractor preparing, itemizing and submitting to the Engineer four (4) copies of a final report containing:

1. A cover page identifying the entity performing Work of this Section with their phone number and business address, name of the "Competent Person", name and business address of the CIH and analytical laboratory, name and business address of the waste transporter, and name and business address of the landfill.

2. Summarize the type(s) of material removed, quantity of material removed, description of containment and engineering controls, amount of waste generated and date(s) transported from facility.

3. Daily project logs, entry logs, and if applicable, time and material sheets.

4. Analytical results of employee exposure air monitoring performed during Work of this Section, and strip or disk chart recordings of differential air pressure to areas adjacent to the "Work Area(s)".

5. Waste Shipment Record signed by the operator of the disposal site indicated in the Contractor's approved submittals.

6. Manometer recording logs. Manometer chart or tape shall include a date and time marker at least once per 24-hour period, and shall clearly indicate scale and zero.

7. The name, title and signature of the person preparing the final report.

END OF SECTION

SECTION 02081

ASBESTOS REMOVAL AND DISPOSAL FOR PORT AUTHORITY

OF NEW YORK AND NEW JERSEY

APPENDIX "A"

SUBMITTALS

A. Prior to the "Asbestos Removal Meeting" the entity performing Work of this Section shall submit to the Engineer for approval the items listed below and any additional items requested by the Engineer.

B. Identify each set of submittals with the corresponding paragraph number for which the submittal is being presented.

C. Submit copies of the certifications, licenses and qualifications to perform Work of this Section as required in 1.04 A.1, 1.04 A.2 and 1.04 A.3 and all required project-specific items including, but not limited to, the following:

02081-01 Copy of valid Asbestos Contractor's License

02081-02 Information on Competent Person (i.e.: resume) showing:

02081-03 Three-years project supervision experience.

02081-04 Copy of valid Asbestos abatement Supervisor certificate.

02081-05 Asbestos Handlers certificates for the proposed staff.

02081-06 Information (i.e.: resume) on the "Certified Project Designer" the Contractor plans to utilize showing:

02081-07 Three-years asbestos project design experience.

02081-08 Copy of valid Asbestos Project Designer certificate.

02081-09 Information (i.e.: resume) on the Certified Industrial Hygienist (CIH) the Contractor plans to utilize showing:

02081-10 Three-years asbestos related experience.

02081-11 Copy of valid American Board Industrial Hygiene certificate.

02081-12 Information on the Environmental Laboratory the Contractor plans to utilize, including:

02081-13 Proof of participation in the American Industrial Hygiene Association's Proficiency Analytical Testing Program [PAT].

02081-14 Outline of Respiratory Protection Program for Employees conforming with current regulations - The outline shall bear the signature and approval of a CIH.

02081-15 List of Subcontractors Contractor plans to utilize. Submit all their appropriate qualifications as per Section 02081, Part 1 (1.04)(A)(1)(a) and (f) herein.

02081-16 Name of Asbestos Waste Transporter Contractor plans to utilize -- the entity providing transportation services shall be approved by the Authority prior to the commencement of Work of this Section. Provide documentation showing, for each State in which transportation is to occur, the following:

02081-17 Copies of Transporter's Permits, Licenses and/or Certificates as required by state agencies to operate.

02081-18 Name and title of Transporter's contact person.

02081-19 Business, mobile and pager telephone numbers.

02081-20 U.S. DOT statement of reportable accidents and reportable environmental incidents as per 49 CFR 171.15 and 171.16

02081-21 Name of landfill Contractor plans to utilize. Contractor shall obtain approval from the Authority for utilization of proposed facility prior to commencement of Work of this Section [refer to Appendix "C" herein]; and submit the following documentation for the proposed facility:

02081-22 Municipal permits and/or licenses required to operate.

02081-23 State permits and/or licenses required to operate.

02081-24 Federal permits and/or licenses required to operate.

02081-25 Name, title and telephone number of Landfill's contact person.

02081-26 "Work Area" and "Work Site" procedures.

02081-27 Fire Prevention and First Aid Procedures.

02081-28 Work site communication with police, fire department, Facility Operations and the Engineer.

02081-29 Detailed site-specific Drawings prepared and signed by a "Certified Project Designer" which shall include, but not be limited to, the following:

02081-30 Negative Air Unit Calculations.

02081-31 Engineering Controls (i.e.: work area enclosure; decontamination enclosure system layout and location; work area boundaries; etc.).

02081-32 "Emergency Egress" location(s).

02081-33 Requirements for electric power, water supply and drainage.

02081-34 Requirements for storage and staging location(s).

02081-35 Project Specific Chain of Command – Show on Chain of Command form(s) office, beeper, mobile and home telephone numbers of persons having the authority to dispatch personnel to the Project location and commit such persons to the tasks as directed by the Engineer. At a minimum include numbers for Project Supervisor, Competent Person and CIH.

02081-36 Support Structures – Drawings, design details and calculations for temporary "Support Structure(s)", signed and sealed by a Professional Engineer (P.E.) licensed in the State in which the Work of this Section is to be performed. Following installation of "Support Structure(s)", submit P.E.signed inspection report verifying compliance with design.

02081-37 List of all materials and equipment to be used.

02081-38 Catalog cuts for all materials and equipment to be used for Work of this Section, in accordance with the Section of Division 1 entitled "Shop Drawings, Catalog Cuts and Samples,"

02081-39 Material Safety Data Sheets and a copy of the product labels for all chemicals to be used for Work of this Section.

02081-40 A construction Critical Path Method (CPM) or Bar Graph Schedule stating critical dates of the job including start of mobilization, the preparation, removal, and reactivation of each work area, and completion of deactivation.

02081-41 A staffing schedule stating number of workers per shift, name and number of supervisor(s) per shift, hours per shift, shifts per day, and total days to be worked.

02081-42 Any changes in schedule or staffing shall be submitted in writing to the Engineer 48 hours prior to implementation, or as directed by the Engineer.

02081-43 Copies of notifications and re-notifications, prior to sending, in accordance with Section 02081(1.02) (B) herein.

02081-44 Copies of the Final Report as stipulated in Section 02081(3.05) herein.

02081-45 Copies of project-specific variances obtained by the Contractor for Work of this Section.

D. The Contractor shall maintain records signed by a physician documenting worker medical examinations with chest X-rays and pulmonary function tests. The form from Appendix D of OSHA CFR 1926.1101 Title 29 or equal shall be used. These records shall be kept on file by the Contractor for the duration of employment, plus 30 years.

END OF APPENDIX "A"

SECTION 02081

ASBESTOS REMOVAL AND DISPOSAL FOR PORT AUTHORITY

OF NEW YORK AND NEW JERSEY

APPENDIX "B"

JOB SPECIFIC REQUIREMENTS

[Edit below as required for Work of the Contract.]

A. Description

This Section specifies removal of asbestos material from the "Work Area(s)" (shown on the Contract Drawings) (listed below).

[List areas if not shown on Contract Drawings.]

B. Asbestos Type(s)

Test results of asbestos-containing material to be removed indicate that such material contains the following type(s) of asbestos:

Asbestos-Containing Material	Asbestos Type	Approx. % by Volume of Asbestos in Asbestos-Bearing Material
	Chrysotile	
	Amosite	
	Crocidolite	
	Anthophyllite	
	Tremolite	
	Actinolite	

C. Items in "Work Area" to be Removed

Remove the items (listed below) (shown on the Contract Drawings) (and store at the "Work Site" at the location(s) shown on the Contract Drawings:) (and remove from the "Work Site" asbestos-contaminated items:) **[List items to be removed if not shown on the Contract Drawings.]**

D. Items Remaining in "Work Area" to be Protected

Protect the items (listed below:) **[or]** (shown on the Contract Drawings:) **[List items to be protected if not shown on the Contract Drawings.]**

E. Utilities for Work of this Section

[Select from below as appropriate for the Contract.]

1. Drainage:

[SELECT FROM BELOW AS APPROPRIATE FOR THE CONTRACT.]

Drainage is available at the "Work Site" without charge at the location(s) designated by the Engineer, subject to such conditions and precautions upon its use as stipulated in "Water Disposal Procedures" herein. Completely remove temporary materials, clean and decontaminate by wet cleaning and/or HEPA vacuuming in the "Work Area", or dispose of as ACM waste. Restore existing facilities to their original condition.

[OR - FOR WORK IN NEW YORK STATE]

Drainage is not available at the "Work Site". Provide a closed piping or hose system and filter through 5.0 micron filters, drum collect and dispose of as stipulated in "Water Disposal Procedures" herein. In the event of asbestos contamination of temporary materials, clean and decontaminate by wet cleaning and/or HEPA vacuuming in the "Work Area" or dispose of as ACM waste.

[OR - FOR WORK IN NEW JERSEY]

Drainage is not available at the "Work Site". All waste water generated at the "Work Area" or from the decontamination facility shall be collected and disposed of as stipulated in "Water Disposal Procedures" herein.

F. Utilities and Services in Work Area to be Shut Down and to Remain in Service

[LIST UTILITIES AND SERVICES TO BE SHUTDOWN AND THOSE TO REMAIN IN SERVICE.]

G. "Work Site Security/Fire Watch"

Provide Security/Fire Watch.

[OR]

Security/Fire Watch is not required.

H. "Work Area" Procedures

[INSERT JOB-SPECIFIC WORK AREA PROCEDURES]

I. "Water Disposal" Procedures

[For Work in New York State where "Work Site" drainage is available, insert the following:]

Prior to disposal of waste water, filter through a new three stage filter system where the final stage is a 5.0 micron filter to remove asbestos fibers.

[For Work in New York State where "Work Site" drainage is <u>not</u> available, insert the following:]

Prior to disposal of waste water, filter through a new three stage filter system where the final stage is a 5.0 micron filter to remove asbestos, and dispose of water away from Authority property in an appropriate sanitary sewage system. Do not re-use waste water.

[For Work in New Jersey where "Work Site" drainage is available, insert the following:]

Prior to disposal of waste water, collect free water, add to asbestos-contaminated material and/or solidify with an approved polymer and dispose of as asbestos-contaminated material; or filter water through a new three stage filter system where the final stage is a 5.0 micron filter to remove asbestos and dispose of in the sanitary drain, if allowed by local treatment works by regulation or as allowed by permit.

J. "Sealing Asbestos-Containing Contact Surfaces"

[For Work in New York State, insert the following:]

After removal, cleaning and final air clearance of the work areas seal surfaces which were the subject of asbestos removal with a sealer approved by the Engineer and compatible with the replacement fireproofing and insulation. Also, seal end surfaces of asbestos-containing material that is to be enclosed and remain, if any, with a sealer approved by the Engineer.

[For Work in New Jersey, insert the following:]

After removal and cleaning of the work areas seal surfaces which were the subject of asbestos removal with a sealer approved by the Engineer and compatible with the replacement fireproofing and insulation. Also, seal end surfaces of asbestos-containing material that is to be enclosed and remain, if any, with a sealer approved by the Engineer.

K. Removal of "Work Area Containment and Protection of Items that Remained in the Work Area"

[Select from below as appropriate for the Contract.]

Remove "Work Area" containment and dispose of as asbestos contaminated material. Remove item wrapping and relocate and/or re-secure objects and items which were moved, wrapped and sealed and remained within the "Work area". Dispose of item wrapping as asbestos contaminated material.

[or if asbestos has been removed in construction to be demolished, or if asbestos removal area(s) will have additional renovation work to be performed under other specification sections or other Contracts use the following text:]

Remove "Work Area" containment and discard as asbestos contaminated material.

L. Re-establishment of Utilities and Services

[Select from below as appropriate for the Contract.]

Re-establish utilities and services that were disconnected and install new filters in air moving system(s) affected by the Work of this section.

[or if asbestos has been removed in construction to be demolished, or if asbestos removal area(s) will have additional renovation work to be performed under other specification sections or other Contracts use the following text:]

Do not re-establish utility services or replace air moving system filters.

M. Re-establishment of Items and Objects in the Work Area

[Select from below as appropriate for the Contract.]

Relocate to their original locations (and re-secure as required) items and objects that were cleaned and removed from the "Work Area" prior to commencement of abatement activities.

[or if asbestos has been removed in construction to be demolished, or if asbestos removal area(s) will have additional renovation work to be performed under other specification sections or other Contracts, use the following text:]

Do not relocate items and objects that were cleaned and removed from the "Work Area" prior to commencement of abatement activities.

N. Replacement of Insulation and Fireproofing

[Select from below as appropriate for the Contract.]

[Delete Article 14.0 if no replacement is to be performed as when construction material is to be removed or demolished.]

1. Replace pipe insulation with insulation (in accordance with Section 15491 hereof.) **[or]** (as shown on the Contract Drawings.)
2. Replace cable insulation in accordance with Section 16128 hereof.
3. Replace fireproofing in accordance with Section (07250, 07252 or 07255) hereof.

   [or]

   Replacement of pipe insulation will be performed by others (under other sections of this Contract) **[or]** (under another Contract).
4. Replacement of cable insulation will be performed by others (under other sections of this Contract) **[or]** (under another Contract).
5. Replacement of fireproofing will be performed by others (under other sections of this Contract) **[or]** (under another Contract.)

END OF APPENDIX "B"

SECTION 02081

ASBESTOS REMOVAL AND DISPOSAL FOR PORT AUTHORITY OF NEW YORK AND NEW JERSEY

APPENDIX "C"

Listed below are landfill disposal sites that are currently used, or have previously been used, by the Authority for the disposal of asbestos-containing material and/or asbestos contaminated objects. This list is provided for reference only and does not relieve the Contractor from verifying the facilities current valid state approvals or from submitting required documentation as outlined in Appendix "A". Furthermore, the Contractor is not limited to use of these disposal facilities:

WETZEL COUNTY SANITARY LANDFILL
New Martinsville, West Virginia 26155
304 455-3800

WASTE MANAGEMENT OF NEW YORK, Inc.
Varick Ave, Brooklyn, New York
617 271-9292

TULLYTOWN LANDFILL
(Tullytown Resource Recovery), Tullytown, Pennsylvania
215 736-9400

SUPERIOR GREEN TREE LANDFILL
Kersey, Pennsylvania
800 257-5705

SOUTHERN ALLEGHENIES LANDFILL
Conemaugh Twshp., Pennsylvania
814 479-2537

SOIL REMEDIATION INC.
Lowellville, Ohio

S&S LANDFILL
Route 5, Box 559
Clarkesburg, West Virginia 26155
304 745-3234

PENNSAUKEN SANITARY LANDFILL
Pennsauken, New Jersey

OTTAWA COUNTY LANDFILL
Port Clinton, Ohio 43452 (BFI Ohio)
419 635-2615

NEW MORGAN LANDFILL CO.,INC.

New Morgan Borough, Exton Pennsylvania
610 286-6844

MINERVA ENTERPRISE INC
900 Minerva Road, Waynesburg, Ohio 46688

MEADOWFILL CORPORATION
Route 2, Box 68
Clarkesburg, West Virginia 26330
304753-9470

MAPLEWOOD RECYCLING & SANITARY LANDFILL
Route 640, Amelia County, Virginia
609 273-5818

M.C. ARNONI LANDFILL
Library, Pennsylvania

KELLY RUN LANDFILL
Elizabeth, Alleghany County, Pennsylvania
412 384-3133

IESI BLUE RIDGE LANDFILL
(Formerly R & A Bender Landfill,)
Greene Twnshp, Franklin County, Pennsylvania
717 264-4678

HAM SANITARY LANDFILL
1 Pozoo Road
Peterstown, West Virginia 24963
304-753-9470

HACKENSACK MEADOWLANDS DEVELOPMENT COMMISSION BALER FACILITY
(Use this facility only for Work performed in Hudson County New Jersey)
100 Baler Boulevard
North Arlington, New Jersey 07031

G.R.O.W.S. LANDFILL, INC.
1000 New Ford Mill Road
Morrisville, Pennsylvania 19067
215-736-9400

GREENRIDGE RECLAMATION LANDFILL
East Huntington, Westmoreland County, Pennsylvania

GRAND CENTRAL LANDFILL
Painfield, Northampton County, Pennsylvania

CONESTOGA LANDFILL (BFI)
Exton, Berks County, Pennsylvania
610 286-6344

CENTRAL WASTE INC.
Smith Twnshp., Mahoning County, Ohio
330 823-6220

BROWNING FERRIS INDUSTRIES (BFI)
Fall River, Pennsylvania

110 CLEAN FILL DISPOSAL SITE
136 Spagnioli Road
Melville, New York 11704

END OF APPENDIX "C"

DIVISION 10

SECTION 10860

BIRD DETERRENT SYSTEM

PART 1. GENERAL

1.01 SUMMARY

A. This Section specifies requirements for a bird deterrent system to be installed where shown on the Contract Drawings to prevent birds from roosting on selected portions of the building. The system has two components – the netting and an electrical system.

B. Related Sections:

1. See Division 16 Electrical Sections for electrical connections for electrical system.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

American Society for Testing and Materials (ASTM)

ASTM A 666	Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.

1.03 DESIGN AND PERFORMANCE REQUIREMENTS

A. Bird deterrent netting shall exclude the species of native birds generally found to infest man-made structures.

1.04 QUALITY ASSURANCE

A. Installer Qualifications

Engage an experienced installer(s), Installer shall have a minimum of 5 years experience in installation and maintenance of each specified type of bird deterrent system. Installer shall be acceptable to manufacturer of bird deterrent system.

1.05 DELIVERY, STORAGE AND HANDLING

1. Contractor shall protect all bird control products from damage before, during, and after installation.

2. Mockups: Installer shall prepare field samples to demonstrate the aesthetic effects and qualities of the materials and execution required. Use materials and methods proposed for the completed work as indicated on the drawings.

1.06 SUBMITTALS

See Appendix "A" for submittal requirements.

1.07 GUARANTEE

Upon completion of the Work specified in this Section, and as a condition for its acceptance, submit a written guarantee executed by the Entity performing the Work, agreeing to repair or replace bird netting that fails to remain effective, whether due to workmanship, materials, or installation within five (5) years from the Date of Issuance of Certificate of Final Completion. Guarantee shall be run to the Authority's benefit and shall grant the Authority a direct right of action against the manufacturer.

PART 2. PRODUCTS

2.01 MANUFACTURERS

A. Subject to compliance with requirements of this Section, furnish and install bird deterrent netting products of one of the following manufacturers, or approved equal:

1. Bell Bird Control, 229 New Rd., Parsippany, NJ 07054; Tel.: 973-575-7800.
2. Bird Master/Division International Bird Control Systems, Inc.; 13 Linnell Circle, Billerica, MA 01821; Tel. 800-562-2473.
3. Advanced Bird Control, PO Box 727, East Moline IL, 61244; Tel. 888-212-8682.
4. D&S Specialty Products Inc., 13611 NE 126th Pl., Kirkland WA 98034; Tel. 425-820-8496.

B. Subject to compliance with requirements of this Section, furnish and install electric bird deterrent system products of one of the following manufacturers, or approved equal:

1. Bell Bird Control, 229 New Rd., Parsippany, NJ 07054; Tel.: 973-575-7800.
2. Avian Flyaway; Tel. 800-888-0165

2.02 MATERIALS

A. Bird netting shall be a minimum 9 strand knotted multi twine, UV resistant polyethylene material in a matte black finish. Netting twine shall have a tensile strength of at least 50 lbs, with a maximum 7/8-inch square mesh size.

B. All fittings, crimps, fasteners, nails and hardware shall be stainless steel.

C. All stainless steel shall be ASTM A 666 Type 316 or 316L.

D. Electrical System

1. High voltage / low amperage slim line track system consisting of a UV protected LDPE base containing two copper, stainless steel, and LDPE braided ropes.
2. Base Color: Natural, Black, Light Gray, Dark Gray, Beige Stone, Red Brick
3. Connective lead wire and mounting hardware and or adhesives recommended by the manufacturer and compatible with surface to be installed on.
4. Power Source
   a. Solar powered energizer powerful enough to carry a minimum of 5000 volts to all points of the track system. Unit shall contain
   b. 110v plug in unit to deliver 5000 volt low amperage charge to all points of the track system.

PART 3. EXECUTION

3.01 EXAMINATION

A. Examine the areas and conditions under which Work of this Section will be performed. Do not proceed until painting, if any, has been completed; all surfaces to receive netting are properly prepared; and unsatisfactory conditions are corrected.

3.02 INSTALLATION

A. Follow manufacturer's instructions for netting and electrical system installation.

B. Netting shall be installed taut and flat with stainless steel cable framework. The perimeter cable framework shall be 1/16-inch diameter stainless steel and Support cables shall be 1/8" and shall be used across the span of netting at the mid point of each length of netting Reversible screw eyes or cable clips shall support the cable framework. Use crimps to secure netting to framework.

C. Netting shall be installed such that suspended / hanging lights fall beneath the plane of installed netting.

D. Three sided zipper access panels no less than 2 feet by 3 feet shall be installed in the netting system under (insert # here) roof drains.

E. Holes to be drilled shall be a maximum of 3/16 inch in diameter and 1-inch deep.

3.03 PROTECTING AND CLEANING

A. Provide protection and maintain conditions in a manner acceptable to the Engineer, which will ensure protection of substrate surfaces from damage, discoloration or deterioration during installation of the bird netting system.

B. Protect Work from damage until issuance of Certificate of Final Completion; protect all adjacent construction and finishes from damage due to Work performed under this Contract.

END OF SECTION

SECTION 10860

BIRD DETERRENT NETTING SYSTEM

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts and Samples" of Division 1 - GENERAL REQUIREMENTS:

A. Product Data

Manufacturer's product specifications, standard details, installations and general recommendations.

B. Shop Drawings

Installation Plan: Submit a detailed plan of the materials and methods to be used in the installation of both specified systems.

C. Samples

Samples of all materials to be installed, including but not limited to:

1. Minimum, 12" by 12" sections of netting.
2. Anchors to support framework.
3. Stainless steel cable.
4. Stainless steel netting crimps in closed position.
5. Electrical system components, including wire and mounts.

D. Qualifications

Installer qualifications in accordance with 1.04.

END OF APPENDIX "A"

DIVISION 7

SECTION 07212

BLANKET TYPE BUILDING INSULATION

PART 1. GENERAL

1.01 SUMMARY

This Section specifies requirements for faced blanket thermal insulation.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

American Society for Testing and Materials (ASTM)

ASTM C 665	Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
ASTM E 84	Test Method for Surface Burning Characteristics of Building Materials.
ASTM E 119	Test Methods for Fire Tests of Building Construction and Materials.
ASTM E 136	Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C.

Underwriters Laboratories Inc. (UL)

Fire Resistance Directory.

1.03 QUALITY ASSURANCE

A. Fire Performance Characteristics

Insulation materials shall be identical to those whose indicated fire performance characteristics have been determined per test method indicated below, by Underwriters Laboratories Inc. (UL). Identify products with appropriate markings of testing and inspecting organization.

1. Surface Burning Characteristics: ASTM E 84.
2. Fire Resistance Ratings: ASTM E 119 for insulation that is part of a fire-resistance rated assembly.
3. Combustion Characteristics: ASTM E 136.

B. Single Source Responsibility

Obtain each building insulation type from a single manufacturer and from a single source.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver in manufacturer's original packaging.

B. Protect insulation from physical damage and from becoming wet, soiled or covered with ice or snow. Store inside and in a dry location. Comply with manufacturer's recommendations for handling, storage and protection during installation.

1.05 SUSTAINABLE DESIGN REQUIREMENTS

A. Sustainable Design General Requirements

1. The Authority requires the Contractor to implement practices and procedures to meet the sustainable design requirements. The Contractor shall ensure that the requirements related to these goals, as defined in Division 1 - GENERAL PROVISIONS and the articles below, are implemented to the fullest extent. Substitutions, or other changes to the Work proposed by the Contractor, will not be allowed if such changes compromise the stated Sustainable Design Performance Criteria.

B. Sustainable Design Performance Criteria

1. Blanket type insulation shall contain a minimum of 75 percent (by weight) recycled content, calculated by adding the post-consumer recycled content percentage to one-half of the post-industrial recycled content percentage. Certify the recycled content in accordance with the Sustainable Design Submittal Requirements of this Section.

2. The manufacturing location (final assembly) of the blanket type insulation shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

3. All field-applied adhesives, sealants, paints and coatings relating to Work of this Section shall meet the requirements of Division 1 - GENERAL PROVISIONS.

4. Mineral-fiber firestopping materials that are exposed to supply or return air plenums, or that are located above suspended ceilings, must be encapsulated or fully sealed to prevent direct exposure of the mineral fibers to the plenum. Where sealants are used to encapsulate the mineral fiber materials (e.g. smoke sealants used at perimeter firestopping joints), the sealants shall meet the requirements of Division 1 - GENERAL PROVISIONS.

5. Batt, blanket, blown and sprayed-in insulation is prohibited from use in all supply and return air plenums.

1.06 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MANUFACTURERS

Subject to compliance with requirements of this Section, furnish and install insulation products of one of the following:

CertainTeed Corp., Valley Forge, PA

Johns Manville Corp., Denver, CO

Knauf Fiber Glass, Shelbyville, IN

Owens Corning, Toledo, OH

Thermafiber LLC, Wabash, IN

2.02 MATERIALS

A. General

Insulating materials shall be sized to fit applications shown and to meet R-value and thickness shown on the Contract Drawings. Select from manufacturer's standard thicknesses, lengths and widths.

B. Faced Mineral Fiber Blanket or Batt Insulation

Thermal insulation with overlapping face tabs on both sides. Insulation produced by combining mineral fibers manufactured from glass or slag with thermosetting resins, asbestos free, complying with ASTM C 665 for Type III, Class A (blankets with reflective membrane covering), Category 1 (foil-scrim-kraft membrane acts as vapor retarder), and as follows:

1. Surface Burning Characteristics

   Maximum flame spread and smoke developed indices of 25 and 50, respectively, when tested in accordance with ASTM E 84.

2. Combustion Characteristics

   Unfaced blanket passes ASTM E 136 test.

PART 3. EXECUTION

3.01 EXAMINATION

Examine substrates and surface conditions to determine if conditions affecting installation of insulation are satisfactory. Do not proceed with installation of insulation until unsatisfactory conditions have been corrected.

3.02 PREPARATION

Clean substrates of substances harmful to insulation or vapor retarder, including removal of projections that might puncture vapor retarder or interfere with insulation placement.

3.03 INSTALLATION

A. Comply with insulation manufacturer's instructions applicable to products and conditions shown on the Contract Drawings.

B. Extend insulation in full thickness over entire area to be insulated. Leave no gaps or voids. Cut and fit tightly around protrusions and fill voids with insulation.

C. Apply insulation in a single layer of required thickness, unless otherwise shown on the Contract Drawings in multiple layers with staggered joints or as required to make up total thickness.

D. Apply insulation units to substrate by method shown on the Contract Drawings. If no specific method is shown, use mechanical anchorage for permanent placement and support of insulation units.

E. Set reflective foil-faced boards accurately with not less than 0.75 inch air space in front of facing. Place foil-faced side (vapor retarder) of insulation towards interior side of building.

F. Tape joints and tears in vapor retarder facing, and seal each continuous area of insulation to adjacent construction to ensure an airtight installation.

3.04 PROTECTION

Protect installed insulation from damage due to harmful weather exposures, physical abuse and other causes. Furnish and install temporary coverings or enclosures where insulation will be subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION

SECTION 07212

BLANKET TYPE BUILDING INSULATION

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1 - GENERAL PROVISIONS:

A. Product Data

Manufacturer's product literature, handling and installation instructions for insulation, vapor retarder and accessories.

B. Certifications

Manufacturer's certified test reports showing compliance with specified performance values, including R-values, densities, fire performance characteristics and water absorption ratings.

C. Sustainable Design Submittal Requirements:

The Contractor shall submit the Sustainable Design certification items listed herein. Sustainable Design submittals shall include the following:

1. A completed Sustainable Design Materials Certification Form (SDMCF), appended to Division 1 - GENERAL PROVISIONS. Information to be supplied for this form shall include:

   a. Cost breakdowns for the materials included in the Contractor's Work. Cost breakdowns shall include total cost plus itemized material costs.

   b. Where required by the Sustainable Design Performance Criteria of this Section, the following information shall also be supplied:

      (1) The amount of post-consumer and/or post-industrial recycled content in the supplied product(s).

      (2) The manufacturing location of the supplied product(s).

      (3) The location (source) of the raw materials used to manufacture the supplied product(s).

      (4) The VOC content of all adhesives, sealants, paints, and coatings applied on site as part of this Work.

2. Published product literature or letters of Certification, provided from the product manufacturer on the manufacturer's letterhead, to verify the product information supplied for the SDMCF.

3. Product cut sheets for materials that meet the SDMCF.

4. Material Safety Data Sheets (MSDS), for applicable products. Applicable products include, but are not limited to field-applied adhesives, sealants, carpets, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).

5. The Sustainable Design submittal information shall be assembled into one (1) package per Section or trade, and sent to the Engineer.

END OF APPENDIX "A"

DIVISION 9

SECTION 09310

CERAMIC TILE

PART 1. GENERAL

1.01 SUMMARY

This Section specifies requirements for ceramic wall and floor tile.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

American National Standards Institute (ANSI)

ANSI A 108.4	Ceramic Tile Installed with Organic Adhesives or Water Cleanable Tile Setting Epoxy Adhesive
ANSI A 108.5	Ceramic Tile Installed with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar
ANSI A 10	Installation of Grout in Tilework
ANSI A 118.4	Latex-Portland Cement Mortar
ANSI A 136.1	Organic Adhesives for Installation of Ceramic Tile, Type 1 and Type 2
ANSI A 137.1	Ceramic Tile

American Society for Testing and Materials (ASTM)

ASTM C 503	Marble Building Stone (Exterior)

Method of Evaluating Ceramic Floor Tile Installation Systems

ASTM C 920	Elastomeric Joint Sealants
ASTM C 1028	Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method

Tile Council of America (TCA)

Handbook for Ceramic Tile Installation

1.03 DESIGN AND PERFORMANCE REQUIREMENTS

A. Static Coefficient of Friction: For tile shown on the Contract Drawings to be installed on walkway surfaces, provide products with the following values as determined by testing identical products per ASTM C 1028:

1. Level Surfaces: Minimum 0.6.
2. Step Treads: Minimum 0.6.
3. Ramp Surfaces: Minimum 0.8.

B. Load-Bearing Performance: For ceramic tile shown on the Contract Drawings to be installed on floor or walkway surfaces, provide installations rated for one or more of the following load-bearing performance levels, as shown on the Contract Drawings, based on testing assemblies according to ASTM C 627.

1. Extra Heavy: Passes cycles 1 through 14.
2. Heavy: Passes cycles 1 through 12.
3. Moderate: Passes cycles 1 through 10.
4. Light: Passes cycles 1 through 6.

1.04 ENVIRONMENTAL REQUIREMENTS

A. Maintain temperature at not less than 50 degrees F in tiled areas during installation and for not less than 3 days after completion, unless a higher temperature is required by the manufacturer's instructions.

B. Vent temporary heaters, if used, to exterior to prevent damage to tile work from carbon dioxide buildup.

1.05 QUALITY ASSURANCE

A. Source of Materials

Provide materials obtained from one source for each type and color of tile, setting material, grout and sealant.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store tiles in original grade-sealed cartons with seals unbroken and labels intact until time of use.

B. Keep materials dry until ready for use. Prevent damage or contamination by water, freezing or other causes.

1.07 SPARE PARTS (EXTRA STOCK)

Unless otherwise shown on the Contract Drawings, deliver to the Engineer prior to issuance of the Certificate of Final Completion, the following materials:

A. Floor and Wall Tiles

Not less than one box for each 50 boxes or fraction thereof, for each type, color and pattern.

B. Trim Units

Not less than 5 linear feet of each type and color of trim.

1.08 SUSTAINABLE DESIGN REQUIREMENTS

A. Sustainable Design General Requirements

1. The Authority requires the Contractor to implement practices and procedures to meet the sustainable design requirements. The Contractor shall ensure that the requirements related to these goals, as defined in Division 1 - GENERAL PROVISIONS and the articles below, are implemented to the fullest extent. Substitutions or other changes to the Work proposed by the Contractor will not be allowed if such changes compromise the stated Sustainable Design Performance Criteria.

B. Sustainable Design Performance Criteria

1. The post-industrial and/or post-consumer recycled content (by weight) of ceramic tiles shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

2. Ceramic tiles shall be manufactured (or assembled) within 500 miles (by air) of the project site. The location shall be documented in accordance with the Sustainable Design Submittal Requirements of this section.

3. The origin of the raw materials from which the product(s) were manufactured shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

4. All field-applied adhesives, sealants, paints and coatings relating to Work of this Section shall meet the requirements of Division 1 - GENERAL PROVISIONS.

1.09 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MANUFACTURERS

Subject to compliance with requirements of this Section, provide tile setting and grouting materials by one of the following manufacturers:

Bostik; Middleton, MA
DAP, Inc.; Dayton, OH
Laticrete International, Inc.; Bethany, CT
Mapei Corporation; Garland, TX

2.02 MATERIALS

A. General

1. Provide material(s), color(s), gloss(es) and pattern(s) from the manufacturer's shown on the Contract Drawings. If color(s), gloss(es) and pattern(s) are not shown, provide as selected by the Engineer from samples submitted in accordance with Appendix "A" A.2 of this Section.

2. Comply with ANSI A 137.1 for Type(s) and Grade(s) of tile shown on the Contract Drawings. Furnish tile complying with "Standard Grade" requirements.

3. Comply with specified ANSI standard for tile installation materials.

4. Unless otherwise shown on the Contract Drawings, provide tile trim and accessories that match color and finish of adjoining flat tile.

B. Waterproof Membrane

1. Manufacturer/Products:

   a. Bostik; Middleton, MA
      Hydroment Ultra-set Waterproofing Membrane

   b. Laticrete International; Bethany, CT
      Laticrete 9235 Waterproof Membrane

2. Install waterproofing membrane in toilet rooms, family room, janitor's closet and where shown on the contract drawings, as follows:

   a. Continue waterproof membrane a minimum of 8" at all walls, partitions, and other vertical terminations.

   b. Apply liberal coat of liquid with a roller.

   c. Roll out enough fabric to cover liquid. Imbed while liquid is still wet.

   d. Allow to dry for 2 – 8 hours until dry to the touch. Apply additional coat of liquid.

   e. When surface is dry to the touch (approximately 24 hours later) it is ready for application of tile or other finish flooring

3. Glazed Wall Tile

   Where shown on the Contract Drawings, in accordance with 2.01 A of this Section.

C. Thresholds

Where shown on the Contract Drawings, marble threshold(s) complying with ASTM C 503 requirements for exterior use and abrasion resistance of 12 or greater for use subject to heavy foot traffic. Utilize marble type and color, and threshold size and edge configuration as shown.

D. Floor Setting Material

Latex Portland Cement Mortar, ANSI A 118.4.

E. Wall Setting Material

Organic Adhesive, ANSI A 136.1, Type I. Provide primer sealer where recommended by manufacturer.

F. Grouting Material

Manufacturer's preblended compound of Portland cement, selected and graded aggregates, color pigments and chemical additives gauged with latex additive to comply with manufacturer's directions; color as shown on the Contract Drawings or, if not shown, color shall be as selected by Engineer from manufacturer's custom colors.

G. Water:. Clean and Potable

H. Miscellaneous Materials

1. Single component sealant for floor to wall joint and perimeter of floor penetrations shall be Dow-Corning Corp., Midland, MI "795 Silicone Building Sealant", color as shown on the Contract Drawings; or approved equal conforming to ASTM C 920, Type S, Grade NS, Class 25, use T.

2. Tile Cleaner

Product specifically acceptable to manufacturers of tile and grout as manufactured by one of the following, or approved equal:

Aqua Mix; Santa Fe Springs, CA
Hillyard, Inc., St. Joseph, MO

3. Cleavage Membrane: Chlorinated polyethylene (CPE) waterproof/crack isolation membrane for thin-bed ceramic tile applications, Dal-Seal TS manufactured by Dal-Tile, Dallas, TX, or approved equal.

2.03 MIXES

Proportion and mix components in accordance with the manufacturer's instructions.

PART 3. EXECUTION

3.01 EXAMINATION

Examine surfaces to receive tile work. Do not proceed with tile work until surfaces and conditions comply with the tolerances specified below. Ensure that installation conditions comply with 1.03 of this Section and surfaces conform to the following before proceeding with tile installation(s):

A. Floors

1. Maximum variation in sub-floor surface: 1/8 inch in 8 feet.

2. Where floor drains are shown on the Contract Drawings, the subfloor slope shall be a minimum of 1/4 inch per foot in the direction of the floor drain.

B. Walls

1. Maximum variation in surface: 1/8 inch in 8 feet.

2. Maximum height of abrupt irregularities: 1/16 inch.

3.02 INSTALLATION

A. General

1. Comply with applicable installation methods of TCA Handbook for Ceramic Tile Installation for installation conditions shown on the Contract Drawings and applicable parts of ANSI A 108.4, A 108.5 and A 108.10 installation standards.

2. Unless otherwise shown on the Contract Drawings, extend tile into recesses and under or behind equipment and fixtures to form a complete covering without interruptions. Neatly terminate work at obstructions, edges and corners without disrupting pattern or joint alignment.

3. Perform cutting and drilling of tile without marring visible surfaces. Grind cut edges of tile abutting trim, finish or built-in items. Fit tile closely to openings and penetrations so that collars, plates or covers will overlap tile.

4. Unless otherwise shown on the Contract Drawings, lay tile in grid pattern. Layout tile and center tile fields in both directions in each space or on each wall area.

5. Unless otherwise shown on the Contract Drawings, provide uniform joint widths. Use setting templates for installations greater than 1,000 sq. ft. in area.

6. Provide sealant filled joints at wall/floor terminations, around floor drains, around floor penetrations; and at control, contraction, expansion and isolation joints shown on the Contract Drawings; or if not shown at spacings and locations recommended in TCA Handbook for Ceramic Tile Installation, and approved by the Engineer.

B. Floor Installation

Install ceramic mosaic tile as follows:

1. Concrete Subfloor, Interior: TCA F113

2. Mortar

   ANSI A 118.4: Latex-Portland Cement.

3. Grout: Latex-Portland Cement.

4. Where Chlorinated polyethylene (CPE) membrane is shown on the Contract Drawings: Install membrane following manufacturer's printed instructions over a thin-bed of mortar. Ensure that all edges of membrane at walls and other protrusions are turned up a minimum of 4 inches and properly lapped and sealed and attached to vertical backing material. Proceed with tile installation in accordance with TCA F 113 or F 102, as applicable.

C. Wall Installation

Install glazed wall tile as follows:

1. Solid backing, interior: TCA W223.

2. Gypsum Board, Interior: TCA W242

3. Organic Adhesive: ANSI A108.4

4. Grout: Latex-Portland Cement

D. Cleaning

Upon completion of placement and grouting, clean ceramic tile surfaces so they are free of grout haze and foreign matter.

3.03 PROTECTION

A. Leave finished tile work clean and free of cracked, chipped, broken, unbonded or otherwise defective tile.

B. When recommended by tile manufacturer(s), apply a neutral protective cleaner to completed tile installation(s).

C. Protect tile installation(s) with approved method during construction period.

D. Prohibit foot and wheel traffic from using tiled floors for at least 3 days after grouting is completed.

E. Before issuance of the Certificate of Final Completion, remove protective coverings and rinse neutral cleaner, if any, from tile surfaces.

END OF SECTION

SECTION 09310

CERAMIC TILE

APPENDIX "A"

SUBMITTALS

A. Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1 - GENERAL PROVISIONS:

1. Product Data

   Submit manufacturer's technical information and installation instructions for materials furnished under this Section.

2. Samples

   a. For Selection Purposes

      When color(s) and pattern(s) are not shown on the Contract Drawings, submit manufacturer's color charts consisting of actual tiles or sections of tiles showing full range of color(s) and pattern(s) available for each type of tile shown. Include samples of grout and sealant involving color selection.

   b. For Verification and Testing

      Samples of each type, pattern, and color required, not less than 24 inches square on hardboard backing and grouted and the following:

   c. Full size samples for each type and color of trim.

   d. Six-inch long sample of thresholds, if any.

B. Certification

   Furnish Master Grade Certificates, as specified in ANSI A 137.1, for each shipment and type of tile, signed by the manufactured and the entity performing installation work.

C. Submit to the Engineer one copy of U.S. Department of Labor Material Safety Data Sheets (MSDS) for all hazardous chemicals utilized during Work of this Section.

D. List of extra stock in accordance with 1.07 of this Section.

E. Sustainable Design Submittal Requirements: The Contractor shall submit the Sustainable Design certification items listed herein. Sustainable Design submittals shall include the following:

1. A completed Sustainable Design Materials Certification Form (SDMCF), appended to Division 1 - GENERAL PROVISIONS. Information to be supplied for this form shall include:

   a. Cost breakdowns for the materials included in the Contractor's Work. Cost breakdowns shall include total cost plus itemized material costs.

   b. Where required by the Sustainable Design Performance Criteria of this Section, the following information shall also be supplied:

      (1) The amount of post-consumer and/or post-industrial recycled content in the supplied product(s).

      (2) The manufacturing location of the supplied product(s).

      (3) The location (source) of the raw materials used to manufacture the supplied product(s).

      (4) The VOC content of all adhesives, sealants, paints, and coatings applied on site as part of this Work.

2. Published product literature or letters of Certification, provided from the product manufacturer on the manufacturer's letterhead, to verify the product information supplied for the Sustainable Design Materials Certification Form.

3. Product cut sheets for materials that meet the Sustainable Design Materials Certification Form.

4. Material Safety Data Sheets (MSDS), for applicable products. Applicable products include, but are not limited to field-applied adhesives, sealants, carpets, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).

5. Sustainable Design submittal information shall be assembled into one package per Section or trade, and sent to the Engineer.

"END OF APPENDIX A"

SECTION 02092
CLEANING, HANDLING & DISPOSAL OF PIGEON GUANO AND RELATED DEBRIS
GEORGE WASHINGTON BRIDGE BUS STATION – RESERVED PREMISES

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. This Section specifies requirements for cleaning, handling and disposal of pigeon guano and related debris from the Port Authority of New York and New Jersey, hereinafter called the "Authority", property known as the George Washington Bridge Bus Station, Reserved Premises.

B. Extent of Work

Cleaning, handling, and disposal of pigeon guano and related debris from selected areas of the building required by the AUTHORITY; items to be removed include, but are not limited to, the following:

1. Pigeon Guano and Related Debris

In the event that accumulated pigeon guano and related debris (remains, carcasses, feathers and severely impacted materials that cannot be made sufficiently clean) should be encountered within a Work area, impacted areas shall be identified, quantified and reported to the Authority. Upon instruction by the Authority, all pigeon guano and related debris shall be removed and disposed of, and the remaining materials cleaned, in accordance with applicable, local state and federal regulations and guidelines, including but not limited to:

a. 6 NYCRR Parts 360, 364, 370-174, & 376,

b. 40 CFR Part 761.

1.02 SUBMITTALS

A. Submit a schedule indicating proposed methods and sequence of operations for the cleaning, handling, and disposal Work, prior to commencement of operations. The sequence of operations shall be planned, in detail, to ensure uninterrupted operations to the facility.

B. Submit details and procedures for dust and noise control.

C. Contractor's approved Site Health and Safety Plan.

1.03 RESPONSIBILITY, PROTECTION, DAMAGES, RESTRICTIONS

A. Condition of Space

The Authority assumes no responsibility for actual condition of the space in which Work is performed.

B. Protections

Provide temporary barricades and other forms of protection required to protect Authority property, personnel, workers and general public from injury due to Work.

1. Provide protective measures as required to provide free and safe passage of Authority personnel, workers and the general public.

2. Protect from damage existing finish work that is to remain in place and which becomes exposed during operations.

3. Protect floors with building paper or other suitable covering.

4. Adequately protect all areas adjacent to Work, including walls, floors, and ingress/egress routes for material transportation, to prevent migration or damage from excessive quantities of cleaning materials, including water, cleaning solutions, and chemical compounds. Temporary barricades and protection shall be installed where required to prevent damage to existing facilities or new work or injury to personnel within the area of operations.

C. Damages

Promptly repair any and all damages to all property and finishes caused by the removals and demolition work; to the Authority's satisfaction and at no extra cost to the Authority.

PART 2 - PRODUCTS

2.01 CLEANING/DISINFECTION SOLUTION

A. Solution for dust control, cleaning and final disinfection of all surfaces impacted by the Work shall 0.05% Hypochlorite Amended Solution. It shall consist of:
   1. 1 gallon of household bleach (0.5% hypochlorite) per 10 gallons of water; and,
   2. 4 ounces of liquid detergent or "wetting agent" per gallon of water.

Should industrial bleach or concentrated hypochlorite be used, quantities shall be amended to produce a final solution of 0.05% hypochlorite.

PART 3 - EXECUTION

3.01 INSPECTION

A. Prior to commencement of the selective removals and demolition Work, inspect the areas in which the Work will be performed. Determine and list the existing conditions of rooms or area surfaces and equipment. After the Work in each respective area is

completed, determine if adjacent surfaces or equipment have been damaged as a result of the Work; if so, the damage shall be corrected at the Contractor's expense.

B. All pigeon impacted areas should be identified and quantified prior to the performance of any Work. Impacted building components or stored materials that may require disposal due to significant existing damage or inability to properly clean/disinfect (porous materials such as paper products or fabrics) should be identified and submitted to the Authority. Any damage identified following the Pre-Work inspection shall be considered as a result of the Work and corrected or remediated at the Contractor's expense.

3.02 CLEANING AND HANDLING WORK

A. Perform Work in a systematic manner and use such methods as are required to complete the Work indicated, and in accordance with the Specifications and governing City, State, and Federal regulations.

B. Pigeon guano and related debris

Material Handling Precautions: Prior to commencing work, the following safety measures shall be taken:

1. All workers shall wear the appropriate respiratory protection during all phases of the work. (P-100 or "HEPA" filters on half-mask respirators. This item shall be defined in the Site Health & Safety Plan. It is the responsibility of the Contractor to comply with all applicable OSHA and other worker protection regulations.)

2. Workers shall wear disposable suits, booties, rubber or vinyl gloves and chemical splash goggles. Two disposable suits shall be worn, and the soiled, outer suit shall be removed and disposed of prior to leaving the work area. (This item shall be defined in the Site Health & Safety Plan. It is the responsibility of the Contractor to comply with all applicable OSHA and other worker protection regulations.)

3. The Contractor shall have a decontamination area constructed adjacent to the work area prior to the commencement of any Work. (This item shall be defined in the Site Health & Safety Plan. It is the responsibility of the Contractor to comply with all applicable OSHA and other worker protection regulations.)

4. Prior to handling, pigeon droppings, nests, eggs, etc. are to be covered with liberal amounts of cleaning/disinfection solution.

5. The disinfectant solution shall remain on the excrement for at least twenty (20) minutes prior to removal.

   a. Removal:

   1. All horizontal and vertical surfaces shall be thoroughly cleaned with scrapers, shovels, brushes, etc. and placed directly into 6mil

polyethylene disposal bags. Material shall be continuously sprayed with the cleaning/disinfection solution during the removal/collection process via Hudson sprayers or similar dispersion tools. Materials shall be maintained adequately so as no visible dust is generated.

2. As bags become filled, they should be tied with a "goosenieck" and placed in a staging area where they shall be placed in a second clean bag and similarly tied. The double-bagged waste shall then be moved from the facility to the hauling container for disposal. All generated wastes (disposable suits, gloves, poly, etc.) shall be similarly contained and disposed of as pigeon waste.

3. Upon removal of all bulk debris and cleaning of the Work Area, all impacted surfaces shall be sprayed and maintained wet with the cleaning/disinfection solution for a minimum of twenty (20) minutes.

4. Reusable equipment such as shovels shall be disinfected and rinsed following the clean up.

3.03 DISPOSAL OF MATERIALS

A. Remove waste materials resulting from the Work from the building immediately; transport and legally dispose of materials off-site. Disposal method shall be in accordance with City, State, and Federal regulations.

B. Pigeon Guano

All waste materials collected or accumulated shall be disposed of in accordance with all local, state and federal regulations at a Municipal Solid Waste Landfill. All transportation of wastes shall be in a closed container by a permitted waste hauler.

3.04 CLEAN-UP AND REPAIR

A. Upon completion of Work, remove tools, equipment and all remaining demolished materials from the site.

B. Repair all damaged areas caused by the removals and demolition Work. Repair adjacent construction or surfaces soiled or damaged by selective demolition work.

3.05 OWNERSHIP OF MATERIALS

A. All equipment, materials, and items removed shall remain the property of the Authority, if desired; equipment, material and items not desired to be re-used or retained by the Authority shall be removed from the site by the Contractor. The Authority's Representative will designate which equipment, materials and items will be retained.

END OF SECTION

LIST OF SUBMITTALS

SUBMITTAL	DATE SUBMITTED	DATE APPROVED
Schedule of proposed methods & sequence of operations:	_____	_____
Details & procedures for dust & noise control:	_____	_____

* * *

SECTION 03350

CONCRETE PAINT REMOVAL

DATE: 15 NOVEMBER 2010

RE: STAGE ONE SCHEMATIC DESIGN FOR CONCRETE REHABILITATION

SITE: GEORGE WASHINGTON BRIDGE BUS STATION

Mock-ups by the contractor must be conducted of all the following work for approval by an Architect and a Conservator.

PAINT STRIPPING – PEEL AWAY 7

Peel Away 7 should be implemented on the blue paint visible at the lower half of the upper bus level piers.

1. Protect surrounding areas that are not to be stripped.
2. Apply Peel Away 7 with a brush to a thickness of 1/8".
3. Cover area with coated Peel Away paper so no air pockets result.
4. Dwell for 24 hours.
5. Remove paper and products with plastic putty knives.
6. Repeat steps 2 through 5.
7. Clean surface with a nylon bristle brush and water to ensure all products and paint residue is removed from the surface.
8. Clean concrete as recommended under Cleaning.

CLEANING – SPONGE JET

Sponge Jet is a mechanical cleaning method using media embedded in sponge particles for greater compatibility with historic concrete. The cleaning should be conducted on the underside of the Nervi roof and on the concrete at Level 3 of the West Building. A certified Sponge Jet applicator should conduct the work. Training is available for contractors.

Sponge Jet media Silver 80 (80 grit aluminum oxide) at a maximum of 15 PSI should be implemented. The nozzle should be held approximately 12" from the surface of the concrete and kept at an angle between 45 and 75 degrees. A collection system can be used to recycle the product for continued use.

Equipment:

1. 375 CFM or larger air compressor delivering not less than 110-120 psi clean. dry air (refer to ASTM 04285-83)
2. Media Feed Unit as manufactured by Sponge-Jet. 235 Heritage Ave., Suite 2, Portsmouth, NH 03801 Phone 603-431-6435.
3. Media Classifier as manufactured by Sponge-Jet, Inc., 235 Heritage Ave., Suite 2, Portsmouth, NH 03801 Phone 603-431-6435.
4. Minimum 2". Inside diameter bull hose.
5. 1 ¼ inch ID blast hose and accompanying deadman controls and connection lines.
6. #8 (1/2 inch) Blast nozzle.

Filling Bugholes – Jahn M30 #31

For the bugholes ¼" or larger that result from the Sponge Jet cleaning they should be filled with Jahn M30 #31 in a custom designed mix.

1. Clean the bughole with compressed air and by injecting water into it.
2. Ensure the bughole is moistened prior to filler application.
3. Mix the product to a paste consistency.
4. Trowel apply the M30 to fill the bugholes.

Concrete Patching – Jahn M90 Smooth

Due to the fact that most of the concrete repairs are overhead, a structural engineer must provide appropriate details for pinning. Manufacturers' product data sheets must be followed. Patching will be done with Jahn M90 Smooth custom mix designed for matching existing weathered concrete and existing un-weathered concrete.

1. To prepare the concrete, cut material back to at least ¼" in depth and dovetail cut all edges.
2. "Key" the surface with a grinder to ensure better adhesion of the patch.
3. Remove dust and debris from the area to be repaired with dry brushing and compressed air. Follow by a water scrub with a nylon bristle brush.
4. Pre-wet the repair area so that it is glistening wet.
5. Apply a "putty" coat (slightly wetter mix than the recommended 5:1) of 1/8" thick to the repair area and do not allow it to dry. This ensures better adhesion.
6. Mix the product by volume approximately 5 parts dry mix to 1 part water.
7. Apply in two-inch lifts. If more than one lift is necessary, allow the first lift to cure for two to four hours. Prior to applying next lift scrape the cement skin from the surface and lightly "key" the surface in preparation for the next lift.
8. Apply the product until it is slightly above the adjacent concrete surface and allow to cure for 30 to 60 minutes.
9. Scrape surface of the patch with plasterer's miter rod to level with adjacent concrete surfaces. Trowel and sculpt patch to match surrounding concrete texture and formwork marks.
10. Cure the patch by misting immediately after repair and for the following three days. The amount of time for misting varies from one minute to two hours depending on the weather.

Crack Filling – Jahn M40

This grout is to be used on crack sizes ranging from 3/16" to 9/16". The cracks must not be structural or moving cracks.

1. Clean the crack with compressed air followed by injecting clean water into the crack.
2. Mix the filler by volume at approximately 2 to 2-1/2 parts powder to 1 part water.
3. Moisten crack by injecting water. Do not allow it to dry prior to filler application.
4. Inject the filler with a syringe. Immediately wipe off any grout that gets on the surrounding concrete.
5. Finish the crack with Jahn M90 Smooth custom mix.

Coating – Keim Sealer

Keim Sealer is a protective sealant that will aid in the resistance to further soiling by preventing impregnation of pollutants. Apply after all stripping, cleaning, patching and crack filling has been conducted.

1. Ensure the surface of the concrete is clean of debris, dust, grease, paint, etc.
2. The surface must be completely dry for application.
3. Apply using a short-haired roller.

needed, use nylon bristle scrub brush to loosen remaining residue, paying particular attention to crevices, grooves and cracks, prior to final wash down. Wash entire surface thoroughly to remove all remaining residue. Collect material removed and dispose of in compliance with local regulations.

9. ***Availability & Cost:*** Peel Away® products are available through a nationwide network of paint and hardware stores, and construction and safety supply distributors. For outlet nearest you, call 800-245-1191 or email plaway@aol.com. Cost will vary depending upon conditions and number of coats to be removed. Peel Away®7 provides an average coverage rate of 40 sq. feet per gallon.

10. ***Precautions & Safety Requirements:*** Wear long rubber or latex gloves, and face shield or goggles. Wear suitable protective clothing if removing with a pressure washer. Wear a carbon filter mask or its equivalent when working in a confined area. Follow manufacturer instructions when spraying.

11. ***Warranty:*** Dumond Chemicals, Inc. warrants all of its products to be free from defects, and makes no other warranties with respect to its products. Express or implied, including without limitation the implied warranties of MERCHANTABILITY OF FITNESS FOR PARTICULAR PURPOSE. Dumond Chemicals, Inc. liability shall be limited in all events to supplying sufficient products to re-treat the specific areas to which defective product has been applied. Dumond Chemicals, Inc. shall have no other liability, including liability for incidental, consequential or resultant damages whether due to breach of warranty or negligence. This warranty may not be modified or extended by representatives or Dumond Chemicals, Inc. or its distributors, and dealers.

12. ***Technical Services:*** Dumond's expert staff is available to answer technical questions and provide product-specific information required by architects, specifiers, contractors and property owners. Expert, on-site assistance is available at no additional cost. Call 800-245-1191 or email plaway@aol.com with product or technical questions.

Technical Data

Form:	Tan Paste
Wt./Gal.:	11.0 lbs.
Flash Point:	260 F°
pH:	3-2

SPONGE-JET

Sponge Media™ for Sensitive Substrates

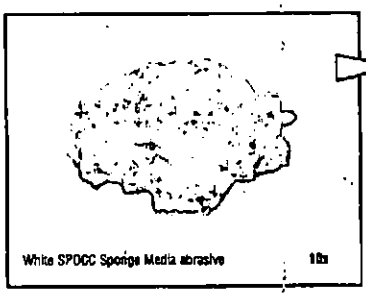
REDUCE
90% OF THE DUST
90% OF THE REBOUND
90% OF THE WASTE

For sensitive substrate restoration, cleaning, and selective stripping

Whether removing dirt, exfoliation, soot, char, single layers of coating, oil or other contaminants, Sponge-Jet offers a dry, low dust, low rebound, reusable solution. Quickly achieve desired results on the most sensitive surfaces.

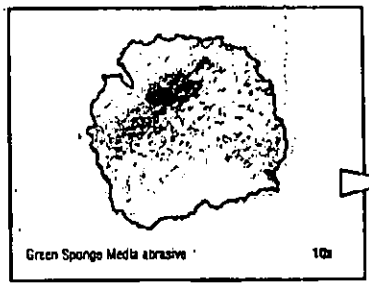
White Sponge Media™

Providing a unique sensitive substrate solution with minimal to no profiling. Used on a wide range of historic restoration and general industrial applications.


White SPOCC Sponge Media abrasive 10x

WHITE SPONGE MEDIA TYPE	PROFILE	CLEANING AGENT
White SPOCC Sponge Media	**<6 micron (<.25 mil)***	**Spherical Precipitate of Calcium Carbonate**
White Plastic Sponge Media	**None***	**30/40 Mesh, type II Plastic Urea**
White Glass Bead Sponge Media	**<6 micron (<.25 mil)***	**60/80 Mesh, Glass Bead**
White Melamine Sponge Media	**<6 micron (<.25 mil)***	**40/60 Mesh, type II Melamine**

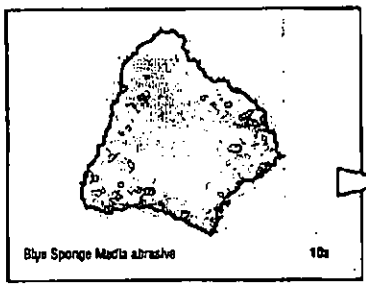
Green Sponge Media™


Green Sponge Media abrasive 10x

Grease and oil removal from hard substrates or heavy machinery without damage to hoses or fittings. Smoke and soot removal from most industrial surfaces, especially concrete and steel.

GREEN SPONGE MEDIA TYPE	PROFILE	CLEANING AGENT
Green Sponge Media	**<6 micron (<.25 mil)***	**Very Mild**

Blue Sponge Media™

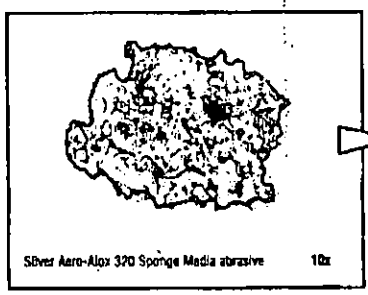

Blue Sponge Media abrasive 10x

Uses the pure cleaning power of sponge with no added abrasion; to remove soot, smoke damage and other light residue from ultra-sensitive, water-intolerable substrates.

BLUE SPONGE MEDIA TYPE	PROFILE	CLEANING AGENT
Blue Sponge Media	**0 micron (<0 mil)***	**None**

Silver Sponge Media™

Combines one of the world's most effective and versatile abrasives (aluminum oxide) with the durability and recyclability of Sponge Media in a range of grit sizes to address virtually every application.


Silver Aero-Alox 320 Sponge Media abrasive 10x

SILVER SPONGE MEDIA TYPE	PROFILE	CLEANING AGENT
Silver 500 Sponge Media	**<6 micron (<.25 mil)***	**500-Grit Aluminum Oxide**
Silver Aero-Alox™ 320 Sponge Media	**<12 micron (<.5 mil)***	**320-Grit Aluminum Oxide**
Silver 220 Sponge Media	**<25 micron (<1 mil)***	**220-Grit Aluminum Oxide**
Silver 120 Sponge Media	**±25 micron (±1 mil)***	**120-Grit Aluminum Oxide**
Silver 80 Sponge Media	**±50 micron (±2 mil)***	**80-Grit Aluminum Oxide**

*On mild carbon steel

Visit Sponge-Jet, Inc. at **www.spongejet.com** or call **603-610-7950** to learn more about the Sponge Blasting™ System

©2007 Sponge-Jet, Inc. All rights reserved. The data provided here and elsewhere is based on historical experience and theoretical determination and is intended to indicate general characteristics only. Sponge-Jet, Inc. disclaims all warranties, expressed or implied, including warranties of merchantability and fitness for any particular purpose or use.

JAHN M30

Micro Injection Grout

• Concrete and hard stone - #31
• Brick and soft stone - #32

Jahn M30 contains no corrosive constituents, and achieves extraordinary flow capacity, penetration and strong adhesion. **The M30 injection grout is offered in two formulations for varying substrates.** To enhance penetration and bonding, a small amount of synthetic material is included. M30 can be applied via gravity feed or pressure injection into hairline cracks up to 3/16" (5.0 mm) in width. This product may be utilized in both non-structural simple void applications and structural load bearing situations, is available in two levels of compressive strength and can be customized through testing.

Features And Benefits

- Single-Component: Easy to mix correctly, thereby improving quality control at the point of injection.
- **Tenacious Adhesion:** Strong bonding capabilities.
- ***Factory Controlled:*** No field chemistry resulting in product variation.
- **Low Viscosity:** Deep, thorough penetration.
- **Simple Application:** Can be applied by pouring or by pumping.
- ***Water Based:*** Environmentally and user safe. No solvent clean up or disposal problems.

Application Procedures

Preparation

Wash the surface and interior of the crack using clean water to remove all dust, loose or deleterious material, which could prevent proper flow and/or adhesion.

Mixing

The mixing ratio is approximately 1 part powder to 1 part water by volume. **Mixing must be done with a high speed drill (3,000 RPM or higher) equipped with a Jiffler-type mixing paddle.** After mixing, the grout should be poured into another clean container using a sieve. Additional or repeated agitation is necessary if the grout is allowed to sit prior to use.

Injection Procedures

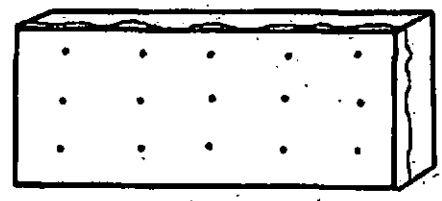
Immediately before injection, moisten interior of the crack by flushing with water. If the crack is allowed to dry out before the grout is injected, this step must be repeated. This is very important.

Transverse Cracks

Drill a series of injection ports in the center of the crack. These ports should be drilled in a downward direction. Seal the crack with removable, non-staining clay, sealant, or caulk.

Inject grout into the lowest port and continue until it flows freely from this port and other ports at the same level. Seal ports using non-staining clay, sealant, or caulk and proceed in identical fashion until the crack is filled. **Clean up overflow and runs immediately with clean water.**

Lateral Cracks (Delaminating Layers)



Drill a series of injection ports in a square configuration (90° angles) on the face of the substrate to create a "drill frame". Ports should be drilled in a downward direction. Wash the surface and interior of the crack using clean water to remove dust and loose. Any dust or debris remaining between the layers will impede the flow of the grout. If this is the case, more holes will be required to attempt to fill all hollow areas.

Inject grout into lower left port and proceed until it flows freely from this port and other ports at the same level. Seal ports using non-staining clay, sealant, or caulk. Inject grout into lower right port and proceed in identical fashion. The order of

Cathedral Stone® Products, Inc. 7266 Park Circle Drive, Hanover, Maryland 21076
(800) 684-0901 FAX: (410) 782-9155 WEB: www.cathedralstone.com

injection is lower left, lower right, upper left, and then upper right. **Clean up overflow and runs immediately with clean water.**

Removal of Sealant

Let the grout dry (approximately 24 hours) and remove all sealant, caulk, or clay. After removing the sealant, repair the crack surface and injection holes with Jahn Mortar that matches the color and type of existing masonry.

Clean Up

While injecting, continually check for grout runs and spills on the surface of the masonry, and clean the surface before the grout has time to set. This is normally done with a clean sponge and water, and may have to be repeated several times, rinsing the sponge with clean water.

Remove uncured grout from tools and equipment with water as soon as possible. Cured grout many only be removed chemically or mechanically.

Safety Requirements

It is recommended that safety goggles, gloves, and a dust mask equipped with P-2 filters (or equivalent) be worn for protection while mixing the grout.

Limitations

- Do not apply Jahn Micro Injection Grout to a frozen or hot substrate. The applied grout must be protected from extreme heat, freezing, excessive wind, direct sunlight, and rain. Ambient temperature range should be 40° F to 90° F with low to average humidity.
- Do not add bonding agents to Jahn Micro Injection Grout or use them as surface preparation materials.

Packaging

A two-gallon plastic pail contains approximately 15 lb. of material. Coverage will vary depending on the type of substrate and the size of the crack.

Storage And Shelf Life

Store material in a dry area away from direct sunlight. Ambient storage conditions should be in the range of 40° F to 90° F with low to average humidity. Average shelf life is six months in original, unopened packaging.

Technical Data

Jahn M30 – #31
Micro Injection Grout

Compressive strength	2 days approx. 3 days approx. 7 days approx. 28 days approx.	3600 psi 6400 psi 7400 psi 9000 psi
Tensile strength	28 days approx.	360 psi
Concrete granular size		Smaller than 6.3E-04 inches
Viscosity direct		80 cps
Specific gravity		1.77
Consumption		Ratio water/dry material: 45% of total weight
Application mixed product		Approx. 30 minutes (68°F)

Jahn M30 – #32
Micro Injection Grout

Compressive strength	2 days approx. 3 days approx. 7 days approx. 28 days approx.	1264 psi 2243 psi 2591 psi 3160 psi
Tensile strength	28 days approx.	195 psi
Concrete granular size		Smaller than 6.3E-04 inches
Viscosity direct		80 cps
Specific gravity		1.77
Consumption		Ratio water/dry material: 45% of total weight
Application mixed product		Approx. 30 minutes (68°F)

Warning

Not for internal consumption. Keep out of reach of children and animals. Consult Material Safety Data Sheet (MSDS) for specific information.

Notice: The information contained herein is based on our own research and the research of others, and it is provided solely as a service to help users. It is believed to be accurate to the best of our knowledge. However, no guarantee of its accuracy can be made, and it is not intended to serve as the basis for determining this product's suitability in any particular situation. For this reason, purchasers are responsible to make their own tests and assume all risks associated with using this product.

03/2010

JAHN M90 SMOOTH

- **Horizontal Concrete Repair – HGS**
- **Vertical Concrete Repair – VGS**
- **Precast Repair**

These single-component, cementitious, *mineral based* repair mortars are designed for the rest-oration of smooth precast. Since Jahn M90 Smooth is engineered for compatibility, there are two separate formulations – for horizontal and vertical applications. In this way, **M90 Smooth achieves a superior chemical bond to concrete substrates. *M90 Smooth contains no latex* or acrylic bonding agents or additives**, nor does it require the application of a bonding agent to achieve adhesion, so it remains vapor permeable. The mortar provides a healthy pH factor and strong resistance to carbonation, creating an environment that does not allow *corrosion to begin. The material can be applied in a* single layer build-up for faster application and reduced installation costs. M90 Smooth is not damaged by salt crystallization, even when heavy concentrations are present. M90 Smooth provides a durable repair able to withstand severe environmental conditions and repeated *freeze-thaw cycles.*

Features and Benefits

- **Single-Component:** Mixes with water only, improving quality control and consistency of application.
- **Compatible Formulation:** Compatibility of physical properties ensures that the mortar and natural substrate react to the environment in the same way.
- **Contains No Latex or Acrylic Bonding Agents:** It protects the substrate by allowing salts, water vapor, and liquid water to reach the surface, preventing failure due to salt expansion or freeze/thaw cycles.
- **Tenacious Adhesion:** Strong bonding capabilities without relying on synthetic bonding agents.
- **Single Layer Build-Up:** Faster application and reduced installation costs.
- **Factory Controlled:** No field chemistry resulting in product variation.
- **Custom Colored Upon Request:** Closely matches existing masonry. Choose from Standard or Custom Colors.
- **Highly Resistant to Carbonation:** Superior long-term, reinforcing steel protection

Application Procedures

Surface Preparation

Surfaces to receive Jahn Mortar must be sound and free of all dust, dirt, grease, laitance and/or any other coating or foreign substance which may prevent proper adhesion. Remove all loose and deteriorated concrete from the repair area (minimum depth ½ ") using manual or pneumatic cutting techniques or mechanical abrasion such as sandblasting, water blasting, shot blasting or chipping. The sides of the repair area should be square cut; incorrect installation will cause repairs to fail prematurely. Wash the prepared surface with clean water and a bristle brush to

remove dust from the pores.

Section: Correct *(Square Cut)* Surface Preparation

Section: Incorrect *(Feathered Edge)* Surface Preparation

Treatment of Reinforcing Steel

Cut out and replace all reinforcements whose structural integrity is in question, as directed by the Project Engineer. Structurally sound corroded reinforcing steel must be mechanically abraded to a white metal finish. Mechanical means, such as sandblasting, grinding or wire brushing are acceptable. Treat anchors with a protective coating to prevent rusting. Apply repair mortar only after coating is completely dry.

Exposed Ferrous Metals

In the event that ferrous metal reinforcement (re-bar, *threaded rod, etc.) is exposed within the repair area or* repairs are adjacent to ferrous metal jambs, lintels, anchoring systems etc., the Coronado Surface Tolerant Mastic 113 Line must be applied to all properly prepared ferrous metal surfaces before repairs are made. Refer to the Technical Data Sheets within Cathedral Stone's *Product line for proper preparation* and use of the Coronado Surface Tolerant Mastic 113 Line.

Mixing

The mixing ratio is approximately 5 to 5 ½ parts powder to 1 *part water by volume*, **depending on temperature and humidity.** Continue mixing until the mortar is thoroughly mixed and is the approximate consistency of damp sand.

M90 Smooth may also be mixed using a slow speed drill (400 - 600 rpm) equipped with a Jiffler-type mixing paddle. Bulk mixing may be achieved in a mortar-type mixer. For best results, add the powder to the water slowly. The working time will vary, depending upon wind, temperature, and humidity.

Application

Moisten the substrate using clean water. Jahn Mortar should be applied to a glistening wet surface on vertical applications and to a dampened surface on horizontal applications (with no pooling water). **If the surface is allowed to dry out before applying M90 Smooth, this step must be repeated. This is important.**

The next step of the application is what CSP has termed the "Peanut Butter" coat. The Jahn mortar should be mixed with water to

Cathedral Stone® Products, Inc. 7266 Park Circle Drive, Hanover Maryland 21076
(800) 684-0901 FAX: (410) 782-9155 WEBSITE: www.cathedralstone.com

the consistency of wet putty. Apply the "Peanut Butter" coat to the glistening wet substrate approximately 1/8 inch thick. **Important – To achieve proper bond, the "Peanut Butter" coat must not dry out prior to application of Jahn Mortar (5:1) mix!**

When repairing horizontal surfaces using **M90 Smooth HG,** apply material flush to the surface and finish to a tight steel troweled finish, float, or broom to achieve a textured effect. When repairing vertical surfaces using **M90 Smooth VG,** build up material beyond the surface of the substrate. The waiting period before finishing will vary, depending upon wind, temperature, and humidity. After achieving initial set, scrape away excess mortar until the desired profile is reached.

M90 Smooth may be placed in deep applications using successive lifts. If a cement skin forms between applications (the surface will appear glossy), scrape away enough of the surface to remove the skin (about 1/16" of material). This will open the pores before an additional layer of material is applied. The surface should be moistened again before continuing the application.

Curing

Periodically mist M90 Smooth repairs using clean water for at least a 72-hour period. The timing for initial misting will vary with ambient conditions. Hot, dry conditions may require misting in 30 to 60 minutes. Cooler, damp conditions may require waiting several hours before beginning the curing process. Mist several times a day. Should access to the repairs be impossible over a period of time, plastic may be used to cover them temporarily. The application of plastic, however, does not remove the need for normal curing techniques.

Clean Up

Remove uncured mortar from the perimeter of the repair before it dries using clean water and a rubber sponge. **Repeat several times with clean water to prevent a halo effect** (staining of adjacent masonry). Cured mortar may only be removed chemically or mechanically.

Safety Requirements

It is recommended that safety goggles, gloves, and a dust mask equipped with P-2 filters (or equivalent) be worn for protection while mixing.

Limitations

- Do not apply Jahn Mortar to a frozen or exceedingly hot substrate. The applied mortar must be protected from extreme heat, freezing excessive wind, direct sunlight, and rain. Ambient temperature range should be 40° F to 90° F with low to average humidity.
- Do not add bonding agents to Jahn Mortar or use them as surface preparation materials.
- Minimum thickness of mortar application is 1/2"

Packaging and Coverage

A 5-gallon plastic pail contains approx. 44 lb. of material. This will cover 0.5 cu. ft. (12 sq. ft. at 1/2" thickness).

Storage And Shelf Life

Store material in a dry area away from direct sunlight. Ambient storage conditions should be in the range of 40° F to 90° F with low to average humidity. Average shelf life is six months in original, unopened packaging.

Technical Data

Jahn M90 Smooth

LIQUID/PLASTIC PHASE	
Ratio water/dry material	2.3 to 3.0 fl. oz /lb.
Volume mixed mortar M70 in inches/ 3 per lb. Of dry material	12.0 fl. oz./lb. (approx)
HARDENED PHASE	
Compressive strength, wet	2300 to 3600 psi
Compressive strength, dry	2900 to 3400 psi
Tensile bending strength, wet	550 to 730 psi
Tensile bending strength, dry	490 to 520 psi
Tensile strength	145 to 290 psi
Linear coefficient of thermal expansion	5.6E-06 to 6.3E-06 in inches °F
Hydraulic coefficient of expansion%	0.076 to 0.089
Modulus of elasticity	1730 to 1860 ksi
Open porosity (%)	32.8 to 37.6
Water absorption (%)	16 (approx.)
Specific gravity	1.4

Warning

Not for internal consumption. Keep out of reach of children and animals. Consult Material Safety Data Sheet (MSDS) for specific information.

Notice: The information contained herein is based on our own research and the research of others, and it is provided solely as a service to help users. It is believed to be accurate to the best of our knowledge. However, no guarantee of its accuracy can be made, and it is not intended to serve as the basis for determining this product's suitability in any particular situation. For this reason, purchasers are responsible to make their own tests and assume all risks associated with using this product.

06/2009

Cathedral Stone® Products, Inc. 7266 Park Circle Drive, Hanover Maryland 21076
(800) 684-0901 FAX: (410) 782-9155 WEBSITE: www.cathedralstone.com

JAHN M40

Crack Injection Grout

Jahn M40 is formulated to repair cracks and voids ranging in width from approximately 3/16" to 9/16" (5.0 mm to 15.0 mm) or larger using low pressure mechanical or gravity feed equipment. M40 is completely mineral based, contains no latex or acrylic bonding agents or additives, and is vapor permeable for compatibility with masonry substrates.

Features and Benefits

- **Single-Component:** Easy to mix correctly, thereby improving quality control at the point of injection.
- **Compatible Formulation:** Compatibility of physical properties ensures that the grout and natural substrate react to the environment in the same way.
- Contains No Latex or Acrylic Bonding Agents: It protects the substrate by allowing salts, water vapor, and liquid water to reach the surface, preventing failure due to salt expansion or freeze/thaw cycles.
- **Tenacious Adhesion:** Strong bonding capabilities.
- **Factory Controlled:** No field chemistry resulting in product variation.
- **Low Viscosity:** Deep, thorough penetration.
- **Simple Application:** Can be manually or mechanically applied.
- **Water Based:** Environmentally and user safe. No solvent clean up or disposal problems.

Application Procedures

Wash the surface and interior of the crack using clean water to remove all dust, loose or deleterious material, which could prevent proper flow and/or adhesion thereby compromising the integrity of the cured injection grout.

Mixing

The mixing ratio is approximately 2 - 2 1/2 parts powder to 1 part water by volume. Mix by hand or mechanically, using a slow speed drill (400 - 600 RPM) equipped with a Jiffler-type mixing paddle. The material should be mixed for a minimum of three minutes, with continued agitation, should the product be allowed to sit prior to use.

Injection Procedures

Immediately before injection, moisten interior of the crack by flushing with water. If the crack is allowed to dry out before the grout is injected, this step must be repeated. This is very important.

Transverse Cracks:

Drill a series of injection ports in the center of the crack. These ports should be drilled in a downward direction. Seal the crack with removable, non-staining clay, sealant, or caulk.

Inject grout into the lowest port and continue until it flows freely from this port and other ports at the same level. Seal ports using non-staining clay, sealant, or caulk and proceed in identical fashion until the crack is filled. **Clean up overflow immediately with clean water.**

Lateral Cracks (Delaminating Layers):

Drill a series of injection ports in a square configuration (90° angles) on the face of the substrate to create a "drill frame". Ports should be drilled in a downward direction. Wash the surface and interior of the crack using clean water to remove as much dust and loose material as possible. Any dust or debris remaining between the layers will impede the flow of the grout. If this is the case, more holes will be required to attempt to fill all hollow areas.

Inject grout into lower left port and proceed until it flows freely from this port and other ports at the same level. Seal ports using non-staining clay, sealant, or caulk. Inject grout into lower right port and proceed in identical fashion. The order of injection is lower left, lower right, upper left, and then upper right. **Clean up overflow immediately with clean water.**

Removal of Sealant

Let the grout dry (24 – 48 hours) and remove all sealant, caulk, or clay. After removing the sealant, repair the crack surface and injection holes with Jahn Mortar that matches the color and type of existing masonry.

Cathedral Stone® Products, Inc. 7266 Park Circle Drive, Hanover Maryland 21076
(800) 684-0901 FAX: (410) 782-9155 WEBSITE: www.cathedralstone.com

Clean Up

While injecting, continually check for grout runs and spills on the surface of the masonry, and clean the surface before the grout has time to set. This is normally done with a clean sponge and water, and may have to be done several times, rinsing the sponge repeatedly with clean water.

Remove uncured mortar from tools and equipment with water as soon as possible. Cured grout many only be removed chemically or mechanically.

Safety Requirements

It is recommended that safety goggles, gloves, and a dust mask equipped with P-2 filters (or equivalent) be worn for protection while mixing.

Limitations

- Do not apply Jahn Injection Grout to a frozen or exceedingly hot substrate. The applied grout must be protected from extreme heat, freezing, excessive wind, direct sunlight, and rain. Ambient temperature range should be 40° F to 90° F with low to average humidity.
- Do not add bonding agents to Jahn Injection Grout or use them as surface preparation materials.

Packaging

A two-gallon plastic pail contains approximately 18 lbs. of material. Coverage will vary depending on the type of substrate and the size of the crack.

A five-gallon plastic pail contains approximately 44 lbs. of material. Coverage will vary depending on the type of substrate and the size of the crack.

Storage And Shelf Life

Store material in a dry area away from direct sunlight. Ambient storage conditions should be in the range of 40° F to 90° F with low to average humidity. Average shelf life is six months in original, unopened packaging.

Technical Data

Jahn M40 - Crack and Void Injection Grout

Liquid/Plastic Phase	
Volume mixed M40 in fluid oz. per lb. of dry material	14.3 fl oz/lb (approx.)
Hardened Phase	
Compressive strength	1500 to 4400 psi
Tensile bending strength	290 to 730 psi
Tensile strength	58 to 100 psi
Ratio in/3 water/lb of dry material	5.3 to 6.0 fl. oz/lb.
Specific gravity	1.3 (approx.)

Warning

Not for internal consumption. Keep out of reach of children and animals. Consult Material Safety Data Sheet (MSDS) for specific information.

Notice: The information contained herein is based on our own research and the research of others, and it is provided solely as a service to help users. It is believed to be accurate to the best of our knowledge. However, no guarantee of its accuracy can be made, and it is not intended to serve as the basis for determining this product's suitability in any particular situation. For this reason, purchasers are responsible to make their own tests and assume all risks associated with using this product.

06/2006

Cathedral Stone® Products, Inc. 7266 Park Circle Drive, Hanover Maryland 21076
(800) 684-0901 FAX: (410) 782-9155 WEBSITE: www.cathedralstone.com

Technical Data Sheet

KEIM Sealer
(KEIM Concretal®-Betonsiegel)

1. Product description

Transparent sealer for all mineral surfaces, concrete and washed concrete, PU (polyurethane)-based, no solvents added.

2. Field of application

Interior or exterior to protect all mineral surfaces, walls where heavy traffic requires the maximum surface protection, fair-faced concrete, and washed concrete surfaces. Can be used any location where exceptional protection against the intrusion of pollutants, CO_2 and water is needed.

3. Product properties

Density: 1.14 m/m³

Color shade
Matt-transparent
(Exceeding the consumption value causes a shiny effect!).

4. Application instructions

Substrate preparation
The substrate must be sound, dry, free from any loose parts and substances with a release action. Dirt and algae are to be removed prior to application. Repairs should be done with the products of the KEIM systems. A special pretreatment is not required. The application may not be done in cases where there is rising damp or an elevated level of humidity present in the surface or on new concrete. Maximum admissible substrate humidity 4 %.

Application
Apply KEIM Sealer in thin layers with a hard, shorthaired roller. The indicated consumption rate should not be exceeded.
From 8°C to max. 30°C (46 - 86°F) air and substrate temperature. Avoid direct sun, rain and wind during application

Note
It is known that KEIM Sealer like all transparent sealers will intensify the color shade and may, especially on absorbent substrates, lead to an visual darkening of these areas. A milky and shiny surface will result from too thick of an application. It is recommended to apply test areas.

Attention: KEIM Sealer is not a substitute for properly installed metal-sheet flashing on horizontal and slightly inclined weathering surface.

Consumption
Max. 0.085 l /m² (10.8 sq ft) per application. Application is normally one coat.

Drying time
Resistant against rain after 24 h.

Cleaning of tools
Clean immediately after use with PU-cleaners.

5. Packaging

1 l and 5 l (0.26 and 1.32 gal) containers

6. Storage

6 months, if stored dry, cool, frost-free in originally closed containers.

Version 02/09

KEIM MINERAL COATINGS
of America, Inc.

10615 Texland Boulevard, Suite 600
Charlotte, North Carolina 28273 USA
Toll Free: 866-906-5346
Tel: 704-588-4811 · Fax. 704-588-4991
www.keim.com Keim-info@keim.com.

7. Hazardous substances ordinance class

Xi, Irritant, contains:
Hexamethylene-1.6 diisocyanate-homopolymer

R 43: May cause sensitization by skin contact.
R 52/53: Harmful to aquatic organisms may cause long-term adverse effects in the aquatic environment.
S 2: Keep out of the reach of children.
S 24: Avoid contact with skin.
S 37: Wear suitable gloves.
S 61: Avoid release to the environment. Refer to special instructions/material safety data sheets.

8. Transport hazard class

n/a

9. Disposal

EC Waste Code No. 08 01 11
Any residues must be emptied out of containers before recycling.

10. Safety instructions

Provide appropriate protection for surfaces which are not to be coated (e.g. glass, natural stone, ceramics etc.). Any splashes on surrounding surfaces or traffic areas must be rinsed off immediately with plenty of water. Protect the eyes and skin from splashes. When using in confined spaces, keep container tightly closed. Keep away from sources of ignition. Do not smoke. Keep out of reach of children.

The stated values and properties are the result of extensive development work and practical experience. Our recommendations for application, whether given verbally or in writing, are intended to provide assistance in the selection of our products and do not establish a contractual relationship. In particular, they do not release those purchasing and applying our products from the duty of establishing for themselves, with due care, the suitability of our products for the intended application. Standard building industry practices must be complied with. We retain the right to make modifications to improve the products or their application. This edition supersedes all earlier editions.

Version 02/09

KEIM MINERAL COATINGS
of America, Inc.

10615 Texland Boulevard, Suite 600
Charlotte, North Carolina 28273 USA
Toll Free: 866-906-5346
Tel: 704-588-4811 - Fax. 704-588-4991
www.keim.com Keim-info@keim.com

DIVISION 3

SECTION 03730

CONCRETE SPALL REPAIRS

PART 1. GENERAL

1.01 SUMMARY

This Section specifies requirements for the repair of deteriorated or delaminated concrete on horizontal, vertical or overhead surfaces, by means of concrete spall repair materials.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section.

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO T-277	Rapid Determination of the Chloride Permeability of Concrete.

American Concrete Institute (ACI)

ACI 503R-30	Pullout Strength Test. Appendix A
ACI 546.1R-80	Guide for Repair of Concrete Bridge Structures.

American Society for Testing and Materials (ASTM)

ASTM A 185	Steel Welded Wire Fabric, Plain for Concrete Reinforcement.
ASTM A 615	Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
ASTM C 39	Compressive Strength of Cylindrical Concrete Specimens.
ASTM C 78	Flexural Strength (Modulus of Rupture)
ASTM C 109	Compressive Strength. Modified
ASTM C 157	Length Change of Hardened Hydraulic-Cement Mortar and Concrete.
ASTM C 403	Time of setting of Concrete Mixtures by Penetration Resistance.
ASTM C 666	Rapid Freeze/Thaw Durability, Procedure A.
ASTM C 928	Specification for Packaged, Dry, Rapid Hardening Cementitious Materials for Concrete Repairs.

Steel Structures Painting Council (SSPC)

1.03 PERFORMANCE REQUIREMENTS

Concrete spall repair materials shall be certified by an independent testing laboratory for compliance with the following minimum requirements:

A. Concrete Spall Repair Material for Vertical or Overhead Applications.

1. Bond Strength

The concrete spall repair material shall be tested as follows:

a. A test panel, 2 ft. long X 1 ft. wide X 3 inches deep, shall be installed in an overhead position.

b. A total thickness of 2 1/2 inches of the concrete spall repair material shall be applied in two lifts within the overhead test panel.

c. After a 28-day dry-curing period, specimens shall be sawcut or cored into the overhead test panel, penetrating a minimum of 1/2 inch into the substrate. Each specimen shall be tested in direct pull out tension to attain a minimum bond strength of 25 psi. Acceptable specimen configurations shall be 3-inch or 4-inch diameter cores, or square specimens sawcut with a 4 inch side.

2. Length Change

The concrete spall repair material shall attain a shrinkage value no greater than – 0.15% after 28 days in air; and an expansion value no greater than 0.15% after 28 days in water. Preparation and testing of specimens shall be performed in accordance with the test method specified in ASTM C-157, except that shrinkage or expansion observations shall be recorded at the times specified in ASTM C-928.

3. Compressive Strength

The concrete spall repair material shall be tested in accordance with ASTM C-109 Modified, and shall attain minimum compressive strengths of 1000 psi in 24 hours, and 4000 psi in 28 days.

4. Flexural Strength

The concrete spall repair material shall be tested in accordance with ASTM C-78, and shall attain a minimum flexural strength of 600 psi in 28 days.

5. Time of Set

To determine the workability of the concrete spall repair material, its initial and final set times shall be tested in accordance with ASTM C-403.

6. Durability

The concrete spall repair material shall be tested in accordance with ASTM C-666, Method A. The test specimens shall have less than 10% weight loss after 300 cycles of testing, and the Relative Dynamic Modulus of Elasticity (R.D.M.E.) shall be no less than 75% of the original value.

7. Permeability

The concrete spall repair material shall be tested in accordance with AASHTO T-277, "Rapid Determination of Chloride Permeability of Concrete", to yield a permeability value of less than 1000 Coulombs.

B. Concrete Spall Repair Material for Horizontal Applications

1. Bond Strength

The concrete spall repair material shall be wet-cured for 28 days and tested in accordance with ACI-503R-Appendix A. The concrete spall repair material bond strength for roadways, bridge decks and other vehicular load carrying concrete surfaces shall be a minimum of 200 psi. For other concrete surfaces not subjected to vehicular traffic the bond strength shall be no less than 100 psi.

2. Length Change

The concrete spall repair material shall be tested in accordance with ASTM C-157, except that it shall attain a shrinkage value no greater than –0.10% after 28 days in air; and an expansion value no greater than 0.10% after 28 days in water.

3. Compressive Strength

Compressive strength testing for neat pastes shall be performed in accordance with ASTM C-109. Materials extended with No. 8 aggregate, shall be tested in accordance with ASTM C-39. Test cylinders shall be a minimum of 3 inches in diameter. The minimum compressive strength shall be 2000 psi in 6 hours or 3000 psi in 24 hours, unless otherwise shown on the Contract Drawings.

4. Flexural Strength

The concrete spall repair material shall be tested in accordance with ASTM C-78, and shall attain a minimum flexural strength of 600 psi in 28 days.

5. Time of Set

The initial set time and final set time of the concrete spall repair material shall be determined in accordance with ASTM C 403.

6. Durability

The concrete spall repair material shall be tested in accordance with ASTM C-666, Method A. The test specimens shall have less than 10% weight loss after 300 cycles of testing, and the Relative Dynamic Modulus of Elasticity (R.D.M.E.) shall be no less than 75% of the original value. This requirement will not apply at locations where freeze-thaw cycles do not occur or for temporary patching.

7. Permeability

The concrete spall repair material shall be tested in accordance with AASHTO T-277, "Rapid Determination of Chloride Permeability of Concrete", to yield a permeability value of less than 1000 Coulombs. This requirement will not apply to indoor applications.

1.04 ENVIRONMENTAL REQUIREMENTS

A. All work in this section shall be performed in accordance with the environmental requirements specified by the manufacturer of each concrete spall repair material, unless otherwise indicated herein or on the Contract Drawings. In case of conflict the more stringent requirements shall apply.

B. Cold Weather Requirements

1. Do not mix or place the concrete spall repair material when the ambient temperature is below 45 degrees Fahrenheit, or when conditions indicate that the temperature will fall below 45 degrees Fahrenheit within 72 hours, unless special mixing and placement procedures are approved by the Engineer.

2. Take all necessary precautions to insure that the temperature of the concrete spall repair material, as placed, is a minimum of 50 degrees Fahrenheit.

1.05 QUALITY ASSURANCE

A. The Contractor shall submit to the Manager of Materials, Materials Engineering Laboratory, Port Authority Technical Center, 241 Erie Street, Jersey City, NJ 07310-1397 for approval, with a copy to the Engineer, the name of a qualified representative of the concrete spall repair material manufacturer, who will be responsible for the following:

1. Provide technical information regarding proper methods of mixing and placing the concrete spall repair material.

2. Be present during the initial mixing and placing of the concrete spall repair material.

3. Be available for technical consultation when concrete spall repair material mixing or application problems arise.

4. Provide certification that the mixing, surface preparation, placement, finishing and curing procedure used during the initial placement were in compliance with the manufacturer's recommendations.

B. The Contractor shall furnish all labor, materials and equipment required to assist the Engineer in performing inspection and testing of the applied concrete spall repair materials. The Contractor shall make scaffolding and other equipment available as necessary to permit access to all repaired areas.

C. The Contractor shall install a test patch for the Engineer's inspection and approval, a minimum of 48 hours prior to proceeding with any concrete spall repair work shown on the contract drawings. The test patch location will be designated by the Engineer.

D. The Engineer may inspect all concrete spall repair materials and application procedures at any time for compliance with the Specifications.

E. The Engineer may take and test samples of each lot of the concrete spall repair materials delivered to the work site.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver all materials in the manufacturers sealed original containers bearing the manufacturer's name and product identification, in a manner to prevent damage by breakage, water or moisture.

B. Store all material on platforms and cover it as required to protect it from the elements.

1.07 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MATERIALS

A. The concrete spall repair material(s) are specified on the Contract Drawings. Concrete spall repair material(s) submitted for approval, shall be accompanied by a certification indicating compliance with the requirements of Paragraph 1.03A or 1.03 B of this Specification, as applicable, and shall be submitted in accordance with the requirements of "Workmanship and Materials" of Division 1 -GENERAL PROVISIONS.

B. Stone aggregate shall be ASTM C-33, Size No. 8.

C. Reinforcing Bars shall be ASTM A-615, Grade 60.

D. Welded Wire Fabric shall be ASTM A-185.

E. Abrasive Blast Material shall be "Black Beauty", as manufactured by Reed Minerals, a Division of Harsco Corporation, South Kearny, NJ or approved equal.

2.02 EQUIPMENT

Abrasive Blast Equipment shall be as manufactured by the following, or an approved equal.

A. "Clemco" by Clementina, Oakland, CA.

B. "Pauli and Griffin" by Pauli Griffin, Vacaville, CA.

C. "Sandstorm" by Bowen Tools, Inc., Houston, TX.

PART 3. EXECUTION

3.01 SURFACE PREPARATION

A. The type and extent of deteriorated or delaminated concrete to be repaired shall be as shown on the Contract Drawings.

B. Square off the concrete area to be repaired with a 1/2-inch sawcut, and shall remove all loose, deteriorated and delaminated concrete by means of pneumatic or mechanical chipping tools.

C. Removal of loose, deteriorated and delaminated concrete, efflorescence and incrustation on concrete surfaces by means of pneumatic or mechanical chipping tools shall be done as follows:

1. Pneumatic hammers heavier than nominal 30-pound class shall not be used.

2. Pneumatic hammers or mechanical chipping tools shall be operated at an angle not to exceed 45 degrees relative to the surface of the area being repaired.

3. The Contractor shall remove deteriorated concrete to a sound surface for a depth not less than 1/4 inch nor more than 3/4 inch beyond the deteriorated layer of concrete, except as noted in 3.01 F.

4. All concrete surfaces to be repaired shall be cleaned of dirt, dust, laitance and other contaminants by abrasive blasting to yield a dry and sound concrete surface. Such work shall be performed within the same work period that the installation of the concrete spall repair material takes place.

D. The Contractor shall not use power tools to remove concrete adhered to exposed reinforcing steel. Removal of concrete, rust and/or corrosion adhered to exposed rebars shall be performed by abrasive blasting to a SSPC-SP6 surface finish.

E. The Contractor shall not damage or debond reinforcing steel, or shatter concrete beyond the area to be repaired.

F. If concrete removal has exposed more than half of the perimeter of a reinforcing bar, the rebar shall be completely exposed to clear the remaining concrete by a minimum of 1/2 inch. The Contractor shall not pry up or displace rebars to accomplish this clearance.

G. Corroded reinforcing bars, which exhibit 25% loss of cross section area, or more after cleaning, shall be repaired in accordance with the Reinforcing Bar Repair Detail shown on the Contract Drawings. Payment for such work shall be at the Net Cost thereof.

3.02 REPAIR MATERIAL INSTALLATION

A. After preparing the concrete surface to be repaired in accordance with the requirements of 3.01, and immediately prior to priming, such concrete surface shall be moistened with clean water without leaving any standing water. The moist condition will not be required, if the concrete spall repair material manufacturer specifically recommends that the surface area to be repaired not be moistened.

B. The concrete surface to be repaired shall be primed by scrubbing a slurry mix of the concrete spall repair material into the substrate using a mason's brush. The slurry shall be mixed in accordance with the manufacturer's recommendations, and its application shall be immediately followed by the installation of the approved concrete spall repair material.

C. The concrete spall repair material shall be mixed, handled and placed in strict conformance with the manufacturer's instructions, and the surface shall be finished as shown on the Contract Drawings, to match the existing concrete surface.

D. Horizontal concrete repair areas greater than 3/4 inch in depth shall have the concrete spall repair material extended with size No. 8 stone aggregate in accordance with the manufacturer's recommendations, or as approved by the Engineer.

E. All concrete spall repairs shall be cured using either an approved wet curing procedure, or a water-based curing membrane. If a wet curing procedure is selected and approved, such procedure shall be maintained for the duration of the curing.

PART 4. PAYMENT

4.01 NET COST WORK

The Contractor will be compensated for the work specified in 3.01 G at the "Net Cost" for such Work. "Net Cost" shall be computed in the same manner as is compensation for Extra Work, including any percentage addition to cost, as set forth in the clause of the Contract providing compensation for Extra Work. Performance of such Net Cost Work shall be subject to all provisions of the Contract relating to performance for Extra Work. Compensation for said Net Cost Work shall not be charged against the total amount of compensation authorized for Extra Work.

END OF SECTION

SECTION 03730

CONCRETE SPALL REPAIRS

SUBMITTALS

APPENDIX "A"

The following items shall be submitted to the Engineer, except as otherwise noted.

A. Shop Drawings

1. As per Division 1 "Shop Drawings, Catalog Cuts and Samples".

B. Catalog Cuts, Material Certification and Test Results

1. As per Division 1 "Shop Drawings, Catalog Cuts and Samples.
2. Submit to the Manager of Materials, Materials Engineering Laboratory, Port Authority Technical Center, 241 Erie Street, Jersey City, NJ 07310-1397, with a copy to the Engineer, a list of the concrete spall repair materials to be used in the performance of the Contract Work. Each concrete spall repair material shall be selected from the products specified on the Contract Drawings, and shall be properly identified for the type of concrete spall repair intended.
3. The manufacturer's instruction for handling, storage, mixing and placing each of the concrete spall repair materials.
4. Submit to the Manager of Materials a certification with a copy to the Engineer indicating compliance with the performance requirements outlined in Section 1.03. This certification shall include test results conducted within the last two years.

C. Samples

1. As per Division 1 "Shop Drawings, Catalog Cuts and Samples".

D. Construction Procedures and Quality Assurance Documents

1. Submit to the Manager of Materials certification with a copy to the Engineer on Quality Assurance Procedures outlined in Section 1.05.

END OF APPENDIX "A"

SECTION 03730

CONCRETE SPALL REPAIRS

INSTRUCTIONS TO THE SPECIFIER

A. General

1. The Specifier shall review all items listed in Appendix "A". Remove items that are not applicable to this project and add to the Appendix "A" under the proper headings any submittal items that are intended to be shown on the contract drawings. Review the final Appendix "A" with the Senior/Principal Engineer in charge.

2. This section is not intended for use where shotcrete is required or specified.

3. Review facility operation requirements to determine a realistic curing time that can be obtained in the field and other specific conditions that help to select the proper concrete spall repair materials.

4. Discuss with Material Division your specific needs in selecting the repair material, including those that may be available but not listed in the tables.

5. Do not alter or revise the test of this section.

6. Select concrete spall repair materials from Selection table "I" - Vertical or Overhead Surface Applications and/or from Selection Table "II" - Horizontal Surface Applications, as appropriate. See Classification Definition for Concrete Spall Repair Materials to be used for Horizontal Surface applications on Instructions 03730 - 6.

NOTE: The Tables mentioned are stored as a separate document. To access, click on document entitled:

03730_INSTRUCTIONS_TABLES I and II.

7. Selection of the type of concrete spall repair material should be based on the physical properties that are suited for the prevailing environmental conditions and/or design requirements. Review this selection with the Principal Engineer.

8. Do not add any concrete spall repair material to Selection Table "I" or Selection Table "II", unless a concrete spall repair material has been reviewed for compliance with the requirements of this section, and has been formally approved in writing by the Materials Engineering Division prior to the issuance of the Contract.

B. Contract Drawings

Ensure that the Contract Drawings show the following:

1. The concrete spall repair material(s) selected from Table "I" and/or Table "II". Specify all products that are considered equals. Do not use the phrase "or approved equal".

2. Typical Concrete Spall Repair Detail(s) based on the location of the repair (horizontal, vertical or overhead) and the depth of the concrete spall, and the required strength.

3. The extent of the spalled area, and the removal limits for the finished squared off repaired area.

4. Provision must be made for payment where the additional cost of exposing the rebar may be encountered (usually by unit price items) in 3.01 F.

5. The Reinforcing Bar Repair Detail referenced in 3.OlG with the proper designation for "Net Cost Work" compensation.

6. If the method for priming the concrete surface to be repaired prior to applying the concrete spall repair material is different from the slurry coat requirement specified in 3.02 B, show it on the Contract Drawing.

7. The type of concrete surface finish required for the repaired area.

8. The type, diameter, spacing, embedment, grade, coating and size of concrete anchors, if mechanical connectors are required.

9. The type and size of Welded Wire Fabric, if WWF is required.

10. Specify limited use of roadways, lane closures, etc., if it is anticipated that traffic-induced vibration may affect the curing of the selected concrete spall repair material.

11. For Horizontal patching applications, if class "B" or "C" material is specified, indicate on the Contract Drawing the compressive strength requirement for the material. For class "B" material, the minimum compressive strength shall be 1500 psi in 6 hours or 2500 psi in 24 hours. For Class "C" material the minimum compressive strength shall be 2000 psi in 24 hours.

C. Contract Specifications

Include P.A. Standard Specification Section 02574 "Abrasive Blasting of Pavements".

DIVISION 6

SECTION 06400

CUSTOM CASEWORK

PART 1. GENERAL

1.01 SUMMARY

This Section specifies requirements for custom casework including laminate and solid plastic surfacing clad cabinets and countertops, wood cabinets and countertops, and closet and utility shelving.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

American National Standards Institute (ANSI)

ANSI A 136.1	Organic Adhesives for Installations of Ceramic
ANSI A 208.1	Wood Particleboard
ANSI A 208.2	Medium Density Fiberboard for Interior Use
ANSI Z 124	Plumbing
ANSI/BHMA A 156.9	American National Standard for Cabinet Hardware
ANSI/BHMA A 156.16	Auxiliary Hardware
ANSI/BHMA A 156.18	Materials and Finishes
ANSI/BHMA 652	

American Society for Testing and Materials (ASTM)

ASTM D 523	Test Method for Specular Gloss
ASTM E 84	Test Method for Surface Burning Characteristics of Building Materials

American Wood Preservers Association (AWPA)

AWPA C20-91	Structural Lumber - Fire-Retardant Treatment by Pressure Processes

Architectural Woodwork Institute (AWI)

Architectural Woodworking Quality Standards

Federal Specifications (FS)

FS WW-P-541E /GEN	August 1, 1980, Plumbing Fixtures (Lavatories)

Hardwood Plywood and Veneer Association

HPVA HP-1	Interim Voluntary Standard for Hardwood and Decorative Plywood

National Electrical Manufacturers Association (NEMA)

NEMA LD 3	High Pressure Decorative Laminate

Underwriters Laboratories Inc. (UL)

Building Materials Directory	

U.S. Department of Commerce, National Institute of Standards and Technology

PS 1	U.S. Product Standard for Construction and Industrial Plywood

1.03 ENVIRONMENTAL REQUIREMENTS

A. The Contractor shall obtain from the woodwork manufacturer and the entity performing installation Work the required temperature and humidity ranges for Work of this Section. Do not proceed with woodwork installation until the Engineer has determined that the required ambient temperature and humidity conditions can be maintained.

B. Maintain temperature and humidity in installation area as required to maintain moisture content of installed woodwork within a 1.0 percent tolerance of optimum moisture content, from date of installation through completion of Work.

1.04 QUALITY ASSURANCE

A. Quality Standard

Comply with applicable requirements of AWI Architectural Woodworking Quality Standards, except as otherwise specified in this Section or unless otherwise shown on the Contract Drawings.

B. Fabricator Qualifications

Firm shall be experienced in producing architectural woodwork similar to that required for Work of this Section with a record of successful in-service performance, as well as sufficient production capacity to produce required units without delaying the Work.

C. Installer Qualifications

Entities performing the installation Work of this Section shall have 2 years experience in installation of architectural woodwork projects involving complexities equal to those required for the Work of this Section.

D. Field Measurements

Where woodwork is shown to be fitted to other construction, check actual dimensions of other construction by accurate field measurements before fabrication, and show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Verify locations of concealed framing, blocking, reinforcements, and furring that support woodwork by accurate field measurements before being enclosed. Record measurements on final shop drawings.

E. Fire-Test-Response Characteristics

Provide materials with the following fire-test-response characteristics as determined by testing identical products per ASTM test method indicated below by a testing and inspecting agency acceptable to the Engineer. Identify fire-retardant-treated material with appropriate markings of applicable testing and inspecting agency in the form of separable paper label or, where required by authorities having jurisdiction, imprint on surfaces of materials that will be concealed from view after installation.

1. Surface-Burning Characteristics

Flame spread not exceeding 25 and smoke developed not exceeding 29, tested per ASTM E 84 for 30 minutes with no evidence of significant combustion. In addition, the flame front shall not progress more than 10-1/2 feet beyond the center line of the burner at any time during the test.

F. Unless otherwise indicated or shown on the Contract Drawings, all cabinets and countertops shall be constructed of hardwood plywood. Particle board or medium-density fiberboard will be acceptable alternates, provided they are used with hardwood edging at all four sides and with inserts for screw attachment.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect woodwork during transit, delivery, storage and handling to prevent damage, soiling and deterioration.

B. Do not deliver woodwork until painting and similar operations that could damage, soil or deteriorate woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas meeting requirements specified in 1.03 of this Section.

1.06 SUSTAINABLE DESIGN GENERAL REQUIREMENTS

A. The Authority requires the Contractor to implement practices and procedures to meet the sustainable design requirements. The Contractor shall ensure that the requirements related to these goals, as defined in Division 1 - GENERAL PROVISIONS and the articles below, are implemented to the fullest extent. Substitutions, or other changes to the work proposed by the Contractor, will not be allowed if such changes compromise the stated Sustainable Design Performance Criteria.

B. Sustainable Design Performance Criteria

1. All field-applied adhesives, sealants, paints and coatings relating to work of this section shall meet the requirements of Division 1 - GENERAL PROVISIONS.

2. The manufacturing location (final assembly) of the Plastic Laminate Clad Casework shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

3. All composite wood, engineered wood, or agrifiber products used for rough carpentry (e.g., plywood, particleboard, medium density fiberboard) shall contain no added urea-formaldehyde resins. Acceptable resins and binders include, but are not limited to, phenol formaldehyde and methyl diisocyanate (MDI). Certification of these products shall be in accordance with the Submittal Requirements of this Section.

4. Fifty percent wood-based materials used on this Project, whether permanently-installed or temporary, shall be certified in accordance with the Forest Stewardship Council (FSC) guidelines.

   a. Applicable products include, but are not limited to, structural framing and general dimensional framing, flooring, finishes, furnishings, miscellaneous blocking, fire rated plywood back panels used for equipment mounting, architectural panels, plywood, and non-rented temporary construction applications such as bracing, concrete form work and pedestrian barriers.

   b. Certified wood material suppliers may be researched through the following websites: www.rainforest-alliance.org/greenbuilding, www.smartwood.org, http://www.certifiedwoodsearch.org/searchproducts.aspx, http://www.fscus.org/certified_companies/.

   c. Any FSC-certified wood products deemed unavailable must be reported by the Contractor to the Engineer.

   d. Wood products previously purchased and used on prior projects, which are reused on this Project, are exempt from the FSC certification requirement. Appropriate documentation certifying reused wood products must be submitted.

   e. Documentation of all FSC-certified wood products shall be in accordance with the Sustainable Design Submittal Requirements herein. Wood products submitted without acceptable documentation will be rejected.

1.07 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MANUFACTURERS

A. Subject to compliance with requirements of this Section, provide high pressure decorative laminates of one of the following manufacturers or approved equal:

Formica Corp.; Cincinnati, OH

Nevamar Corp.; Odenton, MD

Ralph Wilson Plastics Co.; Temple, TX

B. Subject to compliance with requirements of this Section, provide solid plastic surfacing products of one of the following manufacturers or approved equal:

"Corian" by E.I. Du Pont de Nemours and Co., Inc.; Wilmington, DE

"Surrel" by Formica Corporation; Cincinnati, OH

"Fountainhead" by Nevamar/International Paper Products; Odenton, MD

"Gibraltor" by Ralph Wilson Plastics Co.; Temple, TX

C. Restroom Countertops:

As noted on drawings in Contract Documents.

D. Ticket Countertops:

As noted on drawings in Contract Documents.

2.02 MATERIAL

A. General

Provide materials that comply with requirements of the AWI quality standard for each type of woodwork and quality grade indicated and, where the following products are part of interior woodwork, with requirements of the referenced product standards that apply to product characteristics indicated:

B. Medium-Density Fiberboard: ANSI A208.2.

C. Particleboard: ANSI A208.1, Grade M-2.

D. Hardwood Plywood and Face Veneers: HPVA HP-1. Plywood shall be 3/4"-thick, seven ply, unless otherwise shown on the Contract Drawings, selected smooth, sanded stock.

E. High-Pressure Decorative Laminate

NEMA LD 3, grades as indicated, or if not indicated, as required by woodwork quality standard.

F. Solid Plastic Surfacing

Cast, filled polymer, not coated, laminated or of composite construction, meeting ANSI Z 124 and FS WW-P-541E/GEN, having minimum physical and performance properties specified. Thickness and color as specified herein.

G. Adhesive for Bonding Plastic Laminate

Type as recommended by fabricator for applications shown on the Contract Drawings.

H. Sealants and Adhesives for Solid Plastic Surfacing

1. Joint Adhesive

Joint adhesive shall be two-part adhesive kit to create inconspicuous, non-porous joints by chemical bond.

2. Panel Adhesive

Panel adhesive shall be neoprene based panel adhesive meeting ANSI A 136.1, Underwriter's Laboratories (UL) listed.

3. Sealant

Sealant shall be mildew-resistant, FDA and UL listed silicone sealant in colors matching casework components.

I. Fire Retardant Materials

1. Provide materials which are pressure impregnated with fire-retardant chemicals and comply with the following requirements:

a. Fire-Retardant Chemicals

Use chemicals of types which do not bleed-through or otherwise adversely affect finishes. Do not use colorants in solution to distinguish treated lumber from untreated lumber.

b. Low-Hygroscopic Formulation:

Interior Type A per AWPA C 20.

2. Subject to compliance with the requirements of this Section, provide one of the following, or approved equal:

D-Blaze; Chemical Specialties, Ind., Charlotte, NC

Dricon; Hickson Corp., Smyrna, GA

Pyro-guard; Hoover Treated Wood Products, Inc., Thomson, GA

3. Fire-Retardant Particleboard

Panels complying with the following requirements, made from softwood particles and fire-retardant chemicals mixed together at time of panel manufacture to achieve products identical to those tested for flame spread of 25 or less and for smoke developed of 25 or less per ASTM E 84 by a testing and inspecting agency acceptable to the Engineer. Identify products with appropriate markings of applicable testing and inspecting agency.

a. For panels 3/4-inch thick and less and 45-lb/cu. ft density, comply with ANSI A208.1 for Grade M-2 except for the following minimum properties: modulus of rupture, 1600 psi; modulus of elasticity, 300,000 psi; internal bond, 80 psi; and screw-holding capacity on face and edge, 250 lbf and 225 lbf respectively.

b. For panels 13/16 to 1-1/4 inches thick and 44-lb/cu. ft density, comply with ANSI A208.1 for Grade M-1 except for the following minimum properties: modulus of rupture, 1300 psi; modulus of elasticity, 250,000 psi; internal bond 60 psi; and screw-holding capacity on face and edge, 250 lbf and 175 lbf respectively.

c. Product

Subject to compliance with requirements, provide Duraflake FR by Willamette Industries, Inc.

4. Fire-Retardant Fiberboard

Medium-density fiberboard panels complying with ANSI A208.2, made from softwood fibers, synthetic resins, and fire-retardant chemicals mixed together at time of panel manufacture to achieve products identical to those tested for flame spread of 25 or less and for smoke developed of 200 or less per ASTM E 84 by testing and inspecting agency acceptable to the Engineer. Identify products with appropriate markings of applicable testing and inspecting agency.

a. Product

Subject to compliance with requirements, provide Medite FR by Medite Corp.

2.03 FABRICATION

A. Architectural Cabinets, Wood

1. Quality Standard

Where wood cabinets are shown on the Contract Drawings, comply with AWI Section 400 requirements for wood cabinets.

2. Expanded Wood Cabinets, Transparent Finish

Where shown on the Contract Drawings, comply with the following requirements:

a. Grade: Premium.

b. Type of Cabinet Construction: As shown on the Contract Drawings.

c. Wood Species for Exposed Surfaces:

d. Red Oak, rift sawn/cut, unless otherwise shown on the Contract Drawings.

e. Grain Matching: As shown on the Contract Drawings.

f. Wood Species for Semi-Exposed Surfaces:

Match species and cut indicated for exposed surfaces.

B. Architectural Cabinets, Laminate Clad

1. Quality Standard

Where shown on the Contract Drawings, comply with AWI Section 400 for laminate-clad cabinets.

2. Laminate Clad Cabinets: Comply with the following requirements:

a. Grade: Premium

b. Type of Cabinet Construction: As shown on the Contract Drawings.

c. Laminate Cladding

High pressure decorative laminate complying with NEMA LD 3 and as follows:

(1) Colors, Patterns and Finishes

As shown on the Contract Drawings or, if not shown, as selected by Engineer from laminate manufacturer's custom colors, patterns and textures.

d. Laminate Grade for Exposed Surfaces

Provide laminate cladding complying with the following requirements for type of surface and grade.

(1) Horizontal Surfaces Other Than Tops: GP-50 (0.050 inch nominal thickness).

(2) Postformed Surfaces: PF-42 (0.042 inch nominal thickness).

(3) Vertical Surfaces: GP-50 (0.050 inch nominal thickness).

(4) Edges: GP-50 (0.050 inch nominal thickness).

e. Semi-Exposed Surfaces: High pressure laminate, GP-28(0.028 inch nominal thickness)

f. All visible surfaces shall receive plastic laminated stabilizer backing.

C. Cabinet Hardware and Accessory Materials

1. General

Provide cabinet hardware and accessory materials associated with architectural cabinets.

2. Cabinet Hardware

Refer to Contract Drawings for cabinet hardware required for architectural cabinets.

3. Hardware Standard

Comply with ANSI/BHMA A156.9 for items shown on the Contract Drawings by reference to ANSI numbers.

4. Hardware Finishes

Comply with ANSI/BHMA A 156.18 for finishes indicated in this Section or shown on the Contract Drawings by ANSI/BHMA Code Numbers and complying with the following minimum requirements:

a. For exposed hardware comply with requirements for finish and base by ANSI/BHMA Code Number 652 (Satin chromium plated, steel base).

b. For concealed hardware provide manufacturer's standard finish which complies with product class requirements of ANSI/BHMA A156.9.

D. Architectural Countertops

1. Quality Standard: Comply with AWI Section 400 requirements for countertops.

2. Countertop, Transparent Finish

Panel product for transparent finish (wood veneer laminated over various cores) where wood countertops are shown on the Contract Drawings:

a. Grade: Premium

b. Veneer Species

Red Oak, rift cut, unless otherwise shown on the Contract Drawings.

c. Edge Treatment

Lumber matching wood veneer face for species, unless otherwise shown on the Contract Drawings.

3. Countertop, Laminate Clad

High Pressure Decorative Laminate (where laminate countertops are shown on the Contract Drawings):

a. Grade: Premium

b. Laminate Cladding for Horizontal Surface

High pressure decorative laminate complying with NEMA LD 3 and as follows:

(1) Colors, Patterns, and Finishes

As shown on the Contract Drawings or, if not shown, as selected from laminate manufacturer's custom colors, patterns and textures.

(2) Grade: GP-50 (0.050 inch nominal thickness).

c. Edge Treatment. Laminate Finish

Same as laminate cladding on horizontal surfaces, unless otherwise shown on the Contract Drawings.

d. Edge Treatment, Transparent Finish

Transparent finish edge treatment shall match the wood species specified in this Section for wood cabinets and countertops, unless otherwise shown on the Contract Drawings.

E. Solid Plastic Surfacing Countertops

Countertops shall be 1/2 inch thick polymer material, adhesively joined with inconspicuous seams, having edge details as indicated on the Contract Drawings. Tops shall be provided in colors shown on the Contract Drawings or, if not shown, as selected from manufacturer's custom colors, patterns and textures.

F. Solid Plastic Surfacing Wall Cladding/Wainscotting with Silicone Sealant Joints

Wall cladding/wainscotting with flexible joints shall be 1/4 inch thick, with 1/8" wide joints every 30"-60", sealed with silicone sealant matching polymer material color. Wall cladding/wainscotting shall be adhesively applied to solid substrates. Wall cladding/wainscotting shall be provided in colors shown on the Contract Drawings or if not shown as selected from manufacturer's custom colors, patterns and textures.

G. Solid Plastic surfacing Wall Cladding/Wainscotting with Hard Seams

Wall clading/wainscotting with hard seams shall be 1/4 inch thick, with butt joints between sheets made with Joint adhesive. Provide 1/8" silicone filled expansion joints every 10'-15'. Wall cladding/wainscotting shall be attached to solide substrate using silicone sealant. Wall cladding/wainscotting shall be provided in color shown on the Contract Drawings, or if not shown as selected from manufacturer's custom colors, patterns and textures.

H. Closet and Utility Shelving (where shown on the Contract Drawings)

1. Quality Standard: Comply with AWI Section 600.

2. Shelving for Transparent Finish: Comply with the following requirements:

a. Grade: Custom

b. Shelving Material: Birch faced veneer core plywood, unless shown otherwise on the Contract Drawings.

I. Closet and Utility Shelving Hardware (where shown on the Contract Drawings)

1. Adjustable Shelf Standards and Related Supports

Provide standards and supports of type shown on the Contract Drawings which comply with ANSI/BHMA A156.9.

a. Horizontal Slotted Type

Non-mortising, 13/16 inch wide x 3/16 inch high x length indicated, ANSI/BHMA A 156.16 No. B84061, zinc-plated steel.

b. Support Type

Closed shelf rest, ANSI/BHMA A 156.16 No. B84081, zinc-plated steel.

2. Clothes Poles and Supports

Provide steel pipe or tubing cut to lengths required, with standard wrought steel flanges (one with open top), where shown on the Contract Drawings.

a. Size: 1.660 inch O.D., 0.14-inch wall thickness (1-1/2 inches).

(1) Finish: Satin chrome plated, ANSI/BHMA 652.

b. Center Brackets

Combination shelf and closet pole support wrought steel, with manufacturer's standard enamel finish; complying with ANSI/BHMA A156.16, Type B84051.

2.04 CONSTRUCTION FEATURES

A. Wood Moisture Content

Comply with the quality standard requirements referenced in AWI Architectural Woodworking Quality Standards for moisture content of lumber at time of fabrication and for relative humidity conditions in the installation areas.

B. Fabricate woodwork to dimensions, profiles, and details shown on the Contract Drawings with openings and mortises precut, where possible, to receive hardware and other items of Work.

1. Ease edges to a 1/16 inch radius, for corners of cabinets and edges of solid wood (lumber) members less than 1 inch in nominal thickness, 1/8 inch radius for edges of rails and similar members over 1 inch in nominal thickness.

C. Solid Plastic Surfacing Units

Joints shall be formed between components using manufacturer's standard joint adhesive. Joints shall be reinforced with 2-inch wide strips of solid polymer material or other method, as shown on the Contract Drawings. Factory cutouts shall be provided for plumbing fittings and bath accessories as shown on the Contract Drawings. Component edges shall be cut and finished with clean, sharp returns. Contours and radii shall be routed to template, with edges smooth. Defective and inaccurate Work will be rejected. Inlay work shall be performed in accordance with manufacturer's product data, using acrylic or methacrylate inlay material and color shown on the Contract Drawings.

D. Complete fabrication, assembly, finishing, hardware application, and other Work before shipment to the construction site to the maximum extent possible. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at the construction site, provide ample allowance for scribing, trimming and fitting.

E. Pre-Cut Openings

Where possible, fabricate architectural woodwork with pre-cut openings to receive hardware, appliances, plumbing fixtures, electrical Work and similar items. Locate openings accurately and use templates or roughing-in diagrams for proper size and shape. Smooth edges of cutoffs and, where located in countertops and similar exposures seal edges of cutouts with a water-resistant coating.

F. Unless otherwise shown on the Contract Drawings, all visible surfaces shall receive plaster laminate and the back surface shall receive a plastic laminated stabilizer backing.

2.05 SHOP FINISHING

A. Quality Standard: Comply with AWI Section 1500

B. General

The finish of interior architectural woodwork is as specified in this Section.

1. Factory Finishing

To the greatest extent possible, finish architectural woodwork at factory. Defer only final touch-up, cleaning and polishing for time after delivery and installation.

2. Preparations for Finishing

Comply with the quality standard requirements referenced in AWI Architectural Woodworking Quality Standards for sanding, filling countersunk fasteners, sealing of concealed surfaces and similar preparations for finishing of architectural woodwork, as applicable to each unit of Work.

C. Transparent Finish for Wood

Comply with the requirements indicated below for grade, finish system, staining and sheen, with sheen measured on 60-degree gloss meter per ASTM D 523.

1. Grade: Premium.
2. Finish: AWI Finish System TR-6: catalyzed polyurethane.
3. Staining: As shown on the Contract Drawings
4. Sheen: Semi-gloss 55-75 gloss units

PART 3. EXECUTION

3.01 PREPARATION

A. Condition woodwork to the average prevailing humidity conditions in installation areas prior to installing.

B. Do not proceed with woodwork installation until the Engineer has determined that the required ambient temperature and humidity conditions can be maintained.

C. Deliver concrete inserts and similar anchoring devices to be built into substrates, well in advance of substrate construction.

D. Prior to installation of architectural woodwork, examine shop fabricated Work for completion. Complete Work as required, including back priming and removal of packing.

3.02 INSTALLATION

A. Install woodwork plumb, level, true and straight with no distortions and in accordance with AWI Section 1700 for Premium Grade. Shim as required using concealed shims. Install to a tolerance of 1/8 inch in 8 feet-0 inches for plumb and level (including tops); and with no variations in flushness of adjoining surfaces.

B. Form field joints using manufacturer's recommended adhesive, with joints inconspicuous in finished work. Adhere sinks and lavatories to tops using manufacturer's adhesive.

C. Scribe and cut woodwork to fit adjoining Work, and refinish cut surfaces or repair damaged finish at cuts.

D. Fire-Retardant-Treated Wood

Handle, store, and install fire-retardant-treated wood to comply with recommendations of chemical treatment manufacturer, including those for adhesives used to install woodwork.

E. Anchor woodwork to anchors or blocking built-in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation. Except where prefinished fastener heads are shown on the Contract Drawings, use fine finishing nails for exposed nailing, countersunk and filled flush with woodwork, and matching final finish where transparent finish is shown on the Contract Drawings.

F. Cabinets

Install without distortion so that doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessory items as shown on the Contract Drawings. Maintain veneer sequence matching (if any) of cabinets with transparent finish.

G. Tops shall be anchored securely to base units and other support systems.

H. Wood Storage Shelving

Complete the assembly of units and install in the areas where shown on the Contract Drawings, including hardware and accessories shown on the Contract Drawings.

3.03 ADJUSTMENTS

A. Repair damaged and defective woodwork to eliminate defects functionally and visually and, where not possible to repair, replace woodwork to the Engineer's satisfaction. Adjust joinery for uniform appearance.

B. Clean, lubricate and adjust hardware.

C. Clean woodwork on exposed and semi-exposed surfaces. Touch-up shop-applied finishes to restore damaged or soiled areas to the Engineer's satisfaction.

D. Complete the finishing Work specified in this Section to whatever extent not completed at shop, prior to the installation of woodwork.

3.04 PROTECTION

Provide final protection and maintain conditions in a manner which ensures that the architectural woodwork is not damaged or deteriorated at the time of issuance of the Certificate of Final Completion and which is in accordance with the recommendations of the entities performing the fabrication and installation Work specified in this Section.

END OF SECTION

SECTION 06400

CUSTOM CASEWORK

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1 - GENERAL PROVISIONS:

A. Product Data

Manufacturer's data for each product and process specified in this Section and incorporated into items of architectural woodwork during fabrication, finishing, and installation.

B. Fire-Retardant Treatment Data

Manufacturer's instructions for handling, storing, installation, and finish of treated material. Include certification from the treating manufacturer that treated materials comply with the requirements of this Section.

C. Quality Certification

Woodwork manufacturer's (fabricator's) certification, stating that fabricated woodwork complies with quality grades and product requirements in Part 2 of this Section.

D. Shop Drawings

Show location of each item, dimensioned plans and elevations, large scale details, attachment devices and other components.

E. Samples

Submit two of each of the following:

1. Transparent finish lumber; 6 inches x 3/4 inch x 18 inches, for each species and cut, finished on one side and one edge.
2. Lumber or panel products with factory-applied opaque finish, 8 inches x 10 inches.
3. Plastic laminate and/or solid plastic surfacing, 8 inches x 10 inches for each type, color, pattern and surface finish.
4. Exposed cabinet hardware, one unit of each type and finish.

F. Sustainable Design Submittal Requirements:

The Contractor shall submit the Sustainable Design certification items listed herein. Sustainable Design submittals shall include the following:

1. A completed Sustainable Design Materials Certification Form (SDMCF), appended to Division 1 - GENERAL PROVISIONS. Information to be supplied for this form shall include:

   a. Cost breakdowns for the materials included in the Contractor's work. Cost breakdowns shall include total cost plus itemized material costs.
   b. The manufacturing location of the supplied product(s).
   c. The VOC content of all adhesives, sealants, paints and coatings applied on site as part of this work.
   d. Include total cost for all wood products and itemized costs for all FSC-certified wood products.

2. Published product literature or letters of Certification, provided from the product manufacturer on the manufacturer's letterhead, to verify the product information supplied for the SDMCF.

3. Product cut sheets for materials that meet the SDMCF.

4. Material Safety Data Sheets (MSDS), for applicable products. Applicable products include, but are not limited to field-applied adhesives, sealants, carpets, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).

5. The Sustainable Design submittal information shall be assembled into one package per Section or trade, and sent to the Engineer of review.

6. Documentation for all FSC-certified wood products. Provide copies of vendor invoices for each certified wood product, itemizing product costs and FSC chain-of-custody certification tracking numbers

7. Documentation that all plywood, composite wood and agrifiber products installed within the Project's weatherseal do not contain added urea-formaldehyde resins.

END OF APPENDIX "A"

DIVISION 8

SECTION 08110

CUSTOM HOLLOW METAL

PART 1. GENERAL

1.01 SUMMARY

A. This Section specifies the requirements for custom hollow metal Work for doors, frames and related openings; and metal panels and louvers installed therein.

B. Building in of anchors and grouting of frames in masonry construction, if any, is specified in a Division 4 Section of these Specifications.

C. Finish hardware installation for doors is specified in the Section of these Specifications entitled "Finish Hardware".

D. Glazing, if any, of Work of this Section is specified in another Division 8 Section of these Specifications.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

	American Nationals Standards Institute, Inc. (ANSI)
ANSI A 115	Series Door and Frame Preparation
	American Society for Testing and Materials (ASTM)
ASTM A 153	Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A 167	Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
ASTM A 366	Steel, Carbon, Cold-Rolled Sheet, Commercial Quality
ASTM A 525	General Requirements for Steel Sheet, Zinc Coated (Galvanized) by the Hot-Dip Process
ASTM A 526	Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Commercial Quality
ASTM A 569	Steel, Carbon (0.15 maximum percent), Hot-rolled Sheet and Strip, Commercial Quality
ASTM B 117	Method of Salt Spray (Fog) Testing
ASTM C 236	Test Method for Steady-State Thermal Performance of Building Assemblies by Means of a Guarded Hot Box
ASTM E 90	Method for Laboratory Measurement of Airborne-Sound Transmission Loss of Building Partitions

ASTM E 152	Methods for Fire Tests of Door Assemblies
ASTM E 413	Classification for Determination of Sound Transmission Class
ASTM F 476	Test Methods for Security of Swinging Door Assemblies

Door and Hardware Institute (DHI)

Recommended Locations for Builders Hardware for Custom Steel Doors and Frames

National Fire Protection Association (NFPA)

NFPA 80	Fire Doors and Windows

Steel Structures Painting Council (SSPC)

SSPC - PT-2	Cold Phosphate Surface Treatment
SSPC - PT-4	Hot Phosphate Surface Treatment

Underwriters Laboratories, Inc. (UL)

Building Materials Directory

1.03 QUALITY ASSURANCE

A. All materials for Work of this Section shall be from a single manufacturer.

B. Entities performing installation Work of this Section shall have not less than 5 years experience in installation of hollow metal doors, frames and associated fabrications.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow metal Work in cartons or crates to provide protection during transit and storage at the construction site. Inspect hollow metal Work upon delivery for damage. Field repair minor damage provided refinished items are equal in all respects to new Work and acceptable to the Engineer; otherwise, remove and replace items.

B. Store doors and frames at the construction site under cover. Place units on minimum 4-inch high wood blocking. Avoid use of non-vented plastic or canvas shelters which could create a humidity chamber. If cardboard wrapper on door becomes wet, remove carton immediately. Provide 1/4-inch spaces between stacked doors to promote air circulation.

1.05 SUSTAINABLE DESIGN REQUIREMENTS

A. Sustainable Design General Requirements:

1. The Authority requires the Contractor to implement practices and procedures to meet the sustainable design requirements. The Contractor will ensure that the requirements related to these goals, as defined in Division 1 - GENERAL PROVISIONS and the articles below, are implemented to the fullest extent. Substitutions, or other changes to the work proposed by the Contractor, will not be allowed if such changes compromise the stated Sustainable Design Performance Criteria.

B. Sustainable Design Performance Criteria:

1. The post-industrial and/or post-consumer recycled content (by weight) of the hollow metal doors and frames shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

2. The manufacturing location (final assembly) of the hollow metal doors and frames shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

3. The origin of the raw materials from which the hollow metal door and frames were manufactured shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

4. All field-applied interior adhesives, sealants, paints and coatings relating to work of this section shall meet the requirements of Division 1 - GENERAL PROVISIONS.

1.06 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MANUFACTURERS

Subject to compliance with the requirements specified in this Section, provide products of one of the following or approved equal:

A. Hollow Metal and Thermal Rated Doors, Frames and Panels

American Welding & Mfg. Co., Amweld Building Products Division, Niles, OH
Ceco Corporation, Oak Brook, IL
Curries Mfg., Inc., Mason City, IA
Pioneer Industries/Div. CORE Industries, Inc., Carlstadt, NJ

B. Sound Rated Door and Frame Assemblies

Allied Steel Products, Inc., Miami, FL.
Pioneer Industries/Div. CORE Industries, Inc.
Superior Fireproof Door, Inc., Scranton, PA.

2.02 MATERIALS

A. Provide the following, where shown on the Contract Drawings.

1. Interior Hollow Metal Doors, Panels and Frames

Commercial quality, cold rolled carbon steel conforming to ASTM A 366; or hot rolled, commercial quality carbon steel, pickled and oiled conforming to ASTM A 569.

2. Exterior Hollow Metal Doors, Panels and Frames

Commercial quality zinc-coated carbon steel conforming to ASTM A 526 with ASTM A 525, G 90, zinc coating, mill phosphatized.

3. Interior and Exterior Hollow Metal Doors, Panels and Frames - Stainless Steel

a. Frames: Commercial-quality stainless steel, AISI Type 316 L, 14 gauge welded construction, complying with ASTM A 167. Provide non-directional finish to match sample in engineer's office. See door schedule and details for frame configurations

b. Doors and Panels: Commercial-quality stainless steel, AISI Type 316 L, 16 gauge face sheets, complying with ASTM A 167. Provide non-directional finish to match sample in engineer's office.

(1) Stainless steel doors shall be all stainless steel construction; stainless steel clad hollow metal doors will not be accepted.

B. Insulating Material for Hollow Material Doors

Fiberglass, mineral wool, urethane, or similar type material, approved by the Engineer, resistant to fire, vermin, mildew and rot to meet requirements of 2.03 D, E and F of this Section. Provide required cores for fire-rated doors.

C. Supports and Anchors

Fabricate of not less than 16 gage sheet metal. For units to be built into exterior walls, galvanize after fabrication in conformance with ASTM A 153, Class B.

D. Inserts, Bolts and Fasteners

Manufacturer's standard units, except hot-dip galvanize those items to be built into exterior walls in conformance with ASTM A 153, Class C or D, as applicable.

E. Shop Applied Prime Paint

Baked-on-rust inhibiting prime paint capable of passing a 500 hour salt spray and 1000 hour humidity test in accordance with ASTM B 117 as certified by an independent laboratory and suitable as base for finish paint as specified in Section 09910 of these Specifications. Do not prime surfaces of stainless steel, if any.

2.03 CONSTRUCTION FEATURES

A. Provide hollow metal doors which have been pretested and certified by the manufacturer to conform to ASTM F 476 Door Impact Test, Grade 40, Table X5.1.

B. Fire Rated Door Assemblies

1. Where fire-rated door assemblies are shown on the Contract Drawings, provide fire-rated door and frame assemblies that comply with NFPA No. 80; and have been tested, listed and labeled in accordance with ASTM E 152 by UL or other independent testing, inspection and labeling agency approved by the Engineer.

2. All door assemblies in rated construction shall bear a UL label appropriate to the fire resistance requirements of the surrounding partition

C. Oversize Fire-Rated Door Assemblies

For door assemblies required by the Contract Drawings to be fire-rated and exceeding sizes of tested assemblies, provide certificate of label construction from UL or other independent testing and inspection agency approved by the Engineer, indicating that door and frame assembly conforms to the requirements of design, materials and construction as established by individual listings for tested assemblies.

D. Temperature Rise Rating

For stairwell enclosure doors shown on the Contract Drawings, provide doors which have a temperature rise rating of 450 degrees F maximum in 30 minutes of fire exposure.

E. Sound Rated (Acoustical) Assemblies

Where acoustical doors are shown on the Contract Drawings, provide door and frame assemblies which have been fabricated as sound-reducing type, tested in accordance with ASTM E 90 and STC classified in accordance with ASTM E 413. Unless otherwise shown on the Contract Drawings, provide acoustical assemblies with sound ratings of STC 33 or better.

F. Thermal-Rate (Insulating) Assemblies

For exterior doors and other locations where shown on the Contract Drawings, provide hollow metal doors which have been fabricated as thermal insulating units and tested in accordance with ASTM C 236. Provide thermally insulated cores. Sizes as shown on Contract Drawings

1. Unless otherwise shown on the Contract Drawings, provide unit "U-value" rating of 0.24 BTU/hr./sq. ft./degree F, or better.

2.04 FABRICATION

A. General

1. Fabricate hollow metal units rigid and free from defects, warps or buckles. Accurately form metal to sizes and profiles shown on the Contract Drawings. Factory fit and assemble units where possible. Identify Work that cannot be permanently factory assembled before shipment and provide required connector splines or plates to assure proper assembly at the construction site. Weld exposed joints continuously; grind and make smooth, flush and invisible. Do not use metallic filler to conceal manufacturing defects.

2. Fasteners

Unless otherwise shown on the Contract Drawings, provide countersunk flat Phillips or Jackson heads for exposed screws and bolts.

B. Finish Hardware Preparation

1. Prepare hollow metal doors and frames to receive mortised and concealed finish hardware including cutouts, reinforcing, drilling and tapping in accordance with approved finish hardware schedule and templates provided by hardware supplier. Comply with applicable requirements of ANSI A 115 series specifications.

2. Reinforce hollow metal units to receive surface-applied hardware. At the Contractor's option, drilling and tapping for surface-applied finish hardware may be done at the construction site.

3. Unless otherwise shown on the Contract Drawings, locate finish hardware in accordance with "Recommended Locations for Builders Hardware for Custom Steel Doors and Frames" published by DHI.

C. Shop Painting (except at stainless steel doors and frames)

1. Clean steel surfaces of mill scale, rust, oil, grease, dirt and other foreign materials before application of paint.

2. Apply pretreatment to cleaned metal surfaces using cold phosphate solution (SSPG-PT-2) or hot phosphate solution (SSPC-PT-4).

3. Apply shop coat of prime paint within time limits recommended by pretreatment manufacturer.

   a. Full immersion dip coat on frames.

   b. Smooth, even, full coverage spray coat on doors, panels and louvers to a uniform dry film thickness of not less than 2.0 mils.

D. Doors and Panels

1. Unless otherwise shown on the Contract Drawings, provide flush design doors 1 3/4 inch thick, fully welded seamless construction. Provide hollow metal panels, if any, of same materials, construction and finish as hollow metal doors.

   a. Interior Doors: Minimum 18 gage face sheets

   b. Exterior Doors: Minimum 16 gage face sheets

   c. For single-acting swing doors, bevel vertical edge 1/8 inch in 2 inches. For double-acting swing doors, round vertical meeting edge with 2 1/8 inch radius.

2. Reinforce inside of doors with continuous vertical formed steel sections not less than 22 gage spaced 6 inches o.c. Spot weld at not more then 5 inches o.c. to both face sheets.

3. Reinforce tops and bottoms of doors with 16 gage horizontal steel channels welded continuously to outer sheets. At exterior doors, close top and bottom edges with additional 16 gage steel channels as integral part of door construction to provide weather seal. Provide weep hole openings in door bottoms to permit escape of entrapped moisture.

4. Unless otherwise required for acoustical or thermal assemblies, provide filler of fiberboard, mineral wool board or other insulating material solidly packed to the full door height, to fill voids between inner core reinforcing members.

5. Fit non-fire-rated hollow metal doors in their respective frames, with the following clearances:

   a. Jambs and head: 1/8 inch

   b. Meeting edges, pairs of doors: 1/8 inch

   c. Bottom: 3/8 inch, where no threshold or carpet

   d. Bottom: 1/8 inch, at threshold or carpet

6. Fit fire-rated doors with clearances as specified in NFPA 80.

7. Stainless Steel Doors

Stainless Steel doors shall be fabricated of single sheets of stainless steel, gage as specified above, with seamless construction and honeycomb cores. Provide labeled stainless steel door assemblies, in the required fire ratings - where fire-rated assemblies are shown. Provide #4 polish on exposed surfaces with vertical grain direction unless shown otherwise.

a. Reinforce tops and bottoms of doors with stainless steel 16 gage, horizontal channels, welded continuously to core faces. For exterior stainless steel doors, close top and bottom edges to provide weather seal.

E. Frames

1. Provide hollow metal frames for doors, transoms, side-lights and other openings as shown on the Contract Drawings.

2. Fabricate frames of full-welded unit construction with corners mitered, reinforced and continuously welded the full depth and width of frame. Terminate bottom of frames at finished floor surface. Knock-down type frames are not permitted.

a. Interior openings: Minimum 16 gauge

b. Exterior openings: Minimum 14 gauge

c. For openings over 4 feet wide, provide continuous 12-gauge steel channel stiffener for full width of opening, welded to back of frame at head.

3. Provide removable spreader bar across bottom of frames, tack weld to jambs and mullions.

4. Except on interior doors listed in Section 08715 Appendix "A" Finish Hardware Schedule of these Specifications to receive acoustic, weather or smoke seals, drill stop in frame strike jamb to receive 3 silencers on single-door frames and drill frame head stop to receive 2 silencers on double-door frames. Install plastic plugs to keep holes clear until installation of silencers.

5. Provide 26 gage steel plaster guards welded to frame at back of hardware mortise on frames to be set in mortar or plaster construction.

6. Mullions and Transom Bars

Provide closed or tubular mullions and transom bars where shown on the Contract Drawings. Reinforce joints between frame members with concealed clip angles of same metal thickness as frame. At removable units provide exposed fasteners; at fixed units, fasten by butt welding.

7. Form frames of stainless steel sheets with #4 polish for openings indicated to receive stainless steel doors, gage as specified above.

F. Frame Anchors

1. Floor Anchor

Provide 14 gage galvanized steel sheet clip anchor welded to jambs, with 2 holes to receive fasteners and provision for 2 inch height and adjustment.

2. Jamb Anchors

a. Masonry construction

Adjustable, flat, corrugated or perforated, T-shaped to suit frame size, with leg not less than 2 inches wide by 10 inches long. Furnish minimum 3 anchors per jamb up to 7 feet - 6 inches high; 5 anchors for greater than 7 feet - 6 inches and up to 8 feet - 0 inches; over 8 feet - 0 inches one additional anchor for each 24 inches or part thereof.

b. Metal stud partitions

Insert type with notched clip to engage stud, welded to back of frames. Provide at least 4 anchors each jamb up to 7 feet - 6 inches height; 5 anchors for greater than 7 feet - 6 inches and up to 8 feet - 0 inches; over 8 feet - 0 inches one additional anchor for each 24 inches or part thereof.

c. In-place concrete or masonry

Anchor jambs with a minimum 3/8-inch concealed bolts into expansion shield or inserts at 6 inches from top and bottom and 26 inches o.c.

G. Finish Hardware Reinforcement

1. Reinforce doors and frames for required finish hardware as follows:

a. Hinges and Pivots

Steel plate 3/16 inch thick by 1 1/2 inch wide; 6 inches longer than hinge or pivot, secured by not less than 6 spot-welds.

b. Mortise Locksets and Dead Bolts: 14 gauge steel sheet, secured with not less than 2 spot-welds.

c. Strike plate clips: Steel plate 3/16 inch thick by 1 1/2 inch wide by 3 inches long.

d. Flush Bolts: 12 gauge steel sheet, secured with not less than 2 spot-welds.

e. Surface-Applied Closers and Coordinators

12-gauge steel sheet, secured with not less than 6-spot welds. Provide reinforcement for surface closers on all doors and frames.

f. Concealed Closers

Removable steel access plate, 12-gauge internal reinforcement of size and shape required, and enclosing housing to keep closer pocket free of mortar or other materials.

g. Push Plates and Grab Bars

16-gauge steel sheet (except when sex screws are scheduled), secured with not less than 2 spot welds.

h. Surface Panic Devices

14-gauge sheet steel (except when sex screws are scheduled), secured with not less than 2 spot welds.

H. Door Louvers

1. Unless otherwise shown on Contract Drawings, for interior doors provide sightproof, stationary type of inverted V-shaped blades formed of 18 gage cold-rolled steel. Prime painted after fabrication - except for stainless steel doors (where shown on the Contract Drawings). At stainless steel doors, provide 18 gage stainless steel blades, finish to match door.

2. For fire-rated doors, provide tightly fitted, spring-loaded automatic closing louvers with operable blades retained by fusible links. Rating label shall be the same as door units.

3. Mount louvers flush into doors without overlapping moldings on surface of door facing sheets.

I. Louvered Panels

1. Provide for installation in hollow metal or stainless steel frames, where shown on the Contract Drawings.

2. Interior

Not less than 18-gauge cold-rolled steel sheet, sightproof inverted V-shaped blades and U-shaped frames. Space blades not more than 3 inches o.c. with internal support as required. Assemble units by welding. Prime paint after fabrication - except for panels in stainless steel frames. Panels in stainless steel frames shall be constructed of 18 gage stainless sheet, finish to match frame.

3. Exterior

Not less than 16 gage galvanized steel sheet, stationary, weatherproof Z-shaped blades and U-shaped frames. Space blades not more than 1-1/2 inches o.c. with internal support as required. Provide removable 14 x 18-inch bronze wire mesh insect screens on interior side of frame with rigid formed galvanized steel frame surround - except for panels in stainless steel frames. Panels in stainless steel frames shall be constructed of 16 gage stainless sheet, finish to match frame.

J. Transom Panels

1. Provide for installation in hollow metal or stainless steel frames, where shown on the Contract Drawings.

2. Interior

Not less than 18 gage cold-rolled steel, prime painted after fabrication - except for transoms in stainless steel frames. Panels in stainless steel frames shall be constructed of 18 gage stainless sheet, finish to match frame.

3. Exterior

Not less than 16 gage cold-rolled steel, prime painted after fabrication - except for transoms in stainless steel frames. Panels in stainless steel frames shall be constructed of 16 gage stainless sheet, finish to match frame.

K. Astragals

Install Z-shape on double-door active leaf 3/4-inch x 1-3/4-inch wide, 12-gauge. Furnish with countersunk holes located at 12 inches o.c., fastened with flat head machine screws. Weld fill screw heads after installation and grind smooth. Tack welding may be substituted for machine screws.

L. Vision Panel

Minimum 20-gauge glazing stops with butt corner joints, flush with face of door or frame, secured with countersunk tamperproof machine screws spaced at a maximum of 8 inches on centers on security side of door or frame.

PART 3. EXECUTION

3.01 PREPARATION

Prior to frame installation, clean damaged areas of prime coat and apply touch-up of compatible air-drying primer at surfaces which will be concealed.

3.02 INSTALLATION

A. Install in accordance with approved shop drawings, manufacturer's data and as specified in this Section.

B. Provide anchorage devices where required for securing hollow metal frames to in-place construction. Use drilled-in anchorage devices and machine screws. Do not set floor anchors with powder-actuated fasteners.

C. Placing Frames

1. Set in position shown on the Contract Drawings, plumbed, aligned and braced until permanent anchors are set. After wall construction is complete, remove temporary braces and spreaders leaving surfaces smooth and undamaged.
2. Place frames at fire-rated openings in accordance with NFPA 80.
3. Grout solid all door frames shown to be installed in CMU walls and partitiions.
4. Make field splices in frames, if any, as detailed on approved shop drawings. Weld and finish to match shop Work.

D. Door Installation: Maintain door clearances in accordance with 2.04 D.5 and D.6 of this Section.

3.03 FIELD ADJUSTMENTS

A. Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.

B. Check and readjust operating finish hardware items. Remove and replace doors or frames which are warped, bowed or otherwise unacceptable to the Engineer.

C. Stainless Steel Touch-Up

Immediately after erection, smooth any abraded areas of stainless steel and polish to match undamaged finish.

END OF SECTION

SECTION 08110

CUSTOM HOLLOW METAL

APPENDIX "A"

SUBMITTALS

A. Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1 - GENERAL PROVISIONS:

1. Shop Drawings

   Include details of each frame type, elevation of door design, types, hardware reinforcement, details of construction, anchorage details, and door schedules covering doors and frames using same opening reference number shown on the Contract Drawings.

2. Samples:

   a. Door

      One 1 foot 0 inch x 1 foot 0 inch corner section with hinge mortise and reinforcement showing internal construction.

   b. Frame

      One 1 foot 0 inch x 1 foot 0 inch corner section showing welded joint of head to jamb. Include hinge mortise, reinforcement and plaster guard in one rabbet.

   c. Samples submitted shall be of the production type and represent the quality of Work to be installed.

B. Certifications

1. Evidence of installer qualifications as required by 1.03 of this Section.
2. Laboratory certification of prime paint, as required by 2.02 E this Section.
3. Certification of the following as required by 2.03 of this Section.
   a. Door impact test
   b. Oversize fire-rated door assemblies, if any
   c. Sound transmission class (STC), if any
   d. Insulating (U-value), if any

C. Sustainable Design Submittal Requirements:

The Contractor shall submit the Sustainable Design certification items listed herein. Sustainable Design submittals shall include the following:

1. A completed Sustainable Design Materials Certification Form (SDMCF), appended to Division 1 - GENERAL PROVISIONS. Information to be supplied for this form shall include:

a. Cost breakdowns for the materials included in the Contractor's work. Cost breakdowns shall include total cost plus itemized material costs.

b. The amount of post-consumer and/or post-industrial recycled content in the supplied product(s).

c. The manufacturing location of the supplied product(s).

d. The location (source) of the raw materials used to manufacture the supplied product(s).

e. The VOC content of all interior adhesives, sealants, paints, and coatings applied on site as part of this work.

2. Published product literature or letters of Certification, provided from the product manufacturer on the manufacturer's letterhead, to verify the product information supplied for the SDMCF.

3. Product cut sheets for materials that meet the SDMCF.

4. Material Safety Data Sheets (MSDS), for applicable products. Applicable products include, but are not limited to field-applied adhesives, sealants, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).

5. The Sustainable Design submittal information shall be assembled into one (1) package per Section or trade, and sent to the Engineer.

END OF APPENDIX "A"

DIVISION 7

SECTION 07465

DECORATIVE GLASS PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. Section specifies interior decorative and specialty glass wall panels to be installed over gypsum drywall backup construction.

B. Related Sections:

1. Division 9 Section "Gypsum Drywall" for backup wall construction.

1.2 REFERENCES

The following is a listing of the publications referenced in this Section:

American Architectural Manufacturers Association (AAMA)

AAMA 611 Specification for Anodized Architectural Aluminum.

American Society for Testing and Materials (ASTM)

ASTM B 209 Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

American Welding Society Inc. (AWS)

AWS D1.2 Structural Welding Code – Aluminum.

National Association of Architectural Metal Manufacturers (NAAMM)

Metal Finishes Manual for Architectural and Metal Products.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by manufacturer.

B. Testing Agency Qualifications: Qualified according to ASTM E 329 for testing indicated.

C. Source Limitations:
1. Obtain each type of decorative panel from single source.
2. Obtain each type of specialty glass panel from single source.

D. Preconstruction Compatibility and Adhesion Testing: Submit samples of materials that will contact structural adhesives/sealants to adhesive/sealant manufacturers for testing indicated below:

1. Use manufacturer's standard test methods to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of adhesives/sealants to substrates.

   a. Perform tests under environmental conditions replicating those that will exist during installation.
2. Schedule enough time for testing and analyzing results to prevent delaying the Work.
3. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures, including use of specially formulated primers.

E. Perform pull-out tests on a minimum of three representative panel samples attached to back-up construction identical to that to be used in the final construction. Panels must withstand a pull-out value of 100 pound-feet with no noticeable affects.

F. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.

1. Build mockup of typical wall panel grouping, as shown on Contract Drawings; full thickness, including, supports, attachments, and accessories.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Engineer specifically approves such deviations in writing.
3. Approved mockups may become part of the completed Work if undisturbed at time of Final Completion.

G. Preinstallation Conference: Conduct conference at construction site.

1. Meet with Engineer, decorative and specialty glass panel Installer, decorative and specialty glass panel manufacturer's representatives, drywall Installer, and installers whose work interfaces with or affects panels including installers of doors, windows, and other incidental items.
2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review methods and procedures related to decorative and specialty glass panel installation, including manufacturer's written instructions.
4. Examine substrate/support conditions for compliance with manufacturer's requirements including alignment between and attachment to structural members.
5. Review wall penetrations, openings, and condition of other construction that will affect decorative and specialty glass panels.
6. Review temporary protection requirements for decorative and specialty glass panel assembly during and after installation.
7. Review decorative and specialty glass panel observation and repair procedures after installation.

H. Welding Standards
Comply with applicable provisions of AWS D1.1 *Structural Welding Code – Steel* and AWS D1.2 *Structural Welding Code – Aluminum.*

I. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and if pertinent, has undergone recertification.

J. All welders shall be licensed in the state in which the Work is to be performed.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver components, decorative and specialty glass panels, and other manufactured items undamaged and un-deformed. Package panels for protection during transportation and handling.

B. Unload, store, and erect decorative and specialty glass panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack decorative and specialty glass panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store panels to ensure dryness, with positive slope for drainage of water. Do not store panels in contact with other materials that might cause staining, denting, or other surface damage.

1.5 PROJECT CONDITIONS

A. Environmental Limitations: Proceed with installation only when existing and forecasted temperature and humidity conditions permit assembly of decorative and specialty glass panels to be performed according to manufacturer's written instructions and warranty requirements

B. Field Measurements: Verify locations of structural members and wall opening dimensions by field measurements before decorative and specialty glass panel fabrication and indicate measurements on Shop Drawings.

1.6 SUSTAINABLE DESIGN REQUIREMENTS

A. Sustainable Design General Requirements

1. The Authority requires the contractor to implement practices and procedures to meet the sustainable design requirements. The contractor shall ensure that the requirements related to these goals, as defined in Division 1 - GENERAL PROVISIONS, are implemented to the fullest extent. Substitutions or other changes to the work proposed by the contractor will not be allowed if such changes compromise the stated sustainable design performance criteria.

1.7 SUBMITTALS

For submittal requirements, see Appendix "A" to this Section.

1.8 WARRANTY

A. Special Warranty: Manufacturer's form in which manufacturer agrees to repair or replace components of decorative and specialty glass panel assemblies that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

   a. Structural failures, including rupturing, cracking, or puncturing.
   b. Deterioration of metals and other materials beyond normal weathering.

2. Warranty Period: Two years from date of issuance of Certificate of Final Completion.

3. Warranty shall run to the benefit of the Authority and shall grant the Authority a direct right of action against the manufacturer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: The aluminum frame and trim for the decorative glass wall panels for assemblies is based on products of Thin Stone Systems, LLC. Contact: Francis Cox; tel. 973-882-7377. Subject to compliance with requirements, provide the named product or a comparable product by one of the following:
   1. Construction Specialties. Contact: George Ennesser; tel. 908-272-5200, ext. 4973.
   2. JE Berkowitz. Contact: Brian Larsen; tel. 856-456-7800.

B. Subject to compliance with requirements, provide decorative glass panels by one of the following, or approved equal:
   1. Architectural Art Glass, Inc. Contact: Ken Von Roenn; tel. 800-795-9429.
   2. Bendheim. Contact: Donald Jayson; tel. 800-835-5304, ext. 302.
   3. Goldray. Contact: Greg Saroka; tel. 403-816-4653.
   4. Standard Bent Glass Corp.; tel. 724-287-3747.
   5. Vitre. Contact: Robert Wessel; tel. 212-706-7683.

C. Subject to compliance with requirements, provide specialty glass panels where noted on the Contract Drawings by the following, or approved equal:
   1. Cricursa Cristales Curvados S.A.; USA contact: Warren Cirulnick of Artexture
      Tel. 212-265-8400
      Spain contact: Beatriz Fernandez
      Tel. +34 - 93 840-4470

2.2 MATERIALS

A. Aluminum Sheet: ASTM B 209. Alloy and temper as recommended by manufacturer for application.

B. Aluminum Extrusions: ASTM B 221, alloy and temper recommended by manufacturer for type of use and finish indicated.

C. Decorative Glass Panels

1. Glass panels shall be 5/16" thick laminated glass. Glass shall be made up of two panes of 1/8 inch thick glass, laminated with a resin interlayer. The glass panel exposed to view (Lite No. 1) shall be low iron annealed glass. The interior pane (Lite No.2) shall be annealed glass. Decorative glass shall match sample in Engineer's office.

2. Provide finish on glass panes as follows:

3. Surface #1 shall be acid etched.

4. Surface #2 shall be back painted with a custom color as selected by Engineer. Custom color coating system shall be an opaque coating.

5. Surface #3 – no special finish required

6. Surface #4 – prepare surface as required for adhesion to support system according to Manufacturer's recommendations.

7. All exposed edges of the panel exposed to view shall be polished and beveled to match sample in Engineer's office.

D. Specialty Glass Panels

See Contract Drawings for locations and details of specialty glass panels. Where noted, provide the following or approved equal:

1. Cricursa Cridercor Sentryglass Expressions
2. Cricursa Crisunid

E. Panel Adhesive/Sealant: ASTM C 920; elastomeric polyurethane, polysulfide, or silicone sealant; of type, grade, class, and use classifications required to secure decorative and specialty glass panels as recommended in writing by panel manufacturer.

2.3 MISCELLANEOUS MATERIALS

A. Panel Fasteners: Self-tapping screws; bolts and nuts; self-locking rivets and bolts; end-welded studs; and other suitable fasteners designed for applications indicated. Provide exposed fasteners, if any, with heads matching color of metal wall panels by means of plastic caps or factory-applied coating. Provide EPDM, PVC, or neoprene sealing washers.

2.4 CONSTRUCTION FEATURES

A. The decorative glass panel wall system consists of a 5/16" laminated glass panel as described in Section 2.2. C of this specification with a clear anodized extruded structural aluminum framing system shop-applied to the back of the laminated glass panel and all necessary clips, wall runners, anchors etc. as necessary for the installation of the panels.

B. The system shall incorporate panel perimeter frames shaped to provide a minimum 1/8" aluminum edge protection on all edges of glass panels.

C. The system shall be designed so that individual panels are independently removable and replaceable without disturbing adjacent panels.

D. Form all horizontal and vertical panel-to-panel joints with removable recessed aluminum closure pieces as per architectural details. The system shall be designed to provide automatic control of the typical horizontal and vertical joint widths to guarantee consistent dimensional accuracy with a method to compensate for accumulated inconsistencies of actual field dimensions.

E. The decorative glass wall panel system shall consist of various extruded aluminum shapes, performing as perimeter frames, stiffeners, corner angle supports and mating clips and anchors, and which shall attach the framed panels to the structure. The frames and stiffeners shall be shop-applied to the fascia panels using a combination of high performance acrylic adhesive double-sided tape and structural silicone or other acceptable sealant.

F. Aluminum shall have a clear anodized finish, as specified below.

2.5 FABRICATION

A. General: Fabricate and finish decorative and specialty glass panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes, as necessary to fulfill indicated requirements as specified herein. Comply with dimensions and profiles shown on the Contract Drawings.

B. Fabricate panels to the following dimensional tolerances:

1. Length and Width: Plus or minus 0.032 inch up to 48 inches; 0.064 inch more than 48 inches.
2. Diagonal: Plus or minus 0.1875 inch.
3. Panel Bow: Not more than 0.2 percent of panel width or length up to 0.1875 inch maximum.
4. Squareness: 0.1875-inch difference between diagonal measurements.
5. Camber: 0.032 inch.

2.6 FINISH REQUIREMENTS

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

D. Aluminum Finishes

1. Comply with NAAMM's *Metal Finishes Manual for Architectural and Metal Products* for recommendations relative to application and designations of aluminum, stainless steel and copper alloy finishes, except as otherwise shown on the Contract Drawings.
2. Protect aluminum finishes on exposed surfaces from damage by application of strippable temporary protective covering prior to shipment.
3. Aluminum Finishes:
4. Finish designations prefixed by "AA" shall conform to the system established by the Aluminum Association for designating aluminum finishes, listed in NAAMM's *Metal Finishes Manual for Architectural and Metal Products*.
5. Anodized Finish

a. Class I Clear Anodic: AA M12-C22-A41 (Mechanical Finish: as fabricated, nonspecular; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear film 0.7 mil or thicker), complying with AAMA 611.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, decorative and specialty glass panel supports, and other conditions affecting performance of the Work.

B. Examine stud wall framing to verify that angles, channels, studs, and other panel support members and anchorage have been installed within alignment tolerances required by decorative and specialty glass panel manufacturers.

C. Ensure that stud wall framing is plumb, dimensioned and positioned according to Contract Drawings and approved Shop Drawings.

D. Verify that gypsum drywall joints are supported by framing or blocking and that installation is within flatness tolerances required by decorative and specialty glass panel manufacturers.

E. Examine roughing-in for components and systems penetrating decorative and specialty glass panels to verify actual locations of penetrations relative to seam locations of panels before installation.

F. Provide all necessary field dimensions to the fabricator prior to panel fabrication.

G. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

H. Proceed with installation only after detrimental conditions have been corrected.

3.2 PREPARATION

A. Miscellaneous Framing: Install aluminum closures, frames, furring, and other miscellaneous decorative and specialty glass panel support members and anchorage according to panel manufacturer's written instructions.

3.3 DECORATIVE AND SPECIALTY GLASS PANEL INSTALLATION

A. General: Install decorative and specialty glass panels according to manufacturer's written instructions in orientation, sizes, and locations shown on Contract Drawings. Install panels perpendicular to girts and subgirts unless otherwise indicated. Anchor panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Commence decorative and specialty glass panel installation and install minimum of 300 sq. ft in presence of factory-authorized representative.

2. Shim or otherwise plumb substrates receiving decorative and specialty glass panels.

B. Fasteners:

3. Use aluminum or galvanized-steel fasteners for surfaces exposed to view.

C. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action as recommended by decorative and specialty glass panel manufacturers.

D. Attachment System, General: Install attachment system required to support decorative and specialty glass panels and to provide a complete wall system, including subgirts, perimeter extrusions, tracks, trim, closure panels, panel clips, and anchor channels.

E. Clip Installation: Attach panel clips to supports at locations, spacing, and with fasteners recommended by manufacturer. Attach flanges of decorative and specialty glass panels to panel clips with fasteners, as recommended by manufacturers.

3.4 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align decorative and specialty glass panel units within installed tolerance of 1/4 inch in 20 feet, nonaccumulative, on level, plumb, and location lines as indicated and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

3.5 CLEANING

A. Remove temporary protective coverings and strippable films, if any, as decorative and specialty glass panels are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of decorative and specialty glass panel installation, clean finished surfaces as recommended by panel manufacturer. Maintain in a clean condition during construction.

END OF SECTION

DIVISION 7

SECTION 07465

DECORATIVE GLASS PANELS

APPENDIX "A"

SUBMITTALS

1. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of decorative and specialty glass panel and accessory.

2. Shop Drawings: Show fabrication and installation layouts of decorative and specialty glass panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details. Distinguish among factory-, shop-, and field-assembled work.
   a. Accessories: Include details of the following items, at a scale of not less than 1-1/2 inches per 12 inches:
      1) Closures and trim.
      2) Anchorage systems.
      3) Reveals.

2. Samples:
   a. Samples for Initial Selection: Decorative and specialty glass panels, with finished edges. Size to be 12" X 12."
   b. Samples for Verification: Decorative and specialty glass panels, with finished edges – set in extruded aluminum frames. Size to be 24" X 24."
   c. Miscellaneous Samples: Submit extruded aluminum frame, anchors, accessories, adhesives, substrates, shims, and miscellaneous materials.

3. Submit results of pull-out tests.

4. Coordination Drawings: Exterior elevations, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

   a. Decorative and specialty glass panels and attachments.

   b. Stud framing.

   c. Wall-mounted items including doors, windows, louvers, and lighting fixtures.

   d. Penetrations of wall by pipes and utilities.

5. Qualification Data: For Installer and testing agency.

6. Compatibility and Adhesion Test Reports: From adhesive/sealant manufacturer, indicating the following:

   a. Adhesive/sealant materials have been tested for compatibility and adjoining materials.

   b. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.

7. Maintenance Data: For decorative and specialty glass panels to include in maintenance manuals.

8. Warranties: Sample of special warranties.

9. Sustainable Design Submittal Requirements:

   The Contractor shall submit the Sustainable Design certification items listed herein. Sustainable Design submittals shall include the following:

   a. A completed Sustainable Design Materials Certification Form (SDMCF), appended to Division 1 - GENERAL PROVISIONS. Information to be supplied for this form shall include:

      (1) Cost breakdowns for the materials included in the Contractor's work. Cost breakdowns shall include total cost plus itemized material costs.

      (2) The manufacturing location of the supplied product(s).

      (3) The location (source) of the raw materials used to manufacture the supplied product(s).

   b. Published product literature or letters of Certification, provided from the product manufacturer on the manufacturer's letterhead, to verify the product information supplied for the SDMCF.

   c. Product cut sheets for materials that meet the SDMCF.

   d. Material Safety Data Sheets (MSDS), for applicable products. Applicable products include, but are not limited to field-applied adhesives, sealants, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).

e. The Sustainable Design submittal information shall be assembled into one (1) package per Section or trade, and sent to the Engineer.

END OF APPENDIX "A"

DIVISION 9

SECTION 09270

DRYWALL SHAFT SYSTEMS

PART 1. GENERAL

1.01 SUMMARY

A. This Section specifies requirements for interior drywall shaft, stair and elevator enclosures consisting of non-load-bearing, fire-resistance rated, steel framed gypsum board assemblies.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

	American Iron and Steel Institute (AISI)
AISI/COS/ NASPEC	North American Specification for the Design of Cold-Formed Steel Structural Members.
	American National Standards Institute (ANSI)
ANSI A 108.11	Specifications for Interior Installation of Cementitious Backer Units.
ANSI A 118.9	Test Methods and Specifications for Cementitious Backer Units.
	American Society for Testing and Materials (ASTM)
ASTM A 653	Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron-Alloy-Coated (Galvannealed) by the Hot-Dip Process.
ASTM C 473	Test Methods for Physical Testing of Gypsum Panel Products.
ASTM C 475	Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
ASTM C 645	Specification for Nonstructural Steel Framing Members.
ASTM C 665	Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
ASTM C 754	Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
ASTM C 834	Specification for Latex Sealants.
ASTM C 840	Specification for Application and Finishing of Gypsum Board.
ASTM C 919	Practice for Use of Sealants in Acoustical Applications.
ASTM C 954	Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.
ASTM C 1002	Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.

ASTM C 1047	Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
ASTM C 1177	Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
ASTM C 1178	Specification for Glass Mat Water-Resistant Gypsum Backing Panel.
ASTM C 1396	Specification for Gypsum Board.
ASTM D 3273	Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
ASTM E 90	Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
ASTM E 119	Test Methods for Fire Tests of Building Construction and Materials.
ASTM E 413	Classification for Rating Sound Insulation.
	Gypsum Association (GA)
GA-216	Specifications for the Application and Finishing of Gypsum Board.
GA-600	Fire Resistance Design Manual.
	Underwriters Laboratories Inc. (UL)
	Fire Resistance Directory.

1.03 DESIGN AND PERFORMANCE REQUIREMENTS

A. Design Criteria

1. Gypsum board shaft-wall systems shall be installed strictly in accordance with the Contract Drawings to withstand the full air pressure design loads shown for maximum heights of partitions shown without failing and while maintaining an airtight and smoke-tight seal.

   a. Evidence of failure includes deflections exceeding limits indicated, bending stresses causing studs to break or to distort, and end-reaction shear causing runners (track) to bend or to shear and studs to become crippled.

2. Gypsum board shaft-wall systems for horizontal duct enclosures shall be installed strictly in accordance with Contract Drawings and shall be capable of spanning distances shown on the Contract Drawings within the deflection limits indicated.

3. Deflection Limit

   As shown on the Contract Drawings or, if not shown, not more than L/240 of span of framing at minimum 5 lbf per square foot, or higher load per square foot as required by air pressure design loads.

B. Fire-Resistance Ratings

Gypsum board shaft-wall systems shall be identical to those indicated by reference to GA File Numbers in GA-600 or to design designations in UL's *Fire Resistance Directory*, tested per ASTM E 119.

C. Sound Transmission Ratings

Installed gypsum board shaft-wall systems shall be identical to those tested by the manufacturer to achieve the minimum STC rating shown on the Contract Drawings or, if not shown, not less than 35 STC, tested in accordance with ASTM E 90 and classified in accordance with ASTM E 413 by a qualified independent testing agency.

1.04 ENVIRONMENTAL REQUIREMENTS

A. General

Comply with the following ASTM C 840 requirements for environmental conditions before, during and after application of gypsum board:

1. Room Temperatures

For nonadhesive attachment of gypsum board to framing, maintain not less than 40 deg F. For adhesive attachment and for finishing of gypsum board, maintain not less than 50 deg F for 48 hours before application and continuously after until dry. Do not exceed 95 deg F room temperature when using temporary heat sources.

2. Ventilation

Ventilate building spaces as required to remove excess water for drying of joint treatment material immediately after its application. Avoid drafts during dry, hot weather to prevent too-rapid drying.

B. Install gypsum drywall products after installation areas are enclosed and meet requirements of 1.04 A.1 and 2.

1.05 QUALITY ASSURANCE

A. Single Source Responsibility

1. Obtain steel framing components and gypsum board components of shaft-wall systems from a single approved manufacturer.

2. Obtain trim accessories from either the same manufacturer that supplies gypsum board or from a manufacturer acceptable to gypsum board manufacturer.

B. Mock-ups

Prior to finishing room-side gypsum board assemblies, prepare field mock-up for review and acceptance by the Engineer. Mock-ups shall demonstrate qualities of materials and execution. Mock-ups accepted by the Engineer may be incorporated into the finished Work.

1. Prepare mock-ups of the following:

a. Exposed Locations: Room-side and finished shaft-side of stairwell enclosures. Show each level of required gypsum board finish in accordance with 3.03 F.

2. Mock-up Size: Minimum 100 sq. ft. in surface area.

3. Simulate finished lighting conditions for review of in-place Work to receive a Level 4 or 5 finish.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in the manufacturer's original, unopened packages, containers or bundles bearing brand name and identification of manufacturer or supplier.

B. Store materials inside, under cover and in a manner to keep them dry, protected from weather, direct sunlight, surface contamination, corrosion and damage from construction traffic and other causes. Neatly stack gypsum boards flat to prevent sagging.

C. Handle gypsum boards to prevent damage to edges, ends and surfaces. Protect metal trim accessories from being bent or damaged.

1.07 SUSTAINABILITY DESIGN REQUIREMENTS

A. Sustainable Design General Requirements

1. The Authority requires the Contractor to implement practices and procedures to meet the sustainable design requirements. The Contractor shall ensure that the requirements related to these goals, as defined in Division 1 - GENERAL PROVISIONS and the articles below, are implemented to the fullest extent. Substitutions, or other changes to the work proposed by the Contractor, will not be allowed if such changes compromise the stated Sustainable Design Performance Criteria.

B. Sustainable Design Performance Criteria

1. Gypsum shaftwall products shall contain a minimum of 5 percent (by weight) recycled content, calculated by adding the post-consumer recycled content percentage to one-half of the post-industrial recycled content percentage. Certify the recycled content in accordance with the Sustainable Design Submittal Requirements below.

2. All mineral wool insulation products shall contain minimum 75 percent combined post-consumer and post-industrial recycled content, and shall be documented in accordance with the Sustainable Design Submittal Requirements specified herein.

3. Steel framing and support members shall contain a minimum of 25 percent (by weight) recycled content, calculated by adding the post-consumer recycled content percentage to one-half of the post-industrial recycled content percentage. Certify the recycled content in accordance with the Sustainable Design Submittal Requirements below.

4. All field-applied adhesives, sealants, paints and coatings relating to work of this section shall meet the requirements of Division 1 - GENERAL PROVISIONS.

5. The manufacturing location (final assembly) of the drywall shaft system shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

6. The extraction location (final assembly) of the drywall shaft system shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

7. Batt, blanket, blown and sprayed-in insulation is prohibited from use in all supply and return air plenums.

1.08 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MANUFACTURERS

Subject to compliance with requirements, furnish and install products by one of the following, or approved equal:

A. Gypsum Board Shaft-Wall Systems and Related Products

BPB America Inc., Tampa, FL
G-P Gypsum Corp., Atlanta, GA
National Gypsum Co., Charlotte, NC
United States Gypsum Co., Chicago, IL

2.02 MATERIALS

A. General

Furnish the manufacturer's standard materials and components specified in published product literature for the system and application required.

B. Steel Framing

1. Manufacturer's standard stud, track and miscellaneous shapes for shaft-wall construction, of profile, size and base metal thickness designed to comply with AISI/COS/NASPEC for performance characteristics specified or shown on the Contract Drawings.

2. Framing Members: ASTM C 645 for steel sheet requirements.

3. Protective Coating: G40 hot-dip galvanized per ASTM A 653.

C. Gypsum Board

Type as shown on the Contract Drawings, thickness and edge configuration as indicated below, or as shown on the Contract Drawings, in maximum lengths available to minimize end-to-end butt joints.

1. Gypsum Shaftliner Boards: ASTM C 1396, Type X, water-resistant treated core. Boards shall be 1 inch thick, 24 inches wide with long edges beveled.

a. Products: Subject to compliance with requirements, furnish and install one of the following products, or approved equal:

ToughRock Fireguard Shaftliner; G-P Gypsum Corp., Atlanta, GA
Fire-Shield Shaftliner; National Gypsum Co., Charlotte, NC
SHEETROCK Gypsum Liner Panel; United States Gypsum Co., Chicago, IL

2. Gypsum Wallboard and Backing Board: ASTM C 1396, core type as required by fire-resistance rated assembly shown on the Contract Drawings. Board used for face-layer shall have tapered edges.

3. Water-Resistant Gypsum Backing Board: ASTM C 1396, core type as required by fire-resistance rated assembly indicated.

4. Moisture- and Mold-Resistant Wallboard: ASTM C 1396 or ASTM C 1177, Type X core where required or where shown; ASTM C 473 average water absorption maximum of 5 percent by weight after 2 hour immersion; ASTM D 3273 mold resistance average panel score minimum of 8.

   a. Products: Subject to compliance with requirements, furnish and install one of the following products, or approved equal:

      DensArmor Plus Interior Guard; G-P Gypsum Corp., Atlanta, GA
      Gold Bond XP Wallboard; National Gypsum Co., Charlotte, NC
      Humitek; United States Gypsum Co., Chicago, IL

5. Abuse-Resistant Type: ASTM C 1396; with improved resistance to surface abrasion, indentation and through-penetration impact over regular gypsum board, for use where shown, with Type X core where required or where shown.

   a. Products: Subject to compliance with requirements, furnish and install one of the following products, or approved equal:

      ToughRock Abuse-Resistant; G-P Gypsum Corp., Atlanta, GA
      Hi-Abuse; National Gypsum Co., Charlotte, NC
      Sheetrock Abuse-Resistant; United States Gypsum Co., Chicago, IL

D. Tile Backer Units

Where shown on the Contract Drawings, 1/2 inch thick, in manufacturer's standard width but not less than 32 inches, in maximum lengths available to minimize end-to-end butt joints. Subject to compliance with requirements, furnish and install one of the following products, or approved equal:

1. Cementitious Backer Products: ANSI A118.9:

   WonderBoard; Custom Building Products, Seal Beach, CA
   Util-A-Crete Concrete Backer Board; FinPan, Inc., Hamilton, OH
   Hardibacker 500; James Hardie Building Products, Inc., Mission Viejo, CA
   DUROCK Brand Cement Board; United States Gypsum Co., Chicago, IL

2. Gypsum Panel Products: ASTM C 1178, or ASTM C 1178 and ASTM C 1278:

   DensShield Tile Guard; G-P Gypsum Corp., Atlanta, GA
   Fiberock Aqua-Tough; United States Gypsum Co., Chicago, IL

E. Drywall Trim Accessories

1. Cornerbead, edge trim and control joints: ASTM C 1047.

2. Materials: Formed, steel sheet zinc-coated by the hot-dip process or rolled zinc; may be fabricated in combination with paper for use with paper-faced gypsum board only.

3. Configuration: Face flanges formed to receive joint compound and as indicated by reference to accessories depicted in ASTM C 1047, Fig. 1.

F. Joint Treatment Materials

Comply with ASTM C 475 for gypsum board installation and with the recommendations of both the manufacturers of panel products and of joint treatment materials for each application shown on the Contract Drawings.

1. Joint Tape

a. Paper-Faced Gypsum Board: Paper reinforcing tape.

b. Glass Mat Gypsum Board: Glass mesh tape, mesh size 10 by 10.

c. Cementitious Backer Units: Polymer-coated, alkali-resistant, open glass fiber mesh.

2. Joint Compound

a. Setting-Type Joint Compound for Gypsum Board: Factory packaged, job-mixed, chemical-hardening powder product formulated for uses indicated.

(1) Where setting-type joint compound is indicated as a taping compound only or for taping and filling only, use formulation that is compatible with other joint compound applied over it.

(2) For prefilling gypsum board joints, use formulation recommended by gypsum board manufacturer.

(3) For filling joints and treating fasteners of moisture-resistant gypsum backing board behind base for ceramic tile, use formulation recommended by gypsum board manufacturer.

(4) For topping compound, use sandable formulation.

b. Drying-Type Joint Compound for Gypsum Board: Factory packaged vinyl based product complying with the following requirements for formulation and intended use:

(1) Ready-Mixed Formulation: Factory mixed product.

(2) Taping compound formulated for embedding tape and for first coat over fasteners and face flanges of trim accessories.

(3) Topping compound formulated for fill (second) and finish (third) coats.

(4) All-purpose compound formulated for both taping and topping compounds.

c. Joint Compound for Glass-Mat Faced Gypsum Board: Setting type, for use with glass mesh joint tape.

d. Joint Compound for Cementitious Backer Units: Material recommended by cementitious backer unit manufacturer.

G. Acoustical Sealant

1. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard non-sag, skinning, paintable, nonstaining, gunnable latex sealant complying with ASTM C 834 and the following requirements:

   a. Product shall be effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by test representative assemblies per ASTM E 90.

2. Acoustical Sealant for Concealed Joints: Manufacturer's standard nondrying, nonskinning, nonstaining, gunnable, synthetic rubber sealant recommended for sealing interior concealed joints to reduce transmission of airborne sound.

3. Products: Subject to compliance with sound transmission and fire-resistance rating requirements, furnish and install one of the following, or approved equal:

   a. Acoustical Sealant for Exposed and Concealed Joints

      AC-20 FTR; Pecora Corp., Harleysville, PA
      Tremflex 834; Tremco Inc., Beachwood, OH
      SHEETROCK Acoustical Sealant; United States Gypsum Co., Chicago, IL

4. Acoustical Sealant for Concealed Joints

   BA-98; Pecora Corp, Harleysville, PA
   Tremco Acoustical Sealant; Tremco Inc., Beachwood, OH
   SHEETROCK Acoustical Sealant; United States Gypsum Co., Chicago, IL

H. Miscellaneous Materials

1. Fasteners for Steel Framing

   Type, material, size, corrosion resistance, pull-out resistance and other properties as required to fasten steel framing members securely to each other and to substrates, complying with the recommendations of steel framing manufacturer for applications shown on the Contract Drawings.

2. Fasteners for Runners (Track)

   Power-driven fasteners of size and material required to withstand loading conditions imposed on shaft-wall systems without exceeding allowable design stress of track, fasteners or structural substrates in which anchors are embedded, as recommended by steel framing manufacturer.

3. Fasteners for Gypsum Board

   a. ASTM C 1002: Type S steel drill screws for fastening gypsum board to steel members less than 0.033 inch thick and for fastening gypsum board to gypsum board.

   b. ASTM C 954: Steel drill screws for fastening gypsum board to steel members from 0.033 to 0.112 inch thick.

   c. For Fastening Cementitious Backer Units: Corrosion resistant coated steel drill screws of size and type recommended by unit manufacturer.

4. Laminating Adhesive

Special adhesive or joint compound specifically recommended by gypsum board manufacturer for laminating gypsum boards.

5. Spot Grout

ASTM C 475, setting-type joint compound recommended by joint compound manufacturer for spot-grouting hollow metal door frames.

6. Sound Attenuation Blankets

Unfaced mineral fiber blanket insulation produced by combining mineral fibers manufactured from glass, slag or rock with thermosetting resins to comply with ASTM C 665 for Type I (blankets without membrane facing). Comply with product flame resistance requirements where used in fire-resistance rated assemblies.

PART 3. EXECUTION

3.01 EXAMINATION

Examine substrates to which gypsum board shaft-wall systems attach or abut, including installed hollow metal frames, elevator hoistway frames and structural framing, for compliance with installation tolerance requirements and other conditions affecting assembly performance. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Before sprayed-on fireproofing is applied, attach offset anchor plates or ceiling runners (tracks) to surfaces shown on the Contract Drawings to receive sprayed-on fireproofing.

1. Where offset anchor plates are required, install continuous units formed from hot-dip galvanized steel plate of thickness shown, attached to building structure with fasteners spaced not more than 24 inches on center. Secure ceiling runners to offset plates with screws spaced not more than 24 inches on center.

3.03 INSTALLATION

A. General

1. Steel Framing Installation Standard: ASTM C 754.
2. Gypsum Board Application and Finishing Standards: ASTM C 840 and GA-216.
3. Anchor and fasten materials and components to comply with ratings and performance requirements.

B. Framing and Shaftliner Board Installation

Install the manufacturer's standard materials and components specified in published product literature for the system and application required.

1. Installation Tolerances

   Install each steel framing member so that fastening surfaces do not vary more than 1/8 inch from the plane formed by the faces of adjacent framing members.

2. Install runner tracks horizontally at floors and overhead supports, and vertically where gypsum drywall stud system abuts other Work, positioning long leg of members facing the shaft-side.

3. Install shaftliner boards concurrently with studs per shaft-wall system manufacturer's instructions. Where wall height exceeds the maximum available length of shaftliner board, end joints shall fall alternately in the upper and lower third portion of the wall.

4. Frame door openings to comply with details shown or, if not shown, to comply with applicable written recommendations of shaft-wall system manufacturer. Attach vertical studs at jambs with screws either directly to frames or to jamb anchor clips on door frames; install runner track section (for jack studs) at head and secure to jamb studs. Install 2 studs at each jamb.

5. Install supplementary framing, blocking and bracing to support gravity and pullout loads from attached fixtures, equipment, services, heavy trim furnishings and similar Work which cannot be directly supported on gypsum drywall shaft system.

   a. Where handrails are shown on the Contract Drawings for direct attachment to drywall shaft system, install not less than a 20 gage by 4 inch wide galvanized steel reinforcement strip, accurately positioned and secured behind not less than a 5/8 inch thick course of gypsum board in the system.

6. Integrate stair hanger rods with drywall shaft system where shown on the Contract Drawings.

7. At elevator hoistway door frames, install jamb struts on each side of door frame and install other shaft-wall framing at opening as shown on the Contract Drawings.

8. In elevator shafts where drywall shaft system cannot be installed within 4 inches of the shaft face of structural beams, floor edges or similar shaft projections, install 1/2 or 5/8 inch gypsum board cants, at a 75 deg minimum slope, covering the tops of projections. Install steel framing at 24 inches on center where required to support cants.

9. Comply with details shown on the Contract Drawings and with steel framing manufacturer's instructions to provide slip or cushioned type joints to attain lateral support and avoid axial loading.

10. Coordinate drywall shaft system Work with sprayed-on fireproofing of the structure, if required, so that both remain complete and undamaged.

11. At penetrations in shaft-wall system, install supplementary steel framing at perimeter of penetrations and install fire protection behind electrical boxes, elevator call buttons and similar penetrating items to maintain fire-resistance rating of system.

C. Room-Side Gypsum Board Installation

1. Where room-side of drywall shaft Work or shaft-side of stairwells are shown on the Contract Drawings to receive drywall finish, including spaces shown or scheduled for paint or wall coverings, install exposed boards with tapered edges and recessed screw heads, ready for drywall finishing.

2. Install sound attenuation blankets, where shown on the Contract Drawings and where required for sound transmission rating, prior to installing room-side gypsum boards.

3. Install exposed gypsum board with face side out. Do not install imperfect, damaged or damp boards. Butt boards together for a light contact at edges and ends with not more than 1/16 inch open space between boards. Do not force into place.

4. Locate either edge or end joints over supports. Position boards so that like edges abut; do not place tapered edges against mill-cut or field-cut edges or ends.

5. Locate exposed end-butt joints as far from center of walls as possible, and stagger not less than 12 inches in alternate courses of board.

6. Form control joints and expansion joints with space between edges of adjoining boards, prepared to receive trim accessories. Make only control type joints where joints occur at corners of framed openings.

7. Spot grout hollow metal door frames for all doors. Apply spot grout at each jamb anchor clip and immediately insert gypsum boards into frames.

8. Single-Layer Application

   Install gypsum boards vertically (parallel to framing), with screws, in sheet lengths that will minimize end joints. At stairwells, install boards horizontally with end joints staggered over studs.

9. Multilayer Application

   a. Apply gypsum board base layers as shown on the Contract Drawings and apply gypsum board face layer vertically (parallel to framing), with joints of base layers located over stud member and joints of face-layer offset at least one stud member from base-layer joints.

   b. Fastening Method: Fasten base layer with screws and secure face layer with adhesive and supplementary fasteners; or fasten base and face layers separately with screws to comply with fire-resistance rated assembly requirements.

10. Wall Tile Substrates: On substrates to receive thin-set ceramic tile and similar rigid applied wall finishes, install cementitious backer units to comply with ANSI A 108.11 and install gypsum panel products to comply with manufacturer's instructions.

D. Acoustical Sealant Installation

Apply acoustical sealant at sound transmission rated gypsum board shaft-wall Work (STC rated) in compliance with shaft-wall system manufacturer's written instructions.

1. Clean substrate surfaces by brushing and remove loose particles to produce a clean, sound substrate capable of developing optimal bond with joint sealants.

2. Seal perimeter of each section of drywall shaft Work with acoustical sealant where it abuts other Work. Install a second bead of sealant in a location and manner that will prevent dislocation by air pressure differential between shaft and external spaces. Seal joints and penetrations. Comply with ASTM C 919 and drywall shaft system manufacturer's recommendations for location of beads.

E. Installation of Drywall Trim Accessories

1. Install metal edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed. Install type with face flange to receive joint compound. Install L-type trim where Work is tightly abutted to other Work.

2. For trim with flanges intended for fasteners, anchor trim with same fasteners used to attach gypsum board to framing supports. Otherwise, anchor trim flanges in accordance with gypsum board manufacturer's instructions and recommendations.

3. Install metal cornerbead at outside corners of drywall Work.

4. Install metal control joints where shown on the Contract Drawings per ASTM C 840 requirements and in a manner to maintain fire-resistance rating of gypsum board shaft-wall system.

F. Finishing of Gypsum Drywall

1. General

a. Finish Level Standard: ASTM C 840.

b. Apply compound treatment at gypsum board joints (vertical and horizontal), flanges of trim accessories, penetrations, fastener heads and elsewhere as required to prepare Work for final decoration. Prefill open joints and rounded or beveled edges, if any, using type of compound recommended by gypsum board manufacturer.

c. Apply joint tape at joints between gypsum boards using taping joint compound, except where trim accessories are shown on the Contract Drawings.

2. Finish Levels (Room-Side)

Finish gypsum boards at room-side or shaft-side of stairwell enclosure to the levels shown on the Contract Drawings.

3. Finish Levels (Shaft-Side)

Finish shaft-side gypsum boards to the levels shown on the Contract Drawings or as required by fire-resistance rating of system.

3.04 PROTECTION

A. Furnish protection and maintain conditions, in a manner acceptable to the Engineer, to ensure that drywall shaft Work shall be without damage or deterioration at time of issuance of the Certificate of Final Completion.

B. Remove and replace wet or otherwise damaged gypsum board products.

END OF SECTION

SECTION 09270

DRYWALL SHAFT SYSTEMS

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1 - GENERAL PROVISIONS".

A. Product Data

Manufacturer's product specifications and installation instructions for each gypsum board shaft-wall system component, and other data showing compliance with the requirements of this Section.

B. Certifications

1. Fire Test Response Reports: Manufacturer's certification from a qualified independent testing and inspecting agency substantiating each gypsum board shaft-wall system's required fire-resistance rating.

2. Acoustic Test Response Reports: Manufacturer's certification from a qualified independent testing agency substantiating required STC rating for each gypsum board shaft-wall system.

C. Sustainable Design Submittal Requirements:

The Contractor shall submit the Sustainable Design certification items listed herein. Sustainable Design submittals shall include the following:

1. A completed Sustainable Design Materials Certification Form (SDMCF), appended to Division 1 - GENERAL PROVISIONS. Information to be supplied for this form shall include:

a. Cost breakdowns for the materials included in the Contractor's work. Cost breakdowns shall include total cost plus itemized material costs.

b. * The amount of post-consumer and/or post-industrial recycled content in the supplied product(s).

c. * The manufacturing location of the supplied product(s).

d. * The location (source) of the raw materials used to manufacture the supplied product(s).

e. * The VOC content of all adhesives, sealants, paints, and coatings applied on site as part of this work.

*** If applicable- requirements are defined per the Sustainable Design Performance Criteria, this section.**

2. Published product literature or letters of Certification, provided from the product manufacturer on the manufacturer's letterhead, to verify the product information supplied for the SDMCF.

3. Product cut sheets for materials that meet the SDMCF.

4. Material Safety Data Sheets (MSDS), for applicable products. Applicable products include, but are not limited to field-applied adhesives, sealants, carpets, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).

5. The Sustainable Design submittal information shall be assembled into one (1) package per Section or trade, and sent to the Engineer of review.

END OF APPENDIX "A"

SECTION 09270

DRYWALL SHAFT SYSTEMS

INSTRUCTIONS TO SPECIFIER

A. General

1. Drywall shaft systems in the Section are non-load-bearing type; they are not designed to support floor or roof loads, but only certain transverse loads and intermittent and sustained air-pressure loads at elevator and air shafts.

2. Use this Section for enclosure of:

   a. Elevator hoistways.

   b. Stairwells.

   c. Chutes (linen, trash or similar).

   d. Continuous pipe and duct shafts penetrating floors.

   e. Horizontal ducts.

B. Contract Drawings

Ensure that the Contract Drawings show the following items specified in the text:

(1.03 A.1)	Air pressure loads (psf) for air-handling or elevator shaft (shaft for a single-cab, high-speed elevator must resist highest loads).
(1.03 A.3)	Deflection limit for specific wall finish material, if other than L/240 specified. (L/360 recommended for tile work and veneer plaster.)
(1.03 B)	Fire-resistance ratings for shaft-wall systems, include UL Design or GA File Nos.
(1.03 C)	STC rating if other than minimum 35 specified.
(1.05 B)	Mock-ups: Indicate levels of finish and locations where required.
(2.02 B)	Steel framing size and base metal thickness; coating if other than G40 specified.
(2.02 C, D)	Location of each type of gypsum board and cementitious product.
(2.02 C, D; 3.03 C.8, 9)	Number of layers and thickness of gypsum boards for base layers and face layers for finishing.
(2.02 D)	Tile backer panel: Show gypsum type or cementitious type if either/or is not acceptable.
(2.02 E; 3.03 E)	Trim accessories: If other than typically specified, including control joints and expansion joints.
(3.02 A)	Sprayed-on fireproofing locations.
(3.03 B.5.a)	Handrails, if any.
(3.03 B.6)	Stair hanger rods, if any.
(3.03 B.9)	Details of isolation joints.
(3.03 C.2)	Sound attenuation insulation: Location.

(3.03 F) Gypsum board finish: Locations and corresponding finish levels. (Note: Both UL and GA-600 require face-layers only of all fire-rated wall systems to be Level 1 minimum.)

C. Other Items

1. Shaft-wall framing member types include C-H, C-T and I studs and J track. Studs and track are produced by metal framing manufacturers to the gypsum shaft-wall system's specifications. For example, G-P Gypsum systems include steel members authorized to be produced by Clark Steel, Dietrich Industries and Western Metal Lath; BPB uses Dietrich and Phillips Manufacturing; National Gypsum uses Dietrich Industries.) So stud types of one proprietary shaft-wall system cannot be substituted in another system.

2. The standard 'green' water-resistant paper shaftliner product is included in this Section, but should be used only where installation area is enclosed. Moisture- and mold-resistant shaftliner boards are available (G-P has a glass-mat faced product, and National and USG have a paper-faced products) for use where shaft system may be temporarily exposed to the weather.

3. Abuse-resistant gypsum board is available from several manufacturers, some offering different 'levels' of abuse protection. Boards with the most basic level of protection are specified in this Section. However, there is no industry standard yet on material, testing or performance criteria. So select appropriate products per specific project requirements (impact resistance, surface abrasion, surface indentation, board penetration, etc.). Might be a good choice for stairwells.

   a. Use abuse-resistant board with 0.0312 inch min. base metal thickness (20 gage) steel studs where shown or as required by the gypsum board manufacturer.

D. Sustainable Design Considerations

1. Facers: Gypsum board paper facer is generally manufactured from 100 percent recycled paper sources (newspaper, phone books, corrugated cartons, etc.), and is unbleached.

2. Core Material

   a. Gypsum Drywall: The gypsum industry has incorporated recaptured gypsum (synthetic gypsum), a byproduct from fossil fuel-burning power plants, for many years in the manufacture of new gypsum boards. See each manufacturer for specific percentages.

   b. Cement Board: May contain fly ash, a byproduct of coal-fired utility plants.

3. Binders: Corn and wheat starch may be used as a binder in gypsum wallboard.

END OF INSTRUCTIONS

DIVISION 7

SECTION 07531

EPDM MEMBRANE ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Adhered membrane roofing system.
2. Mechanically fastened membrane roofing system.
3. Additional grease and fat resistant topping membrane.
4. Vapor retarder.
5. Roof insulation.

B. Related Sections include the following:

1. Division 6 Section "Rough Carpentry" for wood nailers, curbs, and blocking; and for wood-based, structural-use roof deck panels.
2. Division 7 Section "Joint Sealants."
3. Division 15 Section "Plumbing Specialties" for roof drains.

1.2 DEFINITIONS

A. Roofing Terminology: Refer to ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

B. Design Uplift Pressure: The uplift pressure, calculated according to procedures in SPRI's "Wind Load Design Guide for Fully Adhered and Mechanically Fastened Roofing Systems," before multiplication by a safety factor.

C. Factored Design Uplift Pressure: The uplift pressure, calculated according to procedures in SPRI's "Wind Load Design Guide for Fully Adhered and Mechanically Fastened Roofing Systems," after multiplication by a safety factor.

1.3 PERFORMANCE REQUIREMENTS

A. General: Provide installed roofing membrane and base flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.

B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing membrane manufacturer based on testing and field experience.

C. Roofing System Design: Provide a membrane roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure calculated according to ASCE 7.
   1. Uplift Pressure: 30 lbf/sq. ft..

D. FMG Listing: Provide roofing membrane, base flashings, and component materials that comply with requirements in FMG 4450 and FMG 4470 as part of a membrane roofing system and that are listed in FMG's "Approval Guide" for Class 1 or noncombustible construction, as applicable. Identify materials with FMG markings.

   1. Fire/Windstorm Classification: Class 1A-90.

E. Energy Performance: Provide roofing system with initial Solar Reflectance Index not less than 78 when calculated according to ASTM E 1980 based on testing identical products by a qualified testing agency.

   1. Provide roofing system that is listed on DOE's ENERGY STAR "Roof Products Qualified Product List" for low-slope roof products.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other Work.

   1. Base flashings and membrane terminations.
   2. Tapered insulation, including slopes.
   3. Insulation fastening patterns.

C. Samples for Verification: For the following products:

   1. 12-by-12-inch square of topping sheet, of color specified, including T-shaped side and end lap seam.
   2. 12-by-12-inch square of sheet roofing, of color specified, including T-shaped side and end lap seam.
   3. 12-by-12-inch square of roof insulation.
   4. 12-by-12-inch square of vapor retarder.
   5. 12-by-12-inch square of cover board.

D. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install roofing system.

E. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.

1. Submit evidence of meeting performance requirements.

F. Qualification Data: For Installer and manufacturer.

G. Maintenance Data: For roofing system to include in maintenance manuals.

H. Warranties: Special warranties specified in this Section.

I. Inspection Report: Copy of roofing system manufacturer's inspection report of completed roofing installation.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's warranty.

B. Manufacturer Qualifications: A qualified manufacturer that has UL listing and FMG approval for membrane roofing system identical to that used for this Project.

C. Source Limitations: Obtain components for membrane roofing system from same manufacturer as roofing membrane.

D. Fire-Test-Response Characteristics: Provide membrane roofing materials with the fire-test-response characteristics indicated as determined by testing identical products per test method below by UL, FMG, or another testing and inspecting agency acceptable to authorities having jurisdiction. Materials shall be identified with appropriate markings of applicable testing and inspecting agency.

1. Exterior Fire-Test Exposure: Class A; ASTM E 108, for application and roof slopes indicated.
2. Fire-Resistance Ratings: ASTM E 119, for fire-resistance-rated roof assemblies of which roofing system is a part.

E. Preliminary Roofing Conference: Before starting roof deck construction, conduct conference at Project site. Comply with requirements for preinstallation conferences in Division 1 Section "Project Meetings." Review methods and procedures related to roof deck construction and roofing system including, but not limited to, the following:

1. Meet with Owner; Architect; Owner's insurer if applicable; testing and inspecting agency representative; roofing Installer; roofing system manufacturer's representative; deck Installer; and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

F. Preinstallation Conference: Conduct conference at Project site. Comply with requirements in Division 1 Section "Project Meetings." Review methods and procedures related to roofing system including, but not limited to, the following:

1. Meet with Owner; Architect; Owner's insurer if applicable; testing and inspecting agency representative; roofing Installer; roofing system manufacturer's representative; deck Installer; and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.7 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form, without monetary limitation, in which manufacturer agrees to repair or replace components of membrane roofing system that fail in materials or workmanship within specified warranty period. Failure includes roof leaks.

1. Special warranty includes roofing membrane, base flashings, roof insulation, fasteners, cover boards, vapor retarder, and other components of membrane roofing system.
2. Warranty Period: 15 years from date of Substantial Completion.

B. Special Project Warranty: Submit roofing Installer's warranty, signed by Installer, covering Work of this Section, including all components of membrane roofing system such as roofing membrane, base flashings, roof insulation, fasteners, cover boards, vapor retarder, and other components of membrane roofing system, for the following warranty period:

1. Warranty Period: Three years from date of Substantial Completion.

C. Both Manufacturer's and Installer's Warranties shall include damages incurred by winds at speeds up to and including 80 mph.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Provide specified products of the following manufacturer, with no substitutions permitted:

1. Carlisle SynTec Incorporated, as Distributed by: Coastal Atlantic Associates, 62 Roslyn Rd.; Mineola, NY 11501. Contact: Adam Kraujalis, Telephone: 516-741-4222.

2.2 ROOFING MEMBRANES

A. Fleece-Backed EPDM Roofing Membrane: ASTM D 4637, Type III, nonreinforced, uniform, flexible sheet made from EPDM, laminated to a nonwoven polyester fleece backing except at selvages, and as follows:

1. FleeceBACK System: Sure-Seal® FleeceBACK™Adhered Roofing System using FAST 100™ Adhesive System.

2. Composite Thickness: 115 mils nominal.
3. Exposed Face Color: White.

B. Polyepichlorohydrin Topping Sheet:

1. Carlisle Sure-Seal® Polyepichlorohydrin (ECO/CO) .060" Membrane: nonreinforced, uniform, flexible sheet.
2. Composite Thickness: 60 mils nominal.
3. Exposed Face Color: Black.

2.3 AUXILIARY MATERIALS

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with membrane roofing.

1. Liquid-type auxiliary materials shall meet VOC limits of authorities having jurisdiction.

B. Sheet Flashing: 60-mil- thick EPDM, partially cured or cured, according to application.

C. Bonding Adhesive: Manufacturer's standard bonding adhesive.

D. Cold Fluid-Applied Membrane Adhesive: Manufacturer's standard cold fluid-applied bonding adhesive formulated to adhere fleece-backed roofing membrane to substrate.

E. Seaming Material: Manufacturer's standard synthetic-rubber polymer primer and 3-inch- wide minimum, butyl splice tape with release film.

F. Lap Sealant: Manufacturer's standard single-component sealant, color to match roofing membrane.

G. Water Cutoff Mastic: Manufacturer's standard butyl mastic sealant.

H. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, in-seam sealants, termination reglets, cover strips, and other accessories.

2.4 VAPOR RETARDER

A. CCW-725 Vapor Barrier/Retarder.

2.5 ROOF INSULATION

A. General: Provide preformed roof insulation boards that comply with requirements and referenced standards, selected from manufacturer's standard sizes and of thicknesses indicated.

1. Polyisocyanurate Board Insulation: ASTM C 1289, Type as acceptable to roof system manufacturer.

B. Tapered Insulation: Provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches, unless otherwise indicated.

C. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

2.6 INSULATION ACCESSORIES

A. General: Furnish roof insulation accessories recommended by insulation manufacturer for intended use and compatible with membrane roofing.

B. Cold Fluid-Applied Adhesive: Manufacturer's standard cold fluid-applied adhesive formulated to adhere roof insulation to substrate.

C. Cover Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, 1/2 inch thick.

1. Product: Subject to compliance with requirements, provided "Dens-Deck" manufactured by Georgia-Pacific Corporation.

2.7 WALKWAYS

A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, solid-rubber, slip-resisting, surface-textured walkway pads, 30" x 30" x ¼ inch thick, and acceptable to membrane roofing system manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:

1. Verify that roof openings and penetrations are in place and set and braced and that roof drains are securely clamped in place.
2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
3. Verify that surface plane flatness of roof deck is acceptable to membrane manufacturer.
4. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

D. Install acoustical roof deck rib insulation strips, specified in Division 5 Section "Steel Deck," according to acoustical roof deck manufacturer's written instructions.

3.3 SUBSTRATE BOARD

A. Install substrate board with long joints in continuous straight lines, perpendicular to roof slopes with end joints staggered between rows. Tightly butt substrate boards together.

1. Fasten substrate board to top flanges of steel deck according to recommendations in FMG's "Approval Guide" for specified Windstorm Resistance Classification.
2. Fasten substrate board to top flanges of steel deck to resist uplift pressure at corners, perimeter, and field of roof according to membrane roofing system manufacturers' written instructions.

3.4 VAPOR-RETARDER INSTALLATION

A. Loosely lay vapor retarder in a single layer over area to receive vapor retarder, side and end lapping each sheet a minimum of 2 inches and 6 inches, respectively.

B. Completely seal vapor retarder at terminations, obstructions, and penetrations to prevent air movement into membrane roofing system.

3.5 INSULATION INSTALLATION

A. Coordinate installing membrane roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.

B. Comply with membrane roofing system manufacturer's written instructions for installing roof insulation.

C. Install tapered insulation under area of roofing to conform to slopes indicated.

D. Install one or more layers of insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2 inches or greater, install 2 or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches in each direction.

E. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.

F. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch with insulation.

1. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.

G. Adhered Insulation: Install each layer of insulation and adhere to substrate as follows:

1. Set each layer of insulation in a cold fluid-applied adhesive.

H. Mechanically Fastened Insulation: Install each layer of insulation and secure to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type.

1. Fasten insulation according to requirements in FMG's "Approval Guide" for specified Windstorm Resistance Classification.
2. Fasten insulation to resist uplift pressure at corners, perimeter, and field of roof.

I. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Loosely butt cover boards together and fasten to roof deck.

1. Fasten insulation according to requirements in FMG's "Approval Guide" for specified Windstorm Resistance Classification.
2. Fasten insulation to resist uplift pressure at corners, perimeter, and field of roof.

3.6 ADHERED ROOFING MEMBRANE INSTALLATION

A. Install fleece-backed roofing membrane over area to receive roofing according to membrane roofing system manufacturer's written instructions. Unroll roofing membrane and allow to relax before installing.

B. Start installation of roofing membrane in presence of membrane roofing system manufacturer's technical personnel.

C. Accurately align roofing membrane and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

D. Cold Fluid-Applied Adhesive: Apply cold fluid-applied adhesive to substrate at rate required by manufacturer and install fleece-backed roofing membrane.

E. Adhesively fasten roofing membrane securely at terminations, penetrations, and perimeter of roofing.

F. Apply roofing membrane with side laps shingled with slope of roof deck where possible.

G. Adhesive Seam Installation: Clean both faces of splice areas, apply splicing cement, and firmly roll side and end laps of overlapping roofing membranes according to manufacturer's written instructions to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of roofing membrane terminations.

1. Apply a continuous bead of in-seam sealant before closing splice if required by membrane roofing system manufacturer.

H. Tape Seam Installation: Clean and prime both faces of splice areas, apply splice tape, and firmly roll side and end laps of overlapping roofing membranes according to manufacturer's written instructions to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of roofing membrane terminations.

I. Repair tears, voids, and lapped seams in roofing that does not meet requirements.

J. Spread sealant or mastic bed over deck drain flange at deck drains and securely seal roofing membrane in place with clamping ring.

K. Install roofing membrane and auxiliary materials to tie in to existing roofing.

L. Adhesively apply Polyepichlorohydrin topping sheet over roofing membrane at all roof areas within 12 feet of any exhaust outlets.

3.7 BASE FLASHING INSTALLATION

A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.

B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply bonding adhesive to seam area of flashing.

C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

D. Clean splice areas, apply splicing cement, and firmly roll side and end laps of overlapping sheets to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of sheet flashing terminations.

E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.8 WALKWAY INSTALLATION

A. Flexible Walkways: Install walkway products at all roof access locations, around all rooftop mechanical equipment and forming a continuous path from roof access locations to mechanical equipment and in locations indicated. Adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.9 FIELD QUALITY CONTROL

A. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion and submit report to Architect.

1. Notify Architect or Owner 48 hours in advance of date and time of inspection.

B. Repair or remove and replace components of membrane roofing system where test results or inspections indicate that they do not comply with specified requirements.

C. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.10 PROTECTING AND CLEANING

A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements, repair substrates and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION

DIVISION 9

SECTION 09441

EPOXY MATRIX TERRAZZO

PART 1. GENERAL

1.01 SUMMARY

This Section specifies requirements for epoxy-resin, thin-set terrazzo.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

American Society for Testing Materials (ASTM)

ASTM C 241	Test Method for Abrasion Resistance of Stone Subjected to Foot Traffic
ASTM D 56	Test Method for Flash Point by Tag Closed Tester
ASTM D 412	Test Method for Rubber Properties in Tension
ASTM D 635	Test Method for Rate of Burning and/or Extent and Time of Burning of Self-supporting Plastics in a Horizontal Position
ASTM D 638	Test Method for Tensile Properties of Plastics
ASTM D 695	Test Method for Compressive Properties of Rigid Plastics
ASTM D 696	Test Method for Coefficient of Linear Thermal Expansion of Plastics
ASTM D 790	Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
ASTM D 968	Test Method for Abrasion Resistance of Organic Coatings by the Falling Abrasive Tester
ASTM G 23	Recommended Apparatus (Carbon-Arc Type) for Exposure of Nonmetallic Materials

The National Terrazzo and Mosaic Association (NTMA)

Design Data Book - Terrazzo Plates

1.03 DESIGN AND PERFORMANCE REQUIREMENTS

Epoxy resin shall comply with the following:

A. Tensile Strength

4,000 psi minimum, per ASTM D 638 at a test rate of 0.2 inch per minute using C Die as described in ASTM D 412, and a minimum 5 percent tensile elongation.

B. Compressive Strength

Minimum 14,000 psi, per ASTM D 695 using Specimen b cylinder.

C. Flexural Yield Strength

Minimum 6,500 psi per ASTM D 790, with a minimum tangent modulus of elasticity of 1×10^4.

D. Abrasive Resistance

Maximum 0.1 gram loss per 5 gallons of silica sand, per ASTM D 968.

E. Fading Resistance

Shall show no discoloration or other physical changes when tested per ASTM G 23, Method 1 after 48 hours exposure.

F. Flammability

Self-extinguishing and a maximum extent of burning of 0.25 inch, per ASTM D 635.

G. Thermal Coefficient of Linear Expansion

Maximum value of 25×10^{-6} inch per inch per degree F, at temperature range of -12 degrees F to 140 degrees F, per ASTM D 696.

1.04 ENVIRONMENTAL REQUIREMENTS

A. General

Do not proceed with the Work of this Section under the following conditions:

1. When ambient and substrate temperatures are outside the limits specified by the matrix manufacturer.
2. When substrates are wet due to rain, frost, condensation, or other causes.
3. When substrate conditions do not conform to the requirements of 3.01 A of this Section.

B. Ventilation

Provide ventilation in the area(s) of installation so that odors will be vented outside. Seal adjacent areas from odor migration.

1.05 QUALITY ASSURANCE

A. Entities performing installation Work of this Section shall:

1. Be acceptable to the epoxy matrix manufacturer.
2. Have not less than three years experience in installation of epoxy matrix terrazzo project involving complexities equal to those required for the Work of this Section.

B. Source Limitations for Marble:

Obtain each color, grade, type, and variety of marble from one source with resources to provide materials of consistent quality in appearance and physical properties without delaying the Work.

C. NTMA Standards:

Comply with the National Terrazzo and Mosaic Association's (NTMA) Guide Specification and written recommendations for epoxy-resin, thin set terrazzo, unless more stringent requirements are specified.

D. Mockups:

Before installing terrazzo, construct mockups for each type and color required to verify selection made under sample submittals and to demonstrate aesthetic effects and qualities of materials and execution. Build mockups to comply with the following requirements, using materials indicated for completed Work.

1. Locate mockups in the location and of the size shown on the Contract Drawings, or, if not shown, as directed by the Engineer.
2. Notify Engineer seven days in advance of dates and times when mockups will be constructed.
3. Demonstrate the proposed range of aesthetic effects and workmanship.
4. Obtain Engineer's approval of mockups before proceeding with terrazzo installation.
5. Approved mockups in an undisturbed condition at the time of Substantial Completion may become part of the completed Work.

E. Preinstallation Conference:

Conduct conference at construction site. Review methods and procedures related to installation including, but not limited to, the following:

1. Inspect and discuss condition of substrate and other preparatory work performed by other trades.
2. Review structural loading limitations.
3. Review and finalize construction schedule and verify availability of materials, installer's personnel equipment, and facilities needed to make progress and avoid delays.
4. Review dust-control procedures.
5. Review weather and forecasted weather conditions and procedures for coping with unfavorable conditions.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in manufacturer's original unopened packages or containers bearing brand name, material designation and expiration period for use.

B. Deliver aggregate(s) in bags tagged with producer's name, content and size grading of chips.

C. Store and handle materials to keep them dry and protected from weather and surface contamination.

1.07 SUBMITTALS

For submittal requirements, see Appendix "A".

PART 2. PRODUCTS

2.01 MANUFACTURERS

A. Subject to compliance with the requirements of 1.03, 1.05 B and 2.02 A of this Section, provide products of the following manufacturers, or approved equal.

1. General Polymers Corp., Epoxy Thinset Terrazzo No. 1100; Cincinnati, OH
2. Master Builders, Inc., Morricite Epoxy; Cleveland, OH.
3. Tec, Inc., an H. B. Fuller Company, and Tuff-Lite; Palatine, IL

2.02 MATERIALS

A. Aggregates

Natural, clean, sound, crushed marble chips, size No. 0, No. 1 and No. 2 per NTMA standards. Color(s) and grades in accordance with 2.04 A of this Section.

1. Minimum abrasion resistance (Ha) of 10, per ASTM C 241.
2. Dust content shall be less than 1 percent by weight.
3. Absorption shall not exceed 0.75 percent in 24 hours.

B. Epoxy-Resin matrix:

Provide matrix complying with NTMA's "Guide Specification for Epoxy Terrazzo" in color required for specified mix.

C. Stop and Divider Strips

Where shown on the Contract Drawings, 3/8 inch deep, or as shown, white zinc alloy or high density plastic, color as shown on the Contract Drawings, with 1/8 inch wide top. Angle or "T" type for adhesive bonding to substrate.

1. Bottom-Section Material: Galvanized Steel.

D. Accessory Strips, if any

Match depth, width and material of stop and divider strips, unless otherwise shown on the Contract Drawings. Provide the following types where shown on the Contract Drawings or where required for complete installation:

1. Base bead and cove base dividers
2. Channels to receive abrasive inserts
3. Stair nosings for treads, landings and similar exposed edges of flooring.

E. Control Strips, if any

Double or split units, 1/8 inch wide of the same material depth, and width as stop and divider strips, with 1/8 inch wide full-depth filler between strips.

1. Filler: Neoprene or elastomeric sealant, as shown on the Contract Drawings.

F. Substrate Primer

Two-component resin, or other compound, recommended by matrix manufacturer to penetrate and seal substrate and provide maximum bond of terrazzo to substrate.

G. Finishing Grout

Resin or other compound with filler and pigments, as recommended by the matrix the manufacturer. Use of polyacrylate blending polymer is not permitted.

H. Strip Adhesive

Trowelable mixture of fine sand and bonding agent, compounded by matrix manufacturer for this use.

I. Flexible Epoxy Membrane:

Epoxy-resin matrix manufacturer's 100 percent solids epoxy membrane for crack penetration.

J. Divider-Strip Adhesive:

Epoxy-resin adhesive recommended by manufacturer for this use and acceptable to this-set terrazzo resin manufacturer.

2.03 ACCESSORIES

A. Cleaner

Liquid, neutral chemical cleaner, with Ph factor between 7 and 10, of formulation recommended by sealer manufacturer for epoxy terrazzo, and complying with the following:

1. Free from crystallizing salts or water-soluble alkaline salts.
2. Biodegradable and phosphate free.

B. Interior Floor Sealer

Colorless, slip and stain resistant penetrating sealer that does not affect color or physical properties of epoxy terrazzo surface and complying with the following:

1. Ph factor between 7 and 10.
2. Flash point shall be 95 degrees F minimum, per ASTM D 56.

2.04 MIXES

A. Terrazzo Selection

NTMA Plate Number(s), with aggregates in accordance with 2.02 A of this Section, as shown on Contract Drawings; or if not shown, to match sample(s) in the Engineer's office.

B. Mixing

Charge and mix marble chips and epoxy resin in accordance with matrix manufacturer's instructions to produce a finished surface matching characteristics of 1.07 A.4 and 2.04 A of this Section.

PART 3. EXECUTION

3.01 PREPARATION

A. Substrate surfaces to receive epoxy matrix terrazzo shall have a clean and uniform surface in conformance with matrix manufacturer's directions, NTMA requirements for surface preparation, and the following:

1. Verify that concrete substrate has been cured at least 30 days without use of curing compounds, floor hardener, or application of cement rich surface.
2. Thoroughly clean substrate free of deleterious materials and contaminants by grinding or acid etching with a dilute muriatic acid solution, in accordance with the manufacturer's installation instructions.
3. If required, chip and clean away loose particles, and patch surface to produce substrate with surface variations of less than 1/4 inch in 10 feet.
   a. Patching and fill materials shall be compatible with the terrazzo matrix.

B. Flexible Epoxy Membrane:

Prepare and prefill substrate cracks with membrane material and install flexible epoxy membrane according to manufacturer's written instructions. Prepare epoxy membrane according to manufacturer's written instructions before applying substrate primer.

C. Prime

Apply prime coat of epoxy primer when floor is thoroughly dry from acid etching, using materials and applicator instructions conforming to the matrix manufacturer's installation instructions.

D. Surface Acceptance

The entity performing epoxy terrazzo installation shall inspect surfaces to receive thin-set epoxy matrix terrazzo before surface preparation, and again after surface preparation and installation of epoxy primer. Unsatisfactory conditions shall be corrected to the satisfaction of the Engineer.

3.02 INSTALLATION

A. Install divider and accessory strips according to NTMA's written recommendations.

B. Install control-joint strips back-to-back directly above substrate control joints, or where shown on the Contract Drawing, and according to NTMA's written recommendations.

C. Install angle-or T-type strips and similar accessories in adhesive setting bed without voids below strips. Provide mechanical anchorage of strips as require for adequate attachment of strips to substrate.

D. Install abrasive-strip channels where shown on the Contract Drawings according to NTMA's written recommendations.

E. Place terrazzo to 3/8-inch thickness, unless otherwise shown on the Contract Drawings, and trowel level.

F. Steel trowel surface, adding additional chips as necessary to match the approved sample or test panel, if any, then retrowel the surface. Allow curing time as recommended by the matrix manufacturer.

G. Grinding and Polishing

1. Rough grind with 24 or finer grit stones followed by additional grinding with 80 or finer grit stones.
2. After cleaning, rinsing and vacuum drying, allow 24 hours drying time. Then apply epoxy grout filler in accordance with the manufacturer's printed instructions to completely fill all voids. Allow curing time as recommended by the matrix manufacturer.
3. Final grind with 120 or finer grit stones until grout is removed from surface.
4. Perform final grading after Work that would affect Work of this Section has been completed and when such final grinding is approved by the Engineer.

H. Install abrasive strips as indicated with abrasive-strip surface projecting slightly above terrazzo surface without causing a hazard.

I. Cut out and replace terrazzo areas that evidence lack of bond with substrate or underbed, including areas that emit a "hollow" sound when tapped. Cut out terrazzo areas in panels defined by strips and replace to match adjacent terrazzo, or repair panels according to NTMA's written recommendations, as approved by Engineer.

J. Construction Tolerances:

Limit terrazzo surfaces' variation from level to 1/4 inch in 10 feet.

3.03 Cleaning and Protection

A. Thoroughly wash all surfaces with a neutral cleaner, wash with clean water and when surface is thoroughly dry, apply sealer in accordance with the sealer manufacturer's printed instructions.

END OF SECTION

SECTION 09441

EPOXY MATRIX TERRAZZO

APPENDIX "A"

SUBMITTALS

A. Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1 - GENERAL PROVISIONS.

1. Product Data

   Manufacturer's technical information and installation instructions for epoxy matrix and each type of accessory item and material.

2. Shop Drawings

   a. Show terrazzo fabrication and installation requirements including plans, elevations, sections, component details, and attachments to other Work.

   b. Show layout of stop, divider, accessory and control strips.

3. Certifications

   Submit supplier(s)/manufacturer(s) written certification that materials meet or exceed specified requirements. When required by 1.03 of this Section, submit test results or manufacturer's certification of compliance with requirements specified therein.

4. Samples

   Two 6-inch square samples of each color of epoxy terrazzo, and two minimum 6-inch long samples of each type of strip accessory.

   a. Submitted samples, when approved, shall be used by the Engineer as a standard for judging the test panel, if required, and the completed Work of this Section.

5. Maintenance Instructions

   Two copies of the written instructions for recommended periodic maintenance of epoxy terrazzo.

B. Prior to start of Work of this Section, submit the following to the Engineer:

1. Evidence of installer's qualifications in accordance with 1.05 A of this Section.

2. One copy of U.S. Department of Labor Material Safety Data Sheets (MSDS) for all hazardous or toxic chemicals utilized during Work of this Section.

END OF APPENDIX "A"

SECTION 09441

EPOXY MATRIX TERRAZZO

INSTRUCTIONS TO SPECIFIER

A. Contract Drawings

Ensure that the Contract Drawings show:

1. Requirement for test panel, if any (1.05 C)
2. Size of mockup (1.05 D)
3. Location, material (white zinc alloy or high density plastic of color shown), and size (if other than as specified, of stop and divider strips (2.02 B).
4. Location(s) of accessory strips, if any (2.02 C)
   a. If channels for abrasive strips are shown, specify abrasive fill material on Contract Drawings.
5. Location(s) of control strips, if any (2.02 D). If shown, specify on drawings the filler material as white or black neoprene, or if elastomeric sealant is shown, specify color and see 2.0 A of these Instructions.
6. NTMA plate number of terrazzo (2.04 A), or see 2.0 B of these instructions.
7. Thickness of epoxy terrazzo, if other than specified 1/4 inch (3.02 B).

B. Other Items

1. If control strips are to be filled with elastomeric sealant (2.02 D), consult with Architectural Task Leader for type of sealant (silicone or urethane). Show designation of sealant on Contract Drawings and ensure that Section 07920 Silicone Sealants or Section 07923 Urethane Sealants as appropriate is included in the Contract Booklet.
2. If the Contract Drawings show "epoxy resin color shall match sample(s) in the Engineer's office", ensure that Plate 7 "Available Documents" is modified to include description of required sample(s) and is included in the Contract Booklet.
3. Consult with the Structural Task Leader to ensure that the concrete drawings show:
   a. Area(s) and extent of concrete to receive epoxy terrazzo, and a notation that slabs in these area(s) are not to receive curing compounds, floor hardener or application of cement rich surface.
   b. Concrete substrate in epoxy terrazzo areas shall have a light steel trowel finish.
   c. Provision for vapor barrier below concrete slabs on grade or slabs below grade that will receive epoxy terrazzo.
   d. Provision for control joints in concrete slab spaced not more than 20 feet apart in either direction with a maximum of 300 sq. feet of included area in any panel. Sawed control joints shall not end perpendicular to another sawed joint.

4. If the job includes staging of areas to receive terrazzo, a note should be added to the Contract Drawings requiring that sealer shall be stripped using a stripper recommended by the terrazzo and sealer manufactures and resealed to eliminate discoloration and maintain color consistency of floor finish, as directed by Engineer.

END OF INSTRUCTIONS

DIVISION 8

SECTION 08715

FINISH HARDWARE

PART 1. GENERAL

1.01 SUMMARY

A. This Section specifies requirements for finish hardware for doors scheduled in Appendix "B".

B. Establish keying, furnish keys and key control system in accordance with Keying Appendix "C".

C. If required by Appendix "D", furnish extra stock and specialized tools and maintenance instructions.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

American National Standards Institute, Inc. (ANSI)/Builders Hardware Manufacturers Association, Inc. (BHMA)

A 156.1	Butts and Hinges.
A 156.2	Locks and Lock Trim.
A 156.3	Exit Devices.
A 156.4	Door Controls – Closers.
A 156.5	Auxiliary Locks.
A 156.7	Template Hinge Dimensions.
A 156.8	Door Controls - Overhead Holders.
A 156.13	Mortise Locks and Latches.
A 156.14	Sliding and Folding Door Hardware.
A 156.18	Materials and Finishes.
A 117.1	Providing Accessibility and Usability of Physically Handicapped People.

Underwriters Laboratories Inc. (UL)

	Building Materials Directory.
UL 228	Door Closers-Holders, With or Without Integral Smoke Detectors.
UL 437	Key Locks.

National Fire Protection Association (NFPA)

Standard No. 80 - Fire Doors and Windows.

Door and Hardware Institute (DHI)

Recommended Locations for Builders Hardware for Custom Steel Doors and Frames.

1.03 DESIGN AND PERFORMANCE REQUIREMENTS

A. Fire Rated Openings

Provide hardware for fire-rated openings in compliance with NFPA No. 80 which has been tested and listed by UL Building Materials Directory or other nationally recognized independent testing, inspection and labeling agencies acceptable to the Engineer.

B. Detectable Warnings

Provide doors shown on the Contract Drawings leading to potential hazardous locations such as boiler rooms and loading docks that are accessible to the public, with textured surface hardware conforming to requirements of ANSI A 117.1, and as scheduled in Appendix "B".

C. Closers and Holders

Conform to requirements of ANSI A 156.4, Grade 1, and ANSI A 156.8 respectively.

1. Where door(s) shown on the Contract Drawings are required to be accessible to the physically handicapped and are scheduled in Appendix "B" to receive manual closer(s), provide adjustable unit(s) complying with ANSI A 117.1 provisions for door opening force and delayed action.

D. Furnish and mount electro-magnetic door holder(s) where shown on the Contract Drawings or scheduled in Appendix "B". Electrical connections for such item(s), if any, are specified in Division 16 Section(s) of these Specifications.

1. Provide integral smoke detector device in combination door closers and holders complying with UL 228.

E. Exit Devices

Conform to requirements of ANSI A 156.3 Grade 1. Where emergency exit devices are required on fire rated door(s), provide exit devices available as a complete series, listed in UL "Accident Equipment List - Panic Hardware" and bearing the designation "Fire Exit Hardware".

F. Locks

Conform to the following ANSI Standards, provide 5/8 inch minimum throw on pairs of non-fire-rated doors and 3/4 inch minimum throw on pairs of fire-rated doors:

1. Mortise Locks and Latches: A 15, Grade 1.
2. Cylindrical Locks and Latches: A 156.2, Grade 1.

G. Cylinders

Conform to the requirements of ANSI A 156.5 Grade 1, UL listed, and tested for drill and pick resistance requirements of UL 437.

H. Strikes

Manufacturer's standard wrought box strike for each latch or lock bolt, with curved lip extended to protect frame, finished to match hardware set. Provide dust-proof strikes for foot-bolts, except where threshold provides non-recessed strike for bolt.

I. Sliding and Folding Door Hardware: Conform to ANSI A 15.

J. Template Hinges

Conform to ANSI A 156.1 and A 156.7. All hinges shall be full-mortise type, ball-bearing function, unless otherwise indicated on Hardware Schedule Appendix "B".

K. Materials and Finish

Conform to ANSI A 156.18, do not furnish products of Type 0 "optional" materials or forming methods. Provide matching finishes for hardware units at each door or opening to the greatest extent possible. Reduce color and texture differences as much as commercially possible.

1.04 QUALITY ASSURANCE

A. The entity performing Work of this Section shall have a minimum of 5 years of experience involving quantities and complexities at least equal to those required for the Work of this Section, and shall employ an architectural hardware consultant who shall be available for consultation at the construction site if requested by the Engineer.

B. Provide instruction for the management of the key control system, if any, as required by 1.04 of Appendix "C".

C. Manufacturers for various products are listed in Finish Hardware Schedule Appendix "B". Except as otherwise shown on Appendix "B", products of equivalent quality, design and function by other manufacturers may be used subject to approval of the Engineer in accordance with 1.06 A hereof.

1. Provide each type of hardware (latch and locksets, mortise locks, mortise cylinders, hinges, closers, or other items) from a single manufacturer.

2. Where finish hardware provided as Work of this Section is to be installed within an existing Authority facility, provide such items from the same manufacturer as presently installed, unless otherwise shown on Appendix "B".

1.05 DELIVERY, STORAGE, AND HANDLING

A. Tag or package each item separately, with identification related hardware schedule required in 1.06 B.1 set number. Include manufacturer's basic installation instructions with each item or package.

B. Pack and deliver all locks and cylinders less keys.

C. Provide secure lock-up for hardware delivered to the construction site, but not yet installed. Provide controlled handling and installation of hardware until issuance of the Certificate of Final Completion.

D. Deliver keys as required by Appendix "C".

E. If extra stock is required by Appendix "D", deliver materials to the Engineer in accordance with 1.05 A and B hereof; and deliver keys in accordance with Appendix "C" hereof.

1.06 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MANUFACTURERS

A. Finish hardware manufacturers, or approved equal, are listed in Appendix "B".

B. Key control system manufacturers, if required by 1.04 of Appendix "C", as follows:

Best Lock Corp., Indianapolis, IN
Telke Inc., Glen Riddle, PA
Key Control Systems Inc., Bechtelsville, PA

2.02 MATERIALS

Provide hardware conforming to Appendix "B" and requirements of 1.03.

2.03 CONSTRUCTION FEATURES

A. Provide hardware for machine screw installation. Do not provide hardware prepared for self-tapping sheet metal screws, unless specifically scheduled otherwise in Appendix "B".

B. Furnish screws for installation with each hardware item. Provide Phillips flat-head screws unless specifically scheduled otherwise in Appendix "B". Finish exposed screws (exposed under any condition) to match hardware finish or, if exposed in surfaces of other Work, to match finish of such other Work, including "Prepared for Paint" on surfaces to receive paint finish.

C. Provide concealed fasteners for hardware units that are exposed when door is closed. Do not use through bolts; provide set screw fastener.

D. Hinges

Provide stainless steel pins on non-ferrous hinges, steel pins on steel hinges; non-removable at exterior and out-swinging corridor doors, non-rising for interior non-security exposure, flat button with matching plugs.

E. Closers

1. Section Provide parallel arms, unless otherwise scheduled in Appendix "B".
2. No corner mounting brackets permitted.
3. Mount closers on interior of building, and within stairwells.
4. Where parallel arm closers are scheduled at exterior doors in Appendix "B", provide units one size larger than manufacturer's recommendations for standard arm units.

F. Provide coordinator device for pairs of doors equipped with closers and astragal, prepared for vertical rod exit device.

G. Provide metal threshold unit of type, size and profile as shown on the Contract Drawings or scheduled on Appendix "B". Include butyl rubber or polyisobutylene mastic sealant for exterior doors.

H. Provide resilient silencers for all interior metal doorframes, 3 per single doorframe, 2 per double doorframe, unless acoustic or smoke seal is scheduled on Appendix "B".

I. Provide protection plates where scheduled on Appendix "B", sized as follows:

1. Armor plates: 36 inches high.
2. Mop plates: 4 inches high.
3. Kick plates: 8 inches high.
4. Kick plates for barrier free doors: 16 inches high.
5. Width: 1-1/2 inches less than door opening on doorstop side; 1/2 inch less than door opening opposite stop side.

PART 3. EXECUTION

3.01 INSTALLATION

A. Install each hardware item in compliance with the manufacturer's instructions. Unless otherwise shown on the Contract Drawings, locate in accordance with DHI "Recommended Locations for Builders Hardware for Custom Steel Doors and Frames".

B. Coordinate installation, removal, storage and reinstallation of items with finishing Work specified in Division 9 Section(s) of these Specifications.

C. Set hardware units level, plumb and true to line and location.

D. Drill and countersink units that are not factory-prepared for anchorage fasteners.

E. Set exterior door threshold in full bed of mastic sealant to completely exclude moisture.

3.02 ADJUSTING

A. Check and adjust each hardware item and each door. Ensure proper operation. Replace operating units that cannot be adjusted to operate freely and smoothly.

B. Adjust door control devices to compensate for operation of heating and ventilating equipment.

C. Clean hardware and adjacent surfaces.

END OF SECTION

SECTION 08715

FINISH HARDWARE

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts and Samples" of Division 1 - GENERAL PROVISIONS:

A. Product Data

Submit a finish hardware data sheet listing manufacturers of finish hardware to be furnished and installed as Work of this Section.

B. Samples

Concurrent with submittal of Appendix "B", submit one sample of each type of hardware unit, tagged with full description. Samples shall be retained by and become the property of the Authority.

C. Schedules

1. Hardware Schedule

Based on the manufacturers approved in accordance with 1.06 A. Organize schedule by hardware sets and include the following:

a. Name and manufacturer of each item.

b. Type, style function, size and finish of each item.

c. Location of hardware set cross referenced to Contract Drawing door opening numbers.

d. Door and frame sizes, and materials.

e. Wiring diagrams of electronic hardware items.

f. Explanation of all abbreviations, codes and symbols contained in schedule.

g. UL label designation.

2. Keying Schedule shall be in accordance with 1.02 of Appendix "C".

D. Quality Assurance

Submit templates to each fabricator of doors and frames as required for preparation to receive hardware. Submit to the Engineer notification of such transmittals to door fabricator(s).

E. Spare Parts List

If required by Appendix "D", submit extra stock and one complete set of specialized tools for maintenance to the Engineer in accordance with 1.05 E.

END OF APPENDIX "A"

SECTION 08715

APPENDIX "B"

FINISH HARDWARE SCHEDULE

The following schedule contains a listing of hardware for each door (and roof hatch and locker, if any) by set number which corresponds with hardware set number shown on the Contract Drawings.

*Denotes manufacturers scheduled for Work of this Section, or approved equal.

**Denotes manufacturers scheduled for Work of this Section, with no substitution permitted.

Insert * or ** adjacent to manufacturers below as appropriate for the Contract.

Item	Manufacturer	Symbol
Locks/Latches	Best	B
	Corbin	C
	Yale	Y
Cylinders	Best	B
	Corbin	C
	Yale	Y
Butts/Hinges	Hager	H
	McKinney	MC
	*Stanley	ST
Exit/Panic Devices	*Corbin	C
	Yale	Y
	Von Duprin	V
Door Bolts	Builders Brass Works	BW
	Ives	I
	Stanley	ST
Overhead Closers	*Corbin	C
	LCN	LCN
	Yale	Y
Smoke-activated Closures	*Corbin	C
	Dorma	D
	Rixon Firemark	RF
Floor Closers	Door O Matic	DM
	Dorma	D
	Rixon Firemark	RF
Overhead Stop	Corbin	C
	Glynn-Johnson	GJ
	Rixon Firemark	RF
Door Stripping, Drop Seal & Threshold	A.J. May	M
	*Pemko	P
	Zero	Z

Silencers	Builders Brass Works	BW
	*Ives	I
	Quality	Q
Push/Pull Units and Protection Plates	Builders Brass Works	BW
	Tremco	T
	Quality Hardware Co.	QH
Sliding/Bi-fold Hardware Sets	Grant	GR
	Lawrence	LA
	Stanley	ST
Door Trim/Stops	Builders Brass Works	BW
	Glynn-Johnson	GJ
	*Ives	I

HARDWARE SETS

To be determine in Stages II & III. Below are examples that do not relate to the referenced project.

HW1

1 ea.	Exit/Panic Device	Corbin Russwin	ED5000 Series Model ED5200A, CT6/M99, Pull Trim Design 06/Store Room	#4 Non-directional Stainless Steel
4 ea.	Hinges	Stanley	055125-F179	26D Stainless Steel
1 ea.	Closer	Corbin Russwin	DC2000-A5 with Cover	626 Satin Chrome Plated
1 ea.	Threshold	Pemko	255X5AFG	
1 ea.	Door Seals	Pemko	PK55BL	
1 ea.	Door Bush	Pemko	90137CP	

HW2

1 ea.	Exit/Panic Device	Yale	7150F Series Model DESIGN AU TRIM 896F	619 Satin Chrome Plated
8 ea.	Hinges	Stanley	055125-F179	26D Stainless Steel
2 ea.	Closer	Corbin Russwin	DC2000-A5 with Cover	626 Satin Chrome Plated
1 ea.	Threshold	Pemko	255X5AFG	
2 ea.	Door Seals	Pemko	PK55BL	
2 ea.	Door Bush	Pemko	90137CP	

END OF APPENDIX "B"

SECTION 08715

APPENDIX "C"

KEYING

1.01 Construction Key System

A. Equip locks with cylinders for interchangeable core pin tumbler inserts.

1. Furnish and install temporary cores for the construction period. Remove cores when directed by the Engineer.

2. Final inserts provided and installed by the Authority.

1.02 Keying System

A. General: Meet with the Engineer and the facility manager to finalize keying requirements and obtain final instructions in writing.

1. Submit detailed keying schedule as required by 1.06 C.2 of this Specification Section to indicate final keying of locks. Provide the following:

a. Keying system schematic diagram and floor plan(s) with corresponding key symbols indicated for each door.

b. Copy of final keying schedule as transmitted to lock manufacturer.

c. When keying is an extension of an existing system, include all references and registry numbers of existing keying.

B. Provide grandmaster keying system, with the existing system.

C. Mark the keying symbol on key bow only.

1.03 Keys

A. Key Material: Nickel silver, without substitution.

B. If a construction key system is required by 1.01 A hereof, deliver construction keys and the temporary cores from the lock manufacturer to the Engineer via registered mail. Schedule mail delivery to provide key and core receipt to the Engineer prior to construction site delivery of finish hardware items.

C. Key Quantity: Deliver the following keys from the lock manufacturer to the Engineer via registered mail.

1. Prior to construction site delivery of finish hardware items:

a. 12 change keys.

b. 4 of each master key, grandmaster key.

2. Prior to issuance of the Certificate of Final Completion, 4 control keys for initial construction.

1.04 Key Control System

A: A key control system is not required.

END OF APPENDIX "C"

SECTION 08715

APPENDIX "D"

MAINTENANCE PROVISIONS

1.01 Extra Stock

A. Extra stock for finish hardware items is not required.

B. Specialized tools are not required.

END OF APPENDIX "D"

DIVISION 7

SECTION 07270

FIRESTOPPING

PART 1. GENERAL

1.01 SUMMARY

A. This Section specifies firestopping for the following applications:

1. Penetrations through fire resistance rated floor and roof construction including both empty openings and openings containing cables, pipes, ducts, conduits, and other penetrating items.
2. Penetrations through fire-resistance-rated walls and partitions including both empty openings and openings containing cables, pipes, ducts, conduits, and other penetrating items.
3. Penetrations through smoke barriers and construction enclosing compartmentalized areas involving both empty openings and openings containing penetrating items.
4. Sealant joints in fire-resistance-rated construction.
5. Voids at the intersection of partitions with structure above.

1.02 REFERENCES

The following is a listing of publications referenced in this Section:

American Society for Testing and Materials (ASTM)

ASTM E 84	Surface Burning Characteristics of Building Materials
ASTM E 119	Fire Tests of Building Construction and Materials
ASTM E 136	Behavior of Materials in a Vertical Tube Furnace
ASTM E 814	Fire Tests of Through - Penetration Fire Stops

Underwriters Laboratories (UL)

Fire Resistance Directory

1.03 DESIGN AND PERFORMANCE REQUIREMENTS

A. General: Provide firestopping systems that are produced and installed to resist the spread of fire, according to requirements indicated in this Specifications Section, and the passage of smoke and other gases.

B. F-Rated Through-Penetration Firestop Systems: Provide through-penetration firestop systems with F ratings shown on the Contract Drawings, as determined per ASTM E 814, but not less than that equaling or exceeding the fire-resistance rating of the constructions penetrated.

C. T-Rated Through-Penetration Firestop Systems: Provide through-penetration firestop systems with T ratings, in addition to F ratings, as determined per ASTM E 814, where shown on the Contract Drawings and where systems protect penetrating items exposed to contact with adjacent materials in occupiable floor areas. T-rated assemblies are required where firestop systems protect penetrating items larger than a 4-inch-diameter nominal pipe or 16 sq. in. in overall cross-sectional area.

D. Fire-Resistive Joint Sealants: Provide joint sealants with fire-resistance ratings shown on the Contract Drawings, as determined per ASTM E 119, but not less than that equaling or exceeding the fire-resistance rating of the construction in which the joint occurs.

E. For firestopping exposed to traffic, moisture, and physical damage, provide products that do not deteriorate when exposed to these conditions.

1. For piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture-resistant through-penetration firestop systems.

2. For floor penetrations with annular spaces exceeding 4 inches or more in width and exposed to possible loading and traffic, provide firestop systems capable of supporting the floor loads involved either by installing floor plates or by other means.

3. For penetrations involving insulated piping, provide through-penetration firestop systems not requiring removal of insulation.

F. For firestopping exposed to view, provide products with flame-spread values of less than 25 and smoke-developed values of less than 450, as determined per ASTM E 84.

G. Conditions Requiring Firestopping

1. General:

a. Provide firestopping for conditions specified whether or not firestopping is shown on the Contract Drawings, and, if shown, whether such material is designated as insulation, safing or otherwise.

b. Provide UL listed assemblies for firestopping at all penetrations through floors and fire rated walls and partitions where noted on the contract drawings or if not shown, as required by the International Building Code. Provide two hour ratings at all firestopping locations.

c. Insulation types specified in other Sections of the Specifications shall not be installed in lieu of firestopping material specified herein.

2. Building Exterior Perimeters:

a. Where exterior facing construction is continuous past a structural floor, and a space (i.e. construction joint) would otherwise remain open between the inner face of the wall construction and the outer perimeter edge of the structural floor, provide firestopping to equal the fire resistance of the floor assembly. Mineral wool by itself is not an acceptable firestop. If mineral wool is part of firestop system, the mineral wool must be completely covered by appropriate thickness of UL or Warnock Hersey listed firestop sealant.

b. Firestopping shall be provided whether or not there are any clips, angles, plates, or other members bridging or interconnecting the facing and floor systems, and whether or not such items are continuous.

c. Where an exterior wall of composite type construction passes a perimeter structural members, such as a girder, beam, or strut and the finish on the interior wall face does not continue up too close with the underside of the structural floor above, thus interrupting the fire-resistive integrity of the wall system, and a space would otherwise remain open between the interior face of the wall and lower edge of the structural members, provide firestopping to continuously fill such open space.

3. Interior Walls and Partitions:

a. Construction joints between top of fire rated walls and underside of floors above, shall be firestopped.

b. Firestop system installed shall have been tested by either UL or Warnock Hersey, including exposure to hose stream test and including for use with steel fluted deck floor assemblies.

c. Firestop system used shall allow for deflection of floor above.

4. Penetrations:

a. Penetrations include conduit, cable, wire, pipe, duct, or other elements that pass through one or both outer surfaces of a fire rated floor, wall or partition.

b. Except for floors on grade, where a penetration occurs through a structural floor or roof and a space would otherwise remain open between the surfaces of the penetration and the edge of the adjoining structural floor or roof, provide firestopping to fill such spaces in accordance with ASTM E 814 (UL 1479).

c. These requirements for penetrations shall apply whether or not sleeves have been provided. Firestop the annular space between sleeve and surrounding surfaces.

5. Provide firestopping to fill miscellaneous voids and openings in fire rated construction in a manner essentially the same as specified herein.

1.04 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: Provide firestopping that complies with the following requirements:

1. Firestopping tests are performed by a qualified testing and inspecting agency. A qualified testing and inspecting agency is UL, Warnock Hersey, or another agency performing testing and follow-up inspection services for firestop systems that is acceptable to authorities having jurisdiction, as though the Authority were a private corporation.

2. Through-penetration firestop systems are identical to those tested per ASTM E 814 under conditions where positive furnace pressure differential of at 0.01 inch of water is maintained at a distance of 0.78 inch below the fill materials surrounding the penetrating items in the test assembly. Provide rated systems complying with the following requirements:

a. Through-penetration firestop system products bear classification marking of qualified testing and inspecting agency.

b. Through-penetration firestop systems correspond to those shown on the Contract Drawings by reference to through-penetration firestop system designations listed by UL in their "Fire Resistance Directory," by Warnock Hersey, or by another qualified testing and inspecting agency.

3. Fire-resistive joint sealant systems are identical to those tested for fire-response characteristics per ASTM E 119 under conditions where the positive furnace pressure differential is at least 0.01 inch of water, as measured 0.78 inch from the face exposed to furnace fire. Provide systems complying with the following requirements:

a. Fire-Resistance Ratings of Joint Sealants: As shown on the Contract Drawings by reference to design designations listed by UL in their "Fire Resistance Directory" or by another qualified testing and inspecting agency.

b. Joint sealants, including backing materials, bear classification marking of qualified testing and inspection agency.

B. Information on Contract Drawings referring to specific design designations of through-penetration firestop systems is intended to establish requirements for performance based on conditions that are expected to exist during installation. Any changes in conditions and designated systems require the Engineer's prior approval. Submit documentation showing that the performance of proposed substitutions equals or exceeds that of the systems they would replace and are acceptable to authorities having jurisdiction, as though the Authority were a private corporation.

C. Installer Qualifications: Engage an experienced Installer who has completed firestopping that is similar in material, design, and extent to that shown on the Contract Drawings for Work of this Contract and that has performed successfully.

D. Installer Qualifications: Engage an experienced Installer who is certified, licensed, or otherwise qualified by the firestopping manufacturer as having the necessary experience, staff, and training to install manufacturer's products per specified requirements. A manufacturer's willingness to sell its firestopping products to the Contractor or to an Installer engaged by the Contractor does not in itself confer qualification on the buyer.

E. Single-Source Responsibility: Obtain through-penetration firestop systems for each kind of penetration and construction condition shown on the Contract Drawings from a single manufacturer.

F. Field-Constructed Mockup: Prior to installing firestopping, erect mockups for each different through-penetration firestop system shown on the Contract Drawings to verify selections made and to demonstrate qualities of materials and execution. Build mockups to comply with the following requirements, using materials shown on the Contract Drawings for final installations.

1. Locate mockups on site in locations shown on the Contract Drawings or, if not shown on the Contract Drawings, as directed by Engineer.

2. Notify Engineer 1 week in advance of the dates and times when mockups will be erected.

3. Obtain Engineer's acceptance of mockups before start of final unit of Work.

4. Retain and maintain mockups during construction in an undisturbed condition as a standard for judging completed unit of Work.

   a. When directed, demolish and remove mockups from Project site.

   b. Accepted mockups in an undisturbed condition at time of Substantial Completion may become part of completed unit of Work.

G. Provide firestopping products containing no asbestos as determined by the method specified in 40 CFR Part 763, Subpart F, Appendix A, Section 1, "Polarized Light Microscopy."

H. Coordinating Work: Coordinate construction of openings and penetrating items to ensure that designated through-penetration firestop systems are installed per specified requirements.

I. Preinstallation Conference: Conduct conference at Project site to comply with requirements of Division 1 Section "Project Meetings."

J. Engineer may employ and pay a qualified inspection agency to check installed firestopping systems for compliance with requirements.

K. Sequencing and Scheduling

   1. Notify Engineer at least 1 week in advance of firestopping installations; confirm dates and times on days preceding each series of installations.

   2. Do not cover up those firestopping installations that will become concealed behind other construction until Engineer and authorities having jurisdiction, if any, have examined each installation.

1.05 ENVIRONMENTAL CONDITIONS

A. Environmental Conditions: Do not install firestopping when ambient or substrate temperatures are outside limits permitted by firestopping manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.

B. Ventilation: Ventilate firestopping per firestopping manufacturers' instructions by natural means or, where this is inadequate, forced air circulation.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver firestopping products to Project site in original, unopened containers or packages with intact and legible manufacturers' labels identifying product and manufacturer; date of manufacture; lot number; shelf life, if applicable; qualified testing and inspecting agency's classification marking applicable to Project; curing time; and mixing instructions for multicomponent materials.

B. Store and handle firestopping materials to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.07 SUSTAINABLE DESIGN REQUIREMENTS

A. Sustainable Design General Requirements

1. The Authority requires the Contractor to implement practices and procedures to meet the sustainable design requirements. The Contractor shall ensure that the requirements related to these goals, as defined in Division 1 - GENERAL PROVISIONS and the articles below, are implemented to the fullest extent. Substitutions, or other changes to the work proposed by the Contractor will not be allowed if such changes compromise the stated Sustainable Design Performance Criteria

B. Sustainable Design Performance Criteria

1. The post-industrial and/or post-consumer recycled content (by weight) of Mineral Fiber Insulation and other firestopping products shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

2. The manufacturing location (final assembly) of the Mineral fiber insulation and other firestopping products(s) shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

3. All field-applied adhesives, sealants, paints and coatings relating to work of this section shall meet the requirements of Division 1 - GENERAL PROVISIONS.

4. Mineral-fiber firestopping materials that are exposed to supply or return air plenums, or that are located above suspended ceilings, must be encapsulated or fully sealed to prevent direct exposure of the mineral fibers to the plenum. Where sealants are used to encapsulate the mineral fiber materials (e.g. smoke sealants used at perimeter firestopping joints), the sealants shall meet the requirements of Division 1 - GENERAL PROVISIONS.

1.08 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MANUFACTURERS

Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:

A. Endothermic, Latex Sealant:

1. LC-150 Firestop Sealant; Specified Technologies, Inc.; Somerville, NJ;

2. 3M Fire Dam 150; 3M Company, Construction Markets Division; St. Paul, MN;

3. Tremstop Acrylic Latex; Tremco, Inc.; Cleveland, OH.

B. Endothermic, Latex Compounds:

1. LC-150 Firestop Compound; Specified Technologies, Inc.;

2. 3M Fire Dam 150; 3M Company, Construction Markets Division.

C. Firestop Sleeve:

1. Biostop Pipe Collars; Bio Fireshield, Inc.;
2. Metacaulk Universal Collar 880; The RectorSealCorporation;
3. 3M Plastic Pipe Devices; 3M Company, Construction Markets Division;
4. Fyre Can; Tremco, Inc.; Cleveland, OH.

D. Intumescent Latex Sealant:

1. Biostop 700 Spray Applied Mastic, Bio Fireshield, Inc.;
2. LBC Latex Based Caulk; Nelson Firestop Products; Tulsa, OK;
3. Metacaulk 950; The RectorSeal Corporation;
4. Metacaulk 1000 Spray Applied Mastic; The RectorSeal Corporation;
5. SSS-100 Firestop Sealant; Specified Technologies, Inc.;
6. 3M CP 25 WB+; 3M Company, Construction Markets Division;
7. Tremstop WBM G; Tremco, Inc.; Cleveland, OH.

E. Intumescent Putty:

1. Biostop Fire Rated Putty Stix/Pads; Bio Fireshield, Inc.;
2. FSP Firestop Putty; Nelson Firestop Products;
3. Metacaulk Fire-Rated Putty Sticks/Pads; The RectorSeal Corporation;
4. SSP-100 Firestop Putty; Specified Technologies, Inc.;
5. 3M Moldable Putty+ (Stix/Pads); 3M Company, Construction Markets Division;
6. Tremco Flowable Putty; Tremco, Inc.; Cleveland, OH.

F. Intumescent Wrap Strips:

1. Biostop Pipe Collars; Bio Fireshield, Inc.;
2. WRS Wrap Strip; Nelson Firestop Products;
3. Metacaulk Wrap Strip; The RectorSeal Corporation;
4. SSW-12 Wrap Strips; Specified Technologies,Inc.;
5. 3M FS 195+ Wrap Strips; 3M Company, Construction Markets Division;
6. Tremco Wrap Strips; Tremco, Inc.; Cleveland,OH.

G. Job-Mixed Vinyl Compound:

1. USG Firecode Compound, United States Gypsum Co.; Chicago, IL.

H. Mortar:

1. K-2 Firestop Mortar, Bio Fireshield, Inc.;
2. Novasit K-10 Firestop Mortar, Bio Fireshield, Inc.;
3. CMP Firestop Compound; Nelson Firestop Products;
4. SSM-228 Firestop Mortar; Specified Technologies, Inc.;

5. 3M Fire Barrier Mortar; 3M Company, Construction MarketsDivision;

6. Tremstop Mortar System; Tremco, Inc.; Cleveland, OH.

I. Pillows/Bags:

1. Firestop Pillows, Bio Fireshield, Inc.;

2. PLW Firestop Pillows; Nelson Firestop Products;

3. SSB Series Firestop Pillows; Specified Technologies, Inc.;

4. Tremstop Pillow System; Tremco, Inc.; Cleveland, OH.

J. Silicone Sealants:

1. BioTherm 100/200; Bio Fireshield, Inc.;

2. CLK Firestop Caulk; Nelson Firestop Products;

3. SSB Series Firestop Pillows; SpecifiedTechnologies, Inc.;

4. Pensil 300 Firestop Sealant, GE Silicones; Waterford, NY;

5. Metacaulk 835, The RectorSeal Corporation;

6. Metacaulk 880, The RectorSeal Corporation;

7. 3M Fire Barrier 2000, 2000+ and 2003; 3M Company, Construction Markets Division;

8. Fyre Sil and Fyre Sil/SL; Tremco, Inc.; Cleveland, OH.

2.02 MATERIALS

A. Compatibility: Provide firestopping composed of components that are compatible with each other, the substrates forming openings, and the items, if any, penetrating the firestopping under conditions of service and application, as demonstrated by firestopping manufacturer based on testing and field experience.

B. Accessories: Provide components for each firestopping system that are needed to install fill materials and to comply with "Design and Performance Requirements" Article in Part 1. Use only components specified by the firestopping manufacturer and approved by the qualified testing and inspecting agency for the designated fire-resistance-rated systems. Accessories include but are not limited to the following items:

1. Permanent forming/damming/backing materials including the following:

   a. Semirefractory fiber (mineral wool) insulation.

   b. Sealants used in combination with other forming/damming materials to prevent leakage of fill materials in liquid state.

   c. Fire-rated formboard.

   d. Joint fillers for joint sealants.

2. Temporary forming materials.

3. Substrate primers.

4. Collars.

5. Steel sleeves.

C. Applications: Provide firestopping systems composed of materials specified in this Section that comply with system performance and other requirements.

D. Fill Materials For Through-Penetration Firestop Systems

1. Endothermic, Latex Compound Sealant: Single-component,endothermic, latex formulation.

2. Intumescent, Latex Sealant: Single-component, intumescent, latex formulation.

3. Intumescent Putty: Nonhardening, dielectric, water-resistant putty containing no solvents, inorganic fibers, or silicone compounds.

4. Intumescent Wrap Strips: Single-component, elastomeric sheet with aluminum foil on one side.

5. Job-Mixed Vinyl Compound: Prepackaged vinyl-based powder product for mixing with water at Project site to produce a paintable compound, passing ASTM E 136, with flame-spread and smoke-developed ratings of zero per ASTM E 84.

6. Mortar: Prepackaged dry mix composed of a blend of inorganic binders, fillers, and lightweight aggregate formulated for mixing with water at Project site to form a nonshrinking, homogenous mortar.

7. Pillows/Bags: Re-usable, heat-expanding pillows/bags composed of glass-fiber cloth cases filled with a combination of mineral-fiber, water-insoluble expansion agents and fire-retardant additives.

8. Silicone Sealant: Moisture-curing, single-component, silicone-based, neutral-curing elastomeric sealant, nonsag grade. Unless otherwise shown on the Contract Drawings, firestop system shall use nonsag grade for both vertical and horizontal surfaces.

2.03 MIXING

A. For those products requiring mixing prior to application, comply with firestopping manufacturer's directions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other procedures needed to produce firestopping products of uniform quality with optimum performance characteristics for application shown on the Contract Drawings.

PART 3. EXECUTION

3.01 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of firestopping. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Surface Cleaning: Clean out openings and joints immediately prior to installing firestopping to comply with recommendations of firestopping manufacturer and the following requirements:

1. Remove all foreign materials from surfaces of opening and joint substrates and from penetrating items that could interfere with adhesion of firestopping.

2. Clean opening and joint substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with firestopping. Remove loose particles remaining from cleaning operation.

3. Remove laitance and form release agents from concrete.

B. Priming: Prime substrates where recommended by firestopping manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

C. Masking Tape: Use masking tape to prevent firestopping from contacting adjoining surfaces that will remain exposed upon completion of Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove smears from firestopping materials. Remove tape as soon as it is possible to do so without disturbing firestopping's seal with substrates.

3.03 INSTALLING THROUGH-PENETRATION FIRESTOPS

A. General: Comply with the "System Performance Requirements" article in Part 1 and the through-penetration firestop manufacturer's installation instructions and drawings pertaining to products and applications shown on the Contract Drawings.

B. Install forming/damming materials and other accessories of types required to support fill materials during their application and in the position needed to produce the cross-sectional shapes and depths required to achieve fire ratings of designated through-penetration firestop systems. After installing fill materials, remove combustible forming materials and other accessories not shown on the Contract Drawings as permanent components of firestop systems.

C. Install fill materials for through-penetration firestop systems by proven techniques to produce the following results:

1. Completely fill voids and cavities formed by openings, forming materials, accessories, and penetrating items.

2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.

3. For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.04 INSTALLING FIRE-RESISTIVE JOINT SEALANTS

A. General: Comply with the "System Performance Requirements" article in Part 1, with ASTM C 1193, and with the sealant manufacturer's installation instructions and drawings pertaining to products and applications shown on the Contract Drawings.

B. Install joint fillers to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability and develop fire-resistance rating required.

C. Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross-sectional shapes and depths relative to joint width that optimum sealant movement capability. Install sealants at the same time joint fillers are installed.

D. Tool nonsag sealants immediately after sealant application and prior to the time skinning or curing begins. Form smooth, uniform beads of configuration shown on the Contract Drawings or required to produce fire-resistance rating, as well as to eliminate air pockets, and to ensure contact and adhesion of sealants with sides of joint. Remove excess sealant from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.

3.05 FIELD QUALITY CONTROL

A. Inspecting agency employed and paid by Engineer may examine completed firestopping to determine, in general, if it is being installed in compliance with requirements.

B. Inspecting agency will report observations promptly and in writing to Contractor and Engineer.

C. Do not proceed to enclose firestopping with other construction until reports of examinations are issued.

D. Where deficiencies are found, repair or replace firestopping so that it complies with requirements.

3.06 CLEANING

A. Clean off excess fill materials and sealants adjacent to openings and joints as work progresses by methods and with cleaning materials approved by manufacturers of firestopping products and of products in which opening and joints occur.

B. Protect firestopping during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of issuance of Certificate of Final Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated firestopping immediately and install new materials to produce firestopping complying with specified requirements.

END OF SECTION

SECTION 07270

FIRESTOPPING

APPENDIX "A"

SUBMITTALS

A. Product data for each type of product specified.

1. Certification by firestopping manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs) and are nontoxic to building occupants.

2. Submit firestopping schedule of all required applications and include UL design numbers and product data for all applicable products.

B. Shop drawings detailing materials, installation methods, and relationships to adjoining construction for each through-penetration firestop system, and each kind of construction condition penetrated and kind of penetrating item. Include firestop design designation of qualified testing and inspecting agency evidencing compliance with requirements for each condition shown on the Contract Drawings.

1. Submit documentation, including illustrations, from a qualified testing and inspecting agency that is applicable to each through-penetration firestop configuration for construction and penetrating items.

2. Where Project conditions require modification of qualified testing and inspecting agency's illustration to suit a particular through-penetration firestop condition, submit illustration approved by firestopping manufacturer's fire protection engineer with modifications marked.

C. Product certificates signed by manufacturers of firestopping products certifying that their products comply with specified requirements.

D. Certified product test reports from, and based on tests performed by, a qualified testing and inspecting agency evidencing compliance of firestopping with requirements based on comprehensive testing of current products, for engineer's approval.

E. Qualification data for firms and persons specified in "Quality Assurance" article to demonstrate their capabilities and experience. Include list of completed projects with project names, addresses, names of Engineers and Owners, and other information specified.

F. Sustainable Design Submittal Requirements:

The Contractor shall submit the Sustainable Design certification items listed herein. Sustainable Design submittals shall include the following:

1. A completed Sustainable Design Materials Certification Form (SDMCF), appended to Division 1 - GENERAL PROVISIONS. Information to be supplied for this form shall include:

a. Cost breakdowns for the materials included in the Contractor's work. Cost breakdowns shall include total cost plus itemized material costs.

b. *The amount of post-consumer and/or post-industrial recycled content in the supplied product(s).

c. *The manufacturing location of the supplied product(s).

d. *The location (source) of the raw materials used to manufacture the supplied product(s).

e. *The VOC content of all adhesives, sealants, paints, and coatings applied on site as part of this work.

* If applicable- requirements are defined per the SUSTAINABLE DESIGN Performance Criteria, this section.

2. Published product literature or letters of Certification, provided from the product manufacturer on the manufacturer's letterhead, to verify the product information supplied for the SDMCF.

3. Product cut sheets for materials that meet the SDMCF.

4. Material Safety Data Sheets (MSDS), for applicable products. Applicable products include, but are not limited to field-applied adhesives, sealants, carpets, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).

5. The Sustainable Design submittal information shall be assembled into one (1) package per Section or trade, and sent to the Engineer of review.

END OF APPENDIX "A"

DIVISION 5

SECTION 05721

GLASS AND STAINLESS STEEL GUARDRAIL

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:
   1. Glass- supported guardrail, with stainless steel rail.

1.2 DEFINITIONS

A. Guardrail: railings, guards, handrails, and similar devices used for protection of occupants at open-sided floor areas, pedestrian guidance and support, visual separation, or wall protection.

1.3 REFERENCES

A. Structural Performance

1. Handrails and railings shall be capable of resisting structural loads required by the New York City Building Code or the New Jersey Uniform Construction Code, as applicable to where the Project is located.

2. When installed, guard rail assemblies shall be capable of withstanding required gravity loads and structural loads, applicable to the specific location or use, without exceeding the allowable design working stress of the materials involved, including anchors and connections.

3. Thermal Movements: Allow for thermal movements of handrails and railings resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

   a. Temperature Change (Range): 120 degrees F, ambient; 180 degrees F, material surfaces.

B. Corrosion Control: Prevent galvanic action and other forms of corrosion by isolating metals and other materials from direct contact with incompatible materials.

1.4 QUALITY ASSURANCE

A. Where required by Appendix "A", submit structural calculations for handrails and railings. Determine allowable design working stresses of handrail and railing materials based on AISC 335.

C. Engineer Qualifications

A professional engineer who is legally qualified to practice in the jurisdiction where the Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for design of handrails and railings indicated for this Project in material, design and installation.

D. Welding Standards

1. AWS.D1.1, "Structural Welding Code--Steel."
2. AWS D1.6, "Structural Welding Code--Stainless Steel."
3. Each welder shall have satisfactorily passed AWS qualification tests for welding processes involved and shall be currently AWS certified.

E. Single Source Responsibility

Obtain each type of handrail and railing through one source from a single manufacturer.

F. Field Measurements

Verify handrail and railing dimensions by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

G. Product Options: Contract Drawings indicate size, profiles, and dimensional requirements of guardrails and are based on the specific system indicated.

1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

H. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.

1. Build mockups as shown on Contract Drawings.

1.5 DELIVERY, STORAGE, AND HANDLING

Protect material from damage including, but not limited to, scratches, nicks, dents and gouges during delivery, storage, assembly and installation.

1.6 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

Architectural Metal Works.

Blum, Julius & Co., Inc.

Blumcraft of Pittsburgh.

Livers Bronze Co.

Platers Polishing Company; a division of Rippel Architectural Metals.

TACO Metals Inc.

Tri Tech, Inc.

Zephyr Southwest Ornamental, LLC.

2.2 MATERIALS

A. Metals, General
1. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.
2. Brackets, Flanges, and Anchors: Same metal and finish as supported rails, unless otherwise indicated.
3. Usually select one of four subparagraphs below that corresponds with type of bracket used. Delete all four if wall rails are not used.
4. Provide cast-metal brackets with flange tapped for concealed anchorage to threaded hanger bolt.
5. Provide either formed- or cast-metal brackets with predrilled hole for exposed bolt anchorage.
6. Provide formed-steel brackets with predrilled hole for bolted anchorage and with snap-on cover that matches rail finish and conceals bracket base and bolt head.
7. Provide extruded-aluminum brackets with interlocking pieces that conceal anchorage. Locate setscrews on bottom of bracket.

B. STAINLESS STEEL
1. Tubing: ASTM A 554, Grade MT 304.

2. Plate and Sheet: ASTM A 666, Type 304.

C. STEEL AND IRON

1. Bars: Hot-rolled, carbon steel complying with ASTM A 29, Grade 1010.
2. Plates, Shapes, and Bars: ASTM A 36.
3. Castings: Either gray or malleable iron, unless otherwise indicated.
4. Gray Iron: ASTM A 48, Class 30, unless another class is indicated or required by structural loads.
5. Malleable Iron: ASTM A 47.

D. GLASS AND GLAZING MATERIALS

1. Tempered Glass: ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated), Type 1 (transparent flat glass), Quality-Q3. Provide products that have been tested for surface and edge compression according to ASTM C 1048 and for impact strength according to 16 CFR 1201 for Category II materials.
2. Clear Glass: Class 1 (clear).
3. Tinted Glass: Class 2 (tinted), manufacturer's standard gray tint.
4. Thickness: ¾ inch.
5. Glazing Cement and Accessories for Structural Glazing: Provide glazing cement, setting blocks, shims, and related accessories as recommended or supplied by railing manufacturer for installing structural glazing in metal subrails.

E. FASTENERS

1. General: Provide the following:
   a. Stainless-Steel Components: Type 304 stainless-steel fasteners.
   b. Uncoated Steel Components: Plated-steel fasteners complying with ASTM B 633, Class Fe/Zn 25 for electrodeposited zinc coating where concealed; Type 304 stainless-steel fasteners where exposed.
   c. Galvanized Steel Components: Plated-steel fasteners complying with ASTM B 633, Class Fe/Zn 25 for electrodeposited zinc coating.
   d. Dissimilar Metals: Type 304 stainless-steel fasteners.
   e. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.
   f. Provide concealed fasteners for interconnecting railing components and for attaching railings to other work, unless otherwise shown on the Contract drawings.
   g. Anchors: Provide torque-controlled expansion anchors, fabricated from corrosion-resistant materials with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and equal to four times the load imposed when installed in concrete, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.

2.3 FABRICATION

A. General

Fabricate guardrails to dimensions and details shown on the Contract Drawings. Furnish members in sizes and profiles shown on Contract Drawings, with supporting elements as shown, but not less than required to support the design loadings required by Structural Loading Requirements, of this Section.

1. Preassemble items in shop to the greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly match mark units for reassembly and coordinated installation.

2. Shear and punch metals cleanly and accurately. Remove burrs and ease exposed edges to a radius of approximately 1/32 inch. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing the Work.

3. Cut, reinforce, drill and tap components to receive anchorage, finish hardware and similar items.

4. Close exposed ends of guardrail members with prefabricated end fittings.

B. Welded Connections

Fabricate guardrails with welded connections, unless otherwise shown on the Contract Drawings. Cope components at perpendicular and skew connections to provide close fit or use fittings designed for this purpose. Weld connections continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove flux immediately.
4. At exposed connections, finish exposed surfaces smooth and blend so no roughness shows after finishing and so welded surface matches contours of adjoining surfaces.
5. All welded permanent splices shall be complete penetration welds unless otherwise shown on the contract drawings.

C. Nonwelded Connections

Where railings are shown on the Contract Drawings to be adhesively or mechanically attached:

1. Fabricate handrails and railings to accommodate interconnection of members using railing manufacturer's standard concealed mechanical fasteners and fittings.
2. Assemble members and fittings to produce flush, smooth and rigid hairline joints.
3. Splice joints for field connection shall use epoxy structural adhesive where such procedure represents manufacturer's standard splices.

D. Stainless Steel Finishes

Comply with NAAMM's *Metal Finishes Manual for Architectural and Metal Products* for recommendations for applying and designating finishes. Protect finishes on exposed surfaces with a strippable, temporary protective covering prior to shipment.

1. Finish designations prefixed by "AISI" conform to the system established by the American Iron and Steel Institute for designating stainless steel finishes.
2. Grind and polish surfaces to produce uniform, directionally textured and polished finish indicated, free of cross scratches. Run grain of directional finishes, if any, with long dimension of each piece.
3. Remove or blend tool and die marks and stretch lines into finish.
4. Furnish one or more of the following finishes, where shown on the Contract Drawings. If no finish is shown, provide a 320-grit polished finish.
   a. 180-Grit Polished Finish: Oil-ground, uniform, directionally textured finish.

b. 320-Grit Polished Finish: Oil-ground, uniform, fine, directionally textured finish.
c. Polished and Buffed Finish: Oil-ground, 180-grit finish followed by buffing.
d. Bright, Directional Polish: AISI No. 4 finish (applied after fabrication).

5. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

E. Glazing Panel Fabrication
1. General: Fabricate to sizes and shapes required; provide for proper edge clearance and bite on glazing panels.
2. Method in paragraph below is standard with some manufacturers and optional with others. Most offer only field-glazed systems. Coordinate with manufacturers selected.
3. Structural Glass Balusters: Factory-bond glass to aluminum base and top-rail channels in railing manufacturer's plant using glazing cement to comply with manufacturer's written specifications, unless field glazing is standard with manufacturer.

~~Part 3.~~PART 3 - EXECUTION

~~3.01~~3.1 PREPARATION

Coordinate setting drawings, diagrams, templates, instructions and directions for installation of anchorages, such as sleeves, inserts, anchor bolts and miscellaneous items having integral anchors, which are to be embedded in concrete as masonry construction specified in other Sections. Coordinate delivery of such items to the construction site in time for installation.

~~3.02~~3.2 INSTALLATION

A. General
1. Fit exposed connections accurately together to form tight, hairline joints.
2. Perform cutting, drilling and fitting required for installation of handrails and railings. Set Work accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels.
3. Do not weld, cut or abrade surfaces of handrails and railing components which have been coated or finished after fabrication and are intended for field connection by mechanical means without further cutting or fitting.
4. Set glass balustrades plumb within a tolerance of 1/16 inch in 3 feet.

~~6.~~B. Adjust guardrails prior to anchoring to ensure matching alignment at abutting joints. Space posts at interval shown on the Contract Drawings or, if not shown, as required by design loadings specified in this Section.

C. Installing Glass Panels
1. Glass-Supported Railings: Install assembly to comply with railing manufacturer's written instructions.
2. Attach base channel to building structure, then insert and connect factory-fabricated and - assembled glass panels if glass was bonded to base and top rail channels in factory.

3. Attach base channel to building structure, then insert glass into base channel and bond with glazing cement unless glass was bonded to base and top rail channels in factory.
   a. Support glass panels in base channel at quarter points with channel-shaped setting blocks that also act as shims to maintain uniform space for glazing cement. Fill remaining space in base channel with glazing cement for uniform support of glass.
4. Adjust spacing of glass panels so gaps between panels are equal before securing in position.
5. Erect glass railings under direct supervision of manufacturer's authorized technical personnel.

3.3 CLEANING

D. Clean stainless steel by washing thoroughly with clean water and soap, rinsing with clean water, and wiping dry.

E. Clean and polish glass.

3.4 PROTECTION

F. Protect finishes of guardrails from damage during construction period with temporary protective coverings approved by guardrail manufacturer. Remove protective coverings at time of Substantial Completion.

G. Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in field to shop; make required alterations and refinish entire unit, or provide new units.

END OF SECTION

DIVISION 5

SECTION 05721

GLASS AND STAINLESS STEEL GUARDRAIL

APPENDIX "A" - SUBMITTALS

A. Product Data: For the following:
   1. Manufacturer's product lines of railings assembled from standard components.
   2. Grout, anchoring cement, and paint products.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
   1. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

C. Samples for Initial Selection: For products involving selection of color, texture, or design, including mechanical finishes.

D. Samples for Verification: For each type of exposed finish required.
   1. Sections of each distinctly different linear railing member, including handrails, top rails, posts, and balusters.
   2. Each type of glass required.
   3. Fittings and brackets.
   4. Welded connections.
   5. Brazed connections.
   6. Assembled Samples of railing systems, made from full-size components, including top rail, post, handrail, and infill. Show method of finishing members at intersections. Samples need not be full height.

E. Mill Certificates: Signed by manufacturers of stainless-steel products certifying that products furnished comply with requirements.

F. Welding certificates.

G. Qualification Data: For professional engineer.

H. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, according ASTM E 894 and ASTM E 935.

END OF APPENDIX "A"

DIVISION 6

SECTION 06415

GRANITE LAVATORY COUNTERTOPS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies requirements for granite lavatory countertops.

1.2 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate stone countertops similar to that indicated for this Project and whose products have a record of successful in-service performance.

B. Source Limitations for Stone: Obtain each variety of stone from a single quarry with resources to provide materials of consistent quality in appearance and physical properties.

1. Obtain each variety of stone from a single quarry, whether specified in this Section or in another Section of the Specifications.
2. Make stone slabs available for Engineer to examine for appearance characteristics.

   a. Engineer will select aesthetically acceptable slabs and will indicate aesthetically unacceptable portions of slabs.
   b. Segregate slabs selected for use on Project and mark backs indicating approval.
   c. Mark and photograph aesthetically unacceptable portions of slabs as directed by Engineer.

C. Lift stone with wide-belt slings; do not use wire rope or ropes that might cause staining. Move stone, if required, using dollies with cushioned wood supports.

D. Store stone on wood A-frames or pallets with nonstaining separators and nonstaining, waterproof covers. Ventilate under covers to prevent condensation.

1.3 PROJECT CONDITIONS

A. Field Measurements: Verify dimensions of construction to receive stone countertops by field measurements before fabrication and indicate measurements on Shop Drawings.

1.5 SUSTAINABLE DESIGN REQUIREMENTS

A. Sustainable Design General Requirements:

1. The Authority requires the Contractor to implement practices and procedures to meet the sustainable design requirements. The Contractor shall ensure that the requirements related to these goals, as defined in Division 1 - GENERAL PROVISIONS and the articles below, are implemented to the fullest extent. Substitutions, or other changes to the Work proposed by the Contractor, will not be allowed if such changes compromise the stated Sustainable Design Performance Criteria.

B. Sustainable Design Performance Criteria:

1. The post-industrial and/or post-consumer recycled content (by weight) of the resilient wall base shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

2. All field-applied adhesives, sealants, and coatings relating to Work of this Section shall meet the requirements of Division 1 - GENERAL PROVISIONS.

1.6 SUBMITTALS

A. For submittal requirements, see Appendix "A" to this Section.

PART 2 - PRODUCTS

2.1 GRANITE

A. Granite: Comply with ASTM C 615.

B. Description: Stone Types

1. Countertops and backsplashes: "Cambrian," by Fletcher Granite Co.; North Chelmsford, MA or "Cold Spring Black," Triple A Glaze grade, by Cold Spring Granite; Cold Spring, MN; match sample in Engineer's office.

C. Finish: All stone shall have polished finish on exposed surfaces, concealed surfaces shall be sawn.

2.2 ADHESIVES, GROUT, SEALANTS, AND STONE ACCESSORIES

A. General: Use only adhesives formulated for stone and ceramic tile and recommended by their manufacturer for the application indicated.

B. Water-Cleanable Epoxy Adhesive: ANSI A118.3, with a VOC content of 65 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

1. Available Manufacturers: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

   a. Bonsal, W. R. Company.
   b. Laticrete International, Inc.
   c. MAPEI Corp.
   d. Summitville Tiles, Inc.

C. Stone Adhesive: 2-part epoxy adhesive, formulated specifically for bonding stone to stone, with an initial set time of not more than 2 hours at 70 deg F, and with a VOC content of 65 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24)].

1. Color: Clear.
2. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

   a. Epoxy Adhesive: Akemi North America; Akepox.

D. Sealant for Countertops: Manufacturer's standard sealant of characteristics indicated below that comply with applicable requirements in Division 7 Section "Joint Sealants" and will not stain the stone it is applied to.

1. Single-component, acid-curing silicone sealant.

E. Stone Joint Splines: Stainless steel or brass washers approximately 1 inch in diameter and of thickness to fit snugly in saw-cut kerf in edge of stone units.

F. Stone Cleaner: Cleaner specifically formulated for stone types, finishes, and applications indicated, as recommended by stone producer and, if a sealer is specified, by sealer manufacturer. Do not use cleaning compounds containing acids, caustics, harsh fillers, or abrasives.

G. Stone Sealer: Colorless, stain-resistant sealer that does not affect color or physical properties of stone surfaces, as recommended by stone producer for application indicated.

1. Available Manufacturers: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Bostik Findley Inc.
   b. Hillyard, Inc.
   c. HMK Stone Care System.
   d. Stone Care International Inc.
   e. Summitville Tiles, Inc.

2.3 STONE FABRICATION, GENERAL

A. Factory fabricate components to sizes and shapes indicated, in accordance with approved shop drawings.

B. Form joints between components using manufacturer's standard joint adhesive; without conspicuous joints.

C. Provide factory cutouts for plumbing fittings and accessories as indicated on the drawings.

D. Cut and finish component edges with clean, sharp returns. Route radii and contours to template. Repair or reject defective and inaccurate work.

E. Select stone for intended use to prevent fabricated units from containing cracks, seams, and starts that could impair structural integrity or function.

1. Repairs that are characteristic of the varieties specified are acceptable provided they do not impair structural integrity or function and are not aesthetically unpleasing, as judged by Engineer.

F. Grade and mark stone for final locations to produce assembled countertop units with an overall uniform appearance.

G. Fabricate stone countertops in sizes and shapes required to comply with requirements indicated, including details on Drawings and Shop Drawings.

1. Comply with recommendations in NBGQA's "Specifications for Architectural Granite."
2. Clean sawed backs of stones to remove rust stains and iron particles.
3. Dress joints straight and at right angle to face, unless otherwise indicated.
4. Cut and drill sinkages and holes in stone for anchors, supports, and attachments.
5. Provide openings, reveals, and similar features as needed to accommodate adjacent work.
6. Fabricate molded edges with machines having abrasive shaping wheels made to reverse contour of edge profile to produce uniform shape throughout entire length of edge and with precisely formed arris slightly eased to prevent snipping, and matched at joints between units. Form corners of molded edges as indicated with outside corners slightly eased, unless otherwise indicated.
7. Finish exposed faces of stone to comply with requirements indicated for finish of each type of stone required and to match approved Samples and mockups. Provide matching finish on exposed edges of countertops, splashes, and cutouts.

H. Carefully inspect finished stone units at fabrication plant for compliance with requirements for appearance, material, and fabrication. Replace defective units.

2.4 STONE COUNTERTOPS

A. General: Comply with recommendations in MIA's "Dimension Stone - Design Manual."

B. Nominal Thickness: Provide thickness indicated, but not less than 1-1/4 inches. Gage backs to provide units of identical thickness.

C. Edge Detail: 3/8-inch radius with 2-inch apron.

D. Splashes: Provide 3/4-inch-thick backsplashes and end splashes, unless otherwise shown on the Contract Drawings.

1. Height: 4 inches.
2. Top-Edge Detail: Straight, slightly eased at corner.

E. Joints: Fabricate countertops without joints.

F. Cutouts and Holes:

1. Undercounter Fixtures: Make cutouts for undercounter fixtures in shop using template or pattern furnished by fixture manufacturer. Form cutouts to smooth, even curves.

   a. Provide 3/4-inch (20-mm) full bullnose edges projecting 3/8 inch (10 mm) into fixture opening.

2. Counter-Mounted Fixtures: Prepare countertops in shop for field cutting openings for counter-mounted fixtures. Mark tops for cutouts and drill holes at corners of cutout locations. Make corner holes of largest radius practical.
3. Fittings: Drill countertops in shop for plumbing fittings, undercounter soap dispensers, and similar items.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine substrates indicated to receive stone countertops and conditions under which stone countertops will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.

1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of stone countertops.
2. Proceed with installation only after unsatisfactory conditions have been corrected.

2.5 PREPARATION

A. Advise installers of other work about specific requirements for placement of inserts and similar items to be used by stone countertop Installer for anchoring stone countertops. Furnish installers of other work with Drawings or templates showing locations of these items.

B. Clean dirty or stained stone surfaces by removing soil, stains, and foreign materials before setting. Clean stone by thoroughly scrubbing with fiber brushes and then drenching with clear water. Use only mild cleaning compounds that contain no caustic or harsh materials or abrasives. Allow stone to dry before installing.

2.6 CONSTRUCTION TOLERANCES

A. Variation from Plumb: For vertical lines and surfaces, do not exceed 1/16 inch in 48 inches.

B. Variation from Level: Do not exceed 1/8 inch in 96 inches, 1/4 inch maximum.

C. Variation in Joint Width: Do not vary joint thickness more than 1/4 of nominal joint width.

D. Variation in Plane at Joints (Lipping): Do not exceed 1/64-inch difference between planes of adjacent units.

E. Variation in Line of Edge at Joints (Lipping): Do not exceed 1/64-inch difference between edges of adjacent units, where edge line continues across joint.

2.7 INSTALLATION OF COUNTERTOPS

A. General: Install countertops over plywood subtops with full spread of water-cleanable epoxy adhesive.

B. General: Install countertops by adhering to supports with water-cleanable epoxy adhesive.

C. Do not cut stone in field, unless otherwise indicated. If stone countertops or splashes require additional fabrication not specified to be performed at Project site, return to fabrication shop for adjustment.

D. Do necessary field cutting as stone is set. Use power saws with diamond blades to cut stone. Cut lines straight, true, and at right angles to finished surfaces unless beveling is required for clearance. Ease edges slightly to prevent snipping.

E. Set stone to comply with requirements indicated on Drawings and Shop Drawings. Shim and adjust stone to locations indicated, with uniform joints of widths indicated and with edges and faces aligned according to established relationships and indicated tolerances. Install anchors and other attachments indicated or necessary to secure stone countertops in place.

F. Bond joints with stone adhesive and draw tight as countertops are set. Mask areas of countertops adjacent to joints to prevent adhesive smears.

G. Space joints with 1/16-inch gap for filling with sealant. Use temporary shims to ensure uniform spacing.

1. Install metal splines in kerfs in stone edges at joints where indicated. Fill kerfs with sealant before inserting splines and remove excess immediately after adjoining units are drawn into position.
2. Clamp units to temporary bracing, supports, or each other to ensure that countertops are properly aligned and joints are of specified width.

H. Complete cutouts not finished in shop. Mask areas of countertops adjacent to cutouts to prevent damage while cutting. Use power saws with diamond blades to cut stone. Make cutouts to accurately fit items to be installed, and at right angles to finished surfaces unless beveling is required for clearance. Ease edges slightly to prevent snipping.

I. Install backsplash and end splash by adhering to wall with water-cleanable epoxy adhesive and to countertops with stone adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears.

J. Install backsplash and end splash by adhering to countertops with stone adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears. Leave 1/16-inch gap between splash and wall for filling with sealant. Use temporary shims to ensure uniform spacing.

K. Install backsplash and end splash by adhering to wall with water-cleanable epoxy adhesive. Leave 1/16-inch gap between countertop and splash for filling with sealant. Use temporary shims to ensure uniform spacing.

L. Grout joints to comply with ANSI A108.10. Remove temporary shims before grouting. Tool grout uniformly and smoothly with plastic tool.

M. Apply sealant to joints and gaps specified for filling with sealant]; comply with Division 7 Section "Joint Sealants." Remove temporary shims before applying sealant.

2.8 ADJUSTING AND CLEANING

A. In-Progress Cleaning: Clean countertops as work progresses. Remove adhesive, grout, mortar, and sealant smears immediately.

B. Remove and replace stone countertops of the following description:

1. Broken, chipped, stained, or otherwise damaged stone. Stone may be repaired if methods and results are approved by Engineer.
2. Defective countertops.
3. Defective joints, including misaligned joints.
4. Interior stone countertops and joints not matching approved Samples and mockups.
5. Interior stone countertops not complying with other requirements indicated.

C. Replace in a manner that results in stone countertops matching approved Samples and mockups, complying with other requirements, and showing no evidence of replacement.

D. Clean stone countertops not less than six days after completion of[sealant installation, using clean water and soft rags. Do not use wire brushes, acid-type cleaning agents, cleaning compounds with caustic or harsh fillers, or other materials or methods that could damage stone.

E. Sealer Application: Apply stone sealer to comply with stone producer's and sealer manufacturer's written instructions.

END OF SECTION

DIVISION 6

SECTION 06415

GRANITE LAVATORY COUNTERTOPS

APPENDIX "A"

SUBMITTALS

F. Product Data: For the following:

1. Each variety of stone. Include data on physical properties required by referenced ASTM standards.
2. Stone accessories and other manufactured products.

G. Shop Drawings: Include plans, sections, details, and attachments to other work.

H. Samples for Verification:

1. For each stone type indicated, in sets of Samples not less than 12 inches square. Include two or more Samples in each set and show the full range of variations in appearance characteristics expected in completed Work.

I. LEED Submittal:

1. Product Data for Credit EQ 4.1: For sealants, documentation including printed statement of VOC content.

J. Qualification Data: For fabricator.

K. Sealant Compatibility Test Report: From sealant manufacturer, complying with requirements in Division 7 Section "Joint Sealants" and indicating that sealants will not stain or damage stone.

L. Maintenance Data: For stone countertops to include in maintenance manuals. Include Product Data for stone-care products used or recommended by Installer, and names, addresses, and telephone numbers of local sources for products.

END OF APPENDIX "A"

DIVISION 9

SECTION 09332

GRANITE TILE AND PORCELAIN PAVER TILE

PART 1. GENERAL

1.01 SUMMARY

A. This Section specifies the requirements for granite tile and porcelain paver tile.

B. Furnish extra stock in accordance with 2.01 J herein.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

American National Standards Institute (ANSI)

ANSI A 108.1	Glazed Wall Tile, Ceramic Mosaic Tile, Quarry Tile and Paver Tile Installed with Portland Cement Mortar.
ANSI A 108.4	Ceramic Tile Installed with Organic Adhesives or Water Cleanable Tile Setting Epoxy Adhesive.
ANSI A 108.5	Ceramic Tile Installed with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar.
ANSI A108 10	Installation of Grout in Tilework.
ANSI A 118.4	Latex-Portland Cement Mortar.
ANSI A 137.1	Ceramic Tile.
ANSI A 185	Welded Steel Wire Fabric for Concrete Reinforcement.

American Society for Testing and Materials (ASTM)

ASTM C 503	Marble Building Stone (Exterior).
ASTM C 615	Granite Building Stone.

Tile Council of America (TCA)

Handbook for Ceramic Tile Installation.

1.03 ENVIRONMENT REQUIREMENTS

A. Maintain temperature at not less than 50 degrees F in tiled areas during installation and for not less than 7 days after completion, unless a higher temperature is required by manufacturer's instructions.

B. Vent temporary heaters, if used, to exterior to prevent damage to tile work from carbon dioxide buildup.

1.04 QUALITY ASSURANCE

A. Source of Materials: Provide materials obtained from one source for each type and color of tile, setting material, grout and sealant.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store tiles in original grade-sealed cartons with seals unbroken and labels intact until time of use.

B. Keep materials dry until ready for use. Prevent damage or contamination by water, freezing or other causes.

1.06 SUSTAINABLE DESIGN REQUIREMENTS

A. Sustainable Design General Requirements

1. The Authority requires the Contractor to implement practices and procedures to meet the sustainable design requirements. The Contractor shall ensure that the requirements related to these goals, as defined in Division 1 - GENERAL PROVISIONS and the articles below, are implemented to the fullest extent. Substitutions or other changes to the Work proposed by the Contractor will not be allowed if such changes compromise the stated Sustainable Design Performance Criteria.

B. Sustainable Design Performance Criteria

1. The post-industrial and/or post-consumer recycled content (by weight) of the granite tiles and porcelain paver tiles shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

2. Granite tiles and porcelain paver tiles shall be manufactured (or assembled) within 500 miles (by air) of the project site. The location shall be documented in accordance with the Sustainable Design Submittal Requirements of this section.

3. The origin of the raw materials from which the product(s) were manufactured shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

4. All field-applied adhesives, sealants, paints and coatings relating to Work of this Section shall meet the requirements of Division 1 - GENERAL PROVISIONS.

1.07 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MATERIALS

A. General

1. Provide material(s), color(s) and pattern(s) from the manufacturers as shown on Contract Drawings and specified herein. If color(s) and pattern(s) are not shown, provide as selected by the Engineer from samples submitted in accordance with Appendix "A".

   a. Sizes and finishes of tile are shown on the Contract Drawings.

2. Comply with ANSI A 137.1 for Type(s) and Grade(s) of tile shown. Furnish tile complying with "Standard Grade" requirements. Furnish granite tile complying with ASTM C 615, Architectural Grade.

3. Comply with specified ANSI standard for tile installation materials unless more stringent requirements are specified herein.

4. Unless otherwise shown, provide tile trim and accessories that match color and finish of adjoining flat tile.

5. Where tile is shown on the Contract Drawings for installation on exteriors, or in wet areas, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies that this type of mounting is suitable for these kinds of use and has been successfully used on other projects.

B. Bond Coat

Portland Cement paste with latex additive as recommended by latex manufacturer.

C. Reinforcing

2 inch by 2 inch, 16/16-gauge wire mesh, ASTM A 185 galvanized. Supply in flattened sheets or mats.

D. Cleavage Membrane

Minimum 40 mil uncoated CPE (chlorinated polyethylene), EPDM (ethylene propylene diene monomer) or neoprene sheet.

E. Thresholds

Where shown on Contract Drawings, marble threshold(s) complying with ASTM C 503 requirements for exterior use and abrasion resistance of 12 or greater for use subject to heavy foot traffic.

1. Marble type and color, threshold size and edge configuration as shown on the Contract Drawings.

F. Grouting Material (for mortar bed and grout)

Manufacturer's preblended compound of Portland cement, selected and graded aggregates, color pigments and chemical additives gauged with latex additive to comply with manufacturer's directions; color as shown on the Contract Drawings, as manufactured by one of the following or approved equal:

H.B. Fuller Company, Building Products Div., Palatine, IL
Laticrete No. 3701, manufactured by Latricete International Inc., Bethany, CT
L & M Surco Mfg. Co., Inc., South River, NJ

G. Water: Clean and potable.

H. Tile Cleaner

Product specifically acceptable to manufacturers of tile and grout as manufactured by one of the following, or approved equal:

Hillyard, Inc., St. Joseph, MO
L & M Surco Mfg. Co., Inc., South River, NJ

I. Stone Accessories:

1. Cleaner

Provide stone cleaners of proper formulation for kinds of stones, finishes and applications shown on the Contract Drawings and compatible with specified grout type, as recommended by stone fabricator and/or supplier and, if sealer specified, by sealer manufacturer. Do not use acid-type cleaning agents or other cleaning compounds containing caustic or harsh fillers, except where expressly approved by stone producer for type of condition involved.

2. Sealer for Floors

Colorless, slip and stain resistant sealer which will not affect color or physical properties of stone or grout surface, as recommended by sealer manufacturer and by stone fabricator and/or supplier for application shown on the Contract Drawings.

J. Extra Stock

Unless otherwise shown on Contract Drawings, deliver to the Engineer prior to issuance of the Certificate of Final Completion, the following materials:

1. Floor and Wall Tiles

Not less than one box for each 50 boxes or fraction thereof, for each type, color and pattern.

2. Trim Units

Not less than 5 linear feet of each type and color of trim.

2.02 MIXES

Proportion and mix components in accordance with manufacturer's printed instructions.

PART 3. EXECUTION

3.01 EXAMINATION

A. Examine surfaces to receive tile work. Ensure that installation conditions comply with 3.01 herein and surfaces conform to the following before proceeding with tile installation(s). Do not proceed with tile work until surfaces and conditions comply with specified requirements:

1. Floors

   a. Maximum variation in sub-floor surface: 1/4 inch in 10 ft. from the required plane.

   b. Where floor drains are shown on the Contract Drawings: Subfloor slope to drain of 1/4 inch per ft.

3.02 INSTALLATION

A. General

1. Comply with applicable installation methods of TCA "Handbook for Ceramic Tile Installation" for installation conditions shown and applicable parts of ANSI A 108.1, A 108.5 or A 108.10 installation standards.

2. Unless otherwise shown on the Contract Drawings, extend tile into recesses and under or behind equipment and fixtures to form a complete covering without interruptions. Neatly terminate work at obstructions, edges and corners without disrupting pattern or joint alignment.

3. Perform cutting and drilling of tile without marring visible surfaces. Grind cut edges of tile abutting trim, finish or built-in items. Fit tile closely to openings and penetrations so that collars, plates or covers will overlap tile.

4. Unless otherwise shown on the Contract Drawings, lay tile in grid pattern. Layout tile and center tile fields in both directions in each space or on each wall area.

5. Unless otherwise shown on the Contract Drawings, provide uniform joint widths of 1/16 inch.

6. Provide sealant filled joints at wall/floor terminations, around floor drains, around floor penetrations; and at control, contraction, expansion and isolation joints shown on the Contract Drawings; or if not shown at spacings and locations recommended in TCA "Handbook for Ceramic Tile Installation" Method EJ 171, and approved by the Engineer. Refer to Division 7 Section on sealants.

7. Do not use stone units with chips, cracks, voids, strains or other defects that might be visible in the finished Work.

8. Clean stone before setting by scrubbing with fiber brushes following by a thorough drenching with clear water. Use only mild cleaning compounds that contain no caustic or harsh fillers or abrasives. If not thoroughly wet at time of setting, drench or sponge stone, in accordance with fabricator's or supplier's printed instructions.

B. Floor Installation (Cleavage Membrane Method), where shown on the Contract Drawings

1. TCA F111 (Cement Mortar Cleavage Membrane), with latex-portland cement mortar, portland cement paste bond coat, and grout.

2. For bond coat, reinforcing, cleavage membrane, and latex additives for mortar bed and grouting materials see Part 2 of this Section.

C. Floor Installation (Direct Application Method), where shown on the Contract Drawings

1. TCA F111 (Cement Mortar Cleavage Membrane), with latex-portland cement mortar, portland cement paste bond coat, and grout and modified as follows:

a. Remove wax finish and accumulated dirt from existing terrazzo, in area shown on the Contract Drawings to receive this type of installation, using a floor stripper with steel wool pads and a mild cleaning solution. Replace pads as required.

b. Roughen-up surface to create uniform 1/16 inch to 1/32-inch indentations using a steel shot blaster.

c. Proceed with tile installation method TCA F-111, omitting cleavage membrane.

2. For bond coat, reinforcing, and latex additives for mortar bed and grouting materials see Part 2 of this Section.

D. Wet down tile during installation to allow mortar and grout materials to maintain moisture as recommended by tile installer and in accordance with tile manufacturer's and fabricator's and/or supplier's printed instructions.

E. Cleaning

Upon completion of placement and grouting, clean stone tile and porcelain paver tile surfaces so they are free of grout haze and foreign matter.

F. Apply sealer to cleaned interior stone flooring in compliance with sealer manufacturer's instructions where shown on the Contract Drawings.

3.03 PROTECTION

A. Leave finished tile work clean and free of cracked, chipped, broken, unbonded or otherwise defective tile.

B. When recommended by tile manufacturer(s) shown, apply a neutral protective cleaner to completed tile installation(s).

C. Protect tile installation(s) with Kraft paper or other heavy covering during construction period.

D. Prohibit foot and wheel traffic from using tiled floors for at least 3 days after grouting is complete. As directed by the Engineer, when foot and wheel traffic cannot be prohibited for the full 3 days, cover flow areas with plywood for protection.

E. Before issuance of the Certificate of Final Completion, remove protective coverings and rinse neutral cleaner, if any, from tile surfaces.

END OF SECTION

SECTION 09332

GRANITE TILE AND PORCELAIN PAVER TILE

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts and Samples" of Division 1 - GENERAL PROVISIONS:

A. Product Data

1. Submit manufacturers and fabricators or suppliers technical information and installation instructions for materials furnished under this Section.

2. Submit to the Engineer one copy of U.S. Department of Labor Material Safety Data Sheets (MSDS) for all hazardous chemicals utilized during Work of this Section.

B. Samples

1. For Selection Purposes

When color(s) and pattern(s) are not shown on Contract Drawings, submit manufacturer's color charts consisting of actual tiles or sections of tiles showing full range of color(s) and pattern(s) available for each type of tile shown. Include samples of grout for involving color selection.

2. For Verification Purposes

a. Samples of each type, pattern and color required, not less than 12 inches square for 12 inch x 12 inch tile or 24 inches on hardboard backing and grouted.

b. Full size samples for each type and color of trim.

c. Six-inch long sample of thresholds, if any.

C. Certifications

Furnish Master Grade Certificates, as specified in ANSI A 137.1, for each shipment and type of tile, signed by manufacturer and the entity performing installation.

D. Spare Parts List

List of extra stock in accordance with 2.01 J herein.

E. Sustainable Design Submittal Requirements:

The Contractor shall submit the Sustainable Design certification items listed herein. Sustainable Design submittals shall include the following:

1. A completed Sustainable Design Materials Certification Form (SDMCF), appended to Division 1 - GENERAL PROVISIONS. Information to be supplied for this form shall include:

   a. Cost breakdowns for the materials included in the Contractor's Work. Cost breakdowns shall include total cost plus itemized material costs.

   b. Where required by the Sustainable Design Performance Criteria of this Section, the following information shall also be supplied:

      (1) The amount of post-consumer and/or post-industrial recycled content in the supplied product(s).

      (2) The manufacturing location of the supplied product(s).

      (3) The location (source) of the raw materials used to manufacture the supplied product(s).

      (4) The VOC content of all adhesives, sealants, paints, and coatings applied on site as part of this Work.

2. Published product literature or letters of Certification, provided from the product manufacturer on the manufacturer's letterhead, to verify the product information supplied for the Sustainable Design Materials Certification Form.

3. Product cut sheets for materials that meet the Sustainable Design Materials Certification Form.

4. Material Safety Data Sheets (MSDS), for applicable products. Applicable products include, but are not limited to field-applied adhesives, sealants, carpets, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).

5. Sustainable Design submittal information shall be assembled into one package per Section or trade, and sent to the Engineer.

END OF APPENDIX "A"

DIVISION 9

SECTION 09250

GYPSUM DRYWALL

PART 1. GENERAL

1.01 SUMMARY

This Section specifies requirements for interior non-load-bearing steel framing, interior gypsum board assemblies and finishing, and cementitious backer units installed with gypsum board assemblies.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

	American National Standards Institute (ANSI)
ANSI A 108.11	Specifications for Interior Installation of Cementitious Backer Units.
ANSI A 118.9	Test Methods and Specifications for Cementitious Backer Units.
	American Society for Testing and Materials (ASTM)
ASTM A 653	Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
ASTM C 473	Test Methods for Physical Testing of Gypsum Panel Products.
ASTM C 475	Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
ASTM C 645	Specification for Nonstructural Steel Framing Members.
ASTM C 665	Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
ASTM C 754	Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
ASTM C 834	Specification for Latex Sealants.
ASTM C 840	Specification for Application and Finishing of Gypsum Board.
ASTM C 919	Practice for Use of Sealants in Acoustical Applications.
ASTM C 954	Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.
ASTM C 1002	Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
ASTM C 1047	Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
ASTM C 1177	Specification for Glass Mat Gypsum Substrate for Use as Sheathing.

ASTM C 1178	Specification for Glass Mat Water-Resistant Gypsum Backing Panel.
ASTM C 1396	Specification for Gypsum Board.
ASTM D 226	Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
ASTM D 3273	Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
ASTM E 90	Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
ASTM E 119	Test Methods for Fire Tests of Building Construction and Materials.
ASTM E 413	Classification for Rating Sound Insulation.
	Gypsum Association (GA)
GA-216	Specifications for the Application and Finishing of Gypsum Board.
GA-600	Fire Resistance Design Manual.
	Underwriters Laboratories Inc. (UL)
	Fire Resistance Directory.

1.03 DESIGN AND PERFORMANCE REQUIREMENTS

A. Fire-Resistance Ratings

Where gypsum drywall assemblies with fire-resistance ratings are shown on the Contract Drawings, installed assemblies shall be identical to those indicated by reference to GA File Numbers in GA-600 or to design designations in UL's *Fire Resistance Directory*, tested per ASTM E 119.

B. Sound Transmission Ratings

Where gypsum drywall assemblies with sound transmission ratings (STC rated) are shown on the Contract Drawings, installed assemblies shall be identical to those tested per ASTM E 90 and classified per ASTM E 413 by a qualified independent testing agency, and identical to those assemblies where indicated by reference to GA File Numbers in GA-600.

1.04 ENVIRONMENTAL REQUIREMENTS

A. General

Comply with the following ASTM C 840 requirements for environmental conditions before, during and after application of gypsum board:

1. Room Temperatures

For nonadhesive attachment of gypsum board to framing, maintain not less than 40 deg F. For adhesive attachment and for finishing of gypsum board, maintain not less than 50 deg F for 48 hours before application and continuously after until dry. Do not exceed 95 deg F room temperature when using temporary heat sources.

2. Ventilation

Ventilate building spaces as required to remove excess water for drying of joint treatment material immediately after its application. Avoid drafts during dry, hot weather to prevent too-rapid drying.

B. Install gypsum drywall products after installation areas are enclosed and meet requirements of 1.04 A.1 and 2.

1.05 QUALITY ASSURANCE

A. Single Source Responsibility

1. Obtain steel framing members for gypsum board assemblies from a single manufacturer.
2. Obtain each type of gypsum board and other panel products, including joint treatment materials, from a single manufacturer.
3. Obtain trim accessories from either the same manufacturer that supplies gypsum board or from a manufacturer acceptable to gypsum board manufacturer.

B. Mock-ups

Prior to finishing gypsum board assemblies, prepare field mock-up for review and acceptance by the Engineer. Mock-ups shall demonstrate qualities of materials and execution. Mock-ups accepted by the Engineer may be incorporated into the finished Work.

1. Prepare mock-ups of the following:
   a. Exposed Locations: Each level of gypsum board finish in accordance with 3.03 H.
2. Mock-up Size: Minimum 100 sq. ft. in surface area.
3. Simulate finished lighting conditions for review of in-place Work to receive a Level 4 or 5 finish.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original unopened packages, containers or bundles bearing brand name and identification of manufacturer or supplier.

B. Store materials inside, under cover and in a manner to keep them dry, protected from weather, freezing, direct sunlight, surface contamination, corrosion and damage from construction traffic and other causes. Neatly stack gypsum boards flat to prevent sagging.

C. Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect trim accessories from being bent or damaged.

1.07 SUSTAINABLE DESIGN REQUIREMENTS

A. Sustainable Design General Requirements

1. The Authority requires the Contractor to implement practices and procedures to meet the sustainable design requirements. The Contractor shall ensure that the requirements related to these goals, as defined in Division 1 - GENERAL PROVISIONS and the articles below, are implemented to the fullest extent. Substitutions, or other changes to the Work proposed by the Contractor, will not be allowed if such changes compromise the stated Sustainable Design Performance Criteria.

B. Sustainable Design Performance Criteria

1. For all gypsum board products manufactured as synthetic gypsum or flue gas desulphurization gypsum by the manufacturers listed in Part 2 of this specification section, gypsum board products shall contain a minimum of 45 percent (by weight) recycled content, calculated by adding the post-consumer recycled content percentage to one-half of the post-industrial recycled content percentage. Certify the recycled content in accordance with the Sustainable Design Submittal Requirements below.

2. Steel framing and support members (studs and runners, wall and ceiling furring, ceiling framing) shall contain a minimum of 25 percent (by weight) recycled content, calculated by adding the post-consumer recycled content percentage to one-half of the post-industrial recycled content percentage. Certify the recycled content in accordance with the Sustainable Design Submittal Requirements below.

3. Fiberglass insulation products shall contain a minimum of 20 percent combined post-consumer and post-industrial recycled content, and shall be documented in accordance with the Sustainable Design Submittal Requirements specified herein.

4. All mineral wool insulation products shall contain minimum 75 percent combined post-consumer and post-industrial recycled content, and shall be documented in accordance with the Sustainable Design Submittal Requirements specified herein.

5. All field-applied adhesives, sealants, paints and coatings relating to Work of this Section shall meet the requirements of Division 1 - GENERAL PROVISIONS.

6. The manufacturing location (final assembly) of the gypsum board and steel framing shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

7. The extraction location of the gypsum board and steel framing shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

8. Mineral-fiber firestopping materials that are exposed to supply or return air plenums, or that are located above suspended ceilings, must be encapsulated or fully sealed to prevent direct exposure of the mineral fibers to the plenum. Where sealants are used to encapsulate the mineral fiber materials (e.g. smoke sealants used at perimeter firestopping joints), the sealants shall meet the requirements of Division 1 - GENERAL PROVISIONS.

9. Batt, blanket, blown and sprayed-in insulation is prohibited from use in all supply and return air plenums.

1.08 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MANUFACTURERS

Subject to compliance with requirements, furnish and install products by one of the following, or approved equal:

A. Non-Load-Bearing Steel Framing and Accessories

Clark Steel Framing Systems, Middletown, OH
Deitrich Metal Framing, Inc., div. of Worthington Industries Co., Pittsburgh, PA
Marino\WARE, South Plainfield, NJ
Super Stud Building Products, Inc., Astoria, NY

B. Gypsum Board and Related Products

BPB America Inc., Tampa, FL
G-P Gypsum Corp., Atlanta, GA
National Gypsum Co., Charlotte, NC
United States Gypsum Co., Chicago, IL

2.02 MATERIALS

A. Wall/Partition Framing Materials

1. General

Sizes and spacing of steel framing members shall be as shown on the Contract Drawings, but not less stringent than required to comply with ASTM C 754 under the following deflection and uniform lateral loading conditions:

a. Maximum Deflection: L/240 at 5 lbf per square foot; except L/360 at 5 lbf per square foot where framing supports panels products finished with tile, stone, lath, plaster or similar inflexible materials.

b. Material: Corrosion resistant steel complying with ASTM C 645; 0.0179 inch minimum base metal thickness (25 gage), unless otherwise required for abuse-resistant assemblies or other special purposes shown on the Contract Drawings.

c. Protective Coating: G40 hot-dip galvanized per ASTM A 653, unless otherwise specified.

2. Steel Studs and Runners (Track)

a. Studs: ASTM C 645; size (web depth) as shown on the Contract Drawings.

b. Runners (Track): ASTM C 645; match studs.

(1) Deflection Track: 0.0312 inch minimum base metal thickness (20 gage) with 2 inch flanges, for use as top runner abutting underside of floor construction where double runner is shown on the Contract Drawings.

3. System Accessories

a. Steel Rigid Furring Channels

Hat-Shaped Channel: ASTM C 645.

b. Steel Resilient Furring Channels

Manufacturer's standard product designed to reduce sound transmission through wall partitions and ceilings; 1/2 inch deep channel of configuration shown on the Contract Drawings.

c. Cold-Rolled Furring Channels

U-shaped channel; 0.0538 inch minimum base metal thickness (16 gage), minimum 1/2 inch wide flanges; of depth as shown on the Contract Drawings.

d. Furring Brackets

Serrated-arm type, adjustable; 0.0329 inch minimum base metal thickness (20 gage), designed for screw attachment of steel studs used for furring and steel rigid furring channels to interior side of exterior masonry walls.

e. Z-Furring Members

Z-shaped channel for attachment of gypsum board to concrete or masonry walls; G60 hot-dip galvanized coating per ASTM A 653; of depth required to accommodate insulation of thickness shown on the Contract Drawings.

f. Flat Strap and Backing Plate

Manufacturer's standard sheet steel products for blocking and bracing, in lengths and widths as shown on the Contract Drawings.

B. Gypsum Board

1. General

Type, thickness and edge configuration as indicated below, for use where shown on the Contract Drawings, in maximum lengths available to minimize end-to-end butt joints.

a. Thickness: As shown on the Contract Drawings.

b. Edges: Tapered and featured (rounded or beveled) for prefilling.

c. Gypsum board used as backing board or in multi-layer applications shall be board type as shown on the Contract Drawings, 5/8 inch thick, unless otherwise shown, with square, non-tapered or V-tongue and groove edges.

2. Regular Gypsum Wallboard: ASTM C 1396.

3. Type X: ASTM C 1396; for use in fire-resistant rated assemblies and where shown.

4. Special Type X: ASTM C 1396; with improved fire protection qualities over standard Type X, for use in fire-resistant rated assemblies and where shown.

5. Flexible Type: ASTM C 1396; more flexible than regular gypsum wallboard, 1/4 inch thick, for forming curved walls.

6. Water-Resistant Gypsum Backing Board: ASTM C 1396, core type as required by fire-resistance rated assembly indicated.

7. Moisture- and Mold-Resistant Type: ASTM C 1396, or ASTM C 1396 and ASTM C 1177; for use at interior of exterior walls and where shown, with Type X core where required or where shown; ASTM C 473 average water absorption maximum of 5 percent by weight after 2 hour immersion; ASTM D 3273 mold resistance average panel score minimum of 8.

   a. Products: Subject to compliance with requirements, furnish and install one of the following products, or approved equal:

      DensArmor Plus Interior Guard; G-P Gypsum Corp., Atlanta, GA
      Gold Bond XP Wallboard; National Gypsum Co., Charlotte, NC
      Humitek; United States Gypsum Co., Chicago, IL

8. Abuse-Resistant Type: ASTM C 1396; with improved resistance to surface abrasion, indentation and through-penetration impact over regular gypsum board, for use where shown, with Type X core where required or where shown.

   a. Products: Subject to compliance with requirements, furnish and install one of the following products, or approved equal:

      ToughRock Abuse-Resistant; G-P Gypsum Corp., Atlanta, GA
      Hi-Abuse; National Gypsum Co., Charlotte, NC
      Sheetrock Abuse-Resistant; United States Gypsum Co., Chicago, IL

C. Tile Backer Units

1/2 inch thick, in manufacturer's standard width but not less than 32 inches, in maximum lengths available to minimize end-to-end butt joints. Subject to compliance with requirements, furnish one of the following products, or approved equal:

1. Cementitious Backer Products: ANSI A118.9:

   WonderBoard; Custom Building Products, Seal Beach, CA
   Util-A-Crete Concrete Backer Board; FinPan, Inc., Hamilton, OH
   Hardibacker 500; James Hardie Building Products, Inc., Mission Viejo, CA
   DUROCK Brand Cement Board; United States Gypsum Co., Chicago, IL

2. Gypsum Panel Products: ASTM C 1178, or ASTM C 1178 and ASTM C 1278:

   DensShield Tile Guard; G-P Gypsum Corp., Atlanta, GA
   Fiberock Aqua-Tough; United States Gypsum Co., Chicago, IL

D. Drywall Trim Accessories

1. Cornerbead, edge trim and control joints: ASTM C 1047.

2. Materials: Formed, steel sheet zinc-coated by the hot-dip process or rolled zinc; may be fabricated in combination with paper for use with paper-faced gypsum board only.

3. Configuration: Face flanges formed to receive joint compound and as indicated by reference to accessories depicted in ASTM C 1047, Fig. 1.

E. Joint Treatment Materials

Comply with ASTM C 475 for gypsum board installation and with the recommendations of both the manufacturers of panel products and of joint treatment materials for each application shown on the Contract Drawings.

1. Joint Tape

   a. Paper-Faced Gypsum Board: Paper reinforcing tape.

   b. Glass Mat Gypsum Board: Glass mesh tape, mesh size 10 by 10.

   c. Cementitious Backer Units: Polymer-coated, alkali-resistant, open glass fiber mesh.

2. Joint Compound

   a. Setting-Type Joint Compound for Gypsum Board: Factory packaged, job-mixed, chemical-hardening powder product formulated for uses indicated.

      (1) Where setting-type joint compound is indicated as a taping compound only or for taping and filling only, use formulation that is compatible with other joint compound applied over it.

      (2) For prefilling gypsum board joints, use formulation recommended by gypsum board manufacturer.

      (3) For filling joints and treating fasteners of moisture-resistant gypsum backing board behind base for ceramic tile, use formulation recommended by gypsum board manufacturer.

      (4) For topping compound, use sandable formulation.

   b. Drying-Type Joint Compound for Gypsum Board: Factory packaged vinyl based product complying with the following requirements for formulation and intended use:

      (1) Ready-Mixed Formulation: Factory mixed product.

      (2) Taping compound formulated for embedding tape and for first coat over fasteners and face flanges of trim accessories.

      (3) Topping compound formulated for fill (second) and finish (third) coats.

      (4) All-purpose compound formulated for both taping and topping compounds.

   c. Joint Compound for Glass-Mat Faced Gypsum Board: Setting type, for use with glass mesh joint tape.

   d. Joint Compound for Cementitious Backer Units: Material recommended by cementitious backer unit manufacturer.

F. Acoustical Sealant

1. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard non-sag, skinning, paintable, nonstaining, gunnable latex sealant complying with ASTM C 834 and the following requirements:

   a. Product shall be effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by test representative assemblies per ASTM E 90.

2. Acoustical Sealant for Concealed Joints: Manufacturer's standard nondrying, nonskinning, nonstaining, gunnable, synthetic rubber sealant recommended for sealing interior concealed joints to reduce transmission of airborne sound.

3. Products: Subject to compliance with sound transmission and fire-resistance rating requirements, furnish and install one of the following, or approved equal:

   a. Acoustical Sealant for Exposed and Concealed Joints

      AC-20 FTR; Pecora Corp., Harleysville, PA
      Tremflex 834; Tremco Inc., Beachwood, OH
      SHEETROCK Acoustical Sealant; United States Gypsum Co., Chicago, IL

   b. Acoustical Sealant for Concealed Joints

      BA-98; Pecora Corp, Harleysville, PA
      Tremco Acoustical Sealant; Tremco Inc., Beachwood, OH
      SHEETROCK Acoustical Sealant; United States Gypsum Co., Chicago, IL

G. Miscellaneous Materials

1. Isolation Strips

   ASTM D 226, Type 1, nonperforated 15 lb. asphalt saturated organic felt, or 1/8 inch thick, adhesive-backed, closed-cell vinyl foam gasket in widths as required to suit stud size.

2. Fasteners for Steel Framing

   Type, material, size, corrosion resistance, pull-out resistance and other properties as required to fasten steel framing and furring members securely to each other and to substrates; complying with the recommendations of steel framing manufacturer for applications shown on the Contract Drawings.

3. Fasteners for Gypsum Board

   a. ASTM C 1002: Type S steel drill screws for fastening gypsum board to steel members less than 0.033 inch thick and for fastening gypsum board to gypsum board.

   b. ASTM C 954: Steel drill screws for fastening gypsum board to steel members from 0.033 to 0.112 inch thick.

   c. For Fastening Cementitious Backer Units: Corrosion resistant coated steel drill screws of size and type recommended by unit manufacturer.

4. Laminating Adhesive

   Special adhesive or joint compound specifically recommended by gypsum board manufacturer for laminating gypsum boards.

5. Spot Grout

   ASTM C 475, setting-type joint compound recommended by joint compound manufacturer for spot-grouting hollow metal door frames.

6. Fastening Adhesive for Metal

Special adhesive recommended by gypsum board manufacturer for laminating gypsum boards to steel framing.

7. Sound Attenuation Blankets

Unfaced mineral fiber blanket insulation produced by combining mineral fibers manufactured from glass, slag or rock with thermosetting resins to comply with ASTM C 665 for Type I (blankets without membrane facing). Comply with product flame resistance requirements where used in fire-resistance rated assemblies.

PART 3. EXECUTION

3.01 EXAMINATION

Examine substrates to which gypsum board assemblies attach or abut, including installed hollow metal frames and structural framing for compliance with requirements for installation tolerances and other conditions affecting gypsum board assembly performance. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Before sprayed-on fireproofing is applied, attach offset anchor plates or ceiling runners (tracks) to surfaces shown on the Contract Drawings to receive sprayed-on fireproofing.

1. Where offset anchor plates are required, install continuous units formed from hot-dip galvanized steel plate of thickness shown, attached to building structure with fasteners spaced not more than 24 inches on center. Secure ceiling runners to offset plates with screws spaced not more than 24 inches on center.

3.03 INSTALLATION

A. General

1. Steel Framing Installation Standards: ASTM C 754, and ASTM C 840 requirements that apply to framing installation.
2. Gypsum Board Application and Finishing Standards: ASTM C 840 and GA-216.
3. Do not bridge building expansion joints with framing system; frame both sides of joints with furring and other support as shown on the Contract Drawings.
4. Construct fire-resistance rated partitions, and column, beam, girder and truss enclosures when required, to meet or exceed the rating shown on the Contract Drawings. Protect openings, perimeters and joints
5. Construct sound transmission rated partitions, when required, to meet or exceed the STC rating shown on the Contract Drawings.

B. Wall/Partition Framing Systems Installation

1. Installation Tolerances

   Install each steel framing and furring member so that fastening surfaces do not vary more than 1/8 inch from the plane formed by the faces of adjacent framing members.

2. Install supplementary framing, blocking and bracing at end terminations in the Work and to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings and similar items to comply with details shown or, if not otherwise shown, to comply with applicable printed recommendations of gypsum board manufacturer.

3. Where steel studs are installed directly against exterior walls, install 15 lb. asphalt felt or 1/8 inch thick foam gasket isolation strips between studs and wall.

4. Isolate stud system from transfer of structural loading to system, both horizontally and vertically. Install slip or cushioned type joints to attain lateral support and avoid axial loading.

5. Install runner tracks at floors and overhead supports.

6. Extend partition framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue partition framing over doors and openings, and around ducts penetrating partitions above ceiling.

7. Space studs 16 inches on center.

8. Frame door openings to comply with details shown or, if not shown, to comply with applicable written recommendations of gypsum board manufacturer. Attach vertical studs at jambs with screws either directly to frames or to jamb anchor clips on door frames; install runner track section (for jack studs) at head and secure to jamb studs. Install 2 studs at each jamb.

9. Extend vertical jamb studs through suspended ceilings and attach to underside of structural support system above or to substrates above suspended ceilings.

10. Frame openings other than door openings to comply with details shown or, if not shown, in the same manner as required for door openings or as recommended by gypsum board manufacturer. Install framing below sills of openings to match framing required above door heads.

11. Space wall furring members 16 inches on center. Fasten to concrete or masonry walls with special screws or other fasteners designed for attachment to masonry, spaced 24 inches on center.

C. Gypsum Board Installation

1. Install sound attenuation blankets, where shown on the Contract Drawings and where required for sound transmission rating, prior to installing gypsum boards unless blankets are readily installed after boards have been installed on one side of partition.

2. Install exposed gypsum board with face side out. Do not install imperfect, damaged or damp boards. Butt boards together for a light contact at edges and ends with not more than 1/16 inch open space between boards. Do not force into place.

3. Locate either edge or end joints over supports. Position boards so that like edges abut; do not place tapered edges against mill-cut or field-cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions.

4. Install wall/partition boards vertically without horizontal end-butt joints wherever possible. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs.

5. Locate exposed end-butt joints as far from center of walls as possible, and stagger not less than 12 inches in alternate courses of board.

6. Form control joints and expansion joints with space between edges of adjoining boards, prepared to receive trim accessories. Make only control type joints where joints occur at corners of framed openings.

7. Attach gypsum board to supplementary framing and blocking where installed for additional support at openings and cutouts.

8. Spot grout hollow metal door frames for all doors. Apply spot grout at each jamb anchor clip and immediately insert gypsum boards into frames.

9. Cover both faces of steel stud partition framing with gypsum board in concealed spaces (above finished ceiling line), except in chase walls that are braced internally.

   a. Concealed coverage may be accomplished with gypsum board pieces of not less than 8 sq. ft. in area, except where concealed application is required for sound transmission or fire ratings, or for smoke barriers.

   b. Where partitions intersect open concrete coffers, concrete joists and other structural members projecting below underside of floor/roof slabs and decks, cut gypsum boards to fit profile formed by structural members; allow 1/4 to 3/8 inch joint width for sealant installation. Fit boards around all through penetrations.

10. Isolate perimeter of drywall partitions at structural abutments. Provide 1/4 inch to 1/2 inch space and trim edge with J-type, semi-finishing edge trim. Seal joints with acoustical sealant.

D. Methods of Gypsum Drywall Application

1. Single-Layer Application

   a. Partitions/Walls: Apply gypsum board vertically (parallel to framing), in sheet lengths that will minimize end joints. At stairwells and other high, multistory walls, install boards horizontally.

   b. Z-Furring Members: Apply gypsum board vertically (parallel to framing) with a minimimum of end joints. Locate edge joints of base layer over furring members.

   c. Fastening Method: Apply gypsum boards to supports with screws.

2. Multilayer Application

   a. Partitions/Walls: Apply gypsum board base layers as shown on the Contract Drawings and apply gypsum board face layer vertically (parallel to framing), with joints of base layers located over stud or furring member and joints of face-layer offset at least one stud or furring member from base-layer joints. Stagger joints on opposite sides of partitions.

b. Z-Furring Members: Apply base layer vertically (parallel to framing) or horizontally (perpendicular to framing) with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.

c. Fastening Method: Fasten base layer with screws and secure face layer with adhesive and supplementary fasteners; or fasten base and face layers separately with screws to comply with fire-resistance rated assembly requirements.

3. Wall Tile Substrates: On substrates to receive thin-set ceramic tile and similar rigid applied wall finishes, install cementitious backer units to comply with ANSI A 108.11 and install gypsum panel products to comply with manufacturer's instructions.

E. Direct-Bonding to Substrate

Comply with gypsum board manufacturer's recommendations where gypsum boards are indicated as directly adhered to a substrate (other than studs, furring members or base layer of gypsum board). Temporarily brace or fasten gypsum boards until fastening adhesive has set.

F. Acoustical Sealant Installation

Apply acoustical sealant where sound transmission rated drywall Work is shown (STC rating), including multiple-layer and resilient furring Work, in compliance with sealant manufacturer's written instructions.

1. Clean substrate surfaces by brushing and remove loose particles to produce a clean, sound substrate capable of developing optimal bond with joint sealant

2. Seal perimeters, control and expansion joints, openings and penetrations with a continuous bead of acoustical sealant including a bead at both faces of partitions. Comply with ASTM C 919 and manufacturer's recommendations for location of beads. Close off sound-flanking paths around or through the Work, including sealing of partitions above acoustical ceilings.

3. Tool joints flush, clean excess material and allow sealant to cure per sealant manufacturer's recommendations prior to final decoration.

G. Installation of Drywall Trim Accessories

1. Install metal edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed. Install type with face flange to receive joint compound. Install L-type trim where Work is tightly abutted to other Work.

2. For trim with flanges intended for fasteners, anchor trim with same fasteners used to attach gypsum board to framing supports. Otherwise, anchor trim flanges in accordance with gypsum board manufacturer's instructions and recommendations.

3. Install metal cornerbead at outside corners of drywall Work.

4. Install metal control joint where shown on the Contract Drawings per ASTM C 840 requirements.

H. Finishing of Gypsum Drywall

1. General

a. Finish Level Standard: ASTM C 840.

b. Apply compound treatment at gypsum board joints (vertical and horizontal), flanges of trim accessories, penetrations, fastener heads and elsewhere as required to prepare Work for final decoration. Prefill open joints and rounded or beveled edges, if any, using type of compound recommended by gypsum board manufacturer.

c. Apply joint tape at joints between gypsum boards using taping joint compound, except where trim accessories are shown on the Contract Drawings.

2. Finish Levels

Finish gypsum boards to the levels shown on the Contract Drawings, performed in accordance with ASTM C 840.

3.04 PROTECTION

A. Furnish protection and maintain conditions, in a manner acceptable to the Engineer, to ensure that gypsum drywall Work shall be without damage or deterioration at time of issuance of the Certificate of Final Completion.

B. Remove and replace wet or otherwise damaged board products.

END OF SECTION

SECTION 09250

GYPSUM DRYWALL

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1 - GENERAL PROVISIONS:

A. Product Data

Manufacturer's product specifications and installation instructions for each steel framing system and gypsum drywall component, and other data showing compliance with the requirements of this Section.

B. Certifications

1. Fire Test Response Reports: Manufacturer's certification from a qualified independent testing and inspecting agency substantiating each gypsum board assembly's required fire-resistance rating.

2. Acoustic Test Response Reports: Manufacturer's certification from a qualified independent testing agency substantiating required STC rating for each gypsum board assembly.

C. Sustainable Design Submittal Requirements:

The Contractor shall submit the Sustainable Design certification items listed herein. Sustainable Design submittals shall include the following:

1. A completed Sustainable Design Materials Certification Form (SDMCF), appended to Division 1 - GENERAL PROVISIONS. Information to be supplied for this form shall include:

   a. Cost breakdowns for the materials included in the Contractor's work. Cost breakdowns shall include total cost plus itemized material costs.

   b. Where required by the Sustainable Design Performance Criteria of this Section, the following information shall also be supplied:

      (1) The amount of post-consumer and/or post-industrial recycled content in the supplied product(s).

      (2) The manufacturing location of the supplied product(s).

      (3) The location (source) of the raw materials used to manufacture the supplied product(s).

      (4) The VOC content of all adhesives, sealants, paints, and coatings applied on site as part of this Work.

2. Published product literature or letters of Certification, provided from the product manufacturer on the manufacturer's letterhead, to verify the product information supplied for the SDMCF.

3. Product cut sheets for materials that meet the SDMCF.

4. Material Safety Data Sheets (MSDS), for applicable products. Applicable products include, but are not limited to field-applied adhesives, sealants, carpets, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).

5. The Sustainable Design submittal information shall be assembled into one (1) package per Section or trade, and sent to the Engineer.

END OF APPENDIX "A"

SECTION 09250

GYPSUM DRYWALL

INSTRUCTIONS TO SPECIFIER

A. General

1. Wall/partition support systems in the Section are non-load-bearing type; they are not designed to support floor or roof loads, but only certain transverse loads.

2. Gypsum drywall exterior ceilings and soffits, interior ceilings and soffits, and drywall shaft systems are specified in other Division 9 Sections.

3. An additional industry reference for gypsum board products, systems and installation is the US Gypsum Co.'s *The Gypsum Construction Handbook*.

B. Contract Drawings

Ensure that the Contract Drawings show the following items specified in the text:

(1.03 A; 3.03 A.4)	Fire-resistance ratings for drywall assemblies, include UL Design or GA File Nos.
(1.03 B; 3.03 A.5)	STC rating for sound insulating assemblies.
(1.05 B)	Mock-ups: Indicate levels of finish and locations where required.
(2.02 A)	Steel stud systems requirements; special framing requirements for abuse-resistant wall assemblies.
(2.02 A.1.a)	Deflection for specific wall finish material, if other than specified (see IBC/2000 Table 1604.3 and NYC Bldg. Code for minimum requirements).
(2.02 A.2.a)	Stud depth for each location (1-5/8", 2-1/2", 3-1/2", 3-5/8", 4", 6").
(2.02 A.2.b; 3.03 B.4)	Deflection track: Location and details where required.
(2.02 A.3.a)	Hat channel depth. (7/8" or 1-1/2")
(2.02 A.3.b)	Resilient channel configuration, if any.
(2.02 A.3.c)	U-channel depth. (3/4", 1-1/2", 2", 2-1/2")
(2.02 B, C)	Location of each type of gypsum board and cementitious product.
(2.02 B; 3.03 D)	Thickness of gypsum board and number of layers for each different application.
(2.02 C)	Tile backer panel: Show gypsum type or cementitious type if either/or is not acceptable.
(2.02 D)	Trim accessories: If other than typically specified, including control joints and expansion joints.
(2.02 G.7; 3.03 C.1)	Sound attenuation insulation: Location.
(3.02 A)	Sprayed-on fireproofing locations.

(3.03 B)	Special framing details where normal manufacturer details are not applicable, exceptional framing support spacings; sound control and isolation details.
(3.03 B.6)	Whether partitions pass through ceilings to structure above, and if so, whether drywall facings are to be complete and with joints treated.
(3.03 B.8, 10)	Framing details for door, window and other openings.
(3.03 C.6)	Control joint locations: At partition and furring walls (every 30 ft. max.) and at wall furring at building exterior control joints).
(3.03 H)	Gypsum board finish: Locations and corresponding finish levels. (Note: Both UL and GA-600 require face-layers only of all fire-rated wall systems to be Level 1 minimum.)

C. Other Items

1. Framing support spacings may be selected on a basis other than loading; closer-than-normal spacing will contribute to improved visual flatness and less breakage and screw popping.

2. Doorways in drywall partitions are crucial locations due to stresses generated by the swinging and impact of doors. Framing for doors needs to be specially designed and detailed.

3. Adhesive application of gypsum board face layer improves resistance to cracking, sag and joint deformation, as well as minimizes exposed fasteners.

4. The standard 'green' water-resistant paper gypsum board product is included in this Section, as well as the newer, more effective moisture- and mold-resistant boards (G-P has a glass-mat faced product, and National and USG have a paper-faced products) for use where additional moisture resistance may be required.

5. Abuse-resistant gypsum board is available from several manufacturers, some offering different 'levels' of abuse protection. Boards with the most basic level of protection are specified in this Section. However, there is no industry standard yet on material, testing or performance criteria. So select appropriate products per specific project requirements (impact resistance, surface abrasion, surface indentation, board penetration, etc.).

   a. Use abuse-resistant board with 0.0312 inch min. base metal thickness (20 gage) steel studs where shown or as required by the gypsum board manufacturer.

D. Sustainable Design Considerations

1. Facers: Gypsum board paper facer is generally manufactured from 100 percent recycled paper sources (newspaper, phone books, corrugated cartons, etc.), and is unbleached.

2. Core Material

   a. Gypsum Drywall: For many years the gypsum industry has incorporated recaptured gypsum (synthetic gypsum), a byproduct from fossil fuel-burning power plants, in the manufacture of new gypsum boards. See each manufacturer for specific percentages.

   b. Cement Board: May contain fly ash, a byproduct of coal-fired utility plants.

3. Binders: Corn and wheat starch may be used as a binder in gypsum wallboard.

END OF INSTRUCTIONS

E. Interior Gypsum Board Products

Manufacturer	Regular	Type X	Special Type X	Moisture Resist. ("green") Board) - used less and less
BPB	**"ProRoc"**	**"ProRoc Type X"**	**"ProRoc Type C"**	**"ProRoc Moisture. Resist."**
Core:	regular	Type X	Improved Type X	regular, Type X or Type C
Facer:	paper	paper	paper	paper-green (water resist. core)
Thickness (inches):	1/4, 3/8, 1/2, 5/8	1/2, 5/8	1/2, 5/8	1/2, 5/8
ASTM:	C36; C1396	C36; C1396	C36; C1396	C630; C1396
Performance (5/8")				
G-P	**"ToughRock"**	**"ToughRock Fireguard"**	**"ToughRock Fireguard C"**	**"ToughRock Moisture-Guard"**
Core:	regular	Type X	Improved Type X	regular or Type X
Facer:	paper	paper	paper	paper-green (water resist. core)
Thickness (inches):	1/4, 3/8, 1/2	5/8	1/2, 5/8	1/2, 5/8
ASTM:	C36; C1396	C36; C1396	C36; C1396	C630; C1396
Performance (5/8")				

Manufacturer	Regular	Type X	Special Type X	Moisture Resist. ("green") Board) - used less and less
National Gypsum Corp.	**"Gold Bond"**	**"Gold Bond Fire-Shield"**	**"Gold Bond Fire-Shield C"**	**"Gold Bond MR"**
Core:	regular	Type X	Improved Type X	regular, Type X or Type C
Facer:	paper	paper	paper	paper-green (water resist. core)
Thickness (inches):	1/4, 3/8, 1/2	1/2, 5/8	1/2, 5/8	1/2, 5/8
ASTM:	C36; C1396	C36; C1396	C36; C1396	C630; C1396
Performance (5/8")				
(Use 20 ga studs 16"o.c. for hi-abuse)				
USG	**"Sheetrock"**	**"Sheetrock Firecode"**	**"Sheetrock Firecode C"**	**"Sheetrock Water Resist."**
Core:	regular	Type X	Improved Type X	regular, Type X or Type C
Facer:	paper	paper	paper	paper-green (water resist. core)
Thickness (inches):	1/4, 3/8, 1/2	5/8	1/2, 5/8	1/2, 5/8
ASTM:	C36	C36	C36	C630
Performance (5/8")		also avail: **"Ultracode 3/4"**	also avail: **"Ultracode C 3/4"**	
(USG offers 4 types of abuse-resist. board w/varying performance)				
(Use 20 ga studs 16"o.c. for hi-abuse)				

Manufacturer	Combination-Moist/Mold Resistant	Abuse Resistant (no industry consensus on performance/testing)	Combination-Moist/Mold/Abuse/Impact Resis
BPB	(none)	**"ProRoc Abuse Resist."**	
Core:		Type X (fiberglass reinf)	
Facer:		heavy paper	
Thickness (inches):		1/2, 5/8	
ASTM:		C36; C1396	
Performance (5/8")		Indentation: ASTM D1037 (load to .1 inch indentation) 1/2" bd: 45N (200lb) 5/8" bd: 45N (200lb) Impact Resist: ASTM E695 (ht. of 50lb bag to failure): 1/2" bd: 685mm (27in.) 5/8" bd: 838mm (33in.)	
G-P	**"DensArmor Plus"**	**"ToughRock Abuse-Resist"**	
Core:	regular or Type X	Type X	
Facer:	coated glass mat-front & back	heavy paper	
Thickness (inches):	1/2, 5/8	5/8	
ASTM:	C630; C1177; D3273	C36; C1396	
Performance (5/8")	(scored 10 out of 10 on mold/mildew test)	Surf. Abras. ASTM D4060 (H-18 wheel;500g;200 cycles 0.014 inch Surf. Indent.: ASTM D5420 (72 in-lb drop energy): .0123 inch Soft Body Impact: ASTM E695 133 ft-lb	
***4/04 G-P discontinued paper-faced <u>exterior</u> gypsum sheathing** Note: G-P considers Dens Armor Plus to be = to USG Aqua-Tough, not to USG Humitek as USG states	**"DensShield Tile Backer"** (glass mat surf w/water/vapor proof acrylic ctg on inside face compares to cement bd w/ vapor retarder)	**Also "DensArmor Abuse Guard"**, ASTM C36 & C1177 Type X, 5/8", ctd fg mat back & heavy paper front, taper edge	

Manufacturer	Combination-Moist/Mold Resistant	Abuse Resistant (no industry consensus on performance/testing)		Combination-Moist/Mold/Abuse/Impact Resis
National Gypsum Corp.	**"Gold Bond XP"**	**"Hi-Abuse/Hi-Abuse XP"**	**"Hi-Impact"**	**"Hi-Impact XP Wallboard"**
Core:	regular or Type X	regular or Type X	Type X	Type X
Facer:	paper (moist resist.)trtd core	heavy paper	heavy paper w/Lexan backing	heavy paper
Thickness (inches):	1/2, 5/8	1/2, 5/8	1/2, 5/8 (.010-.080 thk)	5/8; C630; C1396
ASTM:	C36; C1396; D3273	C36; C1396	C36; C1396	(8 out of 10 mold resist)
Performance (5/8")	(all "XP" scores 8 out of 10 on mold/mildew test)	Surf Abras: D4977:0.001 inch Surf. Abras.: ASTM D4060 (H-18 wheel; 500g; 125 cycles) 0.01 inch Impact/Penetr: ASTM D2394 (24 lb single drop-modif. test) Penetration failure: 60 ft-lb Hard Body Impact (swinging ram test): 60 ft-lb (test sim. to USG's)	Surf. Abras.: ASTM D4977 (250 cycles): 0.001 inch Surf. Abras.: ASTM D4060 (H-18 wheel; 500g;125 cycles) 0.01 inch Impact/Penetr: ASTM D2394 (24 lb single drop-modif. test) Penetr.failure: 264->2188 ft-lb	Surf. Abras.: ASTM D4977 (25 lb added wt; 50 cycles): 0.001 inch Surf. Indentation: ASTM D5420 (25 lb added wt.; 50 cycles): .015 inch Impact Resist: ASTM E695 (ht. of 120 lb bag to failure): 5/8" bd:>400ft-lb to failure (ht. not given)
(Use 20 ga studs 16"o.c. for hi-abuse)				
USG	**"Sheetrock Humitek"**	**"Sheetrock Abuse-Resist."**	**"Fiberock VHI"**(v.hi impact)	**"Fiberock Aqua-Tough"**
Core:	regular or Type X	regular or Type X	regular, Type X (perlite core)	regular, Type X
Facer:	paper (moist resis) (core is trtd w/biocide)	heavy paper	exp:gyp&cellulose fiber	same as VHI
Thickness (inches):	1/2, 5/8	1/2, 5/8	1/2, 5/8 unexp:embed fg mesh	1/2, 5/8
ASTM:	C36; C1396; D3273	C36	C36; C1396	C630; C1178; C1278; D3273
Performance (5/8")	(scores 8 out of 10 on mold/mildew test)	Surf. Abras.: ASTM D4977 (25 lb added wt; 20 cycles) 0.13 inch Surf. Indent.: ASTM D5420 (72 in-lb drop energy): .13 inch Soft Body Impact: ASTM E695 Penetration failure: 133 ft-lb Hard Body Impact (swinging ram test): 45 ft-lb	Surf. Abras.: ASTM D4977 (25 lb added wt; 50 cycles) 0.087 inch Surf. Indent.: ASTM D5420 (72 in-lb drop energy): .14 in. Soft Body Impact: E695 Surf. fail: 180 ft-lf Deform. fail: 240 ft-lf (l/240) Penetration failure: >300 ft-lb Hard Body Impact: 99 ft-lb	(scores 10 out of 10 mold resis) (USG proprietary test)
(USG offers 4 types of abuse-resist. board w/varying performance)	(may also be used as tile backer except in wet areas-tub/shower-use Aqua-Tough in those areas)			
(Use 20 ga studs 16"o.c. for hi-abuse)				

END OF INSTRUCTIONS

DIVISION 9
SECTION 09253
GYPSUM DRYWALL - INTERIOR CEILINGS AND SOFFITS

PART 1. GENERAL

1.01 SUMMARY

This Section specifies requirements for interior gypsum drywall ceilings and soffits, including suspension systems, furring and accessories.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

American Society for Testing and Materials (ASTM)

ASTM A 641	Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
ASTM A 653	Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
ASTM C 475	Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
ASTM C 635	Specification for the Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
ASTM C 636	Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.
ASTM C 645	Specification for Nonstructural Steel Framing Members.
ASTM C 665	Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
ASTM C 754	Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
ASTM C 840	Specification for Application and Finishing of Gypsum Board.
ASTM C 919	Practice for Use of Sealants in Acoustical Applications.
ASTM C 1002	Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
ASTM C 1047	Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
ASTM C 1396	Specification for Gypsum Board.
ASTM E 119	Test Methods for Fire Tests of Building Construction and Materials.

Gypsum Association (GA)

GA-216	Specifications for the Application and Finishing of Gypsum Board
GA-600	Fire Resistance Design Manual.

Underwriters Laboratories Inc. (UL)

Fire Resistance Directory.

1.03 DESIGN AND PERFORMANCE REQUIREMENTS

A. Fire-Resistance Ratings

Where gypsum drywall assemblies with fire-resistance ratings are shown on the Contract Drawings, installed assemblies shall be identical to those indicated by reference to GA File Numbers in GA-600 or to design designations in UL's *Fire Resistance Directory*, tested per ASTM E 119.

B. Design Criteria and Standards for Suspension System

1. For Work in New York City, metal suspension systems shall conform to the Building Code of the City of New York except that metal deck tabs shall not be used for top hanger attachment.

   a. In addition, the ceiling suspension system shall conform to the seismic design requirements contained in the Building Code of the City of New York, Local Law 17-95, using an effective peak velocity-related acceleration of 0.15, except revise Table 23-P by adding after II.3:

      4. Anchorage for suspended ceilings weighing more than 4 psf without the weight of light fixtures. [Value of C_p] .75

2. For Work in New Jersey, metal suspension systems shall conform to ASTM C 635 and ASTM C 636 except for design and installation of hangers and their top and bottom connections. For the design and installation of hangers and their top and bottom connections, the above ASTM standards shall be revised as follows:

   a. The hanger and its connections shall safely carry the total supported load plus 200 pounds located at midspan.

   b. Hangers for suspending carrying channels or main runners shall be 1/4 inch diameter galvanized steel rods, or 1/8 inch by 1 inch galvanized steel flat bars or No. 9 gage galvanized, soft annealed, mild steel wire.

   c. In addition, the ceiling suspension system shall conform to the seismic design requirement contained in the NJ Uniform Construction Code. Seismic Design Category shall be as shown on the Contract Drawings.

1.04 ENVIRONMENTAL REQUIREMENTS

A. General

Comply with more restrictive of ASTM C 840 requirements and manufacturer's written recommendations for environmental conditions before, during and after application of gypsum board.

1. Room Temperatures

For screw attachment of gypsum board to framing, maintain not less than 40 deg F for 48 hours before application and continuously after until dry. Do not exceed 95 deg F room temperature when using temporary heat sources.

2. Ventilation

Ventilate building spaces as required to remove excess water for drying of joint treatment material immediately after its application. Avoid drafts during dry, hot weather to prevent too-rapid drying.

B. Install gypsum drywall products after installation areas are enclosed and meet requirements of 1.04 A.1 and 2.

1.05 QUALITY ASSURANCE

A. Single Source Responsibility

1. Obtain steel framing members for gypsum board assemblies from a single manufacturer.
2. Obtain gypsum boards from a single manufacturer. Obtain ancillary materials from manufacturer recommended by the manufacturer of gypsum boards.
3. Obtain trim accessories from either the same manufacturer that supplies gypsum board or from a manufacturer acceptable to gypsum board manufacturer.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in original packages, containers or bundles bearing brand name and identification of manufacturer.

B. Store materials inside under cover and in a manner to keep them dry, protected from weather, freezing, direct sunlight, surface contamination, corrosion and damage from construction traffic and other causes. Neatly stack gypsum boards flat to prevent sagging.

C. Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect trim accessories from being bent or otherwise damaged.

1.07 SUSTAINABLE DESIGN REQUIREMENTS

A. Sustainable Design General Requirements

1. The Authority requires the Contractor to implement practices and procedures to meet the sustainable design requirements. The Contractor shall ensure that the requirements related to these goals, as defined in Division 1 - GENERAL PROVISIONS and the articles below, are implemented to the fullest extent. Substitutions, or other changes to the Work proposed by the Contractor, will not be allowed if such changes compromise the stated Sustainable Design Performance Criteria.

B. Sustainable Design Performance Criteria

1. For all gypsum board products manufactured as synthetic gypsum or flue gas desulphurization gypsum by the manufacturers listed in Part 2 of this specification section, gypsum board products shall contain a minimum of 45 percent (by weight) recycled content, calculated by adding the post-consumer recycled content percentage to one-half of the post-industrial recycled content percentage. Certify the recycled content in accordance with the Sustainable Design Submittal Requirements below.

2. Steel framing and support members (studs and runners, wall and ceiling furring, ceiling framing) shall contain a minimum of 25 percent (by weight) recycled content, calculated by adding the post-consumer recycled content percentage to one-half of the post-industrial recycled content percentage. Certify the recycled content in accordance with the Sustainable Design Submittal Requirements below.

3. Fiberglass insulation products shall contain a minimum of 20 percent combined post-consumer and post-industrial recycled content, and shall be documented in accordance with the Sustainable Design Submittal Requirements specified herein.

4. All mineral wool insulation products shall contain minimum 75 percent combined post-consumer and post-industrial recycled content, and shall be documented in accordance with the Sustainable Design Submittal Requirements specified herein.

5. All field-applied adhesives, sealants, paints and coatings relating to Work of this Section shall meet the requirements of Division 1 - GENERAL PROVISIONS.

6. The manufacturing location (final assembly) of the gypsum board and steel framing shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

7. The extraction location of the gypsum board and steel framing shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

8. Mineral-fiber firestopping materials that are exposed to supply or return air plenums, or that are located above suspended ceilings, must be encapsulated or fully sealed to prevent direct exposure of the mineral fibers to the plenum. Where sealants are used to encapsulate the mineral fiber materials (e.g. smoke sealants used at perimeter firestopping joints), the sealants shall meet the requirements of Division 1 - GENERAL PROVISIONS.

9. Batt, blanket, blown and sprayed-in insulation is prohibited from use in all supply and return air plenums.

1.08 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MANUFACTURERS

A. Grid Suspension Systems

Where direct hung grid suspension systems are shown on the Contract Drawings, furnish and install products of one of the following, or approved equal:

1. Non-Fire Rated

Armstrong World Industries, Inc., Lancaster, PA; "Drywall Grid Systems"
BPB America Inc., Tampa, FL; "Drywall Grid System"
Chicago Metallic Corp., Chicago, IL; "640-C Drywall Furring System"
USG Interiors, Inc., Chicago, IL; "Drywall Suspension System"

2. Fire Rated

Armstrong World Industries, Inc., Lancaster, PA; "Drywall Grid Systems"
Chicago Metallic Corp., Chicago, IL; "Fire-Front 650-C Drywall Furring System"
USG Interiors, Inc., Chicago, IL; "Drywall Suspension System"

B. Gypsum Board and Related Products

BPB America Inc., Tampa, FL
G-P Gypsum Corp., Atlanta, GA
National Gypsum Co., Charlotte, NC
United States Gypsum Corp., Chicago, IL

2.02 MATERIALS

A. Ceiling Support Materials and Systems For Suspended or Furred Ceilings

1. General

a. Size ceiling support components to comply with ASTM C 754, unless otherwise shown on the Contract Drawings or specified herein.

b. Sheet Steel Components: Corrosion resistant steel complying with ASTM C 645.

c. Protective Coating: G40 hot-dip galvanized per ASTM A 653, unless otherwise specified.

d. Direct hung grid suspension systems shall conform to ASTM C 635, heavy-duty.

2. Hangers

Hangers for suspending carrying channels shall be 1/4 inch diameter galvanized steel rods or 1/8 inch by 1 inch galvanized steel flat bars.

3. Hanger Anchorage Devices

Screws, clips, bolts, cast-in-place concrete inserts or other devices applicable to the indicated method of structural anchorage for ceiling hangers and suitable for the use intended as proven through standard construction practices or by certified test data.

4. Channels

Cold-rolled steel, minimum base metal thickness of 0.0538 inch (16 gage), allowable bending stress of 18,000 psi, protected with galvanizing complying with ASTM A 653 for G60 coating designation, and as follows:

a. Carrying Channels: 1-1/2 inch deep by 7/16 inch wide flanges, 508 lbs. per 1000 feet galvanized, as shown on the Contract Drawings.

5. Furring Members

Hat-shaped channel, minimum base metal thickness of 0.0179 inch (25 gage).

a. Where shown on the Contract Drawings as "resilient", furnish manufacturer's special type designed to reduce sound transmission through ceiling.

6. Furring Anchorages

ASTM A 641; 0.0625 inch diameter (No. 16 gage), Class 1 galvanized wire ties or manufacturer's standard wire-type clips, bolts, nails or screws as recommended by furring manufacturer and complying with ASTM C 754.

B. Gypsum Board

ASTM C 1396; of types, thickness and edge configuration as indicated below, in maximum lengths available to minimize end-to-end butt joints.

1. Type: Regular, unless otherwise shown on the Contract Drawings. Furnish Type X or Type C for fire-resistant rated assemblies and where shown on the Contract Drawings.

2. Edges: Tapered and featured (rounded or beveled) for prefilling.

3. Thickness: 1/2 inch, unless otherwise shown on the Contract Drawings.

C. Drywall Trim Accessories

Manufacturer's standard trim accessories of types shown on the Contract Drawings for drywall Work, formed of galvanized steel with either knurled and perforated or expanded flanges for nailing or stapling, and beaded for concealment of flanges in joint compound; complying with ASTM C 1047. Furnish corner beads, L-type edge trim-beads, U-type edge trim-beads and one-piece control joint beads.

D. Joint Treatment Materials

Comply with ASTM C 475 for gypsum board installation and with the recommendations of manufacturers of both the panel products and the joint treatment materials for each application shown on the Contract Drawings.

1. Joint Tape for Paper-Faced Gypsum Board: Paper reinforcing tape.

2. Joint Compound: Ready-mixed, vinyl-type for interior use. Furnish two separate grades; one specifically for bedding tapes and filling depressions, and one for topping and sanding.

E. Acoustical Sealant

1. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard non-sag, skinning, paintable, nonstaining, gunnable latex sealant complying with ASTM C 834 and the following requirements:

   a. Product shall be effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by test representative assemblies per ASTM E 90.

2. Acoustical Sealant for Concealed Joints: Manufacturer's standard nondrying, nonskinning, nonstaining, gunnable, synthetic rubber sealant recommended for sealing interior concealed joints to reduce transmission of airborne sound.

3. Products: Subject to compliance with sound transmission and fire-resistance rating requirements, furnish and install one of the following, or approved equal:

   a. Acoustical Sealant for Exposed and Concealed Joints

      AC-20 FTR; Pecora Corp., Harleysville, PA
      Tremflex 834; Tremco Inc., Beachwood, OH
      SHEETROCK Acoustical Sealant; United States Gypsum Co., Chicago, IL

   b. Acoustical Sealant for Concealed Joints

      BA-98; Pecora Corp, Harleysville, PA
      Tremco Acoustical Sealant; Tremco Inc., Beachwood, OH
      SHEETROCK Acoustical Sealant; United States Gypsum Co., Chicago, IL

F. Miscellaneous Materials

1. General: Furnish auxiliary materials for gypsum drywall Work of type and grade recommended by the gypsum board manufacturer.

2. Gypsum Board Screws: Comply with ASTM C 1002.

3. Sound Attenuation Blankets

   Unfaced mineral fiber blanket insulation produced by combining mineral fibers manufactured from glass, slag or rock with thermosetting resins to comply with ASTM C 665 for Type I (blankets without membrane facing). Comply with product flame resistance requirements where used in fire-resistance rated assemblies.

PART 3. EXECUTION

3.01 PREPARATION

A. Coordinate installation of ceiling suspension system with installation of overhead structural systems to ensure that inserts and other structural anchorage provisions have been installed to receive ceiling hangers in a manner that will develop their full strength and at spacings required to support ceiling.

1. Furnish concrete inserts and similar devices to be installed under other Sections before ceiling installation begins.

3.02 INSTALLATION

A. General

1. Install materials in accordance with the manufacturer's printed instructions, in compliance with governing regulations and fire-resistance rating requirements shown on the Contract Drawings.

2. Suspension System Installation Standard: ASTM C 636.

3. Metal Support Installation Standard: ASTM C 754, and as specified herein.

4. Gypsum Board Application and Finishing Standards: ASTM C 840 and GA-216.

5. Do not bridge building expansion joints with support system; frame both sides of joints with furring or other support as shown on the Contract Drawings.

B. Ceiling Support Suspension Systems

1. Secure hangers to structural support by connecting directly to structure where possible; otherwise, connect to inserts, clips or other anchorage devices or fasteners as shown on the Contract Drawings.

2. Space main runners 4 feet on center and space hangers 4 feet on center along runners, unless otherwise shown on the Contract Drawings.

3. Level main runners to a tolerance of 1/8 inch in 12 feet measured both lengthwise on each runner and transversely between parallel runners.

4. Wire-tie or clip furring members to main runners and to other structural supports as shown on the Contract Drawings. Do not support wires from mechanical or electrical equipment occurring above ceiling.

5. Grid Suspension System

   Attach perimeter wall track, angle or trim wherever support system meets vertical surfaces. Mechanically join main beam and cross furring members to each other and butt-cut to fit into vertical surface device.

6. Space furring members 16 inches on center, unless otherwise shown on the Contract Drawings.

7. Install auxiliary framing at termination of drywall Work, and at openings for light fixtures and similar Work, as required for support of both the drywall construction and other Work shown on the Contract Drawings for support thereon.

C. Gypsum Board Installation

1. Install ceiling boards in the direction and manner that will minimize the number of end-butt joints, and which will avoid end joints in the central area of each ceiling. Stagger end joints by at least 1 foot.

2. Install exposed gypsum board with face side out. Do not install imperfect, damaged or damp boards. Butt boards together for a light contact at edges and ends with not more that 1/16 inch open space between boards. Do not force into place.

3. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

4. Attach gypsum board to supplementary framing and blocking provided for additional support at openings and cutouts.

5. Form control joints and expansion joints with space between edges of adjoining boards, prepared to receive trim accessories.

6. Where sound-rated drywall Work is shown on the Contract Drawings (STC rating), including Work on resilient furring, seal the Work at perimeters, at control and expansion joints, at openings and penetrations with a continuous bead of acoustical sealant. Comply with ASTM C 919 and manufacturer's recommendations for location of beads, and close off sound-flanking paths around or through the Work.

D. Application Methods

1. Install gypsum board ceilings and soffits prior to wall/partition board application to the greatest extent possible.

2. Apply gypsum boards to supports with screws.

E. Drywall Trim Installation

1. For trim with flanges intended for fasteners, anchor trim with same fasteners used to attach gypsum board to framing supports. Otherwise, anchor trim flanges in accordance with gypsum board manufacturer's instructions and recommendations.

2. Install metal cornerbead at outside corners of drywall Work.

3. Install metal edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed. Furnish trim with face flange to receive joint compound. Install L-type trim where Work is tightly abutted to other Work. Install U-type trim where edge is exposed, revealed, gasketed or sealant-filled (including expansion joints).

4. Install metal control joint where shown on the Contract Drawings per ASTM C 840 requirements.

F. Finishing of Gypsum Drywall

1. Finish Level Standard: ASTM C 840.

2. Apply compound treatment at gypsum board joints (vertical and horizontal), flanges of trim accessories, penetrations, fastener heads and elsewhere as required to prepare Work for final decoration. Prefill open joints and rounded or beveled edges, if any, using type of compound recommended by gypsum board manufacturer.

3. Apply joint tape at joints between gypsum boards using taping joint compound, except where trim accessories are shown on the Contract Drawings.

4. Apply topping joint compound in three coats (not including prefill of openings in base), and sand between last two coats and after last coat.

5. Finish Levels

Finish gypsum boards to the levels shown on the Contract Drawings, performed in accordance with ASTM C 840.

3.03 PROTECTION

A. Furnish protection and maintain conditions, in a manner acceptable to the Engineer, to ensure that gypsum drywall Work shall be without damage or deterioration at time of issuance of the Certificate of Final Completion.

B. Remove and replace wet or otherwise damaged board products.

END OF SECTION

SECTION 09253

GYPSUM DRYWALL – INTERIOR CEILINGS AND SOFFITS

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1 - GENERAL PROVISIONS:

A. Product Data

Manufacturer's product specifications and installation instructions for each metal support, steel framing system and gypsum drywall component, and other data showing compliance with the requirements of this Section.

B. Shop Drawings

Reflected ceiling plans, prepared for installation purposes, drawn accurately to 1/4 inch = 1 foot scale and coordinated with related mechanical, electrical, communication, fire suppression and other Work above, penetrating or connected to ceiling or soffit. Show ceiling suspension members, method of anchorage to building structure and framing for supported items.

C. Samples.

1. Set of 12 inch long samples of grid suspension system main runner and furring cross members with couplings.
2. Set of 12 inch long samples of exposed moldings and trim for each type and color required.

D. Certifications

1. Submit certificates from manufacturer of grid suspension systems certifying that their products comply with the requirements of this Section.
2. Fire Test Response Reports: Manufacturer's certification from a qualified independent testing and inspecting agency substantiating each gypsum board assembly's required fire-resistance rating.
3. Acoustic Test Response Reports: Manufacturer's certification from a qualified independent testing agency substantiating required STC rating for each gypsum board assembly.

E. Sustainable Design Submittal Requirements: The Contractor shall submit the Sustainable Design certification items listed herein. Sustainable Design submittals shall include the following:

1. A completed Sustainable Design Materials Certification Form (SDMCF), appended to Division 1 - GENERAL PROVISIONS. Information to be supplied for this form shall include:

a. Cost breakdowns for the materials included in the Contractor's work. Cost breakdowns shall include total cost plus itemized material costs.

b. Where required by the Sustainable Design Performance Criteria of this Section, the following information shall also be supplied:

(1) The amount of post-consumer and/or post-industrial recycled content in the supplied product(s).

(2) The manufacturing location of the supplied product(s).

(3) The location (source) of the raw materials used to manufacture the supplied product(s).

(4) The VOC content of all adhesives, sealants, paints, and coatings applied on site as part of this Work.

2. Published product literature or letters of Certification, provided from the product manufacturer on the manufacturer's letterhead, to verify the product information supplied for the SDMCF.

3. Product cut sheets for materials that meet the SDMCF.

4. Material Safety Data Sheets (MSDS), for applicable products. Applicable products include, but are not limited to field-applied adhesives, sealants, carpets, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).

5. The Sustainable Design submittal information shall be assembled into one (1) package per Section or trade, and sent to the Engineer.

END OF APPENDIX "A"

SECTION 02851

ALUMINUM SIGN PANELS

INSTRUCTIONS TO SPECIFIER

USERS OF THIS SECTION ARE ADVISED THAT DETAILED INSTRUCTIONS ARE NOT AVAILABLE AT THIS TIME.

IN ORDER TO ENSURE PROPER COORDINATION WITH THE CONTRACT DRAWINGS, AND A BIDDABLE CONTRACT, THE TEXT MUST BE CAREFULLY READ AND THE ITEMS OR CHOICES INDICATED AS "AS SHOWN ON THE CONTRACT DRAWINGS" (OR SIMILAR LANGUAGE) MUST BE SHOWN ON THE CONTRACT DRAWINGS.

END OF INSTRUCTIONS

DIVISION 2

SECTION 02851

ALUMINUM SIGN PANELS

PART 1. GENERAL

1.01 SUMMARY

This Section specifies requirements for the following:

A. Aluminum sign panels for use in the construction of directional, guide, warning and regulatory roadway signs.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

American Association of State Highway and Transportation Officials (AASHTO)

Standard Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals (LTS-2)

Manual for Signing and Pavement Markings of the National System for Interstate and Defense Highways

American Society for Testing and Materials (ASTM)

ASTM A 153	Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A 193	Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service
ASTM A 194	Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service
ASTM A 325	High-Strength Bolts for Structural Steel Joints
ASTM A 325	High-Strength Bolts for Structural Steel Joints
ASTM B 209	Aluminum and Aluminum-Alloy Sheet and Plate
ASTM B 211	Aluminum-Alloy Bar, Rod and Wire
ASTM B 221	Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes and Tubes

American Welding Society (AWS)

AWS D 1.2	Structural Welding Code - Aluminum

Federal Highway Administration (FHWA)

Manual on Uniform Traffic Control Devices for Streets and Highway (MUTCD)

Standard Alphabets for Highway Signs

Standard Lower-case Alphabets for Highways

Standard Traffic Signs

1.03 DESIGN AND PERFORMANCE REQUIREMENTS

A. Design of signs, supports and framing shall provide sufficient strength to withstand a wind loading of 80 miles per hour as per AASHTO LTS-2.

1.04 DELIVERY, STORAGE, AND HANDLING

All sign components and materials shall be transported and handled in a manner that shall cause no permanent deformation, injury or damage. Sign components and materials to be stored shall be stored above ground.

1.05 SUBMITTALS

Refer to Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MATERIALS

A. Aluminum Sign Panels

1. Aluminum sheets and plates shall comform to ASTM B 209, alloy 6061-T6.
2. Fabricate panels from standard sheet widths. The thickness for panel sizes of 30 inches by 30 inches or smaller shall be 0.080 inch and the thickness of larger panels shall be 0.125 inch unless otherwise shown on the Contract Drawings.
3. The panel blanks shall be free from laminations, blisters, open seams, pits, holes, or defects that may affect their strength, appearance or use. The thickness shall be uniform and the blanks shall be commercially flat.

B. Panel Sheeting and Screen Printing

1. Reflectorized Sheeting

   Scotchlite Brand High Intensity Grade Series 2800 (heat activated adhesive) or Series 3800 (pressure sensitive adhesive) as manufactured by the Traffic Control Materials Division of the 3M Co., 223-3N 3M Center, St. Paul, Minnesota 55144, or approved equal, and shall meet or exceed the reflecting requirements associated with High Intensity Grade, sheetings.

2. Non-Reflectorized Sheeting

   Scotchcal Brand film Series 650 (heat activated adhesive) or Series 3600 (pressure sensitive adhesive) as manufactured by the Traffic Control Materials Division of the 3M Co., or approved equal.

3. Screen Printing Inks, Thinners and Toners

   a. Scotchlite Brand Process Colors Series 700 for use on Reflectorized Sheeting, or approved equal

   b. Scotchcal Brand Process Colors Series 3900 and 4100 for use on Non-Reflectorized Sheeting, or approved equal.

4. Panel sheeting (reflective or non-reflective) and screen printing usage shall be as shown on the Contract Drawings.

C. Stiffeners, Brackets and Miscellaneous Hardware

1. Horizontal and vertical sign panel stiffeners (Z bars) and panel brackets shall be fabricated of aluminum alloy 6061-T6 conforming to ASTM B 221.

2. Other miscellaneous aluminum hardware including bolts, nuts, washers, screws, rivets, pull-type lockbolts and serrated or knob stem blind rivets shall be fabricated to meet the requirements of ASTM B 209 and B 211 for Alloy 2024-T4. Component designated as Alloy 2024-T4 shall be given a chromated sealed anodic coating.

3. High strength steel bolts, nuts and washers shall conform to ASTM A 325. High-strength bolts, nuts and washers shall be galvanized in accordance with ASTM A 153.

4. Stainless steel nuts shall conform to ASTM A 194, Grade 8F, except that the nuts shall be lock nuts with semifinished hex nuts equivalent to American Standard Heavy Series. Stainless steel bolts, washers, and screws shall conform to ASTM A 193, austenitic steel.

2.02 CONSTRUCTION FEATURES

A. Sign face text, symbol, and border layouts shall be in accordance with the Contract Drawings and conform to the following requirements of:

1. The AASHTO Manual for Signing and Pavement Marking of the National System for Interstate and Defense Highways.

2. The FHWA Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD).

3. The FHWA Standard Alphabets for Highway Signs.

4. The FHWA Standard Lower-case Alphabets for Highways.

B. Sign characters shall be as shown on the Contract Drawings.

C. Sign corner and border radii shall be approximately one-eighth (1/8) of the height of the sign but shall not exceed 12 inches; or as shown in the FHWA Standard Traffic Sign. Sign borders shall be of the same type character as the legend and shall be approximately the same width as the stroke width of the major lettering or the sign, or as shown in the FWHA Standard Traffic Sign.

2.03 FABRICATION

A. All shearing, cutting and punching shall be performed prior to preparing the blanks for application of reflective material. All edges and corners shall be filed or ground smooth, leaving the entire sign blank free from sharp edges and burrs.

B. The blanks shall be cleaned, degreased, and chromated or otherwise properly prepared in accordance with the sheeting manufacturer's recommendations. After treatment, clean cotton gloves shall be used in handling the sign blank until the reflective sheeting is applied. All fabrication except for cutting the lower ends of embedded posts shall be done in the shop. The aluminum panels shall be clean, dry, and free from oils, dust, grit, or any other contaminants that would adversely affect the adhesion of the Reflectorized and Non-Reflectorized sheeting.

C. Welding of aluminum shall consist of inert gas shielded metal arc welding with consumable electrodes. All welding of aluminum shall be performed in the shop. No field welding or aluminum shall be permitted. All welders shall be qualified in accordance with the qualification procedures of AWS D 1.2.

D. Necessary drilling of holes required for shop and field assembly after sheeting is applied shall be done such that the drill bit does not snag, rip, or damage the sheeting outside of the drill hole. Holes shall be deburred prior to assembly.

E. Exposed bolt heads on the face of the assembly sign shall be touched up with enamel paint of the same color as the sheeting surrounding the bolts.

PART 3. EXECUTION

3.01 INSTALLATION

A. Erect, cover, and remove signs as shown on the Contract Drawings.

B. Side-of-road ground mounted signs shall be erected so that the sign face is truly vertical to the profile line and the intersection angle measured between the sign face and the centerline of the travel lane, which the sign serves shall be 93 degrees. Where lanes divide or curve, sign faces shall be oriented so as to be most effective both day and night, and to avoid the possibility of specular reflection.

C. All sign panels shall be securely fastened to their supports with bolts, nuts and washers of aluminum (2024-T4 alloy), hot-dip galvanized steel, or stainless steel conforming to 2.01 D, and 1.03 of this Section.

D. Horizontal and vertical sign clearances shall be as shown on the Contract Drawings.

3.02 FIELD INSPECTION

A. Immediately prior to erection, all material will be inspected by the Engineer for damage that is attributable to improper transportation, handling or storage procedures.

B. An inspection of each completely erected sign shall be made in the daylight for proper location, line and grade of signs, vertical post alignment, condition, appearance and visibility. The completely erected signs may also be inspected at night by the Engineer.

C. As the Work progresses, the location, position and condition of all signs shall be monitored by the Contractor in accordance with the requirements of "Maintenance of Traffic and Work Area Protection" of Division 1 - GENERAL PROVISIONS.

D. Any deviation from the above-indicated procedure shall be approved by the Engineer.

END OF SECTION

SECTION 02851

ALUMINUM SIGN PANELS

APPENDIX "A"

SUBMITTALS

A. Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts and Samples" of Division 1 – GENERAL PROVISIONS:

1. Detailed sign face layout for all sign panels showing letter height, width, brush stroke, spacing between letters, words, symbols and lines, border width, symbols details, and overall dimensions of the sign panels.
2. Shop drawings of sign panels showing the sizes of the members and their connection details including joining and anchorage, stiffening, and bracing.
3. Catalog cuts of all the materials to be used for sign faces.

B. Prior to fabrication, submit computations for the design of the sign panels and supports, as required in 1.03 of this Section, signed by a Professional Engineer licensed to practice in the State where the Work is to be performed.

END OF APPENDIX "A"

DIVISION 4

SECTION 04170

JOINT REINFORCEMENT AND STEEL REINFORCING

PART 1. GENERAL

1.01 SUMMARY

This Section specifies requirements for joint reinforcement and steel reinforcing for unit masonry assemblies.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

American Concrete Institute (ACI)/American Society of Civil Engineers (ASCE)/ The Masonry Society (TMS)

ACI 530.1/ASCE 6/ TMS 602	Specification for Masonry Structures.

American Society for Testing and Materials (ASTM)

ASTM A 82	Specification for Steel Wire, Plain, for Concrete Reinforcement.
ASTM A 153	Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
ASTM A 185	Specification for Steel Welded Wire Fabric, Plain, for Concrete.
ASTM A 497	Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete.
ASTM A 615	Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
ASTM A 775	Specification for Epoxy-Coated Steel Reinforcing Bars.
ASTM A 951	Specification for Masonry Joint Reinforcement.

1.03 DEFINITIONS

A. Joint Reinforcement

Horizontal joint reinforcement fabricated, generally, in truss-type configuration for placement in the horizontal mortar joints of masonry walls and partitions.

B. Steel Reinforcing

Steel reinforcing bars, generally, placed vertically in the cells of CMU walls or partitions or in the cavity of masonry cavity walls, or placed horizontally in bond beams.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver joint reinforcement and steel reinforcing packaged in manufacturer's original, unopened bundles with label data legibly marked. Different types and grades of products shall be packaged separately.

B. Store in a clean dry location.

C. Handle to prevent deterioration or damage due to moisture, contamination, corrosion and other causes.

1.05 SUSTAINABLE DESIGN REQUIREMENTS

A. Sustainable Design General Requirements:

1. The Authority requires the Contractor to implement practices and procedures to meet the sustainable requirements. The Contractor shall ensure that the requirements related to these goals, as defined in Division 1 - GENERAL PROVISIONS and the articles below, are implemented to the fullest extent. Substitutions, or other changes to the work proposed by the Contractor, will not be allowed if such changes compromise the stated Sustainable Design Performance Criteria. Where no additional articles are listed below refer to Division 1 - GENERAL PROVISIONS.

B. Sustainable Design Performance Criteria:

1. Steel Reinforcing shall contain a minimum of 75 percent (by weight) recycled content, calculated by adding the post-consumer recycled content percentage to one-half of the post-industrial recycled content percentage. Certify the recycled content in accordance with the Sustainable Design Submittal Requirements of this section.

2. The post-industrial and/or post-consumer recycled content (by weight) of Joint Reinforcing shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

3. All field-applied adhesives, sealants, paints and coatings relating to work of this section shall meet the requirements of Division 1 - GENERAL PROVISIONS.

4. The manufacturing location (final assembly) of the Steel Reinforcing shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

5. The origin of the raw materials from which the Steel Reinforcing was manufactured shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

1.06 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MANUFACTURERS

Subject to compliance with the requirements of this Section, furnish and install products as manufactured by one of the following, or approved equal:

Joint Reinforcement:

Dur-O-Wal Inc., Div. of Dayton Superior Corp., Aurora, IL
Hohmann & Barnard, Inc., Hauppauge, NY
Wire-Bond, Charlotte, NC

2.02 MATERIALS

A. Joint Reinforcement

1. Steel Wire: ASTM A 82.
2. Finish: ASTM A 153, Class B-2 (1.5 oz. per sq. ft. of wire surface) hot-dip galvanized coating, applied after fabrication.

B. Steel Reinforcing (Horizontal or Vertical)

1. General

   Furnish reinforcing steel complying with ACI 530.1/ASCE 6/TMS 602 requirements and this Section.

2. Steel Reinforcing Bars

   Material and grade and size as follows, as shown on the Contract Drawings:

   1. Uncoated steel reinforcing bars: ASTM A 615.
   2. Epoxy-coated steel reinforcing bars: ASTM A 615 and ASTM A 775.

C. Grade 60 if bar sizes 7 to 10 are used; Grade 40 if bar sizes 3 to 6 are used; Grade 75 if bar sizes 11, 14 or 18 are used.

D. Furnish one or more of the following, where shown on the Contract Drawings:

1. Plain Welded Wire Fabric: ASTM A 185.
2. Deformed Welded Wire Fabric: ASTM A 497.

2.03 FABRICATION

A. Joint Reinforcement

Fabricate joint reinforcement in accordance with ASTM A 951 and as follows:

1. Welded-wire units with deformed, continuous side rods and plain cross rods prefabricated into straight lengths of not less than 10 feet, with prefabricated corner and tee units.

2. Width

Fabricate in widths approximately 2 inches less than nominal width of walls and partitions to provide mortar coverage of not less than 5/8 inch on joint faces exposed to exterior and 1/2 inch elsewhere.

3. Wire Size

1. Side Rods: W1.7 or 0.1483 inch diameter (9 gage).

2. Cross Rods: W1.7 or 0.1483 inch diameter (9 gage).

4. Units shall be fabricated with continuous diagonal cross rods spaced not more than 16 inches on center, placed in the same plane as longitudinal wires with one side rod for each composite wall wythe or face shell.

5. Furnish types as required for single- or multi-wythe walls as shown on the Contract Drawings, including two-piece adjustable types for cavity wall and for seismic design as required.

B. Steel Reinforcing

Fabricate steel reinforcing in maximum 12 foot lengths, unless otherwise shown on the Contract Drawings, and in accordance with approved unit masonry Shop Drawings.

PART 3. EXECUTION

3.01 INSTALLATION

A. Horizontal Joint Reinforcement

1. Install joint reinforcement in all masonry walls and partitions, unless otherwise shown on the Contract Drawings.

2. Use prefabricated "L" and "T" sections at corners and intersections. At returns, offsets, curves and other special conditions, cut and bend joint reinforcement to ensure continuity.

3. Lap joint reinforcement at least 6 inches at splices and prefabricated sections.

4. Space reinforcement as follows, unless otherwise shown on the Contract Drawings:

1. For single- and multi-wythe walls, 16 inches on center vertically.

2. For parapets, 8 inches on center vertically.

3. For masonry openings greater than 1 foot wide, place joint reinforcement 8 inches apart (vertically), immediately above lintel and below sill. Extend joint reinforcement at least 2 feet beyond opening jambs.

5. Cut or interrupt horizontal joint reinforcement at control or expansion joints and terminate 2 inches back from such joints.

6. Terminate horizontal joint reinforcement 2 inches back from jambs.

B. Steel Reinforcing

Install horizontal and/or vertical bar steel reinforcing where shown on the Contract Drawings.

END OF SECTION

SECTION 04170

JOINT REINFORCEMENT AND STEEL REINFORCING

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1 - GENERAL REQUIREMENTS:

A. Product Data

For horizontal joint reinforcement submit manufacturer's technical data including certification of compliance with specified standards for wire and finish, and diagrams depicting product configuration.

B. Certifications

Submit material test reports and certificates of compliance for the following signed by manufacturer and Contractor certifying that each material complies with requirements:

1. Each material and grade indicated for reinforcing bars.
2. Each type and size of joint reinforcement.
3. Epoxy coating for reinforcement bars.
4. Hot-Dip Zinc coating for steel wire and hardware

C. Samples

1. Samples of accessories embedded in masonry.
2. Each type and size of joint reinforcement

D. Sustainable Design Submittal Requirements:

The Contractor shall submit the Sustainable Design certification items listed herein. Sustainable Design submittals shall include the following:

1. A completed Sustainable Design Materials Certification Form (SDMCF), appended to Division 1 - GENERAL PROVISIONS. Information to be supplied for this form shall include:
   a. Cost breakdowns for the materials included in the Contractor's work. Cost breakdowns shall include total cost plus itemized material costs.
   b. The amount of post-consumer and/or post-industrial recycled content in the supplied product(s).
   c. The manufacturing location of the supplied product(s).
   d. The location (source) of the raw materials used to manufacture the supplied product(s).

e. The VOC content of all adhesives, sealants, paints, and coatings applied on site as part of this work.

2. Published product literature or letters of Certification, provided from the product manufacturer on the manufacturer's letterhead, to verify the product information supplied for the SDMCF.

3. Product cut sheets for materials that meet the SDMCF. Cut sheets shall be submitted with the Contractor or sub-contractor's stamp, as confirmation that the submitted products are the products installed in the Project.

4. Material Safety Data Sheets (MSDS), for applicable products. Applicable products include, but are not limited to field-applied adhesives, sealants, carpets, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).

5. The Sustainable Design submittal information shall be assembled into one package per Section or trade, and sent to the Engineer of review.

END OF APPENDIX "A"

DIVISION 9

SECTION 09503

LAY-IN PANEL ACOUSTICAL CEILINGS

PART 1. GENERAL

1.01 SUMMARY

This Section specifies requirements for exposed grid lay-in panel acoustical ceilings, including suspension systems and accessories.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

American Society for Testing and Materials (ASTM)

ASTM C 423	Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
ASTM C 635	Specification for the Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
ASTM C 636	Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.
ASTM E 84	Test Method for Surface Burning Characteristics of Building Materials.
ASTM E 119	Test Methods for Fire Tests of Building Construction and Materials.
ASTM E 413	Classification for Rating Sound Insulation.
ASTM E 1110	Classification for Determination of Articulation Class.
ASTM E 1111	Test Method for Measuring the Interzone Attenuation of Ceiling Systems.
ASTM E 1264	Classification for Acoustical Ceiling Products.
ASTM E 1414	Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum.
ASTM E 1477	Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers.

Ceilings and Interior Systems Construction Association (CISCA)

Acoustical Ceilings Use & Practice.

Underwriters Laboratories Inc. (UL)

Fire Resistance Directory.

1.03 DESIGN AND PERFORMANCE REQUIREMENTS

A. Fire Performance Characteristics

1. Fire-Resistance Ratings

When required, hourly-rated fire-resistant acoustical ceiling systems are shown by reference to design designation in UL's *Fire Resistance Directory*, or in the listing of another qualified testing and inspecting agency for floor, roof or beam assemblies in which acoustical ceilings function as a fire protective membrane.

a. Test Standard: ASTM E 119.

b. Furnish and install protection materials for lighting fixtures and air ducts to comply with requirements of rated assembly shown on the Contract Drawings.

2. Surface Burning Characteristics

Acoustical ceiling units shall comply with ASTM E 1264 for Class A, as determined by testing identical products in accordance with ASTM E 84 by a testing and inspecting agency acceptable to the Engineer. Components shall display appropriate marking of applicable testing and inspecting agency.

a. Flame Spread: 25 or less.

b. Smoke Developed: 50 or less.

B. Design Criteria and Standards for Suspension System

1. For Work in New York City, metal suspension systems shall conform to the Building Code of the City of New York except that metal deck tabs shall not be used for top hanger attachment.

a. In addition, the ceiling suspension system shall conform to the seismic design requirements contained in the Building Code of the City of New York, Local Law 17-95, using an effective peak velocity-related acceleration of 0.15, except revise Table 23-P by adding after II.3:

4. Anchorage for suspended ceilings weighing more than 4 psf without the weight of light fixtures.	[Value of C_p] .75

2. For Work in New Jersey, metal suspension systems shall conform to ASTM C 635 and ASTM C 636 except for design and installation of hangers and their top and bottom connections. For the design and installation of hangers and their top and bottom connections, the above ASTM standards shall be revised as follows:

a. The hanger and its connections shall safely carry the total supported load plus 200 pounds located at midspan.

b. Hangers for suspending carrying channels or main runners shall be 1/4 inch diameter galvanized steel rods, or 1/8 inch by 1 inch galvanized steel flat bars or No. 9 gage galvanized, soft annealed, mild steel wire.

c. In addition, the ceiling suspension system shall conform to the seismic design requirement contained in the NJ Uniform Construction Code and its subcode the IBC/2000. Seismic Design Category shall be as shown on the Contract Drawings.

1.04 ENVIRONMENTAL REQUIREMENTS

A. Ensure that the following space enclosure conditions have been met before installing interior acoustical ceilings:

1. Space is enclosed and weatherproof.
2. Wet-work in space, including concrete, terrazzo, plastering and painting, is completed and nominally dry.
3. Work above ceilings is complete.
4. Ambient conditions of temperature and humidity are continuously maintained at values near those to be used for final occupancy.
5. When a pressurized return air plenum is used, operate the ventilation system 48 hours before installing acoustical ceiling panels to cleanse ducts.

1.05 QUALITY ASSURANCE

A. When required by Appendix "A" or when required by the Contract Drawings, submit calculations for the ceiling suspension system. Calculations shall be prepared and sealed by a professional engineer, licensed in the state where the Work is to be performed, indicating compliance with the Design Criteria.

B. Single Source Responsibility

Obtain acoustical panel units through one source from a single manufacturer. Obtain suspension system components through one source from a single manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical ceiling units to construction site in original, unopened packages. Store them in a fully enclosed space, protected against damage from moisture, direct sunlight, surface contamination and other causes.

B. Before installing acoustical ceiling units, allow them to reach room temperature and a stabilized moisture content.

C. Handle acoustical ceiling units carefully to avoid chipping.

1.07 MAINTENANCE

A. Extra Materials

Where requirement for extra materials is shown on the Contract Drawings, deliver to the Engineer, prior to issuance of the Certificate of Final Completion, extra materials described below matching products installed. Package with protective covering for storage and identify with appropriate labels.

1. Acoustical Ceiling Units: Full size units in quantity equal to 2 percent of installed quantity.
2. Exposed Suspension System Components: Each component in quantity equal to 2 percent of installed quantity of each component.

1.08 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MANUFACTURERS

Subject to compliance with the requirements of this Section, furnish and install products of the following manufacturers, or approved equal:

A. Acoustical Ceiling Panels

Armstrong World Industries, Inc., Lancaster, PA
BPB America Inc., Tampa, FL
USG Interiors Inc., Chicago, IL

B. Metal Suspension Systems

Armstrong World Industries, Inc., Lancaster, PA
BPB America Inc., Tampa, FL
Chicago Metallic Corp., Chicago, IL
USG Interiors, Inc., Chicago, IL

2.02 MATERIALS

A. Standards for Acoustical Ceiling Panels

1. Manufacturer's standard units complying with ASTM E 1264 classifications as designated by reference to criteria for type, pattern, edge and joint details, and the following:

   a. Noise Reduction Coefficient (NRC) Ratings: Established in accordance with ASTM C 423.

   b. Articulation Class (AC) Ratings for open-plan spaces, if any: Established in accordance with ASTM E 1111, classified per ASTM E 1110.

   c. Ceiling Attenuation Class (CAC) Ratings: Determined in accordance with ASTM E 1414, classified per ASTM E 413, with ceilings continuous at partitions and supported by a metal suspension system of type appropriate for ceiling unit of configuration shown.

   d. Light Reflectance (LR) Coefficient: Determined in accordance with ASTM E 1477.

2. Colors, Textures and Patterns

   Furnish products to match appearance characteristics shown or, if not otherwise shown, as selected by Engineer from manufacturer's standard colors, surface textures and patterns available for acoustical ceiling units of quality designated.

3. Acoustical Ceiling Panels

See Contract Drawings for acoustical ceiling unit criteria for panel size, thickness, type, texture, pattern, finish, NRC or AC range, CAC range, light reflectance, edge details and antimicrobial treatment, if any. Acoustical ceiling panel configuration shall be as shown on the Contract Drawings.

B. Metal Suspension Systems

1. Manufacturer's standard system roll-formed from hot-dip galvanized cold rolled steel sheet, or as otherwise shown on the Contract Drawings. Suspension system type and details shall be as shown on the Contract Drawings.

2. Finish

Manufacturer's standard factory-applied finish for type of system shown on the Contract Drawings. For exposed members and accessories with painted finish, color shall be as shown on the Contract Drawings or, if not shown, as selected by the Engineer from the manufacturer's full range of standard colors.

a. High Humidity Finish: Comply with ASTM C 635 requirements for "Coating Classification for Severe Environment Performance" where high humidity locations are shown on the Contract Drawings.

C. Accessories

1. Edge Moldings and Trim

Metal or extruded aluminum of types and profiles as shown on Contract Drawings or, if not shown, manufacturer's standard molding for edges and penetrations of ceiling which fits with type of edge detail and suspension system shown.

a. For circular penetrations of ceilings, if any, furnish edge moldings fabricated to diameter required to fit penetration exactly.

b. For narrow faced suspension systems, furnish suspension system manufacturer's standard edge moldings which match width and configuration of exposed runners.

c. For lay-in panels with reveal edge details, provide stepped edge molding which forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member.

2. Hold-Down Clips

Where shown on the Contract Drawings, furnish manufacturer's standard hold-down clips spaced system spaced per manufacturer's recommendations, design to prevent ceiling panel flutter.

3. Impact Clips

Where shown on the Contract Drawings, furnish manufacturer's standard impact clip system design to absorb impact forces against lay-in panels.

4. Acoustical Sealant: As recommended by manufacturer of acoustical ceiling panel.

PART 3. EXECUTION

3.01 PREPARATION

A. Coordination

Furnish layouts for inserts, clips or other supports required to be installed by other trades for support of acoustical ceilings. Coordinate layout and installation of acoustical ceiling units and suspension system components with other Work supported by, or penetrating through, ceilings, including light fixtures, HVAC equipment, fire-suppression system components, if any, and partition system, if any.

B. Furnish concrete inserts and similar devices to other trades for installation well in advance of time needed for coordination of other Work.

C. Measure each ceiling area and establish layout of acoustical ceiling units to balance border widths at opposite edges of each ceiling, avoiding use of less-than-half-width panels at borders. Comply with approved reflected ceiling plan Shop Drawings.

3.02 INSTALLATION

A. General

1. Install materials in accordance with the manufacturer's printed instructions, and in compliance with governing regulations, fire-resistance rating requirements shown on Contract Drawings and CISCA Standards applicable to the Work.

2. Suspension System Installation Standard: ASTM C 636.

3. Arrange acoustical units and orient directionally-patterned units, if any, in manner shown on approved of reflected ceiling plan Shop Drawings.

B. Suspended Lay-In Panel Acoustical Ceiling Installation

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum which are not part of supporting structural or ceiling suspension system. Splay hangers only where required to miss obstructions; offset resulting horizontal force by bracing, countersplaying or other equally effective means.

   a. Locate hangers not less than 6 inches from each end and spaced 4 feet along each carrying channel or direct-hung runner, unless otherwise shown. Support hangers only from building structural members. Do not attach hangers to steel deck tabs, to steel roof deck or permanent metal forms. Level to tolerance of 1/8 inch in 12 feet.

   b. Secure hangers by bolting either directly to structures or to inserts, eye-screws or other devices which are secure and appropriate for substrate, and which will not deteriorate or fail with age, corrosion or elevated temperatures.

2. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent or kinked suspension members.

3. Install edge moldings at perimeter of acoustical ceiling area and at locations where necessary to conceal edges of acoustical units. Miter corners and connect securely where moldings intersect.

   a. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.

   b. Screw-attach moldings to substrate at intervals not exceeding 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to tolerance of 1/8 inch in 12 feet. Use concealed fasteners on moldings and trim.

4. Install acoustical panels in coordination with suspension system, with edges undamaged, resting on and concealed by support suspension members, and supported by wall moldings. Scribe and cut panels to fit accurately at borders and at penetrations.

   a. Install hold-down clips in areas where shown on the Contract Drawings, or required by governing regulations or for fire-resistance ratings. Space as recommended by ceiling panel manufacturer.

   b. Install impact clips in areas where shown on the Contract Drawings. Space as recommended by ceiling panel manufacturer.

5. Finished Work shall be free from dents, tool marks, warpage, buckles, open joints, misaligned joints, edge damage, soiling, smudges, discolorations or other defects.

3.03 FIELD QUALITY CONTROL

Site Inspection

Lighting shall be in place and operational prior to inspection of acoustical panel ceiling sytems so that lighting conditions upon inspection correspond to final building occupancy conditions.

3.04 ADJUSTING AND CLEANING

Clean exposed surfaces of acoustical ceilings, including trim, edge moldings and suspension members. Comply with the manufacturer's written instructions for cleaning and touch-up of minor finish damage. Remove and replace Work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage, at no cost to the Authority.

END OF SECTION

SECTION 09503

LAY-IN PANEL ACOUSTICAL CEILINGS

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1 - GENERAL PROVISIONS:

A. Product Data

Manufacturer's technical data, installation and maintenance instructions for each type of acoustical ceiling unit and suspension system required.

B. Shop Drawings

Reflected ceiling plans, prepared for installation purposes, drawn accurately to 1/4 inch = 1 foot scale and coordinated with related mechanical, electrical, communication, fire suppression and other Work above, penetrating or connected to acoustical ceiling, showing the following:

1. Ceiling suspension members, method of hanger attachment to building structure.
2. Ceiling-mounted Work, including lighting fixtures, diffusers, grilles, speakers, sprinklers and special moldings.
3. Trim configuration, molding details and material type.

C. Samples

1. Minimum 12 inch square corner samples of each acoustical panel type, pattern and color required.
2. Set of 12 inch long samples of exposed moldings and suspension system components, including main runner and cross tee, for each color and system type required.

D. Certifications

Submit certificates from manufacturers of acoustical ceiling units and suspension systems certifying that their products comply with the requirements of this Section.

E. Design Calculations

Submit structural calculations for suspension system and connections, signed and sealed by a professional engineer licensed in the state in which the Work is to be performed.

END OF APPENDIX "A"

SECTION 09503

LAY-IN PANEL ACOUSTICAL CEILINGS

INSTRUCTIONS TO SPECIFIER

A. General

1. This Section specifies requirements for fire rated and non-fire rated, exposed grid acoustical ceilings with lay-in panels.
2. Use of fire rated ceilings for protection of structural elements are not permitted by code when the structural elements being protected support a load bearing wall or a floor or roof more than one story high.
3. Not recommended for exterior use. But if used anyway, follow recommendations for use in a severe environment (pass high humidity and salt spray testing), as well as consider wind loads, atmospheric conditions and manufacturer's recommendations.

B. Contract Drawings

Ensure that the Contract Drawings show the following items specified in the text:

(1.03 A)	UL Design No. for fire-resistance rated assembly, if required.
(1.03 B.2.c)	Seismic design category, for Work in NJ.
(1.05 A)	Suspension system design computations: Delete E. from Appendix "A" if design calculations not required.
(1.07 A)	Extra materials: Indicate if required, and change percentages as required (possibly use higher percentages for smaller project areas).
(2.02 A.2, 3; 3.02 A.3)	Extent and configuration of ceilings; panel size, type, texture, pattern, finish, NRC or AC rating, CAC, light reflectance, color and edge detail for each location; antimicrobial or other tile coating; sound system or wireless system options, if available.
(2.02 B.1, 2)	Suspension system: Material, if other than galv. steel (aluminum or stainless steel); type and details, finish and color of exposed members (Manufacturer's standard finish is typically polyester or acrylic baked enamel).
(2.02 B.2.a)	High humidity finish, if any.
(2.02 C.1)	Metal edge and penetration details.
(2.02 C.2)	Location of hold-down clips, when ceiling panel cannot stay down against an upward force of 1 psf.
(2.02 C.3)	Location of impact clips, to prevent accidental panel displacement from impact forces, if required.
(3.02 B.1)	Details for fastening partition system or other Work to ceiling construction when such Work is not framed to structure above.
(3.02 B.1.a)	Hanger spacing if other than 4 feet as specified.

C. Other Items

1. Consult with Project Manager to ensure that reflected ceiling plans show mechanical, electrical, communication and fire protection requirements.

2. If suspended acoustical tile ceilings (concealed suspension) are required, include Division 9 Section on suspended concealed-spline acoustical tile ceilings in Contract Booklet.

3. The difference between an acoustical "tile" and an acoustical "panel" is the method of support and the type of suspension system (ASTM E 1264). The size of the acoustical unit does not determine whether it's a tile or a panel, even though most tiles are smaller than most panels.

   a. Tiles are used with concealed or semi-exposed suspension systems (also stapling or adhesive bonding).

   b. Panels are used with exposed suspension systems.

D. Sustainable Design Considerations

1. Ceiling Panel Material: Ceiling tiles/panels incorporate recycled newspaper and cardboard, as well as slag, a byproduct of iron-ore reduction. Recycled content ranges from 22 to 95 percent. See each manufacturer's products for specific percentages.

   a. Recycling Used Acoustical Ceiling Units: Armstrong offers a Ceiling Recycling Program: After checking that the old units are recyclable, they may be removed and packaged per Armstrong's specifications. Armstrong will pay the shipping cost to their plant in Pennsylvania and will use the reclaimed units in manufacturing new acoustical units. (BPB also has a recycling program.)

2. Metal Components: Aluminum grid systems contain up to 95 percent of recycled material; steel grids contain about 25 percent. Both the steel and aluminum grids are recyclable at the end of their service life.

END OF INSTRUCTIONS

DIVISION 7

SECTION 07710

MANUFACTURED ROOF SPECIALTIES

PART 1. GENERAL

1.01 SUMMARY

A. This Section specifies requirements for factory-fabricated metal coping and fascia systems, counterflashing and reglets.

B. Metal roof specialties custom fabricated by contractor or installer, if any, are specified in another Division 7 Section on flashing and sheet metal.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

American Architectural Manufacturers Association (AAMA)

AAMA 611	Specification for Anodized Architectural Aluminum.
AAMA 2605	Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.

American National Standards Institute/Single Ply Roofing Industry (ANSI/SPRI)

ANSI/SPRI ES-1	Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems.

American Society of Testing and Materials (ASTM)

ASTM A 653	Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
ASTM B 209	Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
ASTM B 221	Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
ASTM D 2244	Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates.
ASTM D 4214	Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films.

Factory Mutual Global (FM)

FM Approval Guide – Roof Perimeter Flashing.

National Association of Architectural Metal Manufacturers (NAAMM)

Metal Finishes Manual for Architectural and Metal Products.

Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA)

Architectural Sheet Metal Manual.

1.03 DESIGN AND PERFORMANCE REQUIREMENTS

A. Materials and installation of Work of this Section shall be compatible with and shall be performed in accordance with the requirements of Work of the roofing system specified in other Sections. Work of this Section shall become a part of the Roofing System Guarantee, if any, as specified in such other Sections.

B. Manufactured roof specialties shall be fabricated to resist thermally induced movement and exposure to weather without failing, rattling, water infiltration into the building interior, and disengagement of fasteners.

C. Wind-Uplift Resistance

1. Coping and fascia systems shall be tested according to ANSI/SPRI ES-1 and shall be capable of resisting upward and outward design pressures as shown on the Contract Drawings.

2. Gravel stop (one-piece fascia) shall be tested and approved by FM under the standard for Roof Perimeter Flashing classification, for rating as shown on the Contract Drawings.

1.04 QUALITY ASSURANCE

A. Industry Standards

Furnish products which comply with applicable requirements of SMACNA's *Architectural Sheet Metal Manual*, except as otherwise shown on the Contract Drawings.

B. Single Source Responsibility

Obtain each type of manufactured roof specialty through one source from a single manufacturer.

C. Field Measurements

Prior to fabrication of coping and fascia systems, take field measurements of structure or substrates receiving edge systems.

1.05 WARRANTY

A. Fluoropolymer Finish Warranty

1. Furnish manufacturer's written warranty covering failure of the factory-applied exterior finish on metal roof specialties within the warranty period. This warranty shall be in addition to and not a limitation of other rights the Authority may have against the Contractor under the Contract.

2. Failure shall include, but not be limited to:

a. Chalking of the fluoropolymer finish system to a degree greater than the maximum rating number 8 in accordance with procedures as outlined in ASTM D 4214.

b. Color change more than 5 Hunter units as determined in accordance with the procedures set forth in ASTM D 2244.

c. Visible distortion or oil canning of panels.

d. Blistering, peeling, chipping, checking or cracking of the fluoropolymer finish under normal wear and tear.

e. Any other defects which would lessen the service life of the finish.

3. Warranty period for factory-applied exterior finishes on roof specialties is twenty (20) years after the date of Final Completion.

1.06 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MANUFACTURERS

Subject to compliance with requirements of this Section, furnish and install products of one of the following, or approved equal:

A. Coping System

"Perma-Tite Coping"; Metal-Era, Inc., Waukesha, WI
"Snap-Lok Coping"; MM Systems Corp., Pendergrass, GA
"Permasnap Coping System"; W.P. Hickman Systems, Inc., Asheville, NC

B. Fascia System

Metal-Era, Inc., Waukesha, WI
MM Systems Corp., Pendergrass, GA
W.P. Hickman Systems, Inc., Asheville, NC

C. Counterflashing and Reglets

Cheney Flashing Company, Trenton, NJ
Fry Reglet Corp., Alhambra, CA
Metal-Era, Inc., Waukesha, WI
MM Systems Corp., Pendergrass, GA

2.02 MATERIALS

A. Aluminum Sheet

ASTM B 209, alloy and temper recommended by manufacturer for intended use, required performance and as required for proper application of finish.

B. Extruded Aluminum

ASTM B 221, alloy and temper recommended by manufacturer for intended use, required performance and as required for proper application of finish.

C. Galvanized Steel Sheet (Concealed Components)

ASTM A 653, coating designation G90, structural quality, manufacturer's standard thickness as required for performance of coping or fascia system as shown on the Contract Drawings.

D. Concealed Fasteners

Noncorrosive metal fasteners as furnished or as recommended by the roof specialty manufacturer. Fastener pull-out resistance shall be as required by uplift performance or as required by the roof system manufacturer, whichever is more stringent. Fastener length shall be selected to allow minimum penetration into substrate of 1-1/4 inch for nails and 3/4 inch for wood screws.

E. Elastomeric Sealant

ASTM C 920, elastomeric polymer sealant, of type, grade, class and use classification required for application shown on the Contract Drawings, if any, and as recommended by roof specialty manufacturer.

F. Metal Accessories

Sheet metal clips, straps, anchoring devices and similar accessory units, or other special fabrications as shown on the Contract Drawings and as required for installation of Work, matching or compatible with material being installed, noncorrosive, of size and gage as required for performance.

2.03 FABRICATION

A. General Metal Fabrication

1. Furnish manufactured roof specialties designed and fabricated to fit applications and roof system types shown on the Contract Drawings.
2. Shop fabricate Work, complying with details and sizes as shown on the Contract Drawings and specified in this Section and with applicable requirements of SMACNA's *Architectural Sheet Metal Manual*.
3. Fabricate for watertight and weather-resistant performance, with expansion provisions, sufficient to permanently prevent leakage, damage or deterioration of the Work.
4. Form exposed sheet metal work without excessive oil-canning, buckling and tool marks, true to line and levels indicated, with exposed edges folded back to form hems, and with a uniform appearance.
5. Inside and outside corners, end caps and pier caps, as required by roof configuration, shall be fabricted by the roof specialty manufacturer, of materials, gage and finish matching straight running components.

B. Expansion Provisions

Fabricate roof specialties to allow controlled expansion in running lengths for movement of metal components in relationship to one another and also to adjoining dissimilar materials, including flashing and roofing membrane materials, in a manner which is sufficient to prevent water leakage, deformation or damage. Place joints no closer than 18 inches from corners and intersections.

C. Separations

Provide for separation of metal from incompatible metal or corrosive substrates by coating concealed surfaces at locations of contact, with bituminous coating or other permanent separation as recommended by the manufacturer.

D. Product Lengths

Furnish coping, fascia and counterflashing sytems in maximum 12 foot running lengths, in widths and face dimensions as shown on the Contract Drawings and to suit project requirements. True radii for curved Work, if any, may be built to template.

E. Coping System

Furnish manufacturer's standard snap-on system consisting of zinc-coated steel anchor plates with integral cleats, coping cap formed from aluminum sheet and formed aluminum splice plates (anchor plates shall secure coping cap drip edges using a spring clip, compressible chair or pad); with matching prefabricated inside and outside corners, end caps and pier caps, if required, miters fully-welded (top and legs) before finishing; without exposed fasteners, with top of coping tapered for draining back onto the roof.

1. Thickness of coping cap shall be 0.050 inch minimum, or thicker as shown on the Contract Drawings.
2. Finish: High-performance organic coating, fluoropolymer 2-coat system, or as otherwise shown on the Contract Drawings.
3. Joints: Butt-joints with concealed aluminum splice plates, minimum 6 inch wide, finished to match coping cap, with factory applied non-curing sealant strips for a watertight and maintenance-free seal.

F. Fascia System

Furnish the following roof edging types where shown on the Contract Drawings:

1. Canted Roof Edge Fascia: Manufacturer's standard two-piece fascia system consisting of continuous formed galvanized steel cant dam with integral drip edge cleat, and snap-on fascia cover formed from aluminum sheet; with matching prefabricated inside and outside corners, miters fully-welded before finishing; without exposed fasteners.
   a. Thickness of fascia cover shall be 0.050 inch minimum, unless otherwise shown on the Contract Drawings.
   b. Finish: High-performance organic coating, fluoropolymer 2-coat system, or as otherwise shown on the Contract Drawings.

c. Joints: Butt-joints with concealed splice plates of material, profile and finish to match fascia cover.

2. Roof Edge Fascia with Anchor Bar: Manufacturer's standard fascia system consisting of continuous formed or extruded aluminum anchor bar with integral drip edge cleat, and snap-on fascia cover formed from aluminum sheet; with matching prefabricated inside and outside corners, miters fully-welded before finishing; without exposed fasteners.

a. Thickness of fascia cover shall be 0.040 inch minimum, unless otherwise shown on the Contract Drawings.

b. Finish: High-performance organic coating, fluoropolymer 2-coat system, or as otherwise shown on the Contract Drawings.

c. Joints: Butt-joints with concealed splice plates of material, profile and finish to match fascia cover.

3. Gravel Stops

Manufacturer's one-piece, formed aluminum gravel stop, with a horizontal flange and vertical leg fascia terminated in a drip edge, and continuous hold-down cleat; with matching prefabricated inside and outside corners, miters fully-welded before finishing.

a. Thickness of gravel stop shall be 0.050 inch minimum, unless otherwise shown on the Contract Drawings.

b. Finish: High-performance organic coating, fluoropolymer 2-coat system, or as otherwise shown on the Contract Drawings.

G. Counterflashing and Reglets

Furnish manufacturer's standard 2-piece system consisting of counterflashing formed from aluminum sheet to profile as shown on the Contract Drawings, removeable without disturbing roofing system or base flashing; and reglet type receiver formed from aluminum sheet, of configuration required for specific application and substrate, and as shown on the Contract Drawings.

1. Thickness of counterflashing shall be 0.032 inch minimum; thickness of reglet shall be 0.040 inch minimum.

2. Finish: Class I clear anodized, or as otherwise shown on the Contract Drawings.

2.04 SHOP FINISHING

A. Aluminum Finishes - General

1. Finish designations prefixed by "AA" conform to the system established by the Aluminum Association for designating aluminum finishes, listed in NAAMM's *Metal Finishes Manual for Architectural and Metal Products*.

2. Colors or color matches and gloss, if applicable, shall be as shown on the Contract Drawings or, if not shown, as selected by Engineer from manufacturer's standard colors and samples.

3. Apply organic and anodic finishes to exposed surfaces of roof specialties after fabrication.

4. Protect finishes on exposed surfaces from damage by application of adhesive paper or other temporary protective covering, prior to shipment. Retain protective cover until immediately before installation.

B. High Performance Organic Coating

AA C12-C42-R1x (Chemical Finish: chemically cleaned with inhibitive chemicals, pretreated with acid chromate-flouride-phosphate conversion coat; Organic Coating: as specified below). Apply in strict accordance with coating and resin manufacturer's instructions by a licensed applicator.

1. Fluoropolymer 2-Coat System: Manufacturer's standard 2-coat thermo-cured system composed of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinyldene (PVDF) resin by weight, complying with AAMA 2605.

2. Fluoropolymer 3-Coat System, where shown on the Contract Drawings: Manufacturer's standard 3-coat thermo-cured system composed of specially formulated inhibitive primer, fluoropolymer topcoat, with both color coat and clear coat containing not less than 70 percent PVDF resin by weight, complying with AAMA 2605.

3. Resin Manufacturers

Subject to compliance with requirements, fluoropolymer coating systems shall contain resins produced by Solvay Solexis, Inc. ("Hylar 5000") or Atofina Chemicals, Inc. ("Kynar 500").

C. Class I Clear Anodic Finish

AA M12-C22-A41 (Mechanical Finish: nonspecular, as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: clear coating, 0.7 mil or thicker), complying with AAMA 611.

D. Class I Color Anodic Finish

AA M12-C22-A42/A44 (Mechanical Finish: nonspecular, as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: integrally colored or elctrolytically deposited coating, 0.7 mil or thicker), complying with AAMA 611.

E. Mill Finish: Standard mill finish as furnished by manufacturer.

PART 3. EXECUTION

3.01 EXAMINATION

A. Ensure that parapets, roof edges, curbs, base flashing and other associated roof accessories and interfacing Work have been prepared to receive Work of this Section in accordance with recommendations of the roof system manufacturer.

B. Verify that substrates are dry, clean and free of foreign matter, securely anchored and sloped for drainage where required.

3.02 PREPARATION

A. Coordinate with concrete and masonry entities to ensure that all reglets to be incorporated into concrete and masonry, where shown on the Contract Drawings, are properly formed to shapes and lengths required for easy installation.

B. Coordinate with installation of roofing membrane, flashing and wall construction as required to ensure that each element of the Work performs properly and that combined elements are waterproof and weathertight.

3.03 INSTALLATION

A. General

Comply with manufacturer's installation instructions and recommendations, and with SMACNA's *Architectural Sheet Metal Manual*, except as otherwise shown on the Contract Drawings.

1. Anchor units of Work securely in place by methods indicated herein or as shown on the Contract Drawings.
2. Where FM classified roof edge system is shown on the Contract Drawings, install per FM guidelines, including enhanced corner fastening where required.
3. Provide for thermal expansion of metal units.
4. Conceal fasteners where possible and set units true to line and level as shown on the Contract Drawings.
5. Install Work with laps, joints and seams which will be permanently watertight and weatherproof. Seal joints with sealant where shown and where required by roof specialty manufacturer.
6. Where metal surfaces of units are installed in contact with dissimilar metal or corrosive substrates, including wood, apply bituminous coating on concealed metal surfaces, or apply other permanent separation as recommended by roof specialty manufacturer.
7. Bed flanges of Work in a thick coat of roofing cement of a type acceptable to the roofing system manufacturer where required for waterproof performance.
8. Torch cutting of roof specialties is not permitted.

B. Coping System

Install cleats, plates, clips and other anchoring accessories as required for installation. Anchor products securely to substrates to withstand upward, lateral and thermal stresses. Interlock face and back coping legs into cleats anchored to substrate at manufacturer's recommended spacing.

C. Fascia System

Install cleats, plates, clips, cant dams and other anchoring accessories and devices as required for installation. Anchor products securely to substrates to withstand upward, lateral and thermal stresses.

D. Counterflashing and Reglets

1. Install reglets to receive counterflashing in the manner and by methods shown on the Contract Drawings. Where shown in concrete, furnish reglets to trades of concrete Work for installation as Work of other Sections. Where shown in masonry, furnish reglets to trades of masonry Work, for installation as Work of other Sections.

2. Insert counterfashing into reglet, fitting tightly to base flashings. Extend counterflashing 4 inches over base flashings. Lap running lengths minimum 3 inches and seal counterflashing laps with sealant type as recommended by manufacturer.

3.04 CLEANING

Remove strippable films and temporary protective coverings as each unit of Work is installed. Upon completion of installation, clean exposed metal surfaces, removing substances that might cause corrosion of metal or deterioration of finishes.

3.05 PROTECTION

Provide protective measures as required to ensure that Work of this Section will be without damage or deterioration, other than natural weathering, at time of issuance of the Certificate of Final Completion.

END OF SECTION

SECTION 07710

MANUFACTURED ROOF SPECIALTIES

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1 - GENERAL PROVISIONS:

A. Product Data

Manufacturer's technical data, material descriptions, product details and installation instructions for each coping, fascia and counterflashing product required. Include data substantiating that materials and performance comply with manufacturer's requirements and requirements of this Section.

B. Shop Drawings

Show layout, joining, profiles, accessories, anchorages, flashing connections and relationship to adjoining roof and wall construction. Draw layouts at 1/4 inch = 1 foot scale, and details at 3 inch = 1 foot scale.

C. Samples

Submit 12 inch long finished units for each type of coping, fascia and counterflashing, in each type of color and finish required. Where normal color and texture variations are to be expected, include 2 or more units in each set of samples showing limits of such variations.

D. Certifications

1. Reports confirming performance for edge securement design as required by the Specifications and as shown on the Contract Drawings.
2. Certification from the roofing system manufacturer that roof specialties included in the Work are acceptable for inclusion under the Roofing System Guarantee specified in other Sections.

E. Warranties

Warranty for metal finish as specified.

END OF APPENDIX "A"

SECTION 07710

MANUFACTURED ROOF SPECIALTIES

INSTRUCTIONS TO SPECIFIER

A. General

1. This Section specifies metal coping, fascia and counterflashing which are standard, factory fabricated products by a manufacturer. Not included are items which are entirely custom-fabricated in the subcontractor's shop, which are specified in another Division 7 Section on Flashing and Sheet Metal.

2. Coping and fascia systems incorporating extruded aluminum anchoring components will generally have higher perimeter wind uplift ratings as compared to formed aluminum anchoring components.

3. Private Label Agreements: Metal-Era and W.P Hickman private label edge metal for most major roofing manufacturers, including Carlisle, Firestone, GAF, Genflex, Johns-Manville, Koppers, Sarnafil, Stevens, Versico, etc., for inclusion in their full-system guarantees. MM Systems does not have current private label agreements, but their products are 'approved' with most major roof membrane manufacturers for inclusion in the roof guarantee.

B. Contract Drawings

Ensure that the Contract Drawings show the following items specified in the text:

(1.03 C)	Wind-uplift design pressures, upward and outward, for SPRI ES-1 conformance (required by IBC/2000 Section 1504.5), or FM classification for Roof Perimeter Flashing, if any (1-90, 1-105, 1-120, etc).
(2.01 A)	Coping product, if other than specified products.
(2.01 B)	Fascia System: Indicate product name as basis-of-design or show detail (manufacturer names only are listed, since there is a variety of fascia system designs).
(2.03 A, E, F, G, H)	Extent and details of each type of coping and fascia Work; extent of prefabricated miters, end caps and fascia extenders, if any; thickness and finish of metal if other than specified (Note: For coping thickness less than .050", welded miters are not available).
(2.03 B)	Dimensioned joint locations in coping and fascia, if required to be coordinated with other building elements.
(2.03 C)	Isolation/separation for corrosion prevention.
(2.03 H)	Counterflashing and reglet type (for masonry or concrete wall).
(3.03 A.1)	Anchorage details.

C. Other Items

1. When the Contract Drawings indicate that the color or finish is "to be selected from manufacturer's color chart and samples" or "to match samples in the Engineer's office", ensure that Standard Contract Plate 7 "Available Documents" is modified to include the description of required samples and is included in the Contract Booklet.

2. Ensure that Division 7 Section on sealants is included in the Contract Booklet if required for counterflashings.

D. Sustainable Design Considerations

1. Resource Reuse

a. For coping and fascia systems which use an extruded aluminum type 'anchor bar' with a formed aluminum cover (such as Metal-Era's "Anchor-Tite"), manufacturers recommend that the extruded anchor bar may be removed and reused upon reroofing. Only the formed aluminum fascia or coping cover needs to be replaced.

b. Two-piece counterflashing and reglet systems generally outlast one-piece counterflashing types, because 2-piece systems are more adaptable for reuse. One-piece units, especially surface-mounted types, tend to be ripped off and thrown out upon reroofing, or compromised when bending up and then back down if reusing.

2. Maintenance and Durability

a. These specified edge systems generally require no maintenance—caulking is not used at the splice joints to maintain watertightness, and penetration of the roofing membrane is also avoided or minimized by design, eliminating a source for potential leaks.

b. Even though the metal material of a quality edge system will generally outlast the 20 year roofing system guarantee, the metal finish may deteriorate. Or the galvanized cant dam or fascia flange may get contaminated with adhesives or asphaltic material and can't be reused. So the durability of the edge metal, except in the case where edge metal is reused, is rarely an issue in conjunction with a commercial roofing system. The main issues are thermal and wind performance and watertightness.

END OF INSTRUCTIONS

DIVISION 4

SECTION 04070

MASONRY GROUT

PART 1. GENERAL

1.01 SUMMARY

A. This Section specifies requirements for cementitious grout for use in unit masonry walls.

B. Refer to other Division 4 Sections on unit masonry for installation of masonry grout.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

	American Concrete Institute (ACI)/American Society of Civil Engineers (ASCE)/ The Masonry Society (TMS)
ACI 530.1/ASCE 6/ TMS 602	Specification for Masonry Structures.
	American Society for Testing and Materials (ASTM)
ASTM C 94	Ready-Mixed Concrete.
ASTM C 143	Test Method for Slump of Hydraulic Cement Concrete.
ASTM C 150	Specification for Portland Cement.
ASTM C 207	Specification for Hydrated Lime for Masonry Purposes.
ASTM C 404	Specification for Aggregates for Masonry Grout.
ASTM C 476	Specification for Grout for Masonry.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Deliver packaged materials in unopened packages legibly marked with manufacturer's name, brand and label information.

B. Deliver, store and handle materials to prevent damage by water or moisture and contamination by foreign materials.

1. Store cementitious materials on elevated platforms or in dispensing silo and under cover.

2. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

1.04 ENVIRONMENTAL REQUIREMENTS

A. Weather Requirements

Conform to requirements of ACI 530.1/ASCE 6/TMS 602 for hot and cold weather construction. Follow cold weather requirements for ambient temperatures below 40 degrees F. Follow hot weather requirements for ambient temperatures above 100 degrees F and for temperatures above 90 degrees F with wind speed above 8 mph.

B. Perform the following procedures while masonry construction is in progress. Temperature ranges indicated refer to ambient temperature at time of installation. Do not heat water for grout above 140 degrees F.

1. 40 degrees F to 32 degrees F

   Heat mixing water to produce grout temperature between 40 degrees F and 120 degrees F at the time of mixing.

2. 32 degrees F to 25 degrees F

   Heat mixing water and aggregate to produce grout temperature between 70 degrees F and 120 degrees F at the time of mixing, and to provide in-place grout temperature above 70 degrees F.

3. 25 degrees F to 20 degrees F

   Heat mixing water and aggregate to produce grout temperature between 70 degrees F and 120 degrees F at the time of mixing, and to provide in-place grout temperature above 70 degrees F. Heat masonry to a minimum of 40 degrees F prior to grouting.

4. 20 degrees F and below

   Heat mixing water and aggregate to produce grout temperature between 70 degrees F and 120 degrees F at the time of mixing, and to provide in-place grout temperature above 70 degrees F. Heat masonry to a minimum of 40 degrees F prior to grouting, and provide heated enclosure with minimum 32 degree F air temperature.

1.05 QUALITY ASSURANCE

Obtain grout ingredients of uniform quality from one manufacturer for each cementitious component and from one source and producer for each aggregate.

1.06 SUSTAINABLE DESIGN REQUIREMENTS

A. Sustainable Design General Requirements:

1. The Authority requires the contractor to implement practices and procedures to meet the sustainable design requirements. The contractor shall ensure that the requirements related to these goals, as defined in Division 1 - GENERAL PROVISIONS, are implemented to the fullest extent. Substitutions or other changes to the work proposed by the contractor will not be allowed if such changes compromise the stated sustainable design performance criteria.

B. Sustainable Design Performance Criteria:

1. The origin of the raw materials from which the grout is manufactured shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

2. The manufacturing location (final assembly) of the grout shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

3. The extraction location of the grout shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section

1.07 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MATERIALS

A. Portland Cement

ASTM C 150, Type I, or Type III for winter construction, natural color.

B. Hydrated Lime: ASTM C 207, Type S.

C. Grout Aggregate: ASTM C 404.

D. Water: Clean and potable.

E. Admixtures: Addition of air-entraining materials or admixtures, plasticizers, accelerators, retarders, water repellent agents or other admixtures is not permitted.

2.02 MIXES

A. Grout shall comply with ASTM C 476, with proportions of ingredients determined by Table 1 *Grout Proportions by Volume*, for use in construction of reinforced and non-reinforced unit masonry.

B. Use grout type as shown on the Contract Drawings (fine or coarse) or type in compliance with ACI 530.1/ASCE 6/TMS 602 Table 1.15.1 *Grout Space Requirements*.

PART 3. EXECUTION

3.01 PREPARATION

A. Batch, mix and deliver ready-mixed grout in accordance with batching, mixing and delivery requirements of ASTM C 94. Continuously agitate after mixing, until placement.

B. Mix pre-blended dry grout materials in a clean mechanical batch mixer for 5 minutes.

C. Measure materials by volume or equivalent weight. Do not measure by shovel.

D. Use water to produce a slump between 8 and 11 inches, as measured per ASTM C 143.

E. Perform hand mixing of small quantities of grout only if approved by the Engineer.

3.02 ADJUSTMENTS

Do not retemper grout. Discard grout that is not placed within 1-1/2 hours after water is first added to the batch.

3.03 PROTECTION

Curing: Conform to requirements of ACI 530.1/ASCE 6/TMS 602.

END OF SECTION

SECTION 04070

MASONRY GROUT

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1 – GENERAL PROVISIONS:

A. Product Data

For each product indicated.

B. Certifications

Compliance with ASTM C 476 for masonry grout materials.

C. Test Reports

Test results supporting compliance with performance requirements for grout (compressive strength), if shown on the Contract Drawings.

D. Construction and Installation Procedures

For Cold or Hot Weather (if applicable): Detailed description of methods, materials and equipment to be used to comply with cold or hot weather requirements.

E. Design Mix

List products and mix proportions for grout and list source of aggregate (for information only).

F. Sustainable Design Submittal Requirements:

The Contractor shall submit the Sustainable Design certification items listed herein. Sustainable Design submittals shall include the following:

1. A completed Sustainable Design Materials Certification Form (SDMCF), appended to Division 1 - GENERAL PROVISIONS. Information to be supplied for this form shall include:

   a. Cost breakdowns for the materials included in the Contractor's work. Cost breakdowns shall include total cost plus itemized material costs.

   b. The manufacturing location of the supplied product(s).

   c. The location (source) of the raw materials used to manufacture the supplied product(s).

2. Published product literature or letters of Certification, provided from the product manufacturer on the manufacturer's letterhead, to verify the product information supplied for the SDMCF.

3. Product cut sheets for materials that meet the SDMCF.

4. Material Safety Data Sheets (MSDS), for applicable products. Applicable products include, but are not limited to field-applied adhesives, sealants, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).

5. The Sustainable Design submittal information shall be assembled into one (1) package per Section or trade, and sent to the Engineer.

END OF APPENDIX "A"

DIVISION 4

SECTION 04060

MASONRY MORTAR

PART 1. GENERAL

1.01 SUMMARY

A. This Section specifies requirements for cementitious mortar for use with brick, concrete and glass unit masonry.

B. Refer to other Division 4 Sections on unit masonry for installation of masonry mortar.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

American Concrete Institute (ACI)/American Society of Civil Engineers (ASCE)/ The Masonry Society (TMS)

ACI 530.1/ASCE 6 /TMS 602	Specification for Masonry Structures.

American Society for Testing and Materials (ASTM)

ASTM C 91	Specification for Masonry Cement.
ASTM C 144	Specification for Aggregate for Masonry Mortar.
ASTM C 150	Specification for Portland Cement.
ASTM C 207	Specification for Hydrated Lime for Masonry Purposes.
ASTM C 270	Specification for Mortar for Unit Masonry.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Deliver packaged materials in unopened packages legibly marked with manufacturer's name, brand and label information.

B. Deliver, store and handle materials to prevent damage by water or moisture and contamination by foreign materials.

1. Store cementitious materials on elevated platforms or in dispensing silo and under cover.

2. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

1.04 ENVIRONMENTAL REQUIREMENTS

A. Weather Requirements

Conform to requirements of ACI 530.1/ASCE 6/TMS 602 for hot and cold weather construction. Follow cold weather requirements for ambient temperatures below 40 degrees F. Follow hot weather requirements for ambient temperatures above 100 degrees F and for temperatures above 90 degrees F with wind speed above 8 mph.

B. Perform the following procedures while masonry construction is in progress. Temperature ranges indicated refer to ambient temperature at time of installation. Do not heat water for mortar above 140 degrees F.

1. 40 degrees F to 32 degrees F

   Heat mixing water to produce mortar temperature between 40 degrees F and 120 degrees F at the time of mixing.

2. 32 degrees F to 25 degrees F

   Heat mixing water and sand to produce mortar temperature between 40 degrees F and 120 degrees F at the time of mixing. Maintain temperature of mortar on boards above freezing.

3. 25 degrees F to 20 degrees F

   Heat mixing water and sand to produce mortar temperature between 40 degrees F and 120 degrees F at the time of mixing. Maintain temperature of mortar on boards above freezing. Heat masonry surfaces to a minimum of 40 degrees F. Provide wind breaks when wind velocity exceeds 15 mph.

4. 20 degrees F and below

   Heat mixing water and sand to produce mortar temperature between 40 degrees F and 120 degrees F at the time of mixing. Maintain temperature of mortar on boards above freezing. Heat masonry surfaces to a minimum of 40 degrees F. Provide wind breaks when wind velocity exceeds 15 mph and provide heated enclosure with minimum 32 degree F air temperature.

1.05 QUALITY ASSURANCE

Obtain mortar ingredients of uniform quality, including color for exposed masonry, from one manufacturer for each cementitious component and from one source and producer for each aggregate.

1.06 SUSTAINABLE DESIGN REQUIREMENTS

A. Sustainable Design General Requirements:

1. The Authority requires the contractor to implement practices and procedures to meet the sustainable design requirements. The contractor shall ensure that the requirements related to these goals, as defined in Division 1 - GENERAL PROVISIONS, are implemented to the fullest extent. Substitutions or other changes to the work proposed by the contractor will not be allowed if such changes compromise the stated sustainable design performance criteria.

B. Sustainable Design Performance Criteria:

1. The origin of the raw materials from which the mortar is manufactured shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

2. The manufacturing location (final assembly) of the mortar shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

3. The extraction location of the mortar shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section

1.07 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MANUFACTURERS

A. Colored Masonry Cements, if any: Premixed colored masonry cements, complying with ASTM C 91, of formulation required to produce mortar color shown on the Contract Drawings, shall be one of the following or approved equal:

CEMEX, Wampum, PA, "Richcolor Masonry Cement"
Essroc Cement, Nazareth, PA, "Flamingo-Brixment Masonry Cements in Color"
Lehigh Cement Co., Allentown, PA, "Lehigh Custom Color Masonry Cement"

B. Liquid Water Repellent Admixture: Mortar for use with concrete masonry units (face wythe only) and exterior glass unit masonry shall be one of the following or approved equal:

Grace Construction Products (W.R. Grace & Co.), Milwaukee, WI, "Dry-Block Mortar Admixture" or "Mortar Tite"
Master Builders, Inc. (div. Degussa Corp.), Cleveland, OH, "Rheomix Rheopel Mortar Admixture"

2.02 MATERIALS

A. Portland Cement

ASTM C 150, Type I (normal), or Type III (high early strength) for winter construction, natural color. Winter construction occurs when ambient air temperatures for a period of 48 hours before mortar installation is below 40 degrees F.

B. Masonry Cement: ASTM C 91, for use in preparation of ASTM C 270 Type N, S or M colored mortar.

C. Hydrated Lime: ASTM C 207, Type S.

D. Mortar Aggregate

1. ASTM C 144; for joints less than 1/4 inch use aggregate graded with 100 percent passing the No. 16 sieve.

2. White Mortar Aggregate: Natural white sand or ground white stone as required to produce required mortar color shown on the Contract Drawings.

E. Water: Clean and potable.

F. Admixtures

Field addition at time of mortar mixing of air-entraining materials or admixtures, plasticizers, accelerators, retarders, coloring pigments, water repellent agents or other admixtures is not permitted unless specifically indicated. Submit factory produced cement and mortar blends containing admixtures to the Engineer for review.

2.03 MIXES

A. Mortar mixes and colored mortar mixes shall comply with ASTM C 270 *Proportion Specification Requirements* for types listed, except provisions under Section 8 "Quality Assurance" of ASTM C 270 regarding cost of tests shall not apply. Furnish the following mortar types as required, unless otherwise shown on the Contract Drawings:

1. Type N mortar for exterior, above grade walls and for interior walls.

2. Type M mortar for walls below grade and in contact with earth.

3. Type S mortar for grouted, vertically reinforced walls (not for use with glass masonry units).

B. Mortar Color: Natural (grey), unless otherwise shown on the Contract Drawings.

PART 3. EXECUTION

3.01 PREPARATION

A. Mix mortar ingredients in quantities needed for immediate use.

B. Measure materials by volume or equivalent weight. Do not measure by shovel.

C. Mix materials in clean mechanical batch mixer for 5 minutes.

D. Use maximum amount of water to produce workable consistency. For mortar used with glass masonry units, reduce amount of water to compensate for lack of absorption.

E. Perform hand mixing of small quantities of mortar only if approved by the Engineer.

3.02 ADJUSTMENTS

A. To restore mortar workability, retemper by adding water and remixing. Retemper mortar as required, within 1-1/2 hours after mixing. Discard mortar that has begun to stiffen or is not used within 2-1/2 hours of initial mixing.

B. Do not retemper colored mortar. Discard colored mortar that is not used within 2-1/2 hours after mixing.

C. Do not retemper mortar for use with glass masonry units.

3.03 PROTECTION

Curing: Conform to requirements of ACI 530.1/ASCE 6/TMS 602.

END OF SECTION

SECTION 04060

MASONRY MORTAR

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts and Samples" of Division 1 – GENERAL PROVISIONS:

A. Product Data

For each product indicated.

B. Samples

Colored Mortar, if any: Fabricate samples for verification in a minimum 6 inch long 3/8 inch wide metal channel, using same sand and mortar ingredients to be used in the Work. Label samples to indicate types and amounts of pigments used.

C. Certifications

1. Compliance with ASTM C 270 for masonry mortar materials.
2. Compliance with ASTM C 91 and C 270 for premixed colored masonry cements, if any.

D. Construction and Installation Procedures

For Cold or Hot Weather (if applicable): Detailed description of methods, materials and equipment to be used to comply with cold or hot weather requirements.

E. Design Mix

List products and mix proportions for mortar and source of aggregate (for information only).

F. Sustainable Design Submittal Requirements:

The Contractor shall submit the Sustainable Design certification items listed herein. Sustainable Design submittals shall include the following:

1. A completed Sustainable Design Materials Certification Form (SDMCF), appended to Division 1 - GENERAL PROVISIONS. Information to be supplied for this form shall include:

   a. Cost breakdowns for the materials included in the Contractor's work. Cost breakdowns shall include total cost plus itemized material costs.

   b. The manufacturing location of the supplied product(s).

   c. The location (source) of the raw materials used to manufacture the supplied product(s).

2. Published product literature or letters of Certification, provided from the product manufacturer on the manufacturer's letterhead, to verify the product information supplied for the SDMCF.

3. Product cut sheets for materials that meet the SDMCF.

4. Material Safety Data Sheets (MSDS), for applicable products. Applicable products include, but are not limited to field-applied adhesives, sealants, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).

5. The Sustainable Design submittal information shall be assembled into one (1) package per Section or trade, and sent to the Engineer.

END OF APPENDIX "A"

DIVISION 9

SECTION 09206

METAL FURRING AND LATHING - CEILING SUPPORT SYSTEMS

PART 1. GENERAL

1.01 SUMMARY

A. This Section specifies the requirements for metal furring and lathing for exterior and interior ceilings and soffits.

B. Requirements for gypsum plaster and/or Portland cement plaster, as applicable, are specified in other Division 9 Sections of the specifications.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

American Society for Testing and Materials (ASTM)

ASTM A 36	Carbon Structural Steel
ASTM A 123	Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A 525	General Requirements for Steel Sheet, Zinc Coated Galvanized) by the Hot-Dip Process
ASTM A 307	Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength
ASTM A 641	Zinc Coated (Galvanized) Carbon Steel Wire
ASTM A 653	Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
ASTM C 841	Installation of Interior Lathing and Furring
ASTM C 847	Metal Lath
ASTM C 1063	Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster
ASTM E 119	Method of Fire Tests for Building Construction and Materials

Federal Specifications (FS)

UU-B-790	Building Paper, Vegetable Fiber, (Kraft, Waterproofed, Water Repellent and Fire Resistant)

Metal Lath/Steel Framing Association (ML/SFA), Division of NAAMM

ML/SFA 920	Guide Specifications for Metal Lathing and Furring

The Port Authority of New York & New Jersey

The Port Authority Plaster Ceiling Design Standards

1.03 DESIGN AND PERFORMANCE REQUIREMENTS

A. For construction in New York City, metal support systems shall conform to the Building Code of the City of New York.

B. For construction in New Jersey metal support systems shall conform to ASTM C 841 for interior gypsum plaster installations, except for design and installation of hangers and their top and bottom connections.

For the design and installation of hangers and their top and bottom connections, the hanger and its connections shall safely carry the total supported load plus 200 pounds.

C. Fire-Resistance Ratings

Where plaster systems with fire-resistance ratings are shown on the Contract Drawings, provide materials and installations which are identical to those of applicable assemblies tested per ASTM E 119 by fire testing laboratories acceptable to the Engineer.

D. Conform to all requirements of Port Authority Plaster Ceiling Design Standards, including all required loading conditions.

E. Seismic Forces

Seismic design requirements shall be as specified in the New York City Seismic Code: Local Law 17-95 as amended to date, for Work in New York City, and the Uniform Construction Code of the State of New Jersey and its sub-code the BOCA Basic Building Code, for Work in the State of New Jersey.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original unopened packages containers or bundles bearing brand name and identification of manufacturer.

B. Store materials inside, under cover and in a manner to keep them dry, protected from weather, surface contamination, corrosion, and damage from construction traffic and other causes.

1.05 SUSTAINABLE DESIGN REQUIREMENTS

A. The Authority requires the Contractor to implement practices and procedures to meet the sustainable design requirements. The Contractor shall ensure that the requirements related to these goals, as defined in Division 1 - GENERAL PROVISIONS and the articles below, are implemented to the fullest extent. Substitutions, or other changes to the work proposed by the Contractor, will not be allowed if such changes compromise the stated Sustainable Design Performance Criteria.

B. Sustainable Design Performance Criteria

1. Metal Furring and metal lath shall contain a minimum of 25 percent (by weight) recycled content, calculated by adding the post-consumer recycled content percentage to one-half of the post-industrial recycled content percentage. Certify the recycled content in accordance with the Sustainable Design Submittal Requirements of this section.

2. The manufacturing location (final assembly) of the metal furring and lath shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

3. The origin of the raw materials from which the product(s) were manufactured shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

4. All field-applied interior adhesives, sealants, paints and coatings relating to work of this section shall meet the requirements of Division 1 - GENERAL PROVISIONS.

1.06 SUBMITTALS

For submittal requirements, see Appendix "A" to this Section.

PART 2. PRODUCTS

2.01 MANUFACTURERS

A. Subject to compliance with requirements of this Section, provide products manufactured by one of the following, or an approved equal:

1. Metal Supports

Dale/Incor; Dearborn, MI

Dietrich Industries, Inc.; Pittsburgh, PA

Marino/Wave; South Plainfield, NJ

Unimast Inc.; Schiller Park, IL

2. Expanded Metal Lath

Dale/Incor; Dearborn, MI

Dietrich Industries, Inc.; Pittsburgh, PA

Gold Bond Building Products Div., National Gypsum Co., Charlotte, NC

Unimast Inc.; Schiller Park, IL

United States Gypsum Co.; Chicago, IL

2.02 MATERIALS

A. General

Size metal ceiling components as shown on the Contract Drawings, or if not shown, to comply with ML/SFA 920 "Guide Specifications for Metal Lathing and Furring" and ASTM C 1063 and as specified below:

B. Wire Ties

Minimum 16-gauge AISI Type 304 stainless steel or Monel wire.

C. Flat Hangers

Minimum 1/4 inch x 1-1/2-inch ASTM A 36 steel.

D. Angle - Type Hangers

Where shown on the Contract Drawings or designed by the Contractor, not less than 1-1/2 inches x 1-1/2 inches x 1/4 inch ASTM A 36 steel, with bolted connections and 3/8 inch diameter bolts.

Provide cross-bracing and additional framing shown on the Contract Drawings to resist wind uplift.

E. Channels

Cold-rolled steel, allowable bending stress of 18,000 psi, protected with rust inhibitive paint or galvanizing as specified below, and as follows:

1. Carrying Channels: 1 1/2 inches deep x 7/16 inch wide flanges, 475 lbs. per 1000 feet painted, 508 lbs. per 1000 feet galvanized.
2. Furring Channels: 3/4 inch deep x 7/16 inch wide flanges, 300 lbs. per 1000 feet painted, 316 lbs. per 1000 feet galvanized.
3. Provide ASTM A 653, G-60 hot-dip galvanized channels for exterior installations.

F. Hanger Anchorage Devices

Bolts, cast-in-place concrete inserts or other devices appropriate for anchorage to the form of structural framing shown on the Contract Drawings or designed by Contractor and whose suitability for intended use has been proven through standard construction practices or certified test data from an agency acceptable to the Engineer, such as Board of Standards and Appeals (BSA), Materials and Equipment Acceptance (MEA), or International Conference of Building Officials (ICBO).

G. Attachment to Suspended Members

1. Rod Hangers: Minimum 130 degree bend
2. Flat Hangers: Minimum 3/8-inch diameter round head ASTM A 307 bolts with hot-dip galvanized lock washers.

H. Lath

1. Diamond Mesh Lath

   ASTM C 847 of configuration shown on the Contract Drawings complying with the following:

   a. Flat Configuration: Weight 3.4 lbs. per sq. yd.
   b. Self-furring Configuration. Weight 3.4 lbs. per sq. yd.
   c. Galvanized Steel: Structural-quality, zinc-coated (galvanized) steel sheet complying with ASTM A 653, G60 minimum coating designation, unless otherwise shown on the Contract Drawings.

2. Paper Backing

Where paper-backed, diamond mesh lath is shown on the Contract Drawings, provide asphalt-impregnated paper, factory-bonded to back and complying with FS UU-B-700, for Type I, Grade D (vapor permeable), Style 2.

3. Lath Attachment Devices

Devices of material and type specified in this Section and shown on the Contract Drawings.

I. Expansion Joints

1. Two-piece Type: Pair of casing beads with back flanges formed to provide slip-joint action, adjustable for joint widths from 1/8 to 5/8 inch. For larger joint sizes - see details on Contract Drawings.

a. Provide removable protective tape on plaster face of expansion/control joints.

b. Material: Minimum 0.050-inch thick aluminum.

2.03 SHOP PAINTING

A. Components of exterior systems shall be hot-dip galvanized, as per ASTM A 123, or as noted elsewhere in this Section.

B. Components of interior systems shall receive manufacturer's standard corrosion resistant coating.

PART 3. EXECUTION

3.01 INSTALLATION

A. Installation of Furring and Lathing

1. Comply with ML/SFA 920, "Guide Specifications for Metal Lathing and Furring."

2. Install lathing and furring materials for gypsum plaster to comply with ASTM C 841.

3. Portland Cement Plaster Lathing and Furring Installation Standard

Install lathing and furring materials for portland cement plaster to comply with ASTM C 1063.

4. Install supplementary framing, blocking, and bracing at terminations in the Work and for support of fixtures, equipment services, and similar Work to comply with details shown on the Contract Drawings, or if not shown to comply with applicable published recommendations of gypsum plaster manufacturer.

5. Expansion/Control Joints

Where lathing and metal support system abuts building structure, and where partition/wall Work abuts overhead structure, isolate the Work from structural movement into the Work sufficiently to prevent transfer of loads from building structure. Install slip or cushion type joints to absorb deflections but maintain lateral support.

a. Frame both sides of control and expansion joints independently, and do not bridge joints with lathing and furring or accessories.

b. Refer to Port Authority Plaster Ceiling Design Standards for additional requirements for expansion and control joints.

6. Metal Lathing

Provide metal lath where plaster base coats are shown on the Contract Drawings. Provide configuration and weight of metal lath in accordance with 2.02 H of this Section.

B. Installation of Ceiling Suspension System

1. Preparation and Coordination: Coordinate installation of ceiling suspension system with installation of overhead structural systems to ensure inserts and other structural anchorage provisions have been installed to receive ceiling hangers in a manner that will develop their full strength and at spacings required to support ceiling.

a. Furnish concrete inserts, and other anchorage devices indicated, to other trades for installations well in advance of time needed for coordination with other work.

2. Hanger Installation: Attach hangers to structure above ceiling to comply with ML/SFA 920, "Guide Specifications for Metal Lathing and Furring," and with referenced standards.

a. Do not attach hangers to metal deck tabs.

3. Install ceiling suspension system components of sizes and spacings shown on the Contract Drawings, but not in smaller sizes or greater spacings than those required by referenced lathing and furring installation standards.

a. Hangers: Space hangers not over 54 inches o.c., parallel with and not over 54 inches perpendicular to direction of carrying channels, unless otherwise shown on the Contract Drawings, and within 6 inches of carrying channel ends.

b. Carrying Channels: Space carrying channels not over 36 inches o.c. with 48 inch o.c. hanger spacing, unless otherwise shown on the Contract Drawings.

c. Furring Channels to Receive Metal Lath: Space furring channels not over 16 inches o.c. for 3.4-lb/sq. yd. diamond-mesh lath.

END OF SECTION

SECTION 09206

METAL FURRING AND LATHING - CEILING SUPPORT SYSTEMS

APPENDIX "A"

SUBMITTALS

A. Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" Section of Division 1 - GENERAL PROVISIONS:

1. Product Data

   Submit manufacturer's product data for lath, metal support components and accessories.

2. Shop Drawing

   Reflected ceiling plan(s), prepared for installation purposes, drawn accurately to 1/4 inch = 1 foot - 0 inch scale and coordinated with related mechanical, electrical, communication, fire suppression and other Work, penetrating or connected to ceiling or soffit and/or within ceiling plenum area. Show ceiling suspension members, method of anchorage to building structure and framing for supported items.

B. Samples

   Minimum 6" long for hangers and supports and 6" x 6" for lath. Submit samples for all materials specified in this Section.

C. Sustainable Design Submittal Requirements:

   The Contractor shall submit the Sustainable Design certification items listed herein. Sustainable Design submittals shall include the following:

1. A completed Sustainable Design Materials Certification Form (SDMCF), appended to Division 1 - GENERAL PROVISIONS. Information to be supplied for this form shall include:

   a. Cost breakdowns for the materials included in the Contractor's work. Cost breakdowns shall include total cost plus itemized material costs.

   b. * The amount of post-consumer and/or post-industrial recycled content in the supplied product(s).

   c. * The manufacturing location of the supplied product(s).

   d. * The location (source) of the raw materials used to manufacture the supplied product(s).

   e. * The VOC content of all adhesives, sealants, paints, and coatings applied on site as part of this work.

   *** If applicable- requirements are defined per the Sustainable Design Performance Criteria, this section.**

2. Published product literature or letters of Certification, provided from the product manufacturer on the manufacturer's letterhead, to verify the product information supplied for the SDMCF.

3. Product cut sheets for materials that meet the SDMCF.

4. Material Safety Data Sheets (MSDS), for applicable products. Applicable products include, but are not limited to field-applied adhesives, sealants, carpets, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).

5. The Sustainable Design submittal information shall be assembled into one package per Section or trade, and sent to the Engineer of review.

END OF APPENDIX "A"

DIVISION 9

SECTION 09205

METAL FURRING AND LATHING

PART 1. GENERAL

1.01 SUMMARY

This Section specifies the requirements for metal lathing and furring for partitions and furrings.

A. Requirements for gypsum plaster and/or Portland cement plaster, as applicable, are specified in other Division 9 Sections of the Specifications.

1.02 REFERENCES

A. The following is a listing of the publications referenced in this Section:

1. American Society for Testing and Materials (ASTM)

a.	ASTM A 653	Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
b.	ASTM C 645	Non-load (Axial) Bearing Steel Studs, Runners (Track) and Rigid Furring Channels for Screw Application of Gypsum Board
c.	ASTM C 745	Installation of Steel Framing Members to Receive Screw-Attached Gypsum Wallboard, Backing Board, or Water-Resistant Backing Board
d.	ASTM C 841	Installation of Interior Lathing and Furring
e.	ASTM C 847	Metal Lath
f.	ASTM C 1063	Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster
g.	ASTM E 119	Method of Fire Tests for Building Construction and Materials

2. Federal Specifications (FS)

a.	UU-B-790	Building Paper, Vegetable Fiber, (Kraft, Waterproofed, Water Repellent and Fire Resistant)

3. Metal Lath/Steel Framing Association (ML/SFA), Division of NAAMM

a.	ML/SFA 920	Guide Specifications for Metal Lathing and Furring

1.03 DESIGN AND PERFORMANCE REQUIREMENTS

A. Where plaster systems with fire-resistance ratings are shown on the Contract Drawings, provide materials and installations which are identical with those of applicable assemblies tested per ASTM E 119 by fire testing laboratories acceptable to the Engineer.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original unopened packages, containers or bundles bearing brand name and identification of manufacturer.

B. Store materials inside, under cover and in a manner to keep them dry, protected from weather, surface contamination, corrosion, and damage from construction traffic and other causes.

1.05 SUSTAINABLE DESIGN REQUIREMENTS

A. The Authority requires the Contractor to implement practices and procedures to meet the sustainable design requirements. The Contractor shall ensure that the requirements related to these goals, as defined in Division 1 - GENERAL PROVISIONS and the articles below, are implemented to the fullest extent. Substitutions, or other changes to the work proposed by the Contractor, will not be allowed if such changes compromise the stated Sustainable Design Performance Criteria.

B. Sustainable Design Performance Criteria

1. Metal Furring and metal lath shall contain a minimum of 25 percent (by weight) recycled content, calculated by adding the post-consumer recycled content percentage to one-half of the post-industrial recycled content percentage. Certify the recycled content in accordance with the Sustainable Design Submittal Requirements of this section.

2. The manufacturing location (final assembly) of the Furring and lath shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

3. The origin of the raw materials from which the product(s) were manufactured shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

4. All field-applied interior adhesives, sealants, paints and coatings relating to work of this section shall meet the requirements of Division 1 - GENERAL PROVISIONS.

1.06 SUBMITTALS

For submittal requirements, see Appendix "A" to this Section.

PART 2. PRODUCTS

2.01 MANUFACTURERS

A. Subject to compliance with requirements of this Section, provide products manufactured by one of the following, or an approved equal:

1. Metal Supports

Dale/Incor; Dearborn, MI

Dietrich Industries, Inc.; Pittsburgh, PA

Marino/Wave; South Plainfield, NJ

Unimast Inc.; Schiller Park, IL

2. Expanded Metal Lath

Dale/Incor; Dearborn, MI

Dietrich Industries, Inc.; Pittsburgh, PA

Gold Bond Building Products Div., National Gypsum Co., Charlotte, NC

Unimast Inc.; Schiller Park, IL

United States Gypsum Co.; Chicago, IL

2.02 MATERIALS

A. Non-load (Axial) Bearing Studs and Runners

ASTM C 645 and complying with the following minimum thickness of base (uncoated) metal and stud depth:

1. Stud Thickness: 0.0179 inch, unless otherwise shown on the Contract Drawings.
2. Stud Depth: 3 5/8 inch, unless otherwise shown on the Contract Drawings.
3. Protective Coating: ASTM A 653, G40 hot-dip galvanized coating for framing members attached to and within 10 feet of exterior walls.

B. Vertical Metal Furring

1. Channel Furring and Braces

   Cold-rolled steel, allowable bending stress of 18,000 psi, protected with rust inhibitive paint finish or galvanizing, 3/4 inch deep x 7/16 inch wide flanges, 300 lbs. per 1000 feet with painted finish, 316 lbs. per 1000 feet with galvanized finish.

2. Hat Channels: Hat-shaped screwable furring channels, 7/8 inch deep, formed from zinc-coated (galvanized) steel sheet, minimum 0.0179 inch thick, Grade 33.
3. Z-Furring Members: Manufacturer's standard screw-type Z-shaped furring members formed from minimum 0.0179 inch thick, zinc-coated (galvanized) steel sheet designed for mechanical attachment of insulation boards or blankets to monolithic concrete and masonry walls.
4. Protective Coating: ASTM A 653, G40 hot-dip galvanized coating for framing members attached to and within 10 feet of exterior walls.

C. Furring Brackets

Serrated-arm type, 0.0329 inch min. thickness of base (uncoated) metal, adjustable from ¼ inch to 2 ¼ inches wall clearance for channel furring.

D. Lath

1. Diamond Mesh Lath

ASTM C 847 of configuration shown complying with the following:

a. Flat Configuration: Weight 3.4 lbs. per sq. yd.

b. Self-furring Configuration: Weight 3.4 lbs. per sq. yd.

2. Paper Backing

Where paper-backed, diamond mesh lath is shown on the Contract Drawings, provide asphalt-impregnated paper, factory-bonded to back and complying with FS UU-B-790, for Type I, Grade D (vapor permeable), Style 2.

3. Lath Attachment Devices

Devices of material and type shown on the Contract Drawings, or if not shown, as required by referenced standards of this Section, or unless otherwise recommended by lath manufacturer for secure attachment of lath to framing members and of lath to lath.

2.03 SHOP PAINTING

A. Components of exterior wall systems and furring shall be hot-dip galvanized, as per the requirements of this Section. Components of interior wall and partition systems and furring shall receive manufacturer's standard corrosion resistant coating.

PART 3. EXECUTION

3.01 INSTALLATION

A. Installation of Furring and Lathing

1. Comply with ML/SFA 920, "Guide Specifications for Metal Lathing and Furring".

2. Install lathing and furring materials for gypsum plaster to comply with ASTM C 841.

3. Portland Cement Plaster Lathing and Furring Installation Standard

Install lathing and furring materials for portland cement plaster to comply with ASTM C 1063.

4. Install supplementary framing, blocking, and bracing at terminations in the Work and for support of fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, and similar Work to comply with details shown on the Contract Drawings, or if not shown to comply with published recommendations of plaster manufacturer who meets the requirements of Sections of these Specifications.

5. Isolation

Where lathing and metal support system abuts building structure, and where partition/wallwork abuts overhead structure, isolate the Work from structural movement into the Work sufficiently to prevent transfer of loading from building structure. Install slip or cushion type joints to absorb deflections but maintain lateral support.

a. Frame both sides of control and expansion joints independently, and do not bridge joints with lathing and furring or accessories.

B. Steel Stud Wall/Partition Support Systems

1. Install components for steel stud wall/partition support systems to comply with directions of steel stud manufacturer for applications shown on the Contract Drawings and with the requirements of ASTM C 754.

2. Steel Stud Systems to Receive Metal Lath

Comply with requirements of ML/SFA 920 "Specifications for Metal Lathing and Furring" applicable to each installation condition and metal stud system shown on the Contract Drawings.

3. Extend and attach partition support systems to structure above suspended ceilings, unless otherwise shown on the Contract Drawings.

C. Installation of Vertical Metal Furring

1. Vertical Metal Furring

Comply with requirements of ML/SFA 920 "Specifications for Metal Lathing and Furring" applicable to each installation condition shown on the Contract Drawings.

a. For furring on interior side of exterior walls, provide furring brackets, unless otherwise shown on the Contract Drawings.

b. Metal Furring to Receive Metal Lath: Comply with requirements of ML/SFA 920, "Guide Specifications for Metal Lathing and Furring" applicable to each installation condition shown on the Contract Drawings.

c. Z-Furring with Thermal Insulation: Erect thermal insulation vertically and hold in place with Z-furring members spaced 24 inches o.c. Except at external corners, securely attach narrow flanges of furring members to wall with concrete stub nails or powder-driven fasteners spaced 24 inches o.c. At external corners, attach wide flange of furring members to wall with short flange of furring channel to web of attached channel. Start from this furring channel with standard-width insulation panel and continue in regular manner. At internal corners, space second member no more than 12 inches from corner and cut insulation to fit. Until plaster base is installed, hold insulation in place with 10-inch long staples fabricated from 0.04-inch tie wire and inserted through slot in web of member.

D. Metal Lathing

Install expanded metal lath where plaster base coats are shown on the Contract Drawings. Provide configuration shown and weight of metal lath in accordance with 2.02 D of this Section.

END OF SECTION

DIVISION 9

SECTION 09205

METAL FURRING AND LATHING

APPENDIX "A"

SUBMITTALS

A. Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" Section of Division 1 - GENERAL PROVISIONS:

1. Product Data

   Submit manufacturer's product data for lath, metal support components and accessories.

2. Samples

   Minimum 6" long for supports and 6" x 6" for lath. Submit samples for all materials specified in this Section.

B. Sustainable Design Submittal Requirements:

The Contractor shall submit the Sustainable Design certification items listed herein. Sustainable Design submittals shall include the following:

1. A completed Sustainable Design Materials Certification Form (SDMCF), appended to Division 1 - GENERAL PROVISIONS. Information to be supplied for this form shall include:

   a. Cost breakdowns for the materials included in the Contractor's work. Cost breakdowns shall include total cost plus itemized material costs.

   b. * The amount of post-consumer and/or post-industrial recycled content in the supplied product(s).

   c. * The manufacturing location of the supplied product(s).

   d. * The location (source) of the raw materials used to manufacture the supplied product(s).

   e. * The VOC content of all adhesives, sealants, paints, and coatings applied on site as part of this work.

   * **If applicable- requirements are defined per the Sustainable Design Performance Criteria, this section.**

2. Published product literature or letters of Certification, provided from the product manufacturer on the manufacturer's letterhead, to verify the product information supplied for the SDMCF.

3. Product cut sheets for materials that meet the SDMCF.

4. Material Safety Data Sheets (MSDS), for applicable products. Applicable products include, but are not limited to field-applied adhesives, sealants, carpets, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).

5. The Sustainable Design submittal information shall be assembled into one package per Section or trade, and sent to the Engineer of review.

END OF APPENDIX "A"

DIVISION 10

SECTION 10505

METAL LOCKERS AND LOCKER ROOM BENCHES

PART 1. GENERAL

1.01 SUMMARY

This Section specifies requirements for ventilated metal lockers and locker room benches.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

American Society for Testing and Materials (ASTM)

ASTM A 1008	Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.

1.03 QUALITY ASSURANCE

Uniformity of Manufacture: Metal lockers including hardware, mounting accessories, equipment, fastenings and benches, if any shall be products of a single manufacturer.

1.04 DELIVERY, STORAGE, AND HANDLING

Deliver metal lockers and locker room benches after building is enclosed and ready for locker installation. Store materials in a dry and well ventilated space, protected from the elements. Protect from damage during delivery, handling and installation.

1.05 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MANUFACTURERS

Subject to compliance with the requirements of this Section, furnish and install products of one of the following manufacturers:

Art Metal Products Co., Deerfield Beach, FL
List Industries Inc., Deerfield Beach, FL
Lyon Workspace Products, Aurora, IL
Penco Products Inc., Oaks, PA
Republic Storage Systems, Canton, OH
Tennsco Corp., Dickson, TN

2.02 MATERIALS

A. Steel Sheet

Mild, cold-rolled and leveled steel, ASTM A 1008, Commercial Steel (CS) Type B, suitable for exposed applications, free from buckle, scale and surface imperfections.

B. Fasteners and Anchorages

Zinc or nickel plated steel fasteners; slotless type exposed bolt heads, self-locking nuts or lock washers for nuts on moving parts. For concealed anchors, use hot-dip galvanized or other rust-resistant, protective-coated steel.

C. Equipment

Hooks: Zinc-plated steel or cast aluminum for bolted attachment.

2.03 FABRICATION

A. General

1. Construction

Factory-fabricate lockers square, rigid and without warp, with metal faces flat and free of dents or distortion, for locations and of sizes and layout shown on the Contract Drawings. Make all exposed metal edges safe to touch. Weld frame members together to form a rigid, one-piece structure. Weld, bolt or rivet other joints and connections as standard with manufacturer. Grind exposed welds flush. Do not expose bolts or rivet heads on fronts of locker doors or frames.

2. Locker Type

Standard, knocked-down construction.

3. Locker Arrangement

Single-tier, unless otherwise shown on the Contract Drawings.

B. Lockers

1. Frame

Fabricate of minimum 0.0528 inch (16 gage) channels or 0.0966 inch (12 gage) angles, welded construction, with continuous full height door strike formed on vertical members.

2. Body

Fabricate back and sides of minimum 0.0209 inch (24 gage) steel, with double-flanged connections extending full height. Form tops, bottoms and intermediate dividers if any, of minimum 0.209 inch steel with flanged edges.

a. Hat Shelf: Minimum 0.0209 inch (24 gage) steel.

b. Form exposed ends of non-recessed lockers of minimum 0.0528 inch (16 gage) steel.

3. Door

One-piece, minimum 0.0528 inch (16 gage) sheet steel, flanged at all edges, constructed to prevent springing when opening or closing.

a. Reinforcing

Provide extra bracing or reinforcing welded to inside of doors over 15 inches wide.

b. Ventilation

Provide stamped, louvered vents in door face.

c. Hinges

Minimum 0.050 inch thick steel, full-looping, 5 or 7 knuckle, tight pin, minimum 2 inches high, no fewer than 3 hinges per 42 to 72 inch high doors. Weld to inside of frame and secure to door with no fewer than 2 factory-installed fasteners that are completely concealed and tamperproof when door is closed. Fabricate to swing 180 degrees.

d. Projecting Handle and Latch

Positive automatic, prelocking, pry-resistant latch and pull with resilient silencers; chromium-plated, vandalproof, lift-up handle, containing strike and eye for padlock and with rattle-free, minimum 3-point latching action.

4. Finish

Chemically pretreat metal with cleaning, degreasing and phosphatizing process. Apply baked-on enamel finish to exposed and concealed surfaces, except plates and nonferrous metal. Finish coat shall be hot airless, electrostatically-applied, baked enamel, baked at 300 degrees F, gloss finish with a gloss rating of 55 to 60 units measured at a 60 degree angle.

5. Color

Locker units colors shall be as shown on Contract Drawings or, if not shown, as selected by the Engineer from manufacturer's standard colors. Concealed parts shall be manufacturer's standard neutral color, unless otherwise shown on the Contract Drawings.

2.04 ACCESSORIES

A. Locker Accessories

1. Locking

Fabricate lockers to receive padlocks to be provided under Division 8 Section on Finish Hardware.

2. Equipment

Hooks: Furnish each locker with 1 double-prong hook and no fewer than 2 single-prong wall hooks, unless otherwise shown on the Contract Drawings.

3. Number Plates

Manufacturer's standard etched, embossed or stamped, nonferrous metal number plates with minimum 3/8 inch high numerals. Number lockers in sequence as directed by the Engineer. Attach plates to each locker door, near top, centered and level with adjacent number plates, with at least 2 fasteners of same finish as number plate.

4. Continuous Metal Base

Minimum 0.0329 inch (20 gage) cold-rolled steel, fabricated in lengths as long as practicable to enclose base of lockers without additional fastening devices. Flange bottoms inward 3/4 inch for stiffening. Finish metal base to match lockers.

5. Continuous Sloping Tops

Minimum 0.0329 inch (20 gage) steel sheet, at approximately 25 degree pitch, in lengths as long as practicable but not less than 4 locker widths. Furnish vertical closures at ends and mitered corners as required by locker layout. Finish shall match lockers.

6. Filler Panels

Minimum 0.0428 inch (18 gage) steel sheet, factory-fabricated and finished to match lockers. Furnish filler panels where shown on the Contract Drawings.

B. Locker Room Benches

1. Manufacturer's standard units with one-piece laminated hardwood tops approximately 9-1/2 inch wide by 1-1/4 inch thick with rounded edges, in lengths as shown on the Contract Drawings. Furnish steel pedestal supports spaced 6 feet on center maximum, with provisions for fastening to floor and to bench top.

2. Finish

Furnish bench tops with manufacturer's standard clear coating. Furnish pedestals with manufacturer's factory-applied baked enamel in color selected by the Engineer from manufacturer's standard colors.

PART 3. EXECUTION

3.01 INSTALLATION

A. Furnish inserts and anchorages to be built into other Work for installation of lockers and benches.

B. Install metal lockers at locations shown on the Contract Drawings in accordance with manufacturer's instructions. Install plumb, level, rigid and flush, with no exposed fasteners on door or frame faces.

C. Space locker fastenings 36 inches on center, unless otherwise recommended by manufacturer. Attach through back-up reinforcing plates where necessary to avoid metal distortion. Conceal fasteners where possible.

D. Install trim, metal base, continuous sloping top and metal filler panels where shown on the Contract Drawings, using concealed fasteners to ensure flush, hairline joints against adjacent surfaces.

E. Install benches in compliance with manufacturer's instructions.

3.02 ADJUSTING AND CLEANING

A. Adjust doors and latches to operate easily without binding. Verify that integral locking devices are operating properly.

B. Touch up marred finishes, but replace units that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by locker manufacturer.

END OF SECTION

SECTION 10505

METAL LOCKERS AND LOCKER ROOM BENCHES

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1 - GENERAL PROVISIONS:

A. Product Data

For lockers and benches if any: Manufacturer's technical data for materials, including anchors, hardware, fittings, fastenings and accessories, including dimensions of individual components, construction details, installation instructions, finish information and manufacturer's standard color chart. Furnish templates and instructions for installation of anchorage devices built into other Work.

B. Shop Drawings

For metal lockers, verifying field dimensions affecting locker installation. Show lockers in detail, including fillers, trim, base, accessories and method of installation. Include locker numbering sequence information.

C. Samples

For Verification: Color samples on squares of same metal to be used for locker fabrication. Submit 6 inch square samples of each color and finish on same substrate to be used in the Work, for color verification after selections have been made.

D. Maintenance Manuals

Manufacturer's printed instructions for care and maintenance of installed Work, including adjusting, repairing and replacing locker doors and latching mechanisms.

END OF APPENDIX "A"

SECTION 10505

METAL LOCKERS AND LOCKER ROOM BENCHES

INSTRUCTIONS TO SPECIFIER

A. General

1. Lockers specified in this Section are knocked-down style construction (only frame is welded), unless indicatd on Contract Drawings as 'all-welded' lockers, which shall have welded component accessories and shall be welded into groups that are delivered and fastened together at the construction site.

2. New Specification Section is required for lockers fabricated from other materials, such as solid phenolic, solid plastic and stainless steel, appropriate for greater corrosion resistance, durability and aesthetic value.

3. Add ADA requirements if required (special locker bottom, shelf and hook height limitations, door latch type and height, etc.).

B. Contract Drawings

Ensure that the Contract Drawings show the following items specified in the text:

(2.03 A.1, 2)	Locker construction: All-welded in lieu of knocked-down if required; 'quiet' construction in lieu of standard.
(2.03 A.1; 2.04 B; 3.01 B)	Locker location, dimensions (width, depth, height), layout (freestanding, wall-to-wall, back-to-back, recessed, built-in base) and bench length, if any.
(2.03 A.3)	Locker arrangement if other than single-tier is specified.
(2.03 B.3.b)	Ventilation: Special louver configuration or perforations in lieu of louvers, if required.
(2.03 B.3.d)	Handle and latch: Type if other than projecting as specified (recessed option).
(2.03 B.5)	Color of lockers; gloss if other than specified (optional high-gloss).
(2.04 A)	Locker accessories, if other than or in addition to specified: Finished end panels to conceal fasteners and unused hole punch-outs, ventilation by means other than louvers (perforations in door face or edge), coat rods in lieu of hooks, wall trim for recessed locker layout, etc.
(2.04 A.1)	Locking mechanism, if other than padlock as specified (built-in, keyed cylinder lock; built-in combination lock, etc.)
(2.04 A.4)	Legs (4" or 6") and bases to close front and end spaces between legs, if desired in lieu of continuous metal base specified; galvanized base metal (or stainless steel) for metal base and locker bottom for frequent exposure to water; no base if curb or base is of other construction.
(2.04 A.5)	Sloping tops: End closure style if other than vertical (optional hipped); or show flat top if no sloped top is required.

(2.04 B.1) Bench top material if other than hardwood as specified, if available from locker manufacturer (plastic laminate, phenolic, aluminum).

(2.04 B.2) Color of pedestal support.

C. Other Items

Ensure that the following Specification Sections are included in the Contract Booklet as required:

(2.04 A.1) Division 8 Section on Finish Hardware for locker hardware; make sure locker padlocks are listed in the Finish Hardware Schedule.

END OF INSTRUCTIONS

DIVISION 9

SECTION 09546

METAL PLANK CEILINGS

PART 1. GENERAL

1.01 SUMMARY

This Section specifies requirements for metal plank ceilings, including suspension system.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

Aluminum Association (AA)

American Architectural Manufacturers Association (AAMA)

AAMA 605.2	High Performance Organic Coating on Architectural Extrusions and Panels

American Society for Testing and Materials (ASTM)

ASTM A 123	Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A 153	Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A 591	Steel Sheet, Cold Rolled, Electrolytic Zinc-Coated for Light Coating Mass Applications
ASTM B 209	Aluminum and Aluminum - Alloy Sheet and Plate
ASTM C 634	Definition of Terms Relating to Environmental Acoustics
ASTM C 635	Metal Suspension System for Acoustical Tile and Lay-In Panel Ceilings
ASTM C 636	Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels
ASTM E 84	Surface Burning Characteristics of Building Materials

National Association of Architectural Metal Manufacturers (NAAMM)

Metal Finishes Manual for Architectural and Metal Products

1.03 DESIGN AND PERFORMANCE REQUIREMENTS

A. Metal ceilings and suspension system shall conform to the requirements of 2.02 E of this Section and, withstand inward and outward acting wind pressure loading as shown on the Contract Drawings and normal thermal movement, without showing permanent deformation of ceiling system components including planks and suspension system; noise or metal fatigue caused by vibration, deflection, and displacement of ceiling units; and permanent damage to fasteners and anchors.

1. Normal thermal movement is defined as that resulting from a maximum change (range) in ambient temperature of 100 degrees F.

B. Ceiling planks shall be designed so as to limit deflection to 1/360 of length of plank, as shown on the Contract Drawings.

C. For Work in New York City (interior applications only), metal suspension systems shall conform to the Building Code of the City of New York, except that metal deck tabs shall not be used for the top hanger attachment and the hanger and its top and bottom connections shall safely carry the total supported load plus 200 pounds.

D. For Work in New Jersey (interior applications only), metal suspension systems shall conform to ASTM C 635 and ASTM C 636, except for design and installation of hangers and their top and bottom connections.

1. For the design and installation of hangers and their top and bottom connections, the above ASTM standards shall be revised as follows:

   a. The hanger and its connections shall safely carry the total supported load plus 200 pounds.

   b. Hangers for suspending carrying channels or main runners shall be as specified in this Section.

   c. Metal deck tabs shall not be used for top hanger attachment.

E. Perform structural calculations to show compliance with 1.03 of this Section.

1.04 ENVIRONMENTAL REQUIREMENTS

Do not install metal plank ceilings until space is enclosed and weatherproof and until wet Work in space is completed and nominally dry.

1.05 QUALITY ASSURANCE

A. Definitions and Performance Data

Except as otherwise shown on the Contract Drawing or referenced in this Section, technical acoustical terminology as it is used in this Section is defined in ASTM C 634.

B. Fire Performance Characteristics

Provide metal plank ceiling units, including sound absorption pads that are identical to those tested in accordance with ASTM E 84 by an independent testing laboratory acceptable to the Engineer, to provide the following surface burning characteristics:

1. Flame Spread: 25 or less
2. Smoke Developed: 50 or less

C. Entity performing installation Work of this Section shall be a firm that has successfully completed metal plank ceiling installations similar in material, design, and extent to that shown on the Contract Drawings for Work of this Contract.

D. Single-Source Responsibility

Obtain each type of metal plank ceiling system from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.

E. Job Mock-up

Prior to installation of metal plank ceiling system, erect a sample mock-up using system components where directed by the Engineer. The mock-up shall be a minimum of ten feet x ten feet, unless otherwise shown on the Contract Drawings, and shall include all component parts of the ceiling system.

1. Obtain Engineer's acceptance of visual qualities of mock-up before start of ceiling installation. Accepted ceiling mock-up panel may be incorporated into the finished ceiling.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver units in the manufacturer's original, unopened packages, fully identified with type, finish, performance data, and compliance labels. Handle and store in accordance with the manufacturer's printed instructions and recommendations.

B. Extra Materials

Where requirement for extra materials is shown on the Contract Drawings, deliver the materials in quantities shown to the Engineer prior to issuance of the Certificate of Final Completion. Deliver materials in the manufacturer's original, unopened packaging with label or marking indicating brand name and Contract Number, and an attached packing list indicating quantity of solid and perforated panels included in packages.

1.07 SUBMITTALS

For submittal requirements see Appendix "A".

PART 2. PRODUCTS

2.01 MANUFACTURERS

Subject to compliance with the requirements of this Section provide products by one of the following, or approved equal:

Bevel Stamping Co., Ltd., Downsview, ON
Hunter Douglas Architectural Products, Inc., Duluth, GA
Interfinish/Division of Chicago Metallic Corp., Bridgeview, IL

2.02 MATERIALS

A. Size of planks shall be as shown on the Contract Drawings.

B. Material, Thickness, and Profile of Planks

As shown on the Contract Drawings including perforated panels, if any, and conforming to 1.03 of this Section.

1. Steel Planks

Commercial quality, cold-rolled carbon steel sheet, stretcher leveled. Provide electrolytic zinc-coated steel sheet complying with ASTM A 591, Class B coating, chemical treated in mill with phosphate solution and light chromate rinse.

2. Aluminimum Planks

ASTM B 209, roll-formed sheet, alloy and temper as required for finish specified in 2.05 B of this Section.

C. Plank edge shall be square, unless otherwise shown on the Contract Drawings.

D. Color and sheen shall be as shown on the Contract Drawings and in accordance with Appendix "A" A.3.c of this Section.

E. Perforated panels shall be rolled-formed with an integral, non-woven acoustic textile sheet, color: black, providing a NRC of 0.75.

1. Where perforated panels are specifically shown on the Contract Drawings to receive plastic wrapped fiberglass pads, provide the following in lieu of the non-woven acoustic textiles.

a. Pad Material

Glass fiber of 1 lb./cu. ft. density, wrapped in plastic bags, installed over metal spacer grid to separate pad from pan. Use of polyvinyl chloride wrapper is not permitted.

b. Pad Thickness: 1 inch.

c. Spacer Grid Metal

Aluminum to match metal facing (pans) or galvanized steel at steel and stainless steel facing (pans).

F. Concealed Suspension Systems

1. General

Provide intermediate-duty system, as defined in ASTM C 635, unless otherwise shown on the Contract Drawings, complete with snap-in or hook-in tee-bar main runners, splice plates, connector clips, alignment clips, carrying channels, hangers, trim and other suspension components required to support ceiling units and other ceiling-supported Work, as required for application shown on the Contract Drawings.

2. Type of System

Indirect-hung suspension system, as defined in ASTM C 635, with tee-bar main runners clipped to suspended carrying channels installed perpendicular to the main runners.

3. Structural Performance

Provide a suspension system capable of supporting ceiling loads shown on the Contract Drawings and specified in 1.03 A of this Section, with deflections limited to 1/360 of span between support points.

4. Metal and Finish of Tee Bars or Runners

Of same basic material as ceiling plank, gage as required to conform to 1.03 of this Section and the following:

G. Steel

ASTM A 123 or ASTM A 153 galvanized, 1.5 oz. minimum.

H. Aluminum: Mill finish.

I. Exposed Fillers and Trim

Provide exposed members as shown on the Contract Drawings or required for edges of ceiling, fixture trim, beams, fascias at changes in ceiling height and other conditions; of metal and finish matching metal ceiling units.

J. Access Panels

For access at locations shown on the Contract Drawings, provide snap-in ceiling units, each with 2 access knobs; place one access knob at each end of panel near corners.

K. Miscellaneous Materials

1. Concrete Inserts

Type recommended by suspension system manufacturer, sized for pull-out resistance of not less than 5-times hanger design load for structural classification as shown on the Contract Drawings (ASTM C 635, Table 1, Indirect Hung) or loading specified in 1.03 of this Section, whichever is greater.

2. Attachment Devices

Type recommended by suspension system manufacturer for attachment or anchorage of ceiling hangers to structure, sized for not less than 5-times hanger design load for structural classification as shown on the Contract Drawings (ASTM C 635, Table 1, Indirect-Hung) or loading specified in 1.03 of this Section, whichever is greater.

3. Hangers for suspending carrying channels or main runners shall be 1/4 inch diameter galvanized steel rods, or 1/8 inch x 1 inch galvanized steel flat bars, for interior applications.

a. For exterior applications, hangers shall be 1-1/2 inches x 1-1/2 inches x 1/8-inch hot or cold rolled galvanized steel angles, unless otherwise shown on the Contract Drawings or if greater sizes are required, as determined by structural analysis.

b. Hangers Finish

Hot-dip zinc coating, 1.5 oz. minimum, ASTM A 123 or ASTM A 153 as applicable, unless otherwise shown on the Contract Drawings.

4. Carrying Channels

Hot-rolled or cold-rolled steel channels for support of the ceiling runners with deflections less than 1/360 x span length; but in no case less than 1-1/2 inch section weighing 0.475 lbs. per in. ft., and in no case less than required to conform to 1.03A of this Section.

a. Carrying Channel Finish

Hot-dip zinc coating, 1.5 oz. minimum, ASTM A 123 or ASTM A 153 as applicable, unless otherwise shown on the Contract Drawings.

b. Carrier Channel-Hanger Attachment

3/8-inch diameter round head bolts located at least 3/8 inch from end of hanger or clipped to hangers with approved clips or other approved fastening device.

5. Acoustical Sealant, where shown on the Contract Drawings

Resilient, non-staining, non-shrinking, non-hardening, non-skinning, non-drying, non-sag sealant intended for interior sealing of concealed construction joints.

2.03 CONSTRUCTION FEATURES

A. Ceiling panels shall either snap-in or hook-in to tee-bars, as shown on the Contract Drawings.

B. No greater than 3 panels shall have to be removed to allow removal of any given panel of the ceiling system.

2.04 FABRICATION

A. Form metal panels from sheet metals selected for their surface flatness, smoothness, and freedom from surface blemishes where exposed to view in the finished unit. Do not use materials with exposed surfaces that exhibit pitting, seam marks, roller marks, variations in flatness exceeding those permitted by ASTM standards referenced in 2.02 of this Section for stretcher-leveled metal sheet, stains, discolorations, or other imperfections.

2.05 SHOP PAINTING

A. Finishes, General

1. Comply with NAAMM "Metal Finishes Manual" for recommendations relative to application and designations of finishes for metal plank ceilings and exposed trim.

2. Protect mechanical finishes on exposed surfaces from damage by application of strippable, temporary protective covering before shipment.

3. Appearance of Finished Work

Variations in appearance of abutting or adjacent ceiling units are not acceptable unless they are within one half of the range of approved samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within range of approved samples and they are assembled or installed to minimize contrast.

B. Aluminum Finishes, where shown on the Contract Drawings

1. Finish designations prefixed by "AA" conform to the system established by the Aluminum Association for designating aluminum finishes.

2. Lacquered Mill Finish

AA-M10C1OR1x (Mechanical Finish: as fabricated, unspecified; Chemical Finish: chemically cleaned; Organic Coating: Manufacturer's standard clear organic coating)

3. Class II Clear Satin Anodized Finish

AA-M32C12A212 (Mechanical Finish: Medium satin Chemical Finish: Chemically Cleaned; Anodic Coating: protective and decorative, clear film of 0.2-mil minimum thickness).

a. Organic Coating: Manufacturer's standard clear organic coating.

4. Class II Clear Mirror Anodized Finish

AA-M21C12A212 (Mechanical Finish: smooth specular; Chemical Finish: chemically cleaned; Anodic Coating: protective and decorative, clear film of 0.2-mil minimum thickness)

5. Baked Enamel Finish

AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: chemical conversion coating, acid chromate-fluoride-phosphate pretreatment; Organic Coating: as specified below). Apply baked enamel in compliance with paint manufacturer's specifications for cleaning, conversion coating, and painting.

a. Organic Coating

Manufacturer's standard thermosetting modified acrylic enamel primer/topcoat system, with 2 coats on exposed face, 1 coat on concealed surfaces.

b. Color and Gloss

As shown on the Contract Drawings by reference to manufacturer's standard color and gloss designations or, if not shown on the Contract Drawings, as specified in 1.07 A.3.c of this Section.

6. High Performance Organic Coating

AA-C12C42R1x (Chemical finish cleaned with inhibited chemicals; Chemical finish chemical conversion coating, acid chromate-fluoride-phosphate pretreatment; Organic coating: as specified below) Prepare, pretreat, and apply coating to exposed, metal surfaces to comply with coating and resin manufacturer's instructions, using an entity approved by the coating manufacturer to apply its product.

a. Fluoropolymer 3-Coat System

Manufacturer's standard 3-coat thermo-cured system composed of specially formulated inhibitive primer, fluorocarbon color coat, and clear fluorocarbon topcoat, with both color coat and clear topcoat containing not less than 70 percent polyvinyldene resin by weight; complying with AAMA 605.2.

(1) 3 Coat System (total dry film thickness of 1.6 mils):

(a.) Inhibitive primer, 0.25 $\pm$ 0.05 mil.

(b.) Fluoropolymer color coat, 1.0 mil min.

(c.) Fluoropolymer clear topcoat, 0.6 $\pm$ 0.2 mil.

(2) Color and Gloss

As shown on the Contract Drawings by reference to the manufacturer's standard color and sheen designations or, if not shown on the Contract Drawings, as specified in Appendix "A" A.3.c of this Section.

C. Steel Sheet Finishes, where shown on the Contract Drawings

1. Baked Enamel Finish

Apply manufacturer's standard 2-coat baked enamel finish consisting of prime coat and thermosetting topcoat, with not less than 1.0-mil dry film thickness for topcoat. Prepare, pretreat and apply coating to exposed metal surfaces to comply with paint manufacturer's instructions.

a. Color and Gloss

As shown on the Contract Drawings by reference to manufacturer standard color and gloss designations or, if not shown on the Contract Drawings, as specified in 1.07 A.3.c of this Section.

2. Powder Coating

Apply manufacturer's standard 70-micron-thick polyester-based powder coating. Prepare, pretreat and apply coating to exposed metal surfaces to comply with coating manufacturer's instructions.

a. Color and Gloss

As shown on the Contract Drawings by reference to manufacturer's standard color and gloss designations or, if not shown on the Contract Drawings, as specified in Appendix "A", A.3.c of this Section.

PART 3. EXECUTION

3.01 PREPARATION

A. Concrete Inserts

Where cast-in-place concrete is shown on the Contract Drawings for support of metal plank ceilings, deliver required suspension system inserts to the construction site well in advance of when formwork is completed. Furnish placement layouts and instructions showing required locations and spacings for inserts.

1. Do not support ceilings directly from permanent metal forms; furnish inserts and extend hangers through forms into concrete inserts.

B. Supports in Metal Decking

Where metal decking is shown on the Contract Drawings to support metal plank ceilings, furnish placement layouts and instructions to the decking installer well in advance of decking installation. Show required locations and spacings for clips, slots, and other provisions in decking to receive ceiling support hangers. Use of metal deck tabs will not be permitted.

C. Pre-Installation Conference

Prior to start of metal plank ceiling installation, meet at construction site with installers of related Work, including lighting, ductwork, and similar Work in ceiling plenum. Review areas of potential interference and resolve conflicts before proceeding with Work. Coordinate ceiling layout with the layout of other Work that penetrates or is supported by ceiling in each space of the Work.

D. Plan each layout to balance border widths at opposite edges of each ceiling area. Avoid use of less-than-half width units wherever possible. Comply with reflected ceiling plans shown on the Contract Drawings and approved shop drawings.

3.02 INSTALLATION

A. General

Install metal plank ceiling in accordance with the manufacturer's printed instructions, applicable portions of ASTM C 636, the Contract Drawings, and approved shop drawings.

B. Suspend ceiling hangers from building structure only. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum which are not part of the supporting structural or ceiling suspension system. Splay hangers only where required to miss obstructions and offset resulting horizontal force by bracing, countersplaying or other equally effective means.

1. Space hangers not more than 4 feet-0 inch o.c. along each member and not more than 6 inches from the ends. Support member directly from hangers and as required by the structural analysis.

C. Install edge moldings of the type shown on the Contract Drawings or, if not shown, provide the manufacturer's standard edge molding at the edges of each metal plank ceiling area, and at locations where edge of units would otherwise be exposed after the completion of Work.

1. Where acoustical Work is shown on the Contract Drawings, apply continuous ribbon of acoustical sealant on back of vertical leg before fastening to vertical surface. Locate so that sealant will be concealed after installation.

2. Secure moldings to building construction by fastening through holes drilled in vertical leg. Space holes not more than 3 inches from each end and not more than 16 inches o.c. Draw-up fasteners for tight set against vertical surfaces.

   a. Masonry and Concrete

      Fasten with wood or machine screws into lead-shield type anchors drilled into construction.

   b. Hollow Masonry or Stud Construction

      Fasten with toggle bolts or similar self-expanding screw anchors.

3. Miter corners of moldings accurately to provide hairline joints.

4. Level moldings with ceiling suspension system, to level tolerance of 1/8 inch in 12 feet - 0 inch.

D. Scribe and cut metal planks for accurate fit at borders and at interruptions and penetrations by other Work through ceilings. Stiffen edges of cut units as required to eliminate evidence of oil canning or buckling.

E. Install metal planks, in coordination with the suspension system and exposed runner moldings if any.

1. Align joints in adjacent courses to form uniform, straight joints parallel to room axis in both directions, unless otherwise shown on the Contract Drawings.

2. Fit adjoining planks to form flush, tight joints. Scribe and cut for accurate fit at borders and around Work that penetrates the ceiling.

3.03 PROTECTION

A. Clean exposed surfaces of metal planks and trim, edge moldings, and suspension members, if any, and comply with the manufacturer's instructions for cleaning and touch-up of minor finish damage. Remove and replace Work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage, including dented and bent units.

B. Institute required protection for metal acoustical ceilings, including temperature and humidity limitations and dust control, so that Work will be without damage and deterioration at the time of issuance of the Certificate of Final Completion.

END OF SECTION

DIVISION 9

SECTION 09546

METAL PLANK CEILINGS

APPENDIX "A"

SUBMITTALS

A. Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1 - GENERAL PROVISIONS:

1. Product Data

   Manufacturer's product specifications, installation instructions, certified laboratory test reports and cleaning recommendations including precautions against materials and methods which may be detrimental to finish.

2. Shop Drawing

   Complete shop drawings and reflected ceiling plans drawn accurately to scale and indicating the following: Reflected ceiling plans shall be fully coordinated with regards to penetrations and ceiling mounted items.

   a. Locations of all utilities concealed by the ceiling with dimensions referenced to visible features of construction, and the location of ceiling referenced to field survey bench mark, if any.

   b. Joint pattern.

   c. Ceiling suspension members, method of anchorage to building structure and framing for supported items.

   d. Direction of ceiling and suspension system.

   e. Sections or details of mounting and support conditions, terminations and fasteners, including calculated hanger loadings.

   f. Identification and description of materials, components and integration with related mechanical and electrical components and adjacent existing construction.

   g. Ceiling-mounted items including light fixtures; air outlets and inlets; speakers; sprinkler heads; access panels; and special moldings at walls, column penetrations, and other junctures with adjoining construction.

   h. Design loadings specified in this Section and/or shown on the Contract Drawings, material properties, and other information needed for structural analysis required by 1.03 of this Section; prepared by, or under the supervision of, a professional engineer licensed in the state in which the Work is to be performed. All material shall be signed and sealed with a professional seal for the State in which the Work is to be performed.

3. Samples

Submit for approval by the Engineer, prior to ordering materials, samples in triplicate of each element of the ceiling system including:

a. Minimum 12-inch square of ceiling assembly with all components assembled, including perforated and solid ceiling panels.

b. Minimum 12-inch lengths of ceiling panels, carriers, filler strips, and trim, if any.

c. Manufacturer's standard color chart of colors and sheen of ceiling panels, filler strips and trim, if any, when color and sheen are not shown on the Contract Drawings.

B. Qualification data for entities specified in 1.03 C of this Section to demonstrate their capabilities and experience. Include list of completed projects with project names, addresses, names of architects and owners, plus other information specified.

END OF APPENDIX "A"

SECTION 09546

METAL PLANK CEILINGS

INSTRUCTIONS TO SPECIFIER

A. Contract Drawings

Ensure that the Contract Drawings show the following items specified in the text of this Section:

(1.03 A) (2.02 E.3) (App.A A.2.h)	Inward and outward acting wind pressure, if any.
(1.03 B)	Length of plank (maximum).
(1.05 E)	Size of mock-up if other than that specified.
(1.06 B)	Extra stock of material, if required. Task leader shall consult with appropriate line department for quantity.
(2.02 C, D) (2.05 B) (App.A A.3.c)	Color and sheen designation, using product and manufactures' names of coating system or systems.
(2.02 A)	Size of planks.
(2.02 B)	Material, thickness, perforation pattern - if any, and profile of planks and finish system. Generally, only finish system must be shown. This will, in most cases, determine the material. Thickness and profile of planks are considered to be a function of structural analysis required by 1.03 E and, as such, should in most cases not be shown.
(2.02 C)	Plank edge shape.
(2.02 E)	Perforations, if any.
(2.02 F.1)	Ceiling supported items and applications (interior, exterior, etc.) of metal plank ceilings.
(2.02 F.4)	Metal and Finish of tee bars or runners galvanized steel, or aluminum.
(2.02 G)	Exposed trim, including reveals and other similar items, if any.
(2.02 H)	Access panel locations, if any.
(2.02 I.1)	Concrete inserts.
(2.02 I.2)	Attachment devices.
(2.02 I.3.a)	Exterior hanger size if other than that specified.
(2.02 I.3.b)	Finish of exterior or interior hangers, if other than galvanized specified.
(2.02 I.4)	Finish of carrying channels, if other than galvanized specified.

Note: If finish of hangers and carrying channels other than that specified is required, verify availability prior to including in project.

(2.02 I.5)	Acoustical sealant, if any.
(2.03 A)	Snap-in or hook-in type attachment of panels to tee-bars.
(3.01 A)	Inserts in cast-in-place concrete for ceiling suspension system.

(3.01 B)	Supports in metal decking for ceiling suspension system.
(3.01 D)	Reflected ceiling plans.
(3.02 B.1)	Hanger spacing, if other than 4'-0" specified.
(3.02 C)	Edge molding type, if other than that specified.
(3.02 C.1)	Acoustical Work.
(3.02 E.1)	Ceiling pattern alignment, if other than parallel to walls.

B. Other Items

Ensure that the following Specification Sections are included in the Contract booklet as required.

(3.01 A)	Division 3 Section on concrete, if any.
(3.01 B)	Division 5 Section on metal decks, if any.
(1.06 B.2)	Division 15 and 16 Sections on mechanical and
(3.02 E.1)	Electrical items in ceiling plenum or penetrating ceiling.

C. Ensure that Structural Task Leader reviews connections of hangers to structure above.

END OF INSTRUCTIONS

DIVISION 7

SECTION 07600

METAL SCUPPERS AND DOWNSPOUTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following manufactured roof specialties:

1. Roof edge drainage systems, consisting of scuppers, water collector boxes, and down spouts.

B. Related Sections include the following:

1. Division 7 Section on modified bitumen roofing system.

1.2 PERFORMANCE REQUIREMENTS

A. General: Manufacture and install manufactured roof specialties to resist thermally induced movement and exposure to weather without failing, rattling, leaking, and fastener disengagement.

B. Thermal Movements: Provide manufactured roof specialties that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of thermal movements. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

1.3 SUBMITTALS

A. For Submittals requirements, see Appendix "A" to this Section.

1.4 QUALITY ASSURANCE

A. Product Options: Information on Drawings and in Specifications establishes requirements for system's aesthetic effects and performance characteristics. Aesthetic effects are indicated by

dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field-testing, and in-service performance.

1. Do not modify intended aesthetic effects, as judged solely by Engineer, except with Engineer's approval. If modifications are proposed, submit comprehensive explanatory data to Engineer for review.

1.5 COORDINATION

A. Coordinate installation of manufactured roof specialties with interfacing and adjoining construction to provide a leakproof, secure, and noncorrosive installation.

PART 2 - PRODUCTS

2.1 ALUMINUM SHEET

A. Comply with ASTM B 209, alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required.

1. Surface: Smooth, flat.

2. Exposed Coil-Coated Finishes:

a. Two-Coat Fluoropolymer: AAMA 620. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

3. Color: As selected by Engineer from manufacturer's full range.
4. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

2.2 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, protective coatings, separators, sealants, and other miscellaneous items required by manufacturer for a complete installation.

B. Fasteners: Manufacturer's recommended fasteners, suitable for application and designed to withstand design loads.

1. Exposed Penetrating Fasteners: Gasketed screws with hex washer heads matching color of sheet metal.

C. Sealing Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealing tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape.

D. Elastomeric Sealant: ASTM C 920, elastomeric silicone polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

E. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

F. Polyethylene Sheet: 6-mil- thick, polyethylene sheet complying with ASTM D 4397.

G. Felt: ASTM D 226, Type II (No. 30), asphalt-saturated organic felt, nonperforated.

1. Slip Sheet: Rosin-sized paper, minimum 3 lb/100 sq. ft.

H. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.

2.3 ROOF EDGE DRAINAGE SYSTEMS

A. Available Manufacturers:
1. Berger Bros. Co.
2. Castle Metal Products.
3. Metal-Era, Inc.

B. Downspouts: Manufactured formed down spouts in uniform section lengths not exceeding 12 feet, with mitered and welded or soldered corner units, end caps, outlet tubes, and other accessories. Furnish with support brackets and expansion joints and expansion-joint covers fabricated from same metal as down spouts.
1. Fabricate down spouts from minimum 0.032" thick aluminum
2. Downspouts: Rectangular closed-face with mitered elbows. Furnish wall brackets, from same material and finish as downspouts, with anchors.

C. Water collector boxes: Manufactured water collector boxes with flanged back and stiffened top edge and of dimensions and shape indicated complete with outlet tubes, exterior flange trim, and built-in overflows.

1. Fabricate water collector boxes from aluminum, as specified above.
2. Down spouts Accessories: Continuous removable leaf screen with sheet metal frame.

D. Parapet Scuppers: Fabricate scuppers of dimensions required with closure flange trim to exterior, minimum 4-inch- wide wall flanges to interior, and base extending minimum 4 inches beyond cant or tapered strip into field of roof. Fasten gravel guard angles to base of scupper. Fabricate from 0.032" thick aluminum.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of work.

1. Examine walls, eaves, and roof edge for suitable conditions for manufactured roof specialties.
2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install manufactured roof specialties according to manufacturer's written instructions. Anchor manufactured roof specialties securely in place and capable of resisting forces specified in performance requirements. Use fasteners, separators, sealants, and other miscellaneous items as required to complete manufactured roof specialty systems.

1. Install manufactured roof specialties with provisions for thermal and structural movement.
2. Torch cutting of manufactured roof specialties is not permitted.

B. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.

1. Underlayment: Where installing exposed-to-view components of manufactured roof specialties directly on cementitious or wood substrates, install a course of felt underlayment and cover with a slip-sheet.
2. Bed flanges in thick coat of asphalt roofing cement where required by manufacturers of roof specialties for waterproof performance.

C. Install manufactured roof specialties level, plumb, true to line and elevation, and without warping, jogs in alignment, excessive oil-canning, buckling, or tool marks.

D. Install manufactured roof specialties to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before manufacture.

E. Expansion Provisions: Provide for thermal expansion of exposed manufactured roof specialties. Space movement joints at a maximum of 12 feet with no unplanned joints within 18 inches of corners or intersections.

F. Fasteners: Use fasteners of type and size recommended by manufacturer but of sizes that will penetrate substrate not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screws.

G. Seal joints with elastomeric sealant as required by manufacturer of roofing specialties.

3.3 ROOF EDGE DRAINAGE SYSTEM INSTALLATION

A. General: Install downspouts, and water collector boxes to produce a complete roof drainage system according to manufacturer's written instructions. Coordinate installation of roof perimeter flashing and drip-edges with installation of roof drainage system.

B. Downspouts: Join sections with manufacturer's standard telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch away from walls; locate fasteners at top and bottom and at approximately 60 inches o.c. in between.

1. Provide elbows at base of downspout to direct water away from building.
2. Connect downspouts to underground drainage system indicated.

C. Water collector boxes: Anchor securely to wall with elevation of conductor head rim 1 inch below don spouts discharge.

3.4 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder and sealants.

C. Remove temporary protective coverings and strippable films as manufactured roof specialties are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain in a clean condition during construction.

D. Replace manufactured roof specialties that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION

DIVISION 7

SECTION 07600

METAL SCUPPERS AND DOWNSPOUTS

APPENDIX "A"

SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Samples: Provide full range of manufacturer's available colors for exposed surfaces.

C. Shop Drawings: Show layouts of manufactured roof specialties, including plans and elevations. Identify factory- vs. field-assembled work. Include the following:

1. Details for fastening, joining, supporting, and anchoring manufactured roof specialties including fasteners, clips, cleats, and attachments to adjoining work.
2. Details for expansion and contraction.

D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, verifying compliance of roof edge flashings with performance requirements.

END OF APPENDIX "A"

DIVISION 10

SECTION 10210

METAL WALL LOUVERS

PART 1. GENERAL

1.01 SUMMARY

This Section specifies requirements for fixed and adjustable extruded aluminum wall louvers, wall vents and accessories.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

American Architectural Manufacturers Association (AAMA)

AAMA 611	Voluntary Specification for Anodized Architectural Aluminum.
AAMA 2605	Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.

Air Movement and Control Association International, Inc. (AMCA)

AMCA 500L	Laboratory Methods of Testing Louvers for Rating.
AMCA 501	Application Manual for Air Louvers.

American Society for Testing and Materials (ASTM)

ASTM B 209	Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
ASTM B 221	Specification for Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
ASTM C 612	Specification for Mineral Fiber Block and Board Thermal Insulation.

American Welding Society, Inc. (AWS)

AWS D1.2	Structural Welding Code – Aluminum.

National Association of Architectural Metal Manufacturers (NAAMM)

Metal Finishes Manual for Architectural and Metal Products.

National Electrical Manufacturers Association (NEMA)

Technical Standards.

Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA)

Architectural Sheet Metal Manual.

The Society for Protective Coatings (SSPC)

SSPC-Paint 12 Paint Specification No. 12 – Cold-Applied Asphalt Mastic (Extra Thick Film).

Underwriters Laboratories Inc. (UL)

Fire Resistance Directory.

1.03 DESIGN AND PERFORMANCE REQUIREMENTS

A. Louver Terminology

Refer to AMCA International's publication AMCA 501 for definitions of terms for metal louvers not otherwise defined in this section or to referenced standards.

B. Structural and Thermal Performance

Installed exterior metal wall louvers shall withstand the effects of loads and stresses from wind and normal thermal movement without evidence of permanent deformation of louver components including blades, frames and supports; without noise or metal fatigue caused by louver blade rattle or flutter; and without permanent damage to fasteners and anchors.

1. Wind Load: Withstand wind loading based on uniform pressures shown on the Contract Drawings, acting inwards or outwards. Louvers shall resist minimum wind loading required by the New York City Building Code or by the New Jersey Uniform Construction Code and its subcode the IBC/2000 (all as though the Authority were a private corporation) as applicable to where the Project is located.
2. Allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures. Base design calculations on actual surface temperatures of metals due to both solar heat gain and nighttime-sky heat loss.
   a. Temperature Change (Range): 120 degrees F, ambient; 180 degrees F, material surfaces.

C. Air Performance and Water Penetration Ratings

Louvers shall comply with the following performance requirements, as demonstrated by testing manufacturer's stock or custom fabricated units identical to those furnished and installed, unpainted, clean and degreased units without screens, of height and width indicated, in accordance with AMCA 500L.

1. Free area shall not be less than 45 percent on a 48 inch by 48 inch sized louver.
2. Static pressure drop shall not be more than 0.14 inch of water gage at an airflow of 900 fpm free area velocity.
3. Water penetration shall not be more than 0.01 oz. per sq. ft. of free area at an intake airflow of 900 fpm free air velocity when tested for 15 minutes.
4. Louvers shall be licensed to bear, and shall display, AMCA International's Certified Rating Seal.

D. Air Leakage Ratings (adjustable louvers only)

Adjustable louvers shall also comply with performance requirements indicated for air leakage as tested in accordance with AMCA 500L:

1. Air leakage shall not be more than 1.5 cfm per sq. ft. of gross face area that will pass through the louver at static pressure differential of 0.15 inch of water gage, with louver blades in the closed position.
2. Louvers shall be licensed to bear, and shall display, AMCA International's Certified Rating Seal.

1.04 QUALITY ASSURANCE

A. When required by Appendix "A", submit structural calculations for louvers, signed and sealed by a Professional Engineer licensed in the state in which Work is to be performed, indicating compliance with these Design and Performance Requirements.

B. Engineer Qualifications

Use the services of a professional engineer legally authorized to practice in the jurisdiction where the Work is located. Engineer shall be experienced in providing engineering services of the kind indicated which have resulted in the successful installation of louvers similar to Work of this Section in material, design and extent, and shall have a record of successful in-service performance.

C. Fabrication Standards

Comply with applicable provisions of SMACNA's *Architectural Sheet Metal Manual* for fabrication, construction details and installation procedures, except as otherwise shown on the Contract Drawings.

D. Welding Standards

1. Comply with applicable provisions of AWS D1.2 *Structural Welding Code – Aluminum.*
2. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and has undergone recertification if pertinent.

E. Motor Standards

For motor-operated adjustable louvers, motors and related components shall be listed and labeled by UL and shall comply with applicable NEMA standards.

F. Single Source Responsibility

Obtain louvers and vents through one source from a single manufacturer.

G. Field Measurements

Check actual louver openings by accurate field measurements before fabrication and show recorded measurements on final Shop Drawings. Coordinate field measurements and Shop Drawings with fabrication and shop assembly to minimize field adjustments, splicing, mechanical joints and field assembly of units.

1.05 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MANUFACTURERS

A. Subject to compliance with requirements of this Section, furnish and install products of one of the following:

Airline Products Co., Hagerstown, MD

The Airolite Co., Marietta, OH

American Warming and Ventilating Co., Holland, OH

Construction Specialties, Inc., Cranford, NJ

Industrial Louvers Inc., Delano, MN

Ruskin Co., Kansas City, MO

2.02 MATERIALS

A. Aluminum Extrusions: ASTM B 221, alloy 6063-T5, T6 or T52, or alloy 6061-T6.

B. Aluminum Sheet: ASTM B 209, alloy 3003 or 5005 with temper as required for forming, or as otherwise recommended by louver manufacturer for required finish.

C. Fasteners: Use same material as items fastened, except fasteners for exterior applications may be hot dip galvanized, stainless steel or aluminum. Types, gages and lengths shall suit unit installation conditions. Use Phillips flat-head machine screws for exposed fasteners.

D. Anchors and Inserts

1. Use non-ferrous metal or hot-dip galvanized steel anchors. Inserts shall be steel or lead expansion bolt devices for drilled-in-place anchors.
2. Furnish inserts to be set into concrete or masonry, or furnish flat or angle type wall anchors where shown on the Contract Drawings.

E. Bituminous Paint: Cold-applied, asphalt mastic complying with SSPC-Paint 12 containing no asbestos fibers.

2.03 ACCESSORIES

A. Louver Screens

Removable screens for exterior louvers shall be as follows:

1. Frames
   a. Same material and finish as louver unit to which secured. Aluminum frames shall have mitered corners with clips.
   b. Rewireable, consisting of formed or extruded metal with a driven spline or insert for securing screen mesh.
2. Bird screens shall be 1/2 inch square mesh, of 0.063 inch diameter aluminum wire.
3. Insect screens, if any, shall be 18 by 18 mesh, of 0.009 inch diameter stainless steel wire.

B. Sill Extensions or Loose Sills

Same material and finish as louvers, where shown on the Contract Drawings or where required for drainage to exterior and to prevent water penetrating to interior.

2.04 FABRICATION

A. General

1. Fabricate louvers, blank-off panels, wall vents and accessories of design, dimensions, materials, arrangement and metal finish as shown on the Contract Drawings and as specified in this Section.
2. Preassemble units in shop to greatest extent possible and disassemble as necessary for shipping and handling limitations. Clearly match-mark units for reassembly and coordinated installation.
3. Frames, including integral sills, shall suit adjacent construction with tolerances for installation, including for application of sealants in joints between louvers and adjoining Work.
4. Include supports, anchorages and accessories required for complete assembly, including metal framing.
5. Locate screens on inside face of louver, secure screen to louver frame with machine screws spaced a maximum of 6 inches from each corner and 12 inches o.c. between corner fasteners.
6. Join frame members to one another and to fixed louver blades by welding, except where field bolted connections between frame members are made necessary by size of louvers.
7. Maintain equal blade spacing, including separation between blades and frames at head and sill, to produce uniform appearance.
8. Louver Materials

   Minimum 0.125 inch thick aluminum extrusions for blades, frames and mullions, if any.

   a. Louver Frames

      Louver frames of size and depth shown on the Contract Drawings and as specified herein.

   b. Louver Blades

      Horizontal fixed or adjustable blades of profile, slope and spacing shown on the Contract Drawings and as specified herein.

   c. Mullions

      Vertical mullions shall be of types and at spacings shown on the Contract Drawings but not further apart than recommended by manufacturer or 72 inches on center, whichever is less. Furnish and install horizontal mullions at horizontal joints, if any, between louver units, except where continuous vertical assemblies are shown.

B. Fixed, Extruded Aluminum Wall Louvers

Fixed louvers shall be of extruded aluminum, with aluminum screens as shown on the Contract Drawings, and as follows:

1. Louver Depth: As shown on the Contract Drawings.
2. Blade Angle: Manufacturer's standard (40-45 degrees), or as shown on the Contract Drawings.
3. Blade Type: Drainable.
4. Screen Type: Bird screen.

C. Adjustable-Blade, Extruded Aluminum Wall Louvers

Adjustable-blade louvers shall be of extruded aluminum, with blade and jamb gaskets, with aluminum screens if shown, with manufactuer's recommended bearings and operating mechanisms to suit louver sizes shown on the Contract Drawings and prewired for motor operation, if any, as described below.

1. Louver Depth: As shown on the Contract Drawings.
2. Preset Blade Angle: Manufacturer's standard (40-45 degrees), or as shown on the Contract Drawings.
3. Blade Type: Drainable.
4. Screen Type: Bird screen.
5. Motor Operation: With 2-position, spring-return application (with power on, motor opens louver; with power off, spring closes louver), 120-V, 60-Hz motor and limit switches, wired for grounding and equipped as follows:
   a. Terminals for controlling devices.
6. Adjustable-Blade Accessories
   a. Furnish and install snap-on, blade-edge gaskets for each louver blade to reduce air leakage at blade edges.
   b. Furnish and install metal jamb seals between adjustable-blade ends and jambs to restrict air leakage.

D. Drainable Blades

Fixed or adjustable louver blades shall be drainable type, designed to collect and drain water to exterior at sill by means of gutters in front edges of blades and channels in jambs and mullions.

E. Blank-Off Panels

Laminated metal-faced panels, if any, shall consist of an insulating core, surfaced on back and front with metal sheets, finished to match louver, and shall comply with the following requirements:

1. Panel Thickness: 2 inches, or as otherwise shown on the Contract Drawings.
2. Metal Facing Sheets: Aluminum sheet 0.032 inch thick.
3. Insulating Core: Unfaced rigid glass fiber board insulation complying with ASTM C 612, Class 1 and 2.
4. Edge Treatment: Trim perimeter edges of blank-off panels with louver manufacturer's standard extruded aluminum channel frames (provided they are minimum 0.063 inch thick) with corners mitered and with same finish as panels.
5. Seal perimeter joints between panel faces and louver frames with 1/8 inch by 1 inch polyvinyl chloride compression gaskets.

F. Wall Vents (Brick Vents)

Extruded aluminum wall vents shall comply with the following requirements:

1. Minimum 0.125 inch thick extruded aluminum louvers and frames, welded assembly; incorporating weep holes, continuous drip at sill and integral water stop on inside edge of sill; with 18 by 14 mesh aluminum wire insect screening secured to inside face of wall vent.

2. Dampers: Equip wall vents with dampers where shown on the Contract Drawings. Dampers shall consist of aluminum blades and frame mounted on inside of wall vent; operated from exterior with allen wrench in socket head cap screw. Operating mechanism components shall be Type 304 stainless steel.

2.05 SHOP FINISHING

A. General

1. Comply with NAAMM's Metal Finishes Manual for Architectural and Metal Products for finish designations and application recommendations. Finish designations prefixed by "AA" conform to the system established by the Aluminum Association for designating aluminum finishes listed in the NAAMM manual.
2. Factory apply finish to exposed metal surfaces after products are assembled.
3. Remove visible scratches and blemishes from exposed surfaces after completing finishing process. Protect finishes on exposed surfaces prior to shipment with protective coating.
4. Match colors shown on the Contract Drawings or match color sample, if any. If not shown, color shall be as selected by the Engineer from manufacturer's standard colors.

B. Class I Clear Anodic Finish

AA M12-C22-A41 (Mechanical Finish: nonspecular, as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: clear coating, 0.7 mil or thicker), complying with AAMA 611.

C. Class I Color Anodic Finish

AA M12-C22-A42/A44 (Mechanical Finish: nonspecular, as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: integrally colored or electrolytically deposited color coating, 0.7 mil or thicker), complying with AAMA 611.

D. High Performance Organic Coating

AA C12-C42-R1x (Chemical Finish: cleaned with inhibited chemicals, prepared with an acid-chromate-fluoride-phosphate conversion coating; Organic Coating: as specified below). Ensure that coating is applied in strict accordance with coating manufacturer's instructions by a licensed applicator.

1. Fluoropolymer 3-Coat System: Manufacturer's standard 3-coat, thermocured system composed of specially formulated inhibitive primer, fluoropolymer color coat and clear fluoropolymer topcoat, with both color coat and clear topcoat containing not less than 70 percent polyvinylidene resin by weight; complying with AAMA 2605.
2. Subject to compliance with requirements, fluoropolymer coating systems shall contain resins produced by Atofina Chemicals, Inc. ("Kynar 500") or Solvay Solexis, Inc. ("Hylar 5000").
3. Furnish manufacturer's written warranty covering failure of the fluoropolymer coating system for a period of twenty (20) years after the date of Final Completion.

PART 3. EXECUTION

3.01 PREPARATION

Coordinate setting drawings, diagrams, templates, instructions and directions for installation of anchorages which are to be embedded in concrete or masonry construction. Coordinate delivery of such items to project site.

3.02 INSTALLATION

A. Install louvers and structural supports and attachment brackets as shown on the Contract Drawings and as required for a complete and proper installation.

B. Locate and place louver units plumb, level and in proper alignment with adjacent Work.

C. Use concealed anchorages. Use brass or lead washers fitted to screws to protect metal surfaces, where required, and to make weathertight connections.

D. Form closely fitted joints with exposed connections accurately located and secured. Provide perimeter reveals and openings of uniform width to accommodate sealants and joint fillers.

E. Install concealed gaskets, flashings, joint fillers and insulation, as louver installation progresses where required to make louver joints weathertight. Comply with Division 7 Section on Sealants, for sealants applied during installation of louvers.

F. Install bird screens, insect screens and blank-off panels, if any, as shown on the Contract Drawings.

G. Install wall vents, including supplementary framing or lintels as required, in accordance with manufacturer's instructions. Build vents into masonry walls with mortar as part of masonry construction. Install vents in other wall openings as shown on the Contract Drawings in accordance with approved Shop Drawings.

H. Protect aluminum surfaces from corrosion or galvanic action by application of a heavy coating of SSPC-Paint 12 bituminous paint on surfaces that will be in contact with concrete, masonry or dissimilar metals.

3.03 ADJUSTING AND CLEANING

A. Test operation of adjustable louvers and adjust as needed to produce fully functioning units that comply with requirements.

B. Repair finishes damaged by cutting, welding, soldering and grinding operations required for fitting and joining. Restore finishes so there is no evidence of corrective work. Return items to the shop that cannot be refinished in field, make required alterations and refinish entire unit, or furnish and install new units.

C. Periodically clean exposed surfaces of louvers and vents, which are not protected by temporary covering, to remove fingerprints and soil during construction period; do not let soil accumulate until final cleaning.

D. Before final inspection, clean exposed surfaces with water and a mild soap or detergent not harmful to finishes. Rinse surfaces thoroughly and dry. Remove temporary coverings.

END OF SECTION

SECTION 10210

METAL WALL LOUVERS

SUBMITTALS

APPENDIX "A"

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1 - GENERAL PROVISIONS:

A. Product Data

For each louver type shown, including catalog cuts showing material types, thicknesses, appropriate AMCA certified rating seal and performance data, and product data for each accessory shown.

B. Shop Drawings

1. For louvers and accessories including plans, elevations, sections, and details showing profiles, angles, and spacing of louver blades; unit dimensions related to wall openings and construction; free areas for each size indicated; profiles of frames at jambs, heads and sills; anchorage details and locations. Indicate materials, finishes, fasteners, joinery and other information to determine compliance with specified requirements.
2. Wiring diagrams detailing wiring for power and control systems; differentiate clearly between manufacturer-installed wiring and field-installed wiring, where motorized adjustable louvers are shown on the Contract Drawings.

C. Samples

Submit 6 inch square samples of each required finish. Prepare samples on metal of same gage and alloy to be used in Work. Where normal color and texture variations are to be expected, such samples shall show limits of such variations.

D. Certifications

Product test reports evidencing compliance of units with performance requirements.

E. Design Calculations

Structural analysis data for installed products indicated to comply with certain design loadings, sealed and signed by the qualified professional engineer who was responsible for their preparation.

F. Qualifications

1. Professional Engineer: Demonstrate capabilities and experience. Include list of completed projects with project names, addressees, names of architects and owners.
2. Welder: Evidence of current AWS certification.

END OF APPENDIX "A"

SECTION 10210

METAL WALL LOUVERS

INSTRUCTIONS TO SPECIFIER

A. General

1. This Section specifies fixed, adjustable and motorized extruded aluminum louvers for exterior walls, including insulated blank-off panels and brick vents.
2. Primary louver design considerations are:
   a. Water Protection: If none (use standard z-blade, non-drainable); low protection (drainable blade); superior protection (weather/storm resistant, wind-driven rain resistant; 0 water penetration).
   b. Aesthetics: Finish and color, mullions, decorative grilles, blade spacing and angle. (If specifying blade angle other than manufacturer's standard, make sure requirement does not conflict with louver performance requirements.)
   c. Engineering: Performance criteria.
3. Coordinate performance criteria with Mechanical, Structural and with louver manufacturer.
4. For the following louver types or materials, if required, additional Specification Sections must be included in the Contract Booklet:
   a. Louvers fabricated of formed galvanized or stainless steel, or formed aluminum.
   b. Combination fixed and adjustable louvers.
   c. Fire rated or fusible link operated louvers.
   d. Acoustical louvers.
   e. Vertical blade louvers.

B. Contract Drawings

Ensure that the Contract Drawings show the following items specified in the text:

(1.03 B.1)	Wind load requirements and deflection limits, if any; seismic design requirements, if any; Delete E. from Appendix "A" if design calculations not required.
(1.03 C)	AMCA certified louver performance ratings: Add requirements for 'Wind Driven Rain Penetration' and Seal, if required. (See C.2 below)
(1.03 C.2)	Free area: SF, or percentage if other than 45.
(1.03 C.3)	Static pressure drop and airflow velocity (fpm, intake or exhaust) if other than specified.
(1.03 C.4)	Water penetration and airflow velocity (fpm) if other than specified.
(1.03 D.1)	Air leakage for adjustable louvers, if any: Air volume (cfm) and static pressure drop if other than specified.
(2.01 A)	Manufacturers: List 'Basis of Design' louver mfr./model no's. in Spec Notes if required.
(2.02 C)	Fastener materials, if other than type or materials specified.

(2.03 A)	Loose sills or sill extensions, if any.
(2.03 B; 2.04 B,C)	Louver screen, if any: Type of screen if other than specified 1/2 inch mesh bird screen; material if other than same as louver; location, if other than inside face. (Use insect screens sparingly, if at all – they are easily clogged and obstruct air flow.)
(2.04 A.4)	Joinery, if other than welded construction.
(2.04 A.8)	Louver material and thickness if other than 0.125 inch aluminum.
(2.04 A.8.a)	Louver frame size and depth, and blade profile, slope (angle) and spacing if other than manufacturer's standard.
(2.04 A.8.b)	Mullion type (visible or invisible) and spacing.
(2.04 B)	Fixed louvers: Size, depth and blade angle, if other than mfr. standard.
(2.04 C)	Adjustable louvers: Size, depth and blade angle, if other than mfr. standard.
(2.04 C.5)	Adjustable louvers: Operation, if other than electric motorized.
(2.04 F)	Blank-off panels: Thickness, if other than 2 inches specified.
	Metal facing sheets material and thickness, if other than .032 alum.
(2.04 G)	Wall vents (brick vents), and operable dampers, if any.
(2.05)	Louver finish and color.
(2.05 D.1)	Kynar finish: 2-coat if other than 3-coat as specified.
(3.02 A)	Louver supports and brackets: Locations.
(3.02 E)	Perimeter details: Sealants and joint fillers.

C. Other Items

1. Ensure that the following Specification Sections are included in the Contract Booklet as required:

(2.04 A.4)	Division 5 Section on miscellaneous steel for framing required to support louvers.
(3.02 F)	Division 7 Section on sealants.
(2.04 C.5)	Division 15 Section on electric control systems when motor-operated adjustable louvers are used.

2. AMCA Wind-Driven Rain Seal: If required, specify rainfall rate and wind speed test parameter options: Either 3 inches/hour and 29 mph, or 8 inches/hour and 50 mph. Specify desired performance effectiveness category: Class A, B, C, or D (99-100, 95-99, 80-95, <80 percent, respectively). Note that even a Class C rating is more effective than a typical drainage-blade louver (which is only 60% effective).

END OF INSTRUCTIONS

DIVISION 7

SECTION 07416

METAL WALL PANEL SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

A. This Section specifies requirements for uninsulated, concealed fastener wall panel system and an integral window system, complete with related flashing and accessory components and structurally capable of spanning between supports, as shown on the Contract Drawings.

1. Wall panel system shall consist of the following components:

   a. Uninsulated, concealed fastener wall panel

   b. Flat panels, located on roof side of parapets.

   c. Copings and gravel stops

   d. Roof scuppers

   e. Anchors, and fasteners

   d. Miscellaneous trim

   e. Integrated window system for horizontally oriented windows.

   f. Closures

   g. Sealants

   h. Fascias

B. Related Construction Specified in Other Sections:

1. Structural framing network and supports are specified in Division 5 Sections of these Specifications.
2. Refer to Division 7 Section on roof specialties for coping.
3. Refer to Division 7 Section on sealants for perimeter sealant.
4. Refer to Division 8 Section on glass and glazing for window glass.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

American Society of Civil Engineers (ASCE)

ASCE 7-95	Minimum Design Loads for Buildings and Other Structure

American Society for Testing and Materials (ASTM)

ASTM A 653	Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc Iron Alloy Coated (Galvannealed) by the Hot Dip Process.
ASTM E 699	Practice for Criteria for Evaluation of Agencies Involved in Testing, Quality Assurance, and Evaluating Building Components in Accordance with Test Methods Promulgated by ASTM Committee E-6
ASTM E 1592	Test Method for Structural Performance of Sheet Metal Wall and Siding Systems by Uniform Air Pressure Difference

A. American Architectural Manufacturer's Association (AAMA):
   1. AAMA 621 - Voluntary Specification for High Performance Organic Coatings on Coil Coated Architectural Hot Dipped Galvanized (HDG) and Zinc-Aluminum Coated Steel Substrates.

B. American Society of Civil Engineers (ASCE):
   1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

C. ASTM International (ASTM):
   1. ASTM A 653/A 653M - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
   2. ASTM A 755/A 755M - Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.
   3. ASTM C 920 - Specification for Elastomeric Joint Sealants.
   4. ASTM E 72 - Standard Test Methods of Conducting Strength Tests of Panels for Building Construction.

1.03 DESIGN AND PERFORMANCE REQUIREMENTS

A. General:
   1. Provide Metal Wall Panels over Masonry Wall System: Single-skin concealed

fastener metal wall panels applied as exterior rainscreen cladding over a masonry wall specified in Division 04 Section "Unit Masonry" and an applied membrane that provides air, moisture, and water vapor control specified in Division 07 Section "Air Barriers". Metal wall panel installation specified in this Section includes [secondary metal subgirt framing and] mounting clips for panel attachment.

B. Structural Performance: Uniform load capacity of 1.5 times the design load which shall be determined by engineering analysis by the system manufacturer in accordance with the International Building Code, as adopted by the states of New York and New Jersey, Building Code of the City of New York, or ASCE 7-98, whichever is more stringent.

C. Structural Performance: Provide metal wall panel assemblies capable of withstanding the effects of indicated loads and stresses within limits and under conditions indicated, per ASTM E 72:

D. Secondary supports for the panel system shall be designed in accordance with AISC design procedures. Sub-girt support systems shall be designed and installed only by the manufacturer's approved wall systems installer.

1. Secondary supports shall not vary from the theoretical plane by more than the specified tolerances.

   a. ¼ inch in any 20-foot length vertically or horizontally.

   b. + Or - ½ inch maximum in any building elevation.

   c. + Or - 1/8 inch within 5 feet of any change in plane such as corners and soffits.

E. Engineering: Submit for review copies of an ANSI A 58.1-1988 Load Analysis prepared and/or reviewed and signed and sealed by a Professional Engineer licensed in the State where the project is located.

F. Provide positive drainage to exterior for moisture entering or condensation occurring behind panel system.

G. Single Source Responsibility

Wall system shall be obtained from single manufacturers.

1.04 QUALITY ASSURANCE

A. Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts, and who are completely familiar with the specified requirements and the methods needed for proper performance of the Work of this

Section.

B. Field Measurements

Prior to fabrication of prefabricated panels, take field measurements of structure or substrates to receive panel system. Allow for trimming panel units only where final dimensions cannot be established prior to fabrication.

C. Installer Qualifications:

Engage an experienced installer who has a minimum of five (5) years metal wall panel experience and shall have completed at least four projects similar in material, design, and extent of work shown in the Contract Drawings and with a record of successful in-service performance for the past eight years. The installer shall have completed at least one insulated composite wall panel system at least 5,000 sq. ft. in area for each system.

D. Project superintendent for the installer shall have a minimum of three years experience working on installations similar in size and complexity to Work of this Section.

E. Welding: Shall be performed by skilled and qualified welders licensed and trained in accordance with local building regulations and the American Welding Society (AWS).

F. Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct testing indicated without delaying the Work, as documented according to ASTM E 699.

G. All fasteners shall be produced domestically and shall meet design requirements, including safety factor.

H. Manufacturer's representative shall inspect substrate surfaces to which Work of this Section will be applied-prior to start of wall system installation and shall instruct and assist installer as deemed necessary.

I. Manufacturer's representative shall provide intermittent project supervision and final inspection at end of Work and before issuance of warranty. Such supervision shall be of sufficient duration to cover entire installation sequence.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver panels and other components so they will not be damaged or deformed. Package wall panels for protection against transportation damage.

B. Exercise care in unloading, storing, and erecting wall covering panels to prevent bending, warping, and surface damage.

C. Stack materials on platforms or pallets, covered with tarpaulins or other suitable, weather tight, ventilated covering. Store metal wall panels so that they will not

accumulate water. Do not store panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Factory finished components shall be stored, handled, and shipped in a manner that will prevent scratching and damage. Time delivery of material to the site to insure uninterrupted progress of the Work.

1.06 SUBMITTALS

For submittal requirements, see Appendix "A" to this Section.

1.07 WARRANTY

A. Upon completion of the Work specified in this Section, and as a condition for its acceptance, submit a written warranty executed by manufacturer agreeing to repair or replace insulated composite wall panel system components that fails to remain weathertight within five (5) years from the Date of Issuance of the Certificate of Final Completion.

B. In addition, upon completion of the Work specified in this Section, and as a condition for its acceptance, submit a written warranty executed by manufacturer agreeing to repair or replace insulated composite wall panel system components that exhibit an organic finish failure, as stipulated below:

1. Twenty (20) years for organic coated finish from the later of the Date of Final Completion of the Contract. In addition, provide a ten (10) year manufacturer's Guarantee for materials, only. The Guarantee shall be executed by all of the Entities included in the performance of the Work and shall be joint and several by all Entities. The Entity performing the Work of this Section shall agree to repair or replace defective materials and Workmanship to "like new condition", including such exploratory Work, as necessary to determine the cause, during the Guarantee period, at no additional cost to the Authority. Entity(ies) performing the Work of this Section shall provide copy of proposed Guarantee as per Appendix 'A' of this Specifications Section.

2. Defective materials and Workmanship is hereby defined to include, but not be limited to, evidence of:
   a. Penetration of water into interior spaces.
   b. Delamination of applied panel finishes.
   c. Discoloration or fading, excessive non-uniformity, pitting, cracking, peeling, or crazing of finish or corrosion. (This guarantee provision is for a twenty (20) year period.)
   d. Failure to fulfill other specified performance requirements.

C. Entity performing Work of this Section shall repair all damage to the metal wall panels occasioned by defective materials or Workmanship or damage as part of repairs to the Work.

D. The Guarantee, the enforcement or lack of enforcement thereof, shall not deprive the Authority of other actions, rights or remedies available to him. Guarantee shall be in form approved by the Authority. Guarantee does not cover damage resulting from vandalism or acts of nature exceeding specified performance criteria.

E. The terms below used in conjunction with finish Guarantee are defined as follows:

1. "Excessive fading": means a change in appearance which is perceptible and objectionable as determined by the Engineer when viewed visually in comparison with the original color range standards.

2. "Excessive non-uniformity": means non-uniform fading during the period of the guarantee to the extent that adjacent parts have a color difference greater than the original acceptable color range.

3. "Will not pit or otherwise corrode": means there shall be no pitting or other type of corrosion of finish discernible from a distance of 10 ft. resulting from the natural elements in the atmosphere at the construction site.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

Basis-of-Design Product: The wall panels are based on products of CENTRIA Architectural Systems, 1005 Beaver Grade Road, Moon Township, PA 15108-2944. Contact: Dominic Grecki; tel. 973-744-2040. Subject to compliance with requirements, provide the named product or a comparable product to be submitted for approved equal.

2.02 MATERIALS

A. Metal wall panels, and miscellaneous trim shall be 18 gage, G-90 galvanized steel conforming to ASTM A 653.

B. Wall Panel System

1. Metallic-Coated Steel Face Sheet: Coil-coated, ASTM A 755/A 755M.

2. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90 (Class Z275), structural steel quality.

3. Specifier: Select required metal face sheet thickness from options below. 0.024 inch/24 gage (0.60 mm) thickness is available in CENTRIA CS-260/260E and CS 660/660E panels only.

4. Face Sheet: Minimum 0.036 inch/20 gage (0.91 mm) nominal uncoated

thickness.

5. Surface: Smooth.

C. Metal Wall Panels, General: Factory-formed, concealed fastener panels with interconnecting side joints, fastened to supports with concealed fasteners, with factory-applied sealant in side laps.

D. Specifier: CENTRIA 200 Series Metal Wall Panels are manufactured in 12 inch widths and are available in standard panel lengths from 5 foot (1524 mm) to 30 foot (9144 mm). Custom length panels are available on special order.

E. Asymmetric reveal panel with 9.6" flat face **MWP#__1_**:

1. Basis of Design Product: **CENTRIA, CS-200**.
2. Panel Coverage: 12 inches (305 mm).
3. Panel Height: 0.875 inch (22 mm).

F. Asymmetric three rib profile with ribs at 4" o.c. **MWP#__2_**:

1. Basis of Design Product: **CENTRIA, CS-260**.
2. Panel Coverage: 12 inches (305 mm).
3. Panel Height: 0.875 inch (22 mm).

G. Windows

1. Windows shall be provided by a manufacturer approved by the metal panel manufacturer, and installed by the same installer as installer of the metal panels.
2. All warranties and guarantees shall be supplied by the metal panel manufacturer and installer.

H. Fasteners shall be as recommended by the manufacturer to meet specified structural performance criteria.

I. Finish

1. Exterior finish on G90 galvanized steel shall be a coating consisting of .8 mil (Nom.) PVDF topcoat applied over a 3 mil (Nom.) Versacor Ultra Barrier Coat. The exterior coating shall be applied by the coil coating process to assure quality of application and uniform thickness. Total thickness of coating to be a minimum of 3.8 mil (nom.).

2. The exterior finish system shall exhibit acceptable performance characteristics in accordance with ASTM independently witnessed tests and evaluation procedures and meet the following results:

   a. ACCELERATED WEATHERING - QUV WEATHEROMETER (ASTM D-4587, G 154-00) After 5000 hours of A-Bulb exposure. No

color change in excess of 0.61ΔE per ASTM D-2244 or Chalk rating of 10 per ASTM D-4214.

b. CYCLIC FOG/U.V. WEATHERING (ASTM D-5894) After 2000 Hours results should meet or exceed the following –
   a. Creepage rating of 5 per ASTM D-1654
   b. Field rust rating of 9 per ASTM D-610
   c. Minimal Loss of adhesion
   d. Color Change of 0.63ΔE per ASTM D-2244
   e. Chalk rating of 10 per ASTM D-4214
   f. HUMIDITY TEST (ASTM D 2247, D714-87) Test specimens shall be subjected to 5000 hours of condensing humidity at 100 degrees F. Results achieved should be equal to or better than 4 Medium blisters, per ASTM D-714; Field rust rating 9, per ASTM D-610; No loss of adhesion.
   g. SALT FOG TEST (ASTM B 117-85) Test specimens scribed to the base metal shall be subjected to 3000 hours of 5% salt solution at 95 degrees F. Results shall be equal or better than:
      i. At Scribe – Test rating of 5 per ASTM D-1654, delamination at the scribe, 2 few blistering, per ASTM D-714
      ii. In Field – Test rating of 10, no blistering, per ASTM D-610 and ASTM D-714
   h. FALLING SAND ABRASION (ASTM D-968-93) After 200 liters of falling sand there shall be no exposure of the metal substrate.
   i. ACID RAIN – KESTERNICH TEST (ASTM G-87) Coating system shall have no significant blistering, color change, or loss of adhesion after 30 Cycles in a Kesternich cabinet with dissolved sulfuric dioxide in distilled water, creating a sulfuric acid environment.
   j. FLEXIBILITY T-BEND (ASTM D-4145-90) Flexibility of the coating shall be demonstrated to a 0-T bend minimum, no pick-off.

J. Accessories

Except as indicated as Work of another Specifications Sections, provide components required for complete wall systems, including trim, copings, fascias, scuppers, mullions, sills, corner units, ridge closures, clips, seam covers, battens, flashings, gutters, sealants, gaskets, fillers, closure strips, and similar items.

K. Extruded Trim: Manufacturer's complementary aluminum extrusions for head, jamb, sill, base, flush, reveal, inside and outside corner, endwall, and expansion joint details. Color to match metal wall panels. Formed Flashing trims will not be accepted in lieu of extrusions as indicated.

1. Basis of Design: **CENTRIA, Microline Extrusions.**
2. 6063-ts Aluminum.

L. Joint sealant

One-part elastomeric polyurethane, polysulphide, or silicone rubber sealant as recommended by the panel system manufacturer.

M. Minimum 16 gage clip, allowing for unimpeded thermal movement.
N. Panels factory roll formed.
O. Minimum 16 gage sub-girts, G90 galvanized steel.

2.03 FABRICATION

General: Fabricate and finish panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with profiles shown on the Contract Drawings and with dimensional and structural requirements.

PART 3 - EXECUTION

3.01 EXAMINATION

Examine the areas and conditions under which Work of this Section will be performed. Do not proceed until unsatisfactory conditions are corrected.

3.02 INSTALLATION

A. General

Install wall panel systems, flashings, and all related elements in strict accordance with design, pertinent regulations of governmental agencies having jurisdiction, and the procedures as prescribed by the manufacturer. Set Work accurately in location, plumb, level, and true, as measured from established building lines, and from other work already in place.

B. Comply with manufacturer's instructions and recommendations for installation, as applicable to project conditions and supporting substrates. Anchor panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Field cutting of exterior panels by torch is not permitted.

2. Install panels with approved fasteners.

C. Accessories: Install components required for a complete wall panel system, including trim, copings, fascias, mullions, sills, corner units, ridge closures, clips, seam covers, battens, flashings, gutters, sealants, gaskets, fillers, closure strips, and similar items.

D. Installation Tolerances

Shim and align panel units within installed tolerances, as specified in Article 1.03 – Design and Performance requirements, of this Section.

E. Provide types of gaskets and sealants/fillers shown on the Contract Drawings or, if not otherwise shown, types recommended by wall system manufacturer.

F. Joint Sealers

Install gaskets, joint fillers and sealants where shown on the Contract Drawings and where required for weatherproof wall performance of panel systems. Provide types of gaskets and sealants/fillers shown on the Contract Drawings or specified herein, or, if not otherwise shown or specified, types recommended by panel system manufacturer.

3.02 CLEANING AND ADJUSTMENTS

A. Damaged Units

Replace panels and other components of the Work which have been damaged or have deteriorated beyond successful repair by means of similar minor repair procedures.

B. Cleaning

Remove temporary protective coverings and strippable films (if any) as soon as each panel is installed. Upon completion of installation, clean finished surfaces as recommended by the panel manufacturer, and maintain in a clean condition.

C. Do not allow the installed Work of this Section to be used as a storage space for other materials.

END OF SECTION

SECTION 07416

APPENDIX "A'

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1 - GENERAL PROVISIONS:

A. Product Date

Manufacturer's product specifications, standard details, certified product test results, installation instructions and general recommendations, as applicable to materials, and finished for each component and for total system of stainless steel batten wall system. Submit color charts, showing all standard and custom colors.

B. Samples

Samples, of each exposed finish material, including the following:

1. Wall panel assembly, including finish
2. Minimum 8" X 8" corner section of window, complete with glass.
3. Trim pieces 12" long with finish
4. One of each type of clips, cleats, anchors, support system and fasteners.

C. Shop Drawings

Small-scale layouts of wall and wall panels and large-scale details of edge conditions, joints, corners, custom profiles, supports, anchorages, trim flashings, closures, and special details. Distinguish between factory and field assembly.

1. Shop drawings shall bear the seal and signature of a Professional Engineer, licensed in the State where the project is located.
2. Layout drawings and sections shall show adjacent construction, and be keyed into benchmarks and grid lines established on the Contract Drawings.
3. Details shall show dimensions, sizes, thicknesses, materials, finishes, clips, cleats, anchors, and fasteners. Details shall also show and identify anticipated fabrication and erection tolerances, anticipated thermal movement, and movement of wall structure.

E. Submit structural calculations signed and sealed by the qualified professional engineer responsible for their preparation.

F. Qualification Data: For firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names, and addresses, names and addresses of architects and owners, and other information specified.

G. Product Test Reports: Indicate compliance of manufactured wall panel assemblies and materials with performance and other requirements based on comprehensive testing of current products.

END OF APPENDIX "A"

DIVISION 5

SECTION 05506

MISCELLANEOUS STEEL

PART 1. GENERAL

1.01 SUMMARY

A. This Section specifies requirements for metal fabrications, including but not limited to structural steel and iron shapes, plates, bars, tubes and pipe.

B. Items specified in this Section include but are not limited to the following, where shown on the Contract Drawings:

1. Loose steel lintels.
2. Shelf angles.
3. Ladders and safety cages.
4. Floor plates.
5. Nosings and treads.
6. Pipe bollards.
7. Miscellaneous steel framing and supports.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

	American National Standards Institute (ANSI)
ANSI A 14.3	Safety Requirements for Fixed Ladders.
	American Society of Mechanical Engineers (ASME)
ASME B 18.2.1	Square and Hex Bolts and Screws, Inch Series.
ASME B 18.6.1	Wood Screws (Inch Series).
ASME B 18.6.3	Machine Screws and Machine Screw Nuts.
ASME B 18.21.1	Lock Washers (Inch Series).
ASME B 18.22.1	Plain Washers.
	American Society for Testing and Materials (ASTM)
ASTM A 27	Specification for Steel Castings, Carbon, for General Application.
ASTM A 36	Specification for Carbon Structural Steel.
ASTM A 47	Specification for Ferritic Malleable Iron Castings.
ASTM A 48	Specification for Gray Iron Castings.
ASTM A 53	Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
ASTM A 123	Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
ASTM A 153	Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

ASTM A 307	Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
ASTM A 500	Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
ASTM A 501	Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
ASTM A 563	Specification for Carbon and Alloy Steel Nuts.
ASTM A 666-96	Specification for Austenitic Stainless Steel Sheet, Strip, Plate and Flat Bar
ASTM A 780	Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
ASTM A 786	Specification for Hot-Rolled Carbon, Low-Alloy, High-Strength Low-Alloy, and Alloy Steel Floor Plates.
ASTM A 1011	Specification for Sheet, Steel and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
ASTM B 633	Specification for Electrodeposited Coatings of Zinc on Iron and Steel.
ASTM C 1028	Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method.
ASTM C 1107	Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
ASTM D 1187	Specification for Asphalt-Base Emulsions for Use as Protective Coatings for Metal.
ASTM E 488	Test Method for Strength of Anchors in Concrete and Masonry Elements.
ASTM E 935	Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings.
ASTM F 568M	Specification for Carbon and Alloy Steel Externally Threaded Metric Fasteners.
ASTM F 593	Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.
ASTM F 594	Specification for Stainless Steel Nuts.
	American Welding Society, Inc. (AWS)
AWS D1.1	Structural Welding Code – Steel.
AWS D1.3	Structural Welding Code – Sheet Steel.
	Code of Federal Regulations (CFR)
29 CFR Part 1910, Subpart D	Fixed Ladders.
	The Society for Protective Coatings (SSPC)
SSPC-Paint 20	Paint Specification No. 20 – Zinc Rich Primers (Type I, Inorganic, and Type II, Organic).
SSPC-PA 1	Shop, Field and Maintenance Painting of Steel.
SSPC-SP 3	Surface Preparation Specification No. 3 – Power Tool Cleaning.
SSPC-SP 6	Surface Preparation Specification No. 6 – Commercial Blast Cleaning.

1.03 DESIGN AND PERFORMANCE REQUIREMENTS

A. Ladders

When installed, if any, shall comply with the following minimum requirements for structural performance, unless otherwise shown on the Contract Drawings:

1. Treads and Platforms.

   Capable of withstanding a uniform load of 100 lbs. per sq. ft. and a concentrated load of 300 lbs., so located as to produce maximum stress conditions.

2. Handrails and Toprails

   Capable of withstanding the following loads applied as indicated below:

   a. Uniform load of 50 lbs. per linear ft. applied simultaneously in both vertical and horizontal directions.

   b. Concentrated load of 200 lbs. applied at any point in any direction when tested per ASTM E 935.

   c. Uniform and concentrated loads above need not be assumed to act concurrently.

3. Guards

   Intermediate rail balusters and panel fillers capable of withstanding a horizontal uniform load of 50 lbs. per sq. ft. of gross area of guard, including open areas of which they are part, of fabrication required or as shown on the Contract Drawings.

1.04 QUALITY ASSURANCE

A. When required by Appendix "A", submit design calculations for ladders, signed and sealed by a Professional Engineer licensed in the state in which Work is to be performed, indicating compliance with these Design and Performance Requirements.

B. Fabricator Qualifications

   Firm experienced in producing metal fabrications similar to those indicated for Work of this Contract with a record of successful in-service performance and with sufficient production capacity to produce required units without delaying the Work.

C. Engineer Qualifications

   A professional engineer who is legally qualified to practice in jurisdiction where construction site is located and who is experienced in providing engineering services required for applications shown on the Contract Drawings.

D. Welding Standards

   Comply with applicable provisions of AWS D1.1 *Structural Welding Code – Steel* and AWS D1.3 *Structural Welding Code – Sheet Steel.*

   1. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.

E. Field Measurements

Check actual locations of walls and other construction to which metal fabrications must fit by accurate field measurements before fabricating. Show recorded measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.05 SUSTAINABLE DESIGN REQUIREMENTS

A. Sustainable Design General Requirements

1. The Authority requires the contractor to implement practices and procedures to meet the sustainable design requirements. The contractor shall ensure that the requirements related to these goals, as defined in Division 1 - GENERAL PROVISIONS, are implemented to the fullest extent. Substitutions or other changes to the work proposed by the contractor will not be allowed if such changes compromise the stated sustainable design performance criteria.

B. Sustainable Design Performance Criteria:

1. The manufacturing location (final assembly) of the miscellaneous steel shall be documented in accordance with the sustainable design submittal requirements of this section.
2. Miscellaneous steel members shall contain a minimum of 25 percent (by weight) recycled content, calculated by adding the post-consumer recycled content percentage to one-half of the post-industrial recycled content percentage. Certify the recycled content in accordance with the sustainable design submittal requirements below.
3. The manufacturing location (final assembly) of the miscellaneous steel shall be documented in accordance with the sustainable design submittal requirements of this section.
4. The origin of the raw materials from which the miscellaneous steel was manufactured shall be documented in accordance with the sustainable design submittal requirements of this section.
5. All field-applied adhesives, sealants, paints and coatings relating to work of this section shall meet the requirements of Division 1 - GENERAL PROVISIONS.

1.06 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MATERIALS

A. Ferrous Metals

1. Metal Surfaces: For fabrication of Work exposed to view, use materials that are smooth and free of surface blemishes including pitting, roughness, seam marks, roller marks and rolled trade names.
2. Steel Plates, Shapes and Bars: ASTM A 36.
3. Rolled Steel Floor Plates: ASTM A 786.
4. Steel Bar Grating: ASTM A 1011 or ASTM A 36.

5. Steel Tubing: ASTM A 500, cold-formed; or ASTM A 501, hot-rolled; for exterior installations. Steel tubing shall be hot-dip galvanized coated per ASTM A 53.
6. Steel Pipe: ASTM A 53; type and grade (if applicable) as selected by fabricator and as required for design loading; Schedule 40 (standard weight), unless otherwise shown on the Contract Drawings; black finish, unless galvanized coating is shown on the Contract Drawings.
7. Brackets, Flanges and Fittings: Cast or formed metal of the same type material and finish as supported construction.
8. Gray Iron Castings: ASTM A 48, Class 30.
9. Concrete Inserts: Threaded or wedge type; galvanized ferrous castings, either malleable iron, ASTM A 47 Grade 32510, or cast steel, ASTM A 27. Furnish bolts, washers and shims as required, hot-dip galvanized per ASTM A 153.
10. Stainless steel pit access ladder.

B. Fasteners

1. General

   Zinc-Plated: ASTM B 633, Class Fe/Zn 25 (Service Condition 4–very severe) for exterior use and Class Fe/Zn 8 (Service Condition 2–moderate) where built into exterior walls. Select fasteners for type, grade and class required for application shown on the Contract Drawings.
2. Bolts and Nuts: Regular hexagon head bolts, ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with hex nuts, ASTM A 563, and where indicated, flat washers.
3. Machine Screws: ASME B18.6.3.
4. Lag Bolts: ASME B18.2.1.
5. Wood Screws: Flat head, carbon steel, ASME B18.6.1.
6. Lock Washers: Helical, spring type, carbon steel, ASME B18.21.1.
7. Plain Washers: Round, carbon steel, ASME B18.22.1.
8. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488, conducted by a qualified independent testing agency.
   a. Interior Locations: Carbon steel components zinc-plated complying with ASTM B 633, Class Fe/Zn 8.
   b. Exterior Locations: Alloy Group 1 stainless steel bolts complying with ASTM F 593 and nuts complying with ASTM F 594.

C. Paint

1. Shop Primer for Ferrous Metal

   Zinc-rich primer, complying with SSPC-Paint 20, compatible with substrates and finish paint systems shown on the Contract Drawings. Comply with applicable requirements of Division 9 Section on Painting.

2. Galvanizing Repair Paint

High zinc dust content paint for regalvanizing welds in galvanized steel with dry film containing minimum 94 percent zinc dust content, complying with SSPC-Paint 20.

3. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

D. Grout

Pre-mixed, factory-packaged, nonshrink type, complying with ASTM C 1107, as manufactured by one of the following, or approved equal, for specified application:

1. Non-Metallic:

"Five Star Grout", Five Star Products, Inc., Fairfield, CT
"Masterflow 713 Plus", Master Builders, Inc. (Degussa), Cleveland, OH
"NS Grout", Euclid Chemical Co., Cleveland, OH

2. Metallic:

"Embeco 636 Plus", Master Builders, Inc. (Degussa), Cleveland, OH
"Five Star Metallic Grout", Five Star Products, Inc., Fairfield, CT
"NS Metallic Grout", Euclid Chemical Co., Cleveland, OH

3. Use metallic grout in concealed locations where not exposed to moisture. Use non-metallic nonstaining grout in exposed, wet and exterior locations, unless otherwise shown on the Contract Drawings.

E. Stainless Steel

1. Metal surfaces for fabrication of work which will be exposed to view, use only materials that are smooth and free of blemishes, pitting, seam marks, roller marks, rolled trade names and roughness. remove all pencil or other field markings made during the course of construction.
2. Stainless steel plate, shapes and bars: ASTM A 666-96
3. Stainless steel tubing: ASTM A 312
4. Welded stainless steel mechanical pipe: ASTM A 554

2.02 FABRICATION

A. General

Fabricate items to sizes, shapes, profiles and dimensions required for application shown on the Contract Drawings or approved Shop Drawings, using proven details of fabrication and support. Use materials of type and thickness shown on the Contract Drawings or specified in this Section for various components of Work or, if not shown, as required to produce strength and durability in finished product for intended use.

1. Shop Assembly: Preassemble items in shop to the greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly match mark units for reassembly and coordinated installation.

2. Form exposed Work true to line and level with accurate angles and surfaces and straight sharp edges. Ease exposed edges to a radius of 1/32 inch, unless otherwise shown. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing the Work.

3. Weld corners and seams continuously, complying with AWS D1.1 and D1.3 recommendations as applicable. At exposed connections, grind exposed welds smooth and flush to match and blend with adjoining surfaces.

4. Form exposed connections with hairline joints flush and smooth, using concealed fasteners wherever possible. Exposed fasteners, where used, shall be of type as shown on the Contract Drawings or, if not shown, Phillips flathead (countersunk) screws or bolts.

5. Fabricate joints that will be exposed to weather in a manner to exclude water, or with weep holes where water may accumulate.

6. Cut, drill and tap units to receive anchorage, hardware and similar items.

7. Furnish anchorage of type shown on the Contract Drawings, coordinated with supporting structure. Fabricate and space anchoring devices to provide adequate support for intended use and for design loads. Furnish steel washers, except that where heads and nuts bear on wood structural connections, furnish malleable-iron washers.

8. Galvanizing

   Zinc coating by the hot-dip process for items shown on the Contract Drawings or specified in this Section to be galvanized. Coating thickness shall be as specified in the referenced standards.

   a. Rolled, pressed and forged iron and steel shapes, castings, plates, bars and strip 1/8 inch thick and heavier and assembled fabrications: ASTM A 123.

   b. Iron and steel hardware: ASTM A 153.

B. Steel Ladders

1. Fabricate ladders for locations shown on the Contract Drawings, with dimensions, spacings, details and anchorages as shown. Comply with requirements of ANSI A 14.3 or OSHA 29 CFR 1910, whichever is more stringent.

   a. Side rails shall be 1/2 inch by 2-1/2 inches continuous structural steel flat bar with eased edges, spaced 18 inches apart, unless otherwise shown.

   b. Bar rungs shall be 3/4-inch diameter solid structural steel, spaced 12 inches on center.

2. Fit rungs in centerline of side rails, plug weld and grind smooth on outer rail faces.

3. Top surface of each rung shall be non-slip; either coat the rung with aluminum oxide (corundum) granules set in epoxy resin adhesive or use a type of manufactured rung that is filled with aluminum oxide grout.

4. Support each ladder at top and bottom and at equally spaced intermediate points, so that no unsupported length of ladder shall exceed 5 feet. Use welded or bolted steel brackets, designed for adequate support and anchorage and to hold ladder clear of the wall surface with a minimum 7-inch clearance from wall to centerline of rungs.

5. Extend rails 42 inches above top rung and return rails to wall or structure, unless other secure handholds are furnished. If the adjacent structure does not extend above the top rung, gooseneck the extended rails back to the structure for secure ladder access.

6. Galvanize ladders, brackets and fasteners.

7. Ship's Ladders, if any

Fabricate of open type construction with structural steel channel or steel plate stringers, pipe handrails and open steel grating treads, unless otherwise shown on the Contract Drawings. Furnish brackets and fittings necessary for installation.

C. Ladder Safety Cages

Fabricate from structural steel flat bars, assembled by welding. Comply with requirements of ANSI A 14.3 or OSHA 29 CFR 1910, whichever is more stringent.

1. Top and bottom primary hoops shall be 5/16 inch by 4-inch bar. For cages longer than 20 feet, space intermediate hoops not more than 4 feet on center from 5/16 inch by 2-inch bar between the primary hoops. Vertical flat bars 5/16 inch by 2 inches shall be secured to each hoop at maximum 9-1/2 inches on center, unless otherwise shown on the Contract Drawings. Secure assembled safety cage to ladder rails and adjacent construction shown.

2. Galvanize ladder safety cages and fasteners.

D. Loose Bearing and Leveling Plates

For steel items bearing on masonry or concrete construction, flat, free from warps or twists and of the required thickness and bearing area. Drill plates to receive anchor bolts and for grouting as required. Galvanize after fabrication.

E. Loose Steel Lintels

1. Fabricate from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated.

2. Weld adjoining members together to form a single unit where shown on the Contract Drawings.

3. Size loose steel lintels for equal bearing of 1 inch per foot of clear span, but not less than 8 inches bearing at each side of openings, unless otherwise shown on the Contract Drawings.

4. Galvanize loose steel lintels located in exterior walls.

F. Shelf and Relieving Angles

1. Fabricate from steel angles of sizes indicated and for attachment to concrete framing. Fabricate with slotted holes to receive 3/4 inch bolts, spaced not more than 6 inches from ends and not more than 24 inches on center, unless otherwise shown on the Contract Drawings.

2. Miter and weld corners. Provide open joints at expansion and control joints. Joint width shall be 2 inches larger than expansion or control joint.

3. Galvanize shelf and relieving angles located in exterior walls.

G. Miscellaneous Framing and Supports

1. Furnish miscellaneous steel framing and supports not part of structural steel framework, as required by the Contract Drawings to complete the Work.

2. Fabricate miscellaneous units as shown on the Contract Drawings or, if not shown, of required dimensions to receive adjacent other Work to be retained by framing. Fabricate from structural steel shapes, plates and bars of welded construction using mitered joints for field connection, except as otherwise shown on the Contract Drawings.

3. Equip units with integrally welded anchors for casting into concrete or building into masonry. Furnish inserts if units must be installed after concrete is placed. Space anchors 24 inches on center and furnish minimum anchor units of 1-1/4 inch by 1/4 inch by 8 inch steel straps, except as otherwise shown on the Contract Drawings.

4. Fabricate support for suspended toilet partitions as follows:

   a. Beams

      Continuous steel shapes of size required to limit deflection to L/360 between hangers, but use not less than C8 by 11.5 channels or another shape with equivalent structural properties.

   b. Hangers

      Steel rods, 1/2-inch minimum diameter, spaced not more than 36 inches on center. Thread rods to receive anchor and stop nuts. Fit hangers with wedge-shaped washers for full bearing on sloping flanges of support beam.

   c. Braces and Angles

      Steel angles of size required for rigid support of beam and for secure anchorage.

5. Galvanize miscellaneous framing and supports at exterior locations and where shown on the Contract Drawings.

H. Miscellaneous Steel Trim

1. Fabricate units from structural steel shapes, plates and bars, with continuously welded joints and smooth exposed edges, unless otherwise shown on the Contract Drawings. Miter corners and use concealed field splices wherever possible. Furnish cutouts, fittings and anchorages as required for coordination of assembly and installation with other Work.

2. Galvanize miscellaneous steel trim at exterior locations. Galvanize miscellaneous steel trim at interior locations where shown on the Contract Drawings.

I. Floor Plate

1. Fabricate raised-pattern floor plates from rolled-steel floor plate of thickness and in pattern shown on the Contract Drawings.

2. Abrasive-Surface: Manufacturer's standard abrasive granules rolled into surface of steel plate where shown on the Contract Drawings. Coefficient of friction (COF) shall be 0.6 or higher when tested according to ASTM C 1028.

3. Include steel angle stiffeners and fixed and removable sections with steel bar drop handles for lifting as indicated.

J. Extruded Nosings and Treads

1. Fabricate of material, color, sizes and configurations shown on the Contract Drawings. If not shown, fabricate cast-iron units with an integral abrasive finish. Lengths shall be as required to accurately fit each opening or conditions.

a. Integral abrasive filler shall consist of aluminum oxide (corundum), silicon carbide or a combination of both, in an epoxy resin binder.

b. Solid abrasive type units without ribs.

2. Available Manufacturers

Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:

American Safety Tread Co., Inc., Helena, AL
Balco Inc., Wichita, KS
Safe-T-Metal Co., Inc., Mineola, NY
Wooster Products Inc., Wooster, OH

3. Drill for mechanical anchors with countersunk holes located not more than 4 inches from ends and not more than 12 inches on center, evenly spaced between ends, unless otherwise shown on the Contract Drawings. Use closer spacing if recommended by the manufacturer.

K. Cast Nosings, Treads and Thresholds

1. Fabricate units of material, color, sizes and configurations shown on the Contract Drawings. If not shown, furnish cast-iron units with an integral abrasive finish. Lengths shall be as required to accurately fit each opening or conditions.

a. Cast units with an integral abrasive grit consisting of aluminum oxide (corundum), silicon carbide or a combination of both.

b. Plain surface texture, except where fluted or cross-hatched surfaces are shown on the Contract Drawings.

2. Available Manufacturers

Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:

American Safety Tread Co., Inc., Helena, AL
Balco Inc., Wichita, KS
Safe-T-Metal Co., Inc., Mineola, NY
Wooster Products Inc., Wooster, OH

3. Furnish anchors for embedding units in concrete, either integral or applied to units, as standard with the manufacturer.

4. Drill for mechanical anchors with countersunk holes located not more than 4 inches from ends and not more than 12 inches on center, evenly spaced between ends, unless otherwise shown on the Contract Drawings. Use closer spacing if recommended by the manufacturer.

L. Corner Guards

Fabricate from steel angles of sizes as shown on the Contract Drawings, but not less than 3 by 3 by 5/16 inch extending from floor to 42 inches above floor. Fabricate with 3/8 inch steel base plates for bolting to floor and with 1/4 by 2 inch steel strap braces at top. Furnish at least 2 vertical angles at each location along the length of the ladder where connections are made (except at internal corners), with strap extended between angles and from each angle to wall or column.

M. Wheel Guards

Fabricate from 3/4-inch thick, hollow-core, gray-iron castings of size and shape shown on the Contract Drawings. Fabricate with holes for countersunk anchor bolts and grouting.

N. Pipe Bollards

1. Fabricate from Schedule 40 black steel pipe, unless otherwise shown on the Contract Drawings. Prime and finish with two coats of paint as specified in Division 9 Section on Painting. Cap bollards with 1/4-inch minimum steel plate finished to match pipe, unless indicated to be concrete filled.
2. Fabricate sleeves for bollard anchorage from steel pipe, matching shape and configuration of bollard and with outside dimensions not less than 3/4 inch greater than outside dimensions of bollard. Weld 1/4-inch thick steel plate closures to bottoms of sleeves. Plate closures shall be 1 inch greater in length and width than outside dimensions of sleeves.
3. Reflective marking tape, if any, shall be in color shown and as specified in Division 2 Section on removable retro-reflective pavement marking tape.

O. Welding of Stainless Steel

1. Grind smooth all exposed welds and apply surface finish to match adjacent/adjoining shop finish.

P. Stainless Steel Finish

1. All stainless steel shall be shop finished with non-directional #4 finish. All shop and field welds shall be finished to match.

2.03 SHOP PAINTING

A. Surface Preparation

Prepare ferrous metal surfaces to comply with requirements for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications as follows:

1. Exterior: SSPC-SP 6.
2. Interior: SSPC-SP 3.

B. Apply shop primer to surfaces of metal fabrications, except those that are galvanized or shown on the Contract Drawings to be embedded in concrete or masonry, in compliance with requirements of SSPC-PA 1 for shop painting.

PART 3. EXECUTION

3.01 PREPARATION

Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions and directions for installation of anchorages, such as concrete inserts, sleeves, anchor bolts and miscellaneous items having integral anchors, that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to the construction site in time for installation.

3.02 INSTALLATION

A. Furnish and install anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction, including threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws and other connectors as required.

B. Cutting, Fitting and Placement

Perform cutting, drilling and fitting required for installation of metal fabrications. Set Work accurately in location, alignment and elevation plus level, true and free of rack, measured from established lines and levels. Furnish and install temporary bracing or anchors in formwork for items that are to be built into concrete masonry or similar construction.

C. Fit exposed connections accurately together to form tight hairline joints. Weld connections that are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Grind exposed joints smooth and touch-up shop paint coat. Do not weld, cut or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are intended for bolted or screwed field connections.

D. Field Welding

Comply with AWS D1.1 and D1.3 for procedures of manual shielded metal-arc welding, appearance and quality of welds made and methods used in correcting welding Work.

E. Setting Loose Plates

1. Clean concrete and masonry bearing surfaces of bond-reducing materials and roughen to improve bond to surfaces. Clean bottom surface of bearing plates or surfaces.
2. Set loose leveling and bearing plates on wedges or other adjustable devices. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims, but if protruding, cut off flush with edge of bearing plate before packing with grout.

F. Miscellaneous Framing and Supports

Install framing and supports in compliance with requirements of items being supported, including manufacturer's written instructions and requirements.

G. Supports for Toilet Partitions

Anchor supports securely to and rigidly brace from overhead building structure.

H. Nosings, Treads and Thresholds

1. Install with anchorage system indicated complying with manufacturer's recommendations.
2. Apply black bituminous coating to concealed bottoms, sides and edges of cast-iron units set into concrete.
3. Seal thresholds exposed to exterior with elastomeric sealant, complying with the applicable Division 7 Section on Sealants, for a watertight installation.

I. Wheel Guards

Anchor wheel guards to concrete or masonry construction complying with manufacturer's instructions. Fill cores solidly with concrete.

J. Bollards

1. Install bollards vertical to line and grade shown on the Contract Drawings.
2. Anchor bollards with 4 bolts through bottom plate with minimum 4 inch embedment into concrete, by core-drilling and grouting into concrete or by anchoring in place with concrete footings, as shown on the Contract Drawings.
3. Vibrate and tamp concrete to consolidate. Support and brace bollard until concrete has cured.
4. Seal joint between concrete footings and surrounding pavement and sidewalk in accordance with Division 2 Section on Pavement Joint Sealing.

3.03 ADJUSTING

A. Touch-Up Painting

1. Shop Painted Surfaces: Immediately after erection, clean field welds, bolted connections and abraded areas of shop paint. Paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 for touching up shop painted surfaces. Apply by brush or spray in a minimum dry film thickness of 2.0 mils.
2. Galvanized Surfaces: Immediately after erection, clean field welds, bolted connections and abraded areas. Apply galvanizing repair paint to comply with ASTM A 780.

END OF SECTION

SECTION 05506

MISCELLANEOUS STEEL

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts and Samples" of Division 1 - GENERAL PROVISIONS:

A. Product Data

Manufacturer's technical information, specifications, anchor details and installation instructions for miscellaneous steel products used, including grout and paint products.

B. Shop Drawings

For fabrication and erection of miscellaneous metal fabrications. Include plans, elevations and details of sections and connections. Show anchorage and accessory items. Furnish templates for anchor and bolt installation under other Sections if required.

C. Samples

Representative samples of materials, color, texture or design of finished products for nosings, treads and thresholds, if any.

D. Design Calculations

Submit design calculations signed and sealed by a professional engineer licensed in the state in which Work is to be performed, showing compliance with Design and Performance Requirements loading criteria.

E. Qualifications

1. Professional Engineer: Include experience qualifications.
2. Fabricator: Experience, in-service performance and capability qualifications.
3. Welder: Evidence of current AWS certification.

F. Sustainable Design Submittal Requirements:

The Contractor shall submit the Sustainable Design certification items listed herein. Sustainable Design submittals shall include the following:

1. A completed Sustainable Design Materials Certification Form (SDMCF), appended to Division 1 - GENERAL PROVISIONS. Information to be supplied for this form shall include:
   a. Cost breakdowns for the materials included in the Contractor's Work. Cost breakdowns shall include total cost plus itemized material costs.
   b. Where required by the Sustainable Design Performance Criteria of this Section, the following information shall also be supplied:
      (1) The amount of post-consumer and/or post-industrial recycled content in the supplied product(s).
      (2) The manufacturing location of the supplied product(s).

(3) The location (source) of the raw materials used to manufacture the supplied product(s).

(4) The VOC content of all adhesives, sealants, paints, and coatings applied on site as part of this Work.

2. Published product literature or letters of Certification, provided from the product manufacturer on the manufacturer's letterhead, to verify the product information supplied for the SDMCF.

3. Product cut sheets for materials that meet the SDMCF.

4. Material Safety Data Sheets (MSDS), for applicable products. Applicable products include, but are not limited to field-applied adhesives, sealants, carpets, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).

5. The Sustainable Design submittal information shall be assembled into one (1) package per Section or trade, and sent to the Engineer.

END OF APPENDIX "A"

DIVISION 9

SECTION 09910

PAINTING

PART 1. GENERAL

1.01 SUMMARY

A. This Section specifies requirements for shop and construction site application of paint as shown on the Contract Drawings.

B. Work of this Section includes surface preparation and painting of the following items and surfaces:

1. Exterior and interior painting in accordance with Appendix "B" to this Section.
2. Exposed bare and covered pipes, ducts and conduits, including color coding (if any), and hangers and supports.
3. Galvanized steel, iron work and miscellaneous metal items, and surfaces of architectural, mechanical and electrical items, if any.
4. Architectural woodwork and casework, if any.
   a. Surface preparation and shop staining or painting of architectural woodwork and casework is specified in other Sections of the Specifications.

C. These and similar items shall not be painted:

1. Items with factory-applied top coat.
2. Finished metal surfaces of anodized aluminum, stainless steel, chromium plate, copper, bronze and similar finished metals.
3. Concealed pipes, ducts and conduits.
4. Concealed or inaccessible surfaces.
5. Code required labels such as Underwriters Laboratories and Factory Mutual.
6. Identification, performance rating, name or nomenclature plates of mechanical, electrical and fire equipment.
7. Operating and moving parts of operating units and mechanical and electrical equipment such as: valves, damper operators, linkages, sinkages, sensing devices, motors, shafts and sheaves.
8. Surfaces shown or scheduled on the Contract Drawings to receive spray-applied fire resistive material.

D. Definitions: "QC" refers to quality control or a quality control program. This is a methodology employed by the Contractor to ensure compliance with Contract requirements.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

American Society for Testing and Materials (ASTM)

ASTM A 780	Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
ASTM D 521	Standard Test Methods for Chemical Analysis of Zinc Dust (Metallic Zinc Powder).
ASTM D 523	Test Method for Specular Gloss.
ASTM D 562	Standard Test Method for Consistency of Paints Measuring Krebs Unit (KU) Viscosity Using a Stormer-Type Viscometer.
ASTM D 1475	Standard Test Method for Density of Liquid Coatings, Inks, and Related Products.
ASTM D 2369	Standard Test Method for Volatile Content of Coatings.
ASTM D 2371	Standard Test Method for Pigment Content of Solvent-Reducible Paints.
ASTM D 2697	Standard Test Method for Volume Nonvolatile Matter in Clear or Pigmented Coatings.
ASTM D 3359	Standard Test Method for Measuring Adhesion by Tape Test.
ASTM D 4263	Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.
ASTM D 4285	Standard Test Method for Indicating Oil or Water in Compressed Air.
ASTM D 4414	Standard Practice for Measurement of Wet Film Thickness by Notch Gages.
ASTM D 4417	Standard Test Methods for Field Measurement of Surface Profile of Blast Cleaned Steel.
ASTM D 4541	Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers.
ASTM D 6386	Standard Practice for Preparation of Zinc (Hot-Dip Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Painting.
ASTM F 1869	Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor using Anhydrous Calcium Chloride.

Northeast Protective Coating Committee (NEPCOAT)

NEPCOAT QPL	Qualified Products List

The Society for Protective Coatings (SSPC)

SSPC-PA 1	Shop, Field and Maintenance Painting of Steel
SSPC-PA 2	Measurement of Dry Coating Thickness with Magnetic Gages.
SSPC-SP 1	Solvent Cleaning.
SSPC-SP 2	Hand Tool Cleaning.

SSPC-SP 3	Power Tool Cleaning.
SSPC-SP 5	White Metal Blast Cleaning.
SSPC-SP 6	Commercial Blast Cleaning.
SSPC-SP 7	Brush-Off Blast Cleaning.
SSPC-SP 10	Near-White Blast Cleaning.
SSPC-SP 11	Power Tool Cleaning to Bare Metal.
SSPC-VIS 1	Visual Standard for Abrasive Blast Cleaned Steel.

1.03 AMBIENT TEMPERATURE AND HUMIDITY REQUIREMENTS

A. Comply with the manufacturer's technical data sheets subject to approval by the Engineer as to environmental conditions under which paint and finishes may be applied, and with the following:

1. Do not apply paints in rain, snow, fog or mist, or when relative humidity exceeds 85 percent. Painting may be performed during inclement weather if areas and surfaces to be painted are enclosed and heated within temperature limits specified by the manufacturer(s) during application and drying periods.

2. Apply solvent based paint only when temperature of surfaces to be painted and surrounding air temperatures are between 45 degrees F and 95 degrees F.

3. Apply water-based paint only when temperature of surfaces to be painted and surrounding air temperatures are between 50 degrees F and 90 degrees F.

4. Apply paint to surfaces only when the surface temperature is at least 5 degrees F above the dew point.

5. Apply primer to non-metal surfaces only when the moisture content of surfaces meets the following criteria:

   a. Gypsum Wallboard: 0.5 percent maximum, when measured with an electronic moisture meter.

   b. Wood: 15 percent maximum, when measured with an electronic moisture meter.

   c. Concrete, Masonry and Plaster Walls: No visible moisture when measured in accordance with ASTM D 4263.

6. Do not apply primer to concrete floors unless the moisture vapor emission rate is less than 3 pounds/1,000 square feet/24 hours when tested in accordance with ASTM F 1869.

B. When painting and/or abrasive blasting operations are performed out of doors, no Work shall be performed when the U.S. Weather Bureau forecasts precipitation to commence prior to or within two hours after completion of such procedures and application of paint.

1.04 QUALITY ASSURANCE

A. Paint System Compatibility

The paint system, including all primers and undercoats, shall be produced by the manufacturer of the topcoat. Where this is not possible (as in cases of specialized primers used in the coating of miscellaneous components) review other Sections of the Specifications to determine the primer, surface preparation and treatment for the substrates and items to be field painted or finished as Work of this Section.

1. Notify the Engineer in writing of compatibility problems associated with the Work of this Section and substrates primed under other Sections of these Specifications.

B. Where shown on the Contract Drawings, provide not less than a 100 square foot full-coat finish sample(s) on actual surface(s) of coating material to be applied as Work of this Section, at a location selected by the Engineer. Such sample(s), when approved by the Engineer, may be incorporated into the Work and shall establish standards for color, texture and workmanship for the remainder of the Work of this Section.

C. Painting of Structural Steel - Requirements

All painting of structural steel must be done by firms that are approved by the Engineer. The firm shall have as a minimum the following:

1. Technical Capabilities

a. Shops shall have areas available for specific operations, such as: receiving and lay down for steel to be coated; pre-cleaning of items to be coated; surface preparation; coating application; drying and curing of coated items; storage of coating materials.

b. Blasters and painters must be trained. This training shall consist of at least 4 hours of instruction by a qualified instructor and shall cover various types of surface preparation equipment, paints and application equipment. Maintain instructor qualifications and training records and produce them when requested.

c. There shall be procedures or processes in place to record specifications and revisions and to clarify ambiguous or incomplete specifications.

d. There shall be a procedure for informing quality control and production personnel of job/shop procedures to meet requirements of this Specification.

2. Quality Control (QC)

The entity performing painting of steel and galvanized steel shall have a written quality control program. The program shall contain, but not be limited to, the following:

a. The qualifications of QC staff, including training records and experience.

b. The authority of QC staff and reporting lines in the firm organization chart.

c. Standards and specifications used by QC staff for inspection purposes.

d. Inspection reports and other records documenting compliance with Authority requirements.

e. Inspection equipment and calibration standards used by QC staff and calibration procedures.

f. Procedure for QC staff to advise the shop foreman, in writing, of non-conforming Work.

3. Contractor's Responsibility

a. The Contractor is responsible for Quality Control, which entails the daily inspection of all painting. The Quality Control Program shall ensure that coating systems are applied according to the coating manufacturer's technical data sheets subject to approval by the Engineer for surface preparation, ambient conditions, application parameters, curing and film thickness.

b. The Engineer will perform Quality Assurance inspections to verify that the Contractor's Quality Control program is being followed.

4. Technical Advisor

Obtain the services of a technical advisor employed by the coating manufacturer to assist the Engineer and the Contractor during this Work. The technical advisor shall be a qualified representative, approved by the Engineer and shall be at the shop or work site prior to the opening of the coating containers. Consult with the technical advisor for instruction in the proper mixing of components and application of the materials. Arrange for the technical advisor to remain at the site until the Engineer is satisfied that the Contractor's personnel have mastered the proper handling, mixing and application of the materials.

5. Schedule and Engineer Approval

a. Submit a schedule for surface preparation and painting at least 30 days prior to beginning Work.

b. At least 10 days prior to painting, notify the Engineer.

c. Do not paint steel until approval to proceed is given by the Engineer.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in the manufacturer's original unopened packages and containers bearing manufacturer's name, label and the following information:

1. Manufacturer's name.
2. Name or title of material.
3. Manufacturer's stock number and date of manufacture.
4. Shelf life.
5. Contract or order number under which the material has been ordered.
6. Lot and batch numbers.

B. Store materials not in actual use in tightly covered containers at a minimum ambient temperature of 45 degrees F and a maximum temperature of 90 degrees F in a well-ventilated area. Maintain containers used in storage of coatings in a clean condition, free of foreign materials and residue. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take all necessary precautionary measures to ensure that workmen and Work areas are adequately protected from fire hazards and health hazards resulting from handling, mixing and application of materials.

C. Provide paint ready mixed to approved colors. Construction site tinting is prohibited.

D. Extra Material

Where requirements for extra materials are shown on the Contract Drawings, deliver to the Engineer prior to issuance of the Certificate of Final Completion not less than one gallon of each color of each coating applied as Work of this Section. Deliver extra material in the manufacturer's original, unopened containers, clearly labeled with product identification and Contract number.

1.06 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MANUFACTURERS

A. Provide paint systems and products of manufacturers in accordance with Appendix "B" to this Section, or approved equal.

B. When materials or products proposed to be used are products of manufacturers other than manufacturers specified in Appendix "B" to this Section, submit product information in accordance with the requirements of Division 1 - GENERAL PROVISIONS clause entitled "Substitution".

2.02 MATERIALS

A. Provide colors as shown on the Contract Drawings, or if not shown as required by the Engineer.

2.03 MIXES

A. Verify that the paint to be mixed has not exceeded its shelf life.

B. Mix and prepare painting materials in accordance with the manufacturer's technical data sheets subject to approval by the Engineer and 1.05 C.

C. Stir materials before application, and as required during application to produce a mixture of uniform density. Do not stir surface film into material. Remove film and, if necessary, strain material before using.

D. Mix only complete kits of multi-component materials.

E. Colors

Each undercoat shall be a contrasting color to facilitate identification of each coat where multiple coats are to be applied as shown on the Contract Drawings.

2.04 ABRASIVES

A. Provide expendable or recyclable abrasives that are dry and free of oil, grease and corrosion-producing or other deleterious contaminants.

B. For the preparation of steel that is specified to be blasted, provide abrasives that are sized to produce a sharp, angular, uniform anchor pattern with a profile height of 2-3 mils, unless the requirements of the coating manufacturer are more restrictive. In this case, comply with profile requirements specified by coating manufacturer.

2.05 EQUIPMENT

A. Surface Preparation Equipment

1. Provide brushes, discs, wheels, scrapers, water jetting, blast cleaning and other surface preparation equipment sized properly to conduct the Work as specified in this Section and shown on the Contract Drawings.

2. Provide specialized equipment for the surface preparation of difficult-to-clean areas. Specialized equipment may include, but is not limited to:

a. Angled nozzles or short nozzles for abrasive blast cleaning.

b. Spin blast equipment.

B. Paint Application Equipment

1. Provide paint brushes, rollers and spray equipment to conduct the Work as specified in this Section.

2. Provide specialized equipment as required for the painting of difficult-to-paint areas. Specialized equipment may include, but is not limited to:

a. Angled brushes for backs of nuts and bolts and other hard to reach areas.

b. Mitts, daubers or other methods to supplement brush application.

PART 3. EXECUTION

3.01 PREPARATION

A. General

Perform preparation and cleaning procedures in accordance with the paint manufacturer's technical data sheets subject to approval by the Engineer and as specified in this Section, for each particular substrate condition.

1. Ensure paint system compatibility in accordance with 1.04 A.

2. Do not conduct final surface preparation which exposes the substrate to damp environmental conditions, or when the surface temperature is less than 5 degrees F above the dew point.

3. Remove hardware, hardware accessories, machined surfaces, lighting fixtures and similar items in place and not to be painted, or provide surface-applied protection prior to surface preparation and painting of items and adjacent surfaces. Following completion of painting of each space or area, reinstall removed items.

4. When previously painted surfaces requiring field top coating are glossy (greater than 50 units at 60 degrees), first dull them using a 120 grit or greater (finer) grade sandpaper.

5. Thoroughly clean and remove all dust, oil, grease and other contaminants from surfaces to be painted. Schedule cleaning and painting so that contaminants from cleaning process will not fall onto wet, newly-painted surfaces.

B. Surface Preparation

1. Steel

Remove slag, flux deposits, weld splatter and surface irregularities such as slivers, tears, fins and hackles; follow AWS Guidelines. Grind any resulting burrs smooth, including burrs around holes, if any. Do not remove any welding material that will weaken weld strength.

Prior to preparation, break sharp edges such as those created by flame cutting and shearing. Do not break rolled edges of angles, channels and wide flange beams without Engineer's approval.

Clean surfaces to remove oil, grease, soil and other soluble contaminants in accordance with SSPC-SP1 Solvent Cleaning. Where shown on the Contract Drawings, prepare surface in accordance with one or more of the following: SSPC-SP 2, SSPC-SP 3, SSPC-SP 5, SSPC-SP 6, SSPC-SP 7, SSPC-SP 10 and SSPC-SP 11. For welds, edges and holes, prepare surfaces to the same cleanliness level and profile as the surrounding steel.

a. Steel – Blast Cleaned

Unless otherwise shown on the Contract Drawings, perform abrasive blasting in accordance with SSPC-SP 10 Near White Blast Cleaning using a production line shot and grit blast machine or by air blast. Maintain the abrasive work mix such that the final surface profile is within the required range. Use SSPC-VIS 1 to evaluate the degree of cleaning.

b. Provide expendable or recyclable abrasives that are dry and free of oil, grease, and corrosion producing, or other deleterious contaminants. Daily (or more frequently if required) check the abrasive for oil, grease or dirt contamination with the vial test. The test consists of adding a sample of abrasive from the inside of the blast machine to a sealable vial filled with deionized water. The vial is shaken for one minute and allowed to settle for five minutes. If any oil or grease is floating on top of the water, then the abrasive is contaminated. If the water becomes cloudy, then it contains dirt. Do not use contaminated or dirty abrasives to blast steel surfaces.

c. Compressed Air Cleanliness

(1) Provide compressed air that is free from moisture and oil contamination.

(2) Use the white blotter test in accordance with ASTM D 4285 to verify the cleanliness of the compressed air. Conduct the test at least once per day for each compressor system. Sufficient freedom from oil and moisture is confirmed if soiling or discoloration are not visible on the paper.

(3) If air contamination is observed, change filters, clean traps, add moisture separators or filters or make adjustments as necessary to achieve clean, dry air. Reinspect surfaces prepared or coated since the last satisfactory test and repair, at no cost to the Authority, defective Work caused by contaminated air.

d. Surface Profile

The steel surface profile shall be 2-3 mils. Measure the surface profile of each girder, beam or diaphragm at three locations, paying special attention to areas that may have been shielded during blasting. Measure the surface profile using Testex Replica Tape in accordance with ASTM D 4417. File the impressed tapes with the Quality Control inspection records.

2. Galvanized Steel Surfaces

a. Hot-dip galvanizing shall be by the "dry kettle" process. Do not quench galvanized items following galvanizing nor shall galvanized surfaces be treated with waxes, oils or chromates.

b. Chemical Treatment

Prepare the surface for painting in accordance with ASTM D 6386 Zinc Phosphate Treatment. Follow the manufacturer's instructions for use of the materials. Prior to chemical treatment, remove white rust and other contaminants.

3. Aluminum Surfaces

Clean surfaces of oil, grease, dirt, and other foreign substances. Do not damage the aluminum. Use solvent cleaning in accordance with SSPC-SP 1.

4. Cementitious Materials

Prepare cementitious surfaces (concrete, concrete block and cement plaster) by removing efflorescence, chalk, dust, dirt, grease and oils. Remove oil and grease by detergent water cleaning and steam cleaning. Do not use solvents. For concrete surfaces, after removing oil and grease, prepare the surface for painting by abrasive blasting.

a. For concrete and other cementitious materials, perform appropriate tests as described in 1.03 A.5 to ensure that the moisture content is at or below the limit for painting and use only materials that are capable of being applied to alkaline surfaces. Do not paint over surfaces where moisture content exceeds that permitted in 1.03 A.5.

5. Wood

Wipe off dust and grit from miscellaneous wood items and millwork prior to priming, using a solution of tri-sodium phosphate and water. Rinse off surfaces with clean water. Spot coat knots, pitch streaks and sappy sections with sealer. Fill nail holes and cracks after primer has dried and sand with a fine grade sand paper between coats. Back prime interior and exterior woodwork.

a. Where clear finishes are shown on the Contract Drawings, ensure that fillers match wood tint. Work fillers into grain. Wipe excess from the surface.

3.02 APPLICATION

A. General

1. Apply paint in accordance with SSPC-PA 1 and the manufacturer's technical data sheets subject to approval by the Engineer. Use applicators and techniques best suited for substrate and type of material being applied. Follow the manufacturer's technical data sheets, subject to approval by the Engineer, for cure times, temperature and humidity conditions and recoat times as the individual coats of the specified system are applied.

   a. For blast cleaned steel, apply the prime coat on the same day (within 12 hours) that the substrate was cleaned. If the base substrate is allowed to remain uncoated for more than 12 hours, or rerusting is observed, reblast the steel prior to painting.

2. Do not apply paint in areas where dust is being generated.

3. Apply each coat at proper consistency. After each coat has dried, visually examine for pinholes, fish eyes, blisters, runs, sags and missed areas. Repair defects and repaint.

4. Apply additional coats when undercoats, stains or other conditions show through top coat of paint, until paint film is of uniform finish, color and appearance. Apply stripe coats of the prime and finish coat to all edges, corners, crevices, welds and other surface irregularities.

5. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Paint surfaces behind permanently-fixed equipment or furniture with prime coat only before final installation of equipment.

6. Paint interior surfaces of ducts, where visible through registers or grilles, with a flat, non-specular black paint.

7. Paint backsides of access panels, and removable or hinged covers to match exposed surfaces.

8. Finish exterior doors on tops, bottoms and side edges the same as exterior faces.

9. Sand lightly between each succeeding enamel or varnish coat.

10. Omit first coat (primer) on metal surfaces which have been shop-primed.

11. Paint primed surfaces to color shown on the Contract Drawings.

12. Where shown on the Contract Drawings, prime and paint the following to match adjacent surface: exposed bare pipes, ducts, conduits, boxes, hangers, brackets and supports, except where items are covered with a prefinished coating.

13. Color code equipment, piping conduit and exposed ductwork as shown on the Contract Drawings.

B. Scheduling Painting

Apply paint to surfaces that have been cleaned, pretreated or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

1. Allow sufficient time between successive coats to permit proper drying. Abide by the coating manufacturer's minimum and maximum recoat times subject to approval by the Engineer. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.

C. Coating Thickness

Apply materials at the manufacturer's recommended spreading rate, to establish a total dry film thickness as shown on the Contract Drawings or, if not shown, as recommended by coating manufacturer and as approved by the Engineer. Monitor paint application rate by use of wet film thickness gage in accordance with ASTM D 4414. For metal surfaces, measure dry film thickness in accordance with SSPC-PA 2. Use a non-ferrous guage to measure coating thickness on galvanized surfaces or aluminum.

1. Give special attention to ensure that surfaces such as edges, corners, crevices, welds and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.

2. Apply additional coating to areas of insufficient thickness. Use care during application to assure that all repairs blend in with the surrounding surfaces.

3. Unless directed otherwise by the Engineer, remove excessive coating thickness and reapply the affected coat(s).

D. Coating Adhesion

1. Apply all coats in such a manner to assure that they are well-adhered to each other and to the substrate. If the application of any coat causes lifting of an underlying coat, or if there is poor adhesion between coats or to the substrate, remove the coating in the affected area to adjacent sound, adherent coating and reapply the material.

2. If adhesion is suspect, conduct adhesion tests in accordance with ASTM D 3359 or ASTM D 4541 as directed by the Engineer and repair all test areas. The acceptance criteria for the testing will be established by the Engineer. Replace all defective coating that is revealed by the testing.

E. Completed Work

Match approved samples for color, texture and coverage. Remove, refinish or repair Work not in compliance with the requirements specified in this Section.

F. Field Painting – Fasteners

1. After erection or installation, all rust, scale, dirt, grease and other foreign material on bolts, nuts and washers shall be completely removed by solvent cleaning in accordance with SSPC-SP 1 followed by hand tool cleaning SSPC-SP 2, or power tool cleaning SSPC-SP 3.

2. Apply brush applications of primer and intermediate to bolts, nuts and washers after tensioning. Apply topcoat by spray application. Give careful attention to bolted connections to ensure that all bolts, nuts and washers are fully coated.

G. Repair of Damaged and Unacceptable Coatings

1. Surface Preparation of Localized Areas

   a. Repair localized damage, corrosion and unacceptable coatings.

   b. Prepare the surface by cleaning in accordance with SSPC-SP 1 Solvent Cleaning followed by SSPC-SP 2 Hand Tool Cleaning or SSPC-SP 3 Power Tool Cleaning. Use a solvent that is acceptable to the paint manufacturer.

   c. For previously blast-cleaned steel, if the damage exposes the substrate, remove all loose material and prepare the steel in accordance with SSPC-SP 11.

   d. For galvanized steel, repair damaged galvanizing in accordance with ASTM A 780. Use a zinc-rich coating containing a minimum of 92 percent zinc in the dry film.

2. Surface Preparation of Extensive Areas

   a. Repair extensive areas of damage or unacceptable coating by methods acceptable to the Engineer, based on the nature of the defect.

   b. For previously blast-cleaned steel, blast surfaces back to original requirements. Use extreme care to avoid overblast damage to the surrounding coating.

3. Feathering of Repair Areas

   a. Feather the existing coatings surrounding each repair location. Feather for a distance of 1 to 2 inches to provide a smooth, tapered transition into the coating.

   b. Verify that the edges of coating around the periphery of the repair areas are tight and intact by probing with a putty knife in accordance with the requirements of SSPC-SP 3 Power Tool Cleaning. Roughen the existing coating in the feathered area to assure proper adhesion of the repair coats.

H. Coating Application in Repair Areas

1. When the bare substrate is exposed in the repair area, apply all coats of the system to the specified thicknesses.

2. When the damage does not extend to the bare substrate, apply only the affected coats.

3. Maintain the thickness of the system in overlap areas within the specified total thickness tolerances.

I. Clean-up

During progress of Work, remove discarded paint materials, rubbish, cans and rags daily. Upon completion of painting Work, clean window glass and other paint-spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces.

3.03 PAINT TESTING

A. The Authority reserves the right to conduct tests of the materials at any time, and any number of times during shop or field painting.

1. The Engineer may sample the paint(s) being used. A representative pint or quart sample of each component of paint(s) at the construction site will be transferred to metal containers, identified, sealed and certified in the presence of the Contractor.

2. Tests on paint samples may be conducted by the Engineer to confirm manufacturer's submittals made under Appendix "A". Any or all of the following tests may be conducted:

   a. Viscosity (Stormer @ 25 degrees C) KU, ASTM D 562.

   b. Percent Total Solids by Weight, ASTM D 2369.

   c. Volatile Organic Compounds (VOC), ASTM D 2369.

   d. Weight per Gallon, ASTM D 1475.

   e. Volume Nonvolatile Matter, ASTM D 2697.

   f. Pigment Content, ASTM D 2371.

   g. Percent Metallic Zinc in Primer, ASTM D 521.

   h. Specular Gloss of Finish Coat, ASTM D 523.

   i. Infrared Identification - of individual components and of the mixed coatings for 2 component materials. Obtain each spectrum by sandwiching a small quantity (i.e., 1-2 drops) of material between 2 potassium bromide plates and obtaining a transmission infrared spectrum. For the mixed and cured material, use a solid sampling technique.

3. If the Engineer determines upon review of laboratory tests that the material being used does not comply with the requirements specified in this Section, he may direct the Contractor to stop painting Work and remove non-complying paint, to repaint surfaces coated with rejected paint or to remove rejected paint from previously painted surfaces if, upon repainting with specified paint, the two coatings are incompatible.

3.04 PROTECTION

Protect other adjacent Work against damage by painting and finishing Work. Correct damage by cleaning, repairing or replacing, and repainting, as approved by the Engineer.

A. Provide "Wet Paint" signs to protect newly painted finishes. After completion of painting operations, remove temporary protective wrappings for protection of adjacent and existing conditions.

B. At completion of Work of other trades, touch-up and restore damaged or defaced painted surfaces.

C. Ensure that coated items are not shipped until cured. Protect all fully coated and cured items from handling and shipping damages using padded slings, dunnage, separators and tie-downs.

END OF SECTION

SECTION 09910

PAINTING

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts and Samples" of Division 1 - GENERAL PROVISIONS:

A. Product Data

Manufacturer's technical data sheets including the following information for each coating:

- Volume Solids
- VOC
- DFT range
- DFT maximum
- Zinc content (zinc primers only)
- Slip coefficient (zinc primers only)
- Substrates
- Surface preparation
- Profile
- Storage temperature
- Primers
- Topcoats
- Application equipment, including touchup
- Mixing
- Thinners
- Thinning maximum
- Sweat-in-time
- Pot life
- Application schedule -
- Minimum surface/air temperatures and humidity
- Maximum surface/air temperatures and humidity
- Drying schedule -
- Dry to handle
- Dry to topcoat
- Maximum recoat
- Cure

B. Samples

1. Submit in color(s) shown on the Contract Drawings, or if not shown, in color(s) as selected by the Engineer from manufacturer's color chart.

2. On a 12 inch by 12 inch hardboard or metal panels, two samples of each paint and coating material, if required by the Engineer. If more than one application method is to be used, submit two samples of each paint and coating material for each application method.

3. Identify each sample as to manufacturer, color name and number, location and application.

   a. On actual wood surfaces, two 4 inch by 8 inch samples of each natural and stained wood material. Identify each sample as to manufacturer and location application.

C. Submit to the Engineer one copy of U.S. Department of Labor, Material Safety Data Sheets (MSDS) for hazardous chemicals utilized during the Work of this Section.

D. Submit the paint applicator's qualifications and/or experience.

E. Submit a copy of the quality control program, as required by 1.04 C.2, if requested by the Engineer.

F. Submit instructor qualifications and training records for blasters and painters as required by 1.04 C.1.b, if requested by the Engineer.

G. Submit copy of daily inspection reports if requested by the Engineer.

END OF APPENDIX "A"

SECTION 09910

PAINTING

APPENDIX "B"

PAINT SCHEDULE

A. Exterior

Surface	System Designation	Primer	Manufacturer's Product	2nd Coat	Manufacturer's Product	Top Coat	Manufacturer's Product
Concrete Gloss	C-1G	Water Based Primer Sealer	Carboline Carbocrylic 120	Acrylic Gloss	Carboline Carbocrylic 3359 DTM	Acrylic Gloss	Carboline Carbocrylic 3359 DTM
			PPG Perma-Crete 4-603		PPG Pitt-Tech Plus 90-1310		PPG Pitt-Tech Plus 90-1310
			SW Loxon Acrylic Primer A24W8300		SW DTM Acrylic B66-100 Series		SW DTM Acrylic B66-100 Series
Concrete Semi-Gloss	C-1S	Water Based Primer Sealer	Carboline Carbocrylic 120	Acrylic	Carboline Sanitile 155	Acrylic Semi-Gloss	Carboline Sanitile 155
			PPG Perma-Crete 4-603		PPG Pitt-Tech Plus 90-1210		PPG Pitt-Tech Plus 90-1210
			SW Loxon Acrylic Primer A24W8300		SW DTM Acrylic B66-200 Series		SW DTM Acrylic B66-200 Series

Surface	System Designation	Primer	Manufacturer's Product	2nd Coat	Manufacturer's Product	Top Coat	Manufacturer's Product
Concrete Masonry Gloss	CM-1G	Water Based Block Filler	Carboline Sanitile 100 SW Heavy Duty Block Filler B42W46 PPG Speedhide 6-15	Acrylic Gloss	Carboline Carbocrylic 3359 DTM SW DTM Acrylic B66-100 Series PPG Pitt-Tech Plus 90-1310	Acrylic Gloss	Carboline Carbocrylic 3359 DTM SW DTM Acrylic B66-100 Series PPG Pitt-Tech Plus 90-1310
Concrete Masonry Semi-Gloss	CM-1S	Water Based Block Filler	Carboline Sanitile 100 PPG Speedhide 6-15 SW Heavy Duty Block Filler B42W46	Acrylic Semi-Gloss	Carboline Sanitile 155 PPG Pitt-Tech Plus 90-1210 SW DTM Acrylic B66-200 Series	Acrylic Semi-Gloss	Carboline Sanitile 155 PPG Pitt-Tech Plus 90-1210 SW DTM Acrylic B66-200 Series
Cement Plaster Walls & Soffits Gloss	P-1G	Water Based Primer Sealer	Carboline Carbocrylic 120 PPG Perma-Crete 4-603 SW Loxon Acrylic Primer A24W8300	Alkyd Gloss	Carboline Carbocoat 30R PPG 95-5000 Series SW Industrial Enamel HS B54Z-400 Series	Alkyd Gloss	Carboline Carbocoat 30R PPG 95-5000 Series SW Industrial Enamel HS B54Z-400 Series
Steel Gloss	S-1G*	Organic Zinc Rich	Carboline Carbozinc 859 PPG PMC Amercoat 68 HS SW Zinc Clad III HS	Epoxy	Carboline Carboguard 888 PPG PMC Amercoat 399 SW Macropoxy 646	Aliphatic Polyurethane Gloss	Carboline Carbothane 134 HG PPG PMC Amercoat 450 H SW Acrolon 218 B65-600

*Paint system S-1G must be on the current New England Protective Coatings (NEPCOAT) Qualified Product List.

Surface	System Designation	Primer	Manufacturer's Product	2nd Coat	Manufacturer's Product	Top Coat	Manufacturer's Product
Steel Gloss	S-2G	Inorganic Zinc Rich	Carboline Carbozinc 11 HS	Epoxy	Carboline Carboguard 893	Aliphatic Polyurethane Gloss	Carboline Carbothane 134 HG
			PPG PMC Dimetcote 9 HS		PPG PMC Amercoat 385		PPG PMC Amercoat 450 H
			Sherwin-Williams Zinc Clad II		Sherwin Williams Macropoxy 646		Sherwin-Williams Acrolon 218HS B65-600
Steel Semi-Gloss	S-1S*	Organic Zinc Rich	Carboline Carbozinc 859	Epoxy	Carboline Carboguard 888	Aliphatic Polyurethane Semi-Gloss	Carboline Carbothane 133 LH
			PPG PMC Amercoat 68 HS		PPG PMC Amercoat 399		PPG PMC Amercoat 450 HSG
			SW Zinc Clad III HS		SW Macropoxy 646		SW Acrolon 218 HS

*Paint system S-1S must be on the current New England Protective Coatings (NEPCOAT) Qualified Product List.

Steel Semi-Gloss	S-2S	Inorganic Zinc Rich	Carboline Carbozinc 11 HS	Epoxy	Carboline Carboguard 893	Aliphatic Polyurethane Semi-Gloss	Carboline Carbothane 133 LH
			PPG PMC Dimetcote D9 HS		PPG PMC Amercoat 385		Amercoat 450 HSG
			Sherwin-Williams Zinc Clad II		Sherwin-Williams Macropoxy 646		Sherwin-Williams Acrolon 218 HS

Surface	System Designation	Primer	Manufacturer's Product	2nd Coat	Manufacturer's Product	Top Coat	Manufacturer's Product
Steel Semi-Gloss	S-3S	Aluminum Epoxy Mastic	Carboline Carbomastic 15 PPG PMC Amerlock 2 AL SW Epoxy Mastic Aluminum II	Epoxy	Carboline Carboguard 890 PPG PMC Amercoat 385 SW Macropoxy 646	Aliphatic Polyurethane Semi-Gloss	Carboline Carbothane 133 LH PPG PMC Amercoat 450 HSG SW Acrolon 218 HS
Galvanized & Aluminum Gloss	N-1G	Primer	PPG Pitt-Tech Plus 90-912 SW Pro-Cryl B66 - 310 Series Carboline Galoseal WB		N/A	Acrylic Gloss	PPG Pitt-Tech Plus 90-1310 SW DTM Acrylic B66-100 Series Carboline 3359 DTM
Galvanized & Aluminum Semi-Gloss	N-1S	Primer	PPG Pitt-Tech Plus 90-912 SW Pro-Cryl B66 - 310 Series Carboline Galoseal WB		N/A	Acrylic Semi-Gloss	PPG Pitt-Tech Plus 90-1210 SW DTM Acrylic B66-200 Series Carboline 3359
Galvanized & Aluminum (Marine & Bridge)	N-2S	Epoxy Primer	Carboline Carboguard 888 SW Macropoxy 646 PPG PMC Amercoat 385		N/A	Aliphatic Polyurethane	Carboline Carbothane 133 LH SW Acrolon 218 HS PPG PMC Amercoat 450 HSG

Surface	System Designation	Primer	Manufacturer's Product	2nd Coat	Manufacturer's Product	Top Coat	Manufacturer's Product
Galvanized & Aluminum (Marine & Bridge) Gloss	N-2G	Epoxy Primer	Carboline Carboguard 888 PPG PMC Amercoat 385 SW Macropoxy 646		N/A	Aliphatic Polyurethane Gloss	Carboline Carbothane 134 HG PPG PMC Amercoat 450 H SW Acrolon 218 HS B65-600
Plywood Semi-Gloss	PW-1S	Acrylic Wood Primer	Carboline Carbocrylic 120 SW A-100 Latex B42W42 PPG Speedhide 6-609	Acrylic Semi-Gloss	Carboline Carbocrylic 3359 SW Metalatex B42 Series PPG Speedhide 6-900	Acrylic Semi-Gloss	Carboline Carbocrylic 3359 SW Metalatex B42 Series PPG Speedhide 6-900
Concrete, Brick & Granite Clear Gloss Anti-Graffiti	AG-1	Primer Sealer	Carboline Carboguard 1340 Visual Pollution Tech. Crystal Clear		N/A	Aliphatic Urethane	Carboline Carbothane 130 Visual Pollution Tech. Crystal Clear
Concrete, Brick & Granite Clear Flat Anti-Graffiti	AG-2	Primer Sealer	Degussa Tagguard Sivento Protectosil Tristar Proteus Masonry Sealer		N/A	Various	Degussa Tagguard Sivento Protectosil Tristar Proteus 940

Surface	System Designation	Primer	Manufacturer's Product	2nd Coat	Manufacturer's Product	Top Coat	Manufacturer's Product
Steel & Concrete Saltwater Immersion	CT-1	Coal Tar Epoxy (C-200A)	Carboline Bitumastic 300M International Intertuf 702 Sherwin-Williams Targuard		N/A	Coal Tar Epoxy (C-200A)	Carboline Bitumastic 300M International Intertuf 702 Sherwin-Williams Targuard
Steel, Jet Fuel Splash & Spill	S-4	Organic Zinc Rich	Carboline Carbozinc 859 Tnemec 90-97 Tneme-Zinc SW Zinc Clad III HS	Epoxy	Carboline Carboguard 890 Tnemec Epoxoline II Series N69 SW Macropoxy 646	Polyester Polyurethane	Carboline Carbothane 133 LH Tnemec CRU Series 290 SW Poly-Lon HP
Steel Slip Critical "B"	S-5	Organic Zinc Rich	Carboline Carbozinc 859 PPG PMC Amercoat 68 HS SW Zinc Clad III HS		N/A		N/A
Steel Slip Critical "B"	S-6	Inorganic Zinc Rich (Shop Only)	PPG PMC Dimetcote 9 Carboline Carbozinc 11 HS Sherwin-Williams Zinc Clad II		N/A		N/A

Surface	System Designation	Primer	Manufacturer's Product	2nd Coat	Manufacturer's Product	Top Coat	Manufacturer's Product
Steel (under concrete or grout)	S-7	Epoxy Mastic	Carboline Carboguard 890 PPG PMC Amerlock 2 Sherwin-Williams Macropoxy 646		N/A	Epoxy (immersion grade)	Carboline Carboguard 890 PPG PMC Amerlock 2 Sherwin-Williams Macropoxy 646
Steel, Saltwater, Tidal	S-8	Epoxy	Duramar 2510 UW International Interzone 954 Sherwin-Williams Sher-Glass	N/A		Epoxy	Duramar 2510 UW International Interzone 954 Sherwin-Williams Sher-Glass
Steel, Ultra-Weatherable	S-9	Zinc Rich	Carboline Carbozinc 859 SW Zinc Clad III HS PPG PMC Amercoat 68 HS	Urethane	Carboline Carbothane 134 HG SW Acrolon 218 HS PPG BRP 1000 Series	Fluorocarbon	Carboline Carboxane 950 SW FluoroKem PPG Coraflon ADS
Steel, Rapid Deployment	S-10	Zinc Rich	PPG PMC 68 HS Sherwin-Williams Corothane I - Galvapac		N/A		PPG PMC PSX 700 Sherwin-Williams Fast Clad Urethane
Aluminum Ultra-Weatherable	N-3	Epoxy	Carboline Carboguard 888 Sherwin-Williams Macropoxy 646 PPG PMC Amercoat 385	Urethane	Carboline Carbothane 133 LH Sherwin-Williams Acrolon 218 HS PPG BRP 1000 Series	Fluorocarbon	Carboline Carboxane 950 Sherwin-Williams FluoroKem PPG Coraflon ADS

Surface	System Designation	Primer	Manufacturer's Product	2nd Coat	Manufacturer's Product	Top Coat	Manufacturer's Product
B. Interior							
Steel, water tank	S-11	Epoxy	PPG PMC Amerlock 2	Epoxy	PPG PMC Amerlock 2	Epoxy	PPG PMC Amerlock 2
			Carboline Carboguard 891		Carboline Carboguard 891		Carboline Carboguard 891
			SW Duraplate 235 NSF		SW Duraplate 235 NSF		SW Duraplate 235 NSF
Steel, jet fuel tank	S-12	Epoxy Amine	PPG PMC Amercoat 395 FD		N/A	Epoxy Amine	PPG PMC Amercoat 395 FD
			Carboline Plasite 9060				Carboline Plasite 9060
			SW Shelcote II				SW Shelcote II
Concrete Flat	C-2F	Water Based Sealer	PPG Speedhide 6-2	Acrylic	PPG Speedhide 6-70	Acrylic Flat	PPG Speedhide 6-70
			ProMar B28W8200		SW ProMar B30W200		SW ProMar B30W200
			Carboline 120		Carboline 3130		Carboline 3130
Concrete Semi-Gloss	C-2S	Water Based Sealer	Carboline Carbocrylic 120	Acrylic	Carboline Carbocrylic 3359	Acrylic Semi-Gloss	Carboline Carbocrylic 3359
			SW ProMar B28W8200		SW ProMar B31W200		SW ProMar B31W200
			PPG Speedhide 6-2		PPG Speedhide 6-500		PPG Speedhide 6-500

Surface	System Designation	Primer	Manufacturer's Product	2nd Coat	Manufacturer's Product	Top Coat	Manufacturer's Product
Concrete Heavy-Duty Gloss	C-3G	Epoxy	Carboline Carboguard 1340 SW Macropoxy HS Epoxy	Epoxy	Carboline Carboguard 890 SW HP Epoxy B67-200	Epoxy Gloss	Carboline Carboguard 890 SW HP Epoxy B67-200
Concrete Masonry Flat	CM-2F	Block Filler	PPG Speedhide 6-7 SW PrepRite B25W25 Carboline Sanitile 100	Acrylic	PPG Speedhide 6-70 SW ProMar B30W200 Carboline 3130	Acrylic Flat	PPG Speedhide 6-70 SW ProMar B30W200 Carboline 3130
Concrete Masonry Semi-Gloss	CM-2S	Block Filler	Carboline Sanitile 100 SW PrepRite B25W25 PPG Speedhide 6-7	Acrylic	Carboline Carbocrylic 3359 SW ProMar B31W200 PPG Speedhide 6-500	Acrylic Semi-Gloss	Carboline Carbocrylic 3359 SW ProMar B31W200 PPG Speedhide 6-500
Concrete Masonry Heavy-Duty Gloss	CM-3	Epoxy Block Filler	Carboline Carboguard 954HB SW Kem Cati-Coat HS B42W400	Epoxy	Carboline Carboguard 890 SW HP Epoxy B67-200	Epoxy Gloss	Carboline Carboguard 890 SW HP Epoxy B67-200
Cement & Gypsum Plaster Walls & Soffits Flat	P-1F	Acrylic Sealer	SW PrepRite B28W300 PPG Speedhide 6-2 Carboline Sanitile 120	Acrylic	SW ProMar B30W200 PPG Speedhide 6-70 Carboline 3130	Acrylic Flat	SW ProMar B30W200 PPG Speedhide 6-70 Carboline 3130

Surface	System Designation	Primer	Manufacturer's Product	2nd Coat	Manufacturer's Product	Top Coat	Manufacturer's Product
Cement & Gypsum Plaster Walls & Soffits Semi-Gloss	P-1S	Acrylic Sealer	Carboline Carbocrylic 120	Acrylic	Carboline Carbocrylic 3359	Acrylic Semi-Gloss	Carboline Carbocrylic 3359
			SW PrepRite B28W300		SW ProMar B31W200		SW ProMar B31W200
			PPG Speedhide 6-2		PPG Speedhide 6-500		PPG Speedhide 6-500
Gypsum Board Flat	GB-1F	Acrylic Sealer	SW PrepRite B28W8200	Acrylic	SW ProMar B30W200	Acrylic Flat	SW ProMar B30W200
			PPG Speedhide 6-2		PPG Speedhide 6-70		PPG Speedhide 6-70
			Carboline Sanitile 120		Carboline 3130		Carboline 3130
Gypsum Board Semi-Gloss	GB-1S	Acrylic Sealer	Carboline Carbocrylic 120	Acrylic	Carboline Carbocrylic 3359	Acrylic Semi-Gloss	Carboline Carbocrylic 3359
			SW PrepRite B28W8200		SW ProMar B31W200		SW ProMar B31W200
			PPG Speedhide 6-2		PPG Speedhide 6-500		PPG Speedhide 6-500
Steel Semi-Gloss	S-13S	Acrylic Steel Primer	PPG Pitt-Tech Plus 90-912	Acrylic	PPG Pitt-Tech Plus 90-1210	Acrylic Semi-Gloss	PPG Pitt-Tech Plus 90-1210
			SW DTM B66 W1		SW Sher-Cryl B66-350		SW Sher-Cryl B66-350
			Carboline 3358		Carboline 3359		Carboline 3359

Surface	System Designation	Primer	Manufacturer's Product	2nd Coat	Manufacturer's Product	Top Coat	Manufacturer's Product
Steel Gloss	S-14G	Acrylic Steel Primer	Carboline Carbocrylic 3358	Acrylic	Carboline Carbocrylic 3359 DTM	Acrylic Semi-Gloss	Carboline Carbocrylic 3359 DTM
			SW DTM B66W1		SW DTM Sher-Cryl B66-300		SW DTM Sher-Cryl B66-300
			PPG Pitt-Tech Plus 90-912		PPG Pitt-Tech Plus 90-1310		PPG Pitt-Tech Plus 90-1310
Steel Heavy-Duty Semi-Gloss (UV Exposure)	S-14S	Organic Zinc Rich	Carboline Carbozinc 859	Epoxy	Carboline Carboguard 888	Aliphatic Polyurethane Semi-Gloss	Carboline Carbothane 133 LH
			PPG PMC Amercoat 68 HS		PPG PMC Amercoat 399		PPG PMC Amercoat 450 HSG
			SW Zinc Clad III HS		SW Macropoxy 646		SW Acrolon 218 HS
Steel Heavy-Duty	S-15	Organic Zinc Rich	Carboline Carbozinc 859	Epoxy	Carboline Carboguard 890	Epoxy	Carboline Carboguard 890
			SW Zinc Clad III HS		SW Macropoxy 646		SW Macropoxy 646
			PPG PMC Amercoat 68 HS		PPG PMC Amerlock 2		PPG PMC Amerlock 2
Galvanized & Aluminum Gloss	N-4G	Primer	Carboline Carbocrylic 120		N/A	Acrylic Gloss	Carboline Carbocrylic 3359 DTM
			PPG Pitt-Tech Plus 90-912				PPG Pitt-Tech Plus 90-1310
			SW Pro-Cryl B66-310 Series				SW Sher-Cryl B66-300

Surface	System Designation	Primer	Manufacturer's Product	2nd Coat	Manufacturer's Product	Top Coat	Manufacturer's Product
Galvanized & Aluminum Semi-Gloss	N-4S	Primer	PPG Pitt-Tech Plus 90-912 SW Pro-Cryl B66-310 Series Carboline Carbocrylic 120		N/A	Acrylic Semi-Gloss	PPG Pitt-Tech Plus 90-1210 SW Sher-Cryl B66-350 Carboline 3359
Galvanized & Aluminum Heavy Duty Semi-Gloss	N-5S	Epoxy	Carboline Carboguard 888 SW Macropoxy 646 PPG PMC Amercoat 385		N/A	Aliphatic Polyurethane Semi-Gloss	Carboline Carbothane 133 LH SW Acrolon 218 HS B65-650 PPG Amercoat 450 HSG
Plywood Flat	PW-2F	Acrylic	Carboline Carbocrylic 120 SW PrepRite ProBlock B51W20 PPG SealGrip 17-921	Acrylic	Carboline 3130 SW ProMar B30W200 PPG Speedhide 6-70	Acrylic	Carboline 3130 SW ProMar B30W200 PPG Speedhide 6-70
Plywood Semi-Gloss	PW-2S	Acrylic	Carboline Carbocrylic 120 SW Preprite ProBlock B51W20 PPG SealGrip 17-921	Acrylic	Carboline Carbocrylic 3359 SW ProMar B31W200 PPG Speedhide 6-500	Acrylic	Carboline Carbocrylic 3359 SW ProMar B31W200 PPG Speedhide 6-500

Surface	System Designation	Primer	Manufacturer's Product	2nd Coat	Manufacturer's Product	Top Coat	Manufacturer's Product
Concrete Floor Clear Finish	CF-2	Epoxy	PPG MegaSeal HSPC 99-12700 SW ArmorSeal 33 Carboline Carboguard 1340		N/A	Epoxy	PPG MegaSeal SL 99-12600 SW 650 SL/RC Carboline Sanitile 925
Concrete Floor Color Finish Heavy-Duty Gloss	CF-3	Epoxy	Carboline Semstone 110 SW ArmorSeal 33 PPG MegaSeal HSPC 99-12710	Epoxy	Carboline Sanitile 945 SL SW ArmorSeal 650 SL/RC PPG MegaSeal SL	Epoxy	Carboline Sanitile 945 SL SW ArmorSeal 650 SL/RC PPG MegaSeal SL
Concrete Color Finish Anti-Graffiti	AG-3	Epoxy	Carboline Rustbond Penetrating Sealer SW Macropoxy 920		N/A	Polyester Urethane	Carboline Carbothane 133 LH SW Polylon HP
Concrete Masonry, Color Finish Anti-Graffiti	AG-4	Concrete Block Filler	Carboline Carboguard 954 HB SW Kem Cati-Coat HS		N/A	Polyester Urethane	Carboline Carbothane 133 LH Sherwin-Williams Polylon HP

Surface	System Designation	Primer	Manufacturer's Product	2nd Coat	Manufacturer's Product	Top Coat	Manufacturer's Product
C. Overcoat Systems							
Steel	S-16	Alkyd Spot Primer	Carboline Carbocoat 8215C		N/A	Silicone Alkyd	Carboline 30 R
			SW Kromik Metal Primer				SW Steel Master 9500 B56-300 Series
			PPG Multiprime 97-680				PPG Sil-Shield 95-5000
Steel	S-17	MC Urethane Spot Primer	Wasser MC-Prepbond	MC Urethane	Wasser MC-Prepbond	MC Urethane	Wasser MC-Luster
			Xymax MonoLock PP		Xymax MonoLock PP		Xymax Bridge Finish
			SW Corothane I Mio-Aluminum		SW Corothane I Ironox B		SW Corothane I HS
Galvanized & Aluminum Semi-Gloss	N-6S	Epoxy Spot Primer	Carboline 888 Epoxy	Tie Coat	Carboline Rustbond	Urethane	Carboline 133LH
			SW Macropoxy 646		SW Macropoxy 920 Pre-Prime		SW Acrolon 218 HS
			PPG PMC Amercoat 385		PPG PMC Amerlock Sealer		PPG PMC 450 HSG
Steel Semi-Gloss	S-18	Epoxy Mastic Spot Primer	PPG PMC Amerlock 2AL	Tie Coat	PPG PMC Amerlock Sealer	Polyurethane	PPG PMC Amercoat 450 HSG
			Carboline Carbomastic 615 HS		Carboline Rustbond		Carboline 133 LH
			SW Epoxy Mastic Aluminum II		SW Macropoxy 920 Pre-Prime		SW Acrolon 218 HS

Surface	System Designation	Primer	Manufacturer's Product	2nd Coat	Manufacturer's Product	Top Coat	Manufacturer's Product
Concrete Semi-Gloss	C-4S	Spot Primer	Carboline Sanitile 120	Acrylic	Carboline Sanitile 155	Acrylic	Carboline Sanitile 155
			PPG Perma-Crete 4-603		PPG Pitt-Tech Plus 90-1210		PPG Pitt-Tech Plus 90-1210
			SW Loxon A24W8300		SW DTM Acrylic B66-200		SW DTM Acrylic B66-200
Concrete Masonry Semi-Gloss	CM-4S	Block Filler Spot Primer	Carboline Sanitile 100	Acrylic	Carboline Sanitile 155	Acrylic	Carboline Sanitile 155
			SW H.D. Block Filler B42W46		SW DTM Acrylic B66-200		SW DTM Acrylic B66-200
			PPG Pitt-Glaze 16-90		PPG Pitt-Tech Plus 90-1210		PPG Pitt-Tech Plus 90-1210

D. Interior - Sustainable Design

Concrete Masonry Flat	CM-5F	Block Filler	PPG 6-7 Speedhide Latex Block Filler	Acrylic Flat	PPG 9-100 Pure Performance Flat Interior Latex	Acrylic Flat	PPG 9-100 Pure Performance Flat Interior Latex
			SW PrepRite B25W25		SW ProGreen B30-600		SW ProGreen B30-600
			Carboline Sanitile 100		Carboline 3130		Carboline 3130

Surface	System Designation	Primer	Manufacturer's Product	2nd Coat	Manufacturer's Product	Top Coat	Manufacturer's Product
Concrete Masonry Semi-Gloss	CM-5S	Block Filler	PPG 6-7 Speedhide Latex Block Filler	Acrylic	PPG 9-500 Pure Performance Interior Latex Primer	Acrylic Semi-Gloss	PPG 9-500 Performance Interior Latex Finish Semi-Gloss
			SW PrepRite B25W25		SW ProGreen B31-600		SW ProGreen B31-600
			Carboline Sanitile 100		Carboline 3234		Carboline 3234
Cement & Gypsum Plaster Walls & Soffits Semi-Gloss	P-2S	Acrylic Sealer	PPG 9-900 Pure Performance Interior Latex Primer	Acrylic	PPG 9-500 Pure Performance Interior Latex	Acrylic Semi-Gloss	PPG 9-500 Pure Performance Interior Latex
			SW Loxon A24W8300		SW ProGreen B31-600		ProGreen B31-600
			Carboline Sanitile 120		Carboline 3234		Carboline 3234
Gypsum Board Flat	GB-2F	Acrylic Sealer	PPG 9-900 Pure Performance Latex Primer	Acrylic	PPG 9-100 Pure Performance Latex	Acrylic Flat	PPG 9-100 Pure Performance Latex
			SW ProGreen 200 B28W600		SW ProGreen 200 B30-600		SW ProGreen 200 B30-600
			Carboline Sanitile 120		Carboline 3130		Carboline 3130
Gypsum Board Semi-Gloss	GB-2S	Acrylic Sealer	PPG 9-900 Pure Performance Latex	Acrylic	PPG 9-500 Pure Performance Latex	Acrylic Semi-Gloss	PPG 9-500 Pure Performance Latex
			SW ProGreen 200 B28W600		SW ProGreen 200 B31-600		SW ProGreen 200 B31-600
			Carboline Sanitile 120		Carboline 3234		Carboline 3234

Surface	System Designation	Primer	Manufacturer's Product	2nd Coat	Manufacturer's Product	Top Coat	Manufacturer's Product
Steel Semi-Gloss	S-19S	Acrylic Steel Primer	PPG 90-912 Series Pitt-Tech DTM Industrial Enamel	Acrylic	PPG Pitt-Tech Plus 90-1210	Acrylic Semi-Gloss	PPG Pitt-Tech Plus 90-1210
			Carboline Carbocrylic 3358 MC		Carboline 3234		Carboline 3234
			SW Pro-Cryl Universal Primer		SW Pro Industrial B66-650		SW Pro Industrial B66-650
Steel-Heavy Duty Gloss	S-20G	Organic Zinc-Rich	PPG PMC Amercoat 68 HS VOC	Epoxy	PPG PMC Amercoat 399	Urethane	PPG PMC Amershield VOC
			Carboline Carbozinc 859 VOC		Carboline Carboguard 894		Carboline Carbothane 134 VOC
			SW Zinc Clad III HS-100		SW Macropoxy 646-100		SW Hi-Solids Polyurethane-100
Galvanized & Aluminum Semi-Gloss	N-7S	Primer	PPG 90-912 Series Pitt-Tech DTM Industrial Enamel		N/A	Acrylic Semi-Gloss	PPG Pitt-Tech Plus 90-1210
			Carboline Galoseal WB				Carboline Carbocrylic 3234
			SW Pro-Cryl Universal Primer				SW Pro Industrial B66-650
Plywood Semi-Gloss	PW-3S	Acrylic	PPG 9-900 Pure Performance Interior Latex Primer	Acrylic	PPG Speedhide 6-500	Acrylic Semi-Gloss	PPG Speedhide 6-500
			SW Wood Primer B28W8111		SW Pro Industrial B66-650		SW Pro Industrial B66-650
			Carboline Carbocrylic 120		Carboline 3234		Carboline 3234

Surface	System Designation	Primer	Manufacturer's Product	2nd Coat	Manufacturer's Product	Top Coat	Manufacturer's Product
Concrete Floor Clear Finish	CF-4	Epoxy	PPG MegaSeal HSPC 99-12700 Carboline Carboguard 1340 SW ArmorSeal 33 B58CQ33		N/A	Epoxy	PPG MegaSeal SL 99-12600 Carboline Sanitile 925 SW ArmorSeal 650 SL/RC Clear
Concrete Floor Color Finish	CF-5	Epoxy	PPG MegaSeal HSPC Carboline Carboguard 1340 SW ArmorSeal 33 B58 AQ33		N/A	Epoxy	PPG MegaSeal SL Carboline Sanitile 555 SW ArmorSeal 650 SL/RC
Concrete, Heavy Duty	C-5	Epoxy	Carboline Carboguard 1340 PPG PMC Amerlock Sealer	Epoxy	Carboline Carboguard 890 VOC PPG PMC Amerlock 400 VOC	Epoxy	Carboline Carboguard 890 VOC PPG PMC Amerlock 400 VOC
Concrete Masonry, Heavy Duty	CM-6	Epoxy block filler	Carboline Carboguard 954 HB	Epoxy	Carboline Carboguard 890 VOC		Carboline Carboguard 890 VOC

END OF APPENDIX "B"

SECTION 09910

PAINTING

INSTRUCTIONS TO SPECIFIER

A. General

1. Do not alter or revise the text of this Section. Select appropriate Appendix "B" to specify whether the Work of the Contract includes exterior or interior painting, or both.

2. In Appendix "B" select surfaces and coatings required, and delete surfaces and coatings not required.

3. Do not add manufacturers or paint materials unless such additions have been reviewed and approved by the Materials Engineering Unit prior to issuance of the Contract.

4. Do not use this Section for the following painting applications:

   a. Painting of luminaires and traffic signals.

   b. Painting of piles, sheet piling, or shoring and underpinning systems.

5. Care must be used in specifying the anti-graffiti coatings for concrete and masonry surfaces on the exterior, due to the impermeability of the coating system.

B. Contract Drawings

Ensure that the Contract Drawings show the following items specified in the text:

(1.01 B.1; 1.01 B.2; 2.01 A)	Finish schedule which includes System Designation as selected from Appendix "B" or Appendix "C" as appropriate.
(2.02 B; 1.06 A.2)	Color schedule.
(1.01 B.3; 3.02 A.10; 3.02 A.12)	Color-coding of electrical or mechanical equipment, if any.
(1.04 B)	Sample panel(s), if any.
(1.05 D)	Extra stock required, if any.
(3.01 B)	Show required ferrous metal surface preparation.
(3.02 A.7)	Finish color on top, bottom and side edges of doors if other than color of exterior face.
(3.02 A.11)	Color of exposed, pipes, ducts, conduits, hangers, brackets and supports, if other than same as adjacent surfaces.
(3.02 C)	Dry film thickness of coatings, if other than those recommended by coating manufacturer.

C. Other Items

1. Coordinate with the Structural Task Leader to ensure that no shop primer is applied to structural steel shown or scheduled to receive sprayed on fire-resistive material (1.01 C.8).

2. When the Contract Drawings show "Color(s) shall match sample(s) in the Engineer's Office", ensure that required samples are maintained for Contractor's viewing and coordinate with Division 1 requirements.

3. Sustainable Design Requirements

For buildings and facilities which need to comply with the Sustainability Guidelines, revise the paint systems in Appendix "B" to comply with the following requirements:

a. Paints and coatings used on the interior of the building (defined as inside of the weatherproofing system and applied on-site) shall comply with the following criteria:

(1) Architectural paints, coatings and primers applied to interior walls and ceilings: Do not exceed the VOC content limits established in Green Seal Standard GS-11, Paints, First Edition, May 20, 1993.

- Flats: 50 g/L
- Non-Flats: 150 g/L
- Primers: 150 g/L

(2) Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates: Do not exceed the VOC content limit of 250 g/L established in Green Seal Standard GC-03, Anti-Corrosive Paints, Second Edition, January 7, 1997.

(3) Clear wood finishes, floor coatings, stains and shellacs applied to interior elements: Do not exceed the VOC content limits established in South Coast Air Quality Management District (SCAQMD) Rule 1113, Architectural Coatings, rules in effect on January 1, 2004. The following list are examples. Refer to standard for complete details.

- Clear wood finishes: Varnish 350 g/L; lacquer 550 g/L
- Floor coatings: 100 g/L
- Sealers: Waterproofing sealers 250g/L; sanding sealers 275 g/L; all other sealers 200 g/L
- Shellacs: Clear 730 g/L; pigmented 550 g/L
- Stains: 250 g/L

END OF INSTRUCTIONS

DIVISION 2

SECTION 02075

PARTIAL REMOVALS

PART 1. GENERAL

1.01 SUMMARY

This Section requires the selective removal and subsequent offsite disposal of portions of the existing building as shown on the Contract Drawings and as required to accommodate new construction.

1.01 DESIGN AND PERFORMANCE REQUIREMENTS

A. The Authority assumes no responsibility for guarding the removal areas either before or after the Contractor is given access thereto, and does not guarantee that their condition will remain the same after the submission of Proposals as before.

B. Storage or sale of items of salvageable value to the Contractor is prohibited on the construction site.

A. Removal using explosive, incendiary or wrecking ball methods is prohibited.

B. Provide water and wet down the removal areas, as well as the sites adjacent to the portions of structure(s) being removed, to limit raising dust and dirt to lowest practical level. Provide water truck, water line or hydrant connection, and hoses for this purpose.

C. Do not traverse pavement with tracked vehicles or other equipment which may damage pavement.

D. Do not use heaters without prior approval of the Engineer. Installation of temporary heaters, if used, shall conform to American National Standards Institute (ANSI) A10.10 "Safety Requirements for Temporary and Portable Space Heating Devices and Equipment Used in the Construction Industry".

E. Condition of Adjacent Construction

1. Prior to starting removal work, make an inspection accompanied by the Engineer to determine physical condition of adjacent existing structure(s) or construction that is to remain.

2. During such inspection the Engineer and the Contractor shall mutually agree on existing damage to adjacent existing structure(s) or construction that is to remain, if any, and the Contractor shall subsequently prepare and submit to the Engineer a written description of such mutually agreed upon existing damage, including photographic documentation when requested by the Engineer.

F. Utility Services

1. Do not disrupt service to fire hydrants in any way without the prior written approval of the Engineer. If, with written approval of the Engineer, water service to any area is disrupted, make provisions to ensure adequate fire protection for such area.

2. At all times during the Work of this Section, maintain accessibility from street to all fire hydrants, traffic signals, power or light poles, mailboxes, and similar utility and public service items adjacent to the construction site.

3. Do not interrupt utilities serving occupied or used areas, except when authorized by the Engineer. Provide temporary services during such interruptions as approved by the Engineer.

4. Arrange with the Engineer in advance of removal Work for disconnection or rerouting of utility line(s). Identify such capped, plugged, sealed or rerouted lines on a record drawing. Submit such drawing in accordance with 1.03 B.

G. Occupancy: The Authority will occupy portions of the building immediately adjacent to areas of selective removals. Conduct selective removal Work in manner that will minimize need for disruption of the Authority's normal operations. Provide minimum of 72 hours advance notice to the Authority of removal activities that will affect the Authority's normal operations.

H. Flame Cutting: Do not use cutting torches for removal until Work area is cleared of flammable materials. At concealed spaces, such as interior of ducts and pipe spaces, verify condition of hidden space before starting flame-cutting operations. Maintain portable fire suppression devices during flame-cutting operations.

1.02 SUSTAINABLE DESIGN REQUIREMENTS

A. Sustainable Design General Requirements

1. The Authority requires the contractor to implement practices and procedures to meet the sustainable design requirements. The contractor shall ensure that the requirements related to these goals, as defined in Division 1 - GENERAL PROVISIONS, are implemented to the fullest extent. Substitutions or other changes to the work proposed by the contractor will not be allowed if such changes compromise the stated sustainable design performance criteria.

1.02 COORDINATION

A. Coordinate removals with all Discipline requirements including but not limited to Structure, Electrical and Mechanical. Refer to all Discipline Contract Drawings and Specifications for requirements.

1.03 SUBMITTALS

For Submittal Requirements, see Appendix "A".

PART 2. PRODUCTS

2.01 MATERIALS

A. Imported Fill

Soil materials to be delivered to the construction site by the Contractor, approved in accordance with 1.03C, shall be as follows:

For basements, voids and subbase, soil materials shall consist of stone, gravel, and sand, free from debris, trash, roots and other organic matter, with no particle size exceeding 2 inches in maximum dimension.

B. Rubble Fill

Rubble fill shall be concrete, brick or other masonry materials resulting from removals. Break fill material into pieces not exceeding 4 inches in their greatest dimension, with no flat or elongated pieces, with all protruding reinforcing cut or burned off, and with a sufficient percentage of smaller pieces to minimize voids. A flat piece is one having a ratio of width to thickness greater than five; an elongated piece is one having a ratio of length to width greater than five.

PART 3. EXECUTION

3.01 PREPARATION

A. Protection

2. Erect and maintain temporary window or opening covers, covered passageways, barricades or fences as required to ensure safe passage of persons around area of removals.

3. Erect and maintain enclosed dust chutes as required for the disposal of materials, rubbish, and debris.

4. Erect and maintain dustproof partitions as required to prevent spread of dust, fumes or smoke to occupied portions of the building and adjacent buildings. Where selective removals occurs immediately adjacent to occupied portions of the building, construct dust-proof partitions of minimum 4-inch studs, 1/2-inch fire-retardant plywood on both sides.

5. Provide weatherproof closures for exterior openings and for roof areas with exposed, unprotected edges resulting from removals Work.

6. Provide temporary interior and exterior shoring, bracing and/or support as required to ensure that movement or settlement of portions of structures to be removed is safely controlled and collapse is prevented. Ensure that movement, settlement, and/or damage to existing facilities does not occur.

7. Provide bypass connections as necessary to maintain continuity of service to occupied areas of building. Provide minimum of 72 hours advance notice to the Engineer if shutdown of service is necessary during changeover.

B. Pollution Controls

1. Use water sprinkling, enclosed chutes and/or temporary enclosures to limit dust and dirt rising and scattering in the air. Conform to requirements of 1.02 D.

2. Filter sediment from runoff before it enters drainage systems or waterways using methods approved by the Engineer following submittal in accordance with 1.03 A.4.

3. Do not use water when it may create hazardous or objectionable conditions such as ice or flooding.

3.02 REMOVALS

A. Conduct selective removals Work and disposal of debris to ensure minimum interference with the use of, or access to, adjacent occupied areas, adjacent buildings, or construction site areas. Do not unnecessarily obstruct sidewalks or street.

B. Remove all glass in windows, doors, skylights and fixtures before proceeding with other required removal Work.

C. Proceed with removals in a systematic manner, from top of structure to ground. Complete upper removals before disturbing lower supporting members.

D. Do not store any materials, rubbish, dirt, debris or waste of any sort resulting from removal Work on the floor of areas to remain or adjacent construction site areas.

E. Remove concrete and masonry in small sections. Lower heavy framing members carefully.

F. Where shown on the Contract Drawings, break and remove on grade and basement slabs.

G. Disposal of Removed Materials

1. Unless otherwise shown on the Contract Drawings, dispose of debris, rubbish, and other materials resulting from removal operations away from Authority property.

2. On Authority property, do not burn, bury or otherwise dispose of debris, rubbish or other materials resulting from removal operations.

H. Contractor's Salvaged Materials

Removed and salvaged materials not shown for reuse or as retained shall become the Contractor's property. Such materials shall be removed from Authority property at no additional cost to the Authority.

3.03 ADJUSTMENTS

A. Unless otherwise shown on the Contract Drawings, provide fill for below-grade areas and voids resulting from the Work of this Section as follows:

8. Fill to be placed one foot or more below grade or paving subgrade, or one foot or more away from foundation walls, edges of footings, or underground utility lines, may at the Contractor's option, be imported soil material or rubble fill as specified in 2.01.

9. Fill to be placed in the remaining one-foot voids shall be approved imported soil material conforming to requirements of 2.01 A.1.

B. Place approved rubble fill material in horizontal layers not exceeding one foot in loose depth, with top layer consisting of the smallest size rubble available. Compact each layer of rubble fill with at least four passes of a ten-ton roller, of a type approved by the Engineer.

C. Place approved imported soil materials in horizontal layers not exceeding 6 inches in loose depth. Compact each layer at optimum moisture content of fill material to a density equal to original adjacent ground, unless otherwise directed by the Engineer.

D. After placement and compaction of fill, grade surface to meet adjacent contours and to provide surface drainage.

3.04 REPAIR

Promptly repair, to the satisfaction of the Engineer and at no cost to the Authority, damage caused to adjacent construction by removal operations.

END OF SECTION

SECTION 02075

PARTIAL REMOVALS

APPENDIX "A"

SUBMITTALS

A. Submit the following to the Engineer prior to start of removal Work:

1. Description of proposed methods and operations of removal, for review and approval by the Engineer;
2. Description of sequence of removal and disposal Work, for review and approval by the Engineer;
3. Written inspection report described in 1.02 G.2; and
4. Description of proposed method of filtering sediment from runoff, for review and approval by the Engineer.

B. Submit in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples", of Division 1 - GENERAL PROVISIONS, a record drawing indicating horizontal and vertical locations of disconnected, rerouted or capped utilities. Reference all such items to visible permanent surface features.

C. For imported fill material, submit to the Engineer of Materials, Engineering Materials Laboratory, Port Authority Technical Center, 241 Erie Street, Jersey City, NJ 07310-1397, one 25- pound, representative sample of such material proposed for use under this Section, subject to the following:

1. Not less than three weeks prior to delivery of imported fill material to the construction site, submit sample in clean sturdy container or bag which shall not permit loss of any material.
2. Clearly label sample with Contract number, title and location, material supplier's name and location and identification of fill material.
3. Do not deliver imported fill material to the construction site until the Engineer has checked and approved the sample of such material.

D: Sustainable Design Submittal Requirements:

1. The Contractor shall submit the Sustainable Design certification items listed herein. Sustainable Design submittals shall include the following:

   a. A completed Sustainable Design Materials Certification Form (SDMCF), appended to Division 1 - GENERAL PROVISIONS. Information to be supplied for this form shall include:

      (1) Cost breakdowns for the materials included in the Contractor's work. Cost breakdowns shall include total cost plus itemized material costs.

   b. The Sustainable Design submittal information shall be assembled into one package per Section or trade, and sent to the Engineer of review.

END OF APPENDIX "A"

DIVISION 2

SECTION 02578

PAVEMENT JOINT SEALING

PART 1. GENERAL

1.01 SUMMARY

This Section specifies requirements for sealing joints in pavements, sidewalks and curbs located on grade.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

	American Society for Testing and Materials (ASTM)
ASTM D 3405	Joint Sealants, Hot-Poured, for Concrete and Asphalt Pavements
	Federal Specifications
SS-S-1401	Sealant, Joint, Non-Jet-Fuel-Resistant, Hot-Applied, for Portland Cement and Asphalt Concrete Pavements
SS-S-200	Two Component Joint Sealant, Jet Fuel Resistant, Cold Applied for Portland Cement Concrete Pavement

1.03 ENVIRONMENTAL REQUIREMENTS

A. Do not apply any sealant during rain conditions.

B. Do not apply silicone sealant when ambient or pavement temperature is 40 degrees F, or below.

C. Do not apply rubberized asphalt sealant when ambient or pavement temperature is 50 degrees F, or below.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver silicone sealant to the construction site in unopened containers with the manufacturer's lot numbers clearly marked on the containers. Include with the delivery a manufacturer's invoice stating the date(s) of shipment and lot numbers of the silicone sealant to be used.

B. Store silicone sealant at ambient temperatures at or below 90 degrees F.

C. Silicone sealant which has been in storage more than six months shall not be used in the construction and shall be removed from the construction site immediately.

1.05 SUBMITTALS

See Appendix "A" for Submittal requirements

PART 2. PRODUCTS

2.01 MATERIALS

A. Rubberized Asphalt Joint Sealant shall be one of the following and no substitution will be permitted.

1. Road Saver 211 - manufactured by Crafco Inc. Chandler, AZ
2. Hi-Spec - manufactured by W. R. Meadows, Elgin, IL
3. Koch 9005 - manufactured by Koch Materials Company, Pensauken, NJ

B. Silicone Sealant

1. For Concrete Pavement, Sidewalk and Curb Joints
   a. "Dow Corning 888", manufactured by Dow Corning Corp., Midland, MI; or approved equal meeting ASTM D 3405 and Federal Specification SS-S-200.
2. For Asphalt Pavement in Aircraft Apron and Fueling Areas
   a. "Dow Corning 890", manufactured by Dow Corning Corp., Midland, MI; or approved equal meeting ASTM D 3405 and Federal Specification SS-S-1401.

C. Backer Rod - closed cell, expanded polyethylene foam rod, manufactured by A.H. Harris, New Britain, CT; or approved equal.

PART 3. EXECUTION

3.01 PREPARATION

A. Removal and Cleaning Equipment

1. Mechanical joint router shall be "Jiffy" Crack and Joint Router, manufactured by Aeroil Products Co., Inc., South Hackensack, NJ; or approved equal.
2. Air compressor shall be capable of furnishing not less than 100 cubic feet of air per minute at a pressure of not less than 100 pounds per square inch. Compressed air shall be free of oil and moisture.
3. Power driven concrete saw shall be "Compact Concrete and Asphalt Saw" manufactured by Cimline, Inc., Minneapolis, MN; or approved equal.

B. Removal of Existing Joint Material

1. For existing asphalt concrete and Portland cement concrete pavement joints, use a mechanical joint router to remove any joint sealing material present and to reface or modify existing joints to the dimensions shown on the Contract Drawings.

2. For new asphalt concrete pavement joints, use a mechanical joint router or power-driven concrete saw to cut joints to the dimensions shown on the Contract Drawings.

3. For newly sawed Portland cement concrete joints, after a minimum of 72 hours has passed from the completion of concrete placing operations, use a mechanical joint router or power-driven concrete saw to widen sawed joints to their final required dimensions shown on the Contract Drawings.

4. No removals are required for formed joints.

5. During removal and cleaning operations, do not damage any premolded joint filler that is to remain in expansion joints.

C. Cleaning Joints

1. General

   a. Pavement joints shall be cleaned of any routing or cutting debris, and made free of any particles or film of old sealant.

   b. Abrasive blasting operations shall be performed in accordance with requirements specified in the Section entitled "ABRASIVE BLASTING".

2. Asphalt Concrete Pavement Joints (New and Existing)

   Clean joint slots with power-driven wire brush followed by an oil-free compressed air jet.

3. Existing Portland Cement Concrete Pavement Joints

   Clean joint slots with a power-driven wire brush, followed by an abrasive blast, followed by an oil-free compressed air jet.

4. New Portland Cement Concrete Pavement Joints (Sawed or Formed)

   Clean joint slots with an abrasive blast. Follow by an oil-free compressed air jet.

3.02 SEALANT APPLICATION

A. Application Equipment

1. Double Boiler Indirect-Fired Kettle/Rubberized Asphalt Sealant Applicator

The space between the inner and outer shells of a double boiler indirect-fired kettle shall be filled with suitable heat transfer oil having a flash point of not less than 550 degrees F. The kettle shall be equipped with satisfactory means of agitating the sealant at all times without excessive incorporation of air. The kettle shall be equipped with thermostatic control for automatic regulation of the temperature of the oil bath and sealant and shall have a recording thermometer for recording the temperature of the sealant. A hose shall be directly connected to the melting kettle in such a manner as to permit pumping the melted sealant through the hose to a shoe-type applicator that shall direct and control the filling of the joints. The hose and applicator shall be insulated.

2. Compressed Air-Driven Extrusion Pump/Silicone Sealant Applicator

a. The applicator shall be one of the following, or approved equal:

(1) "700 Series Teflon Packed Pumping System" with teflon lined hoses, manufactured by Pyles Industries, Inc., Wixom, MI

(2) "King" or "Bulldog" Model pumping systems with teflon lined hoses, manufactured by Graco., Inc., Minneapolis, MN

b. The silicone sealant applicator nozzle shall be shaped to fit inside the joint to introduce the sealant between the joint faces.

B. Rubberized Asphalt Sealant Installation

1. Use rubberized asphalt sealant for sealing joints in asphalt concrete pavement and joints between asphalt concrete pavement and Portland cement concrete pavement and curbs.

2. Seal joints immediately following, and during the same work period as, the cleaning operation.

3. Rubberized asphalt sealant shall be heated using a double boiler indirect-fired kettle/applicator. Apply the sealant to cleaned joints at the manufacturer's recommended application temperature.

4. At the start of each day's sealing operations, one gallon of heated sealant shall be flushed through the applicator into a one-gallon container and disposed of away from Port Authority property.

5. Apply sealant as shown on the Contract Drawings in such a manner that the in-place sealant shall be well bonded to the pavement and be free of voids or entrapped air. Seal the joints so that upon completion of the work, the surface of the sealant material shall be 1/4 inch, plus or minus 1/8 inch, below the adjacent pavement surface. Refill or "spot up" all low areas before final approval. Remove excess material on the surface of the pavement and leave the pavement surface in a clean condition. The period of cure shall be in accordance with the manufacturer's recommendations. Vehicular or heavy equipment traffic shall not be permitted on the pavement in the area of the joints during the curing period.

C. Silicone Sealant Installation

1. Silicone sealant shall be used to seal Portland cement concrete pavement, sidewalks, curb joints and asphalt concrete pavements in aircraft aprons and fueling areas.

2. Seal joints immediately following, and during the same work period as, the cleaning operation.

3. Install backer rods without stretching and as shown on the Contract Drawings.

4. Apply silicone joint sealant to cleaned joints using a compressed air driven extrusion pump/silicone sealant applicator.

5. Apply sealant as shown on the Contract Drawings in such a manner that the in-place sealant will adhere to the concrete and be free of voids. Seal the joints so that material shall be 1/4 inch, plus or minus 1/8 inch, below the pavement surface. Refill or "spot up" all low areas before final approval. Remove excess material on the surface of the pavement and leave the pavement surface in a clean condition.

6. If the silicone sealant is not self-leveling, the sealant material shall be tooled in a manner that causes it to wet the joint surfaces.

7. Allow silicone sealant to cure in accordance with the manufacturer's installation instructions before reopening to traffic. Protect surface of sealer from dirt for one to three hours, until tack-free.

END OF SECTION

SECTION 02578

PAVEMENT JOINT SEALING

APPENDIX "A"

SUBMITTALS

Submit to the Engineer of Materials, Engineering Materials Laboratory, Port Authority Technical Center, 241 Erie Street, Jersey City, NJ 07310-1397, the following samples for approval:

A. Rubberized Asphalt Sealant - 10 pounds from each lot.

B. Silicone Sealant - one 10.3-fluid ounce cartridge.

C. Backer Rod - three-foot length

END OF APPENDIX "A"

PAVEMENT JOINT SEALING

INSTRUCTIONS TO SPECIFIER

A. Contract Drawings

Ensure that the Contract Drawings show the following items specified in the text:

(3.01 B.1,2,3)	Joint dimensions
(3.02 B.5)	Joints sealed with rubberized asphalt.
(3.02 C.3)	Backer rods for sealing joints with silicone.
(3.02 C.5)	Application of silicone joint sealant.

B. Other Items

Ensure that the Specifications include the following Sections referenced in this Section:

(3.01 C.1.b) "ABRASIVE BLASTING"

END OF INSTRUCTIONS

SECTION 02082
PCB-CONTAINING CAULK REMOVAL WORK
GEORGE WASHINGTON BRIDGE BUS STATION - RESERVED PREMISES

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. This Section specifies requirements for removal and disposal of caulk material known or presumed to contain more than 50 parts per million (ppm) of Polychlorinated Biphenyls (PCBs) (i.e., "PCB-containing caulk") from the Port Authority of New York and New Jersey, hereinafter called the "Authority", property known as the George Washington Bridge Bus Station, Reserved Premises. If material is tested and found to contain less than 50 ppm, it is to be removed as part of the work of Section X and other applicable sections.

B. Remove all PCB-containing caulk material that will be impacted by the proposed renovation and at all areas that will be affected or impacted by the work in this Contract. Manage all waste as described in Section 1.06, including determining if it is any or all of the following: PCB hazardous waste, ACM waste, Toxicity Characteristic (e.g. lead containing) hazardous waste, PCB Bulk Product Waste or PCB Remediation waste. Wastes shall not be recycled unless the recycler meets all required license and regulatory requirements (e.g., facility is permitted for PCB Remediation waste if recycling window frames with all PCB-containing caulk removed). The Contractor shall provide all labor, equipment and materials complete for performance of the Work in accordance with the Contract Documents.

1. Any caulking locations not listed or addressed in Part 4 of this Specification Section must be assumed to be PCB-containing materials. The Contractor shall notify the Engineer immediately if any materials that are not listed are encountered, who will then notify the Authority's Environmental Consultant. Work shall cease immediately and the work area vacated. Bulk sampling of this material will be conducted by the Authority's Environmental Consultant. Work

shall not commence until the results of the bulk sample analysis has been provided in writing by the Authority's representative indicating that the material is non-asbestos and non-PCB-containing or until the Authority's Environmental Consultant and Engineer determine whether and how abatement of this material will be conducted as a paid extra to the Contractor.

2. Should the Contractor proceed to work without notifying the Authority of these untested materials encountered or other discrepancies, this will result in the Contractor being invoiced for the cost of the resulting environmental clean-up of the Facility and other associated costs, including, but not limited to, the relocation of occupants, disposal and replacement of contaminated perishable items and non-perishable items. The Authority reserves the right to utilize any of its "Requirements" Contractors to conduct any such clean-up in an effort to provide a safe environment for the employees and public.

C. This section shall be used in conjunction with other Specifications that also apply, notably where caulk also contains asbestos (Specification X) or paint (Specification X) and for other existing premises work provisions (Specification X). All caulk material (interior and exterior of the building) is presumed to contain more than 50 ppm of PCBs, unless otherwise indicated in Part 4 of this Section. This includes, but is not limited to, the following:

1. Exterior caulk (e.g., masonry expansion joints on the exterior of the building).

2. Previously hidden caulk that is not part of a homogenous sample previously characterized by the Authority and listed as not PCB-containing.

D. Where caulk being removed is also an Asbestos Containing Material (ACM), follow the applicable provisions of both Specification X and this specification.

E. Caulk that is painted with lead-based paint (or which has not been tested and is assumed to be lead-based paint) shall be tested using the TCLP for lead and removed and disposed in accordance with Specification X and/or other applicable specifications, in addition to the applicable provisions of this specification.

F. Refer to other applicable specifications, for all provisions applicable to Existing Premises Work in addition to the applicable provisions of this specification.

1.02 SITE REQUIREMENTS

A. Noise Control: Provide mufflers on all equipment to be used by the Contractor. Observe local laws regarding noise control.

B. Wastewater: All water used by the Contractor during PCB-containing material activities shall be collected, tested and managed in accordance with Articles 3.04.D. and E. and 3.05. The Contractor shall be responsible for all items necessary to collect, test, transport, and dispose of the wastewater.

1.03 HEALTH AND SAFETY

A. Toxic Effects: The Contractor shall assume all responsibility for any toxic effects to workers from the dusts, vapors or residues generated in their work, including the use of any substances or equipment used by the Contractor during construction.

B. Chemical/Biological Hazards: The known chemical/biological hazards on site include PCB-containing material and debris. The Contractor shall provide materials, equipment and training to its workers to ensure their protection from these and any other chemical/biological hazards which may be identified during the course of this work.

C. Physical Hazards: The Contractor shall provide safety equipment and training to his workers to ensure their protection from any physical hazards including but not limited to trip/fall hazards, working at elevation, heat stress, contact with energized (hot) active

equipment, noise, overhead bump hazards, and electrical shock that may be present during the Work.

D. Safety Act: The Williams-Steiger Occupational and Safety Health Act (OSHA) of 1970, as amended, shall be strictly complied with during the course of this project. This Act shall govern the conduct of the Contractor's workmen, tradesmen, materialmen, and subcontractors, and of visitors to the project site.

E. Accident Prevention: In order to protect the lives and health of his employees, the Contractor shall comply with all pertinent provisions of the latest edition of the "Manual of Accident Prevention in Construction" issued by the Associated General Contractors of America, Inc. and shall maintain an accurate record of all accidents which occur during the project. An injury or loss of life must be immediately reported by the Contractor to the Authority, and a copy of the Contractor's report to his insurer of an accident must be provided to the Authority.

F. Emergency Response: The Contractor shall establish an Emergency Response Team made up of members of his work force. Team members shall be trained, organized, and capable of responding in the event of an accident, fire, or other emergency. The Contractor shall designate a site Safety Coordinator to train team members regarding the location and use of site-specific fire/life safety equipment. As a minimum requirement, members of the Emergency Response Team shall be knowledgeable in standard first aid and CPR techniques, fire extinguisher use, and evacuation procedures.

G. Workmen Protection: The Contractor shall provide and maintain all safety measures necessary to properly protect workmen.

H. Emergency Actions: In an emergency affecting the safety of life, the work, or adjoining property, the Contractor, to prevent such threatened loss or injury without special instruction or authorization from the Authority or the Engineer, is hereby permitted to act at his discretion.

I. Hazard Communication Act: The Contractor shall comply with the Hazard Communication Standard promulgated by the Occupational Safety and Health Administration (OSHA No. 29 CFR 1910.1200). This program ensures that all employers provide the information they need to inform and train employees properly and to design and put in place employee protection program. It also provides necessary hazard information to employees so they can participate in, and support, the protective measures needed at their work place. The contractor shall ensure that labels or other forms of warning are legible in English. Employer having employees who speak other languages may add the information in their languages. See OSHA 29 CFR 1910.1200 for more details.

1.04 WORK SUPERVISION AND COORDINATION

A. Contractor's PCB Management Supervisor: From the start of work through to the project completion, the Contractor shall have on-site a responsible and competent supervisor who shall meet the qualifications as required by Article 1.06. The Supervisor shall be on site during all working hours. When the Supervisor must leave site during work, a temporary Supervisor shall be appointed.

B. Quality of Work: The Supervisor shall supervise and inspect the Work competently and efficiently, devoting such skills and expertise as may be necessary to ensure that the Work is performed in accordance with the Contract Documents. The Supervisor shall be responsible to see that Work complies accurately with the Contract Documents, and that all Work installed is of good quality and workmanship.

1.05 SUBMITTALS

A. Pre-Project Submittal:

1. Provide Certificates of Insurance naming the Authority as additional insured.

2. Health and Safety Plan: Provide a written Health and Safety Plan to protect workers and Facility occupants from possible hazards based on the Contractor's evaluation of the tasks to be

performed (including work with PCB-containing and/or presumed PCB-containing caulk) and addressing procedures for work place safety. The Plan shall reflect a program equivalent to the requirements of 29 CFR 1926.62 for lead in construction, considering the OSHA Permissible Exposure Limit (PEL) for PCBs instead of lead as the trigger for applicable requirements. The lead standard provisions considered relevant to PCB include exposure assessment, compliance program, protective work clothing and equipment, housekeeping, hygiene facilities and practices and employee information and training. An acceptable alternative program would be equivalent to that for ACM. The Contractor shall submit the HASP to the Authority at least two (2) weeks prior to commencing construction activities for Authority review. As a minimum, the following topics shall be addressed in the plan:

a. Hazard Communication. Procedure on how physical and health hazards associated with the WORK are identified and communicated to employees, and name of the person responsible for implementation of the Hazard Communication Program.

b. Guidelines for assessment and prevention of heat stress.

c. Procedures for using ladders safely.

d. Electrical safety procedures.

e. Hazard and exposure assessments and determination of what engineering controls, Personal Protective Equipment and/or monitoring are needed to ensure that exposure remains within OSHA requirements.

f. Training.

g. Certifications (e.g., asbestos, if ACM work is also involved).

3. Emergency Action Plan: Provide a written Emergency Action Plan that outlines the

contingency actions to be performed for emergencies including fire, accident, power failure, safety system failure, breach of work area dust barrier, unexpected PCB contamination in the site area and on the adjoining grounds, or spilling of PCB-containing material being hauled to storage and/or disposal. This Plan shall identify the manner in which emergencies are announced, emergency escape procedures and routes, and procedures to account for all employees after evacuation. The Plan shall identify those persons responsible for fire/life safety duties including the Site Safety Coordinator, persons responsible for fire prevention equipment and the control of fuel source hazards, and the members of the Emergency Response Team (see Paragraph "Emergency Response" of Article 1.03). This Plan shall be readily available for review by all workers.

4. Fall Protection Plan: Provide a written Fall Protection Plan that outlines the actions to be performed to protect personnel when they are working at elevation. The plan shall detail specific fall protection devices to be utilized, training provided to personnel for same and training of designated competent person in charge of and responsible for the elevated work site.

5. Provide proof that arrangements for transport and disposal of PCB-containing or PCB-contaminated materials have been made with a suitable transporter and disposal site that are permitted to accept waste with these and any other constituents known to be present (e.g., asbestos, lead, etc.). Provide copies of permits for the PCB containing waste hauler, transport route and disposal site (including the disposal state and every transit state) to the Authority at least three (3) weeks prior to commencing construction activities for Authority review.

6. Provide manufacturer's literature on all proposed job related equipment and products to be used on this project that require AUTHORITY approval. Provide Material Safety Data Sheets (MSDS) for

chemicals to be used on this project (e.g., solvents, wetting agents).

7. Provide a detailed PCB Management Plan that describes all aspects of the work to be performed and PCB precautions for this project based on a hazard assessment of the possible disturbance or removal of PCB caulk during the project and the requirements of the specifications. The Contractor shall submit the management plan to the Authority at least three (3) weeks prior to commencing construction activities for Authority review. The PCB Management Plan shall include:

   a. A summary of all work to be conducted and a more detailed description of all work activities that could disturb caulk during the project.

   b. A listing of all types of caulks, including locations, which will be disturbed during the project.

   c. A description of controls for dusts generated as part of the project. The minimum dust control requirements for projects that may disturb PCBs are described in Article 3.01.C. All dust controls shall meet the requirements of 29 CFR 1926.62 for lead in construction or equivalent as described in Article 1.05.A.2.

   d. HVAC isolation.

   e. Cleaning activities.

   f. A description of the methods of removing PCB-containing caulk as part of the project. The minimum requirements are described in Article 3.04.

   g. Waste sampling, handling, characterization and management, as detailed in Articles 3.04.D. and E. Waste recycling and disposal, as detailed in Articles 3.04 through 3.06.

h. Information regarding the PCB containing waste hauler, transport route and disposal site (including permits for the disposal site and every transit state).

8. Provide a sample of the daily log proposed for use. Minimally, the log should include the date(s) and time(s) when all personnel enter and leave the work area(s).

B. During Work Submittal:

1. Schedule of Work Changes: Any changes in the Schedule of Work proposed by the Contractor shall be submitted for approval within seven days of the commencement date of the proposed change. A revised Schedule shall be submitted at the end of each week.

2. A certified, signed, and completed copy of each "Waste Shipment Record" form used, and receipts from the landfill operator that acknowledge the Contractor's delivery(s) of material, shall be submitted within thirty (30) days following removal of waste from building.

C. Post Project Submittal:

1. A copy of the bound logbook.

2. Compilation in chronological order of all personal air monitoring records pertaining to this project, if applicable.

3. Compilation of all completed and signed Waste Shipment Record forms, waste analysis results/waste profiles, notification of solid waste landfill 15 days in advance of first shipment (if disposing PCB Bulk Waste or PCB Remediation Waste in a solid waste landfill), bills of lading, or disposal receipts pertaining to this project.

4. Copies of digital photographs (electronic files) taken during caulk disturbance activities in accordance with Article 1.06.

1.06 QUALITY ASSURANCE

A. Work of this Section shall be overseen on-site by the Contractor's PCB Management Supervisor who must have received awareness training in accordance with Article 3.01, be thoroughly familiar with the requirements of the Contractor's PCB Management Plan and have a minimum of three years experience in supervising either removal of PCB-containing caulk, lead abatement, Asbestos Abatement or other hazardous substance abatement/remediation projects.

B. The contractor shall perform the inspections required in Article 3.04.B. of this specification and confirm the absence of PCB-containing caulk before it labels any building component waste as non-hazardous waste instead of New York State hazardous waste and offers it for shipment off-site.

C. Digital Photographs shall be taken by the PCB Management Supervisor during inspections documenting the quality of the work performed in accordance with this Specification Section. These should be taken during caulking disturbance activities where PCB content is assumed, or is known to contain PCB concentrations equal to or above 50 ppm of the activities/areas listed below, when applicable and required.

1. Workers in PPE.

2. Workers utilizing HEPA vacuums.

3. Air Filtration Device's (if utilized).

4. Workers in the process of establishing dust barriers, wrapping/covering objects inside and outside the barrier and other critical dust control measures.

5. Protection of areas beneath scaffolding (i.e. plastic).

6. Windows in the work area (during caulk removal, during window removal from opening, plasticized).

7. Air intakes, air conditioners radiators in the vicinity of the work area (plasticized)

8. Waste storage drums and dumpsters with labels.

9. Work area before and after final clean-up and visual inspection.

10. Interior and exterior window sills (before and after).

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Materials provided under this section shall be standard products of manufacturers regularly engaged in the production of the items and shall conform to applicable OSHA, EPA and Department of Transportation Standards (49 CFR 171, 172, and 173); applicable state regulations; and requirements specified herein. Materials listed under this section "or equal" shall be provided for work under contract.

B. Plastic: Fire retardant plastic of 6-mil thickness shall be provided in rolls of sizes which will minimize the frequency of joints. Fire retardant plastic sheet shall be used for preparation of the dust barriers, and for waste packaging.

C. Duct Tape: Duct tape shall be capable of sealing joints of adjacent sheets of plastic and of attaching plastic sheeting to finished surfaces without damage to existing finish and shall be capable of adhering under both dry and wet conditions, including use of amended water. When used on windows the tape shall be ultra violet light stable and shall not leave residue when removed. Nashua 357 Black Duct Tape shall be used for all window applications. This tape can be used for all applications relative to this project.

D. Amended water: Water to which Surfactant (Wetting Agent) has been added to increase its ability to penetrate the caulk. The additive shall consist of Surfactant materials in a water base, which have has been tested to ensure that materials are non-toxic and non-hazardous. Surfactants shall be added to the

water according to the manufacturer's written instructions.

E. Spray Adhesive: Spray Aerosol Adhesive, when used to join plastic sheets, shall be specially formulated to stick to sheet polyethylene (3M 76, 3M 77, or equivalent).

F. Other Materials: All other materials, such as lumber, plywood, tools, scrapers, brushes, cleaning materials, adhesive, nails, hardware, etc., which are required to perform the work described in this Section shall be provided. Materials and equipment shall be new or used, uncontaminated (by PCBs, lead, asbestos, etc.), in serviceable condition, and appropriate for the intended purpose.

G. Disposal Bags: Plastic Disposal Bags shall be a minimum of six mils in thickness.

H. Shipping Containers: Impermeable Containers shall be suitable to receive and retain any waste materials until they are disposed of at an approved landfill. The containers shall be labeled in accordance with this Section. Containers shall be both airtight and watertight and conform to applicable DOT packaging standards (49 CFR 178).

I. Markings and Labels: Storage, disposal and shipping containers shall bear all required waste labels, transportation packaging labels, and generator identification information. Labels shall be permanently affixed to all waste containers, in accordance with, DOT, and EPA Standards applicable to the waste constituents and Article 3.06.

2.02 EQUIPMENT

A. General: Equipment provided under this section shall conform to applicable federal and state regulations, local codes, and the requirements specified herein.

B. Spraying Equipment: Equipment used to apply amended water shall be of a low-pressure type to prevent disturbance of the caulk prior to physical controlled removal.

C. Vehicles: Trucks or Vans used for the transportation of waste shall be enclosed and suitable for loading, temporary storage, transit, and unloading of waste without exposure to persons or property.

D. Fall Protection Equipment: Certified and approved equipment to be used by trained personnel when working at elevation to protect against falling from an elevated work area.

E. Fire Extinguisher: Type "ABC" dry chemical extinguisher or a combination of several extinguisher of NFPA recommended types for the fire hazard exposures in each extinguisher location shall be provided. Minimum size of extinguisher shall be 4-A, and 40-B:C. Supply a minimum of one extinguisher for every 1,000 square feet of floor area, with a maximum travel distance to an extinguisher of 75-feet. Supply at least one extinguisher in any decontamination and work area.

F. Water Treatment System: A system capable of treating and retaining PCBs shall be provided if required by Articles 3.04 to 3.06 or otherwise proposed by the Contractor.

G. Carts: Provide watertight wheeled carts with tight fitting lids suitable for movement of non-contaminated waste or bagged waste from the work area to the waste storage container or transport vehicle.

H. Power Tools: Provide power tools necessary to complete the Work. Article 3.04 prohibits the use of power tools used directly for caulk removal unless information on proposed tool model and design is submitted in advance for approval by the Authority and tools are equipped with a dust collection system including an attached shroud connected to a HEPA vacuum system for capture of dust.

I. HEPA Air Filtration Device: Provide room Honeywell Model 50250 air cleaning device for placement outside the barrier. Substitutions must be approved in writing by the Authority.

2.03 WORKER PROTECTIVE CLOTHING AND EQUIPMENT

A. General: Protective clothing and equipment shall protect the workers and prevent dust migration as determined in the Health and Safety Plan.

B. Protective Clothing: Workers shall be provided with sufficient sets of properly fitting protective clothing and equipment.

1. The Contractor shall provide authorized visitors including the Authority's Environmental Consultant suitable properly fitting protective disposable clothing and equipment (up to four sets per 8-hour shift) whenever they are required to enter the work area.

C. Equipment: Eye protection and hard hats required for job conditions or by applicable safety regulations shall be provided.

D. Respiratory Protection: The Contractor shall be solely responsible for providing adequate respiratory protection at all times for all individuals, if and whenever the Contractor's Health and Safety Plan calls for such protection. Types of respirators used shall be approved by MSHA/NIOSH in accordance with OSHA Standard 29 CFR 1910.134. The Contractor shall provide workers with individually issued and marked respiratory equipment suitable for the exposure level(s) in the work area(s), as specified in OSHA Standard 29 CFR 1910.1000 and any other applicable standards. Where respirators with disposable filter parts are employed, the Contractor shall provide sufficient filter parts for replacement as necessary or as required by the applicable regulation.

PART 3 - EXECUTION

3.01 PRECAUTIONS AGAINST PCB CAULKING CONTAMINATION

A. General

1. All caulk material (interior and exterior of the building) is presumed to contain more than 50 parts per million (ppm) of PCBs, unless otherwise indicated in the Contract Documents.

2. Provide precautions against PCB contamination when caulking materials are disturbed or removed. Provide all necessary precautions for all building occupants and construction personnel to prevent PCB exposure and/or environmental contamination.

3. Personnel performing the work must receive OSHA awareness training and training on work practices related to PCB disturbances and handling. Training on work practices will include, but not be limited to, hazards, hazard control procedures the prohibition on mechanical saw cutting or grinding of caulking material, removal using only manual hand implements (e.g., knife cutting) and wet scraping, caulk removal prior to cutting building components, dust control measures, waste labeling/ management, security, cleanup and other AUTHORITY and regulatory required work practices. Personnel managing New York State hazardous waste containing greater than 50 ppm of PCBs shall be trained in hazardous waste management.

4. The Contractor shall consider potential PCB hazards and prepare a PCB Management Plan and a Health and Safety Plan as described in Article 1.05. PCBs shall be handled such that no skin contact or release to the building or the environment occurs. Proper handling, storage and disposal of PCB-containing waste shall be performed by the Contractor in accordance with all applicable regulations, including, but not limited to 40 CFR 761, 6 NYCRR 371 and 6 NYCRR 373.

5. If concealed caulks are discovered during the course of the Work that may be disturbed as part of the project, ensure they have been tested for asbestos (with modified tent asbestos procedures in place as required in Section S02081) and PCBs.

B. Pre-Construction: Prior to commencing Work that may disturb or remove caulk, the following shall occur:

1. The Contractor and the Authority shall meet with representatives of the Facility during a protocol meeting to discuss the possible presence of PCBs,

the HVAC system zones and intakes affected by the work and controls used to prevent possible release and exposure.

2. The Contractor and the Authority shall inspect all spaces where work will be conducted to document the current presence of dust and housekeeping. If necessary, the Authority may request additional cleaning by the Contractor.

C. Dust Control

1. All Caulk Removal

a. Shut down and isolate all HVAC equipment, including installing plastic sheeting on all air returns and exhausts within the room and all outdoor air intakes within 35 lateral feet of exterior work.

b. All windows within the work area shall be closed and all room air conditioners shall be closed and sealed with plastic. For exterior caulk removal, all windows shall be closed and all room air conditioners shall be closed and sealed with plastic. This shall also be done for the two rooms on each side of the work and on all floors of the building.

2. Interior Spaces

a. All work involving disturbance of caulk shall be performed in accordance with the "Lead in Construction" dust control requirements of 29 CFR 1926.62 or equivalent as described in Article 1.05.A.2.

b. Install dust isolation barriers with a dust flap (3-layer) across each room approximately 4 feet from the windows, doors or other interior caulk removal work. Construct of PVC piping framework, telescoping, with holes and pegs to allow adjustment of heights. Cover framework completely with fire-retardant polyethylene film, 6-mils minimum thickness, with flap

for access. Install additional two layers of plastic at the access flap to form vestibule between work area and other areas. Tape junctures to obtain a dust-tight barrier. Construct in manner to provide easy assembly and disassembly.

c. All movable objects must be moved outside the dust barrier. All objects outside the barrier and within the room shall be covered with 6-mil fire-retardant polyethylene sheeting.

d. Fixed closets, cabinets, refrigerators, etc. which remain in the work area during demolition shall, at minimum, be sealed with duct tape (or equivalent) at all doors, drawers and other openings where dust may penetrate. As an alternative, the Contractor may completely cover the object with one layer of 6-mil fire-retardant polyethylene sheeting, sealed on all edges to prevent the penetration of dust. Light fixtures in the work area that can be safely sealed using the above method will be sealed to minimize cleaning requirements

e. Floor surfaces along entire length of the wall in front of the windows shall be covered with construction paper the entire width of the work area from the wall to the barrier.

f. The Contractor shall continuously inspect adjacent non-work areas and ensure that these areas are free of any dust or debris generated by the work.

g. Provide a HEPA air filtration device (Honeywell Model 50250) outside and immediately adjacent to the dust barrier within 4 feet of the access flap for all indoor work areas and operate it continuously during the performance of the work and afterward during cleanup for dust control in accordance with the manufacturer's recommendations.

Substitutions must be approved in writing by the Authority.

h. Areas of work shall be regulated to prevent unauthorized visitors and a curtained doorway shall be established at the entrance of each work area. Access to the work areas will be restricted by posting temporary barriers and signs which read "WARNING: Authorized Personnel Only" along with any other required signs (e.g., for ACM/Lead).

i. Dust control ("sticky") foot mats will be placed outside each access flap to minimize the spread of dust and foot marks.

j. For spaces larger than a typical classroom, an alternative to sealing all fixed objects inside the barrier may be proposed by providing a detailed description in the PCB Management Plan of the steps that will be taken to localize the work area for Authority approval.

k. For permanently carpeted spaces that will be work areas where the carpet will not be replaced, provide a detailed description in the PCB Management Plan of the steps that will be taken to prevent dust intrusion onto the carpet for Authority approval.

3. Exterior of Building

a. Prior to beginning any exterior caulk or window removal, 6-mil fire-retardant poly protection shall be placed on all grade areas including under scaffolding to collect dust and debris that may contain caulking. Such protection shall also be placed on roofs and on top of side walk bridges in the vicinity of the work area. Plastic shall be extended from the building to a distance of 15 feet from the building and at least 15 feet laterally beyond on each side of the work. Joints must be taped or otherwise secured to maintain coverage of the required

areas and prevent plastic from the effects of wind or rain.

b. Access to the lined area will be restricted by posting temporary barriers and signs which read "WARNING: Authorized Personnel Only" along with any other required signs (e.g., for ACM/Lead).

c. Waste shall be removed from the plastic sheeting at the end of each shift, at a minimum, and before any high wind conditions occur.

D. Cleaning

1. Daily cleaning shall be performed in accordance with this Specification Section. However, during removal of caulking or demolition of material that may have caulking attached, the following procedure is to be followed when the construction task is completed and at the end of each work day to prevent contamination during the demolition process.

a. The cleaning process shall consist of vacuuming (with a HEPA filter), wet wiping/mopping and a repeated vacuuming (with a HEPA filter) of the entire indoor work area. All surfaces in and around the work area must be free of dust generated during the work.

b. All dust, debris or waste associated with or generated by the removal and demolition of building material with caulk shall be removed from interior and exterior work areas. Final cleanup shall ensure that the area is left cleaner than original conditions found and no trace of the demolition activity is to be left behind.

c. Clean all tools and equipment before removal from the work area by HEPA vacuuming and wet wiping.

d. Cleanup shall begin at the far end of the work area and move towards the entrance to the work area, vacuuming floors last.

2. Cleaning when the construction task is completed shall be performed in accordance with Specification S01900. During removal of caulking or demolition of material that may have caulking attached, the following procedure is to be followed when the construction task is completed:

a. Complete all daily cleaning tasks.

b. All unwrapped vertical and horizontal surfaces and lighting fixtures inside the barrier will be cleaned of dust and dirt.

c. HEPA vacuums will be emptied and the Honeywell Model 50250 HEPA filter element replaced at the end of work at this Facility (and whenever else needed) inside the work area before final cleanup in a manner which minimizes the reentry of contaminants into the workplace. HEPA dust, debris and filter media from the work involving PCB-containing caulk will be containerized and managed as PCB waste.

d. If dust or debris has migrated to areas of the building other than the immediate work area, those areas shall be incorporated into the work area and thoroughly cleaned to ensure all visible dust generated by the activity is eliminated. The Authority reserves the right to utilize its Requirements Contract vendors to complete cleaning, if dust or debris is present and could affect building re-occupancy, for which the Contractor will be back-charged.

e. Remove dust mats, construction paper, dust barriers and other protective sheeting by misting with water, detaching it, folding it dirty side inward, and either taping to seal it or sealing it in heavy-duty bags. Sheeting separating contaminated rooms from non-contaminated rooms must remain in place

until after removing other sheeting. Dispose of as waste.

f. Clean interior walls starting at the ceiling and working down to the floor by either HEPA vacuuming or wiping with a damp cloth. Thoroughly HEPA vacuum all remaining surfaces and objects in the work area, including furniture and fixtures. The HEPA vacuum must be equipped with a beater bar when vacuuming carpets and rugs.

g. Wipe all remaining surfaces and objects in interior work areas, except for carpeted or upholstered surfaces, with a damp cloth. Mop uncarpeted floors thoroughly, using a mopping method that keeps the wash water separate from the rinse water, such as the 2-bucket mopping method or wet mopping system (i.e., mop head designed to be used with disposable absorbent cleaning pads, a reservoir for cleaning solution, and a built-in mechanism for distributing cleaning solution onto a floor, or a method of equivalent efficacy).

h. Visually inspect the area for any remaining dust or debris. Vacuum (with HEPA filter) and wet wipe until space is clean.

3.02 INSPECTIONS

A. Prior to removal of any PCB-containing caulk, the Contractor shall notify the Authority's Environmental Consultant and request a pre-removal inspection. Posting of warning signs, plasticizing of work area, and all other preparatory steps shall be taken prior to notification of the Authority's Environmental Consultant. The Contractor shall not begin PCB-containing caulk removal until the Authority's Environmental Consultant approves the work area preparations.

B. After finishing the cleaning and removing temporary dust barriers, a final inspection shall be performed by the Contractor and the Facility's Representative.

C. Contractor shall submit a completed and signed checklist for the final inspection to the Authority.

3.03 MAINTENANCE OF DUST CONTROLS

A. Ensure that dust barriers and plastic linings are effectively sealed and taped. Repair damaged barriers and remedy defects immediately upon their discovery. Visually inspect dust controls at the beginning and end of each work period.

B. Visually inspect non-work areas for dust leakage. Check the floor below, ceiling and walls, and view beneath/or around the dust controls, for signs of leakage. Perform the visual inspection a minimum of twice each 8-hour work shift.

3.04 REMOVAL OF PCB-CONTAINING CAULKING

A. All Caulk Removal

1. Removal of building components shall be performed in accordance with the following procedures after all precautions and indoor and outdoor dust controls described in Article 3.01, Paragraphs A, B and C, as applicable, are in place Removal of caulk and building components that are also ACM shall follow the applicable provisions of both Specification S02081 and this specification.

   a. Effective dust control, as described in Article 3.01.C, must be maintained in any wind and weather conditions. Exterior windows, doors and caulk shall not be removed when the National Weather Service forecasts winds in excess of 15 miles per hour and ground plastic shall be rolled up and secured to prevent the spread of debris and dust to the building and the environment (unless equivalent precautions are proposed, approved by the Authority and implemented).

   b. All PCB containing caulking removal from the building, windows, doors and other surfaces within the scope of work shall be by wet manual tool removal methods in the work area set up with dust controls. Caulking to be

removed shall be misted with amended water, scored with a razor/knife at the point of contact with the building or component, and manually extracted with a pick and/or other manual tools. Mechanical cutting or grinding of caulking material is not permitted. Power tools with an attached shroud connected to a HEPA vacuum system for capture of dust may be proposed for Authority approval as described in Article 2.02. Any alternative methods not meeting these requirements shall be demonstrated to the Authority to have equivalent dust control performance. Such alternate methods shall not be used without approval by the Authority.

c. Remove all accessible caulk from any building components which require cutting or dismantling to facilitate removal (such as window frames) prior to such cutting or dismantling.

d. Segregate removed caulk which has been tested or is assumed to contain PCBs in excess of 50ppm from all other waste and debris that does not contain greater than 50 ppm PCBs to minimize the quantity of New York State hazardous waste generated. Remove waste caulk from the work area on a regular basis and at the end of each work day.

e. Visually inspect all building components and surfaces remaining in place on the building to ensure that all visible pieces of caulk have been removed. Any residual caulk will be misted with amended water and manually scraped until all visible caulk is removed from the building.

f. Clean building surfaces after caulk removal in accordance with Article 3.01.

B. Managing Caulk on Removed Building Components

1. All PCB containing caulking that would cause the building material waste to be hazardous waste

shall be removed from the windows, doors and other building components as part of the scope of work as described in Paragraph A above unless:

a. The Authority has determined that the combined concentration in removed window waste will be less than 50 ppm because PCB concentrations in both caulk and glazing are below 1650 ppm.

b. The Authority has determined that the waste would remain hazardous due to the presence of glazing that contains PCB-containing glazing compound that cannot be removed.

c. For other building components, the Contractor has demonstrated and obtained the Authority's representative agreement in writing that other removed building components with adhered caulk will have a combined PCB concentration below 50 ppm.

d. The Contractor identifies this task as infeasible in the PCB Management Plan

2. Whenever caulk is removed so building material will not become hazardous waste, the Contractor shall:

a. Remove all caulk only within in the work area set up with dust controls or in a separate staging area that includes barriers to contain dust and protect from the effects of wind and weather and is kept under negative air pressure by use of an air exhaust system equipped with HEPA filtration. If using a separate staging area, windows or other building components that are removed from the work area with caulk intact must, first be wrapped in plastic when transporting them to the staging area.

b. After removing the caulk, inspect all waste glass and building components to ensure that all visible pieces of caulk have been removed. Mist any residual caulk residues

with amended water and manually scrape until all visible caulk is removed from the building component.

c. Remove waste caulk from the work area on a regular basis and at the end of each work day.

3. The Authority has determined that PCB containing caulking and glazing compound on windows, window frames and other building components contain over 1650 ppm of PCBs and all are subject to the removal provisions in Paragraphs 1 and 2 above.

4. If the Contractor identifies the removal of PCB-containing caulk and/or glazing compound that would cause the removed building material to be hazardous waste as infeasible, the Contractor shall plan in advance for the facility exceeding the hazardous waste Large Quantity Generator (LQG) or Small Quantity Generator (SQG) thresholds (see Article 3.06.B.1. or regulation for definitions) and shall meet all LQG or SQG compliance requirements and provide the authority with all LQG or SQG documentation required to demonstrate compliance at least two weeks before they are required (e.g., Contingency Plan submitted two weeks before initiating the work) as described in Article 3.06.B.

5. All surfaces of any door, window, sash, frame, or other building component to be removed that had PCB-containing caulk on it shall be HEPA vacuumed, wet wiped and wrapped with two layers of 6-mil poly prior to removal from the work area.

6. The plasticized sashes and/or frame shall be carried directly to the dumpster or container meeting the requirements of Article 3.06.A.2.

7. The plasticized window sashes and/or frame shall be properly stored and/or presented for transportation as discussed in Paragraphs C and D.

C. Waste Handling

1. All waste or debris shall be placed in covered or sealed containers to ensure that dust is not dispersed during transport Separate caulking and collected HEPA dust/debris containing caulking from other demolition debris to minimize the amount of hazardous waste.

2. All wash water from caulk work shall be collected in appropriate containers and tested. If necessary to minimize the quantity of New York State hazardous waste, it shall be treated (see Paragraph D.5), treated water collected and containerized and characterized to determine how it may be disposed. Waste water treatment solid wastes shall be placed in appropriate hazardous waste containers.

3. The Contractor shall handle waste in accordance with Article 3.06.

D. Waste Characterization

1. Caulk and building components/debris that is painted shall be tested using the TCLP for lead in accordance with Specification S09900, S01900 and/or other applicable specifications, in addition to the applicable provisions of this Specification Section. If homogenized, representative samples indicate that the waste is hazardous waste due to lead, it shall be removed and disposed as such, in addition to any applicable PCB and/or asbestos waste requirements.

2. PCB-Containing Caulk Waste, HEPA Dust and Debris from Caulk Removal:

   a. For disposal, the Contractor shall presume that these wastes contain greater than 50 ppm PCBs and shall be classified for waste disposal as shown below. No sampling or testing of waste is required.

      1) PCB Bulk Product Waste

2) New York State Hazardous Waste (if painted and found to be hazardous waste due to lead, also an EPA Hazardous Waste).

b. If caulks are disturbed during paint removal or abatement, then the waste shall be analyzed for total PCBs in addition to lead TCLP testing unless it is already known to be PCB-containing caulk.

3. Building Components and Debris from Removals Verified Free of Visible PCB-Containing Caulking:

a. Whenever caulk is removed so building material will not become hazardous waste, the Contractor shall inspect all waste building components to ensure that all visible pieces of caulk have been removed as described in Article 3.04.B. and building components removed from the building as described in Article 3.04.C. The Contractor shall classify components and debris which they have verified are free of visible pieces of caulk for waste disposal as shown below. When testing is required for disposal site approval, sampling of waste should be performed as described in Paragraph 4 below.

1) PCB Remediation Waste

2) Non-Hazardous Waste (if painted and found to be hazardous waste due to lead, also an EPA Hazardous Waste).

b. For components and debris that never contacted PCB caulking or glazing or lead containing paint, the Contractor may carefully inspect the waste for caulking and paint, segregate it and dispose of it separately as Construction and Demolition waste.

4. Building Components and Debris from Removals NOT Free of Visible PCB-Containing Caulking:

The Contractor shall characterize all building component and debris wastes that are not free of visible PCB-Containing caulking or glazing compound by performing total PCB tests in accordance with USEPA Publication SW-846 and 40 CFR 761. Copies of all waste characterization analytic results shall be forwarded to the Authority.

a. Contractor shall remove building components and debris from the building as described in Article 3.04.C.

b. The Contractor shall propose a representative sampling and homogenization procedure to obtain a composite sample from each container of building components and debris for disposal. The procedure may include composite sampling of caulk and calculation of total waste concentrations using estimates of caulk and building component weights. All sampling shall be performed outside the building in the waste dumpster.

c. Composite samples shall consist of combining individual samples of approximately equal quantity taken at the rate of one (1) sample per approximately every ten (10) linear feet of caulk on building components. The composite sample shall be homogenized before analysis.

d. At a minimum, Contractor shall analyze one (1) composite sample for each container of waste for disposal.

5. Wash Water from PCB-Containing Caulk Activities

The Contractor shall perform total PCB analysis to characterize all wash water in accordance with USEPA Publication SW-846 and 40 CFR 761 to confirm that is below the New York State hazardous waste threshold of 50 ppm and determine if it is below the PCB Decontamination Standard of 3 ug/L for discharge to a POTW (40 CFR 761.79(b)(1)(ii)). Copies of all waste

characterization analytic results shall be forwarded to the Authority.

a. Contractor shall containerize wash waters from all PCB-containing caulk removal, dust control and cleaning as described in Article 3.04.C.

b. The Contractor shall propose a sampling and homogenization procedure to obtain one or more composite samples representative of all containers for disposal.

c. Contractor shall collect a composite sample of all containerized wash waters from PCB-containing caulk removal, dust control and cleaning. All sampling shall be performed the waste storage area. Waste water treatment solid wastes

d. If wash waste water is below 50 ppm PCBs, the Contractor shall dispose of it as Non-Hazardous, PCB Remediation Waste or may propose discharge in accordance with Article 3.05. If wash water is 50 ppm or above, the Contractor shall treat it to concentrate the PCBs (e.g., in filter solids or activated carbon), collect a composite sample of all treated waters and confirm it is below the above thresholds for Non-Hazardous Waste disposal or discharge. Waste water treatment solid wastes may be tested and characterized prior to proper disposal or assumed to be PCB Remediation Waste and New York State Hazardous Waste.

E. Contractors Bid Amount for Disposal of Caulking Waste

1. Caulk and HEPA Waste: For the purposes of bidding, the Contractor's bid amount shall include disposal of caulking waste and associated HEPA dust and debris as PCB Bulk Product Waste and New York State Hazardous Waste. Where the scope identifies caulk as containing asbestos and/or lead paint, the bid amount shall also include disposal with asbestos waste and/or lead-bearing Hazardous Waste, as applicable.

2. Building Components and Debris: For the purposes of bidding, the Contractor's bid amount shall include disposal of building component waste and associated debris as non-hazardous PCB Bulk Product or PCB Remediation Waste unless (as specified in Article 3.04.B.1) it must be disposed of as PCB Bulk Product and New York State Hazardous Waste. In the latter case, the bid amount shall include disposal as New York State Hazardous Waste. Where the scope identifies lead paint on these components, the bid amount shall also consider specifications applicable to lead-based paint work, as applicable.

3. Wash Waste Water: For the purposes of bidding, the Contractor's bid amount shall include disposal of wash water as non-hazardous PCB Bulk Product or PCB Remediation Waste after confirmation that is below 50 ppm PCBs or they may propose discharge of treated wash water to a POTW after first confirming that is below the PCB Decontamination Standard of 3 ug/L for discharge (40 CFR 761.79(b)(1)(ii)) and meeting other discharge requirements.

3.05 DISPOSAL OF WASTE WATER

A. Waste Water Discharge to Sewer

The Contractor may propose in the PCB Management Plan to discharge treated wash water to sewer after confirming that is below the PCB Decontamination Standard of 3 ug/L for discharge (40 CFR 761.79(b)(1)(ii)) and meeting the following provisions.

1. The Contractor shall not dispose of water used for dust control, to wash surfaces, wash the work area or water used to assist in the removal of PCB-containing caulk in the City sewer system without first obtaining a permit or determination that a permit is not required based on analysis for such disposal from the New York City Department of Environmental Protection (DEP). Until such a permit is obtained, all water shall

be containerized as described in Article 3.06.A.2. below titled "Package and Label Waste".

2. The Contractor shall ensure that water is separated from solid waste and the method used for separation is clearly described in the DEP application.

3. The Contractor shall test the water for the parameters listed below. In addition, the Contractor may be asked by the DEP to test for other parameters not listed.

   a. Total Petro-Hydrocarbons

   b. pH

   c. RCRA Metals

   d. Cyanide

   e. Flashpoint

   f. Total Solids

   f. Total PCBs

4. The permit application process is the responsibility of the Contractor, as well as the cost incurred by the water testing and analyses.

B. Waste Water Disposal

1 If wash water waste water discharge to sewer is not permitted by the DEP, waste water shall be disposed in accordance with Article 3.06.

3.06 DISPOSAL OF PCB WASTE AND DEBRIS

A. Storage and Disposal

1. Disposal of waste and debris containing paint or ACM

   a. Disposal of Waste also containing lead-based paint and/or ACM shall also be performed in

accordance with Specification S01900 and/or Specification S02081, as applicable.

2. Package and label waste

a. PCB-Containing Drummed Caulk Waste, HEPA Dust and Wash Water Treatment Solid Wastes (non-ACM).

1) Drummed waste shall be secured, labeled "Caution - Contains PCBs" and "Hazardous Waste" in accordance with the provisions of 40 CFR 761.45, 40 CFR 262.32 and 49 CFR 172.304, and stored in a designated secured storage space on site.

2) As the work progresses, remove contained PCB-waste containers from the work area and place in a lockable trailer, dumpster, or other shipping container meeting DOT requirements for transport of PCB-containing waste. The waste container shall be lined with two layers of fire retardant plastic. PCB-containing waste shall remain under the positive control of the Contractor and must never be left unattended in an area or on a vehicle where unauthorized persons could gain access.

b. Building Components and Debris from Removals Free of Visible PCB-Containing Caulking (or <50 ppm PCBs by Analysis). These paragraphs apply to material where caulk is removed so building material will not become hazardous waste.

1) This material shall be stored in a manner that shall not allow entry of any residual traces of hazardous material into the environment. Leak-proof drums or portable bins, such as gondolas, are generally acceptable. The lids of the drums, or the covers of the bins, shall be firmly secured. The containers shall be kept out of flood

plains or areas where run-off may occur. Weather resistant labels using indelible ink warning of the potential hazards associated with the material shall be placed on the containers. The containers shall be marked with the contents, tare weights of the containers, and the origin and date of collection of the material.

2) Containers of materials to be disposed shall be labeled "Bulk PCB Remediation Wastes" in accordance with the applicable provisions of 40 CFR 761.45.

c. Intact Building Components and Debris Where PCB-Containing Caulking was Not Removed

1) This material shall be stored in a manner that shall not allow entry of any residual traces of hazardous material into the environment. Leak-proof drums or portable bins, such as gondolas, are generally acceptable. The lids of the drums, or the covers of the bins, shall be firmly secured. The containers shall be kept out of flood plains or areas where run-off may occur. Weather resistant labels using indelible ink warning of the potential hazards associated with the material shall be placed on the containers. The containers shall be marked with the contents, tare weights of the containers, and the origin and date of collection of the material.

2) Containers of materials to be disposed known to have a combined concentration below 50 ppm PCBs shall be labeled "PCB Bulk Product Wastes" in accordance with the applicable provisions of 40 CFR 761.45. Containers of materials to be disposed known or believed to have a combined concentration of 50 ppm PCBs or above shall also be labeled "Hazardous Waste" in accordance with

the applicable provisions of 40 CFR 262.32 and 49 CFR 172.304.

d. Drummed Wash Water

1) Drummed Wash Water shall be secured, labeled "Wash Water" and stored in a designated secured storage space on site until test results appropriately categorize the waste water.

2) Perform tests on waste water as per Article 3.04.D.

3) Once the analytical results are received, if it will be disposed off-site, the container shall be labeled "Bulk PCB Remediation Wastes", in accordance with the provisions of 40 CFR 761.45. If known or believed to have a combined concentration of 50 ppm PCBs or above, it shall also be labeled "Hazardous Waste" in accordance with the applicable provisions of 40 CFR 262.32 and 49 CFR 172.304.

4) As the work progresses, containers shall remain under the positive control of the Contractor and must never be left unattended in an area or on a vehicle where unauthorized persons could gain access.

e. All waste shall be disposed of in accordance with all applicable local, Federal, State and county Regulations. Where required to be characterized, all laboratory analysis shall be conducted in an expeditious manner, with results not to exceed 48 hours turnaround.

f. Based on waste characterization, additional markings and labels shall be affixed to waste containers to meet all applicable local, Federal, State and county Regulations for storage, transportation and disposal.

This includes, but is not limited to hazardous waste (i.e., if hazardous waste due to lead or >50 ppm PCBs), DOT and asbestos standards, when applicable to the waste characteristics.

g. The contractor shall disclose to all waste transporters and disposers the characteristics of the waste and the history of waste generation prior to arranging for disposal. Disposers of wastes that are free of visible PCB-containing caulking shall be advised that PCB-containing caulking was removed from these materials.

h. As part of the PCB Management Plan described in Article 1.05.A, the Contractor shall submit to the Authority for approval information regarding the PCB containing waste hauler (waste transporter permits for all transit states), transport route and disposal site (waste disposal site permit) which demonstrates that they are authorized for transportation and disposal of the waste. The Contractor shall submit evidence that disposers of wastes that are free of visible PCB-containing caulking due to caulking removal were advised that PCB-containing caulking was removed from these materials. This can take the form of disposer waste profiles and disposer approvals, 15 day advance notifications of solid waste landfills of disposal of PCB Bulk Product Waste or PCB Remediation Waste (per 40 CFR 761.61(a)(5)(i)(B)(2)(iv) and 761.62(b)(4)) or equivalent documentation.

3. Storage of waste on site

a. Site storage involves grouping of materials by particular work site, even though the physical location of the storage site may be separate from the work site itself. Regardless of the location of the storage site, the requirements remain constant.

b. The site shall be secure. The storage site shall be in a suitable location, acceptable to the Authority. Storage sites shall be on well-drained ground that is not subject to flooding (40 CFR Part 264.18). The area shall be enclosed by a fence or a designated locked area, and prominent warning signs shall be displayed around the perimeter. If the same storage site is also used for equipment and supplies, the waste containers shall be segregated within the site. This can be accomplished by placing all the debris material in assigned area within the secured site and surrounding this area with a temporary "fence" of ribbons or thin rope. Identification and warning signs shall be posted where the material is being stored, and all drums shall be placed on pallets or dunnage to prevent corrosive attack from moist soil. The containers shall be arranged so that the labels are visible at all times. The site shall be adequately protected from vandalism or unauthorized access by the public (40 CFR Part 264.14). A warning sign shall be posted where the waste is being stored, this sign shall read:

"HAZARDOUS WASTE STORAGE AREA
NO SMOKING OR EATING"

Note: At the completion of each work shift all hazardous or suspected- hazardous waste generated shall be stored in a suitable container that will prevent unauthorized access to the public. The container shall be constructed with rigid construction materials and have a lockable access door. If this is not feasible, the Contractor shall arrange for the removal of the material each day of the project.

4. Transportation requirements

a. The Contractor shall warrant and represent that the entity providing waste transportation services shall possess a valid Waste Hauler's permit issued pursuant

to the New York State Department of Environmental Conservation (NYSDEC) regulations, 6 NYCRR Part 364. In addition, if the waste is to be transported and disposed of out of New York State, permits from those states through which the waste will be transported and for where it will be disposed may be required. It is the responsibility of the Contractor to determine which permits are required and to provide such permits for review and approval of the Authority.

5. Additional disposal requirements

a. The Contractor shall warrant and represent that all entities and/or individuals involved in the work shall possess all permits and/or licenses required under 40 CFR 761, 6 NYCRR 371 and 373, as well as any other federal, state or local permits or licenses required for removal, packaging, transportation and disposal of PCB containing waste.

b. All PCB containing waste materials removed hereunder shall be lawfully treated and disposed by the Contractor at an Environmental Protection Agency (EPA) permitted treatment, storage, and disposal (TSD) facility or (if not hazardous waste) disposed in a permitted solid waste landfill in accordance with all applicable federal and state regulations.

c. All wastes, drums, and other items removed hereunder shall be lawfully treated and/or disposed of by Contractor within thirty (30) days after removal from the site. The Contractor shall provide generator copy of the completed shipping documents for all PCB containing waste removed (for both hazardous and non-hazardous waste), which contain the information required under 40 CFR Part 262 Subpart B (hereinafter the "Manifest Form"), 40 CFR 761 and 6 NYCRR Part 372 to the Authority.

d. For hazardous wastes, the Authority will forward copies of the manifest (upon receipt from the Contractor) to the generator state and disposal states. When the signed Disposal Site copy of the manifest is returned by the disposal site, it also must be forwarded to the Authority within 24 hours. Also forward Certificates of Disposal which specify where each component of all wastes removed from the Authority's property is ultimately treated or disposed. Such Certificates shall include references to the Manifest Form for the shipment as well as address and EPA identification numbers for the generator facility.

e. Contractor shall submit evidence to the authority that those preparing/signing manifests have received DOT Hazardous Materials Shipping Training (initial and refresher every 3 years).

f. Facilities or transporters which the Contractor intends to use to treat and/or dispose of PCB containing waste picked up hereunder shall be approved for use by the Authority prior to any delivery of waste by Contractor to such TSD facility. The Authority reserves the right to inspect the Contractor's transporters, equipment, equipment storage facility and TSD facility at any time.

g. Should any problems arise regarding the TSD facility chosen to accept the waste for treatment and disposal that would require the return of waste to the Authority, or should such TSD facility violate any environmental law or regulation which would result in any regulatory enforcement action, the Contractor shall immediately notify the Authority in writing of such situation, identify an alternative TSD and obtain written approval from the Authority for disposal at such TSD.

h. PCB-containing wastes shall be disposed at facilities licensed for the waste categories as shown below and described in this Article.

PCB Concentrations and Waste Type	PCB Bulk Product Waste	PCB Remediation Waste	NYS Hazardous Waste (HW)	NYS Non-Haz. Waste (Municipal Land Fill)	Construction & Demolition (C&D) Waste
Caulk < 50 ppm					X[1]
Caulk Waste ≥ 50 ppm (caulk /dust, no building materials)	X		X		
Caulk on Bldg. Material Waste (<50 ppm in composite waste; ≥50 ppm in caulk) [2]	X		---[3]	X[3]	
Caulk on Bldg. Material Waste (≥50 ppm in composite waste; ≥50 ppm in caulk)	X		X		
Bldg Material Waste <50 ppm with caulk >50 ppm removed (for HW Minimization)		X[4]	---[3,4]	X[3,4]	
Washwater <50 ppm		X	---[3,5]	X[3,5]	
Washwater ≥50 ppm		X	X		
ACM (≥ 1% Asbestos)	Also an Asbestos Waste (see Section S02081)				
TCLP >5 mg/L Lead	Also a HW for Lead (federal and NYS, see Section S01900)				

Table Notes:

1. If all caulk is < 50 ppm PCB (as well as non-ACM and < TCLP for lead), all waste is C&D waste. Components and debris that never contacted PCB caulking or glazing may also be considered "C&D" waste.
2. NYS HW determination is based on combined average concentration of the entire building component/caulk waste. Since the weight of caulk/glazing on even the lightest wooden windows is ≤3%, windows with <1650 ppm PCBs in caulk may be disposed as PCB Bulk Product Waste in a permitted municipal/solid waste landfill.
3. Changes to HW (federal and NYS) if TCLP lead test results for painted building components/caulk are above 5 mg/L.
4. If caulking is completely removed from building materials prior to disposal to minimize hazardous waste generation, it is considered PCB Remediation Waste. Removal must lower the combined concentration of building material waste to <50 ppm to be non-hazardous and allow disposal in a municipal waste landfill.
5. Wash waste water <50 ppm is non-hazardous and it may be managed by a permitted industrial waste treatment/disposal facility or, if <3 ug/L, the contractor may seek NYC DEP approval as described in the specifications for discharge to the sanitary sewer treatment (40 CFR 761.79(b)(1)(ii)).

The caulk waste from the project shall be handled, stored, transported and disposed of in accordance with all applicable rules and

regulations, including 40 CFR Part 761, 6 NYCRR 371 and 6 NYCRR 373.

h. All ACM and PCB-containing caulking wastes are to be disposed of as per the table above.

i. All ACM caulking materials and debris with ACM caulking from interior removals that are Non-PCB-Containing (PCB levels less than 50 ppm) shall be removed and disposed of as specified under Section S02081.

B. LQG and SQG Hazardous Waste Management Requirements

1. The contractor shall conduct the work using methods that do not result in the facility exceeding the hazardous waste Large Quantity Generator (LQG) or Small Quantity Generator (SQG) thresholds summarized below (considering any existing Facility waste generation) or shall meet all LQG or SQG compliance requirements and provide the authority with all LQG or SQG documentation required to demonstrate compliance at least two weeks before exceeding the thresholds (or before the effective date of the requirement, e.g., biennial reports).

a. Small Quantity Generator (SQG) – generates (in a calendar month) >100 kg and <1,000 kg of hazardous waste, ≤1 kg of acute hazardous waste, and ≤100 kg of acute hazardous waste spill residue or soil; and that also stores (at any time) ≤6,000 kg of hazardous waste, ≤1 kg acute hazardous waste and ≤100 kg of acute hazardous waste spill residue or soil.

b. Large Quantity Generator (LQG) – generates (in a calendar month) ≥1,000 kg of total hazardous waste or >1 kg of acute hazardous waste or >100 kg of acute hazardous waste spill residue or soil, or stores hazardous and acute hazardous wastes in greater quantities (at any time) than ≤6,000 kg of hazardous waste, ≤1 kg acute hazardous waste and ≤100 kg of acute hazardous waste spill residue or soil.

2. The contractor shall notify the authority in the PCB Management Plan if their methods are projected to result in exceeding the LQG and SQG thresholds. The contractor shall track the rate of hazardous waste generation and total quantity accumulated during the work and shall notify the authority in advance of any situation that will result in exceeding the LQG and SQG thresholds.

3. If the contractor will exceed the LQG or SQG thresholds, requirements contractor shall meet all applicable regulatory requirements including, but not limited to, the following:

   a. Operation and Maintenance Requirements.

      1) Adequate aisle space is maintained for emergency equipment access.

      2) Housekeeping is performed to minimize the possibility of fire, explosion or unplanned release.

      3) All personnel involved in hazardous waste handling have immediate access either directly or through visual or voice contact with another employee to a telephone, a hand-held two-way radio or other alarm/device, capable of summoning external emergency assistance.

      4) Weekly inspections of all hazardous waste storage areas are performed and documented.

   b. Maintained and routinely test the following emergency equipment:

      1) Internal communications or alarm system capable of providing immediate emergency instruction (voice or signal).

      2) Telephone or hand-held two-way radio, capable of summoning emergency

assistance from local police, fire or emergency responders.

3) Portable fire extinguishers, fire control equipment, spill control equipment and decontamination equipment.

4) Water at adequate volume and pressure to supply water hose streams, foam-producing equipment, automatic sprinklers or water spray systems.

c. EPA Hazardous Waste Generator ID Number:

1) Determine if there is an existing EPA hazardous waste generator identification number that must be used for waste manifests.

2) If there is no existing EPA identification number, submit a "Notification of Regulated Waste Activity Form" (EPA Form 8700-12 Revised 7/2006) to the Authority concurrent with the PCB Management Plan.

d. Contingency Planning:

1) Prepare, implement, and maintain a Hazardous Waste Contingency Plan that meets the requirements of 6 NYCRR 373-3.4(c) and includes the Emergency Procedures in 6 NYCRR 373-3.4(g).

2) Work with the authority to submit a copy of the plan and all revisions to all local police departments, fire departments, hospitals, and state and local emergency response teams that may be called upon to provide emergency services at the facility.

3) Have a Facility Emergency Coordinator who will: be on-site or on call (i.e., available to respond to an emergency by

reaching the facility within a short period of time); be thoroughly familiar with the Plan, operations, location and characteristics of hazardous waste, location of all records, and facility layout; and have the authority to commit the resources needed to carry out the Plan.

4) In the event of an imminent or actual emergency, the Facility Emergency Coordinator must make notifications and coordinate the emergency and post-emergency response activities in accordance with the Contingency Plan.

e. Waste Minimization:

1) Follow the requirements of this specification regarding minimizing the generation of Hazardous Waste and certify on hazardous waste manifests that there is a waste minimization "program is in place."

f. Training:

1) All Personnel Handling Hazardous Waste: documented classroom instruction or on-the-job training directed by a person trained in hazardous waste management procedures on compliance with the requirements of 6 NYCRR 373-3.2.

PART 4 - SCHEDULES

SEE TABLE(S) BEGINNING ON NEXT PAGE

SUMMARY OF INSPECTION RESULTS FOR PCB CAULKING IN GEORGE WASHINGTON BRIDGE BUS STATION - RESERVED PREMISES:					
Line #	PROPOSED WORK AS PER AUTHORITY RENOVATION PLANS	SUSPECT MATERIAL THAT WILL BE IMPACTED	SAMPLING AND INSPECTION RESULTS	QUANTITY OF PCB-CONTAINING MATERIAL	NOTES
			FLOOR		
	WORK AREA				
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
TOTAL PCB					

END OF SECTION

GEORGE WASHINGTON BRIDGE BUS STATION - RESERVED PREMISES
LIST OF SUBMITTALS

SUBMITTAL	DATE SUBMITTED	DATE APPROVED
Pre-Project Submittal:		
1. Insurance	_____	_____
2. Health and Safety Plan	_____	_____
3. Emergency Action Plan	_____	_____
4. Fall Protection Plan	_____	_____
5. Proof of suitable transporter and disposal site arrangements.	_____	_____
6. Equipment and MSDS of chemicals to be used	_____	_____
7. PCB Management Plan	_____	_____
8. Sample of daily log	_____	_____
During Work Submittal:		
1. Schedule of Work Changes	_____	_____
2. Copy of each "Waste Shipment Record" form	_____	_____
Post Project Submittal:		
1. Copy of the bound log book	_____	_____
2. Personal air monitoring records pertaining to this project, if applicable.	_____	_____
3. Compilation of all completed and signed Waste Shipment Record forms, analyses, Profiles, notifications and disposal receipts.	_____	_____
4. Copies of digital photographs.	_____	_____

* * *

DIVISION 2

SECTION 02850

PLYWOOD SIGN PANELS AND WOOD SIGN POSTS

PART 1. GENERAL

1.01 SUMMARY

This Section specifies requirements for the following:

A. Plywood sign panels for use in the construction of temporary (TYPE 1) and permanent (TYPE 2) guide, warning and regulatory roadway signs. Sign type usage, TYPE 1 or TYPE 2, shall be identified on the Contract Drawings for each required sign.

B. Wood sign posts and footings for both TYPE 1 and TYPE 2 sign panel side-of-road installations.

1.02 REFERENCES

The following is a listing of organizations and publications referenced in this Section:

American Association of State Highway and Transportation Officials (AASHTO)

Standard Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals (LTS-2).

Manual for Signing and Pavement Markings of the National System for Interstate and Defense Highways (MUTCD)

AASHTO M 168	Wood Products

American Society for Testing and Materials (ASTM)

ASTM A 153	Zinc Coating (Hot Dip) on Iron and Steel Hardware
ASTM B 209	Aluminum and Aluminum-Alloy Sheet and Plate
ASTM B 211	Aluminum-Alloy Bar, Rod and Wire
ASTM B 221	Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes and Tubes
ASTM D 245	Methods for Establishing Structural Grades and Related Allowable Properties for Visually Graded Lumber
ASTM A 307	Carbon Steel Externally Threaded Standard Fasteners
ASTM A 325	Quenched and Tampered-Steel Bolts and Studs with suitable Nuts and Plain Washers
ASTM D 2555	Methods for Establishing Clear Wood Strength Values

American Wood Preservers Association (AWPA)

AWPA C 1	Timber Products - Preservative Treatment by Pressure Processes
AWPA C 14	Wood for Highway Construction, Pressure Treatment

Douglas Fir Plywood Association

Federal Highway Administration (FHWA)

Manual on Uniform Traffic Control Devices for Streets and Highway (MUTCD)

Standard Alphabets for Highway Signs

Standard Lower-case Alphabets for Highways

United States Department of Commerce (USDC)

Product Standard PS-1 Soft Plywood, Construction and Industrial

1.03 DESIGN AND PERFORMANCE REQUIREMENTS

A. Design of signs and sign structure shall provide sufficient strength to withstand a wind loading of 80 miles per hour as per AASHTO LTS-2.

B. Sign supports and framing shall be designed to meet the required wind loading. Posts shall be designed for direct embedment in the soil by excavation and back fill, or by driving with hand or mechanical equipment.

1.04 QUALITY ASSURANCE

Each plywood sheet shall be grade marked and certified in accordance with the standards adopted by the Douglas Fir Plywood Association.

1.05 DELIVERY, STORAGE AND HANDLING

All sign components and materials shall be transported and handled in a manner that shall cause no permanent deformation, injury or damage. Sign components and materials to be stored shall be stored above ground.

1.06 SUBMITTALS

Refer to Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MATERIALS

A. Plywood Sign Panels

1. Plywood sign panels shall conform to the requirements set forth in USDC Product Standard PS-1 for Douglas Fir Plywood.

2. The plywood panels for TYPE 1 signs shall be exterior-type plywood, 5-ply and A-C grade or better.

3. The plywood panels for TYPE 2 signs shall be high-density overlay, exterior marine-type plywood, 5 ply and B-B grade or better. Inner plies for TYPE 2 panels shall be B grade veneers or better.

4. The thickness of plywood sign panels and plywood battens shall be not less than 1/2 inch for TYPE 1 panels and not less than 3/4 inch for TYPE 2 signs.

5. The overlay surface for TYPE 2 plywood sign panels shall consist of a cellulose-fibre or sheet, in which not less than 40 percent by weight of the laminate shall be a thermo-setting resin of the phenol or melamine type. The resin-impregnated material shall be not less than 0.009 inches thick and shall weigh at least 60 lbs per 1000 square feet of single face, including both resin and fiber. The resin impregnation shall be sufficient to attach the surfacing material to the plywood. The bond shall be equal in performance to the glue lines between the sheets of veneer that make up the plywood.

6. The face of the cellulose-fibre overlay surface for TYPE 2 panels shall be hard, smooth, and of such quality that further finishing by paint or varnish is not required to fabricate the sign as specified in 2.03 of this Section.

B. Panel Sheeting and Screen Printing

1. Reflectorized Sheeting

Shall be Scotchlite Brand Engineer Grade Series 2200 (heat activated adhesive) or Series 3200 (pressure sensitive adhesive) as manufactured by the Traffic Control Materials Division of the 3M Co., 223-3N 3M Center, St. Paul, Minnesota 55144, or approved equal.

2. Non-Reflectorized Sheeting

Shall be Scotchcal Brand film Series 650 (heat activated adhesive) or Series 3600 (pressure sensitive adhesive) as manufactured by the Traffic Control Materials Division of the 3M Co., or approved equal.

3. Screen Printing Inks, Thinners and Toners

a. Scotchlite Brand Process Colors Series 700 for use on Reflectorized Sheeting.

b. Scotchcal Brand Process Colors Series 3900 and 4100 for use on Non-Reflectorized Sheeting.

c. Approved equals for use on approved reflective and non-reflective sheetings.

4. Panel sheeting (reflective or non-reflective) and screen printing usage shall be shown on the Contract Drawing.

C. Wood Sign Posts

1. Wood sign posts shall be dry, No. 1 grade, S4S, Douglas Fir, Southern or Ponderosa Pine, Hemlock, Spruce or Western Larch conforming to the applicable requirements of AASHTO M 168. The posts shall be straight and true, free of splits, knots and warps or, of steel or aluminum components.

2. All the posts shall be pressure-treated with CCA in accordance with the applicable requirements of AWPA C1 and AWPA C 14.

3. Posts shall be surfaced four sides, have a uniform cross-section, and shall be sized not less than 4 inches by 4 inches. The post shall be graded for the following stress grades in accordance with the grading rules developed from ASTM D 245 for the selected stress grades. Using the clean wood properties of ASTM D 2555, the bending stress of the post in a TYPE 1 panel installation shall be not less than 1200 psi, and not less than 4000 psi for a TYPE 2 panel installation.

D. Stiffeners, Brackets and Miscellaneous Hardware

1. Horizontal and vertical sign panel stiffeners (Z bars) and panel brackets shall be fabricated of aluminum alloy 6061-T6 conforming to ASTM B 221.

2. Other miscellaneous aluminum hardware including bolts, nuts, washers, screws, rivets, pull-type lockbolts and serrated or knob stem blind rivets shall be fabricated to meet the requirements of ASTM B 209 and ASTM B 211 for Alloy 2024-T4. Component designated as Alloy 2024-T4 shall be given a chromated sealed anodic coating.

3. High strength steel bolts, nuts and washers shall conform to ASTM A 325. High-strength bolts, nuts and washers shall be galvanized in accordance with ASTM A 153.

E. Footings

1. Soil bearing plates shall be attached at the bottom of the post as required in 1.03 of this Section, or as shown on the Contract Drawings.

2. Breakaway post, if required, shall be as shown on the Contract Drawings. Breakaway post and footings shall be designed in accordance with the requirements of 1.03 of this Section.

3. Concrete footings, if required by 1.03 of this Section, shall be Class "B" concrete conforming to the Section entitled "Concrete."

4. Portable sign supports shall be as described in "Maintenance of Traffic and Work Area Protection" of Division 1 - GENERAL PROVISIONS.

2.02 CONSTRUCTION FEATURES

A. Sign face text, symbol, and border layouts shall be in accordance with "Maintenance of Traffic and Work Area Protection", of Division 1 - GENERAL PROVISIONS, or the Contract Drawings conforming to the requirements of:

1. The AASHTO Manual for Signing and Pavement Marking of the National System of Interstate and Defense Highways.

2. The FHWA MUTCD.

3. The FHWA Standard Alphabets for Highway Signs.

4. The FHWA Standard Lower-case Alphabets for Highways.

B. Sign characters shall be as shown on the Contract Drawings and shall include letters, numerals, symbols and borders.

C. Sign corner and border radii shall be approximately one-eighth of the height of the sign but shall not exceed 12 inches. Sign borders shall be of the same type character as the legend and shall be approximately the same width as the stroke width of the major lettering or the sign.

2.03 FABRICATION

A. Holes shall be drilled; cut edges shall be smooth and true, and free from burrs or ragged breaks. All fabrication except for cutting the lower ends of embedded posts shall be done in the shop. The plywood panels shall be clean, dry, and free from oils, dust, grit, or any other contaminants that would adversely affect the adhesion of the Reflectorized and Non-Reflectorized sheeting.

B. In preparing TYPE 1 panels for Reflectorized and Non-Reflectorized Sheeting, the entire Grade A surface to be covered shall be wiped down with a tack cloth to remove all saw dust and sanding residue.

C. In preparing TYPE 2 panels for Reflectorized and Non-Reflectorized Sheeting, the entire portion of the overlay surface to be covered, shall first be given a light, firm abrasion with steel wool (medium to fine grade) saturated with xydol, V.M.&P. Naphtha or similar commercial solvent. The surface shall then be wiped clean and dry. An alternate method of panel pre-treatment that consists of a solvent wipe, immediately followed by vapor degreasing (tri-chloroethylene) for a minimum period of 6 minutes may be used.

D. All panel and batten surfaces to be glued shall be slightly roughened and then glued with waterproof adhesive prior to assembly.

E. After panel preparation, the edges and back or rear surface of all TYPE 2 panels and battens shall be painted with two coats of approved white exterior paint.

PART 3. EXECUTION

3.01 INSTALLATION

A. The Contractor shall erect and remove signs as shown on the Contract Drawings, or as ordered by the Engineer, and in such a manner that the traveling public is informed and protected at all times.

B. Side-of-road ground mounted signs shall normally be erected so that the sign face is truly vertical to the profile line and the intersection angle measured between the sign face and the centerline of the travel lane, which the sign serves shall be 93 degrees. Where lanes divide or on curves, sign faces shall be oriented so as to be most effective both day and night, and to avoid the possibility of specular reflection.

C. The wood sign posts for side-of-road mounting shall be embedded in the soil to the depth required by the design specified in 1.03 of this Section. The hole for the embedment shall be excavated using a manual post-hole digger or appropriate size power driven auger. After the hole has been excavated, the post shall be aligned to the sign face direction, held vertical in the hole and suitable excavated material shall be tamped in the annular space. Holes resulting from sign post removals shall be filled by the Contractor to restore the area to its original state as directed by the Engineer.

D. All signs shall be securely fastened to their supports with bolts, nuts and washers of aluminum (2024-T4 alloy) or hot-dip galvanized steel conforming to 2.01 D of this Section, as required by the design specified in 1.03 of this Section.

E. Plywood battens and aluminum panel stiffeners shall be utilized as required by 1.03 of this Section and shall conforming to the applicable requirement of 2.01 of this Section.

F. Horizontal and vertical sign clearances shall be as shown on the Contract Drawings.

G. Other non-wood post mounting of plywood signs, such as overhead sign installations shall be as shown in the Contract Drawings.

H. Concrete footings, if required by 1.03 of this Section, shall be placed in accordance with the requirements of the Section of these Specifications entitled "Concrete," and shall not extend more than 4 inches above grade.

3.02 FIELD INSPECTION

A. Immediately prior to erection, all material shall be inspected by the Engineer for damage.

B. The Engineer will inspect each completely erected sign for proper location, line and grade of signs, vertical post alignment, condition, appearance, reflectorization and visibility.

C. As the Work progresses, the location, position and condition of all signs shall be monitored by the Contractor in accordance with "Maintenance of Traffic and Work Area Protection" of Division 1 - GENERAL PROVISIONS.

END OF SECTION

SECTION 02850

PLYWOOD SIGN PANELS AND WOOD SIGN POSTS

APPENDIX "A"

SUBMITTALS

A. Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts and Samples" of Division 1 – GENERAL PROVISIONS:

1. Detailed sign face layout for all TYPE 2 sign panels showing letter height, width, brush stroke, spacing between letters, words, symbols and lines, border width, symbols details, and overall dimensions of the sign panels. Detailed sign face layouts are not required for TYPE 1 sign panels.
2. Shop drawings of sign panel and posts showing the sizes of the members and their connection details. The shop drawings shall also show the total length of the posts for each sign and give an elevation view of each of the completely erected signs with vertical clearance below the lowest sign panel to adjacent roadway, and other relevant dimensions.
3. Catalog cuts of all the materials to be used for sign faces.

B. Prior to fabrication, submit computations for the design of the sign panels and supports, as required in 1.03 of this Section, signed by a Professional Engineer licensed to practice in the State where the Work is to be performed.

END OF APPENDIX "A"

SECTION 02850

PLYWOOD SIGN PANELS AND WOOD SIGN POSTS

INSTRUCTIONS TO SPECIFIER

USERS OF THIS SECTION ARE ADVISED THAT DETAILED INSTRUCTIONS ARE NOT AVAILABLE AT THIS TIME.

IN ORDER TO ENSURE PROPER COORDINATION WITH THE CONTRACT DRAWINGS, AND A BIDDABLE CONTRACT, THE TEXT MUST BE CAREFULLY READ AND THE ITEMS OR CHOICES INDICATED AS "AS SHOWN ON THE CONTRACT DRAWINGS" (OR SIMILAR LANGUAGE) MUST BE SHOWN ON THE CONTRACT DRAWINGS.

END OF INSTRUCTIONS

DIVISION 3

SECTION 03301

PORTLAND CEMENT CONCRETE, LONG FORM

PART 1. GENERAL

1.01 SUMMARY

This Section and its appendices specify requirements for Portland Cement Concrete mix proportions, materials used in concrete mixes, placing, finishing (with the exception of concrete for pavements), curing, control joints, end result property requirements of the in-place concrete, and the evaluation of these properties through Quality Acceptance testing performed by the Authority for determining Adjustments to Contract Compensation. The Specifications herein establish minimum standards for concrete construction. This does not relieve the Contractor from following more stringent standards to achieve the quality acceptance limits for applicable performance parameters and their respective Percent Within Limit (PWL) measurements.

1.02 REFERENCES

The following is a listing of the publications, standards and codes referenced in this Section, of which the latest edition shall govern:

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO HB	Standard Specifications for Highway Bridges.
AASHTO M182	Burlap Cloth Made From Jute or Kenaf.
AASHTO T 26	Standard Method of Test for Quality of Water to Be Used in Concrete.
AASHTO T 277	Electrical Indication of Concrete's Ability to Resist Chloride.
AASHTO T 318	Water Content of Freshly Mixed Concrete Using Microwave Oven Drying.

American Concrete Institute (ACI)

ACI 207	Mass Concrete.
ACI 211	Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete.
ACI 213	Guide for Structural Lightweight-Aggregate Concrete.
ACI 222R	Protection of Metals in Concrete Against Corrosion.
ACI 301	Specifications for Structural Concrete for Buildings.
ACI 302.1	Guide for Concrete Floor and Slab Construction.
ACI 303.1	Specification for Cast in Place Architectural Concrete.
ACI 304R	Guide for Measuring, Mixing, Transporting, and Placing Concrete. Chapter 8: Concrete Placed Under Water.
ACI 305R	Hot Weather Concreting.
ACI 306R	Cold Weather Concreting.

ACI 308	Standard Practice for Curing Concrete.
ACI 309R	Guide for Consolidation of Concrete.
ACI 318	Building Code Requirements for Structural Concrete.
ACI 548.4	Standard Specification for Latex-Modified Concrete (LMC) Overlays.

ASTM International (ASTM)

ASTM C 31	Practice for Making and Curing Concrete Test Specimens in the Field.
ASTM C 33	Specification for Concrete Aggregates.
ASTM C 39	Test Method for Compressive Strength of Cylindrical Concrete Specimens.
ASTM C 42	Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
ASTM C 78	Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading).
ASTM C 88	Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate.
ASTM C 94	Specification for Ready-Mixed Concrete.
ASTM C 114	Test Methods for Chemical Analysis of Hydraulic Cement.
ASTM C 131	Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
ASTM C 136	Test Method for Sieve Analysis of Fine and Coarse Aggregates.
ASTM C 138	Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete.
ASTM C 143	Test Method for Slump of Hydraulic-Cement Concrete.
ASTM C 150	Specification for Portland Cement.
ASTM C 156	Test Method for Water Retention by Liquid Membrane-Forming Curing Compounds for Concrete.
ASTM C 157	Test Method for Length Change of Hardened Hydraulic-Cement Mortar and Concrete.
ASTM C 171	Specification for Sheet Materials for Curing Concrete.
ASTM C 172	Practice for Sampling Freshly Mixed Concrete.
ASTM C 173	Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
ASTM C 174	Test Method for Measuring Thickness of Concrete Elements Using Drilled Concrete Cores.
ASTM C 191	Test Methods for Time of Setting of Hydraulic Cement by Vicat Needle.
ASTM C 227	Test Method for Potential Alkali Reactivity of Cement-Aggregate Combinations (Mortar-Bar Method).
ASTM C 231	Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
ASTM C 260	Specification for Air-Entraining Admixtures for Concrete.
ASTM C 289	Test Method for Potential Alkali-Silica Reactivity of Aggregates (Chemical Method).

ASTM C 309	Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
ASTM C 311	Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use in Portland-Cement Concrete.
ASTM C 330	Specification for Lightweight Aggregates for Structural Concrete.
ASTM C 494	Specification for Chemical Admixtures for Concrete.
ASTM C 535	Test Method for Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
ASTM C 566	Test Method for Total Evaporable Moisture Content of Aggregate by Drying.
ASTM C 567	Test Method for Determining Density of Structural Lightweight Concrete.
ASTM C 618	Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
ASTM C 979	Specification for Pigments for Integrally Colored Concrete.
ASTM C 989	Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars.
ASTM C 1064	Test Method for Temperature of Freshly Mixed Hydraulic Cement Concrete.
ASTM C 1116	Specification for Fiber-Reinforced Concrete.
ASTM C 1152	Test Method for Acid-Soluble Chloride in Mortar and Concrete.
ASTM C 1218	Test Method for Water-Soluble Chloride in Mortar and Concrete.
ASTM C 1240	Specification for Silica Fume Used in Cementitious Mixtures.
ASTM C 1260	Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method).
ASTM C 1399	Test Method for Obtaining Average Residual-Strength of Fiber-Reinforced Concrete.
ASTM C 1583	Tensile Strength of Concrete Surfaces and the Bond Strength or Tensile Strength of Concrete Repair and Overlay Materials By Direct Tension (Pull-Off Method).
ASTM C 1611	Slump Flow of Self-Consolidating Concrete.
ASTM D 1751	Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
ASTM D 1752	Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction.
ASTM D 3665	Practice for Random Sampling of Construction Materials.
ASTM D 4580	Practice for Measuring Delaminations in Concrete Bridge Decks by Sounding.
ASTM D 4791	Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate.
ASTM D 4833	Test Method for Index Puncture Resistance of Geomembranes, and Related Products.
ASTM D 5199	Test Method for Measuring the Nominal Thickness of Geosynthetics.

ASTM E 965	Test Method for Measuring Pavement Macrotexture Depth Using a Volumetric Technique.
ASTM E 1347	Test Method for Color and Color-Difference Measurement by Tristimulus (Filter) Colorimetry.

Federal Aviation Administration (FAA) Advisory Circular (AC)

FAA AC 150/5370, Item P-501-6	Standards for Specifying Construction of Airports - Portland Cement Concrete Pavement - Contractor Quality Control Program.

Federal Specifications

SS-S-1401	Sealants, Joint, Non-Jet-Fuel-Resistant, Hot-Applied, for Portland Cement and Asphalt Concrete Pavements.

New Jersey Department of Transportation (NJDOT)

Standard Specifications for Road and Bridge Construction 2007.

US Army Corps of Engineers (USACE)

Handbook of Concrete and Cement.

1.03 ENVIRONMENTAL REQUIREMENTS

A. Cold Weather Requirements

1. Cold weather concrete construction shall conform to ACI 306R.
2. Submit a Cold Weather Concrete Construction Plan, and have it approved prior to concrete placements when the ambient temperature falls below 50 deg F. This Plan shall conform to ACI 306R and shall include but not be limited to the demonstration of how the in situ concrete temperature will be maintained at 50 deg F and monitored, or at temperatures specified in ACI 306R, Table 3.1, whichever is more stringent. In addition, demonstrate that the specified concrete properties can be achieved within the time requirements specified while maintaining a minimum curing temperature of 50 deg F.
3. Do not mix or place concrete when the ambient temperature is below 35 deg F, or when conditions indicate that the temperature will fall below 35 deg F within 72 hours, unless the areas to receive fresh concrete are insulated or enclosed, and maintain the concrete temperature at 50 deg F or in accordance with Table 3.1 in ACI 306.
4. Reinforcement, forms and soils with which concrete will be in contact shall not be frozen and must be maintained completely frost-free. If required, apply heat to raise their temperature to a minimum of 35 deg F. The use of chemicals to eliminate frost will not be permitted.

B. Hot Weather Requirements

1. Hot weather concrete construction shall conform to ACI 305R.

2. Submit a Hot Weather Concrete Construction Plan and have it approved prior to concrete placements when the ambient temperature exceeds 80 deg F. This Plan shall conform to ACI 305R and shall include but not be limited to the demonstration of how the concrete temperature during batching and mixing will be kept below 90 deg F, how the concrete will be protected from rapid evaporation of surface moisture, the proper use of water reducing retarders with re-dosing charts and procedures and curing procedures.

3. Do not place concrete for pavements, overlays, bridge decks or ramps when the ambient temperature exceeds 85 deg F; schedule Work so that concrete can be placed during the coolest part of the day. Do not place concrete for structural decks, slabs or pavements when the rate of concrete surface evaporation exceeds 0.15 lbs/ft^2/hr, as defined in ACI 305R, Figure 2.1.5. If ambient conditions exceed this limit, demonstrate through the use of windscreens, fogging or other suitable means that the concrete evaporation rate is less than 0.15 lbs/ft^2/hr.

4. If the concrete temperature reaches 92 deg F as measured at the construction site in accordance with ASTM C 1064, it may be rejected.

1.04 QUALITY CONTROL

A. General

1. Maintain a level of Quality Control sufficient to consistently achieve the end result performance properties specified herein. In addition:

   a. Submit the approved mix proportions including an automated, time-date stamp on each delivery ticket indicating the batch weights of all batching constituents.

   b. Ensure that all plant mixing equipment and trucks are calibrated and approved by either the New Jersey or New York State Department of Transportation. Documentation of such conformance shall be available to the Engineer at all times.

   c. Ensure that all personnel performing concrete testing are certified ACI Grade I Concrete Laboratory Testing Technicians or Concrete Field Testing Technicians, as appropriate.

   d. When placing aeronautical pavement concrete, the quality control plan shall conform to the provisions of the Federal Aviation Administration Advisory Circular 150/5730-10D- Rigid Pavement Items P-501 Contractor Quality Control Program.

B. Quality Control Plan: Submit a Quality Control Plan a minimum of 10 days prior to the pre-concrete construction meeting described in 1.06. Do not start production before the Quality Control Plan has been approved by the Engineer. The Quality Control Plan shall include the following:

1. Quality Control Organization

   a. A chart showing all Quality Control personnel and a description of how these personnel integrate with and report to other management or field construction personnel. Include names, company name and each person's function, telephone number and fax number.

b. The quality control organization chart shall include a Program Administrator who shall ensure that all QA procedures are followed and enforced and who shall have a minimum of 5 years experience on projects of size and scope comparable to the Work of the Contract. The Program Administrator shall be a full-time employee of the Contractor or a consultant engaged by the Contractor. Additional qualifications shall include at least one of the following:

(1) Professional Engineer, Engineer-In-Training, Bachelor of Science in Civil Engineering, Civil Engineering Technology or five years experience with airport and/or highway concrete construction.

(2) Completed New Jersey ACI Chapter's "Concrete Construction Technology" course with 5 years of airport and/or highway concrete construction experience.

(3) Qualified as ACI Concrete Transportation Construction Inspector or possessing Concrete Construction Special Inspector certification with 5 years of airport and/or highway concrete construction experience.

2. Intended project progress schedule for each mix and application, including quantities and a submittal schedule.

3. Quality Control Testing Plan, including a list of testing standards and the frequency at which each test is to be performed.

a. Include gradation and moisture content testing for fine and coarse aggregates in accordance with ASTM C 136 and ASTM C 566, respectively. Perform both tests (1) prior to production, (2) every 3 hours during production or every 100 cubic yards of concrete produced (whichever is longer in time) and (3) when aggregates are used from a new stockpile that has not been tested for gradation or moisture content.

4. Documentation of Quality Control activities, including the location where recorded test results and other information such as mill test certificates for all cementitious material will be stored, which shall be made available to the Engineer at any time upon request.

5. Procedures for corrective action when QA and/or QC test results do not conform to the requirements of the Contract.

1.05 TRIAL BATCHING AND TEST POUR VERIFICATIONS

A. Trial Batching

1. The Engineer may prepare and test trial batches as specified herein and in accordance with ACI 318, Section 5.3. At the Engineer's request, submit representative samples of all materials in sufficient quantities to the Port Authority Materials Engineering Unit. In the event of a conflict between tests performed by the Engineer and tests performed by or for the Contractor, all tests performed by the Engineer shall control.

2. The Engineer may perform the following tests to verify trial batches submitted by the Contractor: compressive strength, flexural strength, permeability by the Coulomb test, air content, unit weight, water content of freshly mixed concrete using the microwave oven drying test, shrinkage, chloride ion concentration, corrosion inhibitor concentration, bond strength, slump, time of set, gradation of fine and coarse aggregates, and the fineness modulus of the fine aggregate.

B. Test Pours

1. Unless otherwise noted on the Contract Drawings, perform a test pour a minimum of 14 calendar days prior to production pouring in order to demonstrate and verify proper workability, finishability, setting characteristics, consolidation and curing procedures and to confirm that specified physical properties are attained for the approved mix proportions. For tremie concrete applications, construct a mock-up to verify acceptable consolidation and that the specified compressive strength is achieved by testing three in-place cores taken from the test placement at locations designated by the Engineer. In addition, for architectural cast in place concrete, construct a full-scale mock-up in accordance with 2.03 C.3. If in the sole opinion of the Engineer the test pour is acceptable, follow the procedures established during the test pour during production.

2. Test Pour Size: For flatwork, the minimum test pour size shall be a length of 100 feet for the entire thickness of the pavement and width of the screed planned to be used. For all other concrete construction, the test pour size shall be full-size for the cross sectional area, including the location of all steel reinforcement. However, at the option of the Engineer, the length of the member may be reduced from its design size, provided it is adequate to demonstrate workability, finishability, setting characteristics, consolidation, finish and curing procedures, as determined solely by the Engineer. Perform all test pours using the same personnel, equipment, procedures and materials that will be used for full production.

3. The test section will be considered acceptable if, in the sole opinion of the Engineer, it meets the specifications for surface preparation, batching, mixing, placement, consolidation, curing, finish and applicable performance properties of the concrete. In addition, for architectural concrete, color and texture will be considered acceptable according to the sole opinion of the Engineer.

4. In the event that the Engineer deems the test section unsatisfactory, remove the test section and repeat the test at no cost to the Authority.

5. The test pour location will be determined by the Engineer at the pre-concrete construction meeting, and will be located close to, if not within, the area of Work, unless otherwise noted on the Contract Drawings.

1.06 PRE-CONCRETE CONSTRUCTION MEETING

A. A pre concrete placement meeting will be conducted at the construction site by the Engineer a minimum of 20 days prior to the first pour to review the Contractor's submitted mix proportions, hot and cold weather concreting plans (as applicable), curing procedures plan and test pour and to discuss the methods and procedures to achieve the specified concrete quality. Notify the Engineer and send a pre-concrete meeting agenda to all attendees a minimum of 15 days prior to the scheduled date of the meeting indicating review subjects. At no additional cost to the Authority make arrangements for the Contractor's superintendent and a qualified representative from each segment of the concrete operations to be present, including, but not limited to the following:

1. Concrete supplier.

2. Laboratory representative responsible for the concrete proportion mix and Quality Control.

3. Contractor's Program Administrator for Quality Control.

4. Concrete subcontractor.
5. Admixtures and curing membrane suppliers.
6. Concrete pumping subcontractor.
7. Mobile mixer subcontractor.
8. Precast concrete fabricator and installer.
9. Joint sawing subcontractor.
10. The Engineer.

B. Record, type, and print meeting minutes and distribute them to all attendees of the meeting within 5 days of the date of the meeting.

C. Do not schedule the pre-concrete construction meeting until all of the following have been submitted and approved, as applicable to the Work of the Contract:

1. Mix Proportions.
2. Admixture dosage charts showing the effects of concrete temperatures from 50 deg F to 90 deg F.
3. Sample panels (12" x 12" x 2" for architectural concrete).
4. Hot and Cold Weather Concrete Construction Plans.
5. Independent testing laboratory AASHTO Accreditation Certification.
6. ACI Grade I certifications for concrete testing personnel.
7. Placement methods and procedures, including surface preparation.
8. Pumping Procedure Plan.
9. Curing Procedure Plan.
10. Joint Location Plan and Timing of Cuts.
11. Quality Control Plan.
12. Procedure for Curing Field Concrete Specimens.

1.07 SUBMITTALS

A. See Appendix "A" for submittal requirements.

B. Do not deliver any concrete to the construction site until all approvals have been obtained.

PART 2. PRODUCTS

2.01 MANUFACTURERS AND SOURCES OF SUPPLY

A. Use no cement, fly ash, slag, silica fume, metakaolin or fine or coarse aggregates that have not been approved by either the New Jersey or New York State Department of Transportation.

2.02 MATERIALS

A. Cement: Conforming to ASTM C 150, Type I and II, and Type III where early strength gain is required, or others specified on the Contract Drawings.

B. Very High Early Strength Cement: Defined as cement used to produce concrete with the compressive strength shown on the Contract Drawings within 12 hours or less and conforming to the following:

1. The compressive strength shall be greater than or equal to the specified strength at the curing time specified on the Contract Drawings, when tested in accordance with ASTM C 39. During cold weather concrete construction, demonstrate that the specified compressive strength can be obtained at a curing temperature of 50 deg F.

2. Absolute drying shrinkage less than or equal to 0.04% at 28 days for the mix proportions containing the Very High Early Strength Cement in accordance with ASTM C 157 modified (Air Drying Method), where the initial reading shall be taken at 3 hours after the addition of the mixing water to the dry materials in the mix.

3. Setting time, determined in accordance with ASTM C 191, shall be sufficient to provide adequate workability, meet the specified strength requirement, and allow enough time in the field to finish and begin curing the concrete for its intended use.

4. The Very High Early Strength Cement shall meet the properties in 2.02 B.1, 2.02 B.2 and 2.02 B.3, for each Lot of cement not to exceed every 50,000 pounds. Submit certification from an independent testing laboratory employed by the Contractor and approved by the Engineer that the cement meets these properties.

C. Silica Fume: Shall conform to ASTM C 1240 and the following:

1. Silicon Dioxide Content: 90% minimum.

2. Loss On Ignition: 6% maximum.

3. Surface Area: (nitrogen absorption): 15,000 m2kg.

4. Crystallinity: Non-crystalline within limits of detection by XRD.

5. Oversize Foreign Materials (in fume): 5% maximum on 45-micron sieve (wet).

D. Metakaolin: Conforming to ASTM C 618, Class N. Use one of the following products, or approved equal:

1. "MetaMax", as manufactured by Engelhard, Iselin, New Jersey.

2. "PowerPozz", as manufactured by Advanced Cement Technologies, LLC, Blaine, Washington.

E. Fly Ash: Conforming to ASTM C 311 and ASTM C 618, Class F except the maximum loss on ignition shall be less than 4%.

F. Slag: Conforming to ASTM C 989, Grade 100 or 120.

G. Fine Aggregate: Conforming to ASTM C 33, ASTM C 227, ASTM C 289 and ASTM C 131 with a maximum percentage of wear of 30%.

H. Coarse Aggregate (Normal Weight Concrete): Conforming to ASTM C 33, ASTM C 227, ASTM C 289, ASTM C 535 with a maximum percentage of wear of 40%, and ASTM C 88 with a magnesium sulfate loss of not more than 12% for a five-cycle test period. Use trap rock or gneiss for all pavement wearing surfaces. The aggregate in any size group shall not contain more than 8% by weight of flat or elongated pieces, as tested in accordance with ASTM D 4791. A flat or elongated piece is one having a ratio between the maximum and minimum dimensions of a circumscribing rectangular prism exceeding 5 to 1. In accordance with ACI 318, Section 3.3.2, the nominal maximum size of coarse aggregate shall be not larger than: (1) one-fifth the narrowest dimension between sides of forms, (2) one-third the depth of slabs, or (3) three-quarters the minimum clear spacing between individual reinforcing bars or wires, bundles of bars, or prestressing tendons or ducts. The nominal maximum size of coarse aggregate used shall be the largest size aggregate that conforms to ACI 318, Section 3.3.2, unless otherwise noted herein or shown on the Contract Drawings.

1. For full depth pavement concretes unless otherwise shown on the Contract Drawings the combined aggregate volume shall be a minimum of 70 percent. The combined gradation of the fine and coarse aggregate shall conform to the following, when tested in accordance with ASTM C 136:

	For Pavement 10 Inches or Greater in Thickness		For Pavement Less Than 10 Inches in Thickness	
Sieve Size % Passing	Min.	Max.	Min.	Max.
2-1/2"	100			
2"	90	98	100	
1-1/2"	76	88	89	98
1"	67	79	74	86
3/4"	65	77	64	76
3/8"	48	60	48	60
No. 4	30	42	30	42
No. 8	27	37	27	37
No. 16	20	30	20	30
No. 30	16	22	16	22
No. 50	4	10	4	10
No. 100	0	4	0	4

2. Pile Jackets: As a minimum, the mix proportion shall contain an ASTM C 33 Size No. 8 coarse aggregate. The ratio of coarse aggregate to fine aggregate by volume shall be not less than one to one.

3. Pipe Piles: Reduce the amount of coarse aggregate to minimize segregation. The volume of coarse aggregate shall not exceed 9.0 cubic feet per cubic yard of concrete. The maximum size coarse aggregate shall be ASTM C 33 Size No. 8.

4. Minimum Volume of Coarse Aggregate: All mixes shall contain a minimum of 39% coarse aggregate by volume, with the exception of 1) applications specified in Part 2.02 H.1-4, H.2), Performance Category VI applications, 3) bridge decks and 4) mixes containing ASTM C 33 Size No. 8 aggregate. Bridge deck concrete mixes shall contain a minimum of 41% coarse aggregate and total minimum aggregate volume of 67%. Mixes containing ASTM C 33 Size No. 8 stone not covered in 2.02 H.2-4 shall contain a minimum of 36% coarse aggregate by volume. These minimum requirements apply to all methods of placement, including pump mixes.

5. When requested by the Engineer, supply independent laboratory test results in accordance with ASTM C 1260 indicating the potential alkali reactivity of the aggregates and cementitious materials proposed for use. Expansion at 16 days shall be less than 0.10%.

I. Coarse Aggregate (Lightweight Concrete)

1. Expanded clay or shale produced by the rotary kiln process conforming to ASTM C 330 shall be graded in accordance with the requirements for 3/4" to No. 4 sieve sizes shown in Table I of that specification.

2. The oven dry unit weight of plant-tested, lightweight aggregate shall vary not more than +/- 3.0 pounds from the unit weight (pounds per cubic foot) determined from the sample quantity submitted in accordance with 1.05 A.1.

J. Water: Conforming to AASHTO T 26. Clean and potable for both mixing and curing concrete.

K. Formulated Latex Modifier: Latex modifier shall be modifier "A/NA", as manufactured by Dow Chemical, Midland, Michigan. Add latex emulsion at a rate of 3.5 gallons per 94 lbs. of cementitious material in the concrete mix.

L. Air Entraining Agent: Conforming to ASTM C 260.

M. Admixtures: All admixtures shall conform to ASTM C 494. They shall contain not more than 0.05% chloride ions, and shall be used in accordance with the manufacturer's recommendations. Submit dosage charts, including the effects of concrete temperatures from 50 deg F to 90 deg F, to the Engineer. All admixtures shall be manufactured by one of the following:

1. Euclid Chemical Company.

2. W.R. Grace & Company.

3. Master Builders Technologies.

4. Sika Corporation.

N. Polycarboxylate High Range Water Reducer: For use when self-compacting concrete is desired and approved by the Engineer. Conforming to ASTM C 494, Type F or Type G. Dosage rate shall be as recommended by the manufacturer to produce a spread of the concrete mixture measuring between 21 and 27 inches in diameter without segregation when released from a slump cone in accordance with ASTM C 1611. Use one of the following products, no substitutions:

1. "Plastol 5000" or "Plastol 341", as manufactured by The Euclid Chemical Company.

2. "ADVA Flow 530" or "ADVA Flow 540", as manufactured by W.R. Grace & Company.

3. "Glenium 3030 NS" or "Glenium 3200 HES", as manufactured by Master Builders Technologies.

O. Corrosion Inhibitors

1. Corrosion inhibitor shall be one of the following:

a. For cast in place or precast:

(1) "DCI-S", as manufactured by W.R. Grace & Company.

(2) "Eucon CIA", as manufactured by Euclid Chemical Company.

(3) An approved equal.

b. For precast applications only:

(1) "Sika CNI", as manufactured by Sika Corporation.

(2) "Rheocrete CNI", as manufactured by Master Builders Technologies.

(3) "DCI", as manufactured by W.R. Grace & Company.

2. The concentration of calcium nitrite shall be 30% +/- 2% by weight of solids per gallon.

3. The Engineer will sample the corrosion inhibitor for testing to verify the calcium nitrite solids content. The amount of calcium nitrite in fresh concrete may also be tested at any time, to verify if the proper quantity of the corrosion inhibitor is being batched in the mix.

4. Corrosion inhibitor admixtures shall not accelerate the setting time of the concrete mixture. Use a retarder and/or other admixtures to ensure that acceleration of setting time does not occur, while maintaining the applicable performance criteria, as stipulated in 2.04. Submit procedures for the placement of concrete mixes containing a corrosion inhibitor when a retarder is required for the range of concrete temperatures from 50 deg F to 90 deg F.

P. Viscosity Modifying and/or Self-Consolidating Admixtures: May be required for tremie concrete applications at the rate recommended by the manufacturer. Test concrete in accordance with CRD-C6189A US Army Corps of Engineers "Handbook of Concrete and Cement". Maximum percentage of washout weight loss shall not exceed 5% after three standard test drops in water.

Q. Pigments: Conforming to ASTM C 979.

R. Curing Materials

1. Curing compound shall be one of the following:

a. "DOT Resin Cure (Type II)", as manufactured by Conspec Marketing & Manufacturing Company, Inc.

b. "Euco Kurez Vox (White)", as manufactured by Euclid Chemical Company.

c. "1200 White", as manufactured by W.R. Meadows.

d. "AHT Type II Class B Cure", as manufactured by American Highway Technology, a Dayton Superior Company.

e. "Certi-Vex Envio Cure White-1000", as manufactured by Vexcon Chemicals Inc.

f. "Day-Chem White Pigmented Cure (J-10-W)", as manufactured by Dayton Superior.

g. Or an approved equal meeting the requirements specified in 2.02 R.2.

2. Liquid Membrane Forming Curing Compound conforming to the following:

a. For horizontal exterior applications, curing membranes are restricted to ASTM C 309 Type 2, Class B materials. ASTM C 309 Type 1-D, Class B membranes are acceptable for other exterior applications. ASTM C 309 Type 1, Class B membranes are acceptable for interior applications only.

b. Curing membranes shall be wax free when used on concrete where overlays, coatings, paints, sealers or any topping is to be applied, or where vehicular, pedestrian or aircraft traffic will pass over.

c. Membranes shall be volatile organic compound (VOC) compliant for the states of both New York and New Jersey. Submit certification of compliance to the Engineer upon request.

d. The membrane shall restrict the loss of water to not more than 0.40 kilograms per square meter in 72 hours at a coverage rate of 300 square feet per gallon per coat for Type I curing compounds, and 200 square feet per gallon per coat for Type 2 curing compounds when tested in accordance with ASTM C 156.

3. Burlap: Conforming to AASHTO M 182, Class 3, weighing approximately 9 oz./sq. yd. dry.

4. Sheet Material: Conforming to ASTM C 171.

a. Shall be White Burlap Polyethylene Sheet.

5. Cotton Mats: conforming to ASTM D 5199 with a minimum thickness of 40 mils, ASTM C 156 with a maximum water loss of 0.0065 oz./in.^{2}, ASTM D 4833 with a minimum puncture strength of 70 pounds and ASTM E 1347 with a minimum reflectance of 75%. The following cotton mats may be used in lieu of burlap for wet curing operations:

a. "Transguard 4000", as manufactured by Reef Industries, Inc., Houston, Texas, or

b. An approved equal conforming to the requirements specified in 2.02 R.5.

S. Evaporation Retardant: This material shall be used to retain moisture in the concrete during finishing operations. Use one of the following:

1. "Euco-Bar", as manufactured by Euclid Chemical Company.

2. "E-Con", as manufactured by L&M Construction Chemicals, Inc.

3. "Confilm", as manufactured by Master Builders Technologies.

4. "SikaFilm", as manufactured by Sika Corporation.

5. "Aquafilm", as manufactured by Conspec Marketing & Manufacturing Company, Inc.

T. Fiber Reinforcement:

1. Polypropylene Micro Fibers

a. Use one of the following products, subject to compliance with the Contract requirements:

(1) "Fiberstrand", as manufactured by Euclid Chemical Company.

(2) "Fibermesh", as manufactured by Fibermesh, Inc.

(3) "Forta", as manufactured by Forta Corporation.

(4) "Grace Fibers" or "Grace Microfibers", as manufactured by W.R. Grace & Company.

(5) "Durafiber", as manufactured by Industrial Systems, Ltd.

(6) Or an approved equal.

b. Additional requirements:

(1) Collated fibrillated materials: Dosage rate shall be a minimum of 1.5 lb./cu. yd.

(2) Multifilament fibers: Dosage rate shall be a minimum of 1 lb./cu. yd. The minimum length shall be 0.75 inches.

(3) Conformance with ASTM C 1116, designation Type III, 4.1.3.

(4) Conformance with a minimum plastic shrinkage crack reduction of 70 percent when tested in accordance with ICBO ES, Appendix B (7-92).

(5) Use of fibers shall not change the water requirements of the mix.

(6) Conform to the manufacturer's recommendations for the quantity of fiber, which shall be not less than the minimum requirements of 2.02 T.1.b.1 and 2.02 T.1.b.2.

(7) Arrange for the fiber manufacturer to provide the services of a qualified representative at the pre-concrete construction meeting and for the first two days of fibrous concrete placement production.

2. Structural Polypropylene/Polyethylene Macro Fibers

a. Use one of the following products, subject to compliance with the Contract requirements:

(1) "Tuf-Strand SF", as manufactured by Euclid Chemical Company.

(2) "Strux 90/40", as manufactured by W.R. Grace & Company.

(3) Or approved equal.

b. Additional requirements:

(1) Dosage rate shall be a minimum of 4.0 lb./cu. yd. Higher dosages may be noted on Contract Drawings.

(2) The minimum length shall be 1.50 inches.

(3) Fiber shall have an Aspect Ratio of 50 to 90.

(4) Conformance with ASTM C 1116, designation Type III, 4.1.3.

(5) The structural macro fiber concrete shall have an average residual strength of 200 psi when tested in accordance with ASTM C 1399.

(6) Use of fibers shall not change the water requirements of the mix.

(7) Conform to the manufacturer's recommendations for the quantity of fiber, which shall be not less than the minimum requirements of 2.02 T.2.b.1.

(8) Arrange for the fiber manufacturer to provide the services of a qualified representative at the pre-concrete construction meeting and for the first two days of fibrous concrete placement production.

U. Expansion Joints (Except for Bridge Decks) and Contraction Joints (Except for Pavements)

1. Vinyl plastic water stops shall be of types and sizes shown on the Contract Drawings and conforming to Corps of Engineers "Specifications for Polyvinylchloride Waterstop" (Designation: CRD-C 572-60, latest revision).

2. Premoulded expansion joint filler, when shown on the Contract Drawings:

a. Cork type shall be ASTM D 1752, Type II.

b. Bituminous type shall be ASTM D 1751.

3. Joint Sealant when shown on Contract Drawings: Federal Specification SS-S-1401, latest revision.

2.03 MIX PROPORTIONS

A. Develop mixes in accordance with the latest editions of ACI 211, ACI 301 and ACI 318 to achieve the proportion performance criteria in accordance with the Contract Documents, with a degree of excess as determined by Chapter 5 of ACI 318, and meet all of the applicable performance criteria as specified in the Contract Documents. In addition, all concrete placed underwater shall conform to ACI 304R, Chapter 8, and lightweight aggregate concrete shall conform to ACI 213. Submit an underwater concrete placement procedure that is in conformance with ACI 304R, Chapter 8. Prior to concrete construction and after approval of all materials to be used in the concrete, submit a mix proportion showing that all performance criteria have been met. Mix proportions submitted shall be based upon laboratory trial mix test results and/or mixes successfully used within the two years preceding the date of the submittal of the mix for the Work of this Section. The independent testing laboratory used to develop the mix proportions and to perform testing shall have AASHTO Accreditation for all test methods required to be performed and to develop the required mix. Submit proof of certification to the Engineer prior to the start of development of the mix proportions and testing. The mix proportions shall include copies of test reports, including test dates, and a complete list of materials, including type, brand and source. The trial mix design performed in the testing laboratory shall use the same materials, cement, pozzolons, aggregates and admixtures that will be used at the proposed batch plant. Show fineness modulus, gradations and absorptions of aggregates. If any of the approved mix constituents change in source, properties or proportion, submit a new mix. The mix proportions shall also conform to the following:

1. Substitute either fly ash or slag at the minimum rate of 20% by weight of cement. The maximum rates of substitution shall be 30% for fly ash and 40% for slag, unless otherwise approved by the Engineer. Fly ash and slag substitution in the same mix may be permitted upon approval by the Engineer.

2. For concrete placed underwater, the minimum cementitious material content shall be 700 pounds per cubic yard of concrete.

3. Compute water to cement ratio using the weight of cementitious material that is equal to the total weight of cement plus fly ash, slag and silica fume. Any admixtures which increase the water to cement ratio by 0.01 or greater shall be accounted for in the mix proportion to meet the specified water to cement ratio.

4. For Categories II, III and IV concrete applications, the mix water to cement ratio shall not exceed 0.40 and the absolute drying shrinkage at 28 days shall not exceed 0.04% in accordance with ASTM C 157 (Air Drying Method), modified to start measuring at 10 hours. In addition for Categories III and IV, the maximum Coulomb count at 28 days shall be 1,000 for mixes without calcium nitrite and 1,500 when the mix contains calcium nitrite. For mixes that do not have silica fume, latex or metakaolin but contain either fly ash or slag, the Coulomb count requirements shall remain the same; however, the test shall be performed at 90 days instead of 28 days. For concrete pavements and Categories I and V applications where the concrete will be exposed to freeze-thaw cycles and/or sulfates, the mix proportion water to cement ratio shall not exceed 0.40 and the absolute drying shrinkage at 28 days shall not exceed 0.04% in accordance with ASTM C 157 (Air Drying Method). For other concrete applications, the mix water to cement ratio shall not exceed 0.50, unless otherwise shown on the Contract Drawings.

5. High Range Water Reducer shall not be added to the concrete mix at the plant. It shall be delivered to the construction site in a tank fixed to the truck that discharges directly into the mixing drum, or it may be added to the drum from a calibrated dispensing unit. A calibrated dispensing unit shall be defined as a manufactured dispenser with clear volume indications marked on the outside of the unit. It shall be available at all times during the concrete placement for re-dosing purposes. Submit a re-dosing chart showing the dosages necessary to increase the slump, in inches per cubic yard of concrete remaining in the drum, over the range of concrete temperatures from 50 deg F to 90 deg F. If re-dosing occurs, the re-dosing chart shall be used, but under no circumstances shall the total dosage exceed the maximum dosage recommended by the manufacturer. The truck shall mix the load for a minimum of an additional 5 minutes prior to releasing the load.

6. The percentage of air in the mix shall fall within the range of the Lower Quality Limit (LQL) and the Upper Quality Limit (UQL) as outlined in the table shown in 2.04 A.6 entitled "Air Content Target Range for Freshly Mixed Concrete". Air content shall be determined by testing in accordance with ASTM C 231 for normal and heavyweight concrete mixes and ASTM C 173 for porous, lightweight aggregate.

7. Make adjustments to the weight of coarse, lightweight aggregate in accordance with the following:

   a. Design lightweight concrete mix proportions not to exceed 123 pounds per cubic foot, unless otherwise specified.

b. Adjust the proportion of lightweight aggregate to compensate for the difference between the wet unit weight determined in 3.05 B.5 and the dry unit weight of the material submitted in accordance with 1.05 A.1 and the approved mix proportions.

c. For lightweight aggregate mixes, advise the batch plant 72 hours prior to pouring in order to saturate the aggregate. Presoak lightweight coarse aggregate a minimum of 72 hours prior to mixing of concrete. The lightweight aggregate shall reach an absorbed moisture content not less than the manufacturer's written recommendations or the concrete will be rejected.

B. Where Latex Modified Concrete is specified in the Contract Documents, conform to ACI 548.4. The mix maximum water to cement ratio shall not exceed 0.37. The minimum volume of coarse aggregate shall be not less than 7.6 cubic feet (absolute volume) per cubic yard.

C. Architectural Concrete

Concrete that will be permanently exposed to view and which therefore requires special care in selection of concrete ingredients including color, forming, placing, consolidating and finishing to obtain the desired architectural appearance is designated as "Architectural Concrete".

1. A minimum of 35 days prior to construction of a mock-up, submit mix proportions and two sample panels (a minimum of 12" x 12" x 2") for each mix to the Engineer for approval. The materials used for the sample panels shall be from the same sources of material supply for all constituents in the approved mix. When requested by the Engineer, submit samples of all constituents for trial batching to the Port Authority Materials Engineering Unit to verify that the physical property requirements are met. Obtain approval for both sample panels for color and texture, as well as for the mix proportions for physical properties prior to constructing a mock-up.

2. Pigments, in conformance with ASTM C 979, shall be used when matching the color of existing concrete or when a specific color of concrete is required by the Engineer.

3. Construct mock-up only after the Engineer has approved both the mix proportions for physical properties and the sample panels for color and texture. For cast in place concrete, a mock-up in accordance with ACI 303.1 Section 1.6 Quality Assurance will be required for approval by the Engineer. For walls, a mock-up shall include all details that will be encountered in a typical day's pour. The mock-up may be constructed at the construction site as part of the permanent Work at the sole risk of the Contractor. If the Engineer rejects the mock-up, it shall be removed and recast at the sole expense of the Contractor. For precast architectural concrete, the mock-up shall consist of a full member selected in advance by the Engineer. Keep the approved mock-up at the precast concrete production facility for the Engineer to compare with the production units for acceptance or rejection. Acceptance or rejection shall be determined solely by the Engineer.

4. Construct mock-ups only with all of the actual constituents of the approved mix proportions. Do not proceed with production until the mix proportions, sample panels, full-scale mock-up and shop drawings have been approved by the Engineer. Once production begins, do not change suppliers or sources of supply for any of the constituents in the approved mix for the duration of the Contract.

5. In addition to the mix proportions and sample panels, submit the following for approval: forms, form liners and form oil or release agents.

6. Architectural Concrete shall conform to the Quality Assurance performance criteria specified in 4.01 B, Table 2 for the appropriate placement application and the associated Quality Acceptance Limits specified in 2.04.

7. Noticeable differences in color and/or texture of the finished product, as determined solely by the Engineer, shall be corrected by means and materials approved by the Engineer.

D. Pipe Piles: The target range for slump shall be 4 to 6 inches.

2.04 QUALITY ACCEPTANCE LIMITS

A. Develop mixes to meet the following performance criteria Quality Acceptance Limits in accordance with the relevant application properties specified in 4.01.B., Table 2, unless otherwise noted on the Contract Drawings:

1. Compressive Strength (ASTM C 39): The Lower Quality Limit, LQL, shall be the specified mix compressive strength at 28 days, unless otherwise noted on the Contract Drawings.

2. Flexural Strength (ASTM C 78): The Lower Quality Limit, LQL, shall be 700 psi at 28 days, unless otherwise noted on the Contract Drawings.

3. Permeability (AASHTO T 277): The Upper Quality Limit, UQL, shall be 1700 Coulombs for mixes not containing a corrosion inhibitor and 2200 Coulombs for mixes that do contain a corrosion inhibitor. Performance testing shall be performed at 28 days, except for mixes containing only fly ash and/or slag substitution for cement but no silica fume or metakaolin, which shall be evaluated at 90 days.

4. Bond Strength (ASTM C 1583): The Lower Quality Limit, LQL, shall be 150 psi at 28 days.

5. Water Content (AASHTO T 318): The Upper Quality Limit, UQL, for water content shall be the specified water to cementitious ratio specified in 2.03 A.4 plus 0.05.

6. Air Content (ASTM C 138, ASTM C 173 or ASTM C 231): Both the Lower Quality Limit, LQL, and the Upper Quality Limit, UQL, shall be as specified in the table below:

AIR CONTENT TARGET RANGE FOR FRESHLY MIXED CONCRETE

MAXIMUM SIZE AGGREGATE (SIZE #)	AIR CONTENT LQL	AIR CONTENT UQL
2" or above (# 467 and above)	3.5%	7.5%
1-1/2" (# 57)	4.0%	8.0%
1" (# 67)	4.5%	8.5%
1/2" (# 8)	5.5%	9.5%
3/8"	6.0%	10.0%
Latex modified concrete	2.5%	6.5%

Note: For a specified compressive strength greater than 5000 psi, the LQL and UQL for air content, as indicated above, shall both be reduced by 1.0%. For all concrete applications not exposed to freeze-thaw cycling or chlorides, no air entrainment is required.

7. Chloride Ion Concentration by Weight of Cementitious Material (ASTM C 1152, ASTM C 1218, ASTM C 114, ACI 222R): The acid soluble chloride ions by weight of cementitious material in the concrete mix shall be less than or equal to 0.10% for reinforced concrete and 0.08% for prestressed concrete, as per ACI 222R. The water soluble chloride ions by weight of cementitious material in the concrete mix shall be less than or equal to 0.08% for reinforced concrete and 0.06% for prestressed concrete, as per ACI 222R.

8. Pavement Thickness: The Lower Quality Limit, LQL, for pavement thickness shall be 97.0% of the thickness shown on the Contract Drawings.

9. Delaminations: The total surface area tested for any given Lot of concrete shall indicate less than 5.00% delaminated area when tested using the chain drag in accordance with ASTM D 4580.

B. For concrete bridge decks where riding surface tolerances are required, as shown on the Contract Drawings, the following requirements shall be met:

1. Surface smoothness deviations shall not exceed 1/4 inch in 16 feet.

2. Vertical deviation from the grade shown on the Contract Drawings shall not exceed plus or minus 0.04 foot at any point.

C. For mass concrete as defined in ACI 207 or as specified on Contract Drawings the temperature at the core of the in situ concrete shall not exceed 160 deg F nor shall the maximum difference in temperature between the core and the surface of the structure exceed 35 deg F at any time. The drop in temperature in the first 24 hours after the end of protection shall not exceed the limits of ACI 306R Table 3.1.

D. Unless otherwise specified on the Contract Drawings, the above specified Quality Acceptance Limits will be used to calculate Adjustments to Contract Compensation in accordance with Part 4 of this Section.

PART 3. EXECUTION

3.01 SURFACE PREPARATION

A. Bonded Overlays and Patching Applications

1. Bond strength tests will be performed by the Engineer in accordance with ASTM C 1583, using 4-inch by 4-inch steel plates, to determine the adequacy of the surface preparation. A minimum average bond strength of 200 psi shall be attained, with no single test value less than 180 psi. If time does not permit the above test to be performed, as determined solely by the Engineer, the Engineer will measure the macrotexture depth in accordance with ASTM E 965. A minimum of four tests will be performed and the average macrotexture depth shall be a minimum of 0.06 inches. Prior to the placement of any overlay or patching material, obtain the Engineer's approval of the surface preparation.

B. Latex Modified Concrete and Silica Fume Concrete

1. The Engineer will sound the concrete surface to identify areas of unsound or deteriorated concrete. Areas so identified shall be removed to the limits and depths as ordered by the Engineer. Perform abrasive blasting of all exposed reinforcing steel that is to remain in place.

C. Construction Joints (excluding joints in pavements)

1. Number, locations and details shall be as shown on the approved shop drawings.

2. Planes of joints shall be normal to direction of pressure and shall include suitable keys and dowels.

3. Locate joints at points of minimum shear, unless otherwise shown on approved shop drawings or directed by the Engineer.

4. Avoid lips and other irregularities between adjoining sections of concrete. Secure forms tightly against previously placed concrete.

D. Expansion and Contraction Joints (excluding joints in pavements)

1. After curing concrete, clean grooves or saw cuts to receive joint sealant by scrubbing with a mechanical wire brush to loosen dirt and other foreign matter and blowing out loose matter with compressed air.

2. Install joint sealant to finish flush with concrete surface, except where otherwise shown on the Contract Drawings.

E. Preparation for Placing Concrete (excluding pavements)

1. Straighten bent dowels, whether placed under this Contract or by others, using tools approved by the Engineer. Do not apply heat to dowels.

2. Clean all dowels and all steel, that will be embedded in concrete, of all loose rust, scale, paint, grease and other objectionable materials.

3. Examine coated reinforcement for integrity of coating. Repair all damaged areas in accordance with the requirements of Specification Section 03200 entitled "Concrete Reinforcement". Make the repair crew available at the time of examination.

4. Check all formwork locking devices to ensure that they are in place and properly secured.

5. Do not place concrete for piles, footings, pile caps or slabs supported on pile caps or piles until the pile survey has been completed and additional reinforcing steel, if necessary, has been added as directed by the Engineer.

6. For preparation of surfaces to receive concrete, conform to the Contract Drawings for all procedures, equipment limitations and requirements to be performed prior to placing concrete.

7. Do not place concrete for slabs-on-grade, grade beams or footings until the subgrade has been inspected and approved by the Engineer, and until any base course or fill has been properly compacted in accordance with the Contract requirements.

8. Provide vent holes (1/4 inch diameter, minimum) edge angles or embedded plates at joints where vibrating alone will not ensure elimination of voids. Locate such holes at high points and with uniform spacing along joints for escape of air during concreting operations. Evidence of voids adjacent to embedments will be cause for rejection of work. Submit all vent holes and procedures for placement of concrete at joints with the shop drawings for review and approval.

9. Make provisions for the concrete to pass through the reinforcing steel without segregating during placement.

F. For preparations for placing concrete pavements, see Section 02513 entitled "PLACEMENT OF PORTLAND CEMENT CONCRETE PAVING (FAA)".

3.02 BATCHING AND MIXING CONCRETE

A. Measurement of Proportions

1. All concrete batching shall be in conformance with ASTM C 94 and ACI 304R.

2. For Very High Early Strength Concrete requiring 2000 psi or greater in 6 hours or less time, the method of batching will be restricted to a calibrated mobile mixer, or to a transit mixer that is loaded at the construction site with bulk bags of the Very High Early Strength Cement. Bulk bags shall contain sufficient Very High Early Strength Cement by weight to batch for a minimum of 3 cubic yards of concrete.

B. Mixing Concrete

1. Arrange for transit mix trucks to be inspected and approved annually by either the New Jersey or New York State Departments of Transportation.

   a. Mixers shall be equipped with a metal plate attached by the manufacturer, indicating the volume of mixed concrete the equipment is intended to produce. The quantities of materials transported and the volume of mixed concrete produced shall not exceed the mixer's rated capacity. In locations where the rate of depositing is slow, the Engineer may restrict the volume of concrete that may be mixed in a mixer to a volume less than the manufacturer's rated capacity of the mixer.

   b. Immediately repair or withdraw from use any mixer which is determined to be mechanically unsatisfactory.

2. If truck mixers are used, keep available a sufficient number to ensure continuous delivery of the concrete at the rate required for the proper handling, placing, finishing and curing of the concrete. If a plant at the construction site is used, it shall be of sufficient capacity to meet such requirements.

   a. Mixers shall be of the revolving-drum type, with drums suitably mounted and fitted with adequate blades capable of discharging the mixture without segregation. All truck mixers shall be equipped with an accurate, operable counter to measure the number of drum revolutions and an accurate, working water site gage or manometer to measure the volume of water introduced into the drum. Truck mixers without an accurately operating counter or water site gage shall be immediately withdrawn from use.

3. The Engineer may permit one re-tempering of the concrete subject to the following:

   a. When the measured water content in the batch is less than the water in the approved mix proportion.

   b. The redosage of high range water reducer shall conform to the Engineer-approved redosage chart and shall not exceed the manufacturer's recommended limitation, nor shall it retard the initial set of the concrete by more than 30 minutes.

   c. When air content is below the lower quality limit specified in 2.04 A.6.

4. The Engineer may reject concrete in the following instances:

   a. Concrete has not been placed within 90 minutes from the time the cement had first contact with water.

   b. Concrete temperature reaches 92 deg F.

   c. The mix appears to be segregated.

5. The Engineer will reject concrete subject to the following:

   a. Concrete that has partially hardened or has attained its initial set prior to placement.

   b. The water to cement ratio as determined by AASHTO T 318 exceeds that given in 2.03 A.4 by 25%.

6. Construction Site Mixing: Measure mix components in accordance with tolerances given in ASTM C 94. Weigh all non-liquid components and measure all liquid components immediately prior to batching. Use a calibrated flask with clear indication markings for ounces, pints, etc. when measuring liquid components. Measures without calibrated clear indication markings will not be permitted. Mix concrete materials in an approved drum-type batch machine mixer.

   a. For a mixer capacity of 1 cubic yard or less, continue mixing a minimum of 3 minutes, but not more than 5 minutes after ingredients are in the mixer and before any portion of the batch is released.

   b. For a mixer capacity of greater than 1 cubic yard, increase the mixing time by 1 minute for each additional 1 cubic yard.

   c. Provide a batch ticket to the Engineer for each batch discharged and used in the Work, indicating the Contract number and title, date, time, mix type, mixing time, quantity of each constituent, volume of concrete and amount of water added. Record a location of the deposit in the structure that can be easily identified.

C. Mobile Mixers: When application requires the use of a mobile mixer, it shall meet the following criteria:

1. Proportioning and Mixing Equipment

   a. Mixer shall be a self-contained, self-propelled, continuous mixing type capable of carrying sufficient unmixed dry cement, aggregates, water and admixtures to produce not less than 6 cubic yards of concrete. Maintain a calibrated back-up unit at the construction site ready for use.

b. Mixer shall be capable of positive measurement of cement being introduced into the mix. A recording meter, visible at all times and equipped with a ticket printout, shall indicate this quantity.

c. Mixer shall provide positive control of the flow of water and admixtures. Water flow shall be indicated by flow meter and shall be readily adjustable to accommodate minor variations in aggregate moisture.

d. Mixer shall be capable of being calibrated to automatically proportion and blend all components of indicated composition on continuous or intermittent basis as required by the finishing operation, and shall discharge mixed material through a chute directly in front of the finishing machine. Notify the Engineer a minimum of 48 hours prior to calibration of the mobile mixers. Before approving the calibration of the mobile mixer, the Engineer will witness the calibration of the mobile mixer. However, the Contractor is responsible for testing the mix produced. Allow the Engineer to test the concrete mix at any time.

e. Calibrate mixer to accurately proportion the specified mix. Certification of calibration by an Engineer approved testing agency will be accepted as evidence of this accuracy, provided such certification attests the yield to be true within the following tolerances (by weight):

Coarse Aggregate	+/- 2%
Fine Aggregate	+/- 2%
Cement	+/- 1%
Water	+/- 1%
Admixtures	+/- 3%
Latex	+/- 1%

f. Mix in accordance with the specified requirements for the equipment used. The concrete, as discharged from the mixer, shall be such that finishing operations can proceed at a steady pace with final finishing completed before the formation of the plastic surface film.

g. Repair mixers not functioning in a manner the Engineer considers acceptable. If repair is not practical, remove the mobile mixer from the construction site and replace it with one which functions properly.

h. Prior to production, test the moisture content of the fine aggregate and coarse aggregate. Adjust the water gage setting only in the presence of the Engineer, to produce the approved mix water to cement ratio. Test the moisture content of the fine aggregate and coarse aggregate every 3 hours during production, or when the mobile mixer is loaded with aggregates from a stockpile different from the one for which moisture content tests were performed, whichever occurs first. Make adjustments in the presence of the Engineer. For Latex Modified Concrete, the maximum permissible moisture content of fine aggregate and coarse aggregate shall be 6.0% and 3.0%, respectively, as determined in accordance with ASTM C 566. If these limits are exceeded, stop concreting operations until drier aggregates are obtained. Allow the Engineer to view and copy all records for moisture content testing at any time.

3.03 PLACEMENT FIELD REQUIREMENTS

A. During all concrete placements at the construction site, the Contractor shall have an individual in a supervisory capacity present with a valid certification from one of the following programs:

1. ACI Concrete Transportation Construction Inspector or Concrete Construction Special Inspector.
2. New Jersey ACI Chapter's "Concrete Construction Technology" course.

B. Prior to any construction site delivery of concrete, furnish, deliver and maintain insulated curing boxes of sufficient size and strength to contain all the specimens (cylinders and beams) made by the Engineer in any two (2) consecutive Work periods. Such boxes shall be equipped to regulate the temperature in the range of 60 deg F to 80 deg F or 68 deg F to 78 deg F when the design compressive strength is 6000 psi or greater, and to provide the moisture to maintain the curing conditions specified in ASTM C 31. During hot weather when the temperature is greater than 80 deg F, maintain the temperature of the concrete specimens in the required range by immersing them in a water bath. Cover the water bath to prevent direct sunlight from raising the water temperature. Completely remove and replace the water in the bath every day. Locate the boxes where directed by the Engineer. Protect boxes from vibration and other disturbances during specimen curing.

C. Keep this Specification and the following ACI publications available at all times at the construction site:

1. ACI 301.
2. ACI 302.1R.
3. ACI 305R.
4. ACI 306R.
5. ACI 308.
6. ACI 309R.
7. ACI 318.

D. Ensure that the concrete supplier keeps this Specification and the following ACI publications available at all times at the batching location:

1. ACI 211.
2. ACI 213.
3. ACI 304R.

E. Bonding New Concrete to Existing Concrete

Where new concrete will be placed against existing concrete surfaces:

1. Surface to receive concrete shall be soaked and kept wet with water for one (1) hour prior to placement of material. Puddles of standing water shall be removed immediately prior to placement.

2. A thin layer of material from the leading edge of the concrete being placed shall be broomed into the wetted surface. Care shall be exercised to ensure that all vertical as well as horizontal surfaces receive a thorough, even coating and that the rate of progress is controlled so that the broomed material does not dry before being covered with additional material as required for final grade.

F. Placing Concrete (excluding pavements)

1. Place concrete only in the presence of the Engineer and by methods approved by him.

2. For concrete cast against earth or an approved compacted subgrade, and for concrete overlays, place concrete against surfaces in a saturated surface dry condition.

3. Prior to placing concrete, remove all standing water or puddles.

4. Do not place concrete on or next to frozen surfaces.

5. Transfer concrete from mixer to place of deposit as rapidly as practical to prevent formation of cold joints.

6. Use equipment and methods for placing which permit rapid placement of concrete of the required consistency and which preclude segregation.

7. The method and equipment used to transfer concrete from mixer to forms will be subject to prior approval by the Engineer. Do not use any pipes, chutes or other equipment made of aluminum.

8. Subject to the foregoing requirements, convey concrete by approved conveyors, pipes, chutes or spouts to a point not more than five feet horizontally or vertically from its final position, unless otherwise approved by the Engineer.

9. Concrete for fill in steel reinforced pipe piles, steel shells or caissons shall be deposited using a metal (not aluminum) hopper and an elephant trunk. The hopper and elephant trunk shall be set above the top of piles, steel shells or caissons to permit the escape of air as the concrete is placed. Elephant trunks shall be removed in sections while filling piles, steel shells or caissons from bottom of reinforcing cage to top of piles, steel shells or caissons. Elephant trunks shall extend a minimum distance of 10 feet below top of pile, steel shell or caisson or to bottom of reinforcing cage, whichever is greater. The top 15 feet of the concrete poured from the top shall be vibrated or rodded. No cold joints will be permitted during concreting operations, unless otherwise noted on the Contract Drawings.

10. Except where otherwise approved by the Engineer, consolidate concrete by internal mechanical vibration subject to the following:

    a. Type, number and method of application of vibrators will be subject to prior approval by the Engineer.

    b. Apply vibrators at points not more than 30 inches apart for time intervals of approximately 10 seconds.

    c. Do not use vibrators to move concrete horizontally.

    d. In locations where spading is approved in lieu of mechanical vibration, spade coarse aggregate away from the forms and into the plastic mass; rod concrete around embedded materials and into corners and spaces to be filled and use only approved equipment.

11. Prevent formation of laitance and accumulation of excessive water on surface of concrete as it is deposited. Remove any accumulated bleed water by approved means before placing other concrete.

12. Place concrete so as to require as little rehandling as possible. Place and spread concrete using an approved mechanical spreading device that prevents segregation of the materials. Place continuously between contraction joints. Perform necessary hand spreading with shovels, not rakes.

13. Deposit concrete as near to joints as possible without disturbing them but do not discharge onto a joint assembly unless placement is centered above the joint assembly.

14. Thoroughly consolidate concrete against and along the faces of all forms and previously placed concrete and along the full length and on both sides of all joint assemblies by means of vibrators inserted in the concrete. Do not permit vibrators to come in contact with a joint assembly, base course or a side form. In no case shall the vibrators be used to move the concrete.

15. Screed and float concrete for riding surfaces as it is placed and use an approved evaporation retardant or fog spray.

G. Concrete Placing and Finishing Equipment for Bridge Decks and other Riding Surfaces (except for FAA pavements)

1. For slab or overlays 8 inches or more thick use internal vibrators. Internal vibrators shall be gang-mounted and supplemented with manual vibrators subject to the following:

   a. Use manual, hand-held vibrators adjacent to joint assemblies and similar locations where gang-mounted vibrators are not practical.

   b. Check all vibrators prior to the start of Work and periodically during construction progress to verify that they are working properly.

2. For slab or overlays less than 8 inches thick, vibrating surface pans or screeds will be allowed.

3. Manual tools such as bull floats, trowels, brooms and other similar hand tools are acceptable.

H. For placement and finishing of concrete pavements, see Section 02513 entitled "PLACEMENT OF PORTLAND CEMENT CONCRETE PAVING (FAA)".

I. Consolidation and Finishing

1. Bridge Decks and other Riding Surfaces

   a. Machine finishing shall conform to NJDOT Standard Specifications for Road and Bridge Construction 2007 Subsection 1005.02, .03 and .04.

   b. Finishing at and adjacent to joints shall conform to NJDOT Standard Specifications for Road and Bridge Construction 2007 Subsection 405.03.02 Item C.

c. Hand finishing methods will not be permitted, except under the following conditions: (1) in the event of breakdown of the mechanical equipment, hand methods may be used to finish the concrete already deposited on the grade; (2) in areas of narrow widths or of irregular dimensions where operation of the mechanical equipment is impractical. Concrete, as soon as placed, shall be struck off and screeded using an approved portable screed. Use a second screed shall for striking off the bottom layer of concrete when reinforcement is used.

The screed for the surface shall be at least 2 feet longer than the maximum width of the slab to be struck off. It shall be of approved design, sufficiently rigid to retain its shape, and shall be constructed either of metal (not aluminum) or of other suitable material covered with metal. Consolidation shall be achieved by the use of suitable vibrators.

d. After the concrete has been struck off and consolidated, it shall be further smoothed and trued by means of a longitudinal float using one of the following methods:

(1) Long-handled floats shall be not less than 12 feet in length and 6 inches in width, stiffened to prevent flexibility and warping. The float shall be operated from foot bridges spanning but not touching the concrete or from the edge of the pavement. Floating shall pass gradually from one side of the bridge deck to the other. Forward movement along the centerline of the pavement shall be in successive advances of not more than one-half the length of the float. Any excess water or laitance in excess of 1/8-inch thick shall be removed and wasted.

(2) The Contractor may use a machine composed of a cutting and smoothing float(s), suspended from and guided by a rigid frame and constantly in contact with, the side forms or underlying surface. If necessary, long-handled floats having blades not less than 5 feet in length and 6 inches in width may be used to smooth and fill in open-textured areas in the pavement. When the crown of the bridge deck will not permit the use of the mechanical float, the surface shall be floated transversely by means of a long-handled float. Care shall be taken not to work the crown out of the pavement during the operation. After floating, any excess water and laitance in excess of 1/8-inch thick shall be removed and wasted. Successive drags shall be lapped one-half the length of the blade.

e. While the concrete is still in a workable condition, test it for trueness with a Contractor-furnished 16-foot straightedge swung from handles 3 feet (1 m) longer than one-half the width of the slab. The straightedge shall be held in contact with the surface in successive positions parallel to the centerline and the whole area gone over from one side of the slab to the other, as necessary. Advance in successive stages of not more than one-half the length of the straightedge. Any excess water and laitance in excess of 1/8-inch thick shall be removed from the surface of the bridge deck and wasted. Any depressions shall be immediately filled with freshly mixed concrete, struck off, consolidated and refinished. High areas shall be cut down and refinished. Special attention shall be given to ensure that the surface across joints meets the smoothness requirements set forth in 2.04 B. Straightedge testing and surface corrections shall continue until the entire surface is free from observable departures from the straightedge and until the slab conforms to the required grade and cross section. The use of long-handled wood floats shall be confined to a minimum; they may be used only in emergencies and in areas not accessible to finishing equipment. Test the surface across the joints with a 16-foot straightedge as the joints are finished and correct any irregularities in excess of 1/4 inch before the concrete has hardened.

2. Specified concrete finishes, as shown on the Contract Drawings, shall be in accordance with the following requirements:

a. "Smooth Finish": A surface of concrete obtained by the use of special forms as specified in Division 3 Section entitled "Concrete Formwork". Remove all fins and other irregularities in the exposed surfaces of concrete by rubbing the irregularities with a carborundum brick and clean fresh water. Any mortar patches shall be rubbed with a carborundum brick as above specified.

b. "Scored Finish": A surface of concrete obtained by roughening in an approved manner or by etching with sharp-pointed steel tools to key or otherwise improve the mechanical bond of the surface. Such scoring shall roughen at least ten percent of the area so scored.

c. "Float Finish": A surface of concrete obtained by the use of a wood float. Apply float finish to horizontal surfaces immediately after screeding and before initial setting has begun.

d. "Trowel Finish": A surface of concrete obtained by the use of a steel trowel, after screeding and floating the surface of the concrete to produce a dense, smooth, even surface suitable for painting or the application of floor covering. The troweling shall not take place until the surfaces have set sufficiently to sustain knee boards without damage. Troweling shall eliminate all irregularities and leave the concrete surface with a smooth, hard finish, free from marks and blemishes to the satisfaction of the Engineer.

e. "Traction Finish": A monolithic layer of abrasive concrete having a minimum thickness of 3/4 inch and which shall be "Emericrete SH", as manufactured by the Sika Corporation, or approved equal. Prepare the base and install the monolithic finish in accordance with the recommendations of the manufacturer of the abrasive concrete. The surface shall be given a wood float finish. The sides and edges of pavement slabs shall be rounded with an approved edging tool to the minimum radius obtainable in the sole opinion of the Engineer.

f. "Burlap Finish": A surface of concrete obtained by the use of a burlap drag, after screeding and floating the surface of the concrete. Drag the burlap in one direction in a straight line before initial setting has begun and in such a manner that the full width of the slab being finished is dragged in one operation. Prepare the surface prior to dragging by working from a bridge that does not come in contact with the fresh concrete at any point. The use of any burlap that causes irregularities or grooves greater than 1/16 inch in depth in the concrete surface will not be permitted. Rinse or wash burlap as often as is necessary to prevent the presence of hardened particles and consequent scarring of the concrete.

g. Stair treads and platforms of steel stairs shall be filled with mortar mixed in the proportions of one part Portland cement to three parts of fine aggregate, mixed with water to a satisfactory consistency. Coat the surface of the mortar with three pounds of aluminum oxide crystals per square yard of surface, uniformly applied, and trowel the surface to a smooth hard finish. Aluminum oxide crystals shall be grade AL203 crystals ranging from No. 12 to No. 30 in size and shall contain not more than six percent of iron or other impurities.

h. "Broom Finish" shall be subject to the following:

(1) Finish the concrete when the water sheen has practically disappeared. Use push broom or floor brush type, not less than 18 inches wide and made of good quality bass or bassine fibers not more than 4-1/2 inches long and with handles longer than half the width of the slab.

(2) Use an adequate number of brooms to keep up with other operations. Achieve proper finish prior to initial set of the concrete.

(3) Wash and thoroughly dry brooms at frequent intervals and remove worn or damaged brooms from the construction site.

(4) Draw broom across previously finished surface from the centerline to each edge of the slab with a slight overlap of strokes.

(5) Corrugations made in surface shall be uniform, approximately 1/16 inch in depth, and not more than 1/8 inch in depth.

(6) Complete brooming before concrete reaches a condition that would result in the surface becoming torn or unduly roughened and before initial set of concrete.

(7) Immediately following brooming, carefully finish the edges of slab along sides and at joints with an approved edging tool to form a smooth rounded surface of required radius and subject to the following:

(a.) Where corners or edges of slabs have crumbled and at any areas which have leaked sufficient mortar to make proper finishing difficult, remove loose fragments and soupy mortar, fill solidly with a mixture of correct proportions and consistency and finish.

(b.) Edges shall be smooth, true to line and free of unnecessary tool marks.

i. "Saw Cut Grooved Surface" for deck slabs and overlays shall conform to the requirements of the NJDOT Standard Specifications, Division 500 Subsection 507.03.02, Item L.

j. Concrete Curbs and Sidewalks

(1) Give sidewalks a "Float Finish", tool edges and joints for a width of 2 inches and round corners to a radius of 1/4 inch with an approved edging tool.

(2) Install expansion joints at not more than 20-foot intervals in sidewalks with matching joints in curbs. Use 1/4-inch bituminous joint filler.

(3) Score sidewalks in squares as approved by the Engineer.

J. Pump Concrete

1. Grout used to prime the pump line shall not be included in the placement. Dispose of the grout at the end of the pump line off Authority property. Do not begin placement until concrete is visible at the end of the pump line.

2. Allow no water to enter the pump hopper at any time during placement operations.

3. Submit written procedures for pumping to the Engineer for approval. The procedures shall contain, but shall not be limited to, pumping scheme, pump description, line diameter, line length and the number of turns and line offsets.

K. Silica Fume Concrete and Fibrous Concrete

1. Arrange for qualified technical representatives from the silica fume and the fiber suppliers, who are experienced in the batching and placement of silica fume and fibrous concrete, to be present for the pre-concrete construction meeting, all test pours and the first two production pours.

L. Fog spray forms, steel reinforcement and subgrade with potable water immediately prior to the placement of fresh concrete. Maintain uniform moisture of the subgrade without standing water, soft spots or dry areas.

3.04 CURING

A. Carefully cure all concrete. Submit a curing procedure plan for approval by the Engineer prior to placing any fresh concrete. Perform curing in accordance with ACI 308 and the following specifications. Commence curing procedures immediately after fresh concrete has been placed.

1. Provide suitable means, such as insulating blankets or heated enclosures, for maintaining a concrete temperature of at least 50 deg F after placement. At the end of this period, remove protection in such a manner that the drop in temperature of any portion of concrete is gradual and does not exceed the following within the first 24 hours after removal of protection, in accordance with ACI 306R, Table 3.1: 50 deg F for applications with a minimum dimension less than 12 inches; 40 deg F for applications with a minimum dimension between 12 and 36 inches; 30 deg F for applications with a minimum dimension between 36 and 72 inches; and 20 deg F for applications with a minimum dimension greater than 72 inches.

2. Allow all concrete to attain 4,000 psi compressive strength before exposure to freeze-thaw cycles.

3. Choice of curing material and method shall be as approved by the Engineer.

B. Wet Curing

1. All pavement concrete and structural slabs: Immediately after screeding of the concrete, apply an evaporation retardant, or commence the operation of a fog spraying system to keep moisture in the atmosphere surrounding the concrete until all concrete finishing has been completed. Do not direct fogging at the fresh concrete and do not permit ponding of water on the fresh concrete surface.

2. Perform wet curing for the following concrete applications: overlays, deck slabs, ramps, any concrete mixes containing silica fume, Very High Early Strength Cement and formulated latex modifier.

3. Immediately after finishing concrete, cover the surfaces with wet burlap or cotton mats which have been presoaked for a minimum of 24 hours in potable water, so that no marring of the surface occurs. Keep the burlap or cotton mats continuously moist, 24 hours per day, through the use of a fog spraying system or soaker hoses arranged at the high points of the concrete pour. Burlap, which shall consist of two or more layers, or cotton mats shall overlap a minimum of one foot, and shall be at least one foot longer than necessary to cover the entire width and edges of the pavement lane. The burlap or cotton mats shall be weighted down to prevent displacement.

   a. Inspect sheet material before reuse. Repair all holes and tears with cemented patches, subject to approval by the Engineer.

4. Wet curing procedures may be stopped only (1) when the ambient temperature is expected to fall below 35 deg F within 24 hours, (2) when placing concrete for slabs directly adjacent to the fog spraying system or soaker hoses or (3) when concrete is to receive traffic.

   a. When the ambient temperature at the surface of placement is 35 deg F and falling, wet curing will not be permitted; instead, apply a liquid membrane forming curing compound in accordance with 2.02 R and 3.04 C.1.a.

   b. When wet curing is temporarily interrupted for an adjacent placement, remove all standing water in areas to receive fresh concrete prior to placement. Occasionally spray a fine mist of water over the wet curing areas. Do not puddle water on the surface of the fresh concrete. When the fresh concrete is finished and covered with burlap or cotton mats, reassemble the continuous fog spraying system or soaker hoses and continue wet curing immediately.

   c. Areas in which the concrete will be exposed to traffic shall be wet cured for as long as possible. Wet curing may stop only when there is just enough time to apply a liquid membrane forming curing compound over the entire area prior to reopening it to traffic. In this case, apply the liquid membrane forming curing compound when the surface has no standing water or puddles on the surface, but is in a damp condition.

5. Wet cure for 7 days, or until 75% of the design compressive strength is obtained, whichever is longer, when determined by strength tests performed on sample cylinders cast in the field and cured in the same manner as the concrete.

6. Immediately after wet curing procedures are completed, apply a liquid membrane forming curing compound in accordance with 2.02 R and 3.04 C.1.a.

7. Contain water within the area of work.

8. For latex modified concrete, wet cure for a maximum of 48 hours, unless otherwise directed by the Engineer.

C. Liquid Membrane Forming Curing Compounds and Sheet Materials for Curing

1. Immediately after placing or finishing, commence the curing process of concrete not covered by forms from loss of moisture. Use one of the curing materials listed in 2.02 R, which may be supplemented by initially using an evaporation retardant listed in 2.02 S, as long as wet curing is not required, subject to the following:

   a. Apply white pigmented liquid membrane forming curing compound as soon as surface moisture has evaporated by approved pressure spraying or distributing equipment in two uniform full applications perpendicular to each other as recommended by the manufacturer. Allow the first coat to become tacky before applying the second coat. Each application shall be the full quantity recommended by the manufacturer. The entire surface shall be white after the second application.

      (1) Recoat areas subjected to heavy rainfall within 3 hours after rain.

      (2) Follow manufacturer's recommendations for agitation during application and warming where necessary during cold weather. Do not use liquid membrane forming curing compound where the surface being cured is to receive a finish that will be bonded to the concrete surface or where a floor hardener is to be applied, unless a certification of compatibility and a minimum five-year performance record is submitted in advance to the Engineer for approval.

      (3) The Engineer will check for uniformity through random sampling and testing. Testing may include determination of membrane infrared spectrum, pH, specific gravity and solids content.

2. Removal of Forms

   Removal of forms shall be subject to the following:

   a. Remove forms in accordance with the requirements of Specification Section 03100 entitled "Concrete Formwork" or Section 02513 entitled "Placement of Portland Cement Concrete Paving (FAA)".

   b. After removal of forms, patch areas of concrete which in the opinion of the Engineer show excessive honeycomb by cutting out defective areas, keying and refilling them with a mortar of cement and sand in the same proportions as those in the approved concrete mix design and sufficient water to provide a workable mix.

   c. After forms are removed, cure sides of slabs greater than 12 inches in thickness in accordance with 3.04 C.

d. Immediately after removal of forms, holes and voids in the surfaces of concrete, resulting from bolts and ties, shall be wetted and filled with a mortar containing cement and fine aggregate in the same proportions as in the approved concrete mix design, and utilizing cement which shall produce mortar of the same color as the concrete. Exposed mortar surfaces shall then be finished smooth and even with a wood float, except that those surfaces exposed to view in the finished structure shall be finished with a steel trowel to match adjacent surfaces. All fins and other surface irregularities shall be removed promptly by chipping, grinding or other methods approved by the Engineer to give a uniform finish. Where no specific surface finish for formed concrete surfaces is indicated on the Contract Drawings, no further finishing will be required.

e. Drop in concrete surface temperature over the first 24 hours shall be controlled in accordance with ACI 306.

3.05 QUALITY ASSURANCE TESTING, SAMPLING AND INSPECTIONS

A. The Engineer will perform Quality Assurance testing during mixing and placing of concrete on samples taken from the end of the pump line or at the point of discharge in accordance with ASTM C 172. The Engineer will take samples of concrete from each Lot during a single Work period based on random sampling procedures contained in ASTM D 3665. A Lot of concrete is defined as the production of a single Work period. For each Sublot, the Engineer will cast cylinders in accordance with ASTM C 31 when testing for compressive strength, as well as 4" x 8" cylinders when permeability is being tested and beams when flexural strength is being tested. The cylinders and beams will be tested in accordance with ASTM C 39 and ASTM C 78, respectively, for each Sublot to determine the compressive strength and flexural strength at the time requirements specified.

TABLE 1

LOTS AND SUBLOTS

Daily Placement Quantity (Cubic Yards)	Number of Lots	Number of Sublots
Less than 50	Note 1	Notes 1 and 3
50 – 100	1	3 equally divided
101 – 450	1	4 equally divided
Greater than 450	1	Note 2

Table 1 Notes:

1. If one Work period's placement of a given Class of concrete is less than 50 cubic yards, it will not constitute a Lot. It will be added either to the previous or the next Work period's Lot, whichever is closer in time, or until a minimum of 3 Sublots are completed constituting a Lot.

2. For concrete placements of 450 cubic yards or greater, a Sublot will be deemed to be one fourth of a Lot of concrete, or 150 cubic yards of concrete, whichever is less. For larger pours the Engineer may increase the number of cubic yards that constitute a Sublot.

3. If the total concrete quantity under the Contract for any type of mix is less than 50 cubic yards, it will constitute one Lot and will be divided into a minimum of 3 Sublots, regardless of the placement schedule.

B. Quality Assurance Testing Standards and Frequency of Testing: Some or all of the following procedures will be used by the Engineer to approve the concrete mix proportions and evaluate the in-place concrete for Adjustments to Contract Compensation:

1. Compressive Strength: In accordance with ASTM C 31 and ACI 318 Part 3, Chapter 5, Item 5.6, entitled "Evaluation and Acceptance of Concrete", except that the Engineer will take samples on a random basis and 4" x 8" cylinders will be used when the nominal maximum size of the coarse aggregate allows. Latex Modified Concrete samples will be wet cured by the Engineer for 1 day and dry cured for 27 days. The cylinders will be tested in accordance with ASTM C 39. The Engineer will calculate the average of two test specimens at the compressive strength time requirement. The average of the two test specimen result values for each Sublot will be considered the Sublot compressive strength value.

2. Flexural Strength: From each Sublot sample, cast beams in accordance with ASTM C 31. The Engineer will test the beams in accordance with ASTM C 78 and will calculate the average of two test specimens at the flexural strength time requirement. The average of the two test specimen result values for each Sublot will be considered the Sublot flexural strength value.

3. Slump Test: Performed by the Engineer at the point of delivery during the time of placement in accordance with ASTM C 143 or ASTM C 1611 when self-consolidating concrete is used. For Latex Modified Concrete, the Engineer will perform slump tests 5 minutes after sampling from the mixer. For pile concrete applications, the slump shall be no less than 4 inches and no greater than 6 inches.

4. Air Content Test: Performed during the placement in accordance with ASTM C 138, ASTM C 173 or ASTM C 231. The Engineer will perform one test for each Sublot, which will be considered the Sublot air content test value.

   a. When results for either two consecutive tests or three tests in one lot or one day's production indicate that the air content is outside the Quality Limits specified in 2.04 A.6 by +1.0 or –0.50% do not place the next load until it has first been tested and satisfactory test results have been obtained. If the air content for the next load is outside the Quality Limits specified in 2.04 A.6, it will be rejected. The Engineer will test subsequent loads until the air content is found to be within the specified limits of 2.04 A.6.

5. Unit Weight: The Engineer will determine the plastic unit weight of concrete (taken at the same frequency as specified in 3.05 B.4 according to ASTM C 138). For lightweight concrete, the plastic unit weight, as determined in accordance with ASTM C 567, shall not exceed 125 pounds per cubic foot, unless otherwise specified.

6. Water Content Test: The Engineer will test for water content during the placement using a Microwave Drying Oven, in accordance with AASHTO T 318. He may adjust drying times depending on the mix constituents to achieve a constant dry weight. Once the water content has been determined, it will be divided by the cementitious content in the mix design to determine the water to cement ratio. When the maximum aggregate size exceeds 1-1/2 inches, the Engineer will obtain a sample of approximately 5000 grams. This sample will be split and the Engineer will perform two separate analyses. The weighted average of the two separate analyses will be considered the Sublot water content value. Likewise, the Engineer will compute the sublot water cement ratio as given above.

a. When results for either two consecutive tests or three tests in one lot or one day's production indicate that the water content exceeds the limits given in 2.03 A.4 by 0.10, do not place the next load until it has first been tested and satisfactory test results have been obtained. If the water content for this load is greater than the Upper Limit given in 2.04 A.5, it will be rejected. The Engineer will test subsequent loads until the water content is found to be within the limit given in 2.04 A.5.

7. Coulomb Test: To evaluate the permeability of the concrete the Upper Quality Limit, UQL, shall be 1700 Coulombs for mixes without a corrosion inhibitor and 2200 Coulombs for mixes containing a corrosion inhibitor, as tested by the Engineer in accordance with AASHTO T 277 after a 28-day wet cure. For mixes containing only fly ash or slag (no silica fume or metakaolin) permeability will be evaluated at 90 days, using the same performance requirements stated above (1700 Coulombs for mixes without a corrosion inhibitor and 2200 Coulombs for mixes with a corrosion inhibitor). For Latex Modified Concrete applications, samples will be wet cured for 7 days and dry cured for 21 days. For each Sublot, the Engineer will cast two (2) 4" x 8" cylinder specimens for each Sublot. The Engineer will cut 2-inch thick samples from the center of each cylinder for testing. The average of the two test specimen result values for each Sublot will be considered the Sublot Coulomb test value.

8. Bond Strength: The bond strength between overlay concrete and parent concrete will be evaluated in accordance with ASTM C 1583. For each Sublot, the Engineer will perform three tests. Three 4-inch diameter cores will be cut 1/2 inch into the parent concrete to isolate the overlay concrete. The average of the three test result values for the Sublot will be considered the Sublot bond strength test value. The locations for each test will be randomly determined by the Engineer.

9. Chloride Ion Concentration by Weight of Cement: The Engineer may perform testing for both the acid soluble and water soluble chloride ion concentrations by weight of cementitious material, which will be evaluated as follows. Powder samples from 28-day concrete cylinders, cast from the concrete mix delivered to the construction site, will be tested to assess both the acid soluble and water soluble chloride ion concentrations by weight of cementitious material. Samples will be obtained using a rotary hammer drill from the mid-height of a minimum of two Sublot specimens from each Lot. The sample will be obtained from the inner three inches of the cylinder specimen, and must be a minimum of 40 grams in weight. The acid soluble and water soluble chloride ion concentrations by weight of cementitious material will be determined by the Materials Engineering Unit in accordance with preparatory standards ASTM C 1152 and ASTM C 1218, respectively, followed by ASTM C 114 (silver nitrate titration) for both the acid soluble and water soluble chloride ion analysis.

10. Pavement Thickness: The Engineer will perform acoustical testing using Impact Echo instrumentation to determine the pavement thickness. Areas indicating pavement thickness below the requirements shown on the Contract Drawings will be cored for verification. The cores will be measured in accordance with ASTM C 174. The average of three test result values for the Sublot will be considered the Sublot test value.

11. Where specified the Engineer will place Remote Temperature Sensing Devices in the in situ concrete to record maximum core temperature and maximum drop of temperature for 24 hours after protection has been removed.

12. Test Cores for Tremie Concrete

a. The Engineer will drill test cores for every 100 cubic yards of concrete placed in mass pours, such as tremie seal, or one core for every 1000 square feet of surface of thin pours, such as bulkheads or wall facings. Cores will be obtained in accordance with ASTM C 42 and will be drilled full depth (or thickness) through the pour horizontally or vertically as applicable.

b. Recovery of less than 95 percent will be considered to indicate defective concrete requiring corrective action by the Contractor.

c. If the cores reveal voids, honeycombing, seams or other defects, the concrete will be subject to rejection for non-uniformity. Additional cores may be obtained by the Engineer for further investigation. The number and location of cores will be determined by the Engineer. All additional cores will be taken at the sole expense of the Contractor.

d. Fill all test core holes by pressure grouting from the bottom upward, or from the inside out, as the case may be.

e. Clean out and fill all voids, honeycombing, seams and other defects by pressure grouting with cement or sand-cement to the Engineer's satisfaction. At the Engineer's request and at the sole expense of the Contractor, drill additional cores to verify grouting.

C. In accordance with the Section of Division 1 entitled "Inspections and Rejections", provide labor and means for obtaining all samples required for trial batches and field testing performed by the Engineer. At no additional cost to the Authority, furnish and deliver the following when requested by the Engineer:

1. Provide a representative sample, in the quantity requested by the Engineer, of all cement, fly ash, slag, silica fume, fine and coarse aggregate, admixtures, corrosion inhibitor, latex, fibers, pigment, evaporation retardant and liquid membrane forming curing compound during any day of production the Engineer requests a sample. Take such samples in the presence of the Engineer at the point of storage used for the Work of this Contract. For cement, fly ash, slag and silica fume samples, only use a sampling port on the silo, or drop material in a loader bucket between loads, or take samples from the boot using a "Sample Thief" during loading. Notify the Engineer of aggregates being loaded at their source of supply at least 48 hours in advance of each loading.

2. Provide the cement, fly ash, slag, silica fume or metakaolin manufacturer's Mill Test Certificate and Bill of Lading, if such documents are requested by the Engineer.

3. Allow the Engineer to sample any mix proportion constituents at any time.

D. The Engineer may direct an inspection of the Contractor's concrete plant or precast concrete fabricator to observe operations and review the Quality Control procedures being implemented. Notify the Engineer, in writing, a minimum of 15 days prior to the commencement of production and submit a schedule and Quality Control Plan for all production for the Work of the Contract.

E. Precast Concrete: Obtain from the fabricator and submit to the Engineer a set of approved shop drawings for the Work of the Contract. Fabrication without shop drawings will not be permitted. Clearly mark all precast units with identification numbers for each unit. The Engineer will provide a manifest ticket to be attached to the driver's shipping ticket listing the approved unit identification numbers. Any units shipped to the construction site that are not approved or are not listed on the manifest will not be permitted to be unloaded at the construction site. Shipments not accompanied by a manifest upon delivery will not be permitted to be unloaded at the construction site.

F. For concrete where riding surface tolerances are required, other than pavements, as indicated on the Contract Drawings, the following requirements must be met:

1. The Engineer will test the entire surface of the hardened concrete with a rolling straight edge for conformance to the smoothness requirements. Surface smoothness deviations must not exceed 1/4 inch in 16 feet. Tests will be made in both the longitudinal and transverse direction of the slab and shall span joints. Correct any deficiencies as specified in 4.01 G.1.H and at no cost to the Authority.

2. The Engineer will survey the slab surface for vertical deviation from grade. Vertical deviation from the grade shown on the Contract Drawings must not exceed plus or minus 0.04 foot at any point.

3. The Engineer will determine finished grade by running levels at intervals of 25 feet longitudinally and transversely. Correct all deficiencies as specified in 4.01 G.1.H and at no cost to the Authority.

G. Specified concrete finishes, as shown on the Contract Drawings, must conform to the requirements set forth in 3.03 H.2. Correct all deficiencies as specified in 4.01 G.1.I and at no cost to the Authority.

PART 4. ADJUSTMENTS TO CONTRACT COMPENSATION

4.01 GENERAL

A. Unless otherwise shown on the Contract Drawings, acceptance of material will be based on the method of estimating Percentage of Lot Within Specification Limits (PWL), where the PWL will be determined in accordance with this Section. All Sublot test result values for a Lot, as defined in 3.05 A, Table 1, will be analyzed statistically to determine the total estimated Percent of the Lot that is Within specification Limits, as shown in 4.01 B. The PWL is computed using the Lot sample Average value, $\overline{X}$, as defined in 4.01 D.3 and the Lot sample standard deviation, S_N, as defined in 4.01 D.4, for the specified number of Sublots, n, and for the specification Quality Acceptance Limits, as defined in 2.04 A, where LQL represents the Lower Quality Limit, and UQL represents the Upper Quality Limit, as they apply to each particular acceptance parameter. From these values, the respective Quality Index(ices), Q_L for Lower Quality Index and/or Q_U for Upper Quality Index, is computed in accordance with 4.01 D.5 and 4.01 D.6. Then the PWL for the Lot for the specified number of Sublots, n, is determined from Table 4, "Percent of Lot Within Limits (PWL) (Standard Deviation Method)". The Adjustment to Contract Compensation for each Lot is then calculated using the formulas specified in 4.01 F.

B. Depending on the application, concrete will be tested for the properties shown below. The PWL of each Lot for each parameter will be determined as specified in 4.01 D. Payments will be based on the concrete application for a Lot and the criteria defined below.

Performance Parameters	Minimum PWL
Flexural Strength	95
Compressive Strength	95
Permeability	90
Bond Strength	80
Water to Cement Ratio	80
Air Content	70*
Pavement Thickness	90
Chloride Content	100**

*denotes that in addition to the minimum PWL, the air content will also be evaluated for the average of test results for a given Lot of concrete as per 3.05 B.4 and 4.01 J.

**denotes that the chloride content (acid soluble and water soluble) will be analyzed only for the average of test results for any given Lot of concrete, as per 3.05 B.9 and 4.01 G.1.b.

Table 2 defines the Quality Acceptance performance criteria to be evaluated for Adjustments to Contract Compensation for a given concrete application. In addition, all concrete shall conform to the requirements of 4.01 G. Any deficiencies found to exist as specified in 4.01 G will govern and the Contractor shall either:

1. Remove and replace the concrete in that particular Lot at no cost to the Authority, or

2. Accept a deduction of 50% of the Base Price per cubic yard, as indicated on the Contract Drawings, for that particular Lot of concrete.

TABLE 2
PERFORMANCE CRITERIA PARAMETERS

Category/ Application	Water/Cement Ratio (W/C)	% Air	Permeability	Bond Strength	Compressive Strength	Flexural Strength	Pavement Thickness
Category I - Full Depth Pavements & Unbonded Overlays							
	I	I	---	---	---	P	
LQL:	---	*	---	---	---	700 psi	97%
UQL:	0.45	*	---	---	---	---	---
Category II - Bonded Pavement Overlays							
	I	I	---	P	I	---	---
LQL:	---	*	---	150 psi	***	---	---
UQL:	0.45	*	---	---	---	---	---
Category III - Elevated Structural Overlays							
	I	I	I	P	I	---	---
LQL:	---	*	---	150 psi	***	---	---
UQL:	0.45	*	**	---	---	---	---
Category IV - Structural (exposed to freeze-thaw and/or sulfates, in addition to chlorides or a marine environment)							
	I	I	P	---	I	---	---
LQL:	---	*	---	---	***	---	---
UQL:	0.45	*	**	---	---	---	---
Category V - Structural (exposed to freeze/thaw and/or sulfates only; no exposure to chlorides or a marine environment)							
	I	I	---	---	P	---	---
LQL:	---	*	---	---	***	---	---
SQL:	0.45	*	---	---	---	---	---
Category VI - Standard Structural (not exposed to freeze-thaw cycles) and Miscellaneous Applications (at-grade sidewalks, at-grade curbs, kerfs, foundations, footings, drainage structures, manholes, pipe pile fill and all concrete applications below grade)							
	---	---	---	---	P	---	---
LQL:	---	---	---	---	***	---	---
UQL:	---	---	---	---	---	---	---

* - Refer to 2.04 A.6.

** - 1700 Coulomb counts for mixes without a corrosion inhibitor and 2200 Coulomb counts for mixes with a corrosion inhibitor.

*** - The proportion compressive strength at 28 days or as specified on the Contract Drawings.

P - Used to Calculate Pay Factor per cubic yard. It denotes the concrete property that will be used to calculate payment for a given concrete application. No incentive payments will be made if the performance criteria parameters labeled 'I' for a given application have a PWL less than specified in 4.01 B.

I - Used to Calculate Incentive only when the Pay Factor for the parameter labeled 'P' is greater than 0.00.

C. Full Depth Pavement and Unbonded Overlay (Category I) Final Pay Factor: The Pay Factor for Pavement Thickness will govern only when the Pay Factor for Pavement Thickness is less than the Pay Factor for Flexural Strength, with the exception of when the Pay Factor for Pavement Thickness is 0.00.

D. Method of Estimating Percentage of Material Within Limits (PWL)

1. Locate sampling positions on the Lot by use of random sampling procedures specified in 3.05 A.

2. Take a test sample and make the test specimens on the test sample in accordance with 3.05 A.

3. Determine the Lot sample Average value, $\overline{X}$, by calculating the average of all Sublot test values.

4. Find the Lot sample standard deviation, S_N, by using the following formula:

$$S_N = \sqrt{\frac{d_1^2+d_2^2+d_3^2+ \ +d_n^2}{n-1}}$$

Where:

S_N = standard deviation of the Sublot test values

$d_1, d_2 ....$ = deviation from the individual Sublot test values

$X_1, X_2, ...$ from the Average value, $\overline{X}$, that is,

$d_1 = (X_1 - \overline{X}), d_2 = (X_2 - \overline{X}), ..., d_n = (X_n - \overline{X})$

n = number of Sublots

5. Find the Lower Quality Index, Q_L, by subtracting the Lower Quality Limit, LQL, from the Average value, $\overline{X}$, and dividing the result by S_N.

$$Q_L = \frac{\overline{X} - LQL}{S_N}$$

6. Find the Upper Quality Index, Q_U, by subtracting the Average value, $\overline{X}$, from the Upper Quality Limit, UQL, and dividing the result by S_N.

$$Q_U = \frac{UQL - \overline{X}}{S_N}$$

7. The percentage of material above lower tolerance limit, P_L, and the percentage of material below upper tolerance limit, P_U, will be found by referring to Table 4, "Percent of Lot Within Tolerance Limit (PWL) (Standard Deviation Method)". Locate Q_L and/or Q_U in the column appropriate to the total number of Sublots, n, and reading the number under the column heading "PWL".

8. For concrete properties with only an Upper Quality Limit (ratio of water to cementitious material, permeability), PWL equals P_U. For concrete properties with a Lower Quality Limit (bond strength, compressive strength, flexural strength, pavement thickness), PWL equals P_L. For concrete properties with both Upper and Lower Quality Limits (air content), first calculate of the Upper Quality Index, Q_U, and the Lower Quality Index, Q_L, by using the Upper Quality Limit, UQL, and the Lower Quality Limit, LQL, respectively, as stipulated in 2.03 A.6. Then determine PWL using the following formula:

$$PWL = (P_U + P_L) - 100$$

E. Pay Factors for each Lot will be computed in accordance with the formulas contained in 4.01 F, Table 3 entitled, "Adjustments to Contract Compensation", by entering the PWL value and performing the calculation indicated for the appropriate PWL range to determine the Pay Factor.

F. Adjustments to Contract Compensation shall be calculated as follows:

TABLE 3

ADJUSTMENTS TO CONTRACT COMPENSATION PER CUBIC YARD

Percent Within Limits (PWL)	Compressive Strength Pay Factor
98 - 100	0.02 (PWL-100) +0.06
95 - 97	0.0
55 - 94	(PWL-95)/100
0 - 54	-0.50

Percent Within Limits (PWL)	Permeability & Bond Strength Pay Factor
91 - 100	0.006 (PWL - 90)
80 - 90	0.0
55 - 79	$0.00017PWL^2 - 0.0105PWL - 0.30$
0 - 54	-0.50

Percent Within Limits (PWL)	Flexural Strength Pay Factor
95 - 100	(PWL-95/100)+.01
55 - 94	(PWL-95)/100
0 - 54	-0.50

Percent Within Limits (PWL)	Pavement Thickness Pay Factor
90 - 100	0.00
55 - 89	(PWL-90)/100
0 - 54	-0.50

Pay Factors are multiplied by the Base Price per cubic yard established in the table below, unless otherwise indicated on the Contract Drawings. The result is the amount to be added or deducted from the compensation for that particular Lot of concrete.

Category	Base Prices for Adjustments to Contract Compensation Per Cubic Yd
I	$100
II	$90
III	$130
IV	$130
IV	$110 when silica fume or metakaolin are not included
V	$90
VI	$80

G. Correction or Cost Adjustments for Deficiencies

1. Remove and Replace Concrete: Remove and replace concrete in a manner approved by the Engineer and at no additional cost to the Authority if any of the following deficiencies exist, unless the Engineer elects to accept the concrete, at which time the Contractor will be compensated at 50% of the Base Price per cubic yard, regardless of the Pay Factors calculated in 4.01 F, Table 3:

   a. Percent Within Limits (PWL) for compressive strength, flexural strength, permeability, bond strength or pavement thickness is below 55.

   b. The average acid soluble chloride ions by weight of cementitious material test results for any given Lot of concrete exceed the limit of 0.10% (reinforced concrete) or 0.08% (prestressed concrete) weight of chloride ions by weight of cementitious material, in accordance with ASTM C 1152 and ASTM C 114, and the average water soluble chloride ions by weight of cementitious material test results for any given Lot of concrete exceed the limit of 0.08% (reinforced concrete) or 0.06% (prestressed concrete) weight of chloride ions by weight of cementitious material, in accordance with ASTM C 1218 and ASTM C 114. The Soxhlet test referenced in ACI 222R will not be considered for chloride evaluations.

   c. For all concrete applications, the cylinder compressive strength shall conform to the following:

      (1) The calculated average of any three consecutive compressive strength tests shall be equal to or shall exceed the specified compressive strength.

      (2) No individual compressive strength test result shall be below the specified compressive strength by more than 500 psi. When the required strength is 5000 psi or less, or by more than 0.10 of the specified strength when greater than 5000 psi is required.

      (3) If either or both of the requirements specified in 4.01 G.1.c.1 and 4.01 G.1.c.2 are not met, investigate the in-place compressive strength in accordance with ACI 318-02, Section 5.6.5, at no additional cost to the Authority. If the compressive strength test results of the in-place concrete fail to meet either or both of the requirements specified in 4.01 G.1.c.1 and 4.01 G.1.c.2, the concrete will be considered deficient, and 4.01 G.1 will apply.

d. Concrete slabs or structures that exhibit any cracks prior to opening to vehicular/aircraft operations or loading will be subject to the actions specified in 4.01 G.1. If the concrete is accepted by the Engineer, seal cracks in accordance with Specification Section 03734 entitled "Concrete Crack Repair" in a manner approved by the Engineer, and at no cost to the Authority.

e. Delamination Testing: The Engineer will check all concrete overlays using the chain drag method in accordance with ASTM D 4580. If more than 5.00% of the total surface area of the Lot is found to be delaminated, remove these areas and replace them at no cost to the Authority. The determination by the Engineer as to the existence of delaminations shall be final and binding.

f. Slabs showing high or low spots exceeding 1/2 inch when tested in accordance with 3.05 F.2.

H. Diamond Grinding and Partial Depth Removal

1. Cured riding surfaces, except pavements, that do not meet the smoothness or finished grade requirements set forth in 2.04 B shall be corrected, to obtain the specified smoothness deviation, as follows:

a. High spots between 1/4 inch and 1/2 inch and surfaces that exceed the finished grade requirements shall be identified and ground with diamond grinding equipment.

b. Low spots between 1/4 inch and 1/2inch and surfaces that are below the finished grade requirements shall be corrected by partial depth removal of the entire slab to 1 inch below rebars by hydrodemolition, or by hydromilling and constructing an overlay in conformance with this Specification.

2. The diamond grinding equipment shall be as approved by the Engineer and shall have a grinding head at least 36-inches wide.

3. Where grinding is required, grind the entire width of the riding surface by the length of defective area. In the sole opinion of the Engineer, if the deficiencies are closely spaced and grinding individual areas will adversely affect ride, grind the entire surface.

4. Dispose of slurry produced from grinding operations off Authority property.

5. Perform diamond grinding, partial depth removal and construction of an overlay, if required to correct deficiencies, at no additional cost to the Authority.

I. If concrete finishes do not meet the requirements set forth for the specified finishes, refinish the hardened concrete as directed by the Engineer, at no additional cost to the Authority.

J. If the average air content for a Lot exceeds either the LQL or the UQL by more than 1% (with the exception of concrete not exposed to freeze/thaw cycles) 10% of the Base Price per cubic yard will be deducted from the compensation for that particular Lot of concrete.

K. If the core temperature of the in situ concrete exceeds 160 deg F, the Engineer will evaluate concrete quality using cores taken from the concrete in question. The cores will be tested in accordance with ASTM C 42 and their compressive strength results will be used to calculate the PWL for payment adjustments.

TABLE 4

PERCENT OF LOT WITHIN TOLERANCE LIMIT (PWL)

(STANDARD DEVIATION METHOD)

Positive Values of Quality Index (QI)

(n = Number of Sublots in the Lot)

PWL	n=3	n=4	n=5	n=6	n=7	n=8
99	1.1541	1.4700	1.6714	1.8008	1.8888	1.9520
98	1.1524	1.4400	1.6016	1.6982	1.7612	1.8053
97	1.1496	1.4100	1.5427	1.6181	1.6661	1.6993
96	1.1456	1.3800	1.4897	1.5497	1.5871	1.6127
95	1.1405	1.3500	1.4407	1.4887	1.5181	1.5381
94	1.1342	1.3200	1.3946	1.4329	1.4561	1.4716
93	1.1269	1.2900	1.3508	1.3810	1.3991	1.4112
92	1.1184	1.2600	1.3088	1.3323	1.3461	1.3554
91	1.1089	1.2300	1.2683	1.2860	1.2964	1.3032
90	1.0982	1.2000	1.2290	1.2419	1.2492	1.2541
89	1.0864	1.1700	1.1909	1.1995	1.2043	1.2075
88	1.0736	1.1400	1.1537	1.1587	1.1613	1.1630
87	1.0597	1.1100	1.1173	1.1191	1.1199	1.1204
86	1.0448	1.0800	1.0817	1.0808	1.0800	1.0794
85	1.0288	1.0500	1.0467	1.0435	1.0413	1.0399
84	1.0119	1.0200	1.0124	1.0071	1.0037	1.0015
83	.9939	.9900	.9785	.9715	.9672	.9643
82	.9749	.9600	.9452	.9367	.9325	.9281
81	.9550	.9300	.9123	.9025	.8966	.8928
80	.9342	.9000	.8799	.8690	.8625	.8583
79	.9124	.8700	.8478	.8360	.8291	.8245
78	.8897	.8400	.8160	.8036	.7962	.7915
77	.8662	.8100	.7846	.7716	.7640	.7590
76	.8417	.7800	.7535	.7401	.7322	.7271
75	.8165	.7500	.7226	.7089	.7009	.6958
74	.7904	.7200	.6921	.6781	.6701	.6649
73	.7636	.6900	.6617	.6477	.6396	.6344
72	.7360	.6600	.6316	.6176	.6095	.6044
71	.7077	.6300	.6016	.5878	.5798	.5747
70	.6787	.6000	.5719	.5583	.5504	.5454
69	.6490	.5700	.5423	.5290	.5213	.5164
68	.6187	.5400	.5129	.4999	.4924	.4877
67	.5878	.5100	.4836	.4710	.4638	.4592
66	.5563	.4800	.4545	.4424	.4354	.4310
65	.5242	.4500	.4255	.4139	.4073	.4031
64	.4916	.4200	.3967	.3856	.3793	.3753
63	.4586	.3900	.3679	.3575	.3515	.3477
62	.4251	.3600	.3392	.3295	.3239	.3203
61	.3911	.3300	.3107	.3016	.2964	.2931
60	.3568	.3000	.2822	.2738	.2691	.2660
59	.3222	.2700	.2537	.2461	.2418	.2391
58	.2872	.2400	.2254	.2186	.2147	.2122
57	.2519	.2100	.1971	.1911	.1877	.1855
56	.2164	.1800	.1688	.1636	.1613	.1592
55	.1806	.1500	.1408	.1363	.1338	.1322
54	.1447	.1200	.1125	.1090	.1070	.1057

END OF SECTION

SECTION 03301

PORTLAND CEMENT CONCRETE, LONG FORM

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts and Samples" of Division 1 - GENERAL PROVISIONS:

A. List of materials for Work of this Section.

B. Shop Drawings of forms and test pour details at least 15 calendar days before the test.

1. Proposed number, location and details of contraction, control, expansion and construction joints at least 15 days prior to concrete placement.

C. Catalog Cuts, Material Certification and Test Results

1. At least 35 calendar days prior to concrete placement, the following:

a. Name and address of proposed concrete supplier, type of plant, documentation of State Certification for plant and ready mix trucks, AASHTO Accreditation certification for the independent testing laboratory and certification for an on-site individual in a supervisory capacity from one of the programs specified in 3.03 A.

b. Material certifications, source, brand name and test results (where required) of cement, fine and coarse aggregate, fly ash, slag, silica fume, metakaolin and concrete admixtures following guidelines of Appendix "B". In addition, arrange for an independent testing laboratory to verify that Very High Early Strength Cement meets compressive strength, absolute drying shrinkage and setting time requirements specified in 2.02 B at the testing frequency specified therein.

c. Brand names and chemical compositions of form oil or release agents, evaporation retardant and liquid membrane curing compounds. For Architectural Concrete include this information also for forms, form liners and pigments.

d. Certification of compatibility and five-year performance record for liquid membrane forming curing compound, when used under conditions specified in 3.04 C, and the requirements of 2.02 R.2.

e. Test data and field use history for corrosion inhibitor admixtures (when specified on the Contract Drawings) as per 2.02 O.4:

(1) Manufacturer's test method to determine the concentration of the active component of the inhibitor.

(2) Procedures for the production of concrete mixes containing a corrosion inhibitor for the range of concrete temperatures from 50 deg F to 90 deg F and a procedure for the placement of concrete when a retarder is being used.

f. Certification that admixtures conform to the requirements of 2.02 M submitted with Appendix "B" "Concrete Materials and Mix Proportion Data". Include dosing and re-dosing charts, which shall demonstrate the effects of concrete temperatures from 50 deg F and 90 deg F.

g. A chemical analysis report of the percent by weight of silica fume solids by an approved independent testing laboratory when a wet slurry type of silica fume is being used.

h. Source of expansion and/or contraction joints.

i. Type, number and method of application of concrete vibrators.

D. Samples

1. Concrete ingredients for trial batches including cement, stone, sand, fly ash, slag, silica fume, metakaolin, admixtures, corrosion inhibitor, fibers, latex, pigment and anti-washout agent. Furnish these to the Engineer in whatever quantities he may require at least 35 days prior to concrete placement. This applies to all mixes, including changes to an approved mix.

2. At the request of the Engineer, submit cement, fly ash, slag and/or silica fume samples to check the Mill Certification at any time in accordance with 3.05 C.

3. For architectural concrete, provide two (2) sample panels (12" x 12" x 2" minimum size) for each mix for approval of color and texture. Provide catalog cuts for forms, form liners and form oil or release agents.

E. Construction Procedures and Quality Control Documents and Plans

1. At least 35 calendar days prior to concrete placement, the following:

a. Contractor's Quality Control Plan in accordance with 1.04 B.

b. Precast concrete fabricator's planned schedule for all production and a Quality Control Plan a minimum of 15 days prior to the commencement of production.

c. Cold and Hot Weather Concreting Plans in accordance with 1.03 of the Specification. Materials and methods for protecting concrete from freezing.

d. Pumping Procedure Plan, including, at a minimum, the pumping scheme, pump description, line diameter, line length and the number of turns and line offsets.

e. Written placement procedures that are in conformance with ACI 304R, Chapter 8 if concrete is being placed underwater.

f. Method of adding concrete admixtures, high range water reducers, non chloride accelerators, corrosion inhibitors, anti-washout agent, latex, fibers, pigment, slag, fly ash and silica fume.

g. Mixing and placement procedures and methods, as well as catalog cuts of equipment for installation. For hand mixes, submit the methods of proportioning, mixing (including minimum time requirements), transferring and placing the concrete.

h. Method of concrete placement in pipe piles (including elephant trunk size, length and material type).

i. Method of concrete placement and consolidation adjacent to joint assemblies and embedded hardware.

j. Curing Procedure Plan in accordance with 3.04, including the method and materials for curing.

k. Control Joint Location Plan.

l. Materials and procedures for filling cracks and patching honeycombs and/or spalls.

2. Daily copy of batch records in accordance with 1.04 A.1.a.

F. Concrete Mix Proportions

1. Appendix "B" "Concrete Materials and Mix Proportion Data" at least 35 calendar days prior to concrete placement in accordance with 2.03 A of the Specification. To substantiate the mix proportions, submit all data and field results in accordance with 2.03 A.

2. ACI Grade I certification for all personnel performing concrete testing.

3. Written request to the Engineer for approval if a change in the weights of fine and coarse aggregate and cement is required in the approved mix proportions.

G. For Information Only

1. Pre-concrete construction meeting agenda a minimum of 15 days prior to the scheduled date of the meeting.

2. Minutes of the pre-concrete construction meeting within 5 days of the meeting.

H. Design Computations

1. If required by the Engineer or noted on the Contract Drawings, have design computations signed and sealed by the Professional Engineer licensed in the state where Work is being done.

END OF APPENDIX "A"

SECTION 03301

PORTLAND CEMENT CONCRETE, LONG FORM

APPENDIX "B"

CONCRETE MATERIALS AND MIX PROPORTION DATA

A. Materials:

1. Cement: Type.....Source/Brand.....
2. Sand: Fineness Modulus.....Source.....
3. Stone: Size.....Class.....Source.....
4. Fly Ash: Type.....Source.....
5. Slag: Grade.....Source.....
6. Microsilica (Silica Fume): Source/Brand.....
7. Metakaolin: Source/Brand.....
8. Admixtures (Source/Brand):

   Air Entraining Agent.....

   Non-Chloride Accelerator.....

   Retarder.....

   Water Reducer.....

   Water Reducer - Retarder.....

   High Range Water Reducer.....

   High Range Water Reducer - Retarder.....

   Polycarboxylate High Range Water Reducer

   Anti-Washout Admixture.....

   Corrosion Inhibitor.....

   Latex.....

   Pigment.....

B. Mix Proportions

1. Proposed method of placement:.....Tremie/Mobile

.....Mixer/Transit Mixer/Portable Mixer/

Pumping/Tube Diameter:.....

2. Proportion of Ingredients:

Cement.....lbs./cu. yd.

Fly Ash.....lbs./cu. yd.

Slag.....lbs./cu. yd.

Silica Fume.....lbs./cu. yd.

Metakaolin.....lbs./cu. yd.

Pigment.....lbs./cu. yd.

Stone.....lbs./cu. yd.

Sand.....lbs./cu. yd.

Water.....lbs./cu. yd.....gallons

Air Entraining Agent:.....ounces/cu. yd.

Admixtures (specify type and amount):

.....at.....ounces/cu. yd.

.....at.....ounces/cu. yd.

.....at.....ounces/cu. yd.

.....at.....ounces/cu. yd.

3. Mix Properties:

Compressive Strength: f'c =.....psi at.....days/hours

Flexural Strength:.....psi at:.....days/hours

Permeability at 28 days:.....Coulombs

Slump:.....inches

Water to Cementitious Ratio:.....

Air Entrainment:.....%

Sand/Stone Ratio:

Combined aggregate gradation chart (% retained on each sieve)

Unit Weight:.....lbs./cu. ft.

C. Conformance with ACI 318

Attach a report on mix proportion and test/statistical data documenting conformance with ACI 318, Chapter 5, or ACI 304R, Chapter 8, as they apply to the Work of the Contract.

D. Concrete Supplier/Batch Plant

1. Name:.....
2. Address:.....
3. Contact Name:.....
4. Telephone number/Fax number/E-mail address:.....
5. Quality Control technician(s):.....

   Name(s):.....

   Telephone number(s):.....

END OF APPENDIX "B"

SECTION 03301

PORTLAND CEMENT CONCRETE, LONG FORM

INSTRUCTIONS TO SPECIFIER

IMPORTANT: The specifier shall ensure that Section 02513, "PLACEMENT OF PORTLAND CEMENT CONCRETE PAVING (FAA)", when applicable, has been included in the Contract Book and that its INSTRUCTIONS TO SPECIFIER have been followed.

A. The specifier shall review all items listed in Appendix "A". Delete all items that are not applicable to the Work of this Contract and add to Appendix "A" under the proper headings any submittal items that are intended to be shown on the Contract Drawings. Review the final Appendix "A" with the Engineer before including it in the Contract Book.

B. Ensure that the Contract Drawings show the following:

1. For each individual concrete construction application, specify the following:

   a. A "Category" of concrete (Part 4, Table 2) for which the concrete will be evaluated for Adjustments to Contract Compensation.

   b. The compressive strength (f'c) requirements for each "Category" of concrete.

   c. The Unit Price per cubic yard for each concrete application Category is shown in 4.01 F. The following non-standard constituents are assumed to be included for concrete mixes in each Category outlined below:

      Category I – high range water reducer
      Category II – high range water reducer
      Category III – high range water reducer
      Category IV – high range water reducer
      Category V – high range water reducer
      Category VI – none

When non-standard concrete mix constituents are anticipated to be included in addition to the above non-standard concrete mix constituents, add the following amounts to the Contract Unit Price for Adjustments to Contract Compensation and indicate the adjusted Contract Unit Price per cubic yard for the intended application on the Contract Drawings:

(1) Very High Early Strength Cement - $125 per cubic yard of concrete;

(2) Latex - $140 per cubic yard of concrete;

(3) Corrosion Inhibitor - $25 per cubic yard of concrete;

(4) Accelerator - $10 per cubic yard of concrete.

(5) Silica fume - $25 per cubic yard of concrete.

(6) Metakaolin - $25 per cubic yard of concrete.

(7) Anti-washout Agent - $30 per cubic yard of concrete.

2. For "Category I" concrete applications, specify the flexural strength if other than 750 psi, for which the Lower Quality Limit (LQL) is 700 psi.

3. Specify coarse aggregate size, if different from that specified in 2.02 H.

4. Specify water to cementitious ratio (W/C) if different from that specified in 2.03 A.4.

5. Specify where corrosion inhibitor is required.

6. Specify when a test pour is not required.

7. Specify Quality Acceptance Limits if different from that specified in 2.04 and Part 4, Table 2.

   Consideration should be given to extending the test times for compressive and flexural strength from 28 days to 56 days when loading of structure permits.

8. For structural tremie placements require the use of an anti-washout admixture in the concrete mix.

9. Specify Coulomb test time, i.e.: 28 or 90 days, if different than that specified in 2.03 A.4.

10. The use of Silica Fume will be limited to marine installations which are in the splash zone or permanently submerged, precast concrete and in high strength concrete 8000 psi and greater.

    Silica Fume will not be permitted in bridge deck construction.

END OF INSTRUCTIONS

DIVISION 5

SECTION 05810

PREFABRICATED EXPANSION JOINT ASSEMBLIES

PART 1. GENERAL

1.01 SUMMARY

This Section specifies requirements for interior and exterior prefabricated expansion joint assemblies, including seismic type, fire barriers and moisture barriers.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

American Architectural Manufacturers Association (AAMA)

AAMA 611	Specification for Anodized Architectural Aluminum.
AAMA 2605	Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.

American National Standards Institute (ANSI)/Underwriters Laboratories Inc. (UL)

ANSI/UL 2079	Tests for Fire Resistance of Building Joint Systems.

American Society for Testing and Materials (ASTM)

ASTM A 666	Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
ASTM B 36	Specification for Brass Plate, Sheet, Strip, and Rolled Bar.
ASTM B 209	Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
ASTM B 221	Specification for Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
ASTM B 455	Specification for Copper-Zinc-Lead Alloy (Leaded-Brass) Extruded Shapes.
ASTM E 1399	Test Method for Cyclic Movement and Measuring the Minimum and Maximum Joint Widths of Architectural Joint Systems.

American Society for Testing and Materials (ASTM)/Society of Automotive Engineers (SAE)

UNS	Unified Numbering System for Metals and Alloys.

National Association of Architectural Metal Manufacturers (NAAMM)

Metal Finishes Manual for Architectural and Metal Products.

1.03 DESIGN AND PERFORMANCE REQUIREMENTS

A. General

Expansion joint assemblies shall permit unrestrained movement of joint without disengagement of cover. Expansion joint assemblies shall also, where shown on the Contract Drawings and as required to suit project requirements, maintain fire-resistance ratings, maintain integrity of smoke barrier, prevent air infiltration, prevent moisture and water penetration, serve as finished architecural joint closures and remain in place upon exposure to seismic activity.

B. Loading Characteristics

Joints in floor, sidewalk, pavement, plaza deck and other similar horizontal surfaces shall withstand loading as established by product types shown, without damage or permanent deformation to the expansion joint assembly.

C. Fire Performance Characteristics

Where indicated on the Contract Drawings, expansion joint assemblies shall incorporate fire barriers identical to those of assemblies whose fire resistance has been determined per ANSI/UL 2079, including hose stream test at full-rated period, by a nationally recognized testing and inspection organization.

1. Fire Rating: Not less than the rating of adjacent construction.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications

Arrange for expansion joint assemblies specified in this Section to be furnished by a manufacturer with minimum 5 years experience in the fabrication of expansion joint assemblies involving quantities and complexities equal to or greater than those required by this Contract.

B. Installer Qualifications

Arrange for expansion joint assemblies specified in this Section to be installed by an entity with minimum 5 years experience in the installation of assemblies involving quantities and complexities at least equal to those required by this Contract.

C. Single Source Responsibility

Obtain expansion joint assemblies furnished and installed under this Section from a single manufacturer.

D. Coordination

Ensure that prefabricated expansion joint assemblies furnished and installed under this Section are compatible with expansion joint assemblies specified in other Sections.

1.05 DELIVERY, STORAGE, AND HANDLING

Handle expansion joint assemblies in manner to protect surfaces and to prevent distortion and other types of damage. Store under cover and off ground. Protect from weather and construction activities until installed and accepted.

1.06 WARRANTY

Submit written warranty executed by the Contractor, installer and the manufacturer, agreeing to provide materials and labor to repair or replace expansion joint assemblies that fail in materials or workmanship within 5 years after date of issuance of the Certificate of Final Completion. This warranty shall not limit other rights the Authority may have under the Contract.

1.07 SUSTAINABLE DESIGN REQUIREMENTS

A. Sustainable Design General Requirements:

1. The Authority requires the Contractor to implement practices and procedures to meet the sustainable design requirements. The Contractor shall ensure that the requirements related to these goals, as defined in Division 1 - GENERAL PROVISIONS and the articles below, are implemented to the fullest extent. Substitutions, or other changes to the Work proposed by the Contractor, will not be allowed if such changes compromise the stated Sustainable Design Performance Criteria.

B. Sustainable Design Performance Criteria:

1. All field-applied adhesives, sealants, paints and coatings relating to Work of this Section shall meet the requirements of Division 1 - GENERAL PROVISIONS.

1.08 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MANUFACTURERS

Subject to compliance with the requirements of this Section, furnish and install Model EMS (Elastolok Membrane System) by MM Systems or approved equal products of one of the following:

Architectural Art Mfg., Inc., Wichita, KS
Balco Inc., Wichita, KS
Construction Specialties, Inc., Cranford, NJ
Watson Bowman Acme Corp. (subsidiary of Degussa Corp.), Amherst, NY

2.02 MATERIALS

A. Aluminum

ASTM B 221, alloy 6063-T5 for extrusions; ASTM B 209, alloy 6061-T6 for sheet and plate; mill finish, unless otherwise shown on the Contract Drawings.

1. Protect aluminum surfaces in contact with cementitious materials with zinc chromate primer or chromate conversion coating.

B. Stainless Steel

ASTM A 666, Type 304 for plates, sheet, and strip; No. 2B finish, unless otherwise shown on the Contract Drawings.

C. Copper Alloys

1. Brass: ASTM B 36, UNS alloy C26000 for half hard sheet and coil.
2. Bronze: ASTM B 455, alloy UNS No. C38500 (architectural bronze) for extrusions; ASTM B 36, alloy UNS No. C28000 (Muntz metal, 60 percent copper) for plates.

D. Preformed Seals

Single or multicellular extruded elastomeric profiles, designed with or without continuous, longitudinal, internal baffles for use as primary and secondary seals. Formed to fit compatible frames or with anchored flanges, in color shown on the Contract Drawings or, if not shown, as selected by Engineer from manufacturer's standard colors.

E. Seismic Seals

Two single-layered elastomeric profiles, one interior and one exterior; retained in a set of compatible frames, in color shown on the Contract Drawings or, if not shown, as selected by Engineer from manufacturer's standard colors.

F. Fire Barriers

1. Manufacturer's standard fire barrier materials for use with fire-resistant expansion joint assemblies, resisting passage of flame and hot gases through the joint without material degradation or fatigue when tested after cycling per ASTM E 1399; tested in maximum joint width condition with a field splice as a component of the expansion joint assembly per performance requirements of 1.03 C.
2. Include manufacturer's standard fire caulks, sealants and hardware for the required hourly fire rating. Fire barrier materials shall be asbestos-free.

G. Moisture/Water Barriers

Manufacturer's standard flexible elastomeric material for use as an inner expansion joint seal: minimum 45 mils thick EPDM or minimum 30 mils thick PVC.

2.03 ACCESSORIES

A. Manufacturer's standard anchors, fasteners, set screws, spacers, flexible vapor seal, filler materials, gutters, drain tubes, adhesives, sealants, grout and other accessories compatible with material in contact, and as shown on the Contract Drawings for complete installations.

2.04 FABRICATION

A. General

Expansion joint assemblies shall be of design, basic profile, materials and operation shown on the Contract Drawings. Furnish units equal to those shown on the Contract Drawings, as required to suit joint size, to accommodate variations in adjacent surfaces and to absorb structural movement.

1. Furnish units in longest available lengths to minimize number of end joints, with hairline mitered corners where joint changes directions or abuts other materials. Include closure materials, transition pieces, tee-joints, corners, curbs, cross-connections, centering bars, pantograph mechanisms, gaskets, splice covers and other accessories as required for continuous joint assemblies.

2. Cover plates shall be extruded aluminum, stainless steel, bronze or brass as shown on the Contract Drawings, with surface design options as shown on the Contract Drawings. Fasten cover plate to anchor member per manufacturer's instructions, lapping each side of joint opening, permitting free movement of joint and maintaining close contact with adjacent finished surfaces.

3. Include manufacturer's continuous standard flexible moisture seals under covers at locations shown on the Contract Drawings.

4. Protect concealed metal surfaces that will be in contact with concrete and masonry surfaces when installed, by applying a shop coat of the manufacturer's standard primer to contact surfaces in minimum dry film thickness of 2.0 mils.

B. Floor Joint Assemblies

Furnish continuous extruded metal seating members of profile shown on the Contract Drawings with raised floor rim and concealed bolt and steel anchors for embedment in concrete. Assemblies shall be formed to receive cover plates of design shown on the Contract Drawings and to receive abrasive-resistant filler materials, if any, for space between raised rim of seating member and edge of cover plate. Depth and configuration shall suit type of construction and ensure that top surface of exposed extrusions, filler material and cover plate fits flush with adjoining finish floor surface.

C. Interior Joint Assemblies

Assemblies for floor-to-floor, floor-to-wall, wall-to-wall and joints in ceilings and soffits shall be as shown on the Contract Drawings.

D. Exterior Joint Assemblies

Assemblies shall be capable of resisting moisture penetration and air infiltration, as shown on the Contract Drawings.

2.05 SHOP FINISHING

A. General

Comply with NAAMM's *Metal Finishes Manual for Architectural and Metal Products* for finish designations and application recommendations. Apply finishes in factory after products are fabricated. Protect finishes on exposed surfaces with a strippable, temporary protective covering prior to shipment.

B. Aluminum Finishes

1. Class I Clear Anodic

AA M12-C22-A41 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: clear film, 0.7 mil or thicker), complying with AAMA 611.

2. Class I Color Anodic

AA M12-C22-A42 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: integrally colored coating, 0.7 mil or thicker), complying with AAMA 611. Color shall be as shown on the Contract Drawings or, if not shown, as selected by the Engineer from the manufacturer's standard colors.

3. High Performance Organic Coating

AA C12-C42-R1x (Chemical Finish: cleaned with inhibited chemicals, prepared with an acid-chromate-fluoride-phosphate conversion coating; Organic Coating: as specified below). Ensure that coating is applied in strict accordance with coating manufacturer's instructions by an applicator authorized by the coating manufacturer.

a. Fluoropolymer 2-Coat System: Manufacturer's standard 2-coat, thermocured system consisting of specially formulated inhibitive primer, 0.2 mil minimum dry film thickness and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight, in a dry film thickness of 1.0 mil minimum, complying with AAMA 2605.

b. Resin Manufacturers

Subject to compliance with requirements, fluoropolymer coating systems shall contain resins produced by Arkema Group ("Kynar 500") or by Solvay Solexis, Inc. ("Hylar 5000").

c. Color shall be as shown on the Contract Drawings or, if not shown, as selected by the Engineer from the manufacturer's custom colors.

C. Stainless Steel Finishes

1. Bright, Cold-Rolled Unpolished Finish: AISI No. 2B finish.
2. Bright, Directional Polish: AISI No. 3 finish.
3. Bright, Directional Polish: AISI No. 4 finish.
4. Satin, Directional Polish: AISI No. 6 finish.

5. Satin, Reflective, Directional Polish: AISI No. 7 finish.

6. Mirror-Like Reflective, Nondirectional Polish: AISI No. 8 finish.

7. Non-Directional Finish: #BJNDF-60 finish, as manufactured by Milgo Industrial, Inc., Brooklyn, NY, or approved equal.

D. Copper Alloy Finishes (Brass and Bronze)

Natural Satin Finish: CDA M32 (Mechanical finish: directional textured, medium satin).

PART 3. EXECUTION

3.01 EXAMINATION

Verify dimensions and conditions in field for Work fabricated to fit project conditions.

3.02 PREPARATION

A. Prepare substrates according to expansion joint assembly manufacturer's instructions, including cutting, cleaning, priming, repair and surfacing.

B. Coordinate with Work of related trades, such as for installation of items embedded in concrete or masonry.

C. Furnish templates as required to related trades for location of embedded support and anchorage items.

D. Repair and grout block-outs as required with manufacturer's recommended material, to provide a level support beneath side frames of floor covers and to correct oversize block-outs. Do not use shims.

E. Fastening to In-Place Construction

Furnish and install anchorage devices and fasteners as required for securing expansion joint assemblies to in-place construction, including threaded fasteners with drilled-in expansion shields for masonry and concrete where anchoring members are not embedded in concrete. Metal fasteners shall be of the type and size required to suit type of construction shown on the Contract Drawings and to ensure secure attachment of expansion joint assemblies.

3.03 INSTALLATION

A. Comply with manufacturer's written instructions for handling and installation of expansion joint assemblies, unless more stringent requirements are indicated.

B. Install factory-fabricated transitions between building expansion joint assemblies and roof expansion joint assemblies specified elsewhere, if any.

C. Terminate exposed ends of exterior expansion joint assemblies with factory-fabricated termination pieces to maintain watertight integrity.

D. Cutting Fitting and Placement

Perform cutting, drilling, patching and fitting required for installation of expansion joint assemblies. Install expansion joint assemblies in true alignment and proper relationship to adjoining finished surfaces measured from established lines and levels. Allow adequate free movement for thermal expansion and contraction of metal to avoid buckling. Set floor assemblies, with countersunk fasteners, at elevations to be flush with adjacent finished floor materials. Locate wall, ceiling, soffit and fascia assemblies where shown on the Contract Drawings, in continuous contact with adjacent surfaces. Attach in place securely with required accessories.

E. Joinery and Continuity

Maintain continuity of expansion joint assemblies with end joints held to a minimum and metal members aligned mechanically using joint splices. Cut and fit ends to produce hairline joints and to produce joints that will accommodate thermal expansion and contraction of metal to avoid buckling of frames. Adhere flexible filler materials, if any, to seating member with adhesive or pressure-sensitive tape as recommended by the manufacturer.

F. Anchorage

Anchor extrusions to adjacent substrates, continuously, at interval recommended by manufacturer, but not less than 3 inches from each end and not more than 24 inches on center. Set anchorage extrusions in continuous bed of sealant per manufacturer's recommendations; prevent slippage of vertical seal anchorages. Sealant type shall be compatible with sealants of adjacent construction.

G. Preformed Seals

Install seals with minimum number of end joints; straight sections shall be in continuous lengths. Vulcanize or heat-weld field splice joints watertight, using manufacturer's recommended procedures. Apply manufacturer's approved adhesive, epoxy or lubricant-adhesive to both frame interfaces before installing preformed seal material. Seal transitions and end joints according to manufacturer's instructions.

H. Seismic Seals

Install interior seal in continuous lengths. Install outer seal in standard lengths and vulcanize or heat-weld field splice joints watertight, using manufacturer's recommended procedures. Seal transitions and end joints according to manufacturer's instructions.

I. Fire Barriers

Install fire barriers, including transitions and end joints, in accordance with manufacturer's recommended procedures so that fire-resistant construction is continuous and uninterrupted.

J. Moisture/Water Barriers

Install water barriers at exterior joints and where shown on the Contract Drawings, in accordance with manufacturer's recommended procedures. Include drainage system where shown.

3.04 CLEANING

Remove strippable protective material after Work in adjacent areas is complete. When protective material is removed, clean exposed metal surfaces in accordance with manufacturer's instructions.

3.05 PROTECTION

Protect the installation from damage by other Work. Remove and store cover plates and exposed seals as required to protect from damage from construction traffic. Install temporary protection over joints, and reinstall covers and seals prior to Susbstantial Completion.

END OF SECTION

SECTION 05810

PREFABRICATED EXPANSION JOINT ASSEMBLIES

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1 - GENERAL PROVISIONS:

A. Product Data

Manufacturer's product data, material and finish descriptions, installation instructions and general recommendations for each type of expansion joint assembly shown on the Contract Drawings.

B. Shop Drawings

Show full extent of expansion joint assemblies; include large scale details of each type indicating profiles, splice joints between sections, joinery with other joint types including intersections, corner joints and tees, special end conditions, anchorages, fasteners, block-out locations and requirements, and relationship to adjoining Work and finishes.

1. Include isometric drawings, if required to fully describe assemblies, depicting the continuity of their route and their intersections.

C. Samples

1. Metal Finish: 6 inch long sample of metal finish shown on the Contract Drawings, on metal of same thickness and alloy to be used in the Work. Where normal color and texture variations are to be expected, include two or more units in each set of samples showing limit variations.
2. Preformed Seals: 6 inch long samples of each type of flexible seal material to be used in the Work. Include manufacturer's standard color charts showing full range of colors and textures available for each type of flexible seal material for selection by the Engineer.
3. For Verification: Full-size units 6 inches long of each type of joint system to be used in the Work, including all system components and showing finish, color, texture, patterns and full range of variations expected for these characteristics.

D. Certifications

Fire Performance: Where fire-rated expansion joint assemblies are shown, submit test data to indicate conformance with 1.03 C and 2.02 F.

E. Qualifications

Submit proof of manufacturer and installer experience qualifications.

F. Sustainable Design Submittal Requirements:

The Contractor shall submit the Sustainable Design certification items listed herein. Sustainable Design submittals shall include the following:

1. A completed Sustainable Design Materials Certification Form (SDMCF), appended to Division 1 - GENERAL PROVISIONS. Information to be supplied for this form shall include:

   a. Cost breakdowns for the materials included in the Contractor's Work. Cost breakdowns shall include total cost plus itemized material costs.

   b. Where required by the Sustainable Design Performance Criteria of this Section, the following information shall also be supplied:

      (1) The amount of post-consumer and/or post-industrial recycled content in the supplied product(s).

      (2) The manufacturing location of the supplied product(s).

      (3) The location (source) of the raw materials used to manufacture the supplied product(s).

      (4) The VOC content of all adhesives, sealants, paints, and coatings applied on site as part of this Work.

2. Published product literature or letters of Certification, provided from the product manufacturer on the manufacturer's letterhead, to verify the product information supplied for the SDMCF.

3. Product cut sheets for materials that meet the SDMCF.

4. Material Safety Data Sheets (MSDS), for applicable products. Applicable products include, but are not limited to field-applied adhesives, sealants, carpets, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).

5. The Sustainable Design submittal information shall be assembled into one (1) package per Section or trade, and sent to the Engineer.

END OF APPENDIX "A"

DIVISION 2

SECTION 02079

REMOVAL, TEMPORARY STORAGE AND REINSTALLATION OF DISPATCHER BOOTHS

PART 1. GENERAL

1.01 SUMMARY

A. This Section includes the following:

1. Removal, temporary storage, and reinstallation of existing dispatch booths.

B. Related Sections

The following Sections contain requirements that relate to this Section:

1. Division 6 Section "Rough Carpentry" for wood blocking.
2. Division 15 Sections for removal and reinstallation of mechanical items.
3. Division 16 Sections for removal and reinstallation of electrical items.

C. Definitions

1. Remove

Carefully remove and store at the construction site, at a location as directed by the Engineer.

2. Reinstall

When directed by the Engineer, bring items from storage location and reinstall in the same locations or in locations shown on the Contract Drawings.

1.02 QUALITY ASSURANCE

A. Entity responsible for Work of this Section shall have successfully completed removal and reinstallation Work similar to that shown on the Contract Drawings for the Work of this Contract.

B. Maintain access to existing corridors and other adjacent occupied or used facilities.

1. Do not close or obstruct corridors or other occupied or used facilities without written permission from the Authority.

C. Utility Service

Maintain existing utilities shown on the Contract Drawings to remain in service and protect them against damage during removal and reinstallation operations.

1. Maintain fire-protection services during removal and reinstallation operations.

D. Schedule removal and reinstallation so as not to interfere with the Authority's, or its tenants' on-site operations.

1.03 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MATERIALS

A. Where repairs are required by the Contract Drawings, use repair materials identical to existing materials.

1. Where identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.

2. Use materials whose installed performance equals or surpasses that of existing materials.

PART 3. EXECUTION

3.01 EXAMINATION

A. Verify that utilities have been disconnected and capped.

B. Inventory and record the condition of items to be removed and reinstalled.

3.02 PREPARATION

A. Do not proceed with Work of this Section until chemicals, gases, explosives, acids, flammables, or other dangerous materials have been drained, purged, or otherwise removed, collected, and disposed of by others.

B. Conduct removal and reinstallation operations to prevent injury to people and damage to adjacent facilities to remain. Ensure safe passage of people around selective demolition area.

1. Erect temporary protection, such as railings, canopies, and covered passageways, where required by the Contract Drawings.

2. Protect walls, ceilings, floors, and other existing finish work that are to remain and are exposed during selective demolition operations.

3. Cover and protect furniture, furnishings, and equipment that have not been removed.

C. Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.

1. Construct dustproof partitions as shown on the Contract Drawings.

2. Paint occupied side of partitions with paint system specified in Division 9 Section of the Specifications on painting.

3. Seal joints and perimeter. Equip partitions with dustproof doors and security locks.

4. Weatherstrip openings.

3.03 UTILITY SERVICES

A. Do not interrupt existing utilities serving occupied or operating facilities, except when authorized in writing by the Engineer. Provide temporary services during interruptions to existing utilities, as acceptable to the Engineer.

1. Provide not less than 72 hours' notice to the Engineer if shutdown of service is required during changeover.

B. Utility Requirements

Locate, identify, shut off, disconnect, and seal or cap off utility services serving dispatch booths to be removed.

1. Where utility services are required to be removed, relocated, or abandoned, provide bypass connections to maintain continuity of service to other parts of the building before proceeding with selective demolition.

2. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal the remaining portion of pipe or conduit after bypassing.

3. After reinstallation of booths, reconnect affected utility connections.

C. Utility Requirements

Refer to Division 15 and 16 Sections for shutting off, disconnecting, removing, and sealing or capping utility services. Do not start selective demolition until utility disconnecting and sealing have been completed and verified in writing.

3.04 CLEANING

A. Sweep the construction site broom clean on completion of selective demolition operations.

END OF SECTION

SECTION 02079

REMOVAL, TEMPORARY STORAGE AND REINSTALLATION OF DISPATCHER BOOTHS

APPENDIX "A"

SUBMITTALS

Submit the following to the Engineer, in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1 - GENERAL PROVISIONS, prior to demolition Work:

A. Schedule of removal and replacement activities indicating the following:

1. Detailed sequence of removal and replacement Work, with starting and ending dates for each activity.
2. Interruption of utility services.
3. Coordination for shutoff, capping, and final start-up of utility services.
4. Use of elevator and stairs.
5. Detailed sequence of of removal and replacement Work to ensure uninterrupted progress of the Authority's, building manager's, or other tenants' on-site operations.
6. Coordination of the Authority's continuing occupancy of portions of existing space and of the Authority's partial occupancy of completed Work.
7. Locations of temporary partitions and means of egress.
8. Locations of temporary partitions and means of egress for other tenants affected by of removal and replacement operations.

B. Inventory of items to be removed and reinstalled

END OF APPENDIX "A"

DIVISION 9

SECTION 09660

RESILIENT TILE FLOORING

PART 1. GENERAL

1.01 SUMMARY

A. This Section specifies requirements for vinyl composition floor tile and/or homogenous (solid) vinyl floor tile, vinyl wall base and accessories.

B. Furnish extra stock in accordance with 2.02 I.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

	American Society for Testing and Materials (ASTM)
ASTM E 84	Test Method for Surface Burning Characteristics of Building Materials.
ASTM E 648	Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.
ASTM E 662	Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
ASTM F 1066	Specification for Vinyl Composition Floor Tile.
	Federal Specifications (FS)
SS-W-40	Wall Base: Rubber and Vinyl Plastic.
SS-T-312	Tile, Floor: Asphalt, Rubber, Vinyl, Vinyl Composition.
RR-T-650	Treads, Metallic and Non-Metallic.
	National Fire Protection Association (NFPA)
Standard 253	Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.

1.03 ENVIRONMENTAL REQUIREMENTS

A. Maintain minimum temperature of 70 deg F (21 deg C) in spaces to receive tiles for at least 48 hours prior to installation, during installation, and for not less than 48 hours after installation. After this period, maintain a temperature of not less than 55 deg F (13 deg C).

B. Do not install tiles until they are at the same temperature as the space where they are to be installed.

C. Close spaces to traffic during tile installation.

1.04 QUALITY ASSURANCE

A. Single-Source Responsibility for Floor Tile

Obtain each type, color, and pattern of tile from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.

B. Fire Test Performance

Provide resilient flooring which complies with the following fire test performance criteria as certified by the manufacturer or an independent testing laboratory acceptable to the Engineer.

1. Critical Radiant Flux (CRF): Not less than 0.45 watts per sq. cm. per ASTM E 648, or NFPA 253.
2. Flame Spread: Not more than 75 per ASTM E 84.
3. Smoke Density: Less than 450 per ASTM E 662.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver tiles and installation accessories to the construction site in original manufacturer's unopened cartons and containers each bearing names of product and manufacturer, contract identification, and shipping and handling instructions.

B. Store flooring materials in dry spaces protected from the weather with ambient temperatures maintained between 50 deg F (10 deg C) and 90 deg F (32 deg C).

C. Store tiles on flat surfaces. Move tiles and installation accessories into spaces where they will be installed at least 48 hours in advance of installation.

1.06 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MANUFACTURERS

Subject to compliance with the requirements of this Section, furnish and install products by one of the following, or approved equal:

Armstrong World Industries, Inc.; Lancaster, PA
Azrock Industries, Inc.; San Antonio, TX
Kentile Floors, Inc.; South Plainfield, NJ

2.02 MATERIALS

A. Provide materials, colors and patterns shown on the Contract Drawings. If colors and patterns are not shown, then as selected by Engineer from manufacturer's standards.

B. Tile Flooring, as listed below, where shown on the Contract Drawings:

1. Vinyl Composition Tile (VCT)

   Conform to ASTM F 1066, Composition 1 (asbestos free); 12-inch x 12-inch x 1/8-inch gage, unless otherwise shown on the Contract Drawings.

2. Vinyl Tile (VT)

   Conform to FS SS-T-312, Type III; 12-inch x 12-inch x 1/8-inch gage, unless otherwise shown on the Contract Drawings.

C. Vinyl Wall Base

Conform to FS SS-W-40, Type II; 4 inches high x 1/8-inch gauge, unless otherwise shown on the Contract Drawings. Vinyl wall base shall be coved at tile areas, toeless at carpet areas, with matching end stops and preformed or molded corner units.

D. Stair Covering, as listed below, where shown on the Contract Drawings

1. Vinyl Stair Treads

   Conform to FS RR-T-650, Type B; nominal 1/4-inch tapered thickness, square nose, single piece for full width and depth of tread.

2. Vinyl Stair Risers

   1/8-inch thick, single piece for full width and height of riser.

3. Vinyl Stringer Sheet: 0.080-inch thick.

E. Resilient Edge Strips

1/8-inch thick or as required to match tile thickness, homogeneous vinyl or rubber composition, tapered or bullnose edge, color to match flooring, or as selected by Engineer from standard colors available; not less than 1 inch wide.

F. Adhesives (Cements)

Water-resistant type recommended by flooring manufacturer to suit material and substrate conditions.

G. Concrete Slab Primer

Non-staining type as recommended by flooring manufacturer.

H. Trowelable Underlayments and Patching Compounds

Latex-modified, portland-cement-based formulation provided or approved by tile manufacturer for applications shown on the Contract Drawings.

I. Extra Stock

Unless otherwise shown on the Contract Drawings, deliver to the Engineer prior to issuance of the Certificate of Final Completion, the following materials from the same manufactured lot as materials furnished for the Work of this Section. Deliver in sealed protective packaging marked with Contract Number and identification of contents:

1. Flooring

   Not less than one box for each 50 boxes or fraction thereof used in the Work of this Section, for each type, color and pattern.

2. Base, Stair Tread, Stair Riser and Edge Strip

   Not less than 15 linear feet of each item.

PART 3. EXECUTION

3.01 EXAMINATION

A. Inspect subfloor surfaces to determine that they are satisfactory. A satisfactory subfloor surface is defined as one that is smooth and free from cracks, holes, ridges, coatings preventing adhesive bond, and other defects impairing performance or appearance. Report significant defects, if any, and proposed method of repair to the Engineer in writing. If such defects are determined by the Engineer to be attributable to Work performed by the Contractor, they shall be repaired by the Contractor to the satisfaction of the Engineer and at no cost to the Authority.

B. Perform bond and moisture tests on concrete subfloors to determine if surfaces are sufficiently cured and dry as well as to ascertain presence of curing compounds.

C. Do not proceed with resilient flooring Work until subfloor surfaces are satisfactory.

3.02 PREPARATION

A. Use trowelable leveling and patching compounds as recommended by resilient flooring manufacturer for filling small cracks, holes and depressions in subfloors.

B. Remove coatings from subfloor surfaces that would prevent adhesive bond, including curing compounds, paint, oils, waxes and sealers incompatible with resilient flooring adhesives.

C. Broom or vacuum clean substrates to be covered by tiles immediately before tile installation. Following cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust.

D. Apply concrete slab primer, if recommended by flooring manufacturer, prior to application of adhesive. Apply in compliance with manufacturer's directions.

3.03 INSTALLATION

A. General

Comply with tile manufacturer's installation directions and other requirements of this Section that are applicable to each type of tile installation included in this Contract.

B. Where movable partitions are shown on the Contract Drawings, install resilient flooring before partitions are erected.

C. Install resilient flooring and accessories after other finishing operations, including painting, have been completed. Do not install resilient flooring over concrete slabs until the latter have been cured and are sufficiently dry to achieve bond with adhesive as determined by resilient flooring manufacturer's recommended bond and moisture test.

D. Install resilient flooring in strict compliance with manufacturer's printed instructions. Extend resilient flooring into toe spaces, door reveals, and into closets and similar openings.

E. Scribe, cut and fit resilient flooring to permanent fixtures, built-in furniture and cabinets, pipes, outlets and permanent columns, walls and partitions.

F. Maintain reference markers, holes, or openings that are in place or plainly marked on subfloor for future cutting by repeating markings on finished flooring. Use chalk or other nonpermanent, marking device.

G. Install resilient flooring on covers for telephone and electrical ducts, and similar items occurring within finished floor areas. Maintain overall continuity of color and pattern with pieces of flooring installed on these covers. Tightly cement edges to perimeter of floor around covers and to covers.

H. Tightly cement resilient flooring to subbase without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections. Hand roll resilient flooring at perimeter of each covered area to assure adhesion.

I. Lay tile from center marks established with principal walls, discounting minor offsets, so that tiles at opposite edges of room area are of equal width. Adjust as necessary to avoid use of cut widths less than 1/2 tile at room perimeters. Lay tile square to room axis, unless otherwise shown on the Contract Drawings.

J. Match tiles for color and pattern by using tile from cartons in same sequence as manufactured and packaged, if so numbered. Cut tile neatly around all fixtures. Broken, cracked, chipped or deformed tiles shall not be used. Lay tile with grain running in one direction, unless otherwise shown on the Contract Drawings.

K. Adhere tile flooring to substrate using full spread of adhesive applied in compliance with flooring manufacturer's directions.

L. Hand roll tiles where required by tile manufacturer.

M. Apply wall base to walls, columns, pilasters, casework and other permanent fixtures in rooms or areas where base is required. Install base in lengths as long as practicable, with preformed corner units, or fabricated from base materials with mitered or coped inside corners. Tightly bond base to substrate throughout length of each piece, with continuous contact at horizontal and vertical surfaces.

1. On masonry surfaces, or other similar irregular substrates, fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material.

N. Place resilient edge strips tightly butted to flooring and secure with adhesive. Install edging strips at edges of flooring which would otherwise be exposed.

3.04 CLEANING AND PROTECTION

A. Perform the following operations immediately upon completion of resilient flooring:

1. Remove excess adhesive or other surface blemishes, using appropriate cleaner recommended by resilient flooring manufacturer.
2. Vacuum floor thoroughly.
3. Do not wash floor until time period recommended by resilient flooring manufacturer has elapsed to allow resilient flooring to become well-sealed in adhesive.
4. Damp-mop floor, being careful to remove black marks and excessive soil.
5. Protect flooring against damage during construction period to comply with resilient flooring manufacturer's directions.
6. Apply protective floor polish to resilient flooring surfaces free from soil, excess adhesive or surface blemishes. Use commercially available, metal cross-linked, acrylic product acceptable to resilient flooring manufacturer.
7. Protect resilient flooring against damage from rolling loads for initial period following installation by covering with plywood or hardboard. Use dollies to move stationary equipment or furnishings across floors.
8. Cover resilient flooring with undyed, untreated building paper until final cleaning.

B. Clean resilient flooring prior to issuance of the Certificate of Final Completion by method recommended by resilient flooring manufacturer.

1. Strip protective floor polish, which was applied after completion of installation, prior to cleaning.
2. Reapply floor polish after cleaning.

END OF SECTION

SECTION 09660

RESILIENT TILE FLOORING

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts and Samples" of Division 1 - GENERAL PROVISIONS:

A. Product Data

1. Manufacturer's technical data for each type of resilient flooring, wall base and accessory, including installation and maintenance instructions.
2. One copy of U.S. Department of Labor Material Safety Data Sheets (MSDS) for all hazardous chemicals utilized during Work of this Section.

B. Shop Drawings

Complete layouts and design of the installation(s). Include a schedule of all materials to be furnished and installed as Work of this Section.

C. Samples

1. Samples for initial selection purposes in form of manufacturer's color charts consisting of actual tiles or sections of tiles showing full range of colors and patterns available for each type of resilient floor tile, wall base and accessory shown on the Contract Drawings.
2. Four full-size samples of floor tile for each selected color and pattern for verification. Tile samples shall show the quality, full color range and texture.
3. Two one-foot lengths of each base and stair material for each selected color for verification.

D. Certifications

1. Certifications required by 1.04 B.
2. Certification by tile manufacturer that products supplied for tile installation comply with local regulations controlling use of volatile organic compounds (VOCs).

E. Spare Parts

Extra stock in accordance with 2.02 I.

END OF APPENDIX "A"

DIVISION 8

SECTION 08470

REVOLVING ENTRANCE DOORS

PART 1. GENERAL

1.01 SUMMARY

This Section specifies manually operated revolving doors and frame assemblies with three wings or four wings as shown on the Contract Drawings.

A. Related Work:

1. Sealants are specified in Division 7 Section entitled "Silicone Sealants".
2. Lock cylinders are included in Division 8 Section "Finish Hardware".
3. Glass and glazing is specified in Division 8 Section entitled "Glass and Glazing".
4. Electrical connections are specified in Division 16.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

	American Architectural Manufacturers Association (AAMA)
AAMA 605.2	High Performance Organic Coatings on Architectural Extrusions and Panels
AAMA 606.1	Inspection Methods for Integral Color Anodic Finishes for Architectural Aluminum
AAMA 607.1	Inspection Methods for Clear Anodic Finishes for Architectural Aluminum
AAMA 608.1	Inspection Methods for Electrolytically Deposited for Electrolytically Deposited Color Anodic Finishes for Architectural Aluminum
	American National Standards Institute (ANSI)
ANSI Z97.1	Glazing Materials Used in Buildings, Safety Performance Specifications and Methods of test
	American Society for Testing and Materials (ASTM)
ASTM B 209	Specification for Aluminum and Aluminum-Alloy Sheet and Plate
ASTM B 221	Specification for Aluminum Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes
ASTM C 1048	Specification for Heat Treated Flat Glass-Kind HS, Kind FT Coated and Uncoated Glass
	Consumer Product Safety Commission:
16 CRF Part 1201	Safety Standard for Architectural Glazing Materials

National Association of Architectural Metal Manufacturers (NAAMM)

Metal Finishes Manual for Architectural and Metal Products

Steel Structures Painting Council (SSPC)

SSPC PA 1 Paint Application Specification No. 1 - Shop, Field and Maintenance Painting

1.03 DESIGN AND PERFORMANCE REQUIREMENTS

A. Revolving Door System shall provide for expansion and contraction within system components caused by a cycling temperature range of 170 degrees F without causing detrimental effects to system or components.

B. Design and size members to withstand dead loads and live loads caused by pressure and suction of wind acting normal to plane of wall in accordance with the following Codes.

1. For Work in New York City:

   Building Code of the City of New York.

2. For Work in New Jersey:

   B.O.C.A. Basic Building Code, as amended by the State of New Jersey.

C. Limit mullion deflection to 1/200 or flexure limit of glass with full recovery of glazing materials, whichever is less.

D. Design system to accommodate movement within system, movement between system and perimeter framing components, dynamic loading and release of loads, and deflection of structural support framing, without damage to system of components, or deterioration of perimeter seal.

E. Revolving doors shall consist of complete units fabricated, assembled, and tested for proper operation at the factory. Each unit shall include door wings, enclosure, hardware (except lock cylinders), weatherstripping, collapsing mechanism, speed control, and other components standard with manufacturer.

F. Air Infiltration: Revolving door assemblies shall limit air leakage to a rate not to exceed 1.25 cfm per square foot of door area when tested in accordance with requirements of ASTM E 283.

G. Drain water-entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system, to exterior.

H. Wind whistles, thermal movement transmitted to other building elements, and loosening, weakening, or fracturing of attachments of components of system are not permitted.

I. Provide emergency collapse feature of door wings for emergency egress.

1.04 QUALITY ASSURANCE

A. Work of this Section is restricted to firms specializing in manufacture and installation of revolving entrance doors with minimum 5 years experience.

1. For Work in New York City:

Building Code of the City of New York.

2. For Work in New Jersey:

B.O.C.A. Basic Building Code, as amended by the State of New Jersey.

B. Safety Glazing Standard: Where safety glass is indicated or required by authorities having jurisdiction, provide the type of products indicated that comply with ANZI Z97.1 and testing requirements of 16 CFR Part 1201 for Category II materials.

1.05 WARRANTY

Submit five-year warranty, executed by revolving door manufacturer, against any defects in the manual speed control. Warranty period shall begin at the date of issuance of the Certificate of Final Completion.

1.06 SUBMITTALS

See Appendix "A" for Submittal Requirements.

PART 2. PRODUCTS

2.01 MANUFACTURER

Subject to compliance with the requirements of this Section, provide manually operated revolving doors by one of the following, or approved equal:

Boon Edam Inc., Salt Lake City, UT
Crane Fulview Door Company, Lake Bluff, IL
EntreMatic Inc. Div. Besam Inc., East Windsor, NJ
Horton Automatics Div. Overhead Door Corp., Corpus Christi, TX
International Steel Company, Evansville, IN

2.02 MATERIALS

Provide the following materials, where shown on the Contract Drawings and where required.

A. Aluminum Extrusions: Provide alloy and temper recommended by the manufacturer for the type of use and finished indicated, but with not less than the strength and durability properties specified in ASTM B 221 for 6063-T5.

1. Provide main extrusions of not less than 0.125-inch wall thickness.

2. Provide extruded aluminum glazing stops and other applied trim extrusions with a minimum wall thickness of 0.062 inch.

B. Aluminum Sheets: Provide alloy and temper recommended by the producer of finisher for type of use and finish indicated, and with not less than the strength and durability properties specified in ASTM B 209 for 5005-H15.

C. Stainless steel: Provide stainless steel sheet and formed members of AISI Type 302/304 alloy with minimum thickness .062 inch for ceiling and wings.

D. Steel Supports: Provide manufacturer's standard, mild steel supports.

E. Anchorages and Fastenings: Provide manufacturer's standard, concealed anchors and fasteners. Exposed fasteners shall be stainless steel, finish to match adjacent metal surfaces.

1. Furnish inserts and anchorage devices in ample time to avoid delays in other work.

2. Do not use exposed fasteners except where unavoidable for assembly of units and for application of hardware.

F. Glass and Glazing Materials:

1. Glass and glazing materials shall comply with requirements of the "Glass and Glazing" Section of these specifications.

2. Tempered Glass: Provide 1/4-inch-thick Class 1 clear glass in wings. Comply with requirements of ASTM C 1048, kind FT (fully tempered), condition A (uncoated surfaces), Type I (transparent), class and thickness as indicated.

3. Enclosure Walls: provide 9/16-inch-thick, clear, single-bent laminated glass.

G. HARDWARE

1. Push Bar: 5/8 inch x 2 inch, with finish to match door, unless otherwise shown on the Contract Drawings.

2. Pivot Bearing Assembly: Permanently lubricated and sealed bearing.

3. Locking Device: Dead bolt with standard cam and mortise without cylinder. (To be keyed to building system. See resident Engineer and refer to Division 8 Section entitled "Finish Hardware" for lock cylinders.)

4. Weatherstripping: Combination black rubber and felt to engage enclosure sides, ceiling and floor.

2.03 ACCESSORIES

A. Canopy Light: Fully recessed with flush frame and lens, quantities and locations as shown on the Contract Drawings.

B. Emergency Collapsing Mechanism: Collapsing mechanism to permit the wings to fold to emergency exit position.

C. Speed Control: Provide overhead mechanical speed regulator allowing free rotation of wings up to a predetermined rate of speed not exceeding 12 rpm.

2.04 FABRICATION

A. All members to be fabricated from stainless steel formed sheet. Reinforcement to be fabricated of stainless steel sections.

B. Fabricate revolving door individual assemblies using reinforced and face welded surface joinery, with welds dressed flush and finish blended to match adjacent surfaces.

C. Where bends in sheet forming are required, all stretch lines and dye marks shall be refinished to blend with adjacent surfaces. Doors shall be fabricated with no visible glazing stops except those required for the bottom rail glazing molds.

D. Fabricate components allowing minimum clearance and shim spacing around perimeter of assembly, yet enabling installation.

E. Rigidly fit and secure joints and corners with internal reinforcement. Make joints and connections flush, hairline, and weatherproof.

F. Develop drainage holes in enclosure framing with moisture pattern to exterior, at exterior door locations.

G. Prepare components to receive anchor devices. Fabricate anchorage items.

H. Arrange fasteners, attachments, and jointing to ensure concealment from view.

I. Reinforce canopy framing to support imposed loads from ceiling mounted accessories.

J. Apply one coat of bituminous paint to conceal stainless steel in contact with cementitious or dissimilar materials.

2.05 SHOP PAINTING

A. Finishes

1. Comply with NAAMM "Metal Finishes Manual for Architectural and Metal Products" for recommendations relative to application and designations of stainless steel and aluminum finishes.

   a. Complete mechanical finishes of flat sheet metal surfaces before fabrication, wherever possible. After fabrication, finish all joints, bends, abrasions, and other surface blemishes to match sheet finish.

   b. Apply organic and anodic finishes to sheet metal fabrications after assembly.

2. Comply with SSPC PA 1 for steel sheet paint finishes.

3. Protect finishes on exposed surfaces from damage by application of adhesive paper or other temporary protective covering, prior to shipment.

B. Aluminum Finishes Where shown on the Contract Drawings and as follows:

1. Finish designations prefixed by "AA" conforming to the system established by the Aluminum Association for designating aluminum finishes, listed in NAAMM "Metal Finishes Manual for Architectural and Metal Products".

2. Class II clear anodic finish at interior locations

   AA-M12C22A31 (Mechanical finish: as fabricated, nonspecular; Chemical finish: etched, medium matte; Anodic coating: Class II architectural, clear film thicker than 0.4 mil).

3. Class I Clear Anodic Finish at exterior locations

AA-MI2C22A41 (Mechanical finish: as fabricated, nonspecular; Chemical finish: etched, medium matte; Anodic coating: Class I architectural, clear film thicker than 0.7 mil) complying with AAMA 607.1.

4. Class I Color Anodic Finish

AA-M12C22A42/A44 (Mechanical finish: as fabricated, nonspecular; Chemical finish: etched, medium matte; Anodic coating: Class II Architectural, film thicker than 0.7 mil with integral color or electrolytically deposited color) complying with AAMA 606.1 or AAMA 608.1, of color as shown on the Contract Drawings.

5. High Performance Organic Coating

a. GeneralApply coatings either before or after forming and fabricating panels, as required by coating process, and as required for maximum coating performance capability. Protect coating promptly after application and cure, by application of strippable film or removable adhesive cover, and retain until installation has been completed. Provide colors or color matches as shown on the Contract Drawings, or if not otherwise shown as selected by the Engineer from the manufacturer's custom color chart.

b. High Performance Organic Finish: AA-C12C42R1x; chemically cleaned with inhibited chemicals; pretreated with acid chromate-flouride-phosphate conversion coat; finish coat applied to exposed metal surfaces to comply with coating and resin manufacturers' instructions.

(1) Fluorocarbon 3-Coat Coating System, where shown on the Contract Drawings: manufacturer's standard 3-coat thermo-cured system composed of specially formulated inhibitive primer, fluorocarbon topcoat, with both color coat and clear coat containing not less than 70% polyvinyldene resin by weight (Atochem Kynar 500 or Ausimont Hylar 5000); complying with AAMA 605.2; color and gloss shown on the Contract Drawings; or if not shown as selected by Engineer from manufacturer's custom range.

C. Stainless Steel Finishes

1. Finish designations prefixed by AISI conform with the system established by the American Iron and Steel Institute for designating finishes for stainless-steel sheet.

2. Remove or blend tool and die marks and stretch lines into finish.

3. Grind and polish surfaces to produce uniform, directional, textured, polished finish indicated, free of cross scratches. Run grain with long dimension of each piece.

4. Provide one or more of the following finishes, where shown on the Contract Drawings:

a. Bright, Directional Polish: AISI No. 4 finish.

b. Satin, Directional Polish: AISI No. 6 finish.

c. Satin, Reflective, Directional Polish: AISI No. 7 finish.

d. Mirror-Like Reflective, Non-Directional Polish: AISI No. 7 finish.

e. Non-directional finish - #BJNDF-60 finish, as manufactured by Milgo Industrial, Inc.; Brooklyn, NY; or approved equal.

5. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

PART 3. EXECUTION

3.01 INSPECTION

A. Verify wall openings and adjoining wall materials are ready to receive Work of this Section.

B. Beginning of installation means acceptance of existing conditions.

3.02 PREPARATION

A. Coordinate dimension, tolerances, and method of attachment with other work.

3.03 INSTALLATION

A. Install revolving door and enclosure system under the direct supervision and in accordance with manufacturer's instructions.

B. Use a method of attachment to structure to permit sufficient adjustment to accommodate construction tolerances and irregularities.

C. Provide alignment attachments and shims required to fasten system to building structure.

D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerance, aligning with adjacent Work.

E. Install glass and enclosure panels in accordance to manufacturer's instructions.

F. Install perimeter type sealant, backing materials, and installation requirements in accordance with the Section entitled "Silicone Sealants".

G. Paint concealed contact surfaces of dissimilar materials, including metal in contact with masonry or concrete work, with a heavy coating of bituminous paint, or provide other separation as recommended by manufacturer.

3.04 TOLERANCES

A. Variation from Plane: 0.06 inches every 3 feet maximum or 0.25 inches per 100 feet, whichever is less.

B. Misalignment of Two Adjoining Sections Abutting in Plane: 0.015 inches maximum.

3.05 ADJUSTMENTS

Adjust doors to provide a tight fit at contact points and weatherstripping for smooth operation and weathertight closure and to operate smoothly with hardware and operators functioning properly. Lubricate hardware and other moving parts.

3.06 CLEANING

A. Remove protective material from prefinished metal surfaces.

B. Wash down exposed surfaces using a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surface clean.

C. Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer.

END OF SECTION

SECTION 08470

REVOLVING ENTRANCE DOORS

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1 - GENERAL PROVISIONS:

A. Product data for each different revolving entrance door assembly required, including:

1. Manufacturer's standard details and fabrication methods.
2. Data on finishing, hardware, and accessories.
3. Recommendations for maintenance and cleaning of exterior surfaces.

B. Shop Drawings: Submit shop drawings for fabrication and installation of revolving doors and associated components. Indicate enclosures, speed control units, and other components not included in manufacturer's product data. Include the following:

1. Layout and installation details, including relationship to adjacent work.
2. Elevations at 1/4-inch scale.
3. Hardware, indicating mounting heights.
4. Detail sections of typical composite members.
5. Provisions for expansion and contraction.
6. Anchors and reinforcements.
7. Glazing details.

C. Samples for Initial Color Selection: Submit pairs of samples of each specified color and finish on 12-inch long sections of extrusions or formed shapes. Where normal color variations are anticipated, include 2 or more units in each set of samples indicating extreme limits of color variations.

D. Samples for Verification Purposes: The Engineer reserves the right to require additional samples that show fabrication techniques and workmanship, and design of hardware and accessories.

E. Maintenance Instructions: Submit manufacturer's maintenance and service instructions for adjustment, operation, and maintenance of revolving door units, including name, address, and telephone number of the nearest service representative. Include instructions for maintenance of metal finishes.

F. Test Reports: Provide certified test reports from a qualified independent testing laboratory showing that the revolving entrance door assembly has been tested in accordance with specified test procedures and complies with performance characteristics indicated.

END OF APPENDIX "A"

SECTION 08470

REVOLVING ENTRANCE DOORS

INSTRUCTIONS TO SPECIFIER

A. General

1. This Section specifies interior and exterior, aluminum and stainless steel, manually operated revolving entrance doors.
2. Power-assisted type doors are not included in this Section.

B. Contract Drawings

Ensure that Contract Drawings show:

(1.01)	Number of wings.
(2.02)	Materials used.
(2.02 F)	Glass types and thickness - if other than those specified.
(2.02 G)	Push bar - if other than that specified.
(2.03 D)	Number and location of canopy lights.
(2.05)	Finishes.

END OF INSTRUCTIONS

DIVISION 6

SECTION 06100

ROUGH CARPENTRY

PART 1. GENERAL

1.01 SUMMARY

This Section specifies requirements for rough carpentry. As used in this Section "rough carpentry" shall mean Work of the kind described in 1.01-A and which is generally not exposed, except as otherwise shown on the Contract Drawings.

A. Types of rough carpentry specified in this section include the following:

1. Wood framing.
2. Wood furring.
3. Wood grounds, nailers, blocking and sleepers.
4. Sheathing (walls and roof).
5. Subflooring and underlayment.
6. Plywood backing panels.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

	The Engineered Wood Association (APA)
APA Form No. E 30	Engineered Wood Construction Guide.
APA Form No. E 445S	Performance Standards and Qualification Policy for Structural-Use Panels.
	American Society of Mechanical Engineers (ASME)
B18.6.1	Wood Screws (Inch Series).
B18.2.1	Square and Hex Bolts and Screws, Inch Series.
	American Society for Testing and Materials (ASTM)
ASTM A 153	Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
ASTM A 307	Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.
ASTM A 563	Carbon and Alloy Steel Nuts.
ASTM D 226	Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
ASTM D 5516	Evaluating the Flexural Properties of Fire-Retardant Treated Softwood Plywood Exposed to Elevated Temperatures.

ASTM D 5664	Evaluating the Effects of Fire-Retardant Treatments and Elevated Temperatures on Strength Properties of Fire-Retardant Treated Lumber.
ASTM F 1667	Driven Fasteners: Nails, Spikes, and Staples.

American Wood Preservers Association (AWPA)

AWPA Standard C 2	Lumber, Timber, Bridge Ties and Mine Ties – Preservative Treatment by Pressure Process.
AWPA Standard C 9	Plywood – Preservative Treatment by Pressure Process.
AWPA Standard C 20	Structural Lumber – Fire-Retardant Treatment by Pressure Process.
AWPA Standard C 27	Plywood – Fire-Retardant Treatment by Pressure Process.
AWPA Standard M 4	Care of Preservative-Treated Wood Products.

Building Officials and Code Administrators International, Inc. (BOCA)

National Building Code.

Council of American Building Officials (CABO)

CABO NER-272	Pneumatic or Mechanically Driven Staples, Nails, P-Nails and Allied Fasteners for Use in All Types of Building Construction.

Redwood Inspection Service (RIS)

Standard Specifications for Grades of California Redwood Lumber.

Society of Automotive Engineers-American Iron and Steel Institute (SAE-AISI)

System for Designating Carbon and Alloy Steels.

Southern Pine Inspection Bureau (SPIB).

Standard Grading Rules for Southern Pine Lumber.

U.S. Dept. of Commerce (DOC)/National Institute for Standards and Technology (NIST)

DOC PS 1	U.S. Product Standard for Construction and Industrial Plywood.
DOC PS 20	American Softwood Lumber Standard.

West Coast Lumber Inspection Bureau (WCLIB)

Standard No. 17	Grading Rules for West Coast Lumber.

Western Wood Products Association (WWPA)

Western Lumber Grading Rules.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Keep materials under cover and dry. Protect against exposure to weather and contact with damp or wet surfaces. Stack materials above ground level on uniformly spaced supports to prevent deformation. Provide for air circulation within, around stacks and under temporary coverings including polyethylene and similar covering types.

1. Lumber and plywood pressure-treated with waterborne chemicals: Place a spacer between each course to provide for air circulation.

1.04 SUSTAINABLE DESIGN REQUIREMENTS

A. Sustainable Design General Requirements

1. The Authority requires the Contractor to implement practices and procedures to meet the sustainable requirements. The Contractor shall ensure that the requirements related to these goals, as defined in Division 1 - GENERAL PROVISIONS and the articles below, are implemented to the fullest extent. Substitutions, or other changes to the work proposed by the Contractor, will not be allowed if such changes compromise the stated Sustainable Design Performance Criteria.

B. Sustainable Design Performance Criteria

1. All field-applied adhesives, sealants, paints and coatings relating to Work of this section shall meet the requirements of Division 1 - GENERAL PROVISIONS.

2. The manufacturing location (final assembly) of the rough carpentry wood shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

3. All composite wood, engineered wood, or agrifiber products used for rough carpentry (e.g., plywood, particleboard, medium density fiberboard) shall contain no added urea-formaldehyde resins. Acceptable resins and binders include, but are not limited to, phenol formaldehyde and methyl diisocyanate (MDI). Certification of these products shall be in accordance with the Submittal Requirements of this Section.

1.05 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MATERIALS

A. Lumber

1. Lumber Standards

Lumber shall comply with DOC PS 20 and with applicable grading rules of inspection agencies certified by the American Lumber Standards Committee's (ALSC) Board of Review.

2. Grade Stamps

Lumber shall be factory-marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at the time of surfacing and producing mill.

a. Exposed lumber shall have grade stamp applied to ends or back of each piece. Grade stamp may be omitted if a certificate of grade compliance from the inspection agency is submitted.

3. Sizing

Sizes of lumber specified herein and on the Contract Drawings are nominal, except patterned sizes shall be as shown by detail dimensions on the Contract Drawings. Actual dressed sizes are as specified in DOC PS 20, for moisture content specified for each use.

4. Surfacing: S4S (surfaced four sides) dressed lumber, unless otherwise shown on the Contract Drawings.

5. Moisture Content: Seasoned lumber with 19 percent maximum moisture content at time of dressing and shipment for sizes less than 5 inches in nominal thickness.

6. Dimension Lumber

   a. Light framing (2 inches to 4 inches thick, 2 inches to 4 inches width): Any species of Construction grade.

   b. Structural light framing (2 inches to 4 inches thick, 2 inches to 4 inches width): Any species of No. 1 grade.

   c. Structural framing (2 inches to 4 inches thick, 5 inches width and greater): Any species of Select Structural grade.

7. Boards

   a. Exposed Boards

      Where boards will be exposed in the finished Work, maximum moisture content shall be 19 percent, "S-Dry".

      (1) Where transparent, natural, or no finish is shown on the Contract Drawings, boards shall be Redwood, Select Heart Grade per Redwood Inspection Service (RIS).

      (2) Where painted finish is shown on the Contract Drawings boards shall be No. 1 Boards per Southern Pine Inspection Bureau (SPIB) rules, Select Merchantable Boards per West Coast Lumber Inspection Bureau (WCLIB) rules, or No. 2 Common Boards and better per Western Wood Products Association (WWPA) rules.

   b. Concealed Boards

      Where boards will be concealed by other Work, maximum moisture content shall be 19 percent, "S-Dry", and one of the following species and grade:

      (1) Redwood Construction Common per RIS rules.

      (2) Southern Pine No. 2 Boards per SPIB rules.

      (3) Any species graded Construction Boards per WCLIB or WWPA rules.

   c. Board Sizes: 1 inch by 8 inch boards (for sheathing, subflooring and similar uses), or in sizes shown on the Contract Drawings.

8. Miscellaneous Lumber

   Furnish wood for support or attachment of other Work including bucks, nailers, blocking, furring, grounds, stripping and similar members. Lumber shall be of sizes and worked into shapes as shown on the Contract Drawings, and as follows:

   a. Moisture Content: 19 percent maximum for lumber items not specified to receive wood preservative treatment.

b. Grade: Standard grade light framing size lumber of any species or board size lumber as required for application as shown on the Contract Drawings, No. 3 Common or Standard grade boards per WCLIB or WWPA rules or No. 3 grade boards per SPIB rules.

B. Construction Panels

1. Plywood Panel Standards

Comply with DOC PS 1 for plywood panels and, for products not manufactured under DOC PS 1 provisions, comply with APA Form No. E 445S.

2. Trademark

Each construction panel shall be factory-marked with APA trademark evidencing compliance with grade requirements.

3. Concealed APA Performance-Rated Panels

APA Performance-Rated panels complying with requirements shown on the Contract Drawings for grade designation, span rating, exposure durability classification, edge detail (where applicable), and thickness, for the following applications:

a. Combination Subfloor-Underlayment: APA rated plywood Sturd-I-Floor® (APA trademark).

(1) Exposure Durability Classification: Exterior.

(2) Thickness: As shown on the Contract Drawings.

(3) Span Rating: As required to suit joist spacing shown on the Contract Drawings.

(4) Edge Detail: Tongue and groove, unless otherwise shown on the Contract Drawings.

b. Underlayment (over the above specified subfloor-underlayment, over an APA exterior rated subfloor, or for resilient tile flooring application over combination subfloor-underlayment): 1/4-inch thick, APA C-C PLUGGED exterior plywood with sanded face.

c. Wall Sheathing: APA rated plywood.

(1) Exposure Durability Classification: Exterior.

(2) Thickness: As shown on the Contract Drawings.

(3) Span Rating: As required to suit stud spacing shown on the Contract Drawings.

d. Roof Sheathing: APA rated plywood.

(1) Exposure Durability Classification: Exterior.

(2) Thickness: As shown on the Contract Drawings.

(3) Span Rating: As required to suit rafter spacing shown on the Contract Drawings.

4. Plywood Backing Panels

Telephone or Electrical Equipment Backing Panels: Fire-retardant treated, APA C-D PLUGGED INT with exterior glue, in thickness shown on the Contract Drawings, or if not otherwise shown, not less than 15/32 inch.

C. Fasteners and Anchorages

Size, type, material and finish as shown on the Contract Drawings. Furnish metal hangers and framing anchors of the size and type recommended by the manufacturer for each use including recommended nails.

1. Wood Screws: ASME B 18.6.1
2. Bolts: ASTM A 307, Grade A; with ASTM A 563 hex nuts and flat washers.
3. Lag Bolts: ASME B18.2.1
4. Nails and Staples: ASTM F 1667
5. Where rough carpentry is in direct contact with preservative treated wood, exposed to weather, in ground contact, or in area of high relative humidity, such as interior humidified spaces, kitchens, laundries, and showers, furnish fasteners and anchorages of AISI Type 304 stainless steel, or with a hot-dip zinc coating per ASTM A 153.

D. Miscellaneous

Building Paper: ASTM D 226, Type I; asphalt saturated felt, non-perforated, 15-lb. type, where shown on the Contract Drawings.

E: Preservative Treatment by Pressure Process

Lumber or plywood shown on the Contract Drawings as "Trt-Wd" or "Treated", or specified in this Section to be treated, shall comply with applicable requirements of AWPA Standard C 2 (Lumber) and AWPA Standard C 9 (Plywood). Each treated item shall be marked with a Quality Mark consistent with the ALSC Board of Review.

1. Wood shall be pressure treated with water-borne preservatives after fabrication of item. Preservative type shall comply with AWPA P 5, and shall be as appropriate for wood type and for use shown on the Contract Drawings.
2. Minimum Preservative Retention
   a. Ground contact use: 0.40 pcf (6.4 kg/m^3)
   b. Above ground use: 0.25 pcf (4.0 kg/m^3)
3. Lumber and plywood shall be kiln-dried after treatment to a maximum moisture content of 19 percent and 15 percent, respectively. After drying, discard damaged or defective pieces as determined by the Engineer.
4. End-Cut Preservative: Where treated lumber or plywood is cut after treatment, field-coat cut surfaces with heavy brush coat of same chemical used for treatment and comply with AWPA Standard M 4.
5. The following items shall be treated in addition to those shown:
   a. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with flashing, vapor barriers and waterproofing.

b. Wood sills, sleepers, blocking, furring, stripping and similar concealed members in contact with masonry, concrete, or plaster.

F. Fire-Retardant Treatment by Pressure Process

Lumber or plywood shown on the Contract Drawings as fire-retardant treated wood ("FRTW"), or specified in this section to be fire-treated, shall be pressure impregnated with fire-retardant chemicals to comply with AWPA C 20 and AWPA C 27, respectively. Each treated item shall be identified with classification marking of Underwriters Laboratories, Inc., U.S. Testing, or Timber Products Inspection, indicating surface burn characteristics.

1. Flame spread rating: 0-25, per ASTM E 84 when tested for a 30 minute period; flame front shall not progress more than 10-1/2 feet beyond the centerline of the test burner at any time during the test.
2. Use treatment that does not promote corrosion of metal fasteners and anchors.
3. Use AWPA treatment Type A High Temperature (HT) at interior applications, and AWPA Exterior type for exterior or interior applications.
4. Treatment type shall have been tested for strength retention after exposure to elevated temperatures; ASTM D 5664 for lumber, ASTM D 5516 for plywood.
5. Treatment chemicals shall be free of halogens, sulfates, ammonium sulfate, and formaldehyde.
6. Lumber and plywood shall be kiln-dried after treatment to a maximum moisture content of 19 percent and 15 percent, respectively. After drying, discard damaged or defective pieces as determined by the Engineer.
7. Treatment type shall permit end cuts and drilled holes; do not rip saw or plane surfaces of fire-retardant treated lumber.

PART 3. EXECUTION

3.01 INSTALLATION

A. General

1. Discard units of material with defects which might impair quality of Work, and units which are too small to use in fabricating Work with minimum joints or optimal joint arrangement.
2. Set carpentry Work to required levels and lines, with members plumb and true to line, cut and fitted.
3. Securely attach carpentry Work to substrate by anchoring and fastening as shown on the Contract Drawings, or if not shown, as required by the following:
   a. CABO NER-272 for power driven fasteners.
   b. BOCA *National Building Code*, Table 2305.2, "Fastening Schedule"

4. Countersink nail heads on exposed carpentry Work and fill holes.

5. Use common wire nails, except as otherwise shown on the Contract Drawings. Select fastener size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting of wood; predrill as required.

B. Wood Framing

1. Install framing members of sizes and on spacings shown on the Contract Drawings, and frame openings as shown. Do not splice structural members between supports.

2. Firestop concealed spaces of wood framed walls and partitions at each floor level and at the ceiling line of the top story. Where firestops are not automatically furnished with the framing system used, use closely fitted wood blocks of nominal 2-inch thick lumber of the same width as framing members.

3. Construct corners and intersections with not less than 3 studs. Install miscellaneous blocking and framing as shown on the Contract Drawings and as required for support of facing materials, fixtures, specialty items and trim.

C. Wood Furring

1. Install plumb and level with closure strips at edges and openings. Shim with wood as required for tolerance of finished Work. Firestop furred spaces on walls at each floor level and at ceiling line of top story, with wood blocking or non-combustible materials, accurately fitted to close furred spaces.

2. Install the following types of wood furring, where shown on the Contract Drawings:

a. Furring to receive plywood paneling: 1 inch by 3 inch furring at 24 inches o.c., horizontally and vertically, unless otherwise shown. Select furring free from knots capable of producing bent-over nails and resultant damage to paneling.

b. Furring to receive gypsum drywall and plaster lath: 1 inch by 2 inch furring at 16 inches o.c., vertically, unless otherwise shown

c. Suspended Furring: Size and spacing shown, including hangers and attachment devices. Level to a tolerance of 1/8 inch in 10 feet, except 1/4 inch in 10 feet for thick-coat plasterwork.

D. Wood Grounds, Nailers, Blocking, and Sleepers

1. Install wherever shown on the Contract Drawings, and where required for screeding or attachment of other Work. Form to shapes as shown and cut as required for true line and level of Work to be attached. Coordinate location with other Work involved.

2. Attach to substrates as required to support applied loading. Countersink bolts flush with surfaces, unless otherwise shown on the Contract Drawings. Build into masonry during installation of masonry work. Anchor to formwork before concrete placement.

3. Where plaster application is shown on the Contract Drawings, install permanent grounds of dressed, preservative treated, key-bevelled lumber not less than 1-1/2 inches wide and of thickness required to bring face of ground to exact thickness of finish material involved. Remove temporary grounds when no longer required.

E. Construction Panels

1. Install in locations and thickness as shown on the Contract Drawings. Comply with applicable recommendations contained in APA's *Engineered Wood Construction Guide*, Form No. E 30 for types of construction panels and applications as shown.

2. Nail panels to framing, space 1/8 inch at edges and ends, and stagger end joints, unless otherwise shown. For subflooring-underlayment, subflooring, and roofing, orient long dimension or strength axis of panel continuous across two or more framing supports, and position panel end joints over framing.

   a. Combination Subflooring-Underlayment: Panel edges not tongue-and-groove type shall be supported on 2 inch lumber blocking between joists. Sand and smooth edge joints receiving resilient flooring.

   b. Subflooring: Sand joints smooth as preparation for underlayment or finish floor.

   c. Underlayment: Butt panel joints to a close, but not tight fit (1/32 inch). Offset joints minimum of 2 inches from subfloor panels. Fill and sand edge joints receiving resilient flooring.

   d. Roof Sheathing: Install edge support as shown on the Contract Drawings, or as recommended by the APA (clips, blocking or T&G edges).

   e. Wall Sheathing: Nail to framing.

   f. Plywood Backing Panels: Nail or screw to supports.

END OF SECTION

SECTION 06100

ROUGH CARPENTRY

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1 – GENERAL PROVISIONS:

A. Product Data

1. Manufacturer's specifications and installation instructions for subfloor-underlayment where shown on the Contract Drawings.

2. Chemical treatment manufacturer's instruction for handling, storing, installation and finishing of treated material.

B. Certifications

1. Certification that moisture content of water-borne treated materials was reduced to specified levels prior to shipment to construction site.

a. Preservative Treatment

Certification by treating plant stating preservataive solution type and pressure process used, net amount of preservative retained and conformance with applicable standards, for each type of preservative used in the Work.

b. Fire-Retardant Treatment

Certification by treating plant that treated material complies with specified standards.

c. Design Value Compliance

Where dimensional lumber is required to comply with specific design values or minimum allowable unit stresses, submit listing of species and grade selected for each use, and submit evidence of compliance with specified requirements. Compliance may be in the form of a signed copy of applicable portion of lumber producer's grading rules showing design values for selected species and grade. Design values shall be as approved by the American Lumber Standards Committee's Board of Review.

C. Warranty

Chemical treatment manufacturer's written warranty for each treatment type.

D. Sustainable Design Submittal Requirements:

The Contractor shall submit the Sustainable Design certification items listed herein. Sustainable Design submittals shall include the following:

1. A completed Sustainable Design Materials Certification Form (SDMCF), appended to Division 1 - GENERAL PROVISIONS. Information to be supplied for this form shall include:

   a. Cost breakdowns for the materials included in the Contractor's Work. Cost breakdowns shall include total cost plus itemized material costs.

   b. Where required by the Sustainable Design Performance Criteria of this Section, the following information shall also be supplied:

      (1) The amount of post-consumer and/or post-industrial recycled content in the supplied product(s).

      (2) The manufacturing location of the supplied product(s).

      (3) The location (source) of the raw materials used to manufacture the supplied product(s).

      (4) The VOC content of all adhesives, sealants, paints, and coatings applied on site as part of this Work.

      (5) Include total cost for all wood products and itemized costs for all FSC-certified wood products.

2. Published product literature or letters of Certification, provided from the product manufacturer on the manufacturer's letterhead, to verify the product information supplied for the SDMCF.

3. Product cut sheets for materials that meet the SDMCF.

4. Material Safety Data Sheets (MSDS), for applicable products. Applicable products include, but are not limited to field-applied adhesives, sealants, carpets, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).

5. Documentation for all FSC-certified wood products. Provide copies of vendor invoices for each certified wood product, itemizing product costs and FSC chain-of-custody certification tracking numbers.

6. Documentation that all plywood, composite wood and agrifiber products installed within the Project's weatherseal do not contain added urea-formaldehyde resins.

7. The Sustainable Design submittal information shall be assembled into one (1) package per Section or trade, and sent to the Engineer.

END OF APPENDIX "A"

DIVISION 6

SECTION 06100

ROUGH CARPENTRY

PART 1. GENERAL

1.01 SUMMARY

This Section specifies requirements for rough carpentry. As used in this Section "rough carpentry" shall mean Work of the kind described in 1.01-A and which is generally not exposed, except as otherwise shown on the Contract Drawings.

A. Types of rough carpentry specified in this section include the following:

1. Wood framing.
2. Wood furring.
3. Wood grounds, nailers, blocking and sleepers.
4. Sheathing (walls and roof).
5. Subflooring and underlayment.
6. Plywood backing panels.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

	The Engineered Wood Association (APA)
APA Form No. E 30	Engineered Wood Construction Guide.
APA Form No. E 445S	Performance Standards and Qualification Policy for Structural-Use Panels.
	American Society of Mechanical Engineers (ASME)
B18.6.1	Wood Screws (Inch Series).
B18.2.1	Square and Hex Bolts and Screws, Inch Series.
	American Society for Testing and Materials (ASTM)
ASTM A 153	Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
ASTM A 307	Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.
ASTM A 563	Carbon and Alloy Steel Nuts.
ASTM D 226	Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
ASTM D 5516	Evaluating the Flexural Properties of Fire-Retardant Treated Softwood Plywood Exposed to Elevated Temperatures.

ASTM D 5664	Evaluating the Effects of Fire-Retardant Treatments and Elevated Temperatures on Strength Properties of Fire-Retardant Treated Lumber.
ASTM F 1667	Driven Fasteners: Nails, Spikes, and Staples.

American Wood Preservers Association (AWPA)

AWPA Standard C 2	Lumber, Timber, Bridge Ties and Mine Ties – Preservative Treatment by Pressure Process.
AWPA Standard C 9	Plywood – Preservative Treatment by Pressure Process.
AWPA Standard C 20	Structural Lumber – Fire-Retardant Treatment by Pressure Process.
AWPA Standard C 27	Plywood – Fire-Retardant Treatment by Pressure Process.
AWPA Standard M 4	Care of Preservative-Treated Wood Products.

Building Officials and Code Administrators International, Inc. (BOCA)

National Building Code.

Council of American Building Officials (CABO)

CABO NER-272	Pneumatic or Mechanically Driven Staples, Nails, P-Nails and Allied Fasteners for Use in All Types of Building Construction.

Redwood Inspection Service (RIS)

Standard Specifications for Grades of California Redwood Lumber.

Society of Automotive Engineers-American Iron and Steel Institute (SAE-AISI)

System for Designating Carbon and Alloy Steels.

Southern Pine Inspection Bureau (SPIB).

Standard Grading Rules for Southern Pine Lumber.

U.S. Dept. of Commerce (DOC)/National Institute for Standards and Technology (NIST)

DOC PS 1	U.S. Product Standard for Construction and Industrial Plywood.
DOC PS 20	American Softwood Lumber Standard.

West Coast Lumber Inspection Bureau (WCLIB)

Standard No. 17	Grading Rules for West Coast Lumber.

Western Wood Products Association (WWPA)

Western Lumber Grading Rules.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Keep materials under cover and dry. Protect against exposure to weather and contact with damp or wet surfaces. Stack materials above ground level on uniformly spaced supports to prevent deformation. Provide for air circulation within, around stacks and under temporary coverings including polyethylene and similar covering types.

1. Lumber and plywood pressure-treated with waterborne chemicals: Place a spacer between each course to provide for air circulation.

1.04 SUSTAINABLE DESIGN REQUIREMENTS

A. Sustainable Design General Requirements

1. The Authority requires the Contractor to implement practices and procedures to meet the sustainable requirements. The Contractor shall ensure that the requirements related to these goals, as defined in Division 1 - GENERAL PROVISIONS and the articles below, are implemented to the fullest extent. Substitutions, or other changes to the work proposed by the Contractor, will not be allowed if such changes compromise the stated Sustainable Design Performance Criteria.

B. Sustainable Design Performance Criteria

1. All field-applied adhesives, sealants, paints and coatings relating to Work of this section shall meet the requirements of Division 1 - GENERAL PROVISIONS.

2. The manufacturing location (final assembly) of the rough carpentry wood shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

3. All composite wood, engineered wood, or agrifiber products used for rough carpentry (e.g., plywood, particleboard, medium density fiberboard) shall contain no added urea-formaldehyde resins. Acceptable resins and binders include, but are not limited to, phenol formaldehyde and methyl diisocyanate (MDI). Certification of these products shall be in accordance with the Submittal Requirements of this Section.

1.05 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MATERIALS

A. Lumber

1. Lumber Standards

Lumber shall comply with DOC PS 20 and with applicable grading rules of inspection agencies certified by the American Lumber Standards Committee's (ALSC) Board of Review.

2. Grade Stamps

Lumber shall be factory-marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at the time of surfacing and producing mill.

a. Exposed lumber shall have grade stamp applied to ends or back of each piece. Grade stamp may be omitted if a certificate of grade compliance from the inspection agency is submitted.

3. Sizing

Sizes of lumber specified herein and on the Contract Drawings are nominal, except patterned sizes shall be as shown by detail dimensions on the Contract Drawings. Actual dressed sizes are as specified in DOC PS 20, for moisture content specified for each use.

4. Surfacing: S4S (surfaced four sides) dressed lumber, unless otherwise shown on the Contract Drawings.

5. Moisture Content: Seasoned lumber with 19 percent maximum moisture content at time of dressing and shipment for sizes less than 5 inches in nominal thickness.

6. Dimension Lumber

   a. Light framing (2 inches to 4 inches thick, 2 inches to 4 inches width): Any species of Construction grade.

   b. Structural light framing (2 inches to 4 inches thick, 2 inches to 4 inches width): Any species of No. 1 grade.

   c. Structural framing (2 inches to 4 inches thick, 5 inches width and greater): Any species of Select Structural grade.

7. Boards

   a. Exposed Boards

      Where boards will be exposed in the finished Work, maximum moisture content shall be 19 percent, "S-Dry".

      (1) Where transparent, natural, or no finish is shown on the Contract Drawings, boards shall be Redwood, Select Heart Grade per Redwood Inspection Service (RIS).

      (2) Where painted finish is shown on the Contract Drawings boards shall be No. 1 Boards per Southern Pine Inspection Bureau (SPIB) rules, Select Merchantable Boards per West Coast Lumber Inspection Bureau (WCLIB) rules, or No. 2 Common Boards and better per Western Wood Products Association (WWPA) rules.

   b. Concealed Boards

      Where boards will be concealed by other Work, maximum moisture content shall be 19 percent, "S-Dry", and one of the following species and grade:

      (1) Redwood Construction Common per RIS rules.

      (2) Southern Pine No. 2 Boards per SPIB rules.

      (3) Any species graded Construction Boards per WCLIB or WWPA rules.

   c. Board Sizes: 1 inch by 8 inch boards (for sheathing, subflooring and similar uses), or in sizes shown on the Contract Drawings.

8. Miscellaneous Lumber

   Furnish wood for support or attachment of other Work including bucks, nailers, blocking, furring, grounds, stripping and similar members. Lumber shall be of sizes and worked into shapes as shown on the Contract Drawings, and as follows:

   a. Moisture Content: 19 percent maximum for lumber items not specified to receive wood preservative treatment.

b. Grade: Standard grade light framing size lumber of any species or board size lumber as required for application as shown on the Contract Drawings, No. 3 Common or Standard grade boards per WCLIB or WWPA rules or No. 3 grade boards per SPIB rules.

B. Construction Panels

1. Plywood Panel Standards

Comply with DOC PS 1 for plywood panels and, for products not manufactured under DOC PS 1 provisions, comply with APA Form No. E 445S.

2. Trademark

Each construction panel shall be factory-marked with APA trademark evidencing compliance with grade requirements.

3. Concealed APA Performance-Rated Panels

APA Performance-Rated panels complying with requirements shown on the Contract Drawings for grade designation, span rating, exposure durability classification, edge detail (where applicable), and thickness, for the following applications:

a. Combination Subfloor-Underlayment: APA rated plywood Sturd-I-Floor® (APA trademark).

(1) Exposure Durability Classification: Exterior.

(2) Thickness: As shown on the Contract Drawings.

(3) Span Rating: As required to suit joist spacing shown on the Contract Drawings.

(4) Edge Detail: Tongue and groove, unless otherwise shown on the Contract Drawings.

b. Underlayment (over the above specified subfloor-underlayment, over an APA exterior rated subfloor, or for resilient tile flooring application over combination subfloor-underlayment): 1/4-inch thick, APA C-C PLUGGED exterior plywood with sanded face.

c. Wall Sheathing: APA rated plywood.

(1) Exposure Durability Classification: Exterior.

(2) Thickness: As shown on the Contract Drawings.

(3) Span Rating: As required to suit stud spacing shown on the Contract Drawings.

d. Roof Sheathing: APA rated plywood.

(1) Exposure Durability Classification: Exterior.

(2) Thickness: As shown on the Contract Drawings.

(3) Span Rating: As required to suit rafter spacing shown on the Contract Drawings.

4. Plywood Backing Panels

Telephone or Electrical Equipment Backing Panels: Fire-retardant treated, APA C-D PLUGGED INT with exterior glue, in thickness shown on the Contract Drawings, or if not otherwise shown, not less than 15/32 inch.

C. Fasteners and Anchorages

Size, type, material and finish as shown on the Contract Drawings. Furnish metal hangers and framing anchors of the size and type recommended by the manufacturer for each use including recommended nails.

1. Wood Screws: ASME B 18.6.1
2. Bolts: ASTM A 307, Grade A; with ASTM A 563 hex nuts and flat washers.
3. Lag Bolts: ASME B18.2.1
4. Nails and Staples: ASTM F 1667
5. Where rough carpentry is in direct contact with preservative treated wood, exposed to weather, in ground contact, or in area of high relative humidity, such as interior humidified spaces, kitchens, laundries, and showers, furnish fasteners and anchorages of AISI Type 304 stainless steel, or with a hot-dip zinc coating per ASTM A 153.

D. Miscellaneous

Building Paper: ASTM D 226, Type I; asphalt saturated felt, non-perforated, 15-lb. type, where shown on the Contract Drawings.

E: Preservative Treatment by Pressure Process

Lumber or plywood shown on the Contract Drawings as "Trt-Wd" or "Treated", or specified in this Section to be treated, shall comply with applicable requirements of AWPA Standard C 2 (Lumber) and AWPA Standard C 9 (Plywood). Each treated item shall be marked with a Quality Mark consistent with the ALSC Board of Review.

1. Wood shall be pressure treated with water-borne preservatives after fabrication of item. Preservative type shall comply with AWPA P 5, and shall be as appropriate for wood type and for use shown on the Contract Drawings.
2. Minimum Preservative Retention
   a. Ground contact use: 0.40 pcf (6.4 kg/m^3)
   b. Above ground use: 0.25 pcf (4.0 kg/m^3)
3. Lumber and plywood shall be kiln-dried after treatment to a maximum moisture content of 19 percent and 15 percent, respectively. After drying, discard damaged or defective pieces as determined by the Engineer.
4. End-Cut Preservative: Where treated lumber or plywood is cut after treatment, field-coat cut surfaces with heavy brush coat of same chemical used for treatment and comply with AWPA Standard M 4.
5. The following items shall be treated in addition to those shown:
   a. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with flashing, vapor barriers and waterproofing.

b. Wood sills, sleepers, blocking, furring, stripping and similar concealed members in contact with masonry, concrete, or plaster.

F. Fire-Retardant Treatment by Pressure Process

Lumber or plywood shown on the Contract Drawings as fire-retardant treated wood ("FRTW"), or specified in this section to be fire-treated, shall be pressure impregnated with fire-retardant chemicals to comply with AWPA C 20 and AWPA C 27, respectively. Each treated item shall be identified with classification marking of Underwriters Laboratories, Inc., U.S. Testing, or Timber Products Inspection, indicating surface burn characteristics.

1. Flame spread rating: 0-25, per ASTM E 84 when tested for a 30 minute period; flame front shall not progress more than 10-1/2 feet beyond the centerline of the test burner at any time during the test.

2. Use treatment that does not promote corrosion of metal fasteners and anchors.

3. Use AWPA treatment Type A High Temperature (HT) at interior applications, and AWPA Exterior type for exterior or interior applications.

4. Treatment type shall have been tested for strength retention after exposure to elevated temperatures; ASTM D 5664 for lumber, ASTM D 5516 for plywood.

5. Treatment chemicals shall be free of halogens, sulfates, ammonium sulfate, and formaldehyde.

6. Lumber and plywood shall be kiln-dried after treatment to a maximum moisture content of 19 percent and 15 percent, respectively. After drying, discard damaged or defective pieces as determined by the Engineer.

7. Treatment type shall permit end cuts and drilled holes; do not rip saw or plane surfaces of fire-retardant treated lumber.

PART 3. EXECUTION

3.01 INSTALLATION

A. General

1. Discard units of material with defects which might impair quality of Work, and units which are too small to use in fabricating Work with minimum joints or optimal joint arrangement.

2. Set carpentry Work to required levels and lines, with members plumb and true to line, cut and fitted.

3. Securely attach carpentry Work to substrate by anchoring and fastening as shown on the Contract Drawings, or if not shown, as required by the following:

a. CABO NER-272 for power driven fasteners.

b. BOCA *National Building Code*, Table 2305.2, "Fastening Schedule"

4. Countersink nail heads on exposed carpentry Work and fill holes.

5. Use common wire nails, except as otherwise shown on the Contract Drawings. Select fastener size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting of wood; predrill as required.

B. Wood Framing

1. Install framing members of sizes and on spacings shown on the Contract Drawings, and frame openings as shown. Do not splice structural members between supports.

2. Firestop concealed spaces of wood framed walls and partitions at each floor level and at the ceiling line of the top story. Where firestops are not automatically furnished with the framing system used, use closely fitted wood blocks of nominal 2-inch thick lumber of the same width as framing members.

3. Construct corners and intersections with not less than 3 studs. Install miscellaneous blocking and framing as shown on the Contract Drawings and as required for support of facing materials, fixtures, specialty items and trim.

C. Wood Furring

1. Install plumb and level with closure strips at edges and openings. Shim with wood as required for tolerance of finished Work. Firestop furred spaces on walls at each floor level and at ceiling line of top story, with wood blocking or non-combustible materials, accurately fitted to close furred spaces.

2. Install the following types of wood furring, where shown on the Contract Drawings:

   a. Furring to receive plywood paneling: 1 inch by 3 inch furring at 24 inches o.c., horizontally and vertically, unless otherwise shown. Select furring free from knots capable of producing bent-over nails and resultant damage to paneling.

   b. Furring to receive gypsum drywall and plaster lath: 1 inch by 2 inch furring at 16 inches o.c., vertically, unless otherwise shown

   c. Suspended Furring: Size and spacing shown, including hangers and attachment devices. Level to a tolerance of 1/8 inch in 10 feet, except 1/4 inch in 10 feet for thick-coat plasterwork.

D. Wood Grounds, Nailers, Blocking, and Sleepers

1. Install wherever shown on the Contract Drawings, and where required for screeding or attachment of other Work. Form to shapes as shown and cut as required for true line and level of Work to be attached. Coordinate location with other Work involved.

2. Attach to substrates as required to support applied loading. Countersink bolts flush with surfaces, unless otherwise shown on the Contract Drawings. Build into masonry during installation of masonry work. Anchor to formwork before concrete placement.

3. Where plaster application is shown on the Contract Drawings, install permanent grounds of dressed, preservative treated, key-bevelled lumber not less than 1-1/2 inches wide and of thickness required to bring face of ground to exact thickness of finish material involved. Remove temporary grounds when no longer required.

E. Construction Panels

1. Install in locations and thickness as shown on the Contract Drawings. Comply with applicable recommendations contained in APA's *Engineered Wood Construction Guide*, Form No. E 30 for types of construction panels and applications as shown.

2. Nail panels to framing, space 1/8 inch at edges and ends, and stagger end joints, unless otherwise shown. For subflooring-underlayment, subflooring, and roofing, orient long dimension or strength axis of panel continuous across two or more framing supports, and position panel end joints over framing.

   a. Combination Subflooring-Underlayment: Panel edges not tongue-and-groove type shall be supported on 2 inch lumber blocking between joists. Sand and smooth edge joints receiving resilient flooring.

   b. Subflooring: Sand joints smooth as preparation for underlayment or finish floor.

   c. Underlayment: Butt panel joints to a close, but not tight fit (1/32 inch). Offset joints minimum of 2 inches from subfloor panels. Fill and sand edge joints receiving resilient flooring.

   d. Roof Sheathing: Install edge support as shown on the Contract Drawings, or as recommended by the APA (clips, blocking or T&G edges).

   e. Wall Sheathing: Nail to framing.

   f. Plywood Backing Panels: Nail or screw to supports.

END OF SECTION

SECTION 06100

ROUGH CARPENTRY

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1 – GENERAL PROVISIONS:

A. Product Data

1. Manufacturer's specifications and installation instructions for subfloor-underlayment where shown on the Contract Drawings.

2. Chemical treatment manufacturer's instruction for handling, storing, installation and finishing of treated material.

B. Certifications

1. Certification that moisture content of water-borne treated materials was reduced to specified levels prior to shipment to construction site.

a. Preservative Treatment

Certification by treating plant stating preservataive solution type and pressure process used, net amount of preservative retained and conformance with applicable standards, for each type of preservative used in the Work.

b. Fire-Retardant Treatment

Certification by treating plant that treated material complies with specified standards.

c. Design Value Compliance

Where dimensional lumber is required to comply with specific design values or minimum allowable unit stresses, submit listing of species and grade selected for each use, and submit evidence of compliance with specified requirements. Compliance may be in the form of a signed copy of applicable portion of lumber producer's grading rules showing design values for selected species and grade. Design values shall be as approved by the American Lumber Standards Committee's Board of Review.

C. Warranty

Chemical treatment manufacturer's written warranty for each treatment type.

D. Sustainable Design Submittal Requirements:

The Contractor shall submit the Sustainable Design certification items listed herein. Sustainable Design submittals shall include the following:

1. A completed Sustainable Design Materials Certification Form (SDMCF), appended to Division 1 - GENERAL PROVISIONS. Information to be supplied for this form shall include:

   a. Cost breakdowns for the materials included in the Contractor's Work. Cost breakdowns shall include total cost plus itemized material costs.

   b. Where required by the Sustainable Design Performance Criteria of this Section, the following information shall also be supplied:

      (1) The amount of post-consumer and/or post-industrial recycled content in the supplied product(s).

      (2) The manufacturing location of the supplied product(s).

      (3) The location (source) of the raw materials used to manufacture the supplied product(s).

      (4) The VOC content of all adhesives, sealants, paints, and coatings applied on site as part of this Work.

      (5) Include total cost for all wood products and itemized costs for all FSC-certified wood products.

2. Published product literature or letters of Certification, provided from the product manufacturer on the manufacturer's letterhead, to verify the product information supplied for the SDMCF.

3. Product cut sheets for materials that meet the SDMCF.

4. Material Safety Data Sheets (MSDS), for applicable products. Applicable products include, but are not limited to field-applied adhesives, sealants, carpets, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).

5. Documentation for all FSC-certified wood products. Provide copies of vendor invoices for each certified wood product, itemizing product costs and FSC chain-of-custody certification tracking numbers.

6. Documentation that all plywood, composite wood and agrifiber products installed within the Project's weatherseal do not contain added urea-formaldehyde resins.

7. The Sustainable Design submittal information shall be assembled into one (1) package per Section or trade, and sent to the Engineer.

END OF APPENDIX "A"

DIVISION 7

SECTION 07920

SEALANTS

PART 1. GENERAL

1.01 SUMMARY

A. This Section specifies interior and exterior cold liquid-applied sealants, as shown on the Contract Drawings with the following designations:

1. ES-1: One-part non-acid curing silicone.
2. ES-2: One-part acid curing, mildew-resistant silicone.
3. ES-3: One-part or two-part non-sag polyurethane.
4. ES-4: One-part or two-part pourable polyurethane.
5. ES-5: Latex sealant for interior locations.
6. ES-6: One-part non-sag silyl-terminated polyether.

B. Horizontal joint sealants in concrete and asphalt roads and sidewalks (hot and cold liquid-applied) are specified in Division 2 Section on pavement joint sealing.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

	American Architectural Manufacturers Association (AAMA)
AAMA CW-13	Structural Sealant Glazing Systems.
	American Society for Testing and Materials (ASTM)
ASTM C 834	Specification for Latex Sealants.
ASTM C 920	Specification for Elastomeric Joint Sealants.
ASTM C 1021	Practice for Laboratories Engaged in Testing of Building Sealants.
ASTM C 1193	Guide for Use of Joint Sealants.
ASTM C 1330	Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants.
ASTM D 1056	Specification for Flexible Cellular Materials – Sponge or Expanded Rubber.

1.03 DESIGN AND PERFORMANCE REQUIREMENTS

A. Elastomeric joint sealants designated as ES-1 through ES-4, and E-6 shall establish and maintain watertight and airtight continuous seals without staining or deteriorating joint substrates when installed.

B. Nonelastomeric joint sealants designated as ES-5 shall establish and maintain airtight continuous seals that are water-resistant without staining or deteriorating joint substrates when installed.

C. Adhesion Test

When directed by the Engineer, perform preconstruction field adhesion test of each sealant per AAMA CW-13. Perform such tests in the presence of the Engineer and a qualified technical representative of the sealant manufacturer.

1. Notify Engineer and sealant manufacturer 7 days in advance of the dates and times when field adhesion tests are to occur.
2. Produce written report on test results.
3. Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with the above requirements, will be considered satisfactory. Sealants that fail to adhere to joint substrates during testing shall not be used in the Work.

1.04 ENVIRONMENTAL REQUIREMENTS

A. Do not proceed with the Work of this Section under the following conditions:

1. When ambient and substrate temperature conditions are outside the limits permitted by sealant manufacturer.
2. When joint substrates are wet due to rain, frost, condensation or other causes.
3. Where joint widths are less than or greater than widths allowed by sealant manufacturer for applications shown on the Contract Drawings.
4. When contaminants capable of interfering with sealant adhesion are present on joint substrates.

1.05 QUALITY ASSURANCE

A. Installer Qualifications

Verify that the entity performing sealant installation has successfully completed within the last 3 years at least 3 joint sealant installations involving quantities and complexities at least equal to those required for Work of this Section.

B. Testing Laboratory Qualifications

Use an independent testing laboratory that demonstrates to Engineer's satisfaction, based on evaluation of laboratory submitted criteria conforming to ASTM C 1021, that it has the experience and capability to conduct satisfactorily the testing indicated without delaying progress of the Work.

C. Single Source Responsibility

Obtain sealant and primer materials from a single manufacturer for each different required product.

D. Field constructed mock-up is required for the structural silicone or ES-1 application as specified in Section 08805 Glass & Glazing. Confirm with engineer color of sealant to be used for mock-up. Final selection of sealant color from manufacturer's standard palette will be made after mock-up has been reviewed.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to construction site in original unopened containers or bundles with labels clearly identifying the manufacturer, product name and designation, color, expiration period for use, pot life, curing time and mixing instructions for multicomponent materials.

B. Store and handle materials to prevent deterioration or damage due to moisture, temperature changes, contaminants or other causes.

1.07 SUSTAINABLE DESIGN REQUIREMENTS

A. Sustainable Design General Requirements

1. The Authority requires the Contractor to implement practices and procedures to meet the sustainable design requirements. The Contractor shall ensure that the requirements related to these goals, as defined in Division 1 - GENERAL PROVISIONS and the articles below, are implemented to the fullest extent. Substitutions, or other changes to the Work proposed by the Contractor, will not be allowed if such changes compromise the stated Sustainable Design Performance Criteria.

2. All field-applied adhesives, sealants, paints and coatings relating to Work of this Section shall meet the requirements of Division 1 - GENERAL PROVISIONS.

1.08 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MANUFACTURERS

Subject to compliance with the requirements of this Section, furnish and install products of the following manufacturers, or approved equal:

A. ES-1 (One-part non-acid curing silicone) where sealant designated as "Structural Silicone" is shown on the Contract Drawings

Dow Corning 795; Dow Corning Corp., Midland, MI
SilPruf NB SCS9000; GE Sealants & Adhesives, Waterford, NY
Bondaflex 295; May National Associates, Inc., Clifton, NJ
Spectrem 2; Tremco Inc., Beechwood, OH

B. ES-2 (One-part acid curing, mildew-resistant silicone)

Dow Corning 786; Dow Corning Corp., Midland, MI
Sanitary SCS1700; GE Sealants & Adhesives, Waterford, NY
Bondaflex Sil 100 WF; May National Associates, Inc., Clifton, NJ
Proglaze; Tremco Inc., Beechwood, OH

C. ES-3 (One-part or two-part non-sag polyurethane)

Dynatrol I-XL or II; Pecora Corp., Harleysville, PA
Sikaflex 15LM or Sikaflex 2c NS; Sika Corp., Lyndhurst, NJ
Vulkem 921 or Dymeric 240; Tremco Inc., Beechwood, OH

D. ES-4 (One-part or two-part pourable polyurethane)

Sonolastic SL 1 or SL 2; Degussa Building Systems, Shakopee, MN
Urexpan NR-201 or NR-200; Pecora Corp., Harleysville, PA
Vulkem 45 or 245; Tremco Inc., Beechwood, OH

E. ES-5 (Latex sealant for interior locations)

AC-20 FTR; Pecora Corp., Harleysville, PA
Tremflex 834; Tremco Inc., Beachwood, OH
SHEETROCK Acoustical Sealant; United States Gypsum Co., Chicago, IL

F. ES-6 (One-part non-sag silyl-terminated polyether)

Sonolastic 150; Degussa Building Systems, Shakopee, MN
Bondaflex STP 25; May National Associates, Inc., Clifton, NJ
Pro-Sil[sct] 1; Pecora Corp., Harleysville, PA
Sikaflex-721 UV; Sika Corp., Lyndhurst, NJ

2.02 MATERIALS

A. Sealants (except designation ES-5)

1. Cold-applied elastomeric joint sealants shall conform to the following requirements of ASTM C 920:

   a. Type: S, except Type S or M for sealant designations ES-3 and ES-4.

   b. Grade: NS, except Grade P for sealant designation ES-4.

   c. Movement Class: 25 for sealant designations ES-2 and ES-4; 50 for sealant designations ES-1 and ES-3. Not applicable for sealant designation ES-5.

   d. Use: T, NT, M, G, A or O as applicable to joint substrate type shown on the Contract Drawings.

2. Sealant designation ES-5: Cold-applied nonelastomeric joint sealant; ASTM C 834.

3. Color

   a. At stone or masonry joints: Sealant color shall match adjacent mortar color, unless otherwise shown on the Contract Drawings, subject to Engineer's approval.

b. At other locations: As shown on the Contract Drawings, or if not shown, as selected by the Engineer from manufacturer's standard colors.

B. Sealant Backing

Furnish sealant backings of material and type which are nonstaining and are compatible with joint substrates, sealants, primers and other joint filler materials. Sealant backing shall be as approved by sealant manufacturer, based on field experience and laboratory testing, for applications shown on the Contract Drawings and shall be one of the following types:

1. Cylindrical Foam Sealant Backing (backer rod): ASTM C 1330; preformed, compressible, resilient, non-exuding lengths of polyethylene or polyolefin foam of size and density required to control sealant depth and contribute to producing optimum sealant performance.

   a. Type B (bi-cellular) or Type C (closed cell), non-gassing foam, as recommended by sealant manufacturer for use with each sealant type and location.

2. Elastomeric Tubing Sealant Backing: Neoprene, butyl or EPDM tubing complying with ASTM D 1056, nonabsorbent to water and gas, capable of remaining resilient at temperatures down to minus 26 degrees F. Furnish products with low compression set and of size and shape to provide a secondary seal, to control sealant depth and contribute to producing optimum sealant performance.

2.03 ACCESSORIES

A. Primer

Types recommended and furnished by joint sealant manufacturer and as required based on results of preconstruction field adhesion testing for adhesion of sealant to joint substrates shown on the Contract Drawings.

B. Bond Breaker Tape

Polyethylene tape or other plastic tape as recommended by sealant manufacturer for preventing bond between sealant and joint filler or other materials at back (third) surface of joints. Furnish self-adhesive tape where applicable. Duct tape is not acceptable.

C. Masking Tape

Removable, nonstaining, nonabsorbent type compatible with joint sealants and to surfaces adjacent to joints.

D. Cleaners for Nonporous Surfaces

Nonstaining, chemical cleaner of type acceptable to manufacturer of sealant and sealant backing materials that is not harmful to substrates and adjacent nonporous materials.

E. Vent Tubes (Weep Holes)

Heat-bendable clear acrylic or polypropylene tubes, of proper diameter and approved by the sealant manufacturer, where shown on the Contract Drawings and as required to direct moisture to the outside of the building.

PART 3. EXECUTION

3.01 EXAMINATION

Inspect joints shown on the Contract Drawings to receive joint sealants for compliance with requirements for joint configuration, installation tolerances and other conditions affecting joint sealant performance. Do not allow joint sealant Work to proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Surface Cleaning of Joints

Clean out joints immediately before installing joint sealants to comply with recommendations of joint sealant manufacturer and the following requirements:

1. Remove foreign material from joint substrates which could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), oil, grease, waterproofing, water repellents, water, surface dirt and frost.
2. Clean concrete, masonry, unglazed surfaces of ceramic tile and similar porous joint substrate surfaces, by brushing, grinding, blast cleaning, mechanical abrading or a combination of these methods to produce a clean, sound substrate capable of developing optimal bond with joint sealants. Remove loose particles remaining after cleaning operations by vacuuming or blowing out joints with oil-free compressed air.
3. Remove laitance and form oil or release agents from concrete.
4. Clean metal, glass, porcelain enamel, glazed surfaces of ceramic tile and similar nonporous joint substrate surfaces with chemical cleaners or by other means that are not harmful to substrates and that do not leave residue capable of interfering with adhesion of joint sealants.

B. Joint Priming

Prime joint substrates where recommended by joint sealant manufacturer and where required based on results of preconstruction field adhesion testing. Apply primer and allow to cure in compliance with joint sealant manufacturer's recommendations. Confine primers to areas of joint sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking

Use masking tape where required to prevent contact of sealant with adjoining surfaces which otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.03 INSTALLATION

A. General

Comply with joint sealant manufacturer's printed installation instructions and recommendations of ASTM C 1193 for use of joint sealants as applicable to materials, applications and conditions shown on the Contract Drawings.

B. Sealant Backings

1. Install sealant backing of type shown on the Contract Drawings, or if not shown, in accordance 3.03 A, for support of sealants during application. Install sealant backing in position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths to allow optimum sealant movement capability.

   a. Do not leave gaps between ends of sealant backings.

   b. Do not stretch, twist, puncture or tear sealant backings.

   c. Remove absorbent sealant backings that have become wet prior to sealant application and replace with dry material.

2. Install bond breaker tape between sealants and sealant backings, joint fillers, compression seals or back of joints where required to prevent third-side adhesion of sealant to back of joint.

3. Install compressible seals serving as sealant backings to comply with requirements of 3.03 B.1 for sealant backings.

C. Sealants

Follow sealant manufacturer's installation instructions so that installed sealants directly contact and fully wet joint substrates, completely fill recesses provided for each joint configuration and provide uniform, cross-sectional shapes and depths relative to joint widths to allow optimum sealant movement capability.

1. Provide sealant ES-1 at vertical joints between metal and metal and between metal and concrete or masonry.

2. Provide sealant ES-3 at vertical joints between concrete and masonry.

D. Tooling

1. Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads, to eliminate air pockets and to ensure contact and adhesion of sealant with sides of joint.

2. Do not use tooling agents that discolor sealants or adjacent surfaces, or tooling agents that are not approved by sealant manufacturer.

3. Joint Configuration: Concave per ASTM C 1193, Figure 8A, unless otherwise shown on the Contract Drawings to be flush per Figure 8B or to be recessed per Figure 8C.

   a. Recessed joint depth shall be as shown on the Contract Drawings. Use masking tape to protect adjacent surfaces of recessed, tooled joints.

E. Clean off excess sealants or sealant smears adjacent to joints immediately as Work progresses by methods and with cleaning materials approved by manufacturer of joint sealant.

3.04 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of issuance of the Certificate of Final Completion.

B. If despite such protection, damage or deterioration occurs, including bubbling, cut out and remove damaged or deteriorated joint sealants and backings immediately and reseal joints with new materials to produce joint sealant installations with repaired areas indistinguishable from original Work, at no cost to the Authority.

END OF SECTION

SECTION 07920

SEALANTS

SUBMITTALS

APPENDIX "A"

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1 - GENERAL PROVISIONS:

A. Product Data

Manufacturer's product data for each joint sealant product, sealant backing, primer and accessory required, and instructions for joint preparation and sealant application.

B. Samples

When color sealant is required, submit two separate bead sample strips of manufacturer's standard colors showing full range of colors available and sample strips of colors to match adjacent mortar color, for each product exposed to view.

C. Certifications

From joint sealant manufacturer attesting that its sealant products comply with 1.03 A-B and 2.02 A.1 and 2 as applicable, and that their sealant products are suitable for the use shown on the Contract Drawings.

D. Test Reports

1. Preconstruction field adhesion test report results per 1.03 C when field adhesion tests are directed by the Engineer.

2. Compatibility and adhesion test reports from sealant manufacturer indicating that materials forming joint substrates and sealant backings have been tested for compatibility and adhesion with joint sealants. Include sealant manufacturer's interpretation of test results relative to sealant performance, and sealant manufacturer's recommendations for primers and substrate preparation needed to obtain adhesion.

E. Qualifications

Evidence of installer's experience and capabilities. Include lists of completed projects with project names and addresses, names and addresses of architects and owners and other information specified.

F. Sustainable Design Submittal Requirements:

The Contractor shall submit the Sustainable Design certification items listed herein. Sustainable Design submittals shall include the following:

1. A completed Sustainable Design Materials Certification Form (SDMCF), appended to Division 1 - GENERAL PROVISIONS. Information to be supplied for this form shall include:

a. Cost breakdowns for the materials included in the Contractor's Work. Cost breakdowns shall include total cost plus itemized material costs.

b. Where required by the Sustainable Design Performance Criteria of this Section, the following information shall also be supplied:

(1) The amount of post-consumer and/or post-industrial recycled content in the supplied product(s).

(2) The manufacturing location of the supplied product(s).

(3) The location (source) of the raw materials used to manufacture the supplied product(s).

(4) The VOC content of all adhesives, sealants, paints, and coatings applied on site as part of this Work.

2. Published product literature or letters of Certification, provided from the product manufacturer on the manufacturer's letterhead, to verify the product information supplied for the SDMCF.

3. Product cut sheets for materials that meet the SDMCF.

4. Material Safety Data Sheets (MSDS), for applicable products. Applicable products include, but are not limited to field-applied adhesives, sealants, carpets, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).

5. The Sustainable Design submittal information shall be assembled into one (1) package per Section or trade, and sent to the Engineer.

END OF APPENDIX

DIVISION 2

SECTION 02076

SELECTIVE DEMOLITION FOR INTERIORS

PART 1. GENERAL

1.01 SUMMARY

A. This Section includes the following:

1. Demolition and removal of selected interior portions of a building and building closure.
2. Repair procedures for selective demolition operations.

B. Related Sections

The following Sections contain requirements that relate to this Section:

1. Division 6 Section "Rough Carpentry" for material and construction requirements for temporary enclosures.
2. Division 9 Section "Gypsum Drywall" for material and construction requirements for temporary enclosures.
3. Division 9 Section "Painting" for painting requirements for temporary enclosures.
4. Division 15 Sections for cutting, patching, or relocating mechanical items.
5. Division 16 Sections for cutting, patching, or relocating electrical items.

C. Definitions

1. Remove

   Remove and legally dispose of items except those indicated to be reinstalled, salvaged, or to remain the Authority's property.

2. Remove and Salvage

   Items indicated to be removed and salvaged remain the Authority's property. Remove, clean, and pack or crate items to protect against damage. Identify contents of containers and deliver to the Authority's designated storage area.

3. Remove and Reinstall

   Remove items shown on the Contract Drawings; clean, service, and otherwise prepare them for reuse; store and protect against damage. Reinstall items in the same locations or in locations shown on the Contract Drawings.

4. Existing to Remain

Protect construction shown on the Contract Drawings to remain against damage and soiling during selective demolition. When permitted by the Engineer, items may be removed to a suitable, protected storage location during selective demolition and then cleaned and reinstalled in their original locations.

D. Except for items or materials shown on the Contract Drawings to be reused, salvaged, reinstalled, or otherwise shown to remain property of the Authority, demolished materials shall become the Contractor's property and shall be removed from the site with further disposition at the Contractor's option.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

Resilient Floor Covering Institute

RCFI-WP Recommended Work Practices for the Removal of Resilient Floor Coverings

1.03 QUALITY ASSURANCE

A. Demolition firm shall have successfully completed selective demolition Work similar to that shown on the Contract Drawings for the Work of this Contract.

B. The Authority will occupy portions of the building immediately adjacent to selective demolition area. Conduct selective demolition so that the Authority's operations will not be disrupted. Provide not less than 72 hours' notice to the Engineer of activities that will affect the Authority's operations.

C. Maintain access to existing corridors and other adjacent occupied or used facilities.

1. Do not close or obstruct corridors or other occupied or used facilities without written permission from the Authority.

D. The Authority assumes no responsibility for actual condition of areas to be selectively demolished.

1. Conditions existing at time of inspection for bidding purposes will be maintained by the Authority as far as practical.

E. Asbestos

Asbestos may be present in the building to be selectively demolished. A report on the presence of asbestos, if any, is on file in the Engineer's office for review and use. Examine the report to become aware of locations where asbestos is present.

1. Asbestos abatement, if any, is specified elsewhere in the Contract Documents.

2. Do not disturb asbestos or any material suspected of containing asbestos except under the procedures specified elsewhere in the Contract Documents.

F. Storage or sale of removed items or materials on-site will not be permitted.

G. Utility Service

Maintain existing utilities shown on the Contract Drawings to remain in service and protect them against damage during selective demolition operations.

1. Maintain fire-protection services during selective demolition operations.

H. Schedule selective demolition so as not to interfere with the Authority's, or its tenants' on-site operations.

1.04 SUSTAINABLE DESIGN REQUIREMENTS

A. Sustainable Design General Requirements

1. The Authority requires the contractor to implement practices and procedures to meet the sustainable design requirements. The contractor shall ensure that the requirements related to these goals, as defined in Division 1 - GENERAL PROVISIONS, are implemented to the fullest extent. Substitutions or other changes to the work proposed by the contractor will not be allowed if such changes compromise the stated sustainable design performance criteria.

1.05 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 SPECIFIC DEMLITION ITEMS

A. Provide all necessary items to complete the following work including but not limited to labor, materials, equipment, coordination:

1. Selective demolition, storage and reinstallation of booths.
2. Selective demolition of floor/structural slab for new Elevator and Escalator.
3. Selective demolition of structural steel framing to accommodate new structural steel framing for new Elevator and Escalator.
4. Selective demolition of concrete pavement topping above structural slab.

2.02 MATERIALS

A. Where repairs are required by the Contract Drawings, use repair materials identical to existing materials.

1. Where identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.

2. Use materials whose installed performance equals or surpasses that of existing materials.

PART 3. EXECUTION

3.01 EXAMINATION

A. Verify that utilities have been disconnected and capped.

B. Survey existing conditions and correlate with requirements shown on the Contract Drawings to determine extent of selective demolition required.

C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

D. When unanticipated mechanical, electrical, or structural elements that conflict with the demolition Work shown on the Contract Drawings are encountered, investigate and measure the nature and extent of the conflict. Promptly submit a written report to the Engineer.

3.02 PREPARATION

A. Do not proceed with selective demolition operations until chemicals, gases, explosives, acids, flammables, or other dangerous materials have been drained, purged, or otherwise removed, collected, and disposed of by others.

B. Conduct demolition operations and remove debris to ensure minimum interference with corridors and other adjacent occupied and used facilities. Do not close or obstruct corridors or other adjacent occupied or used facilities without permission from the Authority.

C. Conduct demolition operations to prevent injury to people and damage to adjacent facilities to remain. Ensure safe passage of people around selective demolition area.

1. Erect temporary protection, such as railings, canopies, and covered passageways, where required by the Contract Drawings.

2. Protect walls, ceilings, floors, and other existing finish work that are to remain and are exposed during selective demolition operations.

3. Cover and protect furniture, furnishings, and equipment that have not been removed.

D. Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.

1. Construct dustproof partitions as shown on the Contract Drawings.

2. Paint occupied side of partitions with paint system specified in Division 9 Section of the Specifications on painting.

3. Maintain negative air pressure of not less than 2000 cfm in the selective demolition are, where required by Contract Drawings.

4. Insulate partition to provide noise protection to occupied areas, when required by Contract Drawings.

5. Seal joints and perimeter. Equip partitions with dustproof doors and security locks.

6. Weatherstrip openings.

E. Provide and maintain interior shoring, bracing, or structural support to preserve stability and prevent movement of area to be selectively demolished.

1. Strengthen or add new supports when required during progress of selective demolition.

3.03 UTILITY SERVICES

A. Do not interrupt existing utilities serving occupied or operating facilities, except when authorized in writing by the Engineer. Provide temporary services during interruptions to existing utilities, as acceptable to the Engineer.

1. Provide not less than 72 hours' notice to the Engineer if shutdown of service is required during changeover.

B. Utility Requirements

Locate, identify, shut off, disconnect, and seal or cap off utility services serving space to be selectively demolished, as shown on the Contract Drawings.

1. Where utility services are required to be removed, relocated, or abandoned, provide bypass connections to maintain continuity of service to other parts of the building before proceeding with selective demolition.

2. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal the remaining portion of pipe or conduit after bypassing.

C. Utility Requirements

Refer to Division 15 and 16 Sections for shutting off, disconnecting, removing, and sealing or capping utility services. Do not start selective demolition until utility disconnecting and sealing have been completed and verified in writing.

3.04 POLLUTION CONTROLS

A. Use water mist, temporary enclosures, and other suitable methods to limit the spread of dust and dirt. Comply with governing environmental protection regulations.

1. Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.

B. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level.

C. Wet mop floors to eliminate trackable dirt and wipe down walls and doors of demolition enclosure.

D. Fully clean adjacent areas of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before start of selective demolition.

3.05 SELECTIVE DEMOLITION

A. Demolish and remove existing construction only to the extent required by new construction and as shown on the Contract Drawings. Use methods required to complete Work within limitations of governing regulations and as follows:

1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. To minimize disturbance of adjacent surfaces, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.

2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.

3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame cutting operations.

4. Maintain adequate ventilation when using cutting torches.

5. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.

6. Locate selective demolition equipment throughout the structure and remove debris and materials so as not to impose excessive loads, on supporting walls, floors, or framing.

7. Dispose of demolished items and materials promptly. Onsite storage or sale of removed items is prohibited.

8. Return elements of construction and surfaces to remain to condition existing before start of selective demolition operations.

B. Comply with the Authority's regulations for using and protecting elevators, stairs, loading docks, building entries, and other building facilities during selective demolition operations.

C. Demolish concrete and masonry in small sections. Cut concrete and masonry at junctures with construction to remain, using power-driven masonry saw or hand tools; do not use power-driven impact tools.

D. Removal of Curtain Wall

1. Remove curtain wall, including support framing and brackets, fasteners, glazing, and any appurtenances thereto. Coordinate removal of curtain wall inserts, if required for construction shown on the Contract Drawings.

2. Coordinate removals of curtain wall with removals of concrete spandrels masonry walls, structural steel, roof copings, and floor slabs - as shown on Contract Documents.

E. Remove resilient floor coverings and adhesive according to recommendations of the Resilient Floor Covering Institute's (RFCI) "Recommended Work Practices for the Removal of Resilient Floor Coverings."

F. Remove residual adhesive and prepare substrate for new floor coverings by one of the methods recommended by RFCI.

3.06 PATCHING AND REPAIRS

A. Promptly patch and repair holes and damaged surfaces caused to adjacent construction by selective demolition operations.

B. Where repairs to existing surfaces are required by the Contract Drawings, patch to produce surfaces suitable for new materials.

C. Restore exposed finishes of patched areas and extend finish restoration into adjoining construction to remain in a manner that eliminates evidence of patching and refinishing.

D. Patch and repair floor and wall surfaces in the new space where demolished walls or partitions extend one finished area into another. Provide a flush and even surface of uniform color and appearance.

1. Closely match texture and finish of existing adjacent surface.
2. Patch with durable seams that are, as invisible as possible. Comply with specified tolerances.
3. Where patching smooth painted surfaces, extend final paint coat over entire unbroken surface containing the patch after the surface has received primer and second coat.
4. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
5. Inspect and test patched areas to demonstrate integrity of the installation, where feasible.

E. Patch, repair or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

3.07 DISPOSAL OF DEMOLISHED MATERIALS

A. General

Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.

B. Burning

Do not burn demolished material on-site.

C. Disposal

Transport demolished materials off the construction site and legally dispose of them.

3.08 CLEANING

A. Sweep the construction site broom clean on completion of selective demolition operations.

END OF SECTION

SECTION 02076

SELECTIVE DEMOLITION FOR INTERIORS

APPENDIX "A"

SUBMITTALS

Submit the following to the Engineer, in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1 - GENERAL PROVISIONS, prior to demolition Work:

A. Schedule of selective demolition activities indicating the following:

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity.
2. Interruption of utility services.
3. Coordination for shutoff, capping, and continuation of utility services.
4. Use of elevator and stairs.
5. Detailed sequence of selective demolition and removal work to ensure uninterrupted progress of the Authority's, building manager's, or other tenants' on-site operations.
6. Coordination of the Authority's continuing occupancy of portions of existing space and of the Authority's partial occupancy of completed Work.
7. Locations of temporary partitions and means of egress.
8. Locations of temporary partitions and means of egress for other tenants affected by selective demolition operations.

B. Inventory of items to be removed and salvaged.

C. Inventory of items to be removed by the Authority

D. Sustainable Design Submittal Requirements:

1. The Contractor shall submit the Sustainable Design certification items listed herein. Sustainable Design submittals shall include the following:

   a. A completed Sustainable Design Materials Certification Form (SDMCF), appended to Division 1 - GENERAL PROVISIONS. Information to be supplied for this form shall include:

      (1) Cost breakdowns for the materials included in the Contractor's work. Cost breakdowns shall include total cost plus itemized material costs.

   b. The Sustainable Design submittal information shall be assembled into one package per Section or trade, and sent to the Engineer of review.

END OF APPENDIX "A"

DIVISION 5

SECTION 05580

SHEET METAL FABRICATIONS

PART 1. GENERAL

1.01 SUMMARY

A. This Section specifies requirements for formed sheet metal fabrications.

B. Items specified in this Section include, but are not limited to the following, where shown on the Contract Drawings

1. Closures and trim.
2. Window stools.
3. Pockets for window treatment.
4. Filler panels.
5. Column covers.
6. Lighting troughs.
7. Heating-cooling unit enclosures.
8. Interior and exterior fascia panels.
9. Interior and exterior soffit panels.

C. Refer to Division 7 Section on Flashing and Sheet Metal for formed metal items used for flashing purposes, if any.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

	American Architectural Manufacturers Association (AAMA)
AAMA 611	Specification for Anodized Architectural Aluminum.
AAMA 2605	Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
	American Society for Testing and Materials (ASTM)
ASTM A 424	Specification for Steel, Sheet, for Porcelain Enameling.
ASTM A 591	Specification for Steel Sheet, Electrolytic Zinc-Coated for Light Coating Weight [Mass] Applications.
ASTM A 653	Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

ASTM A 666	Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
ASTM A 780	Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
ASTM A 1008	Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
ASTM B 209	Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
ASTM C 283	Test Method for Resistance of Porcelain Enameled Utensils to Boiling Acid.
ASTM C 538	Test Method for Color Retention of Red, Orange and Yellow Porcelain Enamels.
ASTM C 665	Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
ASTM C 916	Specification for Adhesives for Duct Thermal Insulation.
ASTM D 1056	Specification for Flexible Cellular Materials – Sponge or Expanded Rubber.
ASTM E 136	Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C.
	American Welding Society, Inc. (AWS)
AWS D1.2	Structural Welding Code – Aluminum.
AWS D1.3	Structural Welding Code – Sheet Steel.
	National Association of Architectural Metal Manufacturers (NAAMM)
	Metal Finishes Manual for Architectural and Metal Products.
	Porcelain Enamel Institute (PEI)
PEI-1001	Specifications for Architectural Porcelain Enamel.
	The Society for Protective Coatings (SSPC)
SSPC-PA 1	Shop, Field and Maintenance Painting of Steel.
SSPC-Paint 12	Paint Specification No. 12 – Cold-Applied Asphalt Mastic (Extra Thick Film).
SSPC-Paint 20	Paint Specification No. 20 – Zinc Rich Primers (Type I, Inorganic, and Type II, Organic).
SSPC-SP 1	Surface Preparation Specification No. 1 – Solvent Cleaning.
SSPC-SP 5	Surface Preparation Specification No. 5 – White Metal Blast Cleaning.
SSPC-SP 8	Surface Preparation Specification No. 8 – Pickling.

1.03 QUALITY ASSURANCE

A. Manufacturer Qualifications

Firm that employs skilled persons, has successfully fabricated products similar to those required for Work of this Section and has sufficient capacity to produce required units without causing delay in the Work.

B. Engineer Qualifications

Professional engineer licensed to practice in state where the project is located and experienced in providing engineering services for the successful installation of sheet metal fabrications similar in material, design and extent to those indicated in these Specifications and shown on the Contract Drawings for Work of this Section.

C. Welding Standards

Comply with applicable provisions of AWS D1.2 *Structural Welding Code – Aluminum* and AWS D1.3 *Structural Welding Code – Sheet Steel.*

1. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.

D. Single Source Responsibility

Obtain sheet metal fabrications from a single manufacturer.

E. Field Measurements

Where sheet metal fabrications are shown on the Contract Drawings to fit to other construction, check actual dimensions of other construction by accurate field measurements before fabrication and show recorded measurements on final Shop Drawings before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver sheet metal fabrications as factory assembled units, with protective crating and covering.

B. Store products on elevated platforms in a dry location.

1.05 SUSTAINABLE DESIGN REQUIREMENTS

A. Sustainable Design General Requirements

1. The Authority requires the contractor to implement practices and procedures to meet the sustainable design requirements. The contractor shall ensure that the requirements related to these goals, as defined in Division 1 - GENERAL PROVISIONS, are implemented to the fullest extent. Substitutions or other changes to the work proposed by the contractor will not be allowed if such changes compromise the stated sustainable design performance criteria.

B. Sustainable Design Performance Criteria:

1. The manufacturing location (final assembly) of the sheet metal fabrications shall be documented in accordance with the sustainable design submittal requirements of this section.

2. Sheet metal fabrications shall contain a minimum of 25 percent (by weight) recycled content, calculated by adding the post-consumer recycled content percentage to one-half of the post-industrial recycled content percentage. Certify the recycled content in accordance with the sustainable design submittal requirements below.

3. The manufacturing location (final assembly) of sheet metal fabrications shall be documented in accordance with the sustainable design submittal requirements of this section.

4. The origin of the raw materials from which the sheet metal fabrications were manufactured shall be documented in accordance with the sustainable design submittal requirements of this section.

5. All field-applied adhesives, sealants, paints and coatings relating to work of this section shall meet the requirements of Division 1 - GENERAL PROVISIONS.

1.06 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MANUFACTURERS

Subject to compliance with the requirements of this Section, provide products by one of the following or approved equal:

Sheet Metal:
American Steel Products Corp.; Farmingdale,NY
Brandt-Airflex Corp.; Farmingdale, NY
Custom Enclosures, Inc.; Rosemont, IL
Forms & Surfaces, Carpinteria, CA
Milgo/Bufkin; Brooklyn, NY
Surface Design & Technology, Miami, FL

Column Covers:
Baker Metal Products Inc., Dallas, Texas
Una-clad
Pittcon, Bronx, NY

Perforated Stainless Steel:
McNichols Co.; Tampa, FL
Metals, Inc.; Oakwood Village, OH

or approved equal

2.02 MATERIALS

A. General

Furnish sheet metals selected for their surface flatness, smoothness and freedom from surface blemishes where exposed to view in the finished unit. Use materials whose exposed surfaces do not exhibit pitting, seam marks, roller marks, variations in flatness exceeding those permitted by referenced standards for stretcher-leveled metal sheet, stains, discoloration or other imperfections.

B. Ferrous Metals

1. Galvanized Steel Sheet

ASTM A 653, commercial or forming steel classification, coating designation G90, mill phosphatized.

2. Steel Sheet

ASTM A 1008, cold rolled, commercial steel (CS) Type B sheet, or structural steel (SS) Grade 25, exposed; electrolytic zinc-coated, unless otherwise shown on the Contract Drawings or specified in this Section to be uncoated, complying with the following requirements as applicable:

a. Electrolytic Zinc-Coated Steel Sheet: ASTM A 591, chemically treated in mill with phosphate solution and light chromate rinse.

b. Uncoated Steel Sheet: ASTM A 1008 per above, matte finish.

3. Stainless Steel Sheet: ASTM A 666, Type 304.

C. Aluminum Sheet

ASTM B 209; alloy and temper recommended by manufacturer for intended use and as suitable for application of finish shown on the Contract Drawings, with not less than strength and durability properties specified in ASTM B 209 for alloy 5005-H15.

D. Porcelain Steel Panels

1. Sheet Steel for Porcelain Steel Panels: Special purpose "enameling iron or steel" of low metalloid and copper content, especially manufactured and processed for the production of porcelain enamel panels and conforming to the requirements of ASTM A 424, commercial quality, Type II.

a. Enameling Iron: Thickness required for structural performances, but not less than manufacturer's recommended minimums for profiles and applications shown on the Contract Drawings and not less than 16 gage for porcelain enamel panels.

2. Aluminum Honeycomb Core for Porcelain Steel Panels

1-1/2 inch aluminum honeycomb with a minimum foil thickness of 0.003 inch, cell size 3/4 inch and density of 1.8 lbs. per cubic foot.

3. Aluminum Backer Sheets for Porcelain Steel Panels

ASTM B 209; alloy, temper and finish as recommended by panel manufacturer; sheet manufacturer's standard "stucco" embossed sheet finish. Thickness required for structural performance, but not less than manufacturer's recommended minimums for profiles and applications shown on Contract Drawings and not less than 0.040 inches for exterior panels.

E. Miscellaneous Materials

Where shown on the Contract Drawings and as follows:

1. Sound-Deadening Insulation

Unfaced mineral fiber blanket or batt insulation complying with ASTM C 665 for Type I, passing ASTM E 136 test.

2. Fire Resistant Insulation Adhesive

Cold-applied, synthetic elastomer adhesive complying with ASTM C 916.

3. Welding Electrodes and Filler Metal

Type and alloy of filler metal and electrodes as recommended by producer of metal to be welded, complying with applicable AWS D1.2 or D1.3 requirements and as required for strength and compatibility of the alloys of the filler metals used in the welds and the base metal being welded.

a. Filler metals and welding procedures shall result in welds that blend with and match the color of sheet metal being joined.

4. Fasteners

Same metal and alloy as fastened metal, or – where same metal and alloy is not available -use metals that are non-corrosive and compatible with metals joined.

a. Concealed Fasteners: For interconnection of sheet metal fabrications and for their attachment to other Work, except where exposed fasteners are unavoidable or are the manufacturer's standard fastening method.

b. Exposed Fasteners, if any: Phillips flathead screws, unless otherwise shown on the Contract Drawings.

5. Anchors and Inserts

Type, size and material required for type of loading and installation shown on the Contract Drawings or as recommended by manufacturer, unless otherwise shown on the Contract Drawings. Use nonferrous metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance.

6. Flexible Cellular Neoprene Gaskets

ASTM D 1056, Type I, Class A, Grade as recommended by gasket manufacturer to obtain airtight seal for specified application and as shown on the Contract Drawings.

7. Bituminous Paint

Cold-applied, asphalt mastic complying with SSPC-Paint 12 containing no asbestos fibers.

8. Joint Sealants for Concealed Joints: Butyl-polyisobutylene sealant.

2.03 FABRICATION

A. General

Fabricate sheet metal fabrications to comply with the Contract Drawings for design, profile, dimensions, materials, joinery and performance.

1. Shop Assembly: Preassemble sheet metal fabrications in the shop to the greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly match mark units for reassembly and coordinated installation.

2. Coordinate dimensions and attachment methods of sheet metal fabrications with adjoining products and construction to produce integrated assemblies with closely fitting joints, with edges and surfaces aligned with one another. Locate fabrications in relation to adjoining construction as shown on the Contract Drawings.

3. Form sheet metal fabrications in maximum practical lengths to minimize joints and without exposed cut edges. Fold back exposed ends of unsupported sheet metal to form a 1/2 inch wide hem on the concealed side or ease edges to a radius of approximately 1/32 inch and support with concealed stiffeners. Produce flat, flush surfaces without cracking and grain separation at bends.

4. Increase metal thickness or reinforce metal with concealed stiffeners or backing materials, or both, as required to provide surface flatness specified for stretcher-leveled metal sheet and to impart sufficient strength for use shown on the Contract Drawings.

5. Fill space between stiffeners with sound-deadening insulation permanently attached to face sheet with cold-applied asphalt mastic where shown on the Contract Drawings.

6. Continuously weld joints and seams in accordance with the requirements of this Section, except where other methods of joining are shown on the Contract Drawings. Grind, fill and dress welds to produce smooth and flush exposed surfaces in which welds are invisible after final finishing is completed.

7. Build in straps, plates and brackets as required for support and anchorage of fabricated items to adjoining construction. Reinforce sheet metal units as required for attachment and support of other construction.

B. Closures and Trim

1. Form closures and trim members, if any, from sheet metal of type and minimum nominal thickness as indicated below, unless otherwise shown on the Contract Drawings. Incorporate components required for support and installation of closures and trim. Fabricate closures and trim to tightly close with adjoining construction.

   a. Metal for Interior Installations: Steel Sheet: 0.0478 inch (18 gage).

b. Metal for Exterior Installations: Galvanized Steel Sheet: 0.0516 inch (18 gage), with weather-tight joints.

2. Fasteners shall conform to 2.02 E.4. Locate to be as inconspicuous as possible. Size fasteners to support closures and trim, with fasteners spaced to prevent buckling or waviness in finished surfaces.

3. Drill and tap holes required for securing closures and trim to other surfaces.

4. Incorporate gaskets where shown on the Contract Drawings or where required for concealed, continuous seal at abutting surfaces.

5. Support joints with concealed stiffeners as required to hold exposed faces of adjoining sheets in flush alignment.

6. Miter or cope trim members at corners to form tight joints.

C. Window Stools

Form window stools, if any, from sheet metal of type and thickness shown on the Contract Drawings and minimum thickness as indicated below, including end closures.

1. Galvanized Steel Sheet: 0.0516 inch (18 gage), with weather-tight joints at exterior installations.

2. Aluminum Sheet: 0.063 inch.

3. Stainless Steel Sheet: 0.050 inch (18 gage).

D. Blind and Drapery Pockets

1. Form pockets, if any, from sheet metal of type and thickness shown on the Contract Drawings and minimum thickness as indicated below, including end closures. Coordinate dimensions and attachment methods with blind and drapery equipment, window frames, ceiling suspension system and other related construction, to produce a coordinated, closely fitting assembly.

   a. Aluminum Sheet: 0.063 inch.

   b. Steel Sheet: 0.0478 inch (18 gage).

   c. Galvanized Steel Sheet: 0.0516 inch (18 gage).

2. Reinforce pocket for attachment of window treatment equipment and hardware or increase metal thickness.

3. Divide continuous pockets by means of built-in partitions located to separate adjoining drapery and blind units, to coincide with window mullions and to receive filler panels at ends of partitions.

E. Filler Panels

1. Form filler panels, if any, for closing ends of partition systems from sheet metal of type and thickness shown on the Contract Drawings and minimum thickness as indicated below, and at other locations as shown on the Contract Drawings. Incorporate reveals, trim and concealed anchorages for attachment to adjacent surfaces.

   a. Steel Sheet: 0.0598 inch (16 gage).

   b. Galvanized Steel Sheet: 0.0635 inch (16 gage).

2. Fill interior of panel with sound-deadening insulation permanently attached to inside panel faces where shown on the Contract Drawings.

3. Adhesively attach gaskets to filler panel edges that abut glass. Use 1 inch square material, unless otherwise shown, set approximately 1/4 inch into channeled edge of filler panel.

4. Attach gaskets to panel edges that abut adjacent surfaces to form a continuous seal. Use compressible gaskets of mastic sealing tape, applied to center of panel edges to be concealed from view, unless otherwise shown on the Contract Drawings.

F. Column Covers

Form column covers, if any, from sheet metal of type and thickness shown on the Contract Drawings, and minimum thickness as indicated below. Incorporate reveals, trim and concealed anchorages for attachment to columns or adjacent construction as indicated.

1. Snap-Together Type

   a. Form column covers to shapes shown on the Contract Drawings. Return edges and bend to form hook that engages continuous mounting clips.

   b. Form returns at joints to provide reveal at joints of size shown on the Contract Drawings. Furnish snap-in metal filler strips at reveals.

2. Metal Type and Thickness:

   a. Steel Sheet: 0.0598 inch (16 gage).

   b. Aluminum Sheet: 0.063 inch.

   c. Stainless Steel Sheet: 0.062 inch (16 gage) thickness with a non-directional finish.

   d. Stainless Steel Diamond Plate: 1/8" thickness with a non-directional finish.

3. For Drywall-Type Construction

   a. Form column covers from 0.125 inch aluminum, rolled to radii shown on the Contract Drawings. Taper edges of adjoining pieces of column covers for taping and spackling, to 0.094 inch thickness in an approximately 1 inch width. Punch tapered edges for drywall screws at 1/2 inch o.c. and mill grooves in tapered edge to provide bonding surface for joint compound.

   b. Joint Treatment Materials: Compounds and reinforcing tape shall comply with requirements of the applicable Division 9 Section on gypsum drywall.

G. Lighting Troughs

Form lighting troughs, if any, from sheet metal of type and thickness shown on the Contract Drawings and minimum thickness as indicated below. Coordinate size of troughs, location of cutouts for electrical wiring and method of attachment to adjoining construction.

1. Steel Sheet: 0.0478 inch (18 gage).

2. Galvanized Steel Sheet: 0.0516 inch (18 gage).

3. Aluminum Sheet: 0.063 inch.

H. Heating-Cooling Unit Enclosures

Fabricate heating-cooling unit enclosures, if any, from galvanized steel sheet of minimum nominal thickness as indicated below, unless otherwise shown on the Contract Drawings.

1. Galvanized Steel Sheet

   a. Framing: 0.108 inch (12 gage).

   b. Sills and Stools: 0.079 inch (14 gage).

   c. Front Panels and Bases: 0.064 inch (16 gage).

   d. Concealed Panels and Trim: 0.040 inch (20 gage).

2. Structural Performance

   Design and fabricate enclosures so that when installed, they shall be capable of withstanding 100 lbs. per sq. foot or concentrated load of 300 lbs. per 4 sq. inch, whichever produces the greatest stress without exceeding the allowable design working stress of materials, including anchors and connections, and without exhibiting permanent deformation in any components making up enclosures.

3. Incorporate stiffeners or laminated backing using noncombustible materials as required for strength and rigidity. Include brackets, plates and straps in assemblies for support of other Work.

4. Incorporate grilles of size, type and materials shown on the Contract Drawings.

   a. For removable grilles use modular units with recessed openings and enclosures formed into surfaces of enclosures, without use of blank filler panels between grilles, so that face panels and stools are continuous. Fabricate removable grilles and openings to close tolerances to produce well-fitted assemblies free of warp or rattle with grilles supported continuously along parallel edges and tops flush with top of enclosure.

   b. Form grille supports to serve also as collars for connection to discharge opening in heating-cooling units where shown on the Contract Drawings or where required for operation.

5. Incorporate removable tops and fronts where shown on the Contract Drawings or where required for access to heating-cooling units and to piping, ductwork, controls and electrical service. Fabricate panels and openings as follows:

   a. Fit with a tolerance of not less than 1/32 inch and not more than 1/10 inch at each edge, with face of panels flush with adjoining fixed surfaces of enclosure.

   b. Hold panels in place with concealed clips and hardware that prevent warp or rattle, and which enable easy removal of panels without interfering with adjoining construction or furniture.

6. Incorporate hinged access panels in enclosures for access to heating-cooling unit controls, either as separate elements or integrated with grille openings, as shown on the Contract Drawings.

7. Coordinate construction, configuration and dimensions of enclosures with those of heating-cooling units. Provide blind knockouts for piping, ductwork, control lines and electrical conduit and wiring. Provide support for those elements and for heating-cooling units where shown on the Contract Drawings or as required.

8. Locate fixed surfaces of enclosure to coincide precisely with window mullions and partition system terminations. Furnish closures at ends of units, at recessed openings in base of units and other locations where required to conceal from view unfinished wall or floor surfaces, piping, conduit, ductwork or heating-cooling units.

   a. Where shown on the Contract Drawings, furnish built-in partitions (bulkheads) within enclosures between heating-cooling units, located to coincide with mullions and partition system terminations. Fabricate panels in manner similar to exposed filler panels to prevent transmission of sound.

9. Furnish and install sound-deadening materials at concealed faces of metal panels over 6 inches wide, consisting of a heavy coating of fire-resistive mastic applied at the minimum rate of 20 sq. ft. per gallon. Apply coating after completion of shop finishing.

I. Fascia Panels

Form fascia panels, if any, from aluminum sheet metal of 0.040 inch minimum nominal thickness, unless otherwise shown on the Contract Drawings.

1. Structural Performance (exterior panels only)

   Design and fabricate exterior fascia panels so that when installed they are capable of withstanding wind pressure of not less than 30 psf inward and 30 psf outward without exceeding the allowable design working stress of materials, including anchors and connections, and without exhibiting permanent deformation in any components making up the fascia panels.

2. Fabricate exterior fascia panel systems that allow no uncontrolled water penetration.

3. Incorporate stiffeners or laminated backing using noncombustible materials as required for strength and rigidity.

4. Locate fasteners to be as inconspicuous as possible, sized to support fascia panels and spaced to prevent buckling or waviness in finished surfaces. Drill and tap holes required for securing fascia panels to other surfaces.

5. Miter or cope fascia panels at corners to form tight joints.

6. Refer to the applicable Division 7 Section on sealants, where perimeter sealant is shown on the Contract Drawings or where required to maintain watertightness of fascia panel system at exterior applications.

J. Soffit Panels

Form soffit panels, if any, from aluminum sheet metal of 0.040 inch minimum nominal thickness, unless otherwise shown on the Contract Drawings.

1. Structural Performance (exterior panels only)

   Design and fabricate exterior soffit panels so that when installed, they are capable of withstanding wind pressure of not less than 37.5 psf inward and 37.5 psf outward without exceeding the allowable design working stress of materials, including anchors and connections, and without exhibiting permanent deformation in any components making up the soffits.

2. Fabricate exterior soffit panel systems that allow no uncontrolled water penetration.

3. Incorporate stiffeners or laminated backing using noncombustible materials as required for strength and rigidity.

4. Locate fasteners to be as inconspicuous as possible, sized to support soffit panels and spaced to prevent buckling or waviness in finished surfaces.

5. Drill and tap holes required for securing soffit panels to other surfaces.

6. Miter or cope soffit panels at corners to form tight joints.

7. Refer to Division 7 Section on sealants where perimeter sealant is shown on the Contract Drawings or where sealant is required to maintain watertightness of soffit panel system at exterior applications.

K. Stainless Steel Cladding

1. Fabricate cladding from 16-gage stainless steel sheet of type 304 with a non-directional finish. Incorporate reveals, trim, support components and concealed anchorages for attachment to substrate or adjacent construction as required for installation.

2. Fasteners shall conform to 2.02 d.3 of this section, located where they will be as inconspicuous as possible, concealed or as indicated on drawings. Size fasteners to support cladding, with fasteners spaced to prevent buckling or waviness in finished surface.

3. Drill & tap holes as required for securing cladding to other surfaces.

4. Support joints with concealed stiffeners as required to hold exposed faces of adjoining sheets in flush alignment.

5. Miter or cope trim members at corners to form tight joints.

2.04 SHOP FINISHING

A. Finishes

1. Comply with NAAMM's *Metal Finishes Manual for Architectural and Metal Products* for recommendations relative to application and designations of stainless steel and aluminum finishes.

2. Comply with SSPC-PA 1 for steel sheet paint finishes.

3. Complete mechanical finishes of flat sheet metal surfaces before fabrication wherever possible. After fabrication, finish joints, bends, abrasions and other surface blemishes to match sheet finish.

4. Apply organic and anodic finishes to sheet metal fabrications after assembly.

5. Protect finishes on exposed surfaces from damage by application of adhesive paper or other temporary protective covering, prior to shipment. Retain cover until installation has been completed.

B. Aluminum Finishes

Where shown on the Contract Drawings and as follows:

1. Finish designations prefixed by "AA" conform to the system established by the Aluminum Association for designating aluminum finishes, listed in NAAMM's Metal Finishes Manual for Architectural and Metal Products.

2. Class II Clear Anodic Finish at Interior Locations

   AA M12-C22-A31 (Mechanical Finish: nonspecular, as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: clear coating, 0.4 to 0.7 mils).

3. Class I Clear Anodic Finish at Exterior Locations

   AA M12-C22-A41 (Mechanical Finish: nonspecular, as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: clear coating, 0.7 mil or thicker), complying with AAMA 611.

4. Class I Color Anodic Finish

   AA M12-C22-A42/A44 (Mechanical Finish: nonspecular, as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: integrally colored or elctrolytically deposited coating, 0.7 mil or thicker), complying with AAMA 611, of color as shown on the Contract Drawings.

5. Baked Enamel Finish

   AA C12-C42-R1x (Chemical Finish: chemically cleaned with inhibited chemicals, conversion coated with an acid chromate-fluoride-phosphate pretreatment; Organic Coating: as specified below). Apply baked enamel in compliance with paint manufacturer's specifications for cleaning, conversion coating and painting.

   a. Organic Coating: Manufacturer's standard thermosetting modified acrylic enamel primer/topcoat system, minimum dry film thickness of 1.5 mils, medium gloss.

   b. Color: As selected by Engineer from manufacturer's full color range.

6. High Performance Organic Coating

   a. AA C12-C42-R1x (Chemical Finish: chemically cleaned with inhibitive chemicals, pretreated with acid chromate-flouride-phosphate conversion coat; Organic Coating: as specified below). Apply in strict accordance with coating and resin manufacturer's instructions by a licensed applicator:

      (1) Fluoropolymer 2-Coat System, where shown on the Contract Drawings: Manufacturer's standard 2-coat thermo-cured system composed of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinyldene (PVDF) resin by weight, complying with AAMA 2605.

      (2) Fluoropolymer 3-Coat System, where shown on the Contract Drawings: Manufacturer's standard 3-coat thermo-cured system composed of specially formulated inhibitive primer, fluoropolymer topcoat, with both color coat and clear coat containing not less than 70 percent PVDF resin by weight, complying with AAMA 2605.

b. Resin Manufacturers

Subject to compliance with requirements, fluoropolymer coating systems shall contain resins produced by Arkema Group ("Kynar 500") or by Solvay Solexis, Inc. ("Hylar 5000").

c. Colors or color matches and gloss shall be as shown on the Contract Drawings or, if not otherwise shown, as selected by the Engineer from manufacturer's full color range.

C. Paint Finish on Galvanized Steel Sheet

1. Surface Preparation

Clean surfaces of dirt, grease and other contaminants. Follow with a conversion coating of type suitable for organic coating application. Clean welds, mechanical connections and abraded areas. Follow with SSPC-Paint 20 galvanizing repair paint with dry film containing minimum 94 percent zinc dust content, applied in accordance with ASTM A 780.

2. Shop Priming for Field Painted Finish

Where field painting after installation is shown on the Contract Drawings, apply air-dried primer, specified in Division 9 Section on Painting, immediately following cleaning and pretreatment.

D. Paint Finish on Uncoated Steel Sheet

1. Surface Preparation

Solvent-clean surfaces in compliance with SSPC-SP 1 to remove dirt, oil, grease and other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel in compliance with SSPC-SP 5 or SSPC-SP 8.

2. Shop Priming for Field Painted Finish

Apply shop primer, specified in Division 9 Section on Painting, immediately following surface preparation and pretreatment.

E. Baked Enamel Finish on Steel

To be used as a steel or galvanized steel finish system where shown on the Contract Drawings.

1. Immediately after cleaning and pretreatment, apply manufacturer's standard 2-coat baked enamel finish, consisting of prime coat and thermosetting topcoat, with not less than 1.0 mil dry film thickness for topcoat. Comply with paint manufacturer's instructions for application and baking to achieve a minimum dry film thickness of 2.0 mils.

2. Color and Gloss: As shown on the Contract Drawings by reference to manufacturer's standard color and gloss designations.

F. Porcelain Enamel on Steel

1. Preparation: Porcelain enamel face panels shall be thoroughly cleaned, degreased, acid etched and neutralized.

2. Application: Apply porcelain enamel by spray application. Panels shall be given a ground coat of porcelain enamel on all surfaces. Panel surfaces exposed to the weather shall be given a cover coat of porcelain enamel necessary to produce the specified colors. Back and other concealed panel areas shall be given at least one coat of porcelain enamel in addition to the ground coat, for protection and as an aid to maintain shape during firing. Ground coat thickness shall be minimum 2.5 mils. Combined ground and cover coat thickness on the front or exposed surface of panels shall be minimum 8.5 mils.

   a. Fire panels at approximately 1450 degrees F in a continuous furnace to properly fuse the porcelain enamel to the metal and ensure color uniformity.

   b. Check colors and gloss of the porcelain enamel finish during each production run. Produce colors and gloss finishes within the limits established by porcelain samples approved by the Engineer.

   c. Fabrications of porcelain steel panel units shall be formed in shape and size in accordance with approved Shop Drawings with allowable tolerances of plus or minus 1/16 inch.

3. Weather Resistance: The porcelain enamel finish on surfaces exposed to weathering shall pass the acid spot test in accordance with ASTM C 283. In addition, red, yellow and orange porcelain enamels, if any, shall pass the cupric sulfate test in accordance with ASTM C 538.

4. Continuity of Coating: Visual inspection of each piece shall reveal no visible breaks or surface defects in the cover coating that expose the underlying coating or the steel on surfaces exposed to weathering, nor the underlying steel on either the back or flanges. This requirement shall not apply to sheared edges.

5. Surface Appearance: Porcelain enamel on surfaces exposed to weathering shall be free of blemishes in the coating that may impair the serviceability or detract from the general appearance of the panel when viewed from a 5 foot distance.

6. Compliance Statement: Obtain from manufacturers at time of submission of bid written certification that the porcelain enameling will be performed in accordance with PEI 1001.

G. Stainless Steel Finishes

Finish designations prefixed by "AISI" conform to the system established by the American Iron and Steel Institute for designating stainless steel finishes, listed in NAAMM's Metal Finishes Manual for Architectural and Metal Products.

1. Remove or blend tool and die marks and stretch lines into finish.

2. Grind and polish surfaces to produce uniform, directional, textured and polished finish indicated, free of cross scratches. Run grain of directional finishes with long dimension of each piece.

3. Furnish one or more of the following finishes, where shown on the Contract Drawings:

   a. Bright, Directional Polish: AISI No. 4 finish.

   b. Satin, Directional Polish: AISI No. 6 finish.

   c. Satin, Reflective, Directional Polish: AISI No. 7 finish.

   d. Mirror-Like Reflective, Nondirectional Polish: AISI No. 7 finish.

   e. Nondirectional Finish: #BJNDF-60 finish, as manufactured by Milgo Industrial, Inc., Brooklyn, NY or approved equal. Refer to Division 5 Section on Stainless Steel Finish for requirements.

4. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

PART 3. EXECUTION

3.01 PREPARATION

Coordinate setting drawings, diagrams, templates, instructions and directions for the installation of anchorages and miscellaneous items having integral anchors, that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to the construction site.

3.02 INSTALLATION

A. Locate and place sheet metal fabrications plumb, level and in alignment with adjacent construction.

B. Use concealed anchorages where possible. Fit brass or lead washers to screws where required to protect sheet metal surfaces and to make weather-tight connections.

C. Form tight joints with exposed connections accurately fitted together. Provide reveals and openings for joint sealants as shown on the Contract Drawings. Joint sealants for exposed joints are specified in another Division 7 Section.

D. Install concealed gaskets, flashing, sealants, fillers and insulation as the Work progresses to make exterior installations weather-tight and sealed and to make interior installations sealed or soundproof as shown on the Contract Drawings.

E. Corrosion Protection: Protect zinc-coated, galvanized and nonferrous metal surfaces from corrosion or galvanic action by application of a heavy coating of bituminous paint on surfaces that come in contact with concrete, masonry or dissimilar metals.

3.03 ADJUSTING

Repair finishes damaged during installation and construction period so that no evidence remains of correction. Return items that cannot be field refinished to the factory. Make required alterations and refinish entire unit or furnish and install new units as directed by the Engineer.

3.04 PROTECTION

Protect finishes of sheet metal fabrications from damage during construction period. Remove temporary protective coverings immediately prior to inspection for issuance of the Certificate of Partial or Final Completion, as applicable for the Work of this Contract.

END OF SECTION

SECTION 05580

SHEET METAL FABRICATIONS

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1 - GENERAL PROVISIONS:

A. Product Data

For each type of product specified in this Section where shown on the Contract Drawings.

B. Shop Drawings

For sheet metal fabrications, including plans, elevations and detail sections. Indicate jointing, fasteners, anchorage and accessory items and specify finishes.

1. Coordination drawings for sheet metal fabrications housing items specified under other Sections.

C. Samples

1. For selection: Manufacturer's standard samples and color charts indicating full range of color, texture and patterns.
2. For verification purposes: 8 inch square units of each metal finish, color, texture and pattern shown on the Contract Drawings, prepared on metal of same composition and thickness to be used in final construction.
   a. For color anodized aluminum, submit sets for each color, texture and pattern shown on the Contract Drawings showing full range of variations expected in these characteristics.

D. Certifications

Porcelain Enamel Finish, if any: Compliance with PEI 1001.

E. Design Calculations

Where installed products are indicated in this Section or shown on the Contract Drawings to comply with certain structural performance criteria, include structural computations, material properties and other information needed for structural analysis that has been prepared by, or under the supervision of a qualified professional engineer licensed in the state in which the Work is to be performed. Information submitted shall be signed and sealed with a professional seal for the State in which the Work is to be performed.

F. Qualifications

1. Manufacturer: Demonstrate capabilities and experience. Include list of completed projects with project names, addresses, names of architects and owners.

2. Professional Engineer: Demonstrate capabilities and experience. Include list of completed projects with project names, addressees, names of architects and owners.

3. Welder: Evidence of current AWS certification.

G. Sustainable Design Submittal Requirements:

The Contractor shall submit the Sustainable Design certification items listed herein. Sustainable Design submittals shall include the following:

1. A completed Sustainable Design Materials Certification Form (SDMCF), appended to Division 1 - GENERAL PROVISIONS. Information to be supplied for this form shall include:

   a. Cost breakdowns for the materials included in the Contractor's Work. Cost breakdowns shall include total cost plus itemized material costs.

   b. Where required by the Sustainable Design Performance Criteria of this Section, the following information shall also be supplied:

      (1) The amount of post-consumer and/or post-industrial recycled content in the supplied product(s).

      (2) The manufacturing location of the supplied product(s).

      (3) The location (source) of the raw materials used to manufacture the supplied product(s).

      (4) The VOC content of all adhesives, sealants, paints, and coatings applied on site as part of this Work.

2. Published product literature or letters of Certification, provided from the product manufacturer on the manufacturer's letterhead, to verify the product information supplied for the SDMCF.

3. Product cut sheets for materials that meet the SDMCF.

4. Material Safety Data Sheets (MSDS), for applicable products. Applicable products include, but are not limited to field-applied adhesives, sealants, carpets, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).

5. The Sustainable Design submittal information shall be assembled into one (1) package per Section or trade, and sent to the Engineer.

END OF APPENDIX "A"

DIVISION 2

SECTION 02501

SILANE SEALER

PART 1. GENERAL

1.01 SUMMARY

This Section specifies requirements for silane sealer for use on concrete surface.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

American Society for Testing and Materials (ASTM)

ASTM C 642 Test Method for Specific Gravity, Absorption, and Voids in Hardened Concrete

National Cooperative Highway Research Program (NCHRP)

REPORT 244 Concrete Sealers for Protection of Bridge Structures

1.03 ENVIRONMENTAL REQUIREMENTS

A. Do not apply sealer if rain is forecast within 12 hours of the completion of sealer application.

B. Do not apply sealer to a wet surface. Surfaces must dry at least 24 hours following rain, water cleaning or other moisture.

C. Do not apply silane sealer when ambient or pavement temperature is 40 degrees F, or below, except where the manufacturer establishes a lower limit for application.

D. Do not apply silane sealer in direct sunlight when ambient or pavement temperature is 90 degrees F, or higher.

1.04 QUALITY CONTROL/ASSURANCE

A. At locations determined by the Engineer, the Contractor shall perform one test installation to demonstrate his ability in performing the Work in strict compliance with the requirements of this section and to the satisfaction of the Engineer. The Contractor shall submit the plan for the test to the Engineer for approval. The sample test installation shall be performed in the same manner as proposed for production Work. The production Work shall be performed after approval of the test installation.

B. The Engineer will take 2" diameter core samples, one core for every 500 square feet of surface sealed. For acceptance the cores shall show evidence of 0.1 inch minimum surface penetration and 85% reduction in Water absorption, per ASTM C 642 entitled "Test Method for Specific Gravity, Absorption, and Voids in Hardened Concrete". Core holes shall be patched by the Contractor in an approved method and finished to match adjacent surfaces to the satisfaction of the Engineer.

C. Where results from test installations or Engineer's sampling are found to be unacceptable, the Contractor shall propose a method for correcting all unacceptable Work, correct the Work to the satisfaction of the Engineer and take those measures necessary to assure that all subsequent repair Work will be acceptable, all at no additional cost to the Authority. Measures shall include any or all of the following: modification of equipment, changing repair materials, or employment of more competent personnel.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver silane sealer to the construction site in its original, unopened containers with the manufacturer's lot numbers clearly marked on the containers. Include with the delivery a manufacturer's invoice stating the date(s) of shipment and lot numbers of the silane sealer to be used.

B. Store silane sealer at ambient temperatures in accordance with the manufacturer's recommendation.

C. Silane sealer which has been in storage more than the time recommended by the manufacturer shall not be used and shall be removed from the construction site immediately.

1.06 SUBMITTALS

See Appendix "A" for submittals requirements.

PART 2. PRODUCTS

2.01 MATERIALS

Breathable penetrating silane sealer (40% solids content, minimum) such as:

	Brand Name	Supplier/Location
A.	Chem-Trete BSM 40 VOC3	Huls America/Piscataway, NJ
B.	Dynasylan BH-N3	Huls America/Piscataway, NJ
C.	Isoflex 6183	Harry S. Peterson, Inc./Berea, OH
D.	Klereseal 940-S3	Pecora Corporation/Harleysville, PA
E.	Masterseal SL 403	Master Buildings, Inc. /Streetsboro, OH
F.	Sil-Act ATS 423	Advanced Chemical Technologies/Oklahoma City, OK
G.	Weather Worker S-100 (J-29A)	Dayton Superior /Pine Plains, NY
H.	Enviroseal 403	Harris Specialty Chemicals, Inc./Jacksonville, FL
I.	Approved equal	

Requests for an approved equal shall include laboratory data showing at least a 94% reduction in absorbed chlorides when tested in accordance with the procedures of NCHRP Report 244, "Concrete Sealers for Protection of Bridge Structures", Series IV, Southern Exposure, and 75% weight gain reduction due to water absorption in accordance with Series II.

PART 3. EXECUTION

3.01 PREPARATION

A. Clean substrate surface, in accordance with the Section entitled "ABRASIVE BLASTING OF PAVEMENTS", to remove substances which may interfere with the penetration of the sealer into the concrete matrix.

B. Vacuum surfaces after cleaning to remove all residue, dirt, sand and grit. Dispose of material off of Authority property.

C. Protect adjoining construction from spillage or over-spray of sealer prior to commencement of application. Mask manholes, drains and other construction not to be sealed.

D. Do not seal freshly placed concrete until it has cured a minimum of 30 days.

3.02 APPLICATION

Apply sealer on surfaces to be sealed in two complete applications where shown on the Contract Drawings. Horizontal surfaces shall be soaked with the sealer and the application shall continue until the surface ponds for a minimum period of five seconds. Roll out any excess sealer that does not penetrate. Comply with the manufacturer's instructions and recommendations, using the manufacturer's recommended application method and rate.

END OF SECTION

SECTION 02501

SILANE SEALER

APPENDIX "A"

SUBMITTALS

A. Submit to the Manager, Materials Engineering Division, Port Authority Technical Center, 241 Erie Street, Jersey City, NJ 07310-1397, one quart sample of silane sealer for approval.

B. Submit the manufacturer's specifications, installation instructions and general recommendations in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1 - GENERAL PROVISIONS.

C. Submit to the Manager, Materials Engineering Division, certification of compliance with the Volatile Organic Compounds (VOC) regulations of the state or city in which the application will occur. If application under this contract will take place in both states, the more stringent regulation shall apply for the entire contract.

END OF APPENDIX "A"

SECTION 02501

SILANE SEALER

INSTRUCTIONS TO SPECIFIER

1.01 CONTRACT DRAWINGS

Ensure that the Contract Drawings show the following items specified in the text:

(3.02) Surfaces to be coated with sealer

(3.02) Rate of application if other than that recommended by manufacturer.

1.02 OTHER ITEMS

(3.01 A) references the Section "ABRASIVE BLASTING." Ensure that the specifications include this Section.

END OF INSTRUCTIONS

SPECIFICATIONS

DIVISION 1

GENERAL PROVISIONS

1. CONSTRUCTION REQUIRED BY THE SPECIFICATIONS

These Specifications relate generally to the redevelopment of the Reserved Premises of the George Washington Bridge Bus Station, in which the bus operations will be consolidated to Level 3 of the West Building of the Station.

These Specifications require the doing of all things necessary or proper for or incidental to the matter referred to in the immediately preceding paragraph, as shown on the Contract Drawings in their present form. In addition, all things shown on the Contract Drawings even though not expressly mentioned in these Specifications, all things mentioned in these Specifications even though not shown on the Contract Drawings, and all things not specified either on the Contract Drawings, or in the Specifications but involved in carrying out their intent and in the complete and proper execution of the matter referred to in the immediately preceding paragraph are required by these Specifications; and the Contractor shall perform the same as though they were specifically delineated, described and mentioned.

In case of a conflict between a requirement of the Contract Drawings and a requirement in Division 1 of the Specifications, the requirement of Division 1 shall control. In case of a conflict between a requirement contained in other Divisions of the Specifications and a requirement of the Contract Drawings, the requirement of the Contract Drawings shall control.

Some Sections of the Specifications make cross references to construction specified in other Sections of the Specifications, including cross references intended to avoid duplication by the bidders in quoting prices and to point out some of the necessity for coordination. Such cross references are not intended to be complete or all inclusive, and the Contractor shall ascertain for himself both the nature and the extent of all construction which may be related to that under each Section of the Specifications whether or not expressly referred to.

Some Sections of the Specifications contain a general description of the construction under such Sections. Such description is merely a very general one and is not intended to outline the construction required by the Specifications and Contract Drawings. Accordingly, such description shall be construed as in aid of and supplemental to, but in no case limiting, impairing or decreasing, the requirements elsewhere set forth with respect to the construction to be performed.

The Contractor's compensation for all construction whatsoever referred to in the Specifications and Contract Drawings in their present form, even though the need for certain items of such construction may be contingent upon future occurrences or determinations or upon other circumstances, shall be deemed to be included in the price(s) quoted by the Contractor in the Form of Contract unless the Specifications or Contract Drawings expressly state that compensation in addition to such price shall be payable for such items of construction. The express statement in some cases to the effect that certain construction shall be without additional cost to the Authority shall not impair the application of this paragraph in other cases.

The distribution of various parts of the construction among the Divisions and Sections of the Specifications or among the Contract Drawings is not intended as a representation of the most effective or logical method of organizing, scheduling, or subcontracting the construction, and the Contractor shall ascertain for himself how to do so unless otherwise expressly prescribed in this Contract.

In all cases the provisions of the second paragraph of this numbered Section shall control.

SPECIFICATIONS

DIVISION 1

GENERAL PROVISIONS

1. CONSTRUCTION REQUIRED BY THE SPECIFICATIONS

These Specifications relate generally to the redevelopment of the Reserved Premises of the George Washington Bridge Bus Station, in which the bus operations will be consolidated to Level 3 of the West Building of the Station.

These Specifications require the doing of all things necessary or proper for or incidental to the matter referred to in the immediately preceding paragraph, as shown on the Contract Drawings in their present form. In addition, all things shown on the Contract Drawings even though not expressly mentioned in these Specifications, all things mentioned in these Specifications even though not shown on the Contract Drawings, and all things not specified either on the Contract Drawings, or in the Specifications but involved in carrying out their intent and in the complete and proper execution of the matter referred to in the immediately preceding paragraph are required by these Specifications; and the Contractor shall perform the same as though they were specifically delineated, described and mentioned.

In case of a conflict between a requirement of the Contract Drawings and a requirement in Division 1 of the Specifications, the requirement of Division 1 shall control. In case of a conflict between a requirement contained in other Divisions of the Specifications and a requirement of the Contract Drawings, the requirement of the Contract Drawings shall control.

Some Sections of the Specifications make cross references to construction specified in other Sections of the Specifications, including cross references intended to avoid duplication by the bidders in quoting prices and to point out some of the necessity for coordination. Such cross references are not intended to be complete or all inclusive, and the Contractor shall ascertain for himself both the nature and the extent of all construction which may be related to that under each Section of the Specifications whether or not expressly referred to.

Some Sections of the Specifications contain a general description of the construction under such Sections. Such description is merely a very general one and is not intended to outline the construction required by the Specifications and Contract Drawings. Accordingly, such description shall be construed as in aid of and supplemental to, but in no case limiting, impairing or decreasing, the requirements elsewhere set forth with respect to the construction to be performed.

The Contractor's compensation for all construction whatsoever referred to in the Specifications and Contract Drawings in their present form, even though the need for certain items of such construction may be contingent upon future occurrences or determinations or upon other circumstances, shall be deemed to be included in the price(s) quoted by the Contractor in the Form of Contract unless the Specifications or Contract Drawings expressly state that compensation in addition to such price shall be payable for such items of construction. The express statement in some cases to the effect that certain construction shall be without additional cost to the Authority shall not impair the application of this paragraph in other cases.

The distribution of various parts of the construction among the Divisions and Sections of the Specifications or among the Contract Drawings is not intended as a representation of the most effective or logical method of organizing, scheduling, or subcontracting the construction, and the Contractor shall ascertain for himself how to do so unless otherwise expressly prescribed in this Contract.

In all cases the provisions of the second paragraph of this numbered Section shall control.

2. AVAILABLE PROPERTY

Subject to the conditions elsewhere stated herein, those areas to be occupied by the permanent construction will be made available to the Contractor upon the commencement of his first operations at the construction site.

Any additional property which the Contractor desires for his operations shall be obtained by him at his own expense.

The Contractor will be permitted to use only so much of the aforesaid areas as is necessary for the performance of the Contract, and he must at all times so conduct his operations as not to encroach upon or block the portions used by others. The Engineer may at any time make joint or exclusive assignments of particular portions thereof, either to the Contractor or to others, and may take over and use for other purposes any portions which, in the opinion of Engineer, are not required for the performance of the Contract.

The Contractor shall daily clean up the areas made available to him so that they are free at all times of refuse, rubbish, scrap material or debris.

3. OPERATIONS OF OTHERS

During the time that the Contractor is performing the Contract, other persons will be engaged in other operations on or about the construction site including Bus & Facility Operations, which shall remain uninterrupted.

The Contractor shall so plan and conduct his operations as to work in harmony with others engaged at the construction site and not to delay, endanger or interfere with the operations of others (whether or not specifically mentioned above), all to the best interests of the Authority and the public and as may be directed by the Engineer.

4. LABOR ACTIONS

Whenever any labor strike, slowdown, work stoppage, picketing or other labor action which might interfere with the performance of the Contract, or of other Authority or PATH contracts or the operation of any Authority or PATH facility occurs at the construction site or at any other Authority or PATH facility as a result of the Contractor's (or its subcontractor's) utilization of particular means, methods or manpower to perform the Work required by the Contract, the Contractor shall pursue all remedies which are appropriate and available to him to avoid such interference.

5. CONTRACTOR'S MEETINGS

The Contractor shall conduct job progress and coordination meetings with subcontractors in his field office every two weeks, or as frequently as job conditions require or the Engineer may request. The Engineer shall be notified and, at his option, may attend these meetings. The Contractor shall prepare and distribute minutes to the Engineer and the subcontractors within forty-eight (48) hours of the day following the meetings.

The Contractor shall attend separate job progress and coordination meetings with the Engineer every two weeks, or at times otherwise requested by the Engineer.

6. CONTRACT DRAWINGS

The Contract Drawings which accompany and form a part of these Specifications bear the general title "George Washington Bridge Bus Station Redevelopment Project Reserved Premises 100% Stage I Submission 1 April 2011 Conformed Stage I Submission" ("Conformed Set") and include only the Architectural drawings.

The Contract Drawings do not show all of the details of the Work and are intended only to illustrate the character and extent of the Work to be performed. Accordingly, they may be supplemented during the performance of the Work by the Engineer or by the Contractor subject to the approval of the Engineer, to the extent necessary to further illustrate the Work.

An indication on the Contract Drawings of the existence, nature or location of any utilities, structures, obstructions, conditions or materials does not constitute a representation as to the conclusions to be drawn therefrom nor a representation that no others exist in addition to those shown, even in the same location; nor does the absence of any indication on said drawings of the existence, nature or location of any utilities, structures, obstructions, conditions or materials constitute a representation that none exist.

After the Contract has been executed, the Contractor will be furnished with copies of the Specifications and Contract Drawings.

7. RELATED DOCUMENTS

The following documents, called Related Documents, were prepared for use in connection with this Contract, but are not included in the Conformed Set. Said documents are as follows:

A. "George Washington Bridge Bus Station Redevelopment Project Reserved Premises 100% Stage I Submission 29 October 2010," prepared by STV, the A/E of Record, and their Consultants.

B. "George Washington Bridge Bus Station Redevelopment Project Reserved Premises 100% Stage I Submission 29 October 2010," prepared by STV, the A/E of Record, and their Consultants.

An indication on the Reference Drawings of the existence, nature or location of any utilities, structures, obstructions, conditions or materials does not constitute a representation as to the conclusions to be drawn there from nor a representation that no others exist in addition to those shown, even in the same location; nor does the absence of any indication on said drawings of the existence, nature or location of any utilities, structures, obstructions, conditions or materials constitute a representation that none exist.

8. SHOP DRAWINGS, CATALOG CUTS AND SAMPLES

The Contractor shall specifically prepare for this Contract all Shop Drawings which may be required in addition to the Contract Drawings or in addition to any other drawings which the Engineer may issue in supplementing the Contract Drawings.

The specific requirements elsewhere set forth in the Specifications for furnishing Shop Drawings, Catalog Cuts and samples for any particular portion of the Contract shall not limit the obligation of the Contractor to furnish Shop Drawings, Catalog Cuts and samples for any other portion when so required by the Engineer.

The Contractor shall submit a general "Submittal Schedule" for the Engineer's review and approval listing the planned transmittal date and estimated number in each specification section category of Shop Drawings, Catalog Cuts, pages of calculations and samples within 30 days after receipt by the Contractor of the acceptance of the Proposal. A more detailed schedule shall be submitted no less than 30 calendar days prior to the actual date of any submittal.

After checking and verifying all field measurements and after complying with applicable procedures specified hereunder, the Contractor shall submit to the Engineer for review and approval, in accordance with the approved schedule of Shop Drawing submissions, or for other action if so indicated by the Engineer, six copies, unless otherwise requested, of all Shop Drawings which will bear a specific written indication that the Contractor has reviewed the submission for conformance to the requirements of the Contract Drawings and Specifications.

The Port Authority uses Primavera Expedition software to track the status of Submittals provided by the Contractor. In order to facilitate this electronic tracking, the Contractor shall use the transmittal form that is provided at the pre-construction meeting, and shall forward it to the Engineer via a MAPI compliant e-mail system (e.g. Microsoft Outlook, CC mail, Lotus notes, etc.).

The Contractor's transmittals of Submittal data shall fully comply with the numbering and naming conventions and other procedures that will be provided by the Engineer to the Contractor at the pre-construction meeting.

All submissions shall contain specific reference to the contract drawing and technical specification section to which they apply, as indicated below or as otherwise identified, as the Engineer may require. The data shown on the Shop Drawings shall be complete with respect to quantities, dimensions, conformance to the specified performance and design criteria, materials, test results and similar information to enable the Engineer to review the submittal as required.

The Contractor shall also submit six copies to the Engineer for review and approval pursuant to the approved submittal schedule, of all Catalog Cuts and samples for conformance to the requirements of the Contract Drawings and Specifications. All Catalog Cuts and samples shall have been reviewed by the Contractor and shall be accompanied by a specific written indication that the Contractor has reviewed the submittal for conformance with the Contract Drawings and Specifications and shall be identified clearly as to material, supplier, manufacturer's procedures and pertinent data such as catalog numbers and the use for which intended.

Before submission of each Shop Drawing, Catalog Cut and sample, the Contractor shall have determined and verified all quantities, dimensions, conformance to the specified performance and design criteria, installation requirements, materials, catalog numbers and similar data with respect thereto and reviewed and coordinated each Shop Drawing or Catalog Cut with other Shop Drawings and Catalog Cuts and with other requirements of the Work.

At the time of each submission, the Contractor shall give the Engineer specific written notice of each variation in any Shop Drawing, Catalog Cut and sample from the requirements of the Contract Drawings or Specifications and, in addition, shall cause a specific notation of each such variation to be made on each submittal to the Engineer, for review and approval of each such variation.

The Engineer's review and approval of Shop Drawings, Catalog Cuts or samples shall not relieve the Contractor from responsibility for any variation from the requirements of the Contract Drawings or Specifications unless the Contractor has in writing called the Engineer's attention to each such variation at the time of submission as required hereunder and the Chief Engineer has given written approval of each by an express specific written notation thereof incorporated in or accompanying the Shop Drawing, Catalog Cut or sample approval. Approval of Shop Drawings, Catalog Cuts and samples which are inconsistent with the requirements of the Contract Drawings and Specifications shall not be deemed to waive or change such requirements or to relieve the Contractor of his obligations to perform such requirements unless the Chief Engineer shall expressly and specifically state that he is waiving or changing such requirements, as stated above.

Where a Shop Drawing, Catalog Cut or sample is required no related Work shall be performed prior to the Engineer's review and approval of the submission.

The format for Shop Drawings prepared by the Contractor shall be as follows: Standard "D" size drawings with outside cut line dimensions of 22 inches by 34 inches and showing in detail all dimensions and description of materials. Two borders shall be drawn. The first shall be drawn one-half inch from the outside edges (top, bottom, left and right). The second shall be drawn inward to the drawing, one-half inch from the top, bottom and right border lines and one and one-half inch from the left border line. The inside borders on these drawings shall be 20 inches by 31 inches. A title block shall be shown on the right side of the drawing adjacent to the inside border identifying the Contractor's Name, Contract Title, Contract Number, cross-referenced Contract drawing number, Specification reference number and related paragraph and applicable signatures. These drawings shall be arranged in systematic order and numbered consecutively.

Upon receipt of the submittal, the Engineer will review the Shop Drawing, Catalog Cut or sample for conformance to the design information and materials shown on the Contract Drawings and contained in the Specifications. Approval by the Engineer shall not constitute a complete review or approval of the means, methods, techniques, sequences or procedures of construction, except where a specific means, method, technique, sequence or procedure of construction is specifically delineated in or required by the Contract Drawings or Specifications, and the approval shall not constitute a review and approval in regard to safety precautions or programs incident thereto. The review and approval of a separate item will not in itself indicate approval of the assembly in which the item functions. Any design shown on the Shop Drawings and prepared by the Contractor, his subcontractors, their detailers, or their professional engineers is the complete responsibility of the Contractor.

Within the number of working days hereinafter specified after receipt of the Shop Drawing prints, the Engineer shall approve or not approve the same or require corrections or additions to be made thereon. When a shop drawing is not approved or if additions or corrections are required, the Engineer shall return within this period one of the six copies submitted and the Contractor shall make the revisions, corrections or additions shown thereon to be made. The Contractor shall resubmit six prints showing the drawing corrected as required. The Contractor shall direct specific attention in writing to revisions other than the corrections called for by the Engineer on the previous submittal. Each drawing shall be corrected as required until the approval of the Engineer is obtained. After each resubmission, the Engineer shall have the number of working days hereinafter specified in which to approve revisions or corrections.

The number of working days within which the Engineer will advise the Contractor as to whether the Shop Drawings are approved, not approved, or require corrections or additions to be made thereto shall be as follows, except that 20 working days shall be required for the Engineer to review shop drawings submitted with design calculations.

No. of Dwgs. Submitted Within 5 Consecutive Working Days for Each Discipline(*)	No. of Working Days for Engineer To Review Shop Drawings
Up to 50	10
51 to 75	15
More than 75	20
* Disciplines shall be defined as follows: Structural, Architectural, Civil, Geotechnical, Mechanical, Electrical, Traffic and Environmental.	

Failure of the Contractor to provide 30 calendar days advance notice to the Engineer of any submittal shall result in a five (5) working day extension of the number of working days stated in the chart above. In no event shall an extension of the Engineer's review time provided for in this section relieve the Contractor from its duty to meet all contractual Milestone dates.

After approval has been given to any Shop Drawing or Catalog Cut no change will be permitted thereon unless approved in writing by the Engineer.

Before final payment for the Work is made, the Contractor shall submit to the Engineer only those previously approved or approved as noted Shop Drawings, which have been revised by field changes.

The Contractor shall mark-up the approved and approved as noted Shop Drawings directing specific attention to revisions reflecting the permanent construction as actually made. In accordance with the requirements specified in this numbered clause, the Contractor shall submit one original print of these drawings, marked "FINAL SHOP DRAWING – NOT FOR REVIEW", dated, and signed by the Contractor to the Engineer for verification. By signature, the Contractor is verifying that the drawing reflects the as-constructed condition.

All drawings, data, calculations and other papers of any type whatsoever, whether in the form of writing, figures or delineations, which are prepared in connection with this Contract and submitted to the Authority shall become the property of the Authority. The Authority shall have the non-exclusive right to use or permit the use of all such drawings, data and other papers and any ideas or methods represented thereby for any purpose and at any time without additional compensation. No such papers shall be deemed to have been given in confidence. Any statement or legend to the contrary in connection with such drawings, data or other papers and in conflict with the provisions of this paragraph shall be void and of no effect.

9. SUBSTITUTION

Where a proprietary item or make is specified or mentioned herein or called for or mentioned on the Contract Drawings and the phrases "similar and equal to" or "approved equal" are used in connection therewith, the utilization of any other item or make will be deemed a substitution. Substitution for the proprietary item or make specifically named may be made only in accordance with the Section hereof entitled "Workmanship and Materials" and in accordance with the following.

Whenever materials or equipment are specified or described in the Contract Drawings or Specifications by using the name of a proprietary item or the name of a particular supplier, the naming of the item is intended to establish the type, function and quality required. Unless the name is followed by words indicating that no substitution is permitted, materials or equipment of another supplier or manufacturer may be accepted by the Engineer if sufficient information and proof is submitted by the Contractor to permit the Engineer to determine that the material or equipment proposed is equivalent or equal to that named and the Engineer approves the substitution. The procedure for review by the Engineer will include the following. Requests for review of substitute items of material and equipment will not be accepted by the Engineer from anyone other than the Contractor. If the Contractor wishes to furnish or use a substitute item of material or equipment, the Contractor shall make a timely written application to the Engineer for approval thereof, certifying that the proposed substitution will perform at least the identical functions and achieve at least the identical results called for by the specified product and otherwise be equal to the specified product with regard to, but not limited to, durability, maintenance, strength, energy costs and record of proven performance. The application shall state that the evaluation and approval of the proposed substitution shall not delay the Contractor's completion of the Work as required by the Contract, whether or not approval of the substitution will require a change in the construction and, in no event will the Contractor be granted an extension of time for completion of any portion of the Work for reasons related directly or indirectly to the evaluation of the proposed substitution or to the proposed substitution itself. Any variations of the proposed substitution from that specified shall be identified in the application, and maintenance, repair and replacement services for the substitution shall be indicated. The Engineer may require the Contractor to furnish at the Contractor's expense additional laboratory test data concerning the proposed substitution.

Such submission to the Engineer shall be made only by including the requested substitution in the list of materials required to be submitted to the Engineer in accordance with the Section hereof entitled "Inspections and Rejections" within forty-five calendar days after the receipt of the acceptance of the Contractor's Proposal. After the approval of said list, no substitutions will be permitted, except that a brand or make named in the Specifications may be submitted for approval in lieu of a brand or make on said list. Any such submission shall not imply, or impose on the Engineer, any obligation whatsoever to discuss, disclose or justify the reasons for his opinion, approval, acceptance or rejection.

The Engineer shall be the sole judge of as to whether a proposed substitution will be approved, and no substitution shall be ordered or utilized without the Engineer's prior written approval. The Engineer may require Contractor to furnish at Contractor's expense a special performance guarantee or other assurance with respect to any approved substitution. Furthermore, the approval of any substitute proprietary item or make shall not in any way entitle the Contractor to additional compensation therefor.

Notwithstanding such approval, however, the Contractor assumes the risk that such approved substitute item or make is not equal to that shown or specified and if at any time the substitution shall appear not to be so equal he shall replace the substitution with that originally shown on the Contract Drawings or called for in the Specifications at his own cost and reimburse the Authority for any loss occurring on account of the substitution failing to be equal, notwithstanding that it had been previously approved for use by the Engineer.

The construction called for by the Contract Drawings and Specifications may be adapted for a particular proprietary item or make of material or equipment. Therefore, if any construction not required by the Contract Drawings or Specifications in their present form is necessary or desirable because of the use of substitute item or make of material or equipment (even though such other item or make is approved by the Engineer), such construction shall be furnished or performed by the Contractor at his expense and subject to the approval of the Engineer.

10. WORKMANSHIP AND MATERIALS

Workmanship and materials shall in every respect be free from defects of any kind and shall be in accordance with the best modern practice and whenever the Contract Drawings, Specifications or directions of the Engineer admit of a doubt as to what is permissible or fail to note the quality of any construction the interpretation which calls for the best quality is to be followed. Workmanship shall conform to applicable Specifications, manufacturer's instructions and recommendations for installation of products for the applications shown on the Contract Drawings, all of which shall be subject to the provisions of the Section of Division 1 GENERAL PROVISIONS entitled "Inspections and Rejections".

All items provided in this contract that use dates in the recording, storing or processing of information shall use such dates correctly at all times including using such dates correctly in the recording, storing or processing of information after January 1, 2000 (Year 2000 Compliant).

Materials and Equipment incorporated into the Work shall be new except as may be otherwise herein specifically required, and shall comply with make, size, type and quality specified, or as specifically approved in writing by the Chief Engineer in accordance with the Section of Division 1 GENERAL PROVISIONS entitled "Substitution".

Reference to standards of any society, institution, association, or governmental authority in the Specifications or on the Contract Drawings, whether specific or by implication, shall mean for such standards which are part of the building code in effect for Work of this Contract the edition date published in such code; and such references which are not part of the building code, shall mean the latest edition date in effect at the time of opening of Proposals upon the present Contract unless specifically stated otherwise.

If required by the Engineer, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment to be employed by the Contractor in performing the Work. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the approved instructions of the applicable supplier except as otherwise provided in the Contract Drawings or Specifications.

In case of a discrepancy between a description or requirement in the Contract Drawings and Specifications for any material or equipment and a catalog number or other designation for the same material or equipment (even though stated to be acceptable), the description or requirements shall control.

In various paragraphs of these Specifications, references may be made to certain standard or tentative specifications or requirements of various organizations. Unless otherwise stated, these references are to be construed as referring to the specifications and requirements in effect on the date set for opening bids upon the present Contract.

All inventions, ideas, designs and methods contained in the Specifications and Contract Drawings in which the Authority has or may acquire patent, copyright or other property rights are hereby expressly reserved for the exclusive use of the Authority. The Specifications and Contract Drawings contain confidential information which is disclosed only to enable this Contract to be performed. Said Specifications and Drawings must not be used for any purpose detrimental to the interest of the Authority and must not be produced or copied in whole or in part or used for furnishing information to others without the written consent of the Authority, provided, however, that the Contractor may, when the performance of the Contract so requires, furnish said information to others for the purpose of engaging or informing subcontractors and materialmen.

If, in accordance with this Contract, the Contractor furnishes research, development or consultative services in connection with the performance of the Contract and if in the course of such research, development or consultation patentable subject matter is produced by the Contractor, its officers, agents, employees, subcontractors or materialmen, the Authority shall have, without cost or expense to it, an irrevocable, non-exclusive, royalty-free license to make, have made, and use, either itself or by anyone on its behalf, such subject matter in connection with any activity now or hereafter engaged in or permitted by the Authority. Promptly upon request by the Authority, the Contractor shall furnish or obtain from the appropriate person a form of license satisfactory to the Authority, but as between the Contractor and the Authority the license herein provided for shall nevertheless arise for the benefit of the Authority immediately upon the production of said subject matter and shall not await formal exemplification in a written license agreement as provided for above. Such license may be transferred by the Authority to its successors, immediate or otherwise, in the operation or ownership of any real or personal property now or hereafter owned or operated by the Authority, but such license shall not be otherwise transferable.

The right to use all material, software, firmware, compositions of matter, manufactures, apparatus, appliances, processes of manufacture or types of construction required in connection with this Contract and to which a patent, copyright or other intellectual property right applies or may apply shall be obtained by the Contractor without separate or additional compensation whether the same is patented, copyrighted or otherwise protected as an intellectual property right before, during or after the performance of the Contract.

The Contractor shall indemnify the Authority against and save it harmless from all loss and expense incurred in the defense, settlement or satisfaction of any claims in the nature of patent, copyright or other intellectual property right infringement arising out of or in connection with the Authority use, in accordance with the preceding two paragraphs of this numbered clause, of such subject matter or material, software, firmware, compositions of matter, manufactures, apparatus, appliances, processes of manufacture or types of construction to which a patent, copyright or other intellectual property right applies or may apply. If requested by the Authority and if notified promptly in writing of any such claim, the Contractor shall conduct all negotiations with respect to and defend such claim without expense to the Authority. If the Authority be enjoined from using any of the facilities which form the subject matter of this Contract and as to which the Contractor is to indemnify the Authority against patent, copyright or other intellectual property right claims, the Authority may, at its option and without thereby limiting any other right it may have hereunder or at law or in equity, require the Contractor to supply, temporarily or permanently, facilities not subject to such injunction and not infringing any patent, copyright or other intellectual property right or to remove all such facilities and refund the cost thereof to the Authority or to take such steps as may be necessary to ensure compliance by the Authority with such injunction, all to the satisfaction of the Authority and all without cost or expense to the Authority.

11. INSPECTIONS AND REJECTIONS

All Work and all construction, processes of manufacture and methods of construction involved in or related to the performance of the Work shall be at all times and places subject to the inspection of the Engineer, acting personally or through his Inspectors, and the enumeration in these Specifications of particular portions of such Work, construction, processes of manufacture or methods of construction which will or may be inspected by the Engineer or such Inspectors shall not be deemed to imply that only such Work, construction, processes of manufacture and methods of construction will or may be so inspected. The Engineer shall be the judge of the quality and suitability of the Work, construction, processes of manufacture and methods of construction for the purposes for which they are used or to be used. Should they fail to meet his approval they shall be forthwith reconstructed, made good, replaced or corrected, as the case may be, by the Contractor at his own expense. Rejected material shall be removed immediately from the site. The fact that the Inspectors have approved the materials and workmanship shall not relieve the Contractor from his obligation to supply other material and workmanship when so ordered by the Engineer.

The Contractor , at his own expense, shall furnish such facilities and give such assistance for inspection as the Engineer may direct. In the case of materials required by the Specifications to be inspected in the factory or plant, and in the case of any other items which the Engineer may designate, the Contractor shall secure for the Engineer and his Inspectors free access to all parts of such factories or plants and shall furnish to the Engineer three copies of purchase orders, two copies of mill shipping statements and four copies of shipping statements. Moreover, in the case of such materials to be factory or plant inspected, the Contractor shall give at least ten days' notice to the Engineer of his intention to commence the manufacture or preparation of such materials.

Other than the materials and equipment specifically required to be inspected at the manufacturer's factory or plant, all materials will be inspected at the construction site and any portions thereof which are rejected by the Engineer shall be immediately removed from the construction site by the Contractor and shall be replaced with new materials by the Contractor at his own expense.

In the case of materials to be inspected at the construction site, the Contractor shall submit a list of all such materials in triplicate to the Engineer for his approval prior to ordering same. The list shall be submitted within forty-five calendar days after receipt of the notice of acceptance and shall contain the following information:

A. Classification of submittal in accordance with the following:

Class I - A submittal for record of an expressly specified item.

Class II - A submittal of an item which conforms to an express generic specification or a submittal which is deemed by the Contractor to be identical to an expressly specified item.

Class III - A submittal which is deemed by the Contractor to be functionally equivalent but not identical to a specified item.

B. In the case of Class II and Class III, the Contractor shall supply adequate information to the Engineer to enable the Engineer to compare the specified item and the proposed substitution. Information shall include, but need not be limited to, technical specifications, Catalog Cuts, drawings, references to existing installations and test data, or any other data required by the Engineer.

C. In the case of fabricated materials for which Shop Drawings are to be prepared, a brief description of the material and the statement "see Shop Drawings".

D. In the case of materials or equipment listed in manufacturer's catalogs, the list shall contain the vendor's name, the manufacturer's name, brand name, style designation, catalog number and, where the Specifications require catalog cuts, the statement "see catalog cut".

E. In the case of materials or equipment for which Shop Drawings are not to be prepared, and which are not listed in any catalog, the list shall contain a complete description of the material or equipment, which shall be in sufficient detail to describe completely the materials or equipment and quality therefor.

The Engineer shall advise the Contractor whether said list is approved or requires corrections or additions within the number of working days indicated in the chart below:

Type of Submittal	No. of Working Days for Engineer to Approve/Disapprove Items
Class I Material submittals	10

Portland Cement mix designs that require confirmation of the 28-day properties	35
Changes in asphalt mix designs that need to be confirmed with a batch mix at the plant	35
Class II Material submittals	20
Class III Material submittals	30

Failure of the Contractor to provide 30 calendar days advance notice to the Engineer of any submittal shall result in a five (5) working day extension of the number of days stated in the chart above. In no event shall an extension of the Engineer's review time provided for in this section relieve the Contractor from its duty to meet all contractual Milestone dates.

Within ten working days after receipt of said list, the Engineer shall notify the Contractor of which items are approved and which disapproved. Within two working days thereafter, the Contractor shall resubmit a new list covering those items which were disapproved. After each such re-submission the Engineer shall have a similar period of ten days in which to approve or disapprove.

Should materials or equipment be delivered to the construction site without having been placed on the aforementioned list and approved, it shall be immediately removed from the construction site by the Contractor at his own expense.

12. MANUFACTURERS' CERTIFICATION

Where materials and equipment are required by these Specifications to conform to certain standard or tentative specifications or requirements of any organizations, including American Society for Testing and Materials, American National Standards Institute, Association Rules for Grading Lumber, Federal Specifications, National Electrical Manufacturers Association, American Association of State Highway and Transportation Officials, American Water Works Association and the International Municipal Signal Association, the Contractor shall furnish to the Engineer the manufacturer's written certification that each of the materials or equipment conforms to the foregoing standard or tentative specifications. The certification shall be delivered to the Engineer prior to installation of the materials to which it refers. Such certifications shall not be binding or conclusive on the Authority and may be rejected at any time by the Engineer if incorrect, improper or otherwise unsatisfactory in his opinion.

13. NO RELEASE OF CONTRACTOR

Any provision of this Contract for testing, inspection or approval, and any actual testing, inspection or approval, of any materials, workmanship, plant, equipment, drawings, program, methods of procedure, or of any other thing done or furnished or proposed by the Contractor to be done or furnished in connection with the Contract is for the benefit of the Authority not the Contractor. Any approval of such things shall be construed merely to mean that at that time the Engineer knows of no good reason for objecting thereto. No such provision for testing or inspection, no omission of testing or inspection, and no such approval shall release the Contractor from his full responsibility for the accurate and complete performance of the Contract in accordance with the Contract Drawings and Specifications or from any duty, obligation or liability imposed upon him by the Contract or from responsibility for injuries to persons or damage to property.

14. ERRORS AND DISCREPANCIES

If, in the performance of the Contract, the Contractor discovers any errors or omissions in the Contract Drawings or Specifications, or in the marks, lines and elevations furnished by the Authority in the construction undertaken and executed by him, he shall immediately notify the Engineer and the Engineer shall promptly verify the same.

If with the knowledge of such error or omission and prior to the correction thereof, the Contractor proceeds with any construction affected thereby, he shall do so at his own risk and the construction so done shall not be considered as construction done under and in performance of this Contract unless and until approved and accepted.

15. DIFFERING SUBSURFACE CONDITIONS

If during the performance of Work, the Contractor becomes aware of any unanticipated subsurface conditions or has cause to suspect the presence of such condition, then the Contractor shall immediately notify the Engineer, or designee thereof verbally, to be followed immediately by written notification. The Contractor shall specify the nature, location, and impact on the Work of such conditions. The Contractor shall immediately stop Work in and secure the area against injury to persons or damage to property pending further instructions from the Engineer.

The Contractor shall then conduct all necessary investigations and testing of the subsurface conditions as directed by the Engineer to identify the character and extent of the unanticipated subsurface conditions and/or to satisfy applicable Federal, State and local laws, codes and ordinances and regulations and shall notify the Engineer accordingly. The investigation program shall be submitted to the Engineer for review and approval.

In the event the Contractor discovers such subsurface conditions during the performance of the Work and (i) special handling of such condition is necessary and required for the performance of the Work as determined by the Engineer; (ii) such special handling cannot be avoided or mitigated by the exercise of reasonable measures by the Contractor; and (iii) the Contractor actually incurs increased costs caused by such condition that could not have been reasonably anticipated from the Contract Drawings, Reference Drawings and Specifications and inspection of the construction site; then in such event, as approved by the Engineer, the Contractor shall, notwithstanding any provision in this Contract to the contrary, be compensated for such costs for special handling, including the necessary investigations and testing of subsurface conditions, in accordance with the provisions of the clause entitled "Compensation for Extra Work".

16. ACCIDENTS AND FIRST AID PROVISIONS

The Contractor shall promptly report in writing to the Engineer and to the Authority Manager, Claims Administration all accidents whatsoever arising out of or in connection with the performance of the Contract, whether on or adjacent to the construction site, which result in death, injuries or property damage, giving full details and statements of witnesses. In addition, if death or serious injuries or serious damage is caused, the accident shall be reported immediately by telephone to both of the said representatives of the Authority.

The Contractor shall provide at the construction site such equipment and medical facilities as are necessary to supply first aid service, in case of accident, to any who may be injured in the progress of the Contract. He shall have standing arrangements for the removal and hospital treatment of any person who may be injured while engaged in the performance of the Contract.

If any claim is made by any third person against the Contractor or any subcontractor on account of any accident, the Contractor shall promptly report the fact in writing to the aforementioned representatives of the Authority, giving full details of the claim.

17. SAFETY PROVISIONS

In the performance of the Contract, the Contractor shall exercise every precaution to prevent injury to workers and the public or damage to property.

He shall, at his own expense, provide temporary structures, place such watchmen, design and erect such barricades, fences and railings, give such warnings, display such lights, signals and signs, exercise such precaution against fire, adopt and enforce such rules and regulations, and take such other precautions as may be necessary, desirable or proper, or as may be directed.

The Contractor shall employ for Work of the Contract a competent person conforming to the requirements of the Code of Federal Regulations 29 CFR 1926.32(f) who shall be designated by the Contractor as authorized to perform the duties required by 29 CFR 1926 et seq. as applicable for Work of this Contract.

Obtain and submit to the Engineer one copy of material safety data sheet (MSDS) conforming to the requirements of 29 CFR 1910.1200(g) for each hazardous chemical utilized for permanent and consumable materials employed for Work of this Contract.

The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. The Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss, including but not limited to:

A. All employees on the Work, the public, and other persons and entities who may be affected thereby;

B. All the Work, materials and equipment to be incorporated therein, whether in storage on or off the site; and

C. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and underground facilities not designated for removal, relocation or replacement in the course of construction.

The Contractor's duties and responsibilities for the safety and protection of the Work shall continue until such time as all the Work is completed and the Contractor has removed all workers, material and equipment from the construction site, or the issuance of the Certificate of Final Completion, whichever shall occur last.

Until fire protection needs are supplied by permanent facilities under this Contract, install and maintain temporary fire protection facilities. Comply with requirements of National Fire Protection Association NFPA 10 "Standard for Portable Fire Extinguishers" and NFPA 241 "Standard for Safeguarding Construction, Alteration and Demolition Operations".

The Contractor shall employ only such men as are physically fit and are free from contagious or communicable diseases.

The Contractor shall use only machinery and equipment adapted to operate with the least possible noise, and shall so conduct his operations that annoyance to occupants of nearby property and the general public will be reduced to a minimum.

The bringing of intoxicating substances onto the construction site and the use or consumption of intoxicating substances at the construction site are prohibited. It shall be the responsibility of the Contractor to insure that all employees of the Contractor and of all subcontractors, materialmen and any other persons under contract to or under the control of the Contractor shall comply with the provisions of this paragraph.

The Contractor shall daily clean up all refuse, rubbish, scrap materials and debris caused by his operations, to the end that at all times the construction site shall present a neat, orderly and workmanlike appearance. Before the Certificate of Final Completion of Work will be issued, the Contractor shall remove all surplus materials, falsework, temporary fences and other temporary structures, including foundations thereof, plant of any description and debris of every nature resulting from his operations and shall put the construction site in a neat, orderly condition.

In the event the Contractor encounters at the construction site, material reasonably believed to be asbestos, polychlorinated biphenyl (PCB) or any other hazardous material, the Contractor shall immediately stop Work in the area affected and report the condition in writing to the Engineer. Work in the affected area shall not thereafter be resumed by the Contractor except upon the issuance of a written order to that effect from the Engineer.

Within 15 days of the acceptance of his Proposal, the Contractor shall submit to the Engineer, for review, the Contractor's Site Safety Program, which shall be specific for the construction site and include a description of the work to be performed, a hazard assessment of the Work to be performed and the means by which such hazards shall be mitigated. The Contractor's Site Safety Program shall comply with all applicable federal, state, municipal and local and departmental laws and shall include, among other things, the designation by the Contractor of a qualified individual to administer such Site Safety Program.

18. RECYCLING OF CONSTRUCTION DEBRIS MATERIAL

The Contractor shall remove from Authority property all construction debris, demolition debris and other debris material generated from the performance of the Work of this Contract unless the material is deemed acceptable by the Engineer for on-site re-use or recycling in accordance with the technical requirements of this Contract and remains at the Work site. The Contractor shall transport to recycling facilities or re-use and recycle on-site for this Contract, as applicable, no less than 75% by weight of the following types of designated debris material, to the extent arising from the Work of this Contract:

Asphalt Concrete

Portland Cement Concrete

Steel

Excess Unrestricted Soil

During the process of removal of all such designated debris material from Authority property, the Contractor shall submit to the Engineer on a monthly basis a Designated Debris Material Assessment Summary indicating the actual types and quantities by weight of the designated debris material removed for this Contract up to that point in time. In addition, the Designated Debris Material Assessment Summary shall also include types and quantities by weight of designated debris material actually re-used or recycled on-site in this Contract or, if shown on the Contract Drawings, are stockpiled for future use by the Authority. The Designated Debris Material Assessment Summary shall be accompanied by written verification from recycling and landfill destinations identifying the originating Work site, quantity of material delivered and type of debris material for all designated debris material removed from the Work site.

Within 15 days of the acceptance of his Proposal, the Contractor shall submit to the Engineer for review the Contractor's Designated Debris Material Assessment Plan indicating the anticipated types and anticipated quantities by weight and the intended destinations for all such designated debris material to be removed from the Work site. The Designated Debris Material Assessment Plan shall also indicate anticipated types and anticipated quantities by weight of all such designated debris material to remain at the Work site for re-use or recycling in this Contract as applicable.

All removals shall be completed promptly upon the completion of construction under this Contract.

19. DIESEL-POWERED EQUIPMENT

A. The Contractor and its subcontractors shall minimize all air-borne pollutants generated by diesel-powered equipment and vehicles at all times during the performance of this Contract in accordance with this numbered clause. The requirements herein apply to all land-based and barge-mounted diesel-powered construction equipment. Marine propulsion engines, marine auxiliary engines, and dredges used in construction activity are exempt from these requirements.

B. No diesel-powered equipment shall be brought on the construction site without meeting the following requirements unless a waiver has been granted as specified in Section D below. In addition, all such equipment and engines shall comply with all Federal, state and local regulations applicable to exhaust emission controls and safety.

1.) Ultra Low Sulfur Diesel (ULSD) Fuel

All diesel-powered equipment to be used in the performance of the Work of this Contract shall use ULSD fuel with an average sulfur content of no more than 15 parts per million (ppm). This requirement applies to on-road and non-road diesel engines. The Engineer may collect samples of the ULSD fuel directly from the fuel tanks of the diesel-powered equipment used on the construction site in order to verify that sulfur concentrations do not exceed 15 ppm. Diesel-powered equipment not using ULSD shall be removed from the construction site or shall immediately comply with the ULSD fuel clause as directed by the Engineer and at no additional cost to the Authority.

2.) Emissions Control Devices – Best Available Technology (BAT)

All non-road diesel-powered equipment with a rated horsepower of 50 horse power (hp) or greater and active on the construction site for any portion of a 24-hour workday for more than 20 total consecutive and non-consecutive days shall be retrofitted with Emissions Control Devices (Devices) utilizing the best available technology (BAT). The Devices shall consist of Diesel Particulate Filters (DPFs) or other measures with equivalent particulate matter (PM) removal efficiency, wherever the implementation of such a Device is feasible in the opinion of the Engineer. For non-road diesel-powered equipment rated between 50 hp and 75 hp, Diesel Oxidation Catalysts (DOCs) may be used in place of DPFs.

Both active and passive filter regeneration mechanisms shall be considered for DPFs. In cases where DPFs are not feasible for safety considerations, mechanical reasons, or where the technology would not function properly, the Contractor shall submit a request for a waiver to the Engineer for review and approval prior to the use of such diesel-powered equipment. If the Engineer grants a waiver under these circumstances, then the Contractor shall retrofit the diesel-powered equipment with Flow Through Filters (FTF) if feasible in the opinion of the Engineer. DOCs shall be used in place of DPFs or FTFs unless it is proven to the Engineer by the Contractor that the application of this type of technology is also technically infeasible.

The use of diesel-powered engines greater than 50 hp without tailpipe reduction measures will be permitted pursuant to the Engineer's approval of a written request for a waiver submitted by the Contractor in accordance with Section D below.

The use of Devices shall be targeted primarily toward the reduction of PM and secondarily to the reduction of nitrogen oxides (NOX), and shall in no event result in an increase in the emissions of either pollutant. The Devices of best available technology shall be defined as those that are contained in the U.S. Environmental Protection Agency (EPA) Verified Retrofit Technology List, the list of California Air Resources Board (CARB), Verifications, Europe's Verified Technology List (VERT), or as otherwise approved by the Engineer to provide the maximal level of pollutant reductions intended by this clause. For more information, refer to the following websites:

U.S. Environmental Protection Agency Verified Technology List:
http://www.epa.gov/otaq/retrofit/nonroad-list.htm

California Air Resources Board Verified Technology List:
http://www.arb.ca.gov/diesel/verdev/vt/cvt.htm

Europe's Verified Technology List:
http://www.akpf.org/pub/vert_filterliste.pdf

3.) Diesel Construction Equipment Age Requirements

To facilitate the application of verified Emission Control Devices, as well as provide lower baseline emissions, Tier 0 engines shall not be used in the performance of this Contract unless they have been upgraded to Tier 1 and then retrofitted with best available technology devices. As determined by the Engineer, exceptions will be made only for specific engines that are not readily upgraded to Tier 1, and where the Work of this Contract cannot reasonably be performed using alternative engines that comply with this clause. In such cases, the Contractor shall submit a written request for a waiver to the Engineer for review and approval prior to bringing such equipment onto the construction site.

4.) Diesel Engine Idling Policy

The idling time of non-road and on-road vehicles shall be limited to three (3) consecutive minutes as determined by the Engineer with the following exceptions:

a. An on-road or non-road vehicle is forced to remain motionless because of traffic conditions or mechanical difficulties over which the operator has no control, or is in queue when engaged in an active operation with other equipment.

b. It is necessary to operate defrosting, heating, or cooling equipment to ensure the safety or health of the driver or passengers.

c. To ensure the safe and proper operation of auxiliary equipment that is located in or on the vehicle, to accomplish the intended use of the vehicle or equipment, but only to the extent so necessary (for example - cranes and concrete mixers).

d. To bring the vehicle to the manufacturer's recommended operating temperature, but only to the extent so necessary.

e. The outdoor ambient temperature is below twenty (20) degrees Fahrenheit.

f. A vehicle is being actively worked on for repairs or maintenance and engine idling is necessary to effectuate such repairs or maintenance.

5.) Electrification

Where electric power is distributed to and available throughout a construction site, electrically powered equipment shall be preferred over diesel-powered versions of that equipment.

C. Submittals:

The Contractor shall submit to the Engineer for review and approval an inventory list for all non-road diesel equipment and engines, and verified Emissions Control Devices. No Work shall commence utilizing diesel-powered non-road equipment rated at 50 hp or greater until the Contractor submits a comprehensive and complete inventory list inclusive of all such equipment, including the specifics of each as detailed below, and same is approved by the Engineer.

1.) The inventory list shall be provided in an electronic format (e.g., Microsoft Word, Access or Excel), and shall include the following:

a. Contract number and title.

b. Owner of equipment's name, address, telephone number and contact person familiar with the operation and maintenance of the equipment and the emission control technologies; whether owner is the Contractor, subcontractor or rental firm.

c. Dates that equipment is anticipated to arrive at and depart from the site.

d. Number, type, make, year of manufacture, manufacturer and serial number.

e. Engine type, tier level, make, horsepower rating, year of manufacture, and serial number.

f. Approximate fuel consumption rate per shift.

g. Anticipated function, duration of use, and days and hours of operation.

h. Retrofit type, make, model, manufacturer, installation date, EPA, VERT or CARB verification number or supporting documentation related to emission control devices.

i. Previous acceptance or waivers granted by the Authority, or the City of New York, or the Metropolitan Transportation Authority, or another public agency that issued a waiver under the same or substantially the same standards.

2.) On-Going Equipment Updates:

Whenever a new or additional piece of diesel-powered non-road equipment is required to complete the Work of this Contract, the Contractor shall submit to the Engineer an update of the equipment inventory list. These updates shall include the actual dates the equipment arrives and departs from the site.

D. Waivers:

The Contractor shall submit a written request for a waiver to the Engineer for review and approval prior to bringing equipment that does not conform to the above requirements onto the construction site. The Contractor shall demonstrate due diligence by providing written documentation of efforts to comply with this clause. For waivers based upon the unavailability of retrofit devices for certain equipment, the Contractor will generally be required to provide written documentation from more than one vendor or supplier of retrofit devices to satisfy this requirement. Waiver requests related to the use of DPFs shall take into consideration actively regenerating filters for equipment with low temperature profiles that typically preclude the application of passively regenerating filtration systems.

Equipment retrofitted with an approved device in connection with another construction contract of the Authority, or the City of New York, or the Metropolitan Transportation Authority is exempt from further retrofitting for three (3) years from the date the retrofit was approved, even if new BAT retrofit devices are available. The Contractor shall submit to the Engineer documentation of approval of a retrofit device by the Authority, or the City of New York, or the Metropolitan Transportation Authority, or another public agency that issued a waiver under the same or substantially the same standards for the equipment in question. In addition, if the Authority, or the City of New York, or the Metropolitan Transportation Authority, another public agency that issued a waiver under the same or substantially the same standards previously waived a requirement contained in this clause for a particular piece of equipment, that equipment shall be exempt from the requirement for three (3) years from the date the initial waiver was granted.

1.) In responding to waiver requests, the following conditions will be taken into consideration with applicable documentation:

a. A BAT retrofit device would pose a safety hazard or impair operator visibility; or

b. A BAT retrofit device would void the engine warranty; or

c. A BAT retrofit device cannot be used for mechanical reasons; or

d. A BAT retrofit device or the engine would not function properly if the BAT retrofit device were installed; or

e. A Tier 0 engine is not readily upgraded to Tier 1, and where the task cannot be reasonably accomplished using alternative engines that do comply with this clause; or

f. The furnishing and installation of a BAT retrofit is more than 30 percent of the fair market value of the construction equipment; or

g. The Authority, or the City of New York, or the Metropolitan Transportation Authority, or another public agency that issued a waiver under the same or substantially the same standards previously approved a BAT retrofit device for the equipment in question. Such approval is valid for three years from the date it was issued; or

h. The Authority, or the City of New York, or the Metropolitan Transportation Authority, or another public agency that issued a waiver under the same or substantially the same standards previously granted a waiver for the equipment in question. Such waiver is valid for three years from the date it was issued.

In addition, the Engineer may, in his or her discretion, grant a waiver based upon excessive costs to satisfy the clause, undue burden on the Contractor, marginal benefits, or other relevant factors, provided adequate supporting documentation is submitted by the Contractor.

2.) Waiver requests shall include the following:

a. Name of contractor applying for the waiver.

b. Contract number and title

c. Owner of equipment's name, address, telephone number and contact person familiar with the operation and maintenance of the equipment and the emission control technologies, whether owner is the Contractor, subcontractor or rental firm.

d. Number, type, make, year of manufacture, manufacturer and serial number.

e. Engine type, make, horsepower rating, year of manufacture, and serial number.

f. Approximate fuel consumption rate per shift.

g. Anticipated function, duration of use, and days and hours of operation.

h. Technical explanation of safety hazard, mechanical constraint, warranty, limited availability, or functionality issues cited as basis for waiver.

i. Written documentation from retrofit device manufacturers, engine manufacturers, or rental companies, as appropriate, supporting the stated reasons for the waiver; for waivers based upon the unavailability of a retrofit device for specified equipment, the Contractor shall provide documents from more than one supplier.

j. If applicable, documentation of previous BAT retrofit approvals granted by the Authority, or the City of New York, or the Metropolitan Transportation Authority, or another public agency that issued a waiver under the same or substantially the same standards for the equipment in question.

k. If applicable, documentation of previous waivers granted by the Authority, or the City of New York, or the Metropolitan Transportation Authority, or another public agency that issued a waiver under the same or substantially the same standards for the equipment in question.

3.) Review of Waiver Application

The Engineer will make a determination whether to approve the Waiver Request no later than 10 days after its receipt.

20. DAILY PROGRESS, EQUIPMENT AND LABOR REPORTS

The Contractor shall furnish to the Engineer at the end of each day Work is performed at the construction site, a memorandum showing for that day (a) the construction performed, (b) the type of equipment used identifying each piece of equipment as owned by the Contractor or rented from others; (c) a statement of any unusual happening that occurred, and (d) the names and number of workers in each trade classification that were employed. Such memorandum shall not be deemed to be a substitute for the notices, time slips, memoranda or other data required under the clauses of the Form of Contract relating to compensation for Extra Work.

21. LAWS AND ORDINANCES

In order to effectuate the policy of the Authority, the Contractor shall comply with all provisions of federal, state, municipal, local and departmental laws, ordinances, rules, regulations and orders which would affect the Contract and the performance thereof and those engaged therein if said Contract were being performed for a private corporation, except where stricter requirements are contained in the Specifications or Contract Drawings, in which event the latter requirements shall apply. However, the Contractor shall not apply for any permits, licenses or variances in the name of or on behalf of the Authority, but shall do so in his own name where required by law, regulation or order or by the immediately preceding sentence. Nor shall the Contractor apply for any variance in his own name without first obtaining the approval of the Authority.

22. IDENTIFICATION

No person will be permitted on or about the construction site without a pass, permit or identification badge approved by the Engineer. The Contractor shall provide such passes, permits or identification badges for his employees, subcontractors and materialmen whenever necessary. Identification badges shall be worn in a conspicuous and clearly visible position by all employees of the Contractor whenever they are working at the construction site.

23. SIGNS

No advertisement or sign, other than the name and address of the Contractor, will be permitted on any fences, temporary structures or elsewhere on the construction site and such advertisement will be permitted only upon the condition that it is first approved by the Engineer. In any event, the advertisement shall not exceed six feet by eight feet in overall dimensions.

24. CONTRACTOR'S FIELD OFFICE AND REPRESENTATIVE

At a readily accessible point on or near the construction site, the Contractor shall maintain a field office provided with a telephone.

During the performance of any Work at the construction site, the Contractor shall have a representative thereat who shall be authorized by the Contractor to receive and put into effect promptly all orders, directions and instructions from the Engineer. The Contractor's representative shall be provided, at all times, with a conformed copy of this Contract and a set of the Contract Drawings.

Orders and directions may be given orally by the Engineer and shall be received and promptly obeyed by the Contractor or his representative or any superintendent, foreman or other employee of the Contractor who may have charge of the particular part of the Work in relation to which the orders or directions are given. A confirmation in writing of such orders or directions will be given by the Engineer when so requested by the Contractor.

25. SURVEYS

The Engineer will establish a bench mark and a base line at or adjacent to the location of the Contractor's operations. The Contractor shall perform all surveys which may be required for the performance of the Contract. He shall carefully preserve any base line and bench mark which may be established by the Engineer.

The Contractor shall, in addition, furnish to the Engineer, without additional compensation therefor, any or all information and data regarding points, lines, grades, elevations and other survey information established by the Contractor during the performance of the Contract.

Surveys and measurements of quantities for purposes of computing Contractor's compensation shall be made by the Contractor as directed by and in the presence of, or jointly with, the Engineer, at the Engineer's option. Computations of quantities for payment shall be made by the Contractor and shall be subject to the approval of the Engineer.

26. TEMPORARY STRUCTURES

Unless otherwise provided in this Contract, the Contractor shall determine the need for and shall design, furnish and construct all barricades, fences, staging, falsework, formwork, shoring, scaffolding and other temporary structures required in the performance of the Contract, whether or not of the type enumerated in the Specifications or on the Contract Drawings, including those which would be required by law or regulation if this Contract were being performed for a private corporation. All such temporary structures shall be of adequate strength for the purposes for which they are constructed and shall be provided with graphics, warning signs and warning lights as required to inform personnel and the public of the hazards being protected against, and the Contractor shall maintain them in satisfactory condition. The design and drawings for such structures shall be prepared by the Contractor utilizing a professional engineer licensed in the state where the structure will be constructed, and when requested by the Engineer they shall be submitted for his review before being used.

The Contractor shall ensure that each temporary structure is inspected by the professional engineer who designed the temporary structure prior to initial use and submit a schedule of periodic inspections to be performed by such professional engineer to the Engineer for review. The number of periodic inspections of temporary structures to be performed by the professional engineer shall be the minimum required by law or regulation if this Contract were being performed for a private corporation. The Contractor shall also submit a signed and sealed statement of inspection from the professional engineer performing the inspection of the temporary structure, including a statement of fitness for use for the intended purpose of the temporary structure, to the Engineer for review.

Neither such approval, however, nor any requirements of the Engineer, the Specifications or the Contract Drawings shall relieve the Contractor of his responsibility for the design, construction and use of the temporary structures or from any obligations and risks imposed on him under this Contract, and any such approval or requirements shall be deemed merely to relate to minimum standards and not to indicate that the temporary structures are adequate or that they meet the Contractor's obligations under this Contract.

Temporary structures shall be painted with an approved dark color paint and shall be repainted whenever necessary during the period that the Contract is being performed. Upon completion of all Work under this Contract, the temporary structures shall be removed from the construction site.

27. PERMIT AND REQUIREMENTS FOR WELDING

Prior to the commencement of any cutting or welding operations at the construction site, the Contractor shall notify the Engineer and obtain an Authority cutting and welding permit. The Authority will issue this permit without payment of a fee, and application forms may be obtained from any Resident Engineer of the Authority, at his office at the facility. Unless otherwise approved by the Engineer, all cutting and welding operations shall be performed in accordance with the conditions which form a part of said permit. The permit application must be filled out and submitted in duplicate to the Engineer at least forty-eight hours prior to commencing welding or cutting operations at the construction site.

28. FINAL INSPECTION

When, in the opinion of the Contractor, the construction is completed and ready for final inspection, he shall so notify the Engineer in writing and the Engineer will give said construction (including any portions with respect to which Certificates of Partial Completion have been issued) a minute and thorough inspection. Before any Certificate of Final Completion will be issued, any defects or omissions noted on this inspection must be corrected by the Contractor.

29. WARRANTIES

The Specifications may provide for certain warranties of portions of the permanent construction. These warranties are intended for the greater assurance of the Authority and not as a substitute for rights which the Authority might otherwise have. Although such warranties shall be enforceable as provided, neither any requirement of this Contract with respect to warranties by the Contractor nor any guarantee or warranty given to the Contractor or the Authority by any manufacturer shall be deemed to be a limitation upon any rights which the Authority would have, either expressed or implied, in the absence of such guarantees or warranties.

30. TEMPORARY UTILITY SERVICES

Operate and maintain temporary services and facilities in a safe and efficient manner. Modify as required throughout progress of the Contract, and remove from Authority property when no longer required, or replaced by the use of completed permanent facilities as approved by the Engineer.

Heat is available at the construction site for the Contractor's use without charge subject to such conditions and precautions upon its use as may be imposed by the Engineer. The Authority will pay the cost for fuel consumed by use of the existing system(s). Provide connections to existing facilities, and extend as required to maintain environmental conditions to facilitate progress of the Work and to protect materials and finishes from damage due to temperature and humidity. Supplement with temporary heating units, if required. Such temporary units, if used, shall be vented self-contained units with individual space thermostatic control, shall be UL tested and approved for the fuel being consumed, shall be installed in accordance with ANSI A10.10 "Safety Requirements for Temporary and Portable Space Heating Devices and Equipment Used in the Construction Industry" and be approved by the Engineer. Use of gasoline burning space heaters, open flame, or salamander type heating units is prohibited. The Contractor shall pay all costs of installation, maintenance, operation, removal and for fuel consumed for supplemental temporary heating units.

Electricity is available at the construction site for the Contractor's use, subject to such conditions and precautions upon its use as may be imposed by the Engineer. The Authority will pay the cost of power used. Provide connections to existing facilities and size to provide service required for small tools and lighting. Install circuit and branch wiring with ground-fault protection, with area distribution boxes for plug-in connection of construction-type power cords. The Contractor shall pay all costs of installation, maintenance, operation and removal of temporary service connections.

Water for construction purposes is available at the construction site, subject to such conditions and precautions upon its use as may be imposed by the Engineer. The Authority will pay the cost for water used. Provide connections to existing facilities, and extend with branch piping, taps and hoses as required. Protect piping and fittings against freezing. The Contractor shall pay all costs of installation, maintenance, operation and removal for temporary service connections.

31. TEMPORARY SANITARY FACILITIES

The Authority will permit use of existing toilet facilities at the construction site at the locations(s) shown on the Contract Drawings, or if not shown, as designated by the Engineer. The Contractor shall supply all disposable materials and clean and maintain such facilities in a manner acceptable to the Engineer.

32. PROGRESS SCHEDULE

A. Schedule Requirements

1.) The Contractor shall, at its own expense, prepare, maintain and update detailed electronic progress schedules for the Engineer's review and approval. All submittals required herein shall be in the form and content stipulated in this Section. Each progress schedule shall bear the signature of the Contractor's authorized representative. The progress schedules/graphics required by this Contract shall be produced using Primavera Project Planner (P3 or P3e).

2.) Progress schedules shall be sufficiently detailed to accurately depict all the Work (including any design, key submittals, procurement and construction activities performed by the Contractor) and shall graphically represent the logical sequence and duration of activities, all in accordance with the requirements of the Contract. The information provided in progress schedules shall also include, but not be limited to, the interdependencies between the Contractors' Activities and all other Activities required for the successful completion of the Contract, e.g., those to be performed by utility companies or by other entities. All Milestone dates specified in the Contract shall be represented in the schedule by Milestone activities that are logically interrelated to the work that must be accomplished in order to achieve the Milestone.

3.) The Contractor's schedule shall incorporate the Activity Code Structure shown in Attachment A, and such other coding as may be required by the Engineer.

4.) To assist the Contractor in preparing its progress schedule, a sample Network Diagram is shown in Figure 1. The sample is intended merely for the Contractor's guidance. The types of data shown are the types of data expected to be shown on the Contractor's Network Diagram. However, the information presented in the sample Network Diagram should not be misinterpreted as either representing a plan for the Contractor's Network Diagram or a depiction of the level of detail which will be required in such diagram.

5.) The submittal of Progress Schedules under this section shall not be deemed to be a substitute for the reporting requirements of the Section of Division 1 entitled "Daily Progress, Equipment and Labor Reports."

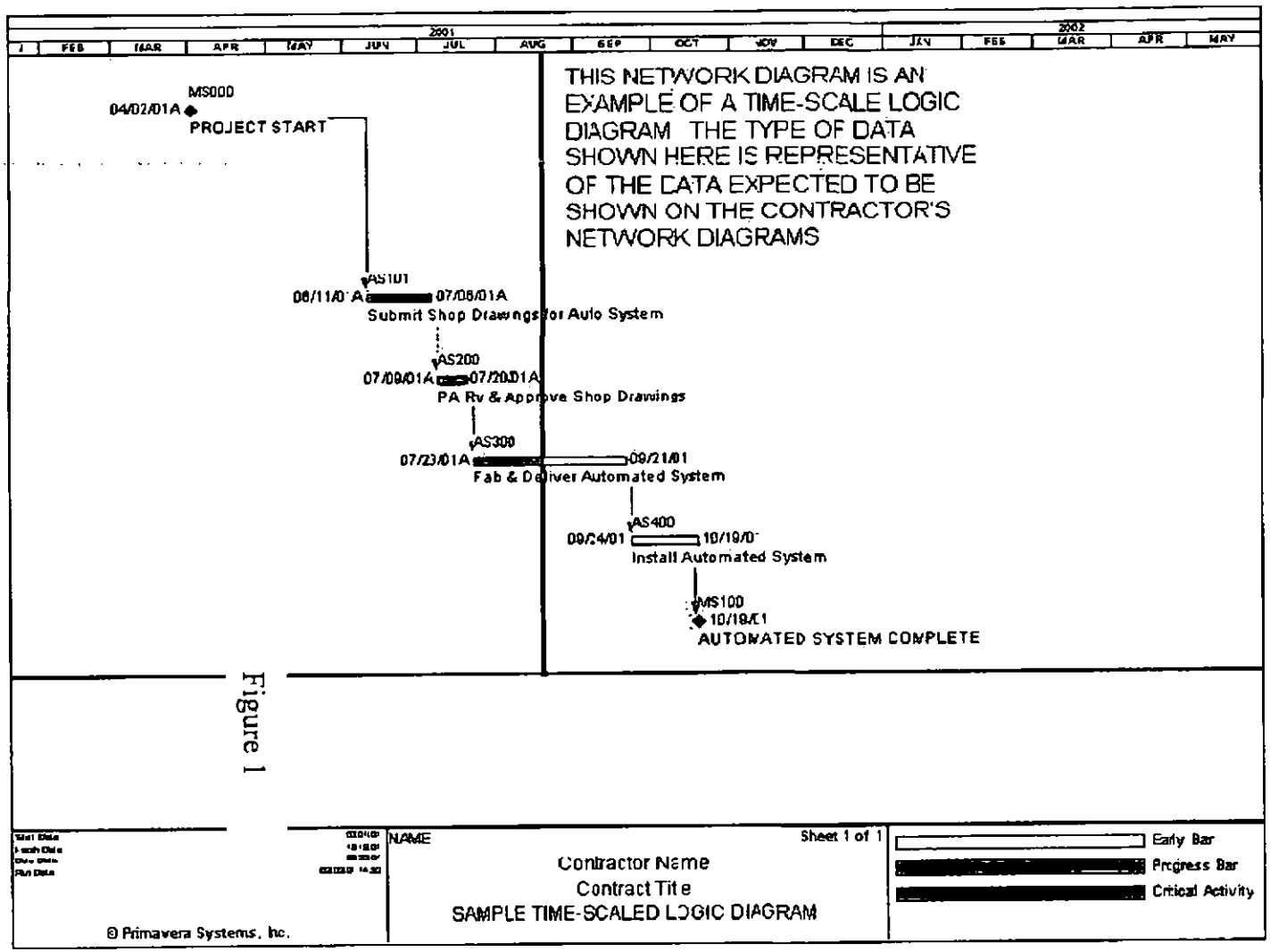

2001
2002
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
THIS NETWORK DIAGRAM IS AN EXAMPLE OF A TIME-SCALE LOGIC DIAGRAM THE TYPE OF DATA SHOWN HERE IS REPRESENTATIVE OF THE DATA EXPECTED TO BE SHOWN ON THE CONTRACTOR'S NETWORK DIAGRAMS
MS000
04/02/01A
PROJECT START
AS101
07/06/01A
Submit Shop Drawings for Auto System
AS200
07/09/01A
PA Rv & Approve Shop Drawings
AS300
07/23/01A
09/21/01
Fab & Deliver Automated System
AS400
09/24/01
Install Automated System
MS100
AUTOMATED SYSTEM COMPLETE
NAME
Sheet 1 of 1
Contractor Name
Contract Title
SAMPLE TIME-SCALED LOGIC DIAGRAM
Early Bar
Progress Bar
Critical Activity
© Primavera Systems, Inc.

Figure 1

B. Schedule Terminology

Schedule terminology used in this Contract shall have the meaning described below:

1.) **Activity**: A discrete item of Work with a Duration that can be clearly defined; a synonym for task. Unless otherwise permitted in writing by the Engineer, an activity's duration shall be not more than 30 calendar days

2.) **Activity Codes**: Activity Codes allow each activity in a project to be grouped into specific classifications such as area, responsibility, phase, system, or location. The codes consist of specific values and descriptive titles that are entered into the data dictionary of the scheduling software. Activities are assigned specific Activity Codes as appropriate.

3.) **Alternative Solutions**: An analysis of the various options for dealing with encountered or anticipated Contract problems. An alternative solution is developed to assist in determining the best method(s) of preventing or correcting any impediments to the progress of the Work. Alternative Solutions analysis shall indicate impacts on scheduling and resources.

4.) **Analysis Report**: A report that displays the impacts of all variances reported in the Current Progress Schedule. The Analysis Report focuses attention on the impacts of variances between planned and actual performance, so as to support an assessment of such impacts. The Analysis Report shall include Alternative Solutions.

5.) **Bar Chart**: A schedule display designed to complement the Network Diagram. The Bar Chart is a traditional Gantt chart, to which the Early Start Dates, Early Finish Dates, Late Start Dates, Late Finish Dates, and Critical Path have been added.

6.) **Calendar**: A calendar defines when work on an activity can occur (i.e. Mon – Fri for a standard work week). Activities shall be assigned to a Calendar that represents the planned work days.

7.) **Constraint**: A constraint is a restriction imposed on the start or finish of an activity or project. An example of the use of constraints is the imposition of a "finish no later than" constraint[1] on the project completion Milestone that is equal to the Contract Completion date. This constraint facilitates the identification of activities that control or do not support the completion date. Constraints shall be limited to start and finish constraints on Milestone activities that represent critical Contract dates, unless otherwise approved by the Engineer in writing.

8.) **Critical Path**: The longest path through the network in estimated total elapsed time from the start of the first Activity through the completion of the last Activity. The Critical Path consists of a series of Activities which must be completed on their scheduled completion dates in order for the Contract to be completed on schedule.

9.) **Current Progress Schedule**: The most recent progress schedule which has been approved by the Engineer. The Baseline Schedule shall be referred to as "Revision 0". Each time a different Current Progress Schedule is accepted by the Engineer, the revision number must be increased by 1, and the old schedule must be electronically archived, so as to permit an audit trail.

10.) **Duration**: The estimated and/or actual length of time required to fully perform a specific Activity. The Duration is expressed in work days.

---

[1] A late finish or "finish no later than" constraint limits the latest time an activity can complete

11.) **Early Finish Date**: The date upon which an Activity can be completed if it is begun on the Early Start Date.

12.) **Early Start Date**: The earliest date upon which an Activity can begin.

13.) **Hammock**: A hammock activity summarizing the early and late dates of a set of activities is used for reporting durations of groups of important activities. An activity shall be designated as a hammock by selecting Hammock as the activity type in the Primavera activity form.

14.) **Lag**: The interval between the completion of a Predecessor Activity and the start of a Successor Activity. For example, ten days of positive Lag will cause the Successor Activity to begin ten days after the Predecessor Activity has been completed. Negative Lag will cause the Activities to overlap. The amount of Lag between each Activity shall be clearly represented on the Network Diagram.

15.) **Late Finish Date**: The latest date by which an Activity must be completed if the succeeding Activity is to be started on schedule.

16.) **Late Start Date**: The latest date by which an Activity must be started to allow completion by the Late Finish Date.

17.) **Milestone**: A significant point in the performance of the Work. A milestone has no Duration, and represents the start of a portion of the Work or the completion of a portion of the Work. A milestone may also represent either the beginning or the completion of a task or action being performed by entities other than the Contractor (e.g., obtaining a permit, notification to proceed with certain Work, etc.).

18.) **Negative Float**: The amount of time that the planned completion date of an Activity is later than its required (Late Finish) date. An Activity with Negative Float must be completed ahead of schedule if the Work is to be completed on time. Negative Float usually indicates the need for corrective and/or preventive action to complete the Work on schedule.

19.) **Network Diagram**: A logic diagram prepared according to the Precedence Diagram Method, which displays each Activity required for the performance of the Contract in the sequence in which it is to be performed with appropriate logic ties between activities displayed.

20.) **Baseline Schedule**: The detailed progress schedule first approved by the Engineer as provided for in the Contract.

21.) **Precedence Diagram Method (PDM)**: A particular type of graphic representation of all Activities and Constraints. The Activities are represented by nodes; the Constraints are represented by lines between nodes. A sample PDM Network Diagram appears in this Section.

22.) **Predecessor Activity**: An Activity which is a prerequisite to commencement of another Activity.

23.) **Preliminary Progress Schedule**: A detailed progress schedule for Work to be performed within one hundred days after the acceptance of the Contractor's Proposal.

24.) **Relationship**: a logic tie between two activities representing restrictions on the start or completion of the subsequent activity. Relationships may cause either positive or negative lag. The four basic types of relationships are finish to start, start to start, finish to finish, and start to finish.

25.) **Successor Activity**: An Activity which cannot be started or completed without the prior completion or partial completion of a Predecessor Activity.

26.) **Total Float**: The amount of time by which an Activity or series of Activities may be delayed without affecting the date of completion of the Work.

C. Schedule Submittal, Review & Approval Process

1.) Preliminary Progress Schedule

a. Within twenty (20) calendar days of the acceptance of the Contractor's Proposal for contracts under $20M, twenty-five (25) calendar days for contracts between $20M to $50M and thirty (30) calendar days for contracts over $50M, the Contractor shall submit a Preliminary Progress Schedule containing the Contractor's detailed proposed plan for the first hundred days of Work, with summary detail for the remaining duration of the project. The first hundred days of the Preliminary Progress Schedule shall be prepared with the same level of detail and in the same format required for the Baseline Schedule. The submittal shall consist of one computer diskette and three printed reports

b. The Engineer will review the Preliminary Progress Schedule and provide the Contractor with comments or accept it as the official Preliminary Schedule, within fifteen (15) calendar days.

c. If it is not accepted, the Contractor shall revise the Preliminary Progress Schedule in accordance with the Engineer's comments, and resubmit three printed reports and one diskette for the Engineer's approval, within seven (7) calendar days of the receipt by the Contractor of the Engineer's comments. Until such time as the Engineer accepts it, the Contractor shall resubmit the Preliminary Progress Schedule as required by the Engineer within the same time frames and in the same format as required in this paragraph for the initial resubmission.

d. The Preliminary Progress Schedule, all reports and network diagrams required by this section shall be updated and submitted monthly during the first ninety days.

2.) Baseline Schedule

a. Within ninety (90) calendar days of the acceptance of the Contractor's Proposal, the Contractor shall submit a proposed Baseline Schedule containing the Contractor's projected plan and schedule to complete all Work required by the Contract within the time(s) for completion required by the Contract. A schedule showing time(s) for completion other than those required by the Contract will not be accepted.

b. The Engineer will review the proposed Baseline Schedule and return it to the Contractor with comments, or accept it as the official Baseline Schedule, within fifteen (15) calendar days. The Contractor shall participate in any meetings called to resolve issues with the schedule.

c. If it is not accepted, the Contractor shall revise the Baseline Schedule in accordance with the Engineer's comments and resubmit three printed reports and one diskette for the Engineer's approval, within fifteen (15) calendar days of the receipt by the Contractor of the Engineer's comments. Until such time as the Engineer accepts it, the Contractor shall resubmit his proposed Baseline Schedule as requested by the Engineer within the same time frame and in the same format as required by this paragraph for the initial resubmission.

d. After the approval of any progress schedule required by this Section no changes shall be made therein without the written approval of the Engineer. No other act or omission on the part of the Engineer shall be deemed to constitute such approval. The Contractor shall not be entitled to any damages by reason of the failure of the Engineer to give timely approval or comments on any progress schedule submitted hereunder.

3.) Progress Schedule Updates

a. The Contractor shall submit to the Engineer not less frequently than once a month, on a date specified by the Engineer, an update of the Current Progress Schedule. Schedule updates shall status the actual performance and progress of the Work and depict any changes.

b. Within seven (7) calendar days after receipt by the Engineer of a updated progress schedule, the Contractor shall meet with the Engineer for the purpose of reviewing and obtaining the Engineer's approval of it.

c. The Engineer may require the Contractor to furnish a revised update which shall include any other information he may request to assist him in evaluating the Contractor's progress, including but not limited to manpower loading charts and equipment schedules; "what-if" analysis performed in a copy of the current progress schedule, etc.

d. In the event that the Engineer requests the Contractor to revise the updated schedule submitted, and/or to submit such additional information, the Contractor shall make the requested revisions and/or submit the updated schedule to the Engineer for approval along with the additional information requested within seven (7) calendar days of the Engineer's request.

D. Schedule Reporting Requirements

1.) The preliminary schedule submittal shall include one computer diskette and three copies of the following output reports:

a. A time-scale logic diagram in PDM format containing all activities displaying Activity ID, Activity Description, Calendar, original and remaining durations, percent complete, Early and Late Dates, and Total Float, and sorted by:

(i) Early Start, Early Finish, Total Float

(ii) Total Float, Early Start (Critical path report)

(iii) Late Start, Late Finish (if required by the Engineer)

b. A tabular Predecessor and Successor standard report showing the relationships between all activities in the schedule and sorted by ES, TF (if required by the Engineer)

c. Any other information which may be requested by the Engineer to assist him in the evaluation

2.) The baseline schedule submittal shall include one computer diskette and six copies of the following output reports:

a. A Schedule narrative that generally describes the Contractor's approach to meeting the project goals, lists the Critical Path Activities and compares Early and Late Dates with Contract Times and Milestone Dates. The basis for any constrained dates shall be explained.

b. A one-page time scaled Summary Schedule consisting of 20-40 Hammock activities or summary bars that show the entire project broken down into major portions of work, as agreed to by the Contractor and Engineer.

c. A time-scale logic diagram in PDM format containing all activities displaying Activity ID, Activity Description, Calendar, original and remaining durations, percent complete, Early and Late Dates, and Total Float, and sorted by:

(i) Early Start, Early Finish, Total Float

(ii) Total Float, Early Start (Critical path report)

(iii) Late Start, Late Finish (if required by the Engineer)

d. A tabular Predecessor and Successor standard report showing the relationships between all activities in the schedule and sorted by ES, TF (if required by the Engineer), as shown in the sample in figure 2.

e. Supporting data showing all activities with their associated cost, budgets or estimates

f. Any other information that may be requested by the Engineer to assist him in evaluation of the Contractor's progress. Such information may include, but not be limited to, the following:

(i) Cost Loading

(ii) Manpower loading charts

(iii) Equipment schedules

g. The Contractor shall electronically archive all accepted schedules

3.) Within seven (7) calendar days after the Baseline Schedule is first accepted by the Engineer, submit a reproducible transparency and six (6) Network Diagrams printed on "C" size (17" x 22") or "D" size (22"x34") sheets as directed by the Engineer. Each sheet shall have match lines indicating the interface between sheets if required.

PORT AUTHORITY OF NY & NJ — PRIMAVERA PROJECT PLANNER — LINCOLN TUNNEL SCADA SYSTEM UPGRADE

REPORT DATE 2NOV00 RUN NO. 420 — START DATE 1AUG97 FIN DATE 22JAN99*

18:47 — DATA DATE 15MAY00 PAGE NO. 27

Schedule Report - Predecessors & Successors

ACTIVITY ID	ORIG DUR	REM DUR	CAL	%	CODE	ACTIVITY DESCRIPTION	EARLY START	EARLY FINISH	LATE START	LATE FINISH	TOTAL FLOAT
					P.L.D.F., 7243.FS 0. 0. ,* 7253.FS 0. 1. -465						
					P.L.D.F.,* 7400.FS 0. 10. -549,						
7244	2	2	2	0	DDNE FIELD ACCEPTANCE TESTING NYLVB - SUBSYSTEMS		2JUN00	5JUN00	12AUG98	13AUG98	-465
					S.L.D.F., 7150.FS 0. 0. -549, 7245.FS 0. 15. -444						
					P.L.D.F.,* 7492.FS 0. 20. -549,						
7502	1	1	2	0	TEST FIBER OPTIC SYSTEM DYER PLAZA		12JUN00*	12JUN00	22APR98	22APR98	-549
					S.L.D.F.,* 7496.FS 0. 79. -549,						
					P.L.D.F.,* 7537.FS 0. 20. -549,						
7547	1	1	2	0	TEST FIBER OPTIC SYSTEMS 39TH FAN ROOM		12JUN00	12JUN00	22APR98	22APR98	-549
					S.L.D.F.,* 7536.FS 0. 79. -549,						
					P.L.D.F.,* 7587.FS 0. 20. -549,						

FIGURE 2

4.) In addition to the reports required for the Baseline Schedule submittal, all Progress Schedule Update Reports shall include the following:

a. A narrative comparing the current Dates to the respective Milestone Dates, describing the physical progress during the current report period, explaining plans for continuing the work during the next report period and describing and explaining changes in crewing and construction equipment. The narrative shall also explain changes in Activity durations, logic ties and Activity Values and the reason why the change was made.

b. Whenever there is any delay or negative float prediction in the schedule, the Contractor shall submit an alternative solutions report that describes the delay, explains when it started and finished or is expected to finish and the basis for those dates, lists the affected schedule activities by activity ID, and discuss who the contractor feels is responsible. Any revisions to durations or the logical sequence of Activities made to reflect these delays must be explained. The report shall propose appropriate schedule recovery such as multiple shifts or overtime to mitigate any potential delay to the overall project completion date, or request an extension of time, as appropriate.

c. A revised Network Diagram sorted by Early Start and Early Finish indicating actual start and finish dates and the remaining duration and percent complete of activities in progress. The critical path of the project shall be clearly shown.

d. An Analysis Report indicating Activities and/or Milestones which are behind schedule by at least 30 calendar days (commonly evidenced by Negative Float).

e. A report that compares the Current Progress Schedule update with the Baseline and prior month's accepted schedule update and lists all changes made to the schedule.

E. General Schedule Provisions

1.) Should the Contractor fail to comply with any provision of this Section, The Engineer shall have the right in its discretion to withhold out of any payment (final or otherwise and even though such payment has already been certified as due) such sums as it deems necessary or desirable, all as more fully provided in the clause of the Form of Contract entitled "Withholding of Payments".

2.) Neither the acceptance, review or approval of any progress schedule or other data submitted by the Contractor pursuant to this Section, nor any other action on the part of the Engineer under this Section shall in any way be deemed as a representation by the Engineer that the Contractor can or will be permitted to follow a particular schedule or sequence of operations or that by following any such schedule or sequence he can or will complete the Work by the time(s) required by the Contract or by any other time(s). Nor shall the approval of any progress schedule or other such data relieve the Contractor of his obligation to complete the Contract by the time(s) required in the Contract, even though the schedule may be inconsistent with such completion.

3.) Any approval under this Section shall be construed merely to mean that the Engineer knew of no good reason at that time to object thereto. No acceptance, review or approval or any other action under this Section shall limit, affect or impair the Contractor's obligation to perform all Work by time(s) required by the Contract and in accordance with all other provisions of the Contract.

4.) The performance of the Work by the time(s) required in the Contract, after taking into account extensions to which the Contractor may be entitled under the clause "Extensions of Time", may require the use by the Contractor of overtime labor, additional shifts or additional plant and equipment and/or other measures at no additional cost to the Owner. The Contractor shall anticipate, avoid and mitigate the effects of all delays.

5.) The Engineer shall have the right at any time when in his judgment the Work is not proceeding in accordance with the approved progress schedule or at any time when it is likely that the Work might not be completed by the time(s) required in the Form of Contract even though the Contractor is proceeding in accordance with the approved progress schedule, to order the Contractor without additional compensation, to employ additional shifts to increase the number of men employed, to use additional plant or equipment, or to take such other steps as may be necessary or required to assure the completion within the time(s) shown in the accepted schedule.

6.) No action on the part of the Contractor pursuant to this Section shall be construed as a request by him for an extension of the time(s) for completion required by the Contract. A request for an extension of time shall be deemed made only if it complies with the requirements of the clause of the Form of Contract entitled "Extensions of Time". No extension of the time(s) for completion shall be inferred because of any action, omission to act, or statement on behalf of the Engineer pursuant to this Section. Extension of time, if any, shall be granted only pursuant to the clause of the Form of Contract entitled "Extensions of Time".

7.) The Contractor acknowledges and agrees that he is not entitled to an extension of time for impacts that do not extend the contractual end date of the project.

8.) Schedule float time disclosed or implied is not for exclusive use or benefit of the owner or contractor but is available to all parties as needed to meet contract milestones and the contract completion dates.

9.) Techniques such as preferential sequencing, special lead/lag logic restraints, extended activity times or imposed dates that tend to sequester float shall be cause for rejection of the Detailed Project Schedule and any revisions or updates.

ATTACHMENT A

MANDATORY ACTIVITY CODE STRUCTURE

1.) Responsibility (Owner, Contractor)

2.) Area (building, floor or area)

3.) Trade/CSI code (concrete, steel, etc as required)

4.) Location (3rd Fl, etc)

5.) Phase of Work, if applicable

6.) Change Order work, if applicable

7.) Other, as required by the Engineer

PRIMAVERA PROJECT PLANNER

Date 01/02/0 ----ACTIVITY CODES DICTIONARY---- Page 1

NAME - Project Title

CODE	VALUE	TITLE	SEQUENCE
Activity Codes:			
RESP	Responsibility		
	AE	Architect/Engineer	
	C	Contractor	
	O	Port Authority	
AREA	Area		
	G	General Area	1
	CTL	Air Traffic Control Tower	2
MILE	Milestone		
CSI	Trade/CSI Code		
	03000	Concrete	
	04000	Masonry	
	07000	Thermal & Moisture Protection	
	15000	Mechanical	
	16000	Electrical	
LOCN	Location		
PHAS	Phase		
	D	Design	1
	P	Procurement	2
	C	Construction	3
CO	Change Order Wor		
OTH	As Req'd by Engr		

33. CONDITIONS AND PRECAUTIONS

A. Construction Site Conditions:

1.) Notwithstanding restrictions specified elsewhere herein, during the time the Contractor is performing the Work, it may at times be necessary, because of emergency conditions, to suspend the Contractor's operations or to postpone the time at which a work area becomes available for performance of Work. Should the Contractor be specifically directed to suspend operations in a work area specified herein to be available for operations of the Contractor, or should such work area not be available by the times specified elsewhere in the Contract, and if solely because of such suspension of operations or late availability of the work area, the Contractor is necessarily kept idle at the construction site, the Contractor will be compensated as stipulated in the provisions of the Contract concerning compensation for emergency delays.

2.) At least 7 days but not more than 10 days prior to performing excavation, call 1-800-272-4480 and provide the information required for excavation(s) in New York and call 1-800-272-1000 and provide the information required for excavation(s) in New Jersey.

3.) No vehicles of the Contractor, employees of the Contractor, subcontractors, materialmen or others over whom the Contractor has control will be permitted to park in or on Authority property, except for construction vehicles which will be permitted to park at the area of Work during the times when the Work is being performed.

All vehicles, including construction vehicles and company vehicles will be required to pay the appropriate tolls for each passage or crossing of Authority facilities, or parking at Authority lots.

4.) Securely fasten material or construction which must be left in place between working periods in a manner approved by the Engineer so as not to be a hazard.

5.) Take all precautions necessary for protection of persons, traffic and property during dust or fragment generating operations, concrete mixing or placing, or other operations which may stain, soil or damage property or injure persons. Provide and erect waterproof, fire-resistant, UL labeled tarpaulins with flame-spread rating of 15 or less, or other protective enclosures as approved by the Engineer.

6.) Restrict smoking to areas designated by the Engineer for this purpose.

7.) Do not burn or bury debris of any type on Authority property, or wash waste materials down sewers or into waterways.

8.) Provide sound suppression devices on gasoline and diesel powered construction equipment and pneumatic tools as required to maintain noise exposures below the limits specified in the Code of Federal Regulations (CFR) 29 CFR 1926 Occupational Safety and Health Regulations for Construction (OSHA). Maintain such sound suppression devices in proper operating condition throughout the time of their use, and adjust and repair as required to maintain noise within exposure levels stipulated in 29 CFR 1926.52, Table D-2.

9.) Use of escalators to transport materials and equipment is prohibited. Movement of materials shall be through the freight elevators. No passenger elevators are to be used. Elevator/hoisting requests require forty-eight (48) hour advance notice to the Engineer.

B. No requirement of or omission to require any precautions under this Contract shall be deemed to limit or impair any responsibility or obligation assumed by the Contractor under or in connection with this Contract and the Contractor shall at all times maintain adequate protection to safeguard the public and all persons engaged in the Work and shall take such precautions as will accomplish such end, without undue interference with the public or the operations of the Authority.

34. HOURS OF WORK AND CONSTRUCTION STAGING

A. Hours of Work

1.) Subject to all requirements stated elsewhere herein, the Work shall be performed in accordance with the hours of work described in the Design Criteria Report.

2.) Delivery of Materials: The Contractor shall coordinate deliveries with the Engineer.

B. Construction Staging

Construction Staging shall be as per the revised Construction Phasing Plans in the George Washington Bridge Bus Station Redevelopment Project Reserved Premises 100% Stage I, which will be not yet been completed.

35. MAINTENANCE OF TRAFFIC AND WORK AREA PROTECTION

A. Definitions

As used in this numbered Section, and this Section only, the terms used herein shall have the following meaning:

1.) The terms "Traffic Lane", "Lane", "Active Roadway", "Street", and "Roadway" shall mean, in addition to the normally traveled pavement areas, other areas including but not limited to ramp terminal gore areas, roadway shoulders and all other areas that may foreseeably be occupied by moving vehicles.

2.) "Flashing Arrow Sign Unit" (FASU) shall mean an engine/generator-, solar- or battery-powered flashing light sign with lights displayed in the shape of an arrow.

3.) "Nighttime " shall mean the local time period between 1/2 hour after sunset to 1/2 hour before sunrise.

4.) "Slow-Moving Vehicles" shall mean vehicles or equipment that travel at or under a speed corresponding to 15 mph less than the posted speed limit.

5.) "Work Area" shall mean the area immediately surrounding the Work in progress, typically where workers are afoot, and/or the space within a Roadway where Work on the Roadway is being done by the Contractor.

B. General Requirements

Conform to requirements of this numbered Section, the Contract Drawings and the following:

1.) Portions of the latest editions, including all amendments thereto, of the Federal Highway Administration (FHWA): "Manual on Uniform Traffic Control Devices" (MUTCD) Part VI as hereinafter specified and applicable portions of the companion "Traffic Control Devices Handbook" (TCDH); "Standard Highway Signs"; "Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects"; and the "Standard Color Tolerance Charts".

2.) American Association of State Highway and Transportation Officials (AASHTO): "Roadside Design Guide", Chapter 9: Safety Appurtenances for Work Zones; and "Standard Specifications for Highway Bridges", as hereinafter specified.

3.) The requirements of the Americans with Disabilities Act (ADA) laws in all respects as specified in the "ADA Accessibility Guidelines for Buildings and Facilities" (ADAAG).

4.) American Traffic Safety Service Associations (ATSSA): "Guidelines for the Use of Portable Changeable Message Signs".

5.) Maintenance of traffic and Work Area protection features specified herein and as shown on Contract Drawings and/or sketches to be furnished to the Contractor.

6.) In the event of a technical conflict between a requirement in the publications referenced herein and the Specifications and Contract Drawings, the requirements of the Specifications and Contract Drawings shall control.

7.) There may be more than one Work Area within the confines of a closed Roadway or Traffic Lane. Each Work Area shall be individually protected as specified herein.

C. Contractor-Furnished Materials and Equipment

1.) Provide and maintain in good working order all materials, equipment, temporary construction signs and facilities required for proper maintenance of traffic and Work Area protection, as specified herein and/or shown on the Contract Drawings. All said equipment/devices shall remain the property of the Contractor, unless otherwise shown on the Contract Drawings.

2.) All items provided under paragraph C.1 shall be new or undamaged previously used materials in serviceable condition conforming to requirements specified herein.

3.) Provide and maintain in serviceable condition the following, as shown on the Contract Drawings:

a. Traffic Cones.

b. Traffic Guide Posts.

c. Plastic Delineator Drums.

d. Type III Barricades.

e. Temporary Signs: Conform to requirements of Specification Section 02850 "Plywood Sign Panels and Wood Sign Posts" and/or Specification Section 02851 "Aluminum Sign Panels" hereof. Plywood signs shall be Type 1, unless otherwise shown on the Contract Drawings.

(i) Temporary Sign Supports: Wood conforming to requirements of Specification Section 02850.

(ii) Portable Sign Supports: "Windmaster" as manufactured by Marketing Displays, Inc., Farmington Hills, MI.; or approved equal;

f. Warning Lights: Units as listed below conforming to the requirements of Part VI of the MUTCD as certified product catalog cuts and/or by independent testing laboratory reports, copies of which, upon request, shall be submitted to the Engineer for approval.

(i) Nighttime: Type A Low Intensity Flashing Warning lights using 12-volt circuit and lamp units with vandal resistant off/on switch and mounting hardware, photocell, and new bulbs and batteries.

(ii) Daylight and Nighttime: Type B High Intensity Flashing Warning lights with vandal resistant off/on switch and mounting hardware, and new bulbs and batteries. Type B Flashing Light battery cases shall be set on the ground/pavement and equipped with a neatly routed electrical cord to the detachable, remote mounted light head.

(iii) Nighttime: Type C Low Intensity Steady-Burn lights with vandal resistant off/on switch and mounting hardware, photocell, and new bulbs and batteries.

g. Back-Up Trucks: Nominal actual weight of 15,000 lbs. with nominal 24,000 lbs. gross vehicle weight registration and rear-most wheels situated close to rear of truck body. Standard "ICC" type rear bumpers are not an acceptable substitute for the required rear wheel location. Actual vehicle weight may vary depending on recommendations of the manufacturer of the vehicle-mounted impact attenuator selected. In addition, equip truck(s) with:

(i) Standard 4-lamp flashing hazard signal lights (parking and tail lights);

(ii) Four-lamp sealed beam rotating yellow warning light providing 35,000 candle power per lamp with an apparent flash rate of 120 flashes per minute. Truck mount such lights 7 to 10 feet above the Roadway and located so as to be visually unobstructed by any part of truck body, load or equipment.

(iii) Vehicle-Mounted Impact Attenuator: "TMA" units as manufactured by Energy Absorption Systems, Inc., Chicago, IL; or approved equal;

h. Temporary Roadway Plates: Steel Plates, sized to cover Roadway excavations with thickness and edge support adequate to accommodate HS-20-44 loading per Figure 3.7.6B and 3.7.7A in the AASHTO "Standard Specifications for Highway Bridges".

4.) Submit the following to the Engineer in accordance with Division 1 - GENERAL PROVISIONS entitled "Shop Drawings, Catalog Cuts and Samples":

a. Catalog Cuts and Data Sheets: Complete manufacturer's data for all equipment and materials.

D. Spare Materials and Equipment

1.) Initially furnish and subsequently maintain the quantities of spare materials and equipment, as scheduled on the Contract Drawings, at the construction site or at another nearby location approved by the Engineer.

2.) In addition to the required number of spare flashing and steady-burn lights, maintain an adequate quantity of appropriate spare batteries and light bulbs at the construction site. Replace batteries and light bulbs in the in-use warning lights as follows:

a. For Nighttime Type A Low Intensity Flashing Warning lights, after 30 consecutive days of operation, or sooner as needed.

b. For Type B High Intensity Flashing Warning lights, after 30 consecutive days of operation, or sooner as needed.

c. For Nighttime Type C Low Intensity Steady-burn lights after 15 consecutive nights of operation, or sooner if needed.

3.) Totally relamp Flashing Arrow Sign Unit after each single bulb failure.

E. General Work Area Protection

1.) Contractor shall establish a Traffic Maintenance Crew, properly trained, supplied, staffed and equipped to deploy and remove the maintenance of traffic and Work Area protection elements required for each of the Contractor's construction activities, as described on the Contract Drawings and/or paragraph E.3 herein. The Contractor shall identify and maintain one individual, per work period, as the central or key contact for the Traffic Maintenance Crew and their associated activities.

2.) Contractor's Traffic Maintenance training shall be specifically developed from this Section. The contents of Contractor's Training programs shall specifically include the Contract Drawings Traffic Standard Details and all other requirements included on the Contract Drawings.

3.) Prior to commencement of each day's Work, furnish and install, and periodically inspect, maintain, relocate, replace, cover, remove or reconstruct the traffic control delineations, guiding devices, signals, signs and pedestrian protection, Roadway plates, barricades, and barriers, if any, as required throughout the progress of construction operations. Maintain safe control of traffic flow and demarcate areas of Work at all times.

a. Ensure that construction material and equipment not removed from areas of Work during non-working periods are protected in such a manner that they shall not constitute a traffic hazard.

b. Do not park any vehicles other than construction vehicles required for construction operations within the demarcated protected areas of Work.

c. Promptly remove traffic control delineations, guiding devices, signals, signs, pedestrian protection, Roadway plates, barricades and barriers and whenever operations under this Contract no longer require said Work Area protection.

d. All existing permanent and temporary pavement markings and traffic guides that conflict with markings and traffic guides to be installed shall be concurrently removed prior to placement of new pavement markings and traffic guides as follows:

(i) On wearing surfaces that will be subsequently replaced, resurfaced or abandoned during the Work of this Contract, remove obsolete temporary marking tape and remove or obliterate obsolete thermoplastic or paint markings in a manner approved by the Engineer so as to completely obscure all obsolete markings for the duration of the Work.

(ii) On finished wearing surfaces, completely remove temporary marking tape and completely remove obsolete permanent markings in a manner approved by the Engineer. Use of blackout paint or other coating material on any finished wearing surface is prohibited.

(iii) Grind or chip off all adhesive residue resulting from removed or relocated traffic guides.

e. Prior to the end of each work period and not less than twice a day on non-work days, the Contractor's Traffic Maintenance crew shall visually inspect and maintain all elements of the maintenance of traffic and Work Area protection installations.

4.) Throughout Progress of Work of This Numbered Section

a. Maintain visual and physical accessibility to fire hydrants. Provide 24-hour advance notice to the Engineer in the event of hydrant obstruction.

b. Conduct Work Area protection operations so that Traffic Lane ingress and egress to intersecting Roadways, adjacent structures or property, and bus and taxi stops, if any, can be maintained. Obtain the approval of the Engineer and provide 24-hour advance notice to the Engineer in the event that Work Area protection operations obstruct access to Work Areas.

5.) Placement and Removal of Temporary Signs and Traffic Control Devices

a. Do not locate signs or other traffic delineations, guiding devices and signs in a manner that would: obstruct or interfere with motorists view of approaching, merging or intersecting traffic; obstruct other permanent signs or route markers; or mislead or misdirect the motorist.

b. Unless otherwise shown on the Contract Drawings, the Work of installing and removing temporary signs, traffic control devices and pavement marking shall be protected, as a minimum, in accordance with Contract Drawing Standard Traffic Details and/or the MUTCD Part 6, as applicable.

6.) At excavations within Traffic Lanes which will be open to Roadway traffic prior to completion of construction, provide and maintain temporary Roadway plates supported on all edges, and maintain the surface condition of the Active Roadway and Roadway plates so that it is consistent with the posted speed limit. Secure plates against displacement by use of suitable steel pins.

a. Secure plate against displacement and bed in well-tamped pre-mixed cold patch material ramped 1:24 at exposed edges, or

b. Cut a recess in the Roadway surface sized to snugly fit the plate and evenly support the plate around its perimeter. Locate the top of the plate flush with or less than one inch below the adjacent Roadway surface. Secure the plate in the recess in a manner approved by the Engineer.

7.) At excavations within pedestrian walkways including Traffic Lane crosswalks which will be open to walkway pedestrian traffic prior to completion of construction, provide appropriate pedestrian railings and steel plate, wood plank or plywood covers surfaced with an approved heavy duty non-skid paint coating containing a grit additive. Temporary walkway covers over excavations shall be a minimum of 4-feet wide, designed and constructed to carry a minimum of 150 psf. Railings shall be approximately 3 feet 6 inches above the walkway cover and consist of a 2-inch by 4-inch wood top rail, 1-inch by 4-inch intermediate rail and a toe board 5-1/2 inches high all securely fastened to 2-inch by 4-inch wood posts spaced not more than 8 feet apart. Securely fasten wood walkway covers and posts to wood sleepers spanning excavation trench. Chamfer or asphalt ramp exposed edges and secure against displacement. Contractor's installations shall meet the requirements of the ADA laws in all respects.

8.) Each Work Area not protected by Vehicle-strong Barriers shall be protected by a back-up truck when workers are present, unless otherwise shown on the Contact Drawings.

9.) Vehicles used by the Contractor during performance of Work shall be considered as equipment vehicles and when not protected by a Vehicle-strong Barrier, said vehicle shall be protected by a back-up truck, unless otherwise shown on the Contact Drawings.

10.) Slow-Moving Vehicles traveling on a Roadway outside of demarcated protected Work Areas shall be followed (approximately 50 feet behind) by a vehicle displaying the same flashing hazard signal lights and sealed beam rotating yellow warning light as required for back-up trucks.

F. Notwithstanding provisions herein requiring or permitting the Authority to approve or disapprove of any traffic control or delineation and guiding device provided by the Contractor, the Contractor shall ensure the suitability and performance of all such traffic control devices such that inconvenience to the traveling public is held to an absolute minimum.

36. REQUIREMENTS FOR CRANES AND DERRICKS

During the performance of Work at the construction site, the use by the Contractor or its subcontractors of power operated cranes and derricks for hoisting and/or rigging purposes; or for construction, alteration, demolition, excavation and maintenance purposes, including highways or sewers; or for the installation of piles; or for the hoisting or lowering of any article on the outside of any building or structure shall be subject to the approval of the Engineer in accordance with this numbered clause.

A. Determinations will be made in writing by the Engineer on whether cranes and other such equipment meeting certain criteria shall be exempt from all or part of the requirements herein. Such determinations shall in no way relieve the Contractor from conformance with all applicable requirements of this clause and governing codes including the possession of a valid operator's license subject to verification by the Engineer.

1.) The following equipment will be considered for full exemption, which means exempt from B., C., D., E., F., G. and H. below:

a. Excavating or earth-moving equipment, except cranes used with clamshells.

b. Augurs, churn-drills, and other drilling equipment not used for the hoisting of any objects.

c. Mobile cranes, including jibs and any other extensions to the boom, not exceeding 50 feet in length, and with a manufacturer's rated capacity of 3 tons or less.

d. Mobile cranes, including jibs and any other extensions to the boom, exceeding 50 feet but not exceeding 135 feet in length, and with a manufacturer's rated capacity of 3 tons or less used exclusively as a man-basket.

e. Hoisting Machines permanently mounted on the bed of material delivery trucks that are used exclusively for the loading and unloading of such trucks, provided that the length of boom does not exceed the length of the truck bed by more than 5 feet, and any material transported thereon shall not be raised more than 2 feet in the unloading process.

f. Derricks having a manufacturer's rated capacity not exceeding 1 ton.

g. Mechanics trucks with a hoisting device used in activities related to the maintenance and repair of construction related equipment.

h. Articulating boom cranes that do not have an integral hoisting mechanism and that are used exclusively for the loading and unloading of trucks or trailers, provided that the length of boom does not exceed 135 feet, and that any material transported thereon shall not be raised more than 100 feet in the unloading process.

2.) The following equipment will be considered for partial exemption, which means exempt from B.4.), C.2.), C.4.) and D. below:

a. Cranes with less than 160 feet combined boom/jib length to be used for a period not exceeding 24 hours, operated entirely within Authority property, and at a location at least one boom/jib length away from all Authority property.

b. Service cranes and clamshells with a boom length of 110 feet or less to be operated entirely within Authority property and at a location that does not require the moving of any load over a roadway or sidewalk.

c. Pile drivers or clamshells used entirely within Authority property with a soil bearing pressure not exceeding 500 pounds per square foot.

d. Mobile cranes, including jibs and any other extensions to the boom, exceeding 50 feet but not exceeding 135 feet in length, and with a manufacturer's rated capacity of 3 tons or less.

B. For each crane or derrick not considered fully exempt by the Engineer, submit the following forms to the Engineer prior to delivery of the crane or derrick to the construction site: (See E. below for all forms)

1.) A copy of a current and valid Form CD-2, entitled "Crane/Derrick/Mobile Work Platform – Approval and Operation Application/Certificate", Revised 08/15/05, as issued by the New York City Department of Buildings - Cranes & Derricks Division, hereinafter called "NYCDOB-C&D". Form CD-2 shall bear the approval stamp of NYCDOB-C&D as a "Temporary Certificate of Approval/Temporary Certificate of Operation," and shall include an expiration date, a legible CD Number, and an authorized signature from a representative of NYCDOB-C&D. In the event that such approved Form CD-2 is not available, the Contractor shall ensure that the owner of the crane or derrick files a Form CD-2 directly with NYCDOB-C&D. Submit to the Engineer proof of the filing, a copy of the completed Form CD-2, and an "acceptable to operate" inspection report issued by NYCDOB-C&D.

2.) A fully executed Form CD-11, entitled "Equipment Owner Identification Form", Revised 12/03, as issued by NYCDOB-C&D.

3.) A fully executed Form CD-16, Statement of Notification to Community Boards.

4.) A fully executed Form CD-4, entitled "Crane/Derrick/Mobile Work Platform – On-Site Inspection Application/Certificate", Revised 12/03, as issued by NYCDOB-C&D. Form CD-4 shall be accompanied by drawings and calculations, all signed and sealed by a Professional Engineer licensed in the state of New York. The drawings and calculations shall clearly indicate the following:

a. Location of each crane or derrick.

b. All pertinent features of the site.

c. Supporting platforms and structures.

d. Swing and reach of each crane or derrick.

5.) If the crane or derrick position is within two hundred feet (200') of an NYC subway line or facility, approval from New York City Transit ("NYCTA") is required prior to the placement, assembly, or erection of the crane or derrick. In such cases, a Certificate of On-Site Inspection cannot be issued without NYCTA written approval.

Upon the review and acceptance in writing by the Engineer of all of the above submissions, the crane or derrick will be permitted to enter the construction site. Coordinate all such deliveries with the Engineer.

C. Upon delivery to the construction site for cranes or derricks considered by the Engineer to be fully or partially exempt, submit the following in accordance with A. above. For all other cranes or derricks, submit all of the following to the Engineer:

1.) Names, classifications, and license numbers of each crane or derrick operator and the master, tower, or climber crane rigger.

2.) For cranes or derricks to be operated solely on Authority property, file Form CD-8, entitled "Technical Report – Statement of Responsibility", Revised 12/03, as issued by the NYCDOB-C&D. Form CD-8 shall be completed in its entirety with the exception of Box #5B, and signed and sealed by a Professional Engineer licensed in the state of New York in Box #5A.

Upon review and acceptance by the Engineer of all submitted drawings and associated documentation specified above, the Contractor will be permitted to place and/or assemble the crane or derrick at the construction site, with the exception of tower or climber cranes. For tower or climber cranes, additional submittals and inspections shall be required as specified in 4.) below.

3.) For cranes or derricks to be operated on other than Authority property, file all forms, drawings and associated documentation directly with NYCDOB-C&D. Upon the submission to the Engineer of a current and valid "Certificate of On-Site Inspection" as issued by NYCDOB-C&D, will the Contractor be permitted to assemble or erect the crane or derrick at the construction site.

4.) For tower or climber cranes, in addition to the documentation in B. and C. above, submit the following to the Engineer:

a. A fully executed Form CD-7, entitled "Notification of Erecting or Dismantling of Climber or Tower Crane", Revised 07/07. Form CD-7 shall be accompanied by a copy of the license of each master or tower rigger designated to supervise the erection of the crane and all associated documentation required to ensure compliance with the manufacturer's recommendations. Form CD-7 shall also be accompanied by signed and sealed drawings by a Professional Engineer licensed in the state of New York for the erection, jumping, climbing and dismantling of the tower or climber crane. Documentation and drawings shall include the following:

(i) Serial number identification of equipment to be used for all rigging and lifting operations including all machines to be used for erection or dismantling.

(ii) Detailed listing of assemblies and components required for erection and dismantling of rigging and lifting equipment, including but not limited to lifting frame, climbing hydraulic cylinders, upper basket, lower basket, outriggers, communication system, tie-downs, dogs, horn, lights and weathervane.

(iii) Location of rigging and lifting equipment, assist cranes, sidewalk sheds, surrounding buildings, protection for their roofs and pick-up points, loads, and radius of swing of all loads. In addition, submit to the Engineer the safe load from the crane manufacturer's approved load radius chart for lift radius.

(iv) Weight list certified by the crane manufacturer listing all assemblies and components to be lifted. All components shall be clearly marked with their weight painted on the assembly, or stamped on metal tags attached to the assembly. In lieu of an equipment manufacturer's certification, submit documentation signed and sealed by a Professional Engineer licensed in the state of New York certifying the weight list and indicating how such weights were determined.

(v) Locations of the centers of gravity for all asymmetrical components.

(vi) Sequence of operation detailing erection, jumping, climbing and dismantling, along with the rigging materials to be used in such operations.

(vii) Written certification by a Professional Engineer licensed in the state of New York that all safety devices on each crane to be used in the erection, jumping, climbing and dismantling operations have been calibrated in accordance with the crane manufacturer's recommendations.

(ix) Names, license numbers (as applicable) and contact information for each licensed rigger, rigger foreman, site safety manager, crane safety coordinator and entity performing the erection, jumping, climbing, and/or dismantling Work.

(x) Load test procedure signed and sealed by a Professional Engineer licensed in the state of New York identifying the weights to be used and the load moment and line pull testing to be conducted in accordance with b. below.

b. A load test shall be conducted on each tower or climbing crane by a Professional Engineer licensed in the state of New York in accordance with the load test

procedure submitted under (x) above. Upon completion of the load test and determination that the results are satisfactory, submit to the Engineer the signed and sealed report certifying acceptance of the results by the Professional Engineer licensed in the state of New York.

c. A fully executed Form CD-12, entitled "Designation of Safety Coordinator" Revised 12/03, as issued by NYCDOB-C&D.

d. A signed and sealed report documenting the results of the field inspection of the crane in the "unassembled state (for cranes delivered in the unassembled state)" performed by a Professional Engineer licensed in the state of New York and certifying that all crane parts are in satisfactory condition, and acceptable for assembly and erection.

e. A copy of the Safety Coordination Meeting Log as stipulated in Section BC 3319 entitled "Cranes and Derricks," of the Building Code for the City of New York (BCCNY) (3319.8.2 through 3319.8.8, and 3319.10.2). The Contractor shall conduct the safety coordination meeting within the week prior to the erection, jumping, climbing, or dismantling of a tower or climber crane in accordance with BCCNY and notify the Engineer one week prior to the meeting.

Upon review and acceptance by the Engineer of all documentation in B. and C. above, the Contractor will be permitted to erect the tower or climber crane at the construction site.

D. Prior to the use and/or operation of each crane or derrick, including tower or climber cranes, at the construction site when the crane or derrick will be operated solely on Authority property, complete the following:

1.) Performance of a field inspection of the crane or derrick in the "assembled state" by a Professional Engineer licensed in the state of New York in accordance with BCCNY Reference Standard RS 19-2 including the verification, inspection, and certification of the following:

a. That the crane or derrick has a current and valid Form CD-2 as issued by NYCDOB-C&D for the configuration to be used at the construction site.

b. That the support, dunnage, configuration and location of the crane or derrick have been constructed and positioned in accordance with the drawings and calculations submitted to the Engineer with Form CD-4.

c. That the crane or derrick is in working order and there is no visible damage including, but not limited to, the following items:

(i) Bent or missing lacings

(ii) Pins are properly installed and have no visible fatigue

(iii) Maladjustment of control mechanisms interfering with proper operation

(iv) Excessive wear of control mechanisms components and contamination by lubricants or other foreign matter

(v) Malfunction of operational aids

(vi) Hydraulic hoses

(vii) Deformation, chemical damage, cracks and wear of hooks and latches

(viii) Rope reeving for compliance with crane manufacturer's specifications

(ix) Malfunction and excessive deterioration of electrical apparatus and accumulation of dirt and moisture

(x) Hydraulic system for proper oil level

(xi) Tires for recommended inflation pressure

Upon the completion of the field inspection and the determination that the crane or derrick is sound and has been assembled and positioned in accordance with the drawings and calculations submitted to the Engineer with Forms CD-4 and CD-7, submit to the Engineer both a signed and sealed inspection report certifying conformance by the Professional Engineer licensed in the state of New York and a fully executed Form CD-8, signed and sealed in Box #5B.

2.) For tower or climber cranes, in addition to the above, procure the services of a New York State Licensed Surveyor to perform a plumbness survey, a licensed testing laboratory to perform anchor bolt pull-out testing, and a licensed rigger to certify compliance with the manufacturers bolt torque values connecting sections. Submit to the Engineer a fully executed Form CD-6, entitled "Crane / Derrick and Work Platform – Plumbness And Torque Notification/Anchor Bolt Pull Out Test" Revised 12/03, as issued by NYCDOB-C&D.

Upon the review and acceptance by the Engineer of a signed and sealed inspection report and Final Form CD-8 (and Form CD-6 for tower and climber cranes), the Contractor will be permitted to use and operate the crane or derrick. Form CD-4 and Final Form CD-8 (and Form CD-6 for tower and climber cranes), as accepted by the Engineer will constitute the "Certificate of On-Site Inspection."

E. The forms issued by the NYCDOB-C&D listed below can be found on the following website:

www.nyc.gov/html/dob/downloads/pdf/cd

CD-2 - Crane/Derrick/Mobile Work Platform – Approval and Operation Application/ Certificate, Revised 08/15/05

CD-4- Crane/Derrick/Mobile Work Platform – On-Site Inspection Application/ Certificate, Revised 12/03

CD-6- Crane/Derrick and Work Platform – Plumbness And Torque Notification/Anchor Bolt Pull Out Test, Revised 12/03

CD-7- Notification of Erecting or Dismantling of Climber or Tower Crane, Revised 07/07

CD-8- Technical Report – Statement of Responsibility, Revised 12/03

CD-11- Equipment Owner Identification Form, Revised 12/03

CD-12- Designation of Safety Coordinator, Revised 12/03

CD-16- Statement of Notification to Community Boards

CD-22- Inspection Request for Assembled/Unassembled Crane, Derricks, and Mobile Work Platforms revised 10/05

F. If Form CD-2 issued by the NYCDOB-C&D expires while the crane or derrick is in use at the construction site on Authority property, the Contractor shall ensure that the owner of the crane or derrick files all renewals and/or extensions directly with NYCDOB-C&D. Submit proof of the filing along with a copy of the completed Form CD-2 to the Engineer. Upon receipt of any such renewals or extensions issued by NYCDOB-C&D, submit copies to the Engineer.

G. The estimated review time for all crane and derrick submissions to the Engineer is five (5) business days. If the Contractor has not received any reply by the fourth day of the review, contact the Engineer.

H. If the NYCDOB-C&D issues a letter of deficiency to the Authority or stop work order to the Contractor while the crane or derrick is on Authority property, the Contractor shall cooperate fully with the NYCDOB-C&D to ensure that all acceptable corrective actions will be taken immediately. Keep the Engineer advised during the performance of all remedial Work.

END OF SECTION

DIVISION 5

SECTION 05080

STAINLESS STEEL FINISH

PART 1. GENERAL

1.01 SUMMARY

A. This Section specifies the application and repair of a non-directional stainless steel finish for Work specified in other Sections of these Specifications.

1.02 QUALITY ASSURANCE

A. Uniformity of Finish: All stainless steel surfaces of each required type (sheet, plate and bars) shall appear to be identical. Closely follow the submittal requirements found in Appendix "A" of this Section, as supplemented by additional submittal and mock-up requirements found in other Stainless Steel Specification sections.

B. If the Engineer rejects stainless steel sample submissions for the reason that the non-directional finish was applied by a different entity than the one that produced the originally approved samples, have all rejected stainless steel refinished by the approved entity at no additional cost to the Authority.

C. Finisher Qualifications: The entity performing the stainless steel non-directional finish shall have completed within the last three years a minimum of two non-directional stainless steel applications of at least 1,500 square feet in area each.

D. Unless otherwise specified or otherwise shown on the Contract Drawings, all exposed stainless steel surfaces shall receive the same non-directional finish.

E. Furnish stainless steel products produced from the same mill for all stainless steel Work to receive a non-directional finish.

1.03 SUBMITTALS

A. See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 STAINLESS STEEL NON-DIRECTIONAL FINISH

A. The stainless steel to receive a non-directional finish shall receive an AISI No. 4 base finish applied prior to application of final non-directional finishing. Apply over the AISI No. 4 base finish a "satin" or "angel-hair" type finish made up of various sized and shaped grain lines, ranging from 1 to 10 millimeters and going in all directions and giving the appearance of very fine random scratches. This applied treatment shall be achieved through the use of a rotating disk hand-held power buffer and shall be applied using a circular motion. Do not use any ferrous metal tools (other than stainless steel) in working the finished surfaces of stainless steel.

B. The standard for non-directionality of stainless steel finishes applied under this Section shall be that the variation between adjacent areas of stainless steel must be imperceptible to the naked eye under normal daylight conditions. Submit range samples defining the maximum variation of finish that can be anticipated in the work. Pieces abutting or within 6 inches of each other, though not abutting, shall not vary by more than 1/2 the range and the variation shall be imperceptible to the naked eye under normal daylight conditions. Carefully inspect parts in the shop, grade for assembly compatibility and mark for installation location.

C. Finishes shall be shop-applied, unless prior permission to utilize other application methods is given in writing by the Engineer.

PART 3. EXECUTION

3.01 INSTALLATION

A. Carefully install stainless steel Work so as to minimize the occurrence of scratching and other surface damage. Follow the requirements of the individual specification Sections for delivery, storage and handling procedures.

B. Repair of Damaged Surfaces

Should the surfaces become scratched or otherwise damaged upon or after installation, repair in the field to the satisfaction of the Engineer.

C. Refer to the individual Sections of these Specifications noted above in 1.01 A for additional installation requirements.

END OF SECTION

SECTION 05080

STAINLESS STEEL FINISH

APPENDIX "A"

SUBMITTALS

A. These submittal requirements are complementary to the submittal requirements found in other Stainless Steel Specifications Sections.

B. Samples for Initial Selection: For required non-directional finish, submit fourteen (14) 24 inch x 24 inch sample panels of 18 gage sheet and 3/16 inch plate and fourteen (14) minimum 18-inch long samples of bars/structural shapes, if any. Samples shall show the full range of expected finish of these samples. The Engineer will select between six (6) and nine (9) samples for each type of material/finish as the acceptable range for Work of this Contract.

C. Samples for Verification: Samples shall be on lengths of bars not less than 12 inches and sheet/plate/panels not less than 24-inch square showing the full range expected in the finished construction. Should an individual Stainless Steel specification require more extensive samples, those requirements shall take precedence. These requirements are in addition to any mock-up requirements for individual Work items or the assemblies in which they occur.

D. Submit certificates, including types, quantities and batch numbers, for all stainless steel products receiving a non-directional finish.

END OF APPENDIX "A"

DIVISION 5

SECTION 05522

STAINLESS STEEL PIPE AND TUBE RAILINGS

PART 1. GENERAL

1.01 SUMMARY

This Section specifies requirements for stainless steel pipe and tube handrails and railings.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

American Society of Civil Engineers (ASCE)

ASCE 8	Specification for the Design of Cold-Formed Stainless Steel Structural Members.

American Society for Testing and Materials (ASTM)

ASTM A 312	Standard Specification for Seamless and Welded Austenitic Stainless Steel Pipes.
ASTM A 554	Specification for Welded Stainless Steel Mechanical Tubing.
ASTM A 666	Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
ASTM A 743	Specification for Castings, Iron Chromium, Iron-Chromium-Nickel, Corrosion Resistant, for General Application.
ASTM A 780	Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
ASTM C 1107	Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).

American Welding Society, Inc. (AWS)

AWS D1.6	Structural Welding Code – Stainless Steel.

National Association of Architectural Metal Manufacturers (NAAMM)

Metal Finishes Manual for Architectural and Metal Products.

The Society for Protective Coatings (SSPC)

SSPC-Paint 20	*Paint Specification No. 20 – Zinc Rich Primers* (Type I, Inorganic, and Type II, Organic).

1.03 DESIGN AND PERFORMANCE REQUIREMENTS

A. Structural Performance

1. Handrails and railings shall be capable of resisting structural loads required by the New York City Building Code or the New Jersey Uniform Construction Code, as applicable to where the Project is located.

2. When installed, handrail and railing assemblies shall be capable of withstanding required gravity loads and structural loads, applicable to the specific location or use, without exceeding allowable design working stresses of the materials involved, including anchors and connections.

3. Thermal Movements: Allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

   a. Temperature Change (Range): 120 degrees F, ambient; 180 degrees F, material surfaces.

B. Corrosion Control: Prevent galvanic action and other forms of corrosion by isolating metals and other materials from direct contact with incompatible materials.

C. Structural performance of handrails and railings: Provide handrails and railings capable of withstanding structural loads required by ASCE 7 and/or the Uniform Building Code, state of New Jersey, whichever is more stringent, without exceeding allowable design working stresses of materials for handrails, railings, anchors, and connections.

1.04 QUALITY ASSURANCE

A. Where required by Appendix "A", submit structural calculations for handrails and railings. Determine allowable design working stresses of handrail and railing materials based on ASCE 8.

B. Engineer Qualifications

A professional engineer who is legally qualified to practice in the jurisdiction where the Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for design of handrails and rails indicated for this Project in material, design and installation.

C. Welding Standards

Comply with applicable provisions of AWS D1.6 *Structural Welding Code – Stainless Steel.*

1. Each welder shsall have satisfactorily passed AWS qualification tests for welding processes involved and shall be currently AWS certified.

2. Ensure that shop and/or field Quality Control inspections are performed by an AWS Certified Welding Inspector (CWI) before and during assembly as well as during and after welding. Submit all QC reports to the Engineer.

3. All welding procedures shall be qualified as required by AWS D1.6.

D. Single Source Responsibility

Obtain each type of handrail and railing through one source from a single manufacturer.

E. Field Measurements

Verify handrail and railing dimensions by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.05 DELIVERY, STORAGE, AND HANDLING

Protect material from damage including, but not limited to, scratches, nicks, dents and gouges during delivery, storage, assembly and installation.

1.06 SUSTAINABLE DESIGN REQUIREMENTS

A. Sustainable Design General Requirements

1. The Authority requires the Contractor to implement practices and procedures to meet the sustainable requirements. The Contractor shall ensure that the requirements related to these goals, as defined in Division 1 - GENERAL PROVISIONS and the articles below, are implemented to the fullest extent. Substitutions, or other changes to the work proposed by the Contractor, will not be allowed if such changes compromise the stated Sustainable Design Performance Criteria. Where no additional articles are listed below refer to Division 1 - GENERAL PROVISIONS.

B. Sustainable Design Performance Criteria:

1. Stainless steel pipe and tube railings shall contain a minimum of 25 percent (by weight) recycled content, calculated by adding the post-consumer recycled content percentage to one-half of the post-industrial recycled content percentage. Certify the recycled content in accordance with the Sustainable Design Submittal Requirements of this section.

2. All field-applied adhesives, sealants, paints and coatings relating to work of this section shall meet the requirements of Division 1 - GENERAL PROVISIONS.

3. The manufacturing location (final assembly) of the stainless steel pipe and tube railings shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

1.07 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MANUFACTURERS

Subject to compliance with requirements of this Section, furnish and install products of one of the following, or approved equal:

Julius Blum & Co., Inc., Carlstadt, NJ
Sterling Dula Architectural Prod. (div. of Kane Mfg.), Erie, PA
Tri-Tech Inc., Austell, GA
R & B Wagner, Inc., Butler, WI

2.02 MATERIALS

Comply with the standards specified for forms and types of metals shown on the Contract Drawings or required for handrail and railing components.

A. Stainless Steel

1. Stainless Steel Tubing: ASTM A 554, Grades MT 302 or MT 304, as standard with manufacturer for interior applications and Grade MT 316L for exterior applications.
2. Stainless Steel Pipe: ASTM A 312, Grade TP 304 for interior applications and Grade TP 316L for exterior applications.
3. Castings: Iron-chromium and iron-chromium-nickel alloy: ASTM A 743, Grade CF 8 or CF 20 for interior applications and Grade CF 8M or CF 3M for exterior applications.
4. Stainless Steel Plate: ASTM A 666, Type 301, 302 or 304 for interior applications and Type 316L for exterior applications.

B. Brackets, Flanges and Fittings

Cast or formed metal of same type of material and finish as supported handrails or railings.

C. Welding Electrodes and Filler Metal

Type and alloy of filler metal and electrodes as recommended by AWS D1.6 (producer of metal to be welded) and as required for color match, strength and compatibility in fabricated items.

D. Fasteners

Type 304 stainless steel. Use concealed fasteners for interconnection of handrail and railing components and for their attachment to other Work, unless otherwise shown on the Contract Drawings.

E. Anchors and Inserts

Type, size and material recommended by the railing manufacturer for type of loading and installation condition shown on Contract Drawings. Use stainless steel or hot-dip galvanized anchors and inserts for exterior locations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts as required, to be set into concrete or masonry.

F. Galvanizing Repair Paint

High zinc dust content paint for regalvanizing welds in galvanized steel with dry film containing minimum 94 percent zinc dust content, complying with SSPC-Paint 20.

G. Nonmetallic Grout

Premixed, factory-packaged, nonshrink, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107, Grade C. Furnish grout of grade specifically recommended by manufacturer for interior and exterior applications.

H. Erosion Resistant Anchoring Cement

Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at the construction site to create pourable anchoring, patching and grouting compound. Formulation shall be resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and shall be recommended by manufacturer for exterior use.

2.03 FABRICATION

A. General

Fabricate handrails and railings to dimensions and details shown on the Contract Drawings. Furnish handrail and railing members in sizes and profiles shown on Contract Drawings, with supporting posts and brackets of size and spacing shown, but not less than required to support the design loadings required by 1.03 A.

1. Preassemble items in shop to the greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly match mark units for reassembly and coordinated installation.
2. Shear and punch metals cleanly and accurately. Remove burrs and ease exposed edges to a radius of approximately 1/32 inch. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing the Work.
3. Cut, reinforce, drill and tap components to receive anchorage, finish hardware and similar items.
4. Close exposed ends of handrail and railing members with prefabricated end fittings.
5. Fabricate wall returns at ends of wall-mounted handrails. Close ends of returns. Furnish railing extensions at bottom and top of stairs as shown on the Contract Drawings.

6. Form bends by using prefabricated elbow fittings and radius bends, as applicable, of radii shown on the Contract Drawings, except where configuration shown requires bending of railing members.

7. Fabricate connections that will be exposed to weather in a manner to exclude water. Where water may accumulate, provide weepholes.

B. Welded Connections

Fabricate handrails and railings with welded connections, unless otherwise shown on the Contract Drawings. Cope components at perpendicular and skew connections to provide close fit or use fittings designed for this purpose. Weld connections continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

2. Obtain fusion without undercut or overlap.

3. Remove flux immediately.

4. At exposed connections, finish exposed surfaces smooth and blend so no roughness shows after finishing and so welded surface matches contours of adjoining surfaces.

5. All welded permanent splices shall be complete penetration welds unless otherwise shown on the contract drawings.

C. Nonwelded Connections

Where railings are shown on the Contract Drawings to be adhesively or mechanically attached:

1. Fabricate handrails and railings to accommodate interconnection of members using railing manufacturer's standard concealed mechanical fasteners and fittings.

2. Assemble members and fittings to produce flush, smooth and rigid hairline joints.

3. Splice joints for field connection shall use epoxy structural adhesive where such procedure represents manufacturer's standard splicing method.

D. Toe Boards

Incorporate toe boards at railings around openings and at edge of open-sided floors and platforms. Fabricate to dimensions and details shown on the Contract Drawings or, if not shown, fabricate toe boards 4 inches high. Use manufacturer's standard toe board material.

E. Brackets, Flanges, Fittings and Anchors

1. Use manufacturer's standard wall brackets, flanges, miscellaneous fittings and anchors for interconnection of handrail and railing members to other Work. Furnish inserts and other anchorage devices as shown on the Contract Drawings and as required to provide support. Coordinate anchorage types with supporting structure.

2. For railing posts set in concrete, furnish minimum 6 inch long galvanized steel sleeves, matching shape and configuration of railing posts and with outside dimensions not less than 1/2 inch greater than outside dimensions of post. Weld galvanized steel plate closures to bottoms of sleeves. Plate closures shall be 1 inch greater in length and width than outside dimensions of sleeves.

   a. Touch-up galvanized surfaces damaged by welding or abrasion by applying galvanizing repair paint to comply with ASTM A 780.

2.04 SHOP FINISHING

A. Stainless Steel Finishes

Comply with NAAMM's *Metal Finishes Manual for Architectural and Metal Products* for recommendations for applying and designating finishes. Protect finishes on exposed surfaces with a strippable, temporary protective covering prior to shipment.

1. Finish designations prefixed by "AISI" conform to the system established by the American Iron and Steel Institute for designating stainless steel finishes.

2. Grind and polish surfaces to produce uniform, directionally textured and polished finish indicated, free of cross scratches. Run grain of directional finishes, if any, with long dimension of each piece.

3. Remove or blend tool and die marks and stretch lines into finish.

4. Furnish one or more of the following finishes, where shown on the Contract Drawings. If no finish is shown, provide a 320-grit polished finish.

   a. 180-Grit Polished Finish: Oil-ground, uniform, directionally textured finish.

   b. 320-Grit Polished Finish: Oil-ground, uniform, fine, directionally textured finish.

   c. Polished and Buffed Finish: Oil-ground, 180-grit finish followed by buffing.

   d. Bright, Directional Polish: AISI No. 4 finish (applied after fabrication).

5. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

PART 3. EXECUTION

3.01 PREPARATION

Coordinate setting drawings, diagrams, templates, instructions and directions for installation of anchorages, such as sleeves, inserts, anchor bolts and miscellaneous items having integral anchors, which are to be embedded in concrete as masonry construction specified in other Sections. Coordinate delivery of such items to the construction site in time for installation.

3.02 INSTALLATION

A. General

1. Fit exposed connections accurately together to form tight, hairline joints.

2. Perform cutting, drilling and fitting required for installation of handrails and railings. Set Work accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels.

3. Do not weld, cut or abrade surfaces of handrails and railing components which have been coated or finished after fabrication and are intended for field connection by mechanical means without further cutting or fitting.

4. Set posts plumb within a tolerance of 1/16 inch in 3 feet.

5. Align rails so variations from level for horizontal members and from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.

6. Adjust handrails and railings prior to anchoring to ensure matching alignment at abutting joints. Space posts at interval shown on the Contract Drawings or, if not shown, as required by design loadings specified in this Section.

B. Anchoring Posts

1. Anchor posts in concrete using steel sleeves preset and anchored into the concrete, unless other methods are shown on the Contract Drawings. After posts have been inserted into sleeves, solidly fill annular space between post and sleeve with nonshrink, nonmetallic grout, mixed and placed to comply with grout manufacturer's directions.

2. Leave anchorage joint exposed, unless otherwise shown on the Contract Drawings. Wipe off excess grout and leave 1/8 inch build-up, sloped away from post. For installation exposed to exterior or to flow of water, seal grout to comply with grout manufacturer's directions.

3. Anchor posts to metal surfaces with manufacturer's standard fittings designed for this purpose.

C. Railing Connections

1. Use fully welded, complete penetration weld joints for permanently connecting railing components, unless otherwise shown on the Contract Drawings. Comply with requirements in 2.03 for welded connections whether welding is performed in the shop or in the field.

2. Where railing components are shown on the Contract Drawings to be mechanically or adhesively attached, use mechanical or adhesive joints for permanently connecting railing components. Prevent damage to railing members and fittings while making connections.

D. Expansion Joints

Install expansion joints at locations shown on the Contract Drawings but not farther apart than required to accommodate thermal movement. Furnish slip-joint internal sleeve extending 2 inches beyond joint on either side. Fasten internal sleeve securely to one side and locate joint within 6 inches of post.

E. Anchoring Railing Ends

1. Anchor railing ends into concrete or masonry with manufacturer's standard fittings designed for this purpose.

2. Anchor railing ends to metal surfaces with manufacturer's standard fittings using concealed fasteners.

F. Attachment of Handrails to Walls

1. Secure handrails to walls with manufacturer's standard wall brackets and end fittings.
2. For concrete and solid masonry, use drilled-in expansion shields for concealed bolts.
3. For hollow masonry anchorage, use toggle bolts with square heads.

3.03 ADJUSTING

At the construction site, repair finishes of handrails and railings damaged as a result of the Contractor's operations or furnish and install new railings. Remove handrails and railings whose finish cannot be repaired at the construction site and either return them to the fabrication shop, restore the finishes and reinstall, or furnish and install new handrails and railings. All such remedial Work shall be performed to the satisfaction of the Engineer and at no cost to the Authority.

3.04 PROTECTION

Protect finishes of handrails and railings from damage by use of temporary protective coverings approved by the railing manufacturer. Remove protective covering when other Work of the Contract is completed or when directed by the Engineer.

END OF SECTION

SECTION 05522

STAINLESS STEEL PIPE AND TUBE RAILINGS

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1 - GENERAL PROVISIONS:

A. Product Data

Manufacturer's product specifications and instructions for materials and processes used in the fabrication, assembly and installation of handrails and railings, including finishes and grout. Provide mill test reports for all material used in the contract.

B. Shop Drawings

Drawings for fabrication and erection of handrails and railings, showing sizes, shapes and layout of all railing components. Include plans, elevations and details of fittings, connections and anchorages to other Work. Furnish templates for anchors and bolts to be installed under other Sections.

C. Samples

1. Samples for each type of finish shown on the Contract Drawings. Prepare samples on metal of same gage and alloy to be used in Work. Where normal color and texture variations are to be expected, samples shall show limits of such variations.

2. Include 6 inch long samples of distinctly different railing members including handrails, toprails, posts, rail coverings and any other appurtenances. Include samples of fittings and brackets.

D. Design Calculations

Submit design calculations signed and sealed by a professional engineer licensed in the state in which Work is to be performed, showing compliance with loading criteria specified in 1.03.

E. Qualifications

1. Professional Engineer: Demonstrate capabilities and experience. Include list of completed projects with project names, addressees, names of architects and owners.

2. Welder: Evidence of current AWS certification.

3. Before starting work, submit to the Engineer for approval welding procedure specifications, welder qualifications, and the qualifications/credentials of the shop and field Quality Control personnel.

F. Quality Control Inspection Reports

1. Provide copies of all Quality Control inspection reports performed by the AWS Certified Welding Inspector within 7 calendar days of the date of each inspection.

G. Sustainable Design Submittal Requirements

The Contractor shall submit the Sustainable Design certification items listed herein. Sustainable Design submittals shall include the following:

1. A completed Sustainable Design Materials Certification Form (SDMCF), appended to Division 1 - GENERAL PROVISIONS. Information to be supplied for this form shall include:

   a. Cost breakdowns for the materials included in the Contractor's work. Cost breakdowns shall include total cost plus itemized material costs.

   b. The amount of post-consumer and/or post-industrial recycled content in the supplied product(s).

   c. The manufacturing location of the supplied product(s).

   d. The VOC content of all adhesives, sealants, paints, and coatings applied on site as part of this work.

2. Published product literature or letters of Certification, provided from the product manufacturer on the manufacturer's letterhead, to verify the product information supplied for the SDMCF.

3. Product cut sheets for materials that meet the SDMCF.

4. Material Safety Data Sheets (MSDS), for applicable products. Applicable products include, but are not limited to field-applied adhesives, sealants, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).

5. The Sustainable Design submittal information shall be assembled into one package per Section or trade, and sent to the Engineer.

END OF APPENDIX "A"

DIVISION 5

SECTION 05311

STEEL DECK

PART 1. GENERAL

1.01 SUMMARY

This Section specifies requirements for steel floor and roof deck.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

American Iron and Steel Institute (AISI)

Specification for the Design of Cold-Formed Steel Structural Members

American Welding Society (AWS)

D1.1	Structural Welding Code, Steel
D1.3	Structural Welding Code - Sheet Steel

American Society for Testing and Materials (ASTM)

ASTM A36	Specification for Structural steel
ASTM A108	Specification for Steel Bars, Carbon, Cold Finished, Standard Quality
ASTM A611	Specification for Steel Sheet, Carbon, Cold Rolled, Structural Quality
ASTM A653	Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc Iron Alloy Coated (Galvannealed) by the Hot Dip Process.

Steel Deck Institute (SDI)

Design Manual for Composite Decks, Form Decks, Roof Decks and Cellular Metal Floor Deck with Electrical Distribution (Publication No. 29).

Diaphragm Design Manual

Factory Mutual Engineering Corporation (FM)

1-28	Loss Prevention Data Sheet - Insulated Steel Deck

1.03 QUALITY ASSURANCE

A. The entity performing the Work of this Section shall have a minimum of five years experience in metal decking work involving complexities similar to those required under this Section and shall employ labor and supervisory personnel experienced in this type of Work.

B. The Contractor shall employ currently qualified welding processes and welding operators in accordance with AWS Specifications and shall provide certification that welders to be employed in the Work have satisfactorily passed AWS qualification tests.

C. Shear connector welds will be inspected and tested according to the requirements of AWS D.1.1 for stud welding. Contractor shall remove and replace work that does not comply with the specified requirements.

D. The composite behavior of floor deck shall be verified by tests as specified in SDI Publication No. 29. See Section 5 of the specifications for composite steel floor deck.

E. The composite behavior of cellular metal floor deck (for electrical distribution) with the concrete slab shall be verified by tests similar to that specified in SDI Publication No. 29. See Section 5 of the specifications for composite floor deck, also Sections 1 and 2 of the specifications for cellular metal floor deck. Where trench headers interrupt the composite action of concrete slab with metal deck, the deck shall be considered non-composite. The deck sheet shall be modified as required by the Engineer.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Do not bend or mar decking.

B. Store off ground with one end elevated for drainage.

C. Cover decking with waterproof material.

D. Do not store on roof or floor framing unless material is securely tied down and the framing has been analyzed to ensure that such storage will not cause an overload.

E. Also see Section 3.02 "Protection".

1.05 SUBMITTALS

For Submittals see Appendix A.

PART 2. PRODUCTS

2.01 MATERIALS

The following materials shall conform to the types shown on the Contract Drawings. The types are indicated by the American Society for Testing and Materials (ASTM) or the Military Specifications Designation for each.

A. Steel for Painted Deck Units: ASTM A 611.

B. For composite floor deck use grades C and D. For non-composite floor deck and for roof deck use Grades C, D or E.

C. Steel for Galvanized Metal Deck Units: ASTM A653 SQ Grade 33.

D. Miscellaneous Steel Shapes: ASTM A 36.

2.02 ACCESSORIES

A. Shear Connectors, if any

Headed stud type, ASTM A 108, Grade 1015 or 1020, cold-finished carbon steel. AWS D1.1 Type B

B. Sheet Metal Accessories

Commercial quality, ASTM A 653, galvanized (coating designation G90).

C. T-toggles when their use is permitted by the Engineer.

2.03 FABRICATION

A. General

Form deck units in lengths to span three or more supports with flush, telescoped or nested 2-inch laps at ends and interlocking or nested side laps, unless otherwise shown on the Contract Drawings. The deck manufacture's design and fabrication shall be based on the total load stress limited to 20,000 psi for roof deck and 22,000 psi for floor deck. The live load deflection shall be limited to 1/360 of the span.

B. Metal Joint Cover Plates, if any

Fabricate metal joint cover plates of not less than the same thickness as decking for end-abutting floor deck units and at changes in direction. Form to match contour of deck units and to be approximately 6 inches wide.

C. Metal Closure Strips, if any

Fabricate metal closure strips, for cell raceways and openings between decking and other construction, of not less than 0.045-inch, minimum (18-gage) sheet steel unless otherwise shown on the Contract Drawings. Form to provide tight-fitting closures at open ends of cells or flutes and sides of decking.

D. Roof Sump Pans

Fabricate from single piece of 0.071-inch, minimum (14-gage) galvanized sheet steel with level bottoms and sloping sides to direct water flow to drain, unless otherwise shown on the Contract Drawings. Provide sump pans of adequate size to receive roof drains and with bearing flanges not less than 3-inches wide. Recess pans not less than 1-1/2 inches below roof deck surface, unless otherwise shown on the Contract Drawings or required by deck configuration. Holes for drains shall be cut in field.

E. Tolerances

Fabrication tolerances for deck shall be in accordance with the provisions of SDI Publication No. 29.

2.04 SHOP PAINTING

A. Galvanizing: ASTM A 653, G 60 (Z 180) minimum.

B. Galvanizing Repair Paint

High zinc-dust content paint for damaged galvanized surfaces complying with Military Specifications MIL-P-21035 (Ships).

C. Coating for Exposed Galvanized Deck Surfaces

Where deck will remain exposed to view in the finished construction, the hot-dipped, zinc-coated deck shall be coated by the same entity that is to apply the prime coat and all subsequent coats.

D. Shop Prime Painting and Surface Preparation, if any

Shop prime painting and surface preparation shall be as shown on the Contract Drawings.

PART 3. EXECUTION

3.01 INSTALLATION

A. General

1. Install deck units and accessories in accordance with manufacturer's recommendations and approved shop drawings, and as specified herein.
2. Coordinate the location of deck bundles with structural steel erector to prevent overloading of structural members.
3. Place deck units on supporting steel framework and adjust to final position with ends accurately aligned and bearing on supporting members before permanently fastening. Do not stretch or contract side lap interlocks.
4. Place deck units in straight alignment for entire length of run of cells and with close alignment between cells at ends of abutting units.

5. Place deck units flat and square, secured to adjacent framing without warp or excessive deflection.

6. Do not place deck units on concrete supporting structure until concrete has cured and is dry.

7. Minimum bearing length of deck on supporting members shall be 1-1/2 inches unless otherwise shown on the Contract Drawings.

B. Fastening Floor Deck Units

Fasten floor deck units to steel supporting members by not less than 3/4-inch diameter fusion welds spaced not more than 12 inches o.c. with a minimum of 2 welds per unit at each support. Side laps are to be welded with a maximum spacing of 36 inches on center. Tack weld at 4 feet o.c. for fastening end closures.

C. Fastening Roof Deck Units

Fasten roof deck units to steel supporting members by not less than 5/8-inch diameter fusion welds spaced not more than 12 inches o.c. at every support, and at closer spacing where required for lateral and uplift force resistance. Uplift resistance for the roof shall meet the requirements of class 1-90 rating in accordance with Factory Mutual (FM) Data Sheet 1-28. Side laps are to be welded with a maximum spacing of 36 inches on center. In addition, secure deck to each supporting member in ribs where side laps occur.

D. Alternative Fastening of Deck Units

Where shown on the Contract Drawings, an Engineer approved self tapping screw fastener may be used in lieu of fusion welds specified in 3.01 B and C above. Only one type of fastening method shall be used for the steel deck fastening.

E. Welding

Comply with AWS specifications requirements and procedures for appearance and quality of welds, and for methods used in correcting welding work. Use welding washers where recommended by deck manufacturer. Recommendations concerning the use of weld washers that appear in SDI Publication No. 29 shall be considered minimum requirements.

F. Cutting and Fitting

Cut and neatly fit deck units and accessories around other work projecting through or adjacent to the decking.

G. Reinforcement at Openings

Provide additional metal reinforcement and closure pieces as required for strength, continuity of decking and support of other Work shown on the Contract Drawings.

H. Metal Joint Cover Plates, if any

Provide metal joint cover plates at abutting ends and changes in direction of floor deck units, except where taped joints are required.

I. Roof Sump Pans

Place over openings provided in roof decking and weld to top decking surface. Space welds not more than 12 inches o.c. with at least one weld at each corner. Cut opening in roof sump bottom to accommodate drain size shown.

J. Shear Connectors, if any

Weld shear connectors to supports through decking units in accordance with manufacturer's instructions. Do not weld shear connectors through two layers (lapped ends) of decking units. Weld only on clean, dry deck surfaces.

K. Closure Strips

Provide metal closure strips at open uncovered ends and edges of roof decking, and in voids between decking and other construction. Weld into position to provide a complete decking installation.

L. Touch-up Painting

After decking installation, wire brush, clean and paint scarred areas, welds and rust spots on top and bottom surfaces of deck units and supporting steel members. Touch up galvanized surfaces with galvanizing repair paint applied in accordance with manufacturer's instructions. Touch up painted surfaces with same type of shop paint used on adjacent surfaces. In areas where shop-painted surfaces are to be exposed, apply touch-up paint to blend into adjacent surfaces.

3.02 PROTECTION

A. Do not use deck units for storage or working platforms until permanently secured in position.

B. Assure that construction loads and concrete weight do not exceed acceptable levels indicated by the manufacturer's load tables. Such loads shall be limited so that the maximum sag is less than 1/180 of the span or 1/2 inch whichever is less.

C. No deck placed or stored shall be left unsecured at end of each day's Work. Deck units shall be secured from movement due to wind at all times.

END OF SECTION

SECTION 05311

STEEL DECK

APPENDIX "A"

SUBMITTALS

The following items shall be submitted to the Engineer for approval, except as otherwise noted.

A. Shop Drawings

1. As per Division 1 "Shop Drawings, Catalog Cuts and Samples". The shop drawings shall clearly indicate the dimensions, section properties, material types and finishes with ASTM designations, hardware, framing, laps, reinforcement, connections, anchorage, sump pans, cant strips, ridge and valley plates, closure strips, pour strips, factory installed knockouts and other details required by the Work of this Section. The preparation of these drawings shall be coordinated with the Work of other Sections.

2. Layout of electrical distribution ducts and trenches in cellular metal floor.

B. Catalog Cuts, Materials Certification and Test Results

1. As per Division 1 "Shop Drawings, Catalog Cuts and Samples".

2. The Contractor shall submit certification that welders to be employed in the Work have satisfactorily passed AWS qualification tests.

3. Submit a letter of certification from the deck manufacturer stating that the design and fabrication of the metal decking to be installed under this Section are in accordance with these specifications and SDI Design Manuals.

4. Test data, calculations or design charts for self tapping screws prepared by the screw manufacturer.

C. Samples

As per Division 1 "Shop Drawings, Catalog Cuts and Samples"; submit samples of the metal decking of sufficient size to show the materials, finishes, construction, connections, and workmanship involved in fabrication of the decking.

D. Construction procedures and Quality Assurance Documents

1. Submit manufacturer's recommended installation instructions.

END OF APPENDIX "A"

SECTION 05311

STEEL DECK

INSTRUCTIONS TO SPECIFIER

1.01 The specifier shall review all items listed in Appendix "A". Remove items that are not applicable to this project and add to Appendix "A" under the proper headings, any submittal items that are intended to be shown on the contract drawings. Review the final Appendix "A" with the Principal/Senior Engineer in charge.

1.02 Ensure that the Contract Drawings show:

A. Type, size and finish of deck units.

B. Shear connectors, if any. (2.01 D)

C. Shop prime paint and surface preparation, or galvanizing, if any.

D. Welds where heavier than standard.

E. For decks with diaphragm action and for deck at roof edges, show the increased number and/or size of attachments at supports and side laps.

F. If screw fasteners are to be used as an alternative to fusion welds, specify fasteners and all spacings on drawings.

END OF INSTRUCTIONS

SECTION 08970
STRUCTURAL GLASS WALLS

PART 1: GENERAL
1.1 SUMMARY

A. Scope of work includes: Bolted glass and connections for the all glass façade, painted steel tubular framing as shown on the structural drawings, in accordance with the Contract Documents. Note that steel tubes are to be laid out on a 5'-0" grid with tube steel members in all corner conditions and around all doorways.

B. Related Sections:
Section 07900 – Sealants for glazing
Section 08800 - Glass and Glazing
Section 05500 - Misc. Steel

C. Substitutions:

The following specifications and related drawings are based on the performance of the Pilkington Planar System as a standard of quality. Substitutions will be accepted <u>**if and only if**</u> they comply in all respects with the drawings and profiles shown, as well as all elements of the specifications contained herein. **Manufacturer must have a minimum of five years experience in the U.S. in structural glass projects and must submit a minimum of ten other projects completed in the U.S. within the last five years similar to the scope of this project.** Any substitutions to the specified product must be approved by the architect no later than fifteen (15) days prior to bid. **Submit in writing with substitution request all deviations from specifications and drawings. No deviations will be considered after bid.**

1.2 QUALITY ASSURANCE

A. Sole Source Responsibility: Glazing Material and System Design: Glass, glazing, system design and accessories are the sole responsibility of Pilkington Architectural.

B. Sole Source Responsibility: Provide installation by an installer acceptable to Pilkington Architectural. Provide a letter signed by representative of Pilkington Architectural with company's authorization stating that installer is acceptable and qualified to install system.

1. The installer of the Pilkington Planar System is responsible for supplying and erecting the complete structural glazing system, coordinating and maintaining tolerances between structure and glazing system with individual suppliers and manufacturers, and installation of glazing system. Installer to be accepted must have installed with his own forces a minimum of two other projects and be approved by W&W Pilkington in writing.

C. Where safety glass is indicated or required by authorities having jurisdiction, provide type of products which comply with ANSI Z97.1 and testing requirements of 16 CFR, Part 1201 for category II materials.

1.3 SYSTEM DESCRIPTION

A. Design Requirements to be completed by architect/engineer:
   1. Design Wind Load as per code
   2 Seismic Zone as per code
   3. Live load deflection of supporting structure if any.

B. Pilkington Planar Glazing System:

   1. Fittings are designed to give flush appearance to outward surface of glazing system. **NO EXTERIOR FITTINGS OR PLATES WILL BE PERMITTED.**

   2. The design of the Planar fittings is the sole responsibility of Pilkington Architectural. All fitting sizes must be in accordance with profiles and sizes shown on drawings. Size of fittings is critical to the design of the glass wall.

   3. Spring plate members are designed to prevent high stress concentration at the hole positions and must cope with:

      a. Negative and positive wind loading
      b. Seismic loads
      c. Thermal movement
      d. Construction tolerances
      e. Live load and dead load movements

   4. Movement diaphragms of stainless steel and durable flexible discs must be incorporated in connections to accommodate oversize holes in spring plate members which allow for thermal movement and glass manufacturing tolerances.

   5. The system shall provide for unitized pre-fixing of all items to glass prior to erection.

1.4 SUBMITTALS

A. Submit the following in accordance with Section _____.

   1. Shop Drawings: Shop drawings shall clearly indicate materials and methods, indicate coordination with other trades, and bear signed approval of the glazing system manufacturer and the glazing system installer, as well as the stamp of a licensed Professional Engineer in the State of New York

2. Product Data: Material description and installation instructions for tapes, compounds, gaskets and other materials.

3. Samples:
   a. Submit 1 sample of glass and glazing materials required for the Project. Samples of glass shall be 12" x 12", samples of sealant or gasket shall be 12" long.

   b. Submit 1 sample of spring plate complete with glass, bolt and accessories.

4. Quality Assurance Compliance: Submit letters from Pilkington's authorized representative and from the project installer stating that they are in compliance with the requirements of the Contract Documents.

5. Calculations: Submit calculations proving structural glazing systems performance and compliance with specified loads with stamp of licensed Professional Engineer registered in the State of VA

6. Letter signed by the glass manufacturer clearly stating the glass and fittings to be used on the project are part of the manufacturer's system and are acceptable to the manufacturer and that they have reviewed the contract documents and will issue a project specific 12-year warranty including the entire system. Letters signed by the subcontractor for this section are not acceptable. System must be manufactured from one source. Glass cannot be supplied by one manufacturer and hardware from another to comply with this warranty.

1.5 WARRANTIES

A. Manufacturer Warranty: Provide Pilkington Planar twelve year warranty for the design integrity, weatherability and durability of the Planar System. Partial multiple warranties of various project elements will not be accepted.

B. Installer Warranty: Warrant the installation for a period of 5 years for installation and repairs of failures. Provide written requirements for notification of installer and terms for maintaining warranty provisions. Do not contradict the requirements of the Contract Documents.

C. The Warranties submitted under this Section shall not deprive the Owner of other rights or remedies that the Owner may have under other provisions of the Contract Documents and the laws of governing jurisdictions and is in addition to and runs concurrently with other warranties made by the Contractor under requirements of the Contract Documents.

PART 2: PRODUCTS

2.1 MATERIALS

A. Structural Glass Wall System: The drawings and specifications herein are based on The Pilkington PLANAR system as a standard of quality. System is distributed by :

W&W Glass, LLC
302 Airport Executive Park, Nanuet, NY 10954
Telephone: 1-800-452-7925 Fax: 845-578-1596

Other acceptable manufacturers provided they comply in all respects with these specifications are:

1. Seele
2. Novum Structures inc.

B. Glass:

1. All glass must be fully tempered and heat soaked.

a. Glass will be clear insulated units with 12mm outboard clear lite, 16mm airspace and a 6mm clear inboard lite with pyrolytic low e coating on surface #3. IGU performance as follows: LT—0.71, LR—0.17, TSHT—0.64, SC—0.74, U—0.32

2. Glass must be certified to be tempered to a minimum compressive strength of 16,000 PSI. Glass tempered to lower strengths will not be accepted.

3. All glass must be horizontally tempered eliminating tong marks.

4. All tempered glass must be heat soak tested to convert nickel sulfide inclusions from the alpha phase to the beta phase so that the glass will fracture in the test. Heat soak must comply with the European Din standard.

5. Written warranties against nickel sulfide inclusions in lieu of heat soaking will not be accepted.

6. All edges will be ground flat with a frosted appearance unless otherwise noted.

7. All edgework, holes and notches in the tempered glass panels will be completed before tempering and shall comply with the requirements of Pilkington Architectural as stated below:

   a. Dimensional tolerance on panel size will be ± 1 mm of the theoretical dimension required.

b. Squareness of each panel will be within 3 mm.

c. Bow allowance is 0.1%.

d. The positional tolerances on all holes will be ± 1 mm from a single datum point.

8. Flatness of glass is a key element of this specification. Average tempered glass rollerwave distortion must be certified not to exceed an average of 0.0007", with a maximum sag at the leading and trailing edge of 0.25 mm. A site inspection if required for roller wave and bow tolerances should be from a minimum distance of 3 meters.

9. All glass must be manufactured in a factory where the quality control procedures are created under the terms of ISO 9000 and are independently monitored.

10. Pre-stress glass around holes to a level which is compatible with the design and use of the fittings. Check by differential surface refractometer on stress level.

C. Fittings:

1. Planar fittings shall be predominantly manufactured from stainless steel Grade 316. Fittings will be 905J series fittings set on gussets welded to steel as part of this section.

2. The subcontractor shall demonstrate to the Architect's satisfaction that the stresses induced in the glass by these fittings are compatible with the strength of the glass and the needs of the performance section of this specification.

3. The finish of all fittings will be "as machined".

4. Spring plates shall be designed to the Architect's specification. The design shall be shown by the Subcontractor to be compatible with the performance specification in all respects.

4.1 Spring plates shall provide a tolerance capability which will cope with the full range of movements shown below:

a. Thermal movements occurring as a result of differential coefficients of thermal expansion within the range specified. The components used within the system shall withstand noiselessly all thermal movements without any buckling, distortion, cracking, failure of joint seals or undue stress on the glass or fixing assemblies.

b. Deflection of edge beams due to loading applied after erection of the cladding to magnitude specified.

c. Maximum side sway of structure due to wind load to the magnitude specified or seismic movement to the degree specified.

d. Deflection due to self weight of the Planar System.

e. Inward and outward movements due to the design wind loads specified.

5. Countersunk Planar bolts will be bright machine finished, socket head bolt diameter 1-1/8" with hexagonal shank, stainless steel Type 303.

5.1 No exterior plates, caps, disks or buttons will be permitted.

6. Bushings will be Nylatron Polyamide.

7. Gaskets will be fully vulcanized fiber, neoprene or precured silicone.

PART 3: EXECUTION

3.1 EXAMINATION

A. Examine surfaces receiving the Work. Verify dimensions of in-place and subsequent construction. Follow the recommendations of the FGMA as to inspection procedures. Do not begin work until unsatisfactory conditions have been corrected. Installation of work shall constitute acceptance of the related construction.

3.2 PREPARATION:

A. Pre-Installation Meeting: Meet at the project site with the representatives of the glass and glazing materials manufacturers, architectural exposed structural steel fabricator and erector, sealant manufacturer, the glazing installer, Architect's representative and Owner's representative. Review the glazing procedure and schedule, including the method of delivering and handling glass, and installing glazing materials. The chemical compatibility of all glazing materials and framing sealants with each other and with like materials used in glass fabrication shall be established.

3.3 INSTALLATION OF GLASS:

A. Install in accordance with Pilkington Architectural's requirements and the shop drawings.

B. Employ only experienced glaziers who have had previous experience with the materials and systems being applied. Use tools and equipment recommended by the glass manufacturer.

C. Plate to plate joints of glass are sealed with silicone sealant. Joint dimensions shall be designed to be compatible with sealant properties and live load movement of the structure.

D. Maintain a minimum temperature of 40 degrees F. during glazing unless the manufacturer of the glazing material specifically agrees to application of this material at lower temperature. If job progresses or other conditions require glazing work when temperature is below 40 degrees F. (or below the minimum temperature recommended by the manufacturer), consult the manufacturer and establish the minimum provisions required to ensure satisfactory work.

E. Clean glazing connectors receiving glazing materials of deleterious substances which might impair the work. Remove protective coatings which might fail in adhesion or interfere with bond of sealants. Comply with manufacturer's instructions for final wiping of surfaces immediately before application of primer and glazing sealants. Wipe metal surfaces with xylol or toluol.

F. Inspect each unit of glass immediately before installation. Glass which has significant impact damage at edges, scratches or abrasion of faces, or any other evidence of damage shall not be installed.

G. Sealants: Prime surfaces to receive glazing sealants where required, in accordance with manufacturer's recommendations, using recommended primers.

H. Locate setting blocks, if required by the drawings, at the quarter points of sill, but no closer than 6 inches to corners of glass. Use blocks of proper sizes to support the glass in accordance with manufacturer's recommendations.

I. Provide spacers to separate glass from spring plates.

J. Set glass in a manner which produces greatest possible degree of uniformity in appearance. Face all glass, which has dissimilar faces, with matching faces in the same direction.

K. Use masking tape or other suitable protection to limit coverage of glazing materials to the surfaces intended for sealants.

L. Tool exposed surfaces of glazing materials.

M. Clean excess sealant from glass and support members immediately after application, using solvents or cleaners recommended by manufacturers.

3.4 CURING, PROTECTION, AND CLEANING

A. Cure sealants in accordance with the manufacturer's instructions to attain maximum durability and adhesion to glass.

B. Clean all surfaces after installation, leaving all in a clean and workmanlike manner.

C. Final cleaning and protection after installation is the responsibility of others.

DIVISION 9
SECTION 09665
TACTILE WARNING STRIPS

PART 1 - GENERAL

1.01 SUMMARY

This Section specifies requirements for composite rubber detectable tactile warning strips/tiles.

1.02 DESIGN AND PERFORMANCE REQUIREMENTS

General: Detectable warning strips/tiles shall have tactile pattern of raised truncated domes complying with ADA Regulations as noted in Federal Register Volume 56 No. 173, Section 4.29 dated September 1994.

Tactile warning strips/tiles shall be exterior grade and include long term UV stability.

1.03 RELATED SECTIONS

Section 01352 – Sustainable Design Requirements

1.04 REFERENCES

ASTM International (ASTM)

1. E84 - Test Method for Surface Burning Characteristics of Building Materials.
2. E648 - Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.
3. E662 - Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
4. F1344 - Standard Specification for Rubber Floor Tile

Americans with Disabilities Act (ADA)

5. Accessibility Guidelines for Buildings and Facilities
6. Federal Register Volume 56 No. 173, Section 4.29

National Fire Protection Association (NFPA)

7. 253 - Standard Method of Test for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source

1.05 SUSTAINABLE DESIGN REQUIREMENTS

Sustainable Design General Requirements

1. The Authority requires the Contractor to implement practices and procedures to meet the Project's sustainable design requirements. The Contractor shall ensure that the requirements related to these goals, as defined in Section 01352 and the articles below, are implemented to the fullest extent. Substitutions, or other changes to the Work proposed by the Contractor, shall not be allowed if such changes compromise the stated Sustainable Design Performance Criteria.

Sustainable Design Performance Criteria

2. All field-applied adhesives, sealants, paints and coatings relating to Work of this Section shall meet the requirements of Section 01352.

1.06 QUALITY ASSURANCE

Single Source Responsibility: Obtain tactile warning strips/tiles and accessories from a single manufacturer.

Fire Test Performance: Provide tactile warning strips/tiles which comply with the following fire test performance criteria as certified by the manufacturer or an independent testing laboratory acceptable to the Engineer.

1. Critical Radiant Flux (CRF): No less than 0.45 watts per sq. cm. as per ASTM E648, or NFPA 253.
2. Flame Spread: No more than 75 per ASTM E84.
3. Smoke Developed: No more than 450 per ASTM E84.
4. Smoke Density: No more than 450 per ASTM E662.

Installer Qualifications: A firm which has specialized in this type of tactile warning surfacing, and which is certified, or otherwise approved by the manufacturer of primary materials.

5. Installer shall have no less than five years of successful experience in the installation of the tactile warning strip systems specified for this Project. The qualified installer shall also have completed three projects in the past five years similar in size and scope.

1.07 SUBMITTALS

See Appendix "A" for submittal requirements.

1.08 DELIVERY, STORAGE AND HANDLING:

Tactile warning strip/tile materials shall be packaged and separated so as to prevent any damage during delivery and storage.

Delivery tactile warning strips/tiles and accessories. Protect and properly store to prevent damage prior to installation.

1. Promptly inspect shipment(s) to assure that products comply with the requirements, quantities are correct, and that the products are undamaged.
2. Reject any damage goods, and return to supplier for identical replacement materials.

Store tactile warning strips/tiles in accordance with the manufacturer recommendations. Store materials indoors, under cover and protected from prolonged UV exposure.

3. All sealants and adhesives shall be protected from freezing conditions.
4. Periodically inspect materials in storage to assure that products are undamaged and are maintained under specified conditions.

1.09 PROJECT/SITE CONDITIONS

Install tactile warning strips/tiles when environmental conditions fall within those recommended by the manufacturer.

Air and Surface temperature shall be a minimum of 40 degrees F during installation and cure of the adhesive.

Concrete surfaces shall be completely cured for a minimum of 28 days. Power wash or shot blast concrete surfaces to fully remove all curing compounds, if any.

Concrete: Substrates shall be flat, level and true to within 1/8-inch in 10 feet. Concrete substrates shall be prepared with a "profile" acceptable to tactile warning strip/tile manufacturer to allow for proper adhesion.

PART 2 - PRODUCTS

2.01 MANUFACTURER

Subject to compliance with the requirements of this Section, furnish and install products of one of the following or approved equal:

1. Transit-Tile, Boulder, CO, a Div of Process Equipment Company.
2. ADA Solutions Inc., North Billerica, MA.
3. ADA Armor-Tile, Engineered Plastics Inc., Williamsville, NY.

2.02 MATERIALS

Tactile Warning Strips/Tiles: The tactile warning strips/tiles shall consist of a colorfast, fiberglass reinforced molecular cross-linked copolymer composite.

1. Tile Standard: ASTM F1344, Class 1, (solid, homogeneous).
2. Color: Safety yellow, unless otherwise selected by the Engineer. Color shall be homogenous throughout the tile.
3. Thickness: 1/4-inch, unless otherwise indicated on the Contract Drawings.

4. Tile Edges: Manufacturer's standard chamfered edge design, unless otherwise acceptable to the Engineer.

5. Tile Pattern: Tactile surface pattern of raised truncated domes complying with ADA. Dome pattern shall align properly from tile to tile

2.03 MISCELLANEOUS MATERIALS

Polyurethane Adhesive: Provide a single, or multi-component elastomeric type polyurethane adhesive as recommended by the manufacturer. The maximum allowable VOC content for Tile Adhesive is 65 g/L. Provide adhesives as manufactured by one of the following:

1. Mapei, International Coatings
2. Boardi Products.

Fasteners: Fasteners in concrete shall consist of 0.25-inch by 1.5-inch white nylon expansion sleeves with stainless drive pins as acceptable to the tactile warning tile manufacturer.

Sealant: Self-leveling grade, single component polyurethane sealant as recommended by the tactile warning tile manufacturer. The maximum allowable VOC content for architectural sealants is 250 g/L. Provide sealants as manufactured by one of the following:

3. Sonneborn
4. SIKA

2.04 FABRICATION

General: Fabricate a tactile warning strip/tile material from a fiberglass reinforced, cross-linked copolymer composite material in a compression molded fashion resulting in a high density, colorfast, UV stabile, truncated dome pattern tactile wearing surface material.

The tactile warning tiles shall have factory molded chamfers on all four sides of the tile to assure safe, smooth transitions in all directions between the tile and adjacent surfaces and to facilitate water drainage.

1. Squared, butt or radial edges are not acceptable.

Sizes: 24 inches by 48 inches by 0.125-inch thick plus-or-minus 0.0625-inch, unless otherwise indicated on the Contract Drawings.

Tiles shall be fabricated with 0.50-inch flanges along both 4 foot sides, unless otherwise indicated on the Contract Drawings. The bottom of the tile shall be completely flat.

2. Undercuts, patterns and bosses on the bottom of the tile will not be acceptable.
3. Tiles shall feature a minimum of 10 integrally molded fastener recesses. Fastener recesses shall be formed in the factory. Recesses for the fasteners shall be located at the centers of the truncated domes. Provide matching plugs/fastener covers.

PART 3 - EXECUTION

3.01 SURFACE PREPARATION

Grind smooth, or otherwise provide a self-leveling patching compound to properly prepare the concrete substrates so the resulting installation of tactile surfacing is in accordance with the manufacturer's instructions and recommendations. The properly prepared substrate shall be smooth and uniform so that the tactile warning tile sits flush on the substrate. The variation in grade shall not exceed 1/8-inch per 10 feet. Surfaces shall be prepared so that the tactile warning surfacing can attain proper bonding to the substrate. When ground, the concrete shall have a light ribbed finish. There shall be a maximum of 1/4-inch difference between the adjacent substrate and the finished installed tactile tile in compliance with ADA Accessibility Guidelines.

Saw cuts shall be made to accept either the single or double flange as provided on the tactile tiles. The saw cuts shall measure 3/8-inch wide by 11/16-inch deep and shall at all times remain parallel to the platform edge. The centerline of the saw cut shall be placed 24 inches back from the front edge of the platform (track side). The saw cut shall be straight and true within 1/8-inch per 10 feet. A 10-foot long saw cut shall be made to confirm proper fit of the tactile warning tile prior to continuation of the saw cutting operation.

3.02 INSTALLATION OF COMPOSITE TACTILE TILES

The concrete substrate shall be clean, dry, and free of contaminants. The concrete shall have been allowed to cure for at least 28 days unless otherwise directed. Acceptable moisture tests may be conducted and submitted for approval to the Engineer in order to prove complete concrete curing and for installation to proceed in less than 28 days. Tests shall included calcium chloride and polyethylene sheeting tests as a minimum certification that the concrete is adequately cured.

Apply adhesive in accordance with the tactile warning tile manufacturer's instructions. Adhesive shall be applied in an "H" pattern using a minimum 6 inch pattern. The entire tile bottom does not have to be completely covered with adhesive.

Set tactile warning tiles and install fasteners in accordance with the tactile warning tile manufacturer's instruction and as further noted below:

1. To the greatest extent possible whole uncut tactile warning tiles shall be used. Do not use pieces less than 1-foot long unless otherwise indicated on the approved Shop Drawings.
2. Leave a gap of 3/32-inch between successive tactile warning tiles to allow for expansion and contraction.

At platform expansion joints, tactile warning tiles shall be cut on their short sides, the cut edges finished smoothly, and the tactile warning tiles laid with the cut edges aligned with the edges of the concrete substrate along the joints. Where there is platform curvature, tactile warning tiles shall be treated in a similar fashion so that the joints remain reasonably uniform across the width of the tactile warning tiles.

Cutting through the tactile warning tiles domes shall be kept to a minimum. Where less than half of the truncated dome remains, the balance shall be ground off. Where over half of the truncated dome remains, it shall be feathered so as not to present a tripping hazard.

Backer rod shall be placed in the sawcuts and the sawcuts shall be filled flush to the surface with sealant following the setting of the panels.

Scratch or sand the back of the tile to rough up the surface prior to applying adhesive.

Apply adhesive in accordance with the tactile warning surface manufacturer. Spread adhesive with a notched/serrated trowel resulting in a minimum adhesive thickness of 1/16-inch thickness. Employ a full spread adhesive approach at the tile corners and an "H" pattern in the tactile tile field in accordance with the manufacturer's instructions and recommendations.

3.03 INSPECTION

Inspection shall be conducted after installation is completed and all adhesive has fully cured.

1. Minor movement of the tactile warning tiles will be considered acceptable provided these tiles have not lost their adhesive bond to the substrate, or otherwise resulting in movement and alignment exceeded the criteria specified as solely determined by the Engineer.
2. Remove and replace installations deemed unacceptable to the Engineer.

END OF SECTION

SECTION 09665

TACTILE WARNING STRIPS

APPENDIX "A"

SUBMITTALS

A. General: Submittal listed in this article shall be in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1 – GENERAL PROVISIONS.

B. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, fittings, accessories, colors and finishes.

C. Samples for Verification: For each type of exposed tactile warning strips/tiles required, in manufacturer's standard sizes.

D. Shop Drawings: For tactile warning strips/tiles. Include plans, elevations, details, and attachments to other work. Show general arrangement, jointing, accessories, and anchoring.

E. Material Test Reports: Submit written test data reports verifiable by an independent testing laboratory demonstrating that the material proposed for use are in compliance with the specified requirements.

F. Sustainable Design Submittal Requirements: The Contractor shall submit the Sustainable Design certification items listed herein. Sustainable Design submittals shall include the following:

3. A completed Sustainable Design Materials Certification Form (SDMCF), appended to Section 01352. Information to be supplied for this form shall include:

   a. Cost breakdowns for the materials included in the Contractor's Work. Cost breakdowns shall include total cost plus itemized material costs.

   b. Where required by the Sustainable Design Performance Criteria of this Section, the following information shall also be supplied:

      1) The amount of post-consumer and/or post-industrial recycled content in the supplied product(s).

      2) The manufacturing location of the supplied product(s).

      3) The location (source) of the raw materials used to manufacture the supplied product(s).

      4) The VOC content of all adhesives, sealants, paints, and coatings applied on site as part of this Work.

      5) Include total cost for all wood products and itemized costs for all FSC-certified wood products.

4. 2. Published product literature or letters of Certification, provided from the product manufacturer on the manufacturer's letterhead, to verify the product information supplied for the SDMCF.

5. 3.. Product cut sheets for materials that meet the SDMCF.

6. 4. Material Safety Data Sheets (MSDS), for applicable products. Applicable products include, but are not limited to field-applied adhesives, sealants, carpets, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).

7. 5. The Sustainable Design submittal information shall be assembled into one (1) package per Section or trade, and sent to the Engineer.

END OF SECTION

DIVISION 12

SECTION 12301

TICKETING COUNTERS

PART 1 – GENERAL

1.01 SUMMARY

A. Work of the Section shall include all labor, tools, equipment and services necessary to fabricate, deliver and install ticketing counters including all items required for proper completion of said items of Work, as shown on the Contract Drawings, and as specified herein and/or as required by job conditions to provide a complete installation.

B. Related Work specified in other Sections of the Specifications include the following:

1. Stainless Steel Finish – Section 05080.

2. Rough Carpentry – Section 06100.

1.02 REFERENCES

A. The following is a listing of publications referenced in this Section:

American Society for Testing and Materials (ASTM)

ASTM A 36 Specification for Carbon Structural Steel

ASTM E 84 Test Method for Surface Burning Characteristics of Building Materials

ASTM A 666 Specification for Annealed or Cold Worked Austenitic Stainless Steel, Sheet, Plate and Flat Bar

American Welding Society (AWS)

AWS D1.1 Structural Welding Code, Steel
Standard Code for Arc and Gas Welding in Building Construction

American Wood Preservers' Association (AWPA)

AWPA C-20 Plywood-Fire-Retardant Treatment by Pressure Process

Hardwood Plywood and Veneer Associations (HPVA)

HPVA HP-1 Hardwood and Decorative Plywood

The Society for Protective Coatings (SSPC)

SSPC – Paint 12 Cold Applied Asphalt Mastic (Extra Thick Film)

SSPC – Paint 20 Zinc-rich Primers (Type I – Inorganic & Type II – Organic)

1.03 ENVIRONMENTAL REQUIREMENTS

A. Environmental Limitations: Do not deliver or install counters until building is enclosed, wet Work and utility roughing-in are complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

1.04 QUALITY ASSURANCE

A. Entities performing the fabrication and installation Work of this Section shall have minimum 5 years experience in the fabrication and installation of counter assemblies involving complexities equal to or greater than that required for the Work of this Section. Entity shall submit a list of five (5) comparable projects of similar complexity completed within the five (5) comparable projects of similar complexity completed within the last five (5) years.

B. The Entity performing the Work of this Section shall have single source responsibility for overall Work of this Section and be responsible for execution of all aspects of this Specifications Section.

C. The Entity performing the Work of this Section shall comply with construction details on all applicable Contract Drawings. Final responsibility for the development and execution of Shop Drawings rests with the Contractor.

D. The Entity shall be responsible for the quality of all materials and workmanship of any firms who act as its subcontractor. Entity shall be responsible for providing all of its subcontractors with complete and up-to-date Contract Documents; including Contract Drawings and Specifications, and other applicable information issued by the Engineer.

E. Completed Work shall find materials structurally sound, free from scratches, abrasions, dents, distortions, chips, breaks, holes, splits or other disfigurement considered to be imperfections.

F. The Engineer reserves the right to inspect the fabrication facilities of the Entity performing the Work of this Section or any of its subcontractors, for purposes of observing the fabrication of Work of this Section to ensure conformance to Contract Document requirements. Refer to Article of Division 1 – General Provisions entitled "Inspections and Rejections" for more information.

G. Factory Mock-Up:

1. Produce mock-up in the fabricator's shop of one (1) typical counter section with dimensions approximately 6'-2" long by 4'-0" high, full size of completed section of baggage and ticketing counters. Mock-up shall include but not be limited to stainless steel outer shell components, countertops, inner counter components, shelving, drawers, hardware, identification numbering, counter doors, etc. Mock-up components include but are not necessarily limited to stainless steel outer shell components, countertops, inner counter components, shelving, drawers, hardware, identification numbering, counter doors, etc. Mock-ups must be made available for Engineer's inspection and approval.

2. Notify Engineer minimum of one week in advance of availability to view mock-up.

3. Do not proceed with final fabrication until Engineer has approved factory mock-up.

4. Approved factory mock-up may be incorporated as part of the site installation of counters.

H. Internal shelves shall be capable of supporting a load of 100 lbs.

I. Low wall assembly shall be capable of resisting a lateral load of 200 lbs force applied at any point with failure of deflection.

1.05 DELIVERY, STORAGE AND HANDLING

A. Product Delivery and Storage: Deliver counters in protective wrapping, and store protected from weather, moisture and soiling. The Contractor shall coordinate on-site storage with the Authority.

1.06 GUARANTEE

A. Contractor shall execute and submit a Guarantee, acceptable to the Engineer, that Work of this Section is in accordance with the Contract Documents and free from faults and

defects in materials and workmanship for period of five (5) years from the date is issuance of the Certificate of Final Completion.

1.07 SUBMITTALS

A. See Appendix "A" for submittal requirements.

PART 2 – PRODUCTS

2.01 GENERAL DESCRIPTION

A. Ticketing counters shall have outer assembly fabricated of 18 ga. stainless steel backed-up with plywood core. Inner components (drawers, shelves, electrical floor raceways, etc.) shall be fabricated of 20 ga. stainless steel.

2.02 MATERIALS

A. The following metal materials shall be used, where shown on the Contract Drawings. Metal gauges and thicknesses shall be as follows, unless greater gauges and thicknesses are shown on the Contract Drawings.

1. Stainless Steel: Stainless steel shall conform to ASTM A 666, Type 304.

a. Stainless steel backed up by plywood core shall be 18 ga. Stainless steel for internal components shall be 20 ga.

b. Provide stainless steel elements in sizes and shapes shown on Contract Drawings. Comply with the requirements of Section 05080 – Stainless Steel Finish for finishing requirements.

c. For stainless steel finishes, refer to Article 2.04 of this Section.

2. Steel Angles, Plates, Tubes: Conform to ASTM A 36. Shop prime per SSPC – Paint 20: zinc rich primer.

B. Hardwood Plywood and Face Veneers: HPVA HP-1. Plywood shall be ¾" thick, seven ply, unless otherwise shown on the Contract Drawings, selected smooth, sanded stock.

1. Plywood shall be fire retardant treated to meet flame spread not exceeding 25 and smoke developed not exceeding 29, tested per ASTM E 84 for 30 minutes with no

evidence of significant combustion. In addition, the flame front shall not progress more than 10-1/2" beyond the centerline of the burner at any time during the test.

a. Fire-Retardant Chemicals: Use chemicals of types which do not bleed-through or otherwise adversely affect finishes. Do not use colorants in solution to distinguish treated lumber from untreated lumber.

b. Low-Hygroscopic Formulation: Interior Type A per AWPA C-27.

2. Provide fire retardant treatment of one of the following, or approved equal:

   a. D-Blaze, Chemical Specialties, Inc., Charlotte, NC

   b. Dricon; Arch Wood Protection, Inc., Smyrna, GA

   c. Pyro-guard; Hoover Treated Wood Products, Inc., Thomson, GA

3. Use chemicals of types which do not bleed-through or otherwise adversely affect exposed finishes.

   a. Low-Hygroscopic Formulation: Interior Type A per AWPA C-27.

4. Where noted on Contract Drawings, exposed plywood shall have shop applied opaque finish conforming to AWI System OP-8, polyester/polyurethane finish, Premium Grade, color as selected by the Engineer.

C. Countertops: Bent stainless steel metal countertop, similar to bases. Refer to Contract Drawings for additional information.

2.03 MISCELLANEOUS MATERIAL

A. Decorative Glass Panels
   1. Panels below countertop shall be as per section 07465 Decorative Glass Panels.
   2. Panels shall be fabricated to conform with configurations shown on the Contract Drawings.

B. Rubber Membrane: 30-mil neoprene as manufactured by American Hydro-Tech, Emseal or approved equal.

   1. Adhere to substrate using adhesive as recommended by membrane

manufacturer.

C. Wood blocking: Construction or No. 2 Common grade southern Pine or Hem-Fir fire retardant treated as specified herein for plywood.

D. Keyboard Drawers: As selected by Engineer.

E. Bituminous Coating: Cold-applied asphalt mastic SSPC Paint 12, compounded for 15-mil dry film thickness per coat.

F. Wire Molds: Consisting of two 3-tier custom 0.125" thick stainless steel wire mold enclosure made by Wiremold or approved equal, as shown on Contract Drawings.

1. Surface metal raceway is to be utilized in dry interior locations only as covered in Article 352 Part A of the National Electrical Code and in Section 12-1600 to 12-1614 of the Canadian Electrical Code. The Wiremold Any Size Raceway System is listed by Underwriter's Laboratories under File No. E4376 for the Raceway and File No. E41751 for the fittings, with a UL designation in accordance with publication UL5 for Surface Metal Raceways, and a CUL designation in accordance with Canadian Standards Association publication C22.2 No. 62 for Surface Metal Raceways.

2. The raceway shall be a two piece design with a base and a snap-on cover, or a three-piece design with a base and two snap-on covers that snap side by side on a common base. The base may be divided with a fixed barrier for up to 3 compartments. Raceway covers must be in an enhanced tamper resistant form, where screws are only necessary on access plates and the covers of certain fittings, but no on standard cover lengths. A tool shall be provided in order to form the shape in the cover flange necessary to maintain enhanced tamper resistance, when the cover is field cut. A tool shall also be provided for cutting covers, with widths ranging from 2.5" to 10", to ensure square field cuts.

3. A full line of fittings must be provided including, but not limited to, flat, internal and external elbows, couplings or joining raceway sections, wire clips, blank end fittings, entrance fittings, and a full compliment of device mounting brackets and plates. All fittings must also be provided in an enhanced tamper resistant form and be divided with barriers and made to match the size of the accompanying raceway base.

2.04 SHOP FINISHING OF STAINLESS STEEL

A. All stainless steel surfaces shall receive a non-directional finish or a custom patterned treatment, such as grids of bumps, oval stamps, etc – where shown on the Contracts Drawings.

B. The stainless steel to receive a non-directional finish shall receive an AISI No. 4 base finish applied prior to application of final non-directional finishing. Over this shall be applied a "satin" or "angel-hair" finish made up of various sized and shaped grain lines, ranging from 1 to 10 millimeters - going in all directions and giving the appearance of random scratches. This applied treatment shall be achieved through the use of a rotating disk, hand-held power buffer and shall be applied using a circular motion. Do not use any ferrous metal tools (other than stainless steel) in working the finished surfaces of stainless steel.

C. Finishes shall be shop applied, unless prior permission to utilize other application methods is given in writing by the Engineer.

2.05 FABRICATION OF "OUTER SHELL COUNTER

A. For outer shell of ticket counters laminate stainless steel to face of plywood core at locations and to comply with details indicated on Contract Drawings. Use adhesive recommended by fabricator, such as Dow Corning 790 Construction Adhesive, that will fully bond metal to wood core and that will prevent telegraphing and oil canning.

1. No exposed fasteners permitted.

B. Construction of plywood assembly to be clad with stainless steel shall conform to AWI "Premium" grade standards.

C. Steel framing, plate reinforcing, supplementary steel framing or reinforcing, bracket assemblies, and the like required for the support, framing, reinforcing, bracing, etc., of the "outer shell" shall be of such sizes and shapes as indicated on the Contract Drawings, or as required t suit the conditions, and shall be provided with all necessary supports and accessory items such as inserts, braes, struts, clip angles, anchors, bolts, nuts. Welds, etc., as required to properly and rigidly fasten, anchor or attach Work of the "outer shell" in place and to concrete and other connecting and adjoining Work.

D. Metal Connections

1. Make connections with tight joints, capable of developing full strength of member, flush unless otherwise shown on the Contract Drawings. Locate joints where shown on the Contract Drawings. For Work exposed to view, use concealed fasteners (unless welded or other connections indicated) with joints accurately fitted, flush and rigidly secured with hairline contacts.

2. Welding: Welding shall be in accordance with recommendations of the American Welding Society and shall be done with electrodes and/or methods recommended by the manufacturers of the metals being welded. Refer to AWS D1.1 and Standard Code for Arc and Gas Welding in Building Construction. Welds shall be continuous, except where spot welding is specifically permitted. Welds exposed to view shall be ground flush and dressed smooth with and to match finish of adjoining surfaces so that joint will not be visible; undercut metal edges where welds are required to be ground flush and dressed smooth. All welds on or behind surfaces which will be exposed to view shall be done so that finished surface will be free of imperfections such as pits, runs, splatter, cracks, warping, dimpling, depressions or other forms of distortion or discoloration. Remove weld splatter and welding oxides from all welded surfaces.

E. All surfaces exposed to view shall be clean, and free from dirt, stains, grease, scratches, distortions, waves, dents, buckles, tool marks, burrs and other defects which mar appearance of finished Work. Metalwork exposed to view shall be straight and true to line or curve, smooth arises and angles as sharp as practicable, miters formed in true alignment, profiles accurately intersecting, and with joints carefully matched to produce continuity of line and design. Exposed fastenings, where permitted or approved shop drawings, shall be of the same material, color and finish as the metal to which applied, and shall be of the smallest practicable size.

2.06 FABRICATION OF INNER COUNTER COMPONENTS

A. For stainless steel interior shelves, drawers, cabinets, doors, raceway, etc., conform to the following:

1. General: Complete assembly and finish Work at point of manufacture. Perform unit assembly on precision jigs to provide units, which are square; fully reinforced with angles, gussets, and channels. Maintain uniform clearance around door and drawer fronts of between 1/16inch minimum to 3/32 inch maximum.

2. Fabricate units on precision dies to permit interchangeability of drawers, hinged doors, and similar pieces of like sizes.

3. Flush Doors: Outer pan and inner pan formed and telescoped into box formation, with channel reinforcements full height on center of each pan. Fill doors with fire-resistant sound-deadening coating material meeting ASTM E 84, flame spread of 25 or less.

4. Hinged Doors: Mortise at flanges for hinges and reinforce with minimum 0.0635-inch thick (16-gage) stainless steel angle, welded inside inner pan at hinge edge. Provide nylon roller catches and stainless steel strike welded to door assembly.

5. Drawers" Assemble fronts from telescoping inner and outer pans, designed to eliminate raw edge of steel at top. Fabricate sides, back and bottom of one piece, with rolled or formed top of sides for stiffening and comfortable grasp for drawer removal. Weld drawer front to sides, back and bottom to form a single, integral unit. Provide drawers with rubber bumpers, runners and positive stops to prevent metal-to-metal contact or accidental removal.

6. Adjustable Shelves: Sides and ends formed down, and returned to front and back.

7. Drawer Guides: Provide nylon-tired, ball bearing rollers with metal guide channels, with integral stops to eliminate accidental removal of drawer. Guides designed to provide self-closing of drawer and to prevent rebounding action when drawers are closed.

8. Utility Space: Provide space, cutouts, and holes for pipes, conduits, and fittings in cabinet bodies to accommodate services and their support-strut assemblies as shown on the Contract Drawings.

2.07 CASEWORK HARDWARE AND ACCESSORIES

A. Hardware for interior metal cabinetry shall conform to the following:

1. Provide commercial quality stainless steel, heavy-duty hardware complying with requirements indicated for each type.

2. Hinges: Institutional 5-knuckle hinges. Provide 1 pair for doors.

3. Pulls: Solid metal for drawers and swing doors, mounted with 2 screws fastened from back. Provide 2 pulls for drawers over 24 inches wide.

4. Door Catches: Nylon-roller spring catch or dual self-aligning, permanent magnet catch. Provide 2 catches per door.

5. Drawer Guides: Provide nylon-tired, ball bearing rollers with metal guide channels and integral stops to eliminate accidental removal of drawer. Provide guides designed to provide self-closing of drawer and to prevent rebounding action when drawers are closed.

6. Drawer Stops: Designed to permit easy removal, and yet prevent inadvertent drawer removal. Provide on all drawers, located on the inside.

7. Label Holders: Provide where indicated, size to receive standard label cards approximately 1 inch by 2-inch normal size, finished to match other exposed hardware.

8. Filler Strips: Provide where required for closing space between cabinets and walls of same material and finish as cabinets.

9. Drawer and Cabinet Locks: Half-mortise type, 5-pin tumbler and dead bolt, round cylinder only exposed, brass with plated finish. Furnish keying conforming to Authority's masterkey system and intermediate construction key cores, for installation purposes.

10. Adjustable Shelf Supports: Stainless steel, mortise-mounted.

B. Hardware for counter doors on customer side of outer shell of ticketing counters shall conform to the following:

1. Hinges: Automatic type door hinges, 1 pair per door, see Contract Drawings.

2. Door Release Mechanism: Custom fabricated metal latch, spring-loaded, double latch, with remote release located at a convenient location on "serving" side of counters – as detailed on Contract Drawings.

C. Hardware for hollow metal door to "serving" side of and ticketing counters shall be as described in Article 2.09.

2.08 COUNTERTOP FABRICATION

A. Fabricate tops in one piece with shop-applied edges, unless otherwise shown on the Contract Drawings. Comply with solid-surfacing material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing. All joining of solid surface material to be done in the factory. (No jobsite processing of top and edge surfaces).

B. Fasten solid-surfacing material countertops by screwing through corner blocks of cabinet units into underside of countertop. Align adjacent surfaces, and form seams to comply with manufacturer's written instructions using adhesive in color to match countertop. Secure tops to cabinets with "Z"-type fasteners or equivalent, using 2 or more fasteners at each front, end, and back. Carefully dress joints smooth, remove surface scratches, and clean entire surface. Provide smooth, clean exposed tops and edges in uniform plane free of defects. Make exposed edges and corners uniformly rounded.

C. Abut top and edge surfaces in one true plane, with internal supports placed to prevent any deflection. Provide flush hairline joints in top units using clamping devices. Use manufacturer's recommended adhesive and holding devices to provide joint widths not more than 1/16 inch wide at any location, completely filled and flush with abutting edge.

Finish: Material shall be sanded, buffed and polished to a gloss finish according to manufacturer's recommendation.

PART 3 – EXECUTION

3.01 PREPARATION

A. Do not proceed with installation until the Engineer has determined that the required ambient temperature and humidity conditions can be maintained.

B. Deliver concrete inserts and similar anchoring devices to be built into substrates, well in advance of substrate construction.

C. Prior to installation of counter assemblies, examine shop fabricated Work for completion. Complete Work as required, including removal of packing.

3.02 INSTALLATION

A. Install counters level, plumb, and true; shim as required, using concealed shims. Where counters abut other finished Work, apply filler strips and scribe for accurate fit, with fasteners concealed. Anchor to floor to provide sturdy installation.

B. Installation of Countertops

1. Abut top and edge surfaces in one true plane with flush hairline joints and with internal supports placed to prevent deflection. Locate joints only where shown on Shop Drawings.

1. Field Jointing: Where possible, make in the same manner as shop jointing using dowels, splines, adhesives, and fasteners recommended by manufacturer. Prepare edges to be joined in shop.

C. Dissimilar Materials

Protect surfaces in contact with dissimilar metals with bituminous coating or other permanent separation. Allow bituminous coating to dry prior to installation of component.

3.03 INSTALLATION OF ACCESSORIES

A. Install accessories according to Shop Drawings and manufacturer's written instructions.

B. Securely fasten adjustable shelving supports and stainless steel shelves to substrate.

C. Install, lubricate and adjust all operating hardware to insure smooth functioning.

3.04 ADJUSTMENTS

A. Repair damaged and defective Work to eliminate defects functionally and visually and, where not possible to repair, replace woodwork to the Engineer's satisfaction. Adjust joinery for uniform appearance.

B. Clean, lubricate and adjust hardware.

C. Clean woodwork on exposed and semi-exposed surfaces. Touch-up shop-applied finishes to restore damaged or soiled areas to the Engineer's satisfaction.

D. Complete the finishing Work specified in this Section to whatever extent not completed at shop, prior to the installation of woodwork.

3.05 PROTECTION

A. Provide final protection and maintain conditions in a manner, which ensures that the counters are not damaged or deteriorated at the time of issuance of the Certificate of final Completion and which is in accordance with the recommendations of the entities performing the fabrication and installation Work specified in this Section.

END OF SECTION

DIVISION 12

SECTION 12301

TICKETING COUNTERS

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1 – General Provisions"

A. Product Data: Manufacturer's data for each product and process specified in this Section and incorporated into items of counter construction during fabrication, finishing and installation.

B. Fire Retardant Treatment Data: Manfuacturer's instructions for handling, storing, installation, and finish of treated material. Include certification from the treating manufacturer that treated materials comply with the requirements of this Section.

C. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices hardware and other components. Submit separate shop drawings, including all of the above-mentioned requirements, for factory mock-up.

D. Samples: Submit three of each of the following:

1. Stainless steel finishes, each type, 24" x 24" samples.

2. Translucent panels, 24 inches x 24 inches.

3. Solid plastic surfacing, 8 inches x 10 inches for each type, color, pattern and surface finish.

4. Cabinet hardware, one unit of each type and finish.

E. Guarantee: Refer to Article 1.06 herein for guarantee requirements and submit same in writing to the Engineer.

Refer to Article 1.04, paragraph G. herein for description of factory mock-up requirements.

END OF SECTION

DIVISION 10

SECTION 10810

TOILET ACCESSORIES

PART 1. GENERAL

1.01 SUMMARY

This Section specifies requirements for toilet accessories, including mirrors.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section.

American Society for Testing and Materials (ASTM)

ASTM A 153	Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
ASTM A 653	Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
ASTM A 666	Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
ASTM A 1008	Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
ASTM B 16	Specification for Free-Cutting Brass Rod, Bar and Shapes for Use in Screw Machines.
ASTM B 19	Specification for Cartridge Brass Sheet, Strip, Plate, Bar and Disks.
ASTM B 30	Specification for Copper Alloys in Ingot Form.
ASTM B 456	Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.
ASTM C 1503	Specification for Silvered Flat Glass Mirror.
ASTM F 446	Consumer Safety Specification for Grab Bars and Accessories Installed in the Bathing Area.

National Fire Protection Association (NFPA)

NFPA 70	National Electric Code.

1.03 QUALITY ASSURANCE

A. Single Source Responsibility

Furnish products of same manufacturer for each type of accessory unit and for units exposed in same areas, unless otherwise approved by the Engineer.

B. Electrical Components, Devices and Accessories

Listed and labeled as defined in NFPA 70, Article 100, by an approved listing and testing agency, and marked for intended use.

1.04 WARRANTY

A. Mirrors

Where mirrors are to be furnished and installed, furnish manufacturer's written warranty against silver spoilage of mirrors, whereby manufacturer agrees to replace mirrors that develop visible defects within warranty period. Warranty period for mirrors shall be fifteen (15) years after the date of issuance of the Certificate of Final Completion, shall run to the benefit of the Authority and shall grant the Authority a direct right of action against the manufacturer.

1.05 SUSTAINABLE DESIGN REQUIREMENTS

A. Sustainable Design General Requirements

1. The Authority requires the Contractor to implement practices and procedures to meet the sustainable design requirements. The Contractor shall ensure that the requirements related to these goals, as defined in Division 1 - GENERAL PROVISIONS and the articles below, are implemented to the fullest extent. Substitutions or other changes to the Work proposed by the Contractor will not be allowed if such changes compromise the stated Sustainable Design Performance Criteria.

B. Sustainable Design Performance Criteria

1. The post-industrial and/or post-consumer recycled content (by weight) of toilet accessories shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.
2. The manufacturing location (final assembly) of the name of product(s) shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.
3. All field-applied adhesives, sealants, paints and coatings relating to Work of this Section shall meet the requirements of Division 1 - GENERAL PROVISIONS.

1.06 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MANUFACTURERS

Subject to compliance with the requirements specified in this Section, furnish and install products of one of the following, or approved equal:

A & J Washroom Accessories, New Windsor, NY
American Specialties, Inc., Yonkers, NY
Bobrick Washroom Equipment, Inc., North Hollywood, CA
Bradley Corporation, Menomonee Falls, WI

2.02 MATERIALS

A. Stainless Steel: ASTM A 666, Type 304, No. 4 finish (satin) for exposed surfaces, unless otherwise specified or shown on the Contract Drawings.

B. Brass: ASTM B 19, flat products; ASTM B 16, rods, shapes, forgings and flat products with finished edges; ASTM B 30, castings.

C. Sheet Steel: Cold-rolled, commercial quality, ASTM A 1008, 0.0375 inch (20 gage) minimum thickness; surface preparation and metal pretreatment as required for applied finish.

D. Galvanized Steel Sheet: ASTM A 653, G60 hot-dip zinc coating.

E. Galvanized Steel Mounting Devices: ASTM A 153, hot-dip galvanized after fabrication.

F. Chrome Plating: Nickel and chromium electro-deposited on base metal, ASTM B 456, Service Condition No. SC 2 (moderate service).

G. Mirrors: ASTM C 1503, with Mirror Select Quality, clear glass mirrors, nominal 1/4-inch (6 mm) thick.

H. Stainless Steel Mirror Surfaces: Type 304 stainless steel sheet, or Type 430 as specified, stretcher-leveled with No. 8 polished mirror finish, 0.0375 inch (20 gage) minimum thickness, bonded to minimum 1/4-inch thick hardboard backing.

I. Fasteners: Screws, bolts and other devices of same material as accessory unit, tamper and theft resistant where exposed, and of galvanized steel where concealed.

2.03 CONSTRUCTION FEATURES

A. General

Furnish toilet accessories as shown on the Contract Drawings, in sizes, dimensions, capacities, equipment, material, color and finish as specified herein, unless otherwise shown on the Contract Drawings.

B. Keys

Furnish universal keys for access to toilet accessory units requiring internal access for servicing and resupplying. Furnish minimum of six keys to the Engineer.

C. Toilet Tissue Dispensers

1. Roll-In-Reserve

Stainless steel, for mounting indicated below, sized to store and dispense either 4-1/2-inch diameter or 5-inch diameter core tissue rolls, with reserve roll placed in service by automatic release or by action of manual release bar. Hinge front of unit with pivot hinge and secure with tumbler lockset.

a. Furnish mounting type of one or more of the following, where shown on the Contract Drawings: Partition-mounted, designed to service two adjacent toilet compartments, two rolls for each; surface-mounted, with concealed anchorage; or semi-recessed for nominal 4-inch wall depth.

2. Jumbo-Roll, Surface-Mounted

Stainless steel cabinet, door and mounting plate, with viewing slot for tissue level. Swing-down door shall be equipped with tumbler lockset.

a. Furnish one-roll unit dispensing one roll up to 10-inch diameter, or two-roll unit dispensing up to two rolls up to 10-inch diameter with sliding panel to expose other roll, as shown on the Contract Drawings.

D. Seat-Cover Dispensers

1. Surface-Mounted Type

Stainless steel with concealed opening at bottom for filling; capacity not less than 250 seat covers.

2. Partition-Mounted, Dual-Access Type

Stainless steel, with fixed and adjustable 1-inch wide seamless wall flanges to install in cutout in toilet partition, to serve two compartments. Furnish hinged access door with tumbler lock for servicing from one side.

3. Recessed Type

Stainless steel for nominal 4-inch wall depth. Furnish seamless 1-inch wide wall flange and hinged front with tumbler lockset; capacity not less than 500 seat covers.

E. Paper Towel Dispensers

1. Recessed

Stainless steel, for nominal 4 inch wall depth, sized to dispense not less than 400 C-fold or 525 multi-fold paper towels unless otherwise shown on the Contract Drawings, without use of special adaptors. Door shall be equipped with tumbler lockset.

2. Surface-Mounted

Stainless steel with hinged front with pierced slots at sides as refill indicator, sized to dispense not less than 400 C-fold or 525 multi-fold paper towels unless otherwise shown on the Contract Drawings, without use of special adaptors. Door shall be equipped with tumbler lockset.

F. Waste Receptacles

1. Open-Top, Recessed

Stainless steel with seamless exposed flange, removable receptacle with seamless exposed walls, hemmed edges, secured by tumbler lockset. Furnish heavy-duty vinyl removable liner, secured to receptacle at not less than 4 points by means of grommets, stainless steel hooks; minimum 10.5 gallon capacity.

2. Closed-Top, Recessed

Stainless steel with seamless full panel reinforced door equipped with tumbler lockset and push-in, self-closing top door. Furnish removable waste container of rigid molded plastic; minimum 10.5 gallon capacity.

3. Surface-Mounted

Stainless steel with seamless exposed walls and continuously welded bottom pan. Furnish heavy-duty vinyl removable liner, secured to receptacle at not less than 4 points by means of grommets, stainless steel hooks; minimum 20 gallon capacity.

4. Surface Wall-Mounted Corner

Stainless steel with seamless exposed walls and continuously welded bottom pan. Furnish heavy-duty removable vinyl liner, secured to receptacle at not less than 3 points by means of stainless steel grommets and hooks; minimum 13 gallon capacity.

5. Free-Standing

Stainless steel with swing top and heavy-duty reusable vinyl liner; minimum 21 gallon capacity.

6. Under-Counter

Unit designed for mounting under countertop, fabricated of stainless steel with seamless exposed faces, continuously welded bottom pan, and with self-closing disposal door. Furnish reusable, heavy-duty vinyl liner; minimum 5 gallon capacity.

G. Combination Towel Dispenser/Waste Receptacle Units

1. Recessed Unit

Stainless steel combination unit fabricated for nominal 4-inch wall depth and with continuous seamless wall flange. Towel compartment in upper portion of unit designed to dispense not less than 400 C-fold or 700 multi-fold paper towels. Waste receptacle in lower portion of unit furnished with reusable heavy-duty vinyl liner; minimum 12 gallon capacity. Furnish flush doors with piano hinges and tumbler locks on upper and lower compartments.

2. Recessed Unit with Projecting Receptacle

Stainless steel combination unit fabricated for nominal 4-inch wall depth and with continuous seamless 1-inch wall flange. Furnish towel compartment in upper portion of unit, designed to dispense not less than 400 C-fold or 700 multi-fold paper towels. Double panel door with continuous piano hinge and tumbler lock. Waste receptacle in lower portion of unit furnished with reusable heavy-duty vinyl liner; minimum 12 gallon capacity, secured in place by tumbler lock.

H. Multi-Purpose Units

1. Type MP-1

Stainless steel combination soap/towel dispenser unit, designed for recess mounting behind continuous mirror or behind wall. Towel dispenser designed to dispense minimum 500 C-Fold or 800 multi-fold paper towels. Soap dispenser capacity 80 oz.; furnish with push-type soap valve designed to dispense soap in measured quantities in liquid or lather form.

I. Sanitary Napkin Dispensers

Stainless steel unit, all-welded seamless construction, with returned edges and equipped with tumbler lockset. Furnish identification reading "Napkins" and "Tampons" at coin slots; brand name advertising of products dispensed is not permitted. Capacity shall be not less than 30 napkins and 20 tampons.

1. Mounting

Fully recessed type for nominal 6-inch wall; or semi-recessed type, with stainless steel collar to extend unit from nominal 4-inch wall cavity; or surface-mounted type, as shown on the Contract Drawings.

2. Operation

Fifty-cent coin operation, with locked coin box keyed separately from door and other accessory units.

J. Sanitary Napkin Disposal Units

1. Partition-Mounted Dual-Access Type

Stainless steel, equipped with adjustable flanges to permit partition mounting to service two toilet compartments. Furnish with self-closing door and all-welded stainless steel receptacle removable from one side.

2. Surface-Mounted Type

Stainless steel with seamless exposed walls, tightly self-closing top cover and locking bottom panel with continuous stainless steel piano hinge.

3. Recessed Type

Stainless steel, fabricated for nominal 4-inch wall depth. Furnish self-closing door and removable stainless steel receptacle of all-welded construction.

K. Soap Dispensers

1. Liquid Soap Dispenser, Deck-Mounted

Deck-mounted piston and spout type unit with minimum 16 fl. oz. capacity polyethylene reservoir concealed below deck. Piston and spout shall be stainless steel with bright polished finish with chrome-plated brass deck escutcheon. Spout shall be 4 inches long. Equip unit with valve for dispensing soap in liquid form.

a. Furnish unit designed for mounting on vanity deck or lavatory deck of thickness shown, or as shown on the Contract Drawings.

2. Liquid Soap Dispenser, Horizontal Recessed Tank Type

Recess mounted in wall, stainless steel tank type dispenser; minimum 32 fl. oz. capacity. Furnish stainless steel piston, springs and internal parts designed to dispense soap in measured quantity by pump action, and with integral check valve to prevent leaking. Unit shall be removable for servicing by means of tumbler lock. Furnish stainless steel cover with unbreakable window-type refill sight gauge. Equip unit with push type valve for dispensing soap in liquid or lather form.

3. Liquid Soap Dispenser, Horizontal Surface Tank Type

Surface-mounted, stainless steel tank type dispenser; minimum 40 fl. oz. capacity. Furnish stainless steel piston, springs and internal parts designed to dispense soap in measured quantity by pump action. Unit shall be serviceable by means of locked filler top. Furnish stainless steel body with unbreakable window-type refill sight gauge. Equip unit with push type valve for dispensing soap in liquid or lather form.

L. Grab Bars

Stainless steel tube, 1-1/2 inch o.d. with minimum wall thickness of 0.050 inch (18 gage), in configuration as shown on the Contract Drawings, with 1-1/2 inch clearance between wall surface and inside face of bar. Concealed mounting shall be manufacturer's standard flanges and anchorages.

1. Gripping Surfaces

Smooth, satin finish at dry areas or manufacturer's standard non-slip texture at wet areas, or as shown on the Contract Drawings.

M. Fold-Down Purse Shelf

Surface-mounted, stainless steel fold-down shelf, 15 inches long by 5-1/2 inches wide, hinged unit spring-loaded to provide automatic return to vertical position after use.

N. Warm-Air Hand Dryer

Surface-mounted, cast iron base, with manufacturer's standard white porcelain enamel cover, with fixed position nozzle. Equip with electronic sensor activation and adjustable timed power cut-off switch. Set operation time for 30 seconds. Electrical requirements shall be as shown on the Contract Drawings.

O. Mirror Units

1. Standard Stainless Steel Framed Mirror Units

Fabricate frame with channel shapes in minimum 0.0375 inch (20 gage) stainless steel, with square corners carefully mitered to hairline joints and mechanically interlocked. Furnish in Type 430 bright polished finish.

2. Fixed-Tilt, Stainless Steel Framed Mirror Units

Stainless steel frame, minimum thickness 0.0375 inch (20 gage), with joints mitered, welded and ground smooth. Construct frame so that taper is not less than 3 inches from top to bottom.

3. Adjustable-Tilt, Stainless Steel Framed Mirror Units

Stainless steel frame of angle or channel shapes, minimum thickness 0.0375 inch (20 gage), with square corners carefully mitered to hairline joints, welded and ground smooth. Furnish continuous, stainless steel piano hinge at bottom of unit and adjustable elbow hinge at each side to allow pivoting from vertical to not less than 6 inches outward at top.

4. Frameless, Stainless Steel Security Mirror

Single piece mirror and integral frame of minimum 0.050 inch (18 gage) Type 430 stainless steel, polished to a No. 8 mirror (bright polished) finish. Furnish unit with factory-drilled holes for mounting with stainless steel tamperproof mounting screws. Nominal size shall be 11 inches wide by 17 inches high.

P. Shower Curtain Rod, Heavy-Duty

Stainless steel tube, 1-1/4 inch o.d. with minimum wall thickness of 0.050 inch (18 gage); furnish 3 inch o.d. minimum 0.0375 inch (20 gage) stainless steel flanges, designed for exposed fasteners.

Q. Anti-Bacterial Shower Curtain

10 oz. nylon-reinforced anti-bacterial vinyl fabric with hemmed edges. Fabric shall be flameproof, stain resistant and self-deodorizing, with corrosion resistant grommets on 6-inch centers through top hem. Furnish in surgical green color, unless otherwise shown on the Contract Drawings. Size shall be minimum 6 inches wider than opening by 72 inches high.

R. Shower Curtain Hooks

Stainless steel spring wire curtain hooks with snap fasteners, sized to accommodate curtain rod size specified above.

S. Recessed Soap Dish

One-piece construction of seamless stainless steel for recess mounting in wall. Furnish with mounting clamp or lugs appropriate for wall construction shown on the Contract Drawings.

T. Towel Bar

Stainless steel tubular bar, 3/4-inch square, with rectangular end brackets, 24 inches long. Furnish galvanized backplates for concealed wall mounting.

U. Mop and Broom Holder/Utility Shelf

Combination unit with minimum 0.050 inch (18 gage), stainless steel shelf with 1-1/2 inch returns and support brackets for wall mounting; and minimum 0.0625 inch (16 gage) stainless steel shelf front hooks for wiping rags, together with spring-loaded rubber cam type mop/broom holders, and 1/4 inch diameter stainless steel drying rod suspended beneath shelf. Furnish 36 inch long unit with four mop/broom holders and three hooks.

V. Mop and Broom Holder

"Hat" channel of minimum 0.0312 inch (22 gage) stainless steel, with spring-loaded rubber cam type mop/broom holders. Furnish 36-inch long unit with four holders.

2.04 FABRICATION

A. Product Identification: Only an unobtrusive stamped logo of manufacturer, as approved by the Engineer, is permitted on exposed face of units. On either interior surface not exposed to view or back surface, provide additional identification by means of either a printed, waterproof label or a stamped nameplate, indicating as a minimum, manufacturer's name and product model number.

B. Construction: Fabricate units of all welded construction with tight seams and joints, with exposed edges rolled. Hang doors and access panels with full length, continuous stainless steel piano hinges. Furnish concealed anchorage wherever possible.

C. Mirror Units

1. Edge Protection

Fabricate frames for glass mirrors to accommodate wood, felt, plastic or other glass edge protection material.

2. Backing

Galvanized steel backing sheet, not less than 0.0312 inch (22 gage) and full mirror size, with non-absorptive filler material. Corrugated cardboard is not an acceptable filler material.

3. Hangers

Heavy-duty wall brackets of galvanized steel, equipped with concealed locking devices requiring special tool to remove, unless shown otherwise on the Contract Drawings.

4. Heavy-Duty Frame

Fabricate with angle shapes of minimum 0.050 inch (18 gage) stainless steel with square corners mitered, welded and ground smooth; Type 430 bright polished finish.

5. Shelves

Where shown on the Contract Drawings, fabricate from stainless steel in same gage and finish as mirror frame, approximately 5 inches deep by width of mirror. Turn down and return edges for additional rigidity, with welded, ground and polished corners. Weld shelves securely to bottom of mirror frame; furnish concealed rigid bracket supports for shelf widths exceeding 36 inches.

PART 3. EXECUTION

3.01 PREPARATION

A. Coordinate accessory locations with other Work to avoid interference and to assure proper operation and servicing of accessory units.

B. Furnish inserts and anchoring devices which must be set in concrete or built into masonry. Coordinate delivery with other Work to avoid delay.

3.02 INSTALLATION

A. Install toilet accessory units in accordance with manufacturer's instructions, using fasteners appropriate for substrate type and recommended by manufacturer of unit. Install units plumb and level, firmly anchored in locations and at heights shown on the Contract Drawings or, if not shown, as recommended by the unit manufacturer.

B. Mirrors

Set units plumb, level and square at locations shown. Secure mirrors to walls in concealed tamperproof manner with special hangers, toggle bolts or screws as appropriate for type of substrate and in accordance with manufacturer's instructions.

C. Grab Bars

Install grab bars to withstand a minimum downward load of 250 lbs. when tested in compliance with ASTM F 446. Grab bars may not rotate within their holding device or fittings.

3.03 ADJUSTMENTS

A. Adjust accessories for proper operation and verify that mechanisms function smoothly. Replace damaged or defective items.

B. Clean and polish exposed surfaces after removing temporary labels and protective coatings.

C. Clean exposed surfaces of mirror units in compliance with manufacturer's recommendations.

END OF SECTION

SECTION 10810

TOILET ACCESSORIES

SUBMITTALS

APPENDIX "A"

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1 – GENERAL PROVISIONS:

A. Product Data

Product data for each toilet accessory item specified, including construction details relative to materials, dimensions, profiles, thicknesses, mounting methods and specified options and finishes. Furnish setting drawings, templates, instructions, directions for installation of anchorage devices and cutout requirements in other Work.

B. Shop Drawings

Show fabrication and erection of toilet accessories not fully described by product data drawings.

C. Warranty

Prior to issuance of the Certificate of Final Completion, submit manufacturer's warranty to the Engineer for any mirrors furnished.

D. Schedules

Indicating manufacturer, accessory type and model number, quantities, sizes and installation location for each accessory shown on the Contract Drawings.

E. Maintenance Manuals

Submit manufacturer's printed instructions for care and maintenance of installed Work, including replaceable parts and service recommendations.

F. - Sustainable Design Submittal Requirements

The Contractor shall submit the Sustainable Design certification items listed herein. Sustainable Design submittals shall include the following:

1. A completed Sustainable Design Materials Certification Form (SDMCF), appended to Division 1 - GENERAL PROVISIONS. Information to be supplied for this form shall include:

   a. Cost breakdowns for the materials included in the Contractor's Work. Cost breakdowns shall include total cost plus itemized material costs.

   b. Where required by the Sustainable Design Performance Criteria of this Section, the following information shall also be supplied:

(1) The amount of post-consumer and/or post-industrial recycled content in the supplied product(s).

(2) The manufacturing location of the supplied product(s).

(3) The location (source) of the raw materials used to manufacture the supplied product(s).

(4) The VOC content of all adhesives, sealants, paints, and coatings applied on site as part of this Work.

2. Published product literature or letters of Certification, provided from the product manufacturer on the manufacturer's letterhead, to verify the product information supplied for the SDMCF.

3. Product cut sheets for materials that meet the SDMCF.

4. Material Safety Data Sheets (MSDS), for applicable products. Applicable products include, but are not limited to field-applied adhesives, sealants, carpets, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).

5. The Sustainable Design submittal information shall be assembled into one (1) package per Section or trade, and sent to the Engineer.

END OF APPENDIX "A"

SECTION 10810

TOILET ACCESSORIES

INSTRUCTIONS TO SPECIFIER

A. General

1. This Section specifies requirements for toilet accessories, including types for public use washrooms, public use showers and custodial accessories. Accessories for institutional applications have not been included.

2. Only basic toilet accessory types are specified here, although there are many more available configurations. Add Spec Notes to Contract Drawings to supplement this specification as required.

3. For design and details required for compliance with Port Authority standards and local building code requirements for access by persons with disabilities, refer to the following publications:

   a. *ADA Accessibility Guidelines for Buildings and Facilities* (ADAAG), published by the U.S. Justice Department.

   b. ICC/ANSI A-117.1 *Accessible and Useable Buildings and Facilities.*

4. Where choice of size of unit is involved, use manufacturers' standard sizes wherever possible.

5. Where accessories are used with metal toilet partitions, to eliminate the need for internal reinforcement of partitions, consider arranging accessories back-to-back, so they may be through-bolted, as design allows.

B. Contract Drawings

Ensure that the Contract Drawings show the following items specified in the text:

(3.02 A)	Location, mounting height, type and size of required accessories.
(2.03 C)	Size and mounting types of toilet paper dispensers.
(2.03 C.2.a)	Jumbo tissue dispenser: One-roll or two-roll unit.
(2.03 D)	Type of seat-cover dispenser.
(2.03 E)	Types of paper towel dispensers required and, if surface-mounted type used, capacity - typically either (a) not less than 300 C-fold or 400 multi-fold paper towels without need for special adapters or (b) not less than 1000 single-fold paper towels.
(2.03 F)	Types and capacities of waste receptacles, if other than specified.
(2.03 G)	Types and capacities of combination towel dispenser/waste receptacle units, if other than specified.
(2.03 H)	Type multi-purpose units, if other than specified.
(2.03 I)	Mounting type for sanitary napkin dispenser.
(2.03 J)	Type of sanitary napkin disposal units.
(2.03 K)	Soap dispensers: Unit type and valve for dispensing soap (either liquid or lather).

(2.03 L)	Grab bars mounting type, wet areas to receive non-slip texture gripping surface, size - if other than 1 1/2 inch outside diameters, and configuration.
(2.03 M)	Type of purse shelf and size, if other than specified.
(2.03 N)	Type of hand dryer, if other than specified, and additional features (electrical requirements, brushless motor, fixed nozzle, etc.).
(2.03 O; 2.04 C)	Types of mirrors required and special mounting requirements for mirrors, if other than specified.
(2.03 Q)	Size and color of shower curtain, if other than specified.
(2.03 S)	Wall construction at recessed soap dish.
(2.03 T)	Size of towel bar, if other than specified.
(2.03 U)	Mop and broom holder/utility shelf: Length of units and number of mop/broom holders and hooks, if other than specified.
(2.03 V)	Mop and broom holder: Length of units and number of mop/broom holders, if other than specified.
(3.02 A)	Details of installation for major items, including substrate anchorages.

C. Other Items

1. Ensure that Division 10 Section on toilet partitions is included in the Contract Booklet, if required.

2. Ensure that Division 16 Sections for electrical work are included in the Contract Booklet to coordinate with warm-air hand dryers. Coordinate requirements with Electrical Task Leader.

END OF INSTRUCTIONS

DIVISION 10

SECTION 10160

TOILET PARTITIONS

PART 1. GENERAL

1.01 SUMMARY

This Section specifies requirements for toilet partitions, including screens.

A. Related Work specified in other Sections of the Specifications includes the following:

1. Division 5 Section on miscellaneous steel for support for anchoring partitions above finished ceiling.
2. Division 10 Section on toilet accessories including grab bars, paper holders, and similar accessories.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

The Engineered Wood Association (APA)

APA Form No. E 30	Engineered Wood Construction Guide.

American Society for Testing and Materials (ASTM)

ASTM A 666	Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.

Society of Automotive Engineers-American Iron and Steel Institute (SAE-AISI)

System for Designating Carbon and Alloy Steels.

1.03 QUALITY ASSURANCE

A. Field Measurements

Take field measurements prior to preparation of Shop Drawings and prior to fabrication where possible, to ensure proper fitting of Work. However, allow for adjustments while maintaining specified clearances, wherever taking field measurements before fabrication might delay Work.

B. Coordination

1. Furnish inserts and anchorages to be built into other Work for installation of toilet partitions and related Work, and coordinate delivery with other Work to avoid delay.
2. Coordinate cutouts, drilled holes and internal reinforcement as required to accommodate partition installation, and partition-mounted accessories.

1.04 SUSTAINABLE DESIGN REQUIREMENTS

A. Sustainable Design General Requirements

1. The Authority requires the Contractor to implement practices and procedures to meet the sustainable design requirements. The Contractor shall ensure that the requirements related to these goals, as defined in Division 1 - GENERAL PROVISIONS and the articles below, are implemented to the fullest extent. Substitutions or other changes to the Work proposed by the Contractor will not be allowed if such changes compromise the stated Sustainable Design Performance Criteria.

B. Sustainable Design Performance Criteria

1. The post-industrial and/or post-consumer recycled content (by weight) of stainless steel toilet partitions shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

2. The manufacturing location (final assembly) of the name of product(s) shall be documented in accordance with the Sustainable Design Submittal Requirements of this Section.

3. All field-applied adhesives, sealants, paints and coatings relating to Work of this Section shall meet the requirements of Division 1 - GENERAL PROVISIONS.

1.05 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MANUFACTURERS

Subject to compliance with the requirements of this Section, furnish and install products of one of the following:

Bobrick Washroom Equipment, Inc., North Hollywood, CA

Bradley Corporation (Mills Partitions), Menomonee Falls, WI

Global Steel Products Corp., Deer Park, NY

Knickerbocker Partition Corp., Freeport, NY

Metpar Corp., Westbury, NY

Partition Systems, Inc. (Columbia Partitions), Columbia, SC

Santana Products Co., Scranton, PA

Sanymetal (A Crane Plumbing Co.), Somerset, KY

2.02 MATERIALS

A. General

Furnish materials that have been selected for surface flatness and smoothness. Exposed surfaces that exhibit pitting, seam marks, roller marks, saw marks, stains, discolorations, telegraphing of core material or other imperfections on finished units are not acceptable.

B. Furnish products of style, arrangement and materials shown on the Contract Drawings.

1. Stainless Steel

ASTM A 666, Type 302/304 seamless facing sheets, pressure laminated to core material, finished on exposed faces with AISI No. 4 bright, directional polish and of the following minimum thicknesses, or as otherwise shown:

a. Doors: 0.0312 inch (22 gage), finished to 1 inch.

b. Panels: 0.0375 inch (20 gage), finished to 1 inch.

c. Pilasters: 0.050 inch (18 gage), finished to 1-1/4 inch.

2. Solid Phenolic Core

Solid phenolic core panel consisting of multiple layers of phenolic resin saturated kraft paper, compressed under heat and pressure, faced with melamine-impregnated decorative surface papers on both sides fused to substrate during panel manufacture, with black eased and polished edges, of the following minimum thicknesses, or as otherwise shown:

a. Doors: 3/4 inch.

b. Panels: 1/2 inch.

c. Pilasters: 3/4 inch.

3. Solid Polymer

High density, solid polyethylene panel with homogenous color throughout, seamless construction with edges eased, continuous metal heat strip fastened to bottom edges of doors and panels, of the following minimum thicknesses, or as otherwise shown:

a. Doors: 1 inch.

b. Panels: 1 inch.

c. Pilaster: 1 inch.

C. Metal Partition Core Material

1. Honeycomb Kraft Paper: Manufacturer's standard sound-deadening honeycomb of resin-impregnated kraft paper, in thickness as required for a finished dimension of 1 inch for doors, panels, and screens, 1-1/4 inch for pilasters. For wall-supported wedge type screens, if any, use manufacturer's standard sound-deadening core material bonded to inner face of panel sheets.

2. Plywood: Manufacturer's heavy duty solid core material, 7-ply APA Exterior grade or Marine grade plywood, as defined in APA's *Engineered Wood Construction Guide*, in thickness as required for a finished dimension of 1 inch for doors, panels, and screens, 1-1/4 inch for pilasters.

D. Metal Partition and Screen Reinforcement

1. Concealed anchorage: Minimum 12 gage, rust-resistant, protective-coated steel.

2. Concealed tapping: Minimum 14 gage, rust-resistant, protective-coated steel.

E. Overhead-Bracing

Manufacturer's standard continuous extruded aluminum headrail, anti-grip profile, clear anodized finish, with corner and wall brackets and end caps as required by layout.

F. Pilaster Shoes

ASTM A 666, Type 302 or 304 stainless steel, 20 gage, AISI No. 4 finish, not less than 3 inches high, with rounded edges to match pilaster profile.

G. Hardware and Fittings

Hinges, Door Hardware and Brackets: Manufacturer's heavy-duty type operating hardware and fittings of satin finish stainless steel, cast stainless steel or extruded aluminum, as shown on the Contract Drawings. Chrome-plated non-ferrous cast alloy (zamac), or chrome-plated brass is not acceptable. Furnish full height hinges and brackets as shown on the Contract Drawings.

H. Anchorages and Fasteners

Manufacturer's standard exposed fasteners to match hardware, with theft-resistant type heads and nuts. For concealed anchors, use hot-dip galvanized, cadmium-plated, or other rust-resistant, protective-coated steel.

2.03 CONSTRUCTION FEATURES

A. General

Furnish standard doors, panels, pilasters and screens, unless otherwise shown on the Contract Drawings. Furnish units with cutouts, drilled holes, and internal reinforcement to receive partition-mounted hardware, accessories and grab bars, as shown on the Contract Drawings and in sizes shown on the Contract Drawings.

B. Door Dimensions

Unless otherwise shown on the Contract Drawings, furnish 24 inch wide in-swinging doors for ordinary toilet stalls, and 36 inch wide out-swinging doors with minimum 32 inch wide clear opening at stalls equipped for use by persons with disabilities.

C. Metal Panel Construction

Pressure laminate seamless face sheets to core material with non-toxic adhesive and seal edges with continuous interlocking strip, or with lapped and formed edges. Weld edges and corners, with exposed welds ground smooth.

D. Toilet Partitions and Screens Mounting Styles

Styles shall be as shown on the Contract Drawings, and shall conform to one or more the following:

1. Floor-Anchored Overhead-Braced Partitions

   Galvanized steel supports and leveling bolts at pilasters, as recommended by manufacturer to suit floor conditions, and to permit structural connection to floor. Make provisions for setting and securing each pilaster. Furnish shoe at each pilaster to conceal supports and leveling mechanism. Furnish overhead brace to bridge compartments and brace freestanding end pilasters to the wall.

2. Floor and Ceiling Anchored Partitions

   Galvanized steel supports and leveling bolts at pilasters as recommended by manufacturer to suit floor conditions, and threaded rods, lock washers, and leveling adjustment nuts at pilasters, to permit connection to structural support above finished ceiling. Make provisions for setting and securing each pilaster. Furnish shoe and cap at each pilaster to conceal supports and leveling mechanism.

3. Floor-Anchored Screens

   Pilasters not less than 1 inch thick, panels and pilasters in sizes shown on the Contract Drawings of same construction and finish as toilet partitions. Furnish galvanized steel anchorage devices, complete with threaded rods, lock washers and leveling adjusting nuts at pilasters, to permit structural connection to floor. Furnish shoe at pilaster to conceal anchorage.

E. Color

Shall be as shown on the Contract Drawings, or if not shown, as selected by the Engineer from the manufacturer's standard colors.

F. Hardware

Furnish hardware for each compartment in partition system, as follows:

1. Hinges

   Adjustable type to hold door open at any angle up to 90 degrees. Furnish gravity type, spring-action cam type, or concealed torsion rod type, per manufacturer's available types.

2. Latch and Keeper

   Surface-mounted latch unit, designed for emergency access, with combination rubber-faced door strike and keeper.

3. Coat Hook

Combination hook and rubber-tipped bumper, sized to prevent door from hitting mounted accessories.

4. Door Pull

Surface-mounted unit for out-swinging doors.

PART 3. EXECUTION

3.01 INSTALLATION

A. General

Comply with the manufacturer's recommended procedures and installation sequence. Install partitions rigid, straight, plumb and level. Clearances shall be not more than 1/2 inch between pilasters and panels, and not more than 1 inch between panels and walls. Secure panels to walls and panels to pilasters with not fewer than two stirrup brackets attached near top and bottom of panel, or with full height brackets as shown. Locate wall brackets so that holes for wall anchorages occur in masonry or tile joints. Secure panels in position with the manufacturer's recommended anchoring devices and as specified herein.

B. Floor-Anchored Overhead-Braced Partitions

Secure pilasters to floor and level, plumb, and tighten installation with devices obtained from the manufacturer. Secure overhead brace to each pilaster with not fewer than two fasteners per pilaster. Hang doors and adjust so that tops of doors are aligned with tops of panels, and are parallel with overhead-brace when doors are in closed position.

C. Floor and Ceiling Anchored Partitions

Secure pilasters to supporting construction, and level, plumb and tighten installation with devices obtained from the manufacturer. Hang doors and adjust so that doors are level and aligned with panels when doors are in closed position.

D. Floor-Anchored Screens

Attach with concealed anchoring devices, as recommended by the manufacturer to suit supporting structure. Set units level and plumb, and to resist lateral impact.

3.02 ADJUSTMENTS

A. Hardware Adjustment

Adjust and lubricate hardware for proper operation. Set hinges on in-swinging doors to hold open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors, and entrance swing doors where shown on the Contract Drawings, to return to fully closed position.

B. Clean exposed surfaces of partition systems using materials and methods recommended by the manufacturer and protect as necessary to prevent damage during remaining construction.

END OF SECTION

SECTION 10160

TOILET PARTITIONS

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1 - GENERAL PROVISIONS:

A. Product Data

Manufacturer's detailed technical data for materials, fabrication, and installation, including catalog cuts of anchors, hardware, fittings, fastenings, accessories and manufacturer's standard color chart. Furnish templates and instructions for installation of anchorage devices built into other Work.

B. Shop Drawings

Show fabrication and erection of toilet partition assemblies not fully described by product drawings.

C. Samples

Submit full range of standard color samples for each type of unit required. Submit 6 inch square samples of each color and finish on same substrate to be used in Work, for color verification after selections have been made.

D. Maintenance Instructions

Submit manufacturer's printed instructions for care and maintenance of installed Work.

E. Sustainable Design Submittal Requirements

The Contractor shall submit the Sustainable Design certification items listed herein. Sustainable Design submittals shall include the following:

1. A completed Sustainable Design Materials Certification Form (SDMCF), appended to Division 1 - GENERAL PROVISIONS. Information to be supplied for this form shall include:

a. Cost breakdowns for the materials included in the Contractor's Work. Cost breakdowns shall include total cost plus itemized material costs.

b. Where required by the Sustainable Design Performance Criteria of this Section, the following information shall also be supplied:

(1) The amount of post-consumer and/or post-industrial recycled content in the supplied product(s).

(2) The manufacturing location of the supplied product(s).

(3) The location (source) of the raw materials used to manufacture the supplied product(s).

(4) The VOC content of all adhesives, sealants, paints, and coatings applied on site as part of this Work.

(5) Include total cost for all wood products and itemized costs for all FSC-certified wood products.

2. Published product literature or letters of Certification, provided from the product manufacturer on the manufacturer's letterhead, to verify the product information supplied for the SDMCF.

3. Product cut sheets for materials that meet the SDMCF.

4. Material Safety Data Sheets (MSDS), for applicable products. Applicable products include, but are not limited to field-applied adhesives, sealants, carpets, paints and coatings. Material Safety Data Sheets shall indicate the Volatile Organic Compound (VOC) limits of products submitted (If an MSDS does not include a product's VOC limits, then product data sheets, manufacturer literature, or a letter of certification from the manufacturer can be submitted in addition to the MSDS to indicate the VOC limits).

5. The Sustainable Design submittal information shall be assembled into one (1) package per Section or trade, and sent to the Engineer.

END OF APPENDIX "A"

PRODUCT: **TRAX SEATING SYSTEM**

FINISH: **TX F 01 Perforated Mild Steel**

SUPPLIER: **OMK Design Ltd**
30 Stephen Street
London, UK
+44 (0) 20 7631 1335
enquiries@omkassociates.com

1.0 SEATING PERFORMANCE CRITERIA AND WARRANTY

The seating system must be guaranteed against structural failure for a minimum of 25 years and have been independently tested to withstand 25 years of heavy contract use.

Metal components must be finished for interior and exterior use, be UV stable and guaranteed against colour fading. Colour fastness must conform to DIN 54004. All metal components must be able to finished in any RAL colour.

All upholstery materials must be abrasion resistant and in excess of 100,000 rubs (Martindale Test).

Tables must be double-sided solid core laminate and resistant to chemicals, cigarette burns, staining and be fire-rated to BS476 Class 2.

2.0 SEATING STRUCTURAL CRITERIA

2.1 Supporting Beam

The seat must consist of a triangular supporting beam. It must allow up to 7 seats to be fitted with the need for only 2 leg supports, minimising floor interference for cleaning purposes.

- Must be made from extruded aluminium with an anodised finish.
- High strength aluminium alloy, UNE-L2630 alloy 6063.
- Anodised film applied 25 microns thick.
- Breaking strength of 20kg/mm.
- Bending strength of 175N/mm.
- Tensile strength of 300N/mm.
- Density of 2.7g/cm.
- End capped with pressure-die-cast aluminium cover polyester coated.
- No plastic end caps should be used.

The standard chassis must also allows 2 seats to be mounted either side of the beam instead of the backrest creating a double sided bench for short sit areas.

2.2 Seat & Back Panels

The panels must incorporate a substantial radius at both the front of the seat and top of the back. This stops the possibility of injury to people's legs due to accidental impact with the seat, and the top of the back can be used as a neck or armrest without cutting off blood supply. The radius also produces a natural space when the seats are abutted back to back eliminating head clash. It also prevents damage to vertical wall surfaces when the seats are placed against them.

The seat and back panels must be made from perforated mild steel powder coated in oven baked polyester. The panels should be fixed to pressure die cast aluminium brackets using mechanical fasteners.

2.2.1 Perforated Mild Steel

- 2.2mm thick perforated mild steel plate.
- Pre-phosphate coated. Finished in oven-baked polyester powder. Coating thickness no less than 80 microns.
- Suitable for interior and exterior use.
- Conforms to BS4875 (tests strength of seats and tables)

2.3 Seat And Back Castings

The brackets must be fixed to the extruded beam, again using mechanical fasteners.

- Pressure die-cast aluminium alloy, LM06.
- Alloy must conform to BS1490.
- Finished in alochrom/alodine 1200 (corrosion preventive pre-treatment).
- Polyester powder coated to 100 microns, available in any RAL colour.

2.4 Armrests, Legs and Table Fixing Brackets

Armrests, legs and table fixing brackets should be made from pressure die cast aluminium to the following specification:

- Pressure die-cast aluminium alloy, LM06.
- Alloy must conform to BS1490.
- Finished in alochrom/alodine 1200 (corrosion preventive pre-treatment).
- Polyester powder coated to 100 microns, available in any RAL colour.

Armrests must also be available in Chrome and Polished Aluminium finishes.

An optional longer armrest must also be available to prevent passengers from lying across the seating unit.

Armrests must be able to be added or subtracted on the units and not be integral to the seat. The fixings must remain common on all configurations.

2.5 Tables

Tables must follow the same module as the seat units allowing them to be juxtaposed in any position. The beam must carry the necessary fixings for either seat or table. However a half table should be available as an alternative where space is at a premium.

Tables should be double sided allowing them to be reversed in the event of surface damage and incorporate through fixings to facilitate this.

Tables must be made from Solid Core Laminate to the following specification:

- Must be constructed from fire resistant solid core laminate.
- Must be resistant to boiling water, staining and cigarette burns.
- Must be tested to ISO 4586.
- Must be fire rated to ISO 476 class 2.

3.0 MAINTENANCE CRITERIA

The seat must comprise of 3 panels; seat panel, back panel and headrest. Allowing either to be easily replaced in situ in the event of damage, without the necessity to replace or repair the whole seat.

There must be a gap between seat and back to eliminate dirt accumulation at this junction and allow any spilt drinks to drain immediately.

The shape of the supporting beam should be triangular with the flat face adjacent to the floor. Therefore self-shedding, eliminating dust accumulation and facilitating easy cleaning.

All the panels must be interchangeable allowing in-house maintenance staff to easily change the finishes should future passenger profiles change, i.e. upgrade or downgrade seat comfort without the need to change the framework.

The seat must be assembled using only mechanical fixings to the following specification:

- Hexagonal metric socket button head bolts, manufactured to BS:4168 pt 6.
- Must be made of high tensile steel 12.9, and zinc plated to prevent corrosion.
- Common fixing bolts should be are used throughout.
- Tables must be fixed using stainless steel bolts, lock washers and nuts.
- All bolts must be self-locking using Nylock.
- All bolts must be used in conjunction with standard hexagonal key or spanner.

All components must be able to be cleaned using a mild detergent.

4.0 TEST SPECIFICATIONS

The seating system must be performance tested by an independent body to BS EN 15373:2007 Test Level 3 or equivalent, to withstand 25 years of heavy contract use in an Airport environment.

It must also be fire tested to BS 5852 1990, ignition source 5, or equivalent.

5.0 ENVIRONMENTAL STATEMENT

All metal components must be recyclable, and recyclable and biodegradable packaging materials must be used.

6.0 TYPICAL DIMENSIONS

Depth of Single Unit	735mm
Depth of Back-to-Back Unit	1500mm
Height Of Unit	970mm
Height of Seat	445mm
Width of 2 Seat Units	1260mm
Width of 3 Seat Units	1850mm
Width of 4 Seat Units	2440mm
Width of 5 Seat Units	3030mm
Width of 6 Seat Units	3620mm
Width of 7 Seat Units	4220mm

DIVISION 2

SECTION 02094

WORKER AND ENVIRONMENTAL PROTECTION FOR LEAD PAINT REMOVAL

PART 1 - GENERAL

1.01 SUMMARY

A. This Section specifies requirements for:

1. The installation and use of containment systems for the removal of paint coatings containing lead and other toxic metals in accordance with the Society for Protective Coatings (SSPC) guidelines listed on the attached table 1.

2. Worker and Environmental Compliance Plans for the protection of Contractor workers, the public, and the environment from exposure to harmful levels of lead that may be present in the paint being removed.

3. Ensuring that all waste is collected, handled, stored, transported, and disposed off in accordance with applicable regulations.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section.

A. Code of Federal Regulations (CFR)

1.	29 CFR 1910.120.	Hazardous Waste Operations and Emergency Response
2.	29 CFR 1910.134	Respiratory Protection
3.	29 CFR 1926	Occupational Safety and Health Regulations for Construction
4.	29 CFR 1926.51	Sanitation
5.	29 CFR 1926.62	Lead
6.	40 CFR 50	National Primary and Secondary Ambient Air Quality Standards
7.	40 CFR 261-264	Hazardous Waste Standards
8.	40 CFR 265.13	General Waste Analysis

9. 40 CFR 268 Land Disposal Restrictions

10. 49 CFR 171-179 Transportation Regulations

B. New Jersey Administrative Code (NJAC)

1. NJAC, Title 8, Chapter 62 New Jersey Department of Health, Standards for Lead Certification

2. NJAC, Title 5, Chapter 17 New Jersey Lead Hazard Evaluation Abatement Code

C. Society for Protective Coatings (SSPC)

1. SSCP Guide 6 Guide for Containing Debris Generated During Paint Removal Operations

2. SSPC Guide 7 Guide for Disposal of Lead-Contaminated Surface Preparation Debris

REGULATORY REQUIREMENTS

D. Comply with the requirements of this section as though the Authority were a private corporation. Comply with the requirements of all applicable Federal, State, and City laws, codes, and regulations, including, but not limited to the regulations of the:

1. United States Environmental Protection Agency (USEPA);
2. Occupational Safety and Health Administration (OSHA);
3. New Jersey Department of Environmental Protection (NJDEP);
4. New Jersey Department of Health and Senior Services (NJDHSS);
5. New Jersey Department of Labor (NJDOL);

E. Comply with all applicable regulations even if the regulation is not specifically referenced herein. If a Federal, State, or City regulation is more restrictive than the requirements of this Section, follow the more restrictive requirements.

1.03 QUALIFICATIONS AND EXPERIENCE

A. Contractor and its Subcontractors

1. For Work in New Jersey, verify that the Contractor or its subcontractor who will be working with lead is certified under the Lead Hazard Evaluation and Abatement Code for Steel Structures and Commercial Buildings, N.J.A.C. 5.17-2.1. Certification must be maintained throughout the duration of the Contract.

B. Laboratory Qualifications/Occupational Physician

1. Verify that the analytical laboratories performing metals analysis on air, water, soil and solid waste, are accredited by The American Industrial Hygiene Association (AIHA), and has successfully participated (previous 12 months at a minimum) in the AIHA ELPAT program and PAT program.

2. Verify that the laboratory conducting the worker blood analyses is approved by OSHA, and NJDHSS as applicable.

3. Verify the certifications of the Occupational Physician.

C. Competent Person/Supervisor. Employ one who:

1. Has a minimum of two years industrial painting field experience, with a minimum of ninety days field supervisory or management experience in paint removal projects;

2. Has proof of completion of 29 CFR 1926.62 Lead in Construction training within the last 12 months;

3. Has proof of 29 CFR 1910.120 (initial or refresher) HAZWOP Supervisor training within the last 12 months;

4. For work in New Jersey, has proof of completion of the New Jersey Lead Abatement Supervisor Program for Commercial Buildings and Super Structures, N.J.A.C. 5.17-2.1. Certification must be maintained throughout the duration of the Contract.

D. Workers. Confirm that:

1. For work in New Jersey, all workers have proof of completion of the New Jersey Lead Abatement Worker Program for Commercial Buildings and Super Structures, N.J.A.C. 5.17-2.1. Certification must be maintained throughout the duration of the Contract.

2. All workers have proof of completion of 29 CFR 1926.62 Lead in Construction training within the last 12 months.

1.04 SUBMITTALS

See Appendix A.

PART 2 - PRODUCTS

2.01 PERSONAL PROTECTIVE MATERIALS AND MONITORING EQUIPMENT

A. Monitoring and Testing Equipment

1. Supply the instrumentation needed for monitoring worker and area exposures.

2. Supply all equipment needed for the operation of all instrumentation and monitors (e.g., generators, batteries, power cords, fuel, etc.).

B. Personal Protective Equipment and Hygiene Facilities

1. Provide all personal protective equipment (PPE) needed for Contractor's workers and for up to four Engineering representatives at each shift.

2. Repair or replace PPE as required to assure that it continues to provide its intended purpose.

C. Containment Materials

1. Supply all equipment and materials needed to contain debris in accordance with the provisions of this Section. This may include ground covers, rigging, scaffolding, planking, containment materials, dust collection and ventilation equipment and HEPA vacuums.

PART 3 - EXECUTION

3.01 WORKER PROTECTION CRITERIA FOR LEAD

A. Competent Person - confirm that daily inspections of the work area will be made by a competent person.

B. Written Compliance Program (WCP) – Prepare a WCP in accordance with 29 CFR 1926.62 (e)(2)(i). Maintain a copy of the WCP at the construction site for review by all employees and interested parties.

C. Engineering and Work Practice Controls – Implement engineering and work practice controls, including administrative controls, to reduce and maintain employee exposure to lead below the PEL.

D. Exposure Monitoring/Initial Assessment – Collect representative personal air samples in accordance with 29 CFR 1926.62 (d)(1)(iii). Protect workers during initial exposure assessment in accordance with 29 CFR 1926.62 (d)(2)(i). If historical data will be used in accordance with 29 CFR 1926.62 (d)(3)(iii), provide prior to start of work for evaluation by the Engineer.

E. Respiratory Protection- Implement a Respiratory Protection Program in accordance with 29 CFR 1910.134. Proper selection, use, maintenance and inspection of respirators is required. Provide medical clearance and fit tests for respirator users.

F. Protective Clothing and Equipment - Provide clean protective clothing and equipment in accordance with 29 CFR 1926.62 (g) and ensure they are used by all employees whose exposures exceed the PEL. Provide closed containers for items to be cleaned, such as work shoes and facemasks. If the clothing is disposable, label the containers as clothing contaminated with lead, if applicable. Apply hazardous waste labels as appropriate after testing.

G. Housekeeping – In accordance with 29 CFR 1926.62 (h), clean accumulations of dust or debris containing lead daily and conduct all cleaning with HEPA (High Efficiency Particulate Air)-filtered vacuums. Containerize the debris for proper disposal. Bags and containers should be appropriately labeled as lead-containing waste.

H. Personal Hygiene Facilities and Equipment/Decontamination Zone – In accordance with 29 CFR 1926.62 (i), provide clean change areas, showers, lavatory, eating facilities, and hand washing facilities as necessary for workers who may be exposed to lead at or above the OSHA PEL.

I. Medical Surveillance and Medical Removal Protection – In accordance with 29 CFR 1926.62 (j) and (k), perform initial and periodic blood sampling and analysis for lead and zinc protoporphyrin (ZPP) when an employee is exposed to lead at or above the OSHA Action Level of 30 ug/m3. Provide the Engineer with blood analysis results.

J. Employee Training and Information - In accordance with 29 CFR 1926.62 (l), provide initial and annual refresher site specific training for all employees who may be exposed to lead at or above the OSHA Action Level.

K. Signs and Restricted Zones - In accordance with 29 CFR 1926.62 (m), establish restricted zones around areas or activities that might generate airborne emissions of lead in excess of the OSHA Action Level and post caution signs around each restricted zone.

L. Record keeping - In accordance with 29 CFR 1926.62 (n), retain all records related to training, medical examinations, blood analysis, exposure monitoring, respirator fit testing, inspections by a competent person, and other related documentation.

M. Visible Assessments - Conduct daily assessments of visible emissions and releases to the air, soil, water, and sediment, as applicable. Undertake all necessary corrective action to control emissions.

3.02 AMBIENT AIR MONITORING FOR LEAD

A. High Volume Ambient Air Monitoring

1. The Engineer will undertake high volume ambient air monitoring during paint removal and clean-up activities to confirm that emissions do not exceed the EPA National Primary and Secondary Ambient Air Quality Standards (NAAQS), or specific New Jersey regulations.

2. Total suspended particulate (TSP-lead) will be analyzed in accordance with 40 CFR 50 Appendix G.

3. The number and location of monitors will be determined by the Engineer, taking into consideration proximity to homes, businesses, and the general surroundings. Monitor sitting and operation will be performed in accordance with the guidance provided in Methods A1 and A2 of SSPC publication 95-06, Project Design.

4. The Contractor will be advised if such monitoring will be performed and will be provided with verbal background and ongoing results. Written results will be provided if requested by the Contractor.

5. Take the following corrective action when air monitoring results exceed the following:

   a. If the emissions of 1 day of monitoring exceed:

      (1) 4.5 $\mu g/m^3$ (8 hour period) minus two times the average 8 hour background level for TSP-lead,

      (2) Assess all field data for that day and take appropriate corrective action to control emissions.

b. If the emissions of 2 consecutive days of blasting exceed:

(1) 4.5 $\mu g/m^3$ (8 hour period) minus two times the average 8 hour background level for TSP-lead,

(2) Suspend dust producing operations (e.g., paint removal and/or clean-up) and implement appropriate corrective action to control emissions.

c. If the emissions on any one day exceed:

(1) 13.5 $\mu g/m^3$ (8 hour period) minus two times the average 8 hour background level for TSP-lead,

(2) Suspend dust producing operations (e.g., paint removal and/or clean-up) and implement appropriate corrective action to control emissions.

6. Regardless of the ambient air monitoring results, ensure at all times that no visible emissions occur

3.03 ON-SITE MANAGEMENT, TRANSPORTATION, AND DISPOSAL OF PAINT DEBRIS, WASTEWATER, AND ANY OTHER WASTE GENERATED FROM THE WORK.

A. General

1. Contractor is responsible for the collection, handling, storage, transportation and disposal of all hazardous wastes generated from this Work. The Authority will provide the EPA identification number for lead waste disposal for permitting purposes.

2. The Contractor is responsible for the collection, handling, transportation, and disposal of all solvent wastes generated from this Work. The Contractor must acquire their own EPA identification number for the disposal of solvent wastes.

3. The Contractor is responsible for the collection, handling, transportation, and disposal of all non-hazardous municipal/construction waste and waste water generated from this Work.

4. Recover all waste products generated during the paint removal Work, including but not limited to rags, tape, disposable coveralls, filters, and sediments.

5. Store waste only at location designated by the Engineer. Transport the waste to the designated storage area at the end of each working day, at a minimum.

6. Hazardous waste generation reports and fees/taxes imposed by the States shall be handled and paid for by the Contractor.

B. Items provided by the Contractor

1. Hazardous Waste - Provide DOT-approved containers of the appropriate size and type for the hazardous waste generated, including but not limited to, paint chips, protective clothing, and the interior lining of the containment. Use containers that are resistant to rust and corrosion, (painted if constructed of steel), that have tight fitting lids or covers, and which are water resistant and leak proof.

2. Municipal/Construction Waste - Provide all containers for non-hazardous municipal/construction waste. Use containers that are free of loose debris when brought to the construction site.

3. Spent Solvents - Provide all DOT-approved containers for spent solvents. Do not mix spent solvents with paint debris, water or other lead contaminated waste.

C. Waste Sampling, Testing, And Classification

1. Sampling: Collect and have analyzed, representative samples of each waste stream generated by the Work. Collect the samples under the observation of the Engineer.

2. Testing

a) Solid Waste: Direct the laboratory to test the solid waste in accordance with 40 CFR 261, Appendix II, Method 1311, Toxicity Characteristic Leaching Procedure (TCLP), to determine if it is hazardous. (Equal to or greater than 5 mg/L)

b) Waste water - test the waste water for Total metals (As, Cd, Cr, Cu, Pb, Hg, Mo, Ni, Zn), hexavalent chromium, pH, suspended solids, oil and grease, BOD, temperature, total cyanide, TPH, and other analytical parameters required for disposal characterization or by the disposal facility.

3. Laboratory Report

a) Include the following minimum information in each report : Identity of the RCRA listed waste streams and identity of the waste stream(s) analyzed, the number of samples collected and tested, dates of sampling and testing, laboratory test procedures utilized, the names and signatures of the individuals collecting the samples and analyzing the laboratory tests, interpretation of the test results, and final determination.

b) Include copies of the chain-of-custody forms in the documentation of hazardous waste and non-hazardous waste streams.

D. Waste Handling, Packaging, And Storage

1. Comply with 40 CFR 262 for the on-site handling, packaging, and storage of all waste generated by the Work.

2. All paint debris shall be vacuumed and collected in DOT-approved 55-gallon drums at the end of each Work period. Paint debris shall include paint chips and dust and shall not include any other construction debris, trash or chemical solvents. All disposable protective clothing and interior lining of the containment system shall be collected in DOT-approved drums at the end of each Work period.

3. At the Work areas, store waste in locations designated by the Engineer. Do not place hazardous waste on unprotected grounds (e.g. cover the ground with impervious tarping). Locate in a secure area with signs around the perimeter, and shield adequately to prevent dispersion of the waste by wind or water.

4. Properly transport all non-hazardous waste municipal/construction waste from the Work areas to the designated storage area. Verify that the waste is completely covered during transportation.

5. Maintain all drums in good operating condition with all lids and closing mechanisms intact and operational to prevent escape of debris by winds, spilling of contents, or access by unauthorized personnel.

6. Store non-hazardous waste separately from hazardous waste. Do not mix hazardous waste with non-hazardous waste. Do not mix different types of hazardous waste unless specifically approved by the Engineer.

7. Verify that all waste is transported to the appropriate recycling or disposal facility within 60 days after waste is first placed into the container.

8. Train all personnel in the proper handling of hazardous waste at the Work site in accordance with 29 CFR 1910.120, including the procedures to follow in the event of a release or spill, required notifications, and methods of clean-up. Maintain all training records on-site.

E. Labeling of Containers

1. Immediately label all containers of waste and paint debris to identify the contents. Label containers of paint debris as "LEAD PAINT WASTE, CONTAINS LEAD". Include the Contract Number and locations. Provide similar labels on containers of other waste, wastewater and debris.

2. After the TCLP test results are received, or after determination of hazardous waste status based on RCRA list at 40 CFR 261, Subpart D, immediately apply hazardous waste labels, if the waste tests hazardous. Label each container of hazardous waste in accordance with 40 CFR 262, and 49 CFR 171-179.

F. Waste Transportation and Disposal (with the Exception of Waste Water)

1. Hazardous Waste.

a) Prepare the hazardous waste manifest for each shipment and provide to the Engineer for review and signature.

b) Arrange for the transportation of all hazardous waste by a licensed transporter in accordance with 40 CFR 263, 49 CFR 171-179.

c) Hazardous Paint Waste (TCLP results which indicate that lead concentrations or equal to or greater than 5 mg/L) shall be treated and stabilized to TCLP levels below 0.75 mg/L prior to disposal.

d) Provide a certification for each manifested shipment that the waste was accepted by the recycling or disposal facility, and properly treated and disposed. Comply with all of the manifesting, certification, and reporting requirements for hazardous waste in accordance with 40 CFR 262, and 40 CFR 268, including certificates of final disposal for each shipment.

2. Non-Hazardous, Municipal, and Construction Waste

a) Properly transport, and dispose of all non-hazardous, municipal and construction waste.

b) Verify that waste is completely covered during transport.

c) If lead or hazardous substances were detected during the laboratory testing, notify the disposal facility that such metals or materials are present in the waste.

d) For non-hazardous lead waste with TCLP results which indicate lead concentrations between 1 mg/L and 5 mg/L, the waste shall be treated and stabilized to TCLP levels below 0.75 mg/L prior to disposal.

e) Comply with additional City and local regulations as applicable.

G. Waste Water Handling And Disposal

I. Provide containers for the collection and retention of all waste water including but not limited to the water used for steam cleaning, hygiene purposes, decontamination and cleanup activities. Filter visible paint chips and particulate from the waste water prior to placing it into the containers. Make disposal arrangement with the local publicly owned treatment works (POTW), sanitation company, or other appropriate permitted facility.

H. Cleaning of Haul Routes - Clean waste transportation haul routes upon completion of operation at end of each hauling.

END OF SECTION

DIVISION 2

SECTION 02094

WORKER AND ENVIRONMENTAL PROTECTION FOR LEAD-BASED PAINT REMOVAL

APPENDIX A

SUBMITTALS

1.0 GENERAL - Provide all submittals of this Appendix in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1, General Provisions.

2.0 PRE-CONSTRUCTION

A. Provide a site-specific WCP. Include the methods and procedures that will be followed for complying with this Section and 29 CFR 1926.62 for Lead.

1. Scope of Work – provide site specific information such as method of lead removal, lead work location(s), duration of lead work, crew size, login procedures, key personnel, competent person(s), containment classifications and the location of the WCP during the project.

2. Qualifications and Experience - provide written qualifications, experience, training, and certification information for the contractor and subcontractors, laboratories, physician, competent person/supervisor and workers, as stated in 1.04 of this Section.

3. Engineering and Work Practice Controls – provide a written program describing method of lead removal, air monitoring, containment/collection systems, equipment, and safety. Include catalog cuts for all equipment.

4. Exposure Assessments – provide a written program for site exposure assessments. Include details of personal air monitoring and note specific lead disturbance tasks. Identify personnel performing air sampling. Provide certifications of laboratory conducting air-sampling analysis. If historical data is to be used, provide to Engineer for evaluation.

5. Respiratory Protection - provide a written program in compliance with 29 CFR 1926.103. Address the selection, use, maintenance and inspection of respirators, and qualifications for respirator users. Include copies of fit test records for all crew and catolog cuts of respirators. Include letter from physician stating workers are fit to wear respirators.

6. Protective Clothing and Equipment - provide a written program for selection, use, replacement and disposal of protective clothing and equipment. Include catalog cuts for all PPE.

7. Housekeeping – provide a written program describing cleaning frequency, cleaning with HEPA vacuums, cleaning with biodegradable lead detergents, containerizing, storing and disposing of lead dust and paint chips.

8. Personal Hygiene Facilities and Equipment/Decontamination Zone – provide a written program describing decontamination procedures, hand wash, showers, break areas and change areas. Include catalog cuts for decon unit and hand wash station.

9. Medical Surveillance and Medical Removal Protection – provide a written program describing frequency and type of blood testing, medical removal, and physical examinations. Provide certifications for laboratory conducting blood work, certifications of occupational physician, and copies of blood lead and ZPP testing for workers and competent person(s).

10. Employee Training and Information – provide a written program describing training requirements and frequency. Provide evidence of training for all workers.

11. Signs and Restricted Zones – provide a written program for establishing restricted zones and use of Lead Work signs.

12. Record keeping – provide a written program describing record keeping procedures.

13. Visible Assessments – provide a written program for assessments of visible emissions.

14. Chemical Safety and Handling – provide a written program for the safe use and storage of chemicals on-site. Provide MSDS for chemicals to be brought on-site.

B. Waste Handling Plan – Provide a written program that addresses the proper handling and disposal of all waste as described in 3.02 of this Section.

1. Transporter Qualifications, Experience, and Permits: Provide the names, addresses, qualifications, and contact persons for the proposed transporter(s) of hazardous waste, non-hazardous waste, and waste water. Provide evidence that each transporter has current registration approved by NYSDEC and NJDEP, as applicable as stated in 3.02 F of this Section.

2. Disposal Facility Qualifications, Experience, and Permits: Provide the name, address, telephone number and contact person for each waste disposal facility proposed for use in the Contract. Provide evidence that each disposal facility has current registrations and permits for the operation of such facilities, or written approval from the state (and by the USEPA or other local agency, if applicable) in which it operates as stated in 3.02 F of this Section.

C. Contingency Plan and Emergency Procedures

1. Submit a Contingency Plan and Emergency Procedures to respond to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water at the construction site.

   a) Describe arrangements agreed to by local police departments, fire departments, hospitals and state and local emergency response teams.

   b) List names, addresses, and phone numbers of all persons qualified to act as emergency coordinators. Include a list of all emergency equipment at the construction site (fire extinguishers, spill control equipment, communications and alarm systems and decontamination equipment).

   c) Include an evacuation plan for workers. Describe signals to be used to begin evacuation.

2. Submit evidence that a copy of the plan has been submitted to all local police departments, fire departments, hospitals, and State and local emergency response teams that may be called upon to provide emergency services.

3.0 CONSTRUCTION PHASE

A. Provide a complete analytical package of TCLP test results of waste samples within 4 weeks after sample collection.

B. Provide a complete analytical package of waste water test results of waste sample collection within 4 weeks after sample collection.

C. Waste Manifests - Submit to the Engineer one copy of

1. Executed and signed manifests for each load of waste material transported from the construction site. Provide the manifest within one day of shipment.

2. Executed waste manifest form signed by a responsible party of the disposal facility. Provide the form within one day of receipt. If the copy is not received within 35 days from the date of shipment, contact the Engineer, and assist as directed, in efforts to locate the shipment, and in the completion of the EPA Exception Reports (if the signed manifest is not received within 45 days of the date of shipment).

3. Certificate of final disposal for each manifest or certificate of recycling for recycled material. Provide the certification within one day of receipt.

D. Bills of Lading - Provide bills of lading for the disposal of all non-hazardous municipal/construction waste within one week of the date of shipment.

E. Waste water - Provide written documentation of the receipt of disposal of all waste water within one week of the date of shipment.

F. Clean-up - Prior to issuance of Certificate of Final Completion, provide the Engineer with a letter report presenting the results of the inspections conducted to verify the final cleanliness of the construction site, surrounding property, waterways, equipment, buildings, and structures.

END OF APPENDIX A

DIVISION 2

SECTION 02094

WORKER AND ENVIRONMENTAL PROTECTION FOR LEAD-BASED PAINT REMOVAL

TABLE 1

Containment Criteria for Removal of Paint Containing Lead and Other Toxic Metals[1]

Containment Removal Method	Containment SSPC Class[2]	Containment Material Flexibility	Containment Material Permeability[3]	Support Structure	Material Joints	Containment Entryway	Ventilation System Required	Negative Pressure Required	Exhaust Filtration Required
Hand Tool Cleaning[4]	3P	Rigid or Flexible	Permeable or Impermeable	Minimal	Partially Sealed	Overlapping or Open Seam	Natural	No	No
Power Tool Cleaning w/ Vacuum[4]	3P	Rigid or Flexible	Permeable or Impermeable	Minimal	Partially Sealed	Overlapping or Open Seam	Natural	No	No
Power Tool Cleaning w/o Vacuum[5]	2P	Rigid or Flexible	Permeable or Impermeable	Rigid or Flexible	Fully or Partially Sealed	Overlapping or Open Seam	Natural[5]	No	No[5]
Chemical Stripping[6]	3C	Rigid or Flexible	Permeable or Impermeable	Minimal	Partially Sealed	Open Seam	Natural	No	No[6]
Wet Methods[7]	2W-3W	Rigid or Flexible	Permeable or Impermeable	Rigid, Flexible, or Minimal	Partially Sealed	Overlapping or Open Seam	Natural[7]	No	No[7]
Abrasive Blast Cleaning[8]	1A	Rigid or Flexible	Impermeable	Rigid or Flexible	Fully Sealed	Airlock or Resealable	Mechanical	Yes	Yes

[1]This table provides general design criteria only. It does not guarantee that specific controls over emissions will occur because unique site conditions must be considered in the design. Other combinations of materials may provide controls over emissions equivalent to or greater than those combinations shown above.

[2]The SSPC Classification is based on SSPC Guide 6. Note that for work over water, water booms or boats with skimmers must be employed, where feasible, to contain spills or releases. Debris must be removed daily at a minimum.

[3]Permeability addresses both air and water as appropriate. In the case of water or chemical removal methods, the containment materials must be resistant to both chemicals and water. Ground covers should always be impermeable, and of sufficient strength to withstand the impact and weight of the debris and the equipment used for collection and clean-up.

[4]Ground covers and/or free hanging tarpaulins may provide suitable controls over emissions without the need to completely enclose the work area.

[5]Ventilation is not required provided the emissions are controlled as specified in this Section, and provided worker exposures are properly controlled. If unacceptable worker exposures to lead or other toxic metals occurs, incorporate a ventilation system into the containment.

[6]Ground covers must always be impermeable and of sufficient strength to withstand the weight and impact of the debris and the equipment used for cleaning. If debris escape through the seams, then additional sealing of the seams and joints is required. All containment materials and materials used for sealing must be resistant to both chemicals and water. If unacceptable worker exposures to lead or other toxic metals occurs, incorporate a ventilation system.

[7]This method applies to pressure washing, high pressure water jetting with and without abrasive, and wet abrasive blast cleaning. Although both permeable and impermeable containment materials are included, ground covers and the lower portions of the containment must be water impermeable with fully sealed joints, and of sufficient strength and integrity to facilitate the collection and holding of the water and debris for proper disposal. Ventilation is not required provided the emissions are controlled as specified in this Section, and provided worker exposures are properly controlled. If unacceptable worker exposures to lead or other toxic metals occurs, incorporate a ventilation system into the containment.

[8]Ground covers must be of sufficient strength to withstand the impact and weight of the abrasive and the equipment used for cleaning. Ground covers must also extend beyond the containment boundary to capture escaping debris. If vacuum blasting is employed, ground covers and/or free hanging tarpaulins may provide suitable controls over emissions without the need to completely enclose the work area.

CONFORMED COPY

R.K.A.
A.L.E.
CATEGORY I

THE PORT OF NEW YORK AUTHORITY

GEORGE WASHINGTON BRIDGE BUS STATION

—

SUPERSTRUCTURE

—

CONTRACT GWB-200.013

PART I OF II

—

DECEMBER 1960

CONTRACT GWB-200.013
SUPERSTRUCTURE
PART I OF II

THIS PROPOSAL IS NOT COMPLETE UNLESS BIDDER'S SIGNATURE APPEARS ON PAGE 8

THE PORT OF NEW YORK AUTHORITY

COMMISSIONERS

NEW JERSEY

James C. Kellogg, III, Vice Chairman
Donald V. Lowe
John J. Clancy
Robert F. McAlevy, Jr.
W. Paul Stillman
Charles W. Engelhard

NEW YORK

S. Sloan Colt, Chairman
Howard S. Cullman, Honorary Chairman
N. Baxter Jackson
Joseph A. Martino
Bayard F. Pope
Alexander Halpern

Austin J. Tobin, Executive Director
Sidney Goldstein, General Counsel
J. J. Doyle, Director of Finance
E. A. Mintkeski, Deputy Director of Finance and Treasurer
C. M. Wahlberg, Comptroller

John M. Kyle, Chief Engineer
J. J. Fitzgerald, Jr.
Deputy Chief Engineer

Henry Davison, Director of Terminals

TABLE OF CONTENTS

Page

INFORMATION FOR BIDDERS 1

Form and Submission of Proposals 1

Papers Accompanying Proposals 1

Qualification Information 3

Acceptance or Rejection of Proposal 4

Return of Certified Checks 4

Available Documents 5

Inspection of Site 6

Questions by Bidders 6A

PROPOSAL 7

ACKNOWLEDGMENTS 9

STATEMENT ACCOMPANYING PROPOSAL 10

BID BOND 11

ACKNOWLEDGMENTS 13

FORM OF CONTRACT 14

Chapter I -- General Provisions

Definitions 14

General Agreement 19

Exemptions for New York City Sales & Federal Excise Taxes: Purchase of Materials & Rental of Equipment 20A

Page

Performance Bond 21

Chapter II -- Compensation and Payments

Unit Prices and Lump Sum 23
Reduction of Prices 76

Compensation for Extras 76

Monthly Advances 79

Final Payment 81

Withholding of Payments 83

Chapter III -- Provisions Relating To Time

Time for Completion and Damages for Delay 84

Extensions of Time 86

Idle Salaried Men and Equipment 87

Delays to Contractor 89

Cancellation for Delay 89

Chapter IV -- Conduct of Contract

Authority of Chief Engineer 90

Authority and Duties of Engineer 90

Minimum Wages 91

Extra Orders 92

Page

Title to Materials 93

Assignments and Subcontracts 93

Claims of Third Persons 94

Certificates of Partial Completion 94

Certificate of Completion of Sale 95

Certificate of Completion of Work 95

CHAPTER V

WARRANTIES MADE AND LIABILITIES ASSUMED BY THE CONTRACTOR

Page

Contractor's Warranties..... 96

Risks Assumed by the Contractor..... 97

No Third Party Rights..... 98

Liability Insurance Procured by Contractor..... 99

Fire Insurance Procured by Authority..... 100

Rights and Remedies of Authority..... 102

Rights and Remedies of Contractor..... 103

Performance of Contract as Agent for Contractor..... 103

No Estoppel or Waiver..... 104

Provisions of Law Deemed Inserted..... 105

Invalid Clauses..... 105

Non-liability of the Authority Representatives..... 105

Service of Notices on the Contractor..... 105

Modification of Contract..... 106

PERFORMANCE AND PAYMENT BOND..... 107

ACKNOWLEDGEMENTS..... 111

Chapter I -- Specifications

Work Required by the Specifications..... 112

Conditions and Precautions..... 112

Materials Furnished by the Authority..... 116

Progress Schedule and Analysis of Bid..... 118

Reference Drawings..... 118

Page

Contract Drawings 121

Working Drawings and Catalog Cuts 128

Workmanship and Materials 130

Inspections and Rejections 131

Manufacturers' Certification 133

Approvals by Engineer 134

Errors and Discrepancies 134

Accidents and First Aid Provisions 134

Safety and Sanitary Provisions 135

Daily Progress, Equipment and Labor Reports 135

Laws and Ordinances 136

Identification 136

Signs 136

Contractor's Field Office and Representative 136

Engineer's Field Office 137

Surveys 137

Temporary Structures 137

Utility Services 138

Permit and Requirements for Welding 138

Maintenance of Traffic 139

Publicly and Privately Owned Utility Facilities 139

Use of George Washington Bridge 140

Final Inspection 140

Guarantees 140

Light and Power 141

Chapter II -- Construction Page

Concrete..... 150

Class F Roof and Sidewall Concrete..... 167A

Concrete Reinforcement..... 168

Lightweight Structural Concrete..... 169

Lightweight Concrete..... 172

Concrete Sidewalks..... 175

Asphalt Plank..... 175

Precast Concrete Plank..... 175

Premoulded Joint Filler Sealer..... 176

Structural Steel..... 177

Shear Connectors..... 181

Expansion Plates..... 181

Miscellaneous Iron & Steel..... 182

Miscellaneous Metals..... 183

Safety Stair Treads..... 189

Beam Guard Rail..... 189

Membrane Waterproofing..... 190

Dampproofing..... 193

Granite Masonry..... 197

Concrete Block Masonry..... 200

Cold Glazed Enamel..... 202

Ceramic Glazed Brick..... 203

Structural Facing Tile..... 205

Architectural Cast Stone..... 207

Page

Mortar..... 209

Pneumatic Mortar..... 211

Aluminum..... 213

Ornamental Metals.....ALUM RAILING..... 215

Aluminum Storefronts & Entrances..... 220

Caulking..... 222

Flashings.....Flashings & Insulation..... 225

Cold Process Roofing..... 229

[illegible] ..... [illegible]

Hollow Metal Doors and Frames..... 238

Hollow Metal Partitions..... 240

Toilet Compartments..... 243

Rolling Doors..... 245

Freight Elevator..... 245A

Moving Stairs..... 246

Ceramic Floor Tile..... 254

Ceramic Wall Tile..... 257

Glass Mosaics..... 261

Terrazzo..... 264

Glass and Glazing..... 268

Plastic Louvers and Frames..... 270

Page

Furring and Lathing..... 271

Plastering..... 275

Metal Pan Acoustical Ceilings..... 282

Luminous Ceiling Areas..... 284

Carpentry and Millwork..... 285

Panel Walls and Aluminum Panels..... 287

Multiple Seating..... 289

Asphalt Tile..... 290

Miscellaneous Specialties..... 292

Hardware..... 293

Field Painting..... 301

Directional Signs..... 311

CHAPTER III

Mechanical

Page

General Description of the Heating, Ventilating and Air Conditioning System 312

General Requirements 313

Piping Material Requirements 313

Motors 319

Sheet Metal and Accessories 320

Tests 324

Air Compressor for the Expansion Tank 325

Insulation 327

Centrifugal Pumps (Double Suction) 327

Packaged Automatic Hot Water Boilers No. 1 and 2 330

Burner Equipment (Gas) 332

Unit Heaters 333

Cabinet Heaters 334

Vanexial Fan Requirements 336

Fan Motors 338
Field Tests 339
Motor Operated Dampers 339

Cooling Towers 343

Vibration Eliminators 345

Water Treatment Systems 345

Hot Water Booster Coils 345

Unit Heaters (Gas Fired) 358

General Requirements of the Sprinkler Installation 360

Sprinkler Installation 361

Sprinkler Equipment 363

Tags, Identification Signs and Flow Diagrams 365

Tests 366

CHAPTER IV

PLUMBING

Page

General Description of Plumbing Systems..... 367

Pipe and Fittings..... 368

Joints..... 370

Flexible Pipe Couplings..... 371

Valves..... 372

Cast Iron Water Service Pipe..... 374

Supports, Hangers and Pipe Sleeves..... 376

Plumbing Fixtures..... 378

Automatic Cigarette Disposal Unit..... 381

Fire Standpipe Equipment..... 381

Roof Drains and Floor Drains..... 384

Wall Hydrants..... 386

Fresh Air Plates..... 386

Pressure Gauges..... 386

Escutcheons..... 386

Vacuum Breakers..... 387

Hose Bibbs..... 387

Roof Couplings..... 387

Vent Terminations..... 387

Air Chambers..... 387

Nipples..... 387

Cleanouts..... 388

Plugged and Capped Outlets for Future Connections..... 388

Page

Flap Valves..... 388

Domestic Hot Water Heaters (Winter Season)..... 388

Domestic Hot Water Heaters (Summer Season)..... 390

Hot Water Circulating Pumps..... 391

Thermometers..... 391

Pressure Relief Valve..... 392

Water Meters..... 392

Air Release Valves..... 392

Soap System..... 393

Gas Hot Water Heater..... 393

Gas Boosters..... 393

Gas Meter Cops..... 393

Cellar Drainer..... 394

Inverted U Covers..... 394

Monel Metal Troughs..... 394

Insulation..... 396

Tests..... 399

Catalog Cuts..... 401

Chapter V -- Electrical Installation Page

General Description of the Electrical Installation..... 402

General Requirements of the Electrical Installation..... 402

Rigid Metallic Conduit..... 405

Electrical Metallic Tubing..... 408

Flexible Conduit..... 409

Tagging Conduit..... 409

Duct Banks..... 410

Cleaning and Testing Conduit..... 411

Electrical Boxes..... 412

Wire and Cable..... 416

Terminals..... 425

Tagging of Wires and Cables..... 425

Electric Services..... 426

Current Limiting Fuses..... 428

Bus Duct..... 428

Dry-Type Distribution Transformers..... 429

Low Voltage Switchgear..... 430

Switches..... 432

Fuses..... 432

Receptacle Wall Plates..... 432

Panelboards..... 433

Low Voltage Automatic Transfer Switches..... 435

Contactors..... 435

Safety Switches..... 436

Page

Distribution Fuses and Fuse Holders 436

Nameplates 437

Floodlight Poles 437

Street Lighting Standards 439

Mercury-Vapor Ballasts and Supports 440

Grounding 442

Lighting Fixtures 443

Electric Pipe Heating 456

Supervisory Data Centers, East and West 457

Motor Control Centers 460

Pump Alternator Cabinet 461

Dispatcher Booth Heater 462

Intercommunication System 463

Metering 472

Fire Alarm and Sprinkler Supervisory Systems 473

Telephone System 474

Equipment Mounting 475

Manhole and Handhole Record Drawings 475

Field Tests 476

INFORMATION FOR BIDDERS

1. FORM AND SUBMISSION OF PROPOSALS.

The Port of New York Authority, hereinafter called the Authority, invites Proposals in the annexed form. Proposals will be received until 2:30 P.M. on Tuesday, December 6, 1960 in the office of the Chief Engineer of the Authority, Room 1100, 111 Eighth Avenue, New York 11, New York, at which time they will be opened and read in Room No. 1108. Each Proposal must be contained in the envelope furnished by the Authority, which shall be sealed and conspicuously endorsed with the bidder's name and the number of this Contract, in the spaces provided.

The proposal must be submitted upon the blank form bound herewith and must give all information required (*). The proposal must be signed and the acknowledgment taken on the appropriate form following the Proposal.

No effort is made to emphasize any particular provision of the Contract, but bidders must familiarize themselves with every provision and its effect.

2. PAPERS ACCOMPANYING PROPOSALS.

Each Proposal must be accompanied by the following papers, which, unless otherwise indicated, should be enclosed with the Proposal:

(*) While two copies of this booklet are furnished to each prospective bidder, only one should be submitted. The extra copy is for the bidder's files.

(a) If the bidder be a corporation: (1) a statement of the names and residences of its officers, which may be on the page following the proposal; (2) a copy of its Certificate of Incorporation, with a written declaration signed by the secretary of the corporation, with the corporate seal affixed thereto, that the copy furnished is a true copy of the Certificate of Incorporation as of the date of the opening of the proposals; and (3) if the bidder is not incorporated under the laws of the state in which the construction site is located, a certificate from the Secretary of State of that state evidencing its legal qualification to do business in said state.

If the bidder be a partnership, a statement of the names and residences of its members, indicating which are general and which are special partners, which may be on the page following the Proposal.

If the bidder be an individual, a statement of his residence, which may be on the page following the Proposal.

(b) Either the Bid Bond bound herewith, duly executed by the bidder as principal and by one or more surety companies duly authorized to carry on the business of suretyship in the state in which the construction site is located, whose names appear on the current list of the Treasury Department of the United States as acceptable as sureties upon federal contracts; or, in lieu of a Bid Bond,

A certified check, payable to the order of The Port of New York Authority, in the same amount appearing in the Bid Bond form, which check shall be separately delivered, prior to the time for the bid opening, to the Treasurer of the Authority, Room 1001, 111 Eighth Avenue, New York 11, New York, who will give a proper receipt therefor.

(c) A balance sheet showing the net worth of the bidder as of a date not earlier than forty-five days prior to the date of the opening of the Proposals; or in lieu thereof, a balance sheet showing the net worth of the bidder as of a date not earlier than the end of the preceding fiscal year, together with a statement in writing, signed by a duly authorized representative of the bidder, that the present financial condition of the bidder is at least as good as that shown on the balance sheet submitted. The balance sheet or statement shall also note the name and address of the bidder's chief bank with the name of the bank representative handling his account.

(d) The bidder's progress schedule and analysis of bid filled in on the form furnished herewith. The Contractor will be required to furnish a more detailed progress schedule and analysis of bid at a later date in accordance with the requirements of the clause of the Specifications entitled "Progress Schedule and Analysis of Bid".

(e) The Contract Booklet bound herewith, with the following filled in, in addition to the Proposal Form, Pages 7 and 8:

1. Pages 25 et seq : all unit prices and lump sum prices

All the foregoing figures will be taken into consideration in comparing proposals. The amounts must be given both in figures and in writing where so indicated and, in case of discrepancy, the writing shall control. The unit prices must be extended and totaled. The estimated Total for Classified Materials and the Estimated Total for Classified Work and the Lump Sum Sale Price and the Lump Sum Work Price must be entered in the recapitulation. The Estimated Total for the Sale and the Estimated Total for the Work must be computed and entered. One copy of each addendum, if any, issued during the bidding period shall be initialled and attached to the Proposal, but any Proposal submitted without such addendum initialled and attached will nevertheless be construed as though such addendum had been initialled and attached.

3. QUALIFICATION INFORMATION.

At any time after the opening of Proposals, the Chief Engineer may give oral or written notice to one or more bidders to furnish the Authority with information relating to his qualifications to perform the Work, including the following, which information shall be furnished within three days thereafter:

(1) A detailed list of the plant and equipment which the bidder proposes to use, indicating which portions he already possesses.

(2) A detailed list of materialmen and subcontractors, together with such information as the Chief Engineer may require regarding the terms and conditions under which such materials and labor are expected to be furnished.

(3) A statement of work which the bidder has on hand, including work on which a bid has been submitted, showing the dollar value, nature, size, location, degree of completion, expected time of completion and any other information pertaining to such work which the Chief Engineer may require.

(4) Detailed information relating to work which the bidder has completed for others, including without limitation personal and corporate references, sufficient to enable the Authority to determine the Contractor's financial responsibility, experience and capacity to perform the Work.

(5) Information to supplement that shown in the balance sheet required to be submitted with the Proposal.

The giving of such notice to a bidder shall not be construed as an acceptance of his Proposal.

4. ACCEPTANCE OR REJECTION OF PROPOSAL.

Within forty-five (45) days after the opening of the Proposals, the Authority will accept one of the Proposals, if it accepts any. The acceptance of a Proposal will be only by mailing to or delivering at the office designated in the Proposal a notice in writing specifically indicating acceptance signed by an authorized representative on behalf of the Authority. No other act of the Authority, its Commissioners, officers, agents, or employees shall constitute acceptance of a Proposal. Such notice will state whether or not the Authority elects to require the bidder to furnish a performance bond. Rejection of a Proposal will be only by either (a) a notice in writing specifically stating that the Proposal is rejected, signed by an authorized representative on behalf of the Authority and mailed to or delivered at the office designated in the Proposal or (b) omission of the Authority to accept a Proposal within 45 days after the opening of Proposals; and no other act of the Authority, its Commissioners, officers, agents or employees shall constitute rejection of a Proposal, including any counter offer or other act of the Authority, its Commissioners, officers, agents or employees.

The Authority reserves the unqualified right, in its sole and absolute discretion, to reject all Proposals or to accept that Proposal, if any, which in its judgment will under all the circumstances best serve the public interest and to waive defects in any proposal.

The Authority will accept the proposal of the same bidder for performance of the Sale as it accepts for performance of the Work, in order to assure the necessary coordination between the sale of the materials and the installation thereof.

In the event that a successful bidder defaults upon the Contract by failing to furnish a satisfactory performance bond, if required, and the Authority terminates the Contract, the Authority reserves the option to accept the Proposal of any other bidder within forty-five (45) days after the opening of Proposals, in which case such acceptance shall have the same effect as to such other bidder as though he were the originally successful bidder.

5. RETURN OF CERTIFIED CHECKS.

Within ten days after the opening of the Proposals, the Authority will return all certified checks deposited by bidders, except those deposited by three bidders to be selected by the Authority, which will be returned within three days after one Proposal is accepted by the Authority; or if a performance bond is required, within three days after a satisfactory performance bond is furnished to the Authority; or if all Proposals are rejected, not later than three days after such rejection. The return of a bidder's check shall not however, be deemed to be a rejection of his proposal.

6. AVAILABLE DOCUMENTS.

Certain documents are available for reference and examination by bidders at the office of the Chief Engineer of the Authority during regular business hours. These documents are as follows:

Nervi Solution "B" Roof Beam - Test Section - BS-267-60

Miscellaneous Concrete Details

Dwg. No. 46 Drainage Details at Fort Washington Ave. and Broadway Ends of Building
Dwg. No. 47 Standard and Columns-Horizontal Sections Showing Formwork Details
Dwg. No. 48 Standard and Columns Horizontal Sections showing Formwork Details
Dwg. No. 49 Standard and Columns-Horizontal Sections Showing Formwork Details
Dwg. No. 50 Standard and Columns-Horizontal Sections Showing Formwork Details
Dwg. No. 51 Standard and Columns-Horizontal Sections Showing Formwork Details
Dwg. No. 52 Standard and Columns-Horizontal Sections Showing Formwork Details
Dwg. No. 53 Standard Type Center Line Columns. Elevations of Formwork
Dwg. No. 54 Details of the Rainwater System through the Forked Column at Fort Washington Ave. - Detail of Connection at Hinge

The foregoing documents do not form a part of this Contract. The Authority makes no representation or guaranty as to, and shall not be responsible for, their accuracy, completeness or pertinence or the conclusions to be drawn therefrom. They are made available to the bidders merely for the purpose of providing them with such information as is in the possession of the Authority, whether or not such information may be accurate, complete or pertinent or of any value to the bidders.

The documents listed above relate among other things, to possible designs of forms for concrete to be furnished and placed under this Contract. Neither the Authority nor anyone else, however, assumes any obligation of any kind to the Contractor or to any other person in connection with said documents, and the Contractor assumes the entire risk of any loss, claims or

expense arising out of or in connection with the use of said documents except only that the Authority represents that such property rights in said documents as are possessed by the engineer who prepared them have been obtained by the Authority, and are hereby made available to the Contractor, for the purpose of performing this Contract. The Contractor is not required to use said documents and may use such other designs as are suitable.

There is also being sent to bidders, under separate cover, a letter from the Chief Engineer dated November 7, 1960 relating to the concrete required under this Contract, and there may be further communications, written and oral, between bidders and representatives of the Authority, both at the invitation of the Authority and at the request of bidders, relating to such concrete and other matters in connection with this Contract. In addition, the Authority may make available for examination by bidders data and materials in connection with this Contract. Said letter and any such communications, data and materials shall not form a part of this Contract and shall be subject to all the provisions of this numbered clause in the same way as the above listed drawings. Should anything in said letter or such communications, data and materials appear to constitute a representation or guaranty or be otherwise inconsistent with the provisions of this numbered clause or the remainder of this Contract, the provisions of this numbered clause and of the remainder of this Contract shall control.

Accordingly, nothing contained in the above listed documents or the above mentioned letter, communications, data or materials, notwithstanding anything therein to the contrary, shall impair or limit the effect of the warranties of the Contractor contained in the clause of the Form of Contract entitled "Contractor's Warranties".

CONTRACT GWB-200.013

PROPOSAL

To The Port of New York Authority:

The undersigned (*) Wm. L. Crow Construction Co. and the W. J. Barney Corp., both corporations organized under the laws of the State of N.Y. hereby offers to perform all of the obligations and to assume all the duties and liabilities of the Contractor set forth in the attached Form of Contract, at the prices inserted by the undersigned in the clause of said Form of Contract entitled "Unit Prices and Lump Sums".

This offer shall be irrevocable for 45 days after the date on which The Port of New York Authority opens this Proposal.

To induce the acceptance of this Proposal, the undersigned hereby makes each and every representation and warranty made by the Contractor in said Form of Contract. Moreover as a condition to receipt and consideration by the Authority of the Proposal whether or not it is accepted, the undersigned agrees that all information of any nature whatsoever, regardless of the form of the communication, received from the undersigned (including its officers, agents or employees) by the Authority, its Commissioners, officers, agents or employees, and notwithstanding any statement therein to the contrary, has not been given in confidence and may be used or disclosed by or on behalf of the Authority without liability of any kind except as may arise under letters patent of the undersigned, if any.

The attached Information for Bidders, all papers required by it and submitted in connection herewith at any time, said Form of Contract, and all papers made part thereof by its terms are made part of this Proposal.

The undersigned hereby designates Room Number 811

on the 8th floor of Number 101 Park Ave.

City of New York, State of N. Y.
as his office within the New York metropolitan area to which

(*) Insert bidder's name. If a corporation, give the state of incorporation, using the phrase "a corporation organized under the laws of the ."
If a partnership, give full names of partners, using also, the phrase, "co-partners doing business under the firm name of ."
If an individual, using a trade name give individual name, using also the phrase, "an individual doing business under the trade name of ."

notices may be delivered or mailed. The telephone number of the undersigned is LE. 2-2720

Dated, December 6, 1960.

Wm. L. Crow Const. Co.
Ralph L. Crow, Jr., V.P.

(Signature of individual or name of corporation or partnership)

W. J. Barney Corp.

By(*) Alfred T. Glassett
Pres.

(Signature of agent, partner or corporate officer)

(Acknowledgment of signature to be taken on proper form on following pages)

CERTIFICATE OF AUTHORITY, IF BIDDER IS A CORPORATION

We, the undersigned, as Secretarys of the corporations submitting the foregoing Proposal, hereby certify that under and pursuant to the by-laws and resolutions of said corporations each officer who has signed said Proposal on behalf of the corporations is fully and completely authorized so to do.

William L. Crow Construction Co.

(Corporate Seal)

Dorothy A. Hall
Ass't. Secty.

W. J. Barney Corporation
Wm. Joshua Barney, Jr., Sec.

(*) If Proposal is signed by an officer or agent, give title and address.

ACKNOWLEDGEMENT OF BIDDER,
IF A CORPORATION

State of New York)
)SS.:
County of New York)

On this 6th day of December, 1960, before me personally came and appeared Ralph L. Crow & Alfred T. Glassett to me known, who, being by me duly sworn, did depose and say that they reside at ....., that they are the Vice President & President respectively of ....., the corporations described in and which executed the foregoing instrument; that they know the seals of said corporations; that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the directors of said corporations, and that they signed their names thereto by like order.

(Seal)

Florence T. Stewart
.....
Florence T. Stewart
Notary Public, State of New York
No. 24-3848200
Qualified in Kings County
Commission Expires March 30, 1961

ACKNOWLEDGEMENT OF BIDDER,
IF A PARTNERSHIP

State of.....)
) SS.:
County of.....)

On this .....day of....., 19 , before me personally came and appeared .....to me known and known to me to be one of the members of the firm of ...., described in and who executed the foregoing instrument and he acknowledged to me that he executed the same as and for the act and deed of said firm.

(Seal) .....

ACKNOWLEDGEMENT OF BIDDER,
IF AN INDIVIDUAL

State of .....)
) SS.:
County of .....)

On this.....day of....., 19 , before me personally came and appeared ....to me known and known to me to be the person described in and who executed the foregoing instrument and he acknowledged to me that he executed the same.

(Seal) .....

CONTRACT GWB-200.013

STATEMENT ACCOMPANYING PROPOSAL

Names and Residences of Officers, if Bidder
is a corporation

Name	Title	Residence (*)

See Separate Two Sheets Attached Listing Officers of William L. Crow Construction Company and Officers of W. J. Barney Corporation.

Names and Residences of Partners, if Bidder
is a Partnership

Name	General or Limited Partner	Residence (*)

Bidders Residence, if an Individual (*)

If Bidder is a Corporation, Annex Copy of Certificate of Incorportation Certified by Corporate Secretary.

(*) Give Street and Number of Residence. Do not give business address.

W. J. BARNEY CORPORATION

Building Construction

101 Park Avenue

New York 17,N.Y.

LExington 2-2720

NAMES AND RESIDENCES OF OFFICERS

Alfred T. Glassett, President

Wm. Joshua Barney, Jr., Exec. Vice Pres.,
Secretary and Treasurer

James J. Lindon, Vice President

Frederick L. Conway, Vice President

WILLIAM L. CROW CONSTRUCTION COMPANY

101 PARK AVENUE

NEW YORK 17, N. Y.

ORegon 9-1515

NAMES & RESIDENCES OF OFFICERS

William L. Crow, President

Ralph L. Crow, Jr., Vice President

William J. Pickett, Secretary

Samuel Frothingham, Treasurer

CONTRACT GWB-200.013

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned (*) William L. Crow Construction Company and the W. J. Barney Corporation, a joint venture
as principal; and (/) Seaboard Surety Company, a New York Corporation, of 100 William Street, New York, New York

as surety are hereby held and firmly bound unto The Port of New York Authority in the penal sum of Two Hundred Fifty Thousand----------

---------- Dollars ($ 250,000.00), for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

Signed this 6th day of December , 1960 .

The condition of the above obligation is such that whereas the above named principal has submitted or is about to submit to The Port of New York Authority a certain Proposal, bound herewith and hereby made a part hereof, to perform the obligations of the Contractor under a contract in writing, known as Contract GWB-200.013 "George Washington Bridge Bus Station - Superstructure", now, therefore,

(a) If said Proposal shall not be accepted, or

(b) If said Proposal shall be accepted and the Authority does not require the principal to furnish a performance bond, or

---

(*) Insert bidder's name. If a corporation, give the state of incorporation, using the phrase, "a corporation organized under the laws of the ".

If a partnership, give full names of partners, using also, the phrase, "co-partners doing business under the firm name of ".

If an individual using a trade name, give individual name, using also the phrase, "an individual doing business under the trade name of ".

(/) Insert name of surety.

(c) If said Proposal shall be accepted and the Authority requires the principal to furnish a performance bond and either the principal furnishes a performance bond satisfactory to The Port of New York Authority in accordance with the requirements of said Proposal or The Port of New York Authority does not terminate the Contract as provided therein on account of the failure to furnish such a bond,

Then, this obligation shall be void, otherwise the same shall remain in full force and effect; it being expressly understood and agreed that the liability of the surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The surety, for value received, hereby stipulates and agrees that the obligations of said surety and its bond shall be in no way impaired or affected by any extensions of the times within which The Port of New York Authority may receive or accept such Proposal or within which the principal may furnish a performance bond or by any waiver by The Port of New York Authority of any of the requirements of said Proposal; and said surety does hereby waive notice of any such extensions or waivers.

IN WITNESS WHEREOF, the principal and the surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

William L. Crow Construction Company and the
W. J. Barney Corporation, a Joint Venture

Principal

Ralph L. Crow, V.P., Wm. L. Crow Const. Co.

(Seal) By(*) Alfred T. Glassett, President
W. J. Barney Corporation

Seaboard Surety Company

Surety

(Seal) By F. R. Prigge
F. R. Prigge, Atty-in- Fact

(*) If bond is signed by an officer or agent, give title; if signed by a corporation, affix corporate seal.

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

State of New York,)
) SS.:
County of New York,)

On this 6th day of December, 1960, before me personally came and appeared Ralph L. Crow and Alfred T. Glassett, to me known. who being by me duly sworn, did depose and say that they reside at . .....; that they are the Vice President and President respectively..... the corporations described in and which executed the foregoing instrument that they knows the seals of said corporations that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the directors of said corporations and that they signed their names thereto by like order.

(Seal)

Florence T. Stewart
Florence T. Stewart
Notary Public, State of New York
No. 24-3848200
Qualified in Kings County
Commission Expires March 30, 1961

ACKNOWLEDGMENT OF PRINCIPAL, IF A PARTNERSHIP

State of .....,)
) SS.:
County of .....,)

On this .....day of ....., 196 , before me personally came and appeared ....., to me known, and known to me to be one of the members of the firm of .... described in and who executed the foregoing instrument and he acknowledged to me that he executed the same as and for the act and deed of said firm.

(Seal)

ACKNOWLEDGMENT OF PRINCIPAL, IF AN INDIVIDUAL

State of .....,)
) SS.:
County of .....,)

On this .....day of ....., 196 , before me personally came and appeared ... ., to me known and known to me to be the person described in and who executed the foregoing instrument and he acknowledged to me that he executed the same.

(Seal) .....

AFFIX ACKNOWLEDGMENT AND JUSTIFICATION OF SURETY

ACKNOWLEDGEMENT AND JUSTIFICATION OF SURETY AFFIXED TO ORIGINAL BID BOND.

FORM OF CONTRACT

CHAPTER I

GENERAL PROVISIONS

1. DEFINITIONS.

To avoid undue repetition, the following terms whenever they occur in this Form of Contract or any of the other papers forming a part of the Contract shall be construed as follows:

"Contract" shall mean, in addition to this Form of Contract, the Information for Bidders, the Proposal, the Authority's acceptance, the Specifications and the Contract Drawings (including written addenda issued over the name of the Chief Engineer), all of which are made part hereof as though herein set forth in full. The entire agreement between the parties shall consist only of the Contract as so defined.

The term "days" or "calendar days" in reference to a period of time shall mean consecutive calendar days, Saturdays, Sundays and holidays included.

The term "construction site" or words of similar import shall mean the George Washington Bridge Bus Station and the vicinity thereof; and the term "Bus Station" shall include the parking deck east of Broadway and the four bridges over Broadway and Fort Washington Avenue connecting with the Bus Station proper.

"Sale" and words of similar import shall mean the furnishing (including delivery and unloading at the construction site) of all permanent materials (hereinafter collectively referred to as "Materials") and the furnishing of the use of construction equipment not owned by the Contractor or sub-contractors but rented from others which are necessary or proper for or incidental to the construction of the superstructure of the George Washington Bridge Bus Station, including certain parts of the steel work and retaining walls therefor.

"Work" and words of similar import shall mean all structures, equipment, plant, labor, materials (other than Materials sold to the Authority under this Contract) and other facilities and all other things which are necessary or proper for or incidental to the construction of the superstructure of the George Washington Bridge Bus Station, including certain parts of the steelwork and retaining walls therefor.

"Performance of the Contract" or "arising out of or in connection with the Contract" and words of similar import shall mean the performance of the Sale and the Work or arising out of or in connection with the Sale or the Work.

"Classified Work" and "Classified Materials" shall mean the items of Materials and Work set forth in the Schedule of Unit Prices for Classified Materials and the Schedule of Unit Prices for Classified Work contained in the clause hereof entitled "Unit Prices and Lump Sums" and shall include any Materials and Work hereafter required which, in the opinion of the Engineer, is of the same general character as that set forth in any of said items.

"Unclassified Materials" shall mean Materials other than Classified Materials.

"Unclassified Work" shall mean Work other than "Classified Work".

"Estimated Total for Classified Materials" shall mean the result obtained by applying the prices quoted by the Contractor in the Schedule of Unit Prices for Classified Materials to the estimated quantities given therein and totaling the results, whether or not such results are correctly shown in the Contractor's Proposal.

"Estimated Total for Classified Work" shall mean the result obtained by applying the prices quoted by the Contractor in the Schedule of Unit Prices for Classified Work to the estimated quantities given therein and totaling the results, whether or not such results are correctly shown in the Contractor's Proposal.

"Lump Sum Sale Price" shall mean the Lump Sum for Unclassified Materials quoted by the Contractor in the clause hereof entitled "Unit Prices and Lump Sums".

"Lump Sum Work Price" shall mean the Lump Sum for Unclassified Work quoted by the Contractor in the clause hereof entitled "Unit Prices and Lump Sums".

"Estimated Total for the Sale" shall mean the result obtained by adding together the Estimated Total for Classified Materials and the Lump Sum Sale Price, whether or not such result is correctly shown in the Contractor's Proposal.

"Estimated Total for the Work" shall mean the result obtained by adding together the Estimated Total for Classified Work and the Lump Sum Work Price, whether or not such result is correctly shown in the Contractor's Proposal.

"Materials required by the Contract Drawings and Specifications in their present form" or "Work required by the Contract Drawings and Specifications in their present form" or words of similar import shall include all Materials or Work required by the Specifications in their present form (whether or not shown upon the Contract Drawings), all Materials or Work shown upon the Contract Drawings in their present form (whether or not mentioned in the Specifications) and all Materials or Work involved in or incidental to the accomplishment of the results intended by the Specifications and Contract Drawings in their present form (whether or not mentioned therein or shown thereon).

"Extra Materials" or "Extra Work" shall mean Unclassified Materials or Unclassified Work required by the Engineer which in his judgment are in addition to those required by the Contract Drawings and Specifications in their present form.

"Contract Drawings" shall mean the Contract Drawings designated in the clause of the Specifications entitled "Contract Drawings", and except as used in the phrase "Contract Drawings in their present form", shall include any future alterations and revisions of said drawings.

"Chief Engineer" shall mean the Chief Engineer of the Authority for the time being, or his successor in duties, acting personally.

"Deputy Chief Engineer" shall mean the Deputy Chief Engineer of the Authority for the time being, or his successor in duties, acting personally.

"Engineer" shall mean the Chief Engineer, acting either personally or through his duly authorized representatives acting within the scope of the particular authority vested in them.

"Inspector" shall mean any representative of the Engineer designated by him as Inspector and acting within the scope of the particular authority vested in him.

The term "permanent construction" shall include all construction, installation, structures, equipment and materials to be constructed, installed or left by the Contractor at or about the construction site (or elsewhere in the possession of the Authority) after the completion of the Contract (whether or not they are yet delivered or installed), even though they are subsequently to be removed by others. The terms "permanent installation", "permanent structure", "permanent materials", and words of similar import shall have the same meaning as the term "permanent construction".

"Materialmen" shall mean anyone (other than the Contractor) who furnishes materials, plant or equipment to the Contractor or any subcontractor in the performance of Sale.

"Subcontractor" shall mean anyone (other than the Contractor) who performs Work (other than or in addition to the furnishing of materials, plant or equipment) at or about the construction site, directly or indirectly for or in behalf of the Contractor (and whether or not in privity of contract with the Contractor), but shall not include any person who furnishes merely his own personal labor or his own personal services.

"Workingman" or "workman" shall mean any employee of the Contractor or of a subcontractor who performs personal labor or personal services at the construction site.

"Notice" shall mean a written notice.

Whenever they refer to the Sale or Work or its performance, "directed", "required", "permitted", "ordered", "designated", "prescribed" and words of similar import shall mean directed, required, permitted, ordered, designated or prescribed by the Engineer; and "approved", "acceptable", "satisfactory" and words of similar import shall mean approved by or acceptable or satisfactory to the Engineer; and "necessary", "reasonable", "proper", "correct" and words of similar import shall mean necessary, reasonable, proper or correct in the judgment of the Engineer.

Whenever "including", "such as" or words of similar import are used, the specific things thereafter enumerated shall not limit the generality of the things preceding such words.

2. GENERAL AGREEMENTS.

A. Agreement of Sale

The Contractor agrees to sell and the Authority agrees to purchase the permanent materials necessary or proper for or incidental to the construction of the superstructure of the George Washington Bridge Bus Station, including certain parts of the steelwork and retaining walls therefor.

The Authority agrees to pay to the Contractor and the Contractor agrees to accept from the Authority, in full consideration for the performance by the Contractor of all his duties and obligations under this Contract in connection with said Sale, including furnishing the use of construction equipment not owned by the Contractor or the subcontractors but rented from others, a compensation consisting of the following amounts:

(a) An amount based upon the Classified Materials sold, computed at the rates quoted in the Schedule of Unit Prices for Classified Materials, said Classified Materials to be measured and said amount to be computed in the manner provided in the clause hereof entitled "Unit Prices and Lump Sums"; and

(b) The amount of the Lump Sum Sale Price quoted in the clause hereof entitled "Unit Prices and Lump Sums";

and such compensation only, subject only to the express provisions of this Contract specifically setting forth actual, defined additions to or deductions from such compensation.

B. Agreement to Perform Work

The Contractor agrees to construct the superstructure of the George Washington Bridge Bus Station, including certain parts of the steelwork and retaining walls therefor
and to furnish all structures, equipment, plant, labor, materials and other facilities and to do all other things necessary or proper therefor or incidental thereto, except that the materials sold to the Authority under the foregoing agreement of sale shall be furnished by the Authority to the Contractor for use in the performance of said Work and except that the use of construction equipment not owned by the Contractor or subcontractors but rented from others shall be deemed to be furnished by the Contractor under the above agreement of sale.

The Authority agrees to pay to the Contractor and the Contractor agrees to accept from the Authority, in full consideration for the performance by the Contractor of all his duties and obligations under this Contract in connection with said Work, a compensation consisting of the following amounts:

(a) An amount based upon the Classified Work performed, computed at the rates quoted in the Schedule of Unit Prices for Classified Work, said Classified Work to be measured and said amount to be computed in the manner provided in the clause hereof entitled "Unit Prices and Lump Sums"; and

(b) The amount of the Lump Sum Work Price quoted in the clause hereof entitled "Unit Prices and Lump Sums";

and such compensation only, subject only to the express provisions of this

Contract specifically setting forth actual, defined additions to or deductions from compensation.

C. Sale and Work

Said Sale and Work shall be performed in strict accordance with the Contract Drawings and Specifications and any future changes therein; and the Contractor further agrees to assume and perform all other duties and obligations imposed upon him by this Contract. Such other duties and obligations, as well as any rights, duties, obligations and liability assumed by or imposed on the Authority, shall be deemed a part of either the Sale or the Work, whichever may be appropriate.

The enumeration in this Form of Contract and in the Specifications of particular things to be furnished or done at the Contractor's expense, or without cost or expense to the Authority, or without additional compensation to the Contractor shall not be deemed to imply that only things of a nature similar to those enumerated shall be so furnished and done, but the Contractor shall furnish all Materials and perform all Work as required without other compensation than that specifically provided, whatsoever changes may be made in the Contract Drawings and Specifications whatsoever Materials and Work may be required in addition to that required by the Contract Drawings and Specifications in their present form, and whatsoever obstacles or unforeseen conditions may arise or be encountered.

2A. EXEMPTIONS FOR NEW YORK CITY SALES TAX AND FEDERAL EXCISE TAXES: PURCHASE OF MATERIALS AND RENTAL OF EQUIPMENT.

Purchase by Contractor Directly

The purchase by the Contractor of the Materials sold hereunder and the procurement by him of construction equipment not owned by him but rented from others and to be used hereunder will be a purchase or procurement for resale and therefore not subject to the New York City sales or compensating use taxes. The Sale of such Materials and the furnishing of such rental equipment by the Contractor to the Authority, which is a governmental agency, will not be subject to the New York City sales or compensating use taxes.

Purchases Through Subcontractors

The purchase by subcontractors of Materials to be sold hereunder and the procurement by them of construction equipment not owned by them but rented from others and to be used hereunder will also be a purchase or procurement for resale to the Contractor (either directly or through other subcontractors) and therefore not subject to the New York City sales or compensating use taxes, provided that the subcontract agreements provide for the resale of such Materials or of the use of such equipment prior to and separate and apart from the incorporation of such Materials into the permanent construction and that such subcontract agreements are in a form similar to this Contract with respect to the separation of the Sale of Materials and use of construction equipment from the other services to be performed.

Federal Excise Taxes

Purchases of Materials by the Contractor and the subcontractors for use in the permanent construction for the Authority are not subject to federal excise taxes.

Indemnity by Authority

In accordance with the above, the Contractor should not include an amount for such New York City and federal taxes in the Sale Price.

If (i) any claim is made against the Contractor by the City of New York or the United States for sales or compensating use taxes or federal excise taxes on the aforementioned Materials or rental of equipment or (ii) any claim is made against the Contractor by a materialman or a subcontractor on account of a claim against such materialman or subcontractor by the City of New York or the United States for the sales or compensating use taxes or federal excise taxes on the aforementioned Materials or rental of equipment, then, if the Contractor and the subcontractors have complied with the provisions of this Contract relating thereto, the Authority will reimburse the Contractor for an amount equal to the amount of such tax required to be paid in accordance with the requirements of law, provided that:

(a) (i) the subcontract agreements in connection with this Contract provide for the resale of such Materials or of the use of such equipment prior to and separate and apart from incorporation of such Materials into the permanent construction, (ii) such subcontract agreements are in a form similar to this Contract with respect to the separation of the Sale of Materials and use of construction equipment from the other services to be performed, and (iii) such separation is actually followed in practice, including the separation of payments for materials and use of construction equipment from the payments for other services; and

(b) the Authority is afforded the opportunity, before any payment of tax is made, to contest said claim in the manner and to the extent that the Authority may choose and to settle or satisfy said claim, and such attorney as the Authority may designate is authorized to act for the purpose of contesting, settling and satisfying said claim; and

(c) the Contractor and the subcontractor give immediate notice to the Authority of any such claim, cooperate with the Authority and its designated attorney in contesting said claim and furnish promptly to the Authority and said attorney all information and documents necessary or convenient for contesting said claim, said information and documents to be preserved for six years after the date of Final Payment for the Sale or longer if such a claim is pending or threatened at the end of such three years.

If the Authority elects to contest any such claim, it will bear the expense of such contest.

3. PERFORMANCE BOND.

If the Authority shall in its sole discretion so elect at the time of accepting the Contractor's Proposal, the Contractor shall furnish a bond for the faithful performance of all obligations imposed upon him by the Contract and also for the payment of all lawful claims of subcontractors, materialmen and workmen arising out of the performance of the Contract. Such bond shall be in the form bound herewith entitled "Performance and Payment Bond", shall be in a penal sum equal to the sum of the Estimated Total for the Sale and the Estimated Total for the Work, and such bond shall be signed by one or more sureties* satisfactory to the Authority no-one of which sureties shall be individually liable in an amount exceeding $1,000,000.00. The bond may be executed on a separate copy of such form not physically attached to this Contract booklet. In any case, both the form of bond bound herewith and any unattached executed copy thereof shall form a part of this Form of Contract as though herein set forth in full.

At any time after the opening of Proposals, the Authority may give notice to one or more bidders to advise the Authority as to the names of their proposed sureties and the amount for which each surety would be individually liable. Within forty-eight hours thereafter each bidder so notified shall so advise the Authority. The giving of such notice to a bidder shall not be construed as an acceptance of his Proposal, and omission to give such notice shall not be construed as an election by the Authority not to require a bond.

If the Authority elects to require the Contractor to furnish a bond, he shall deliver such bond to the Authority within seven days after receipt by him of the acceptance of his Proposal, and the sureties thereon and the amounts for which they are individually liable shall be as proposed by him, provided, that if the Authority has theretofore given notice to him that his proposed sureties or any of them are not satisfactory, the bond shall be executed by other sureties satisfactory to the Authority.

---

* Sureties must be corporations (commonly known as "surety companies"), authorized to do business as sureties in the States of New York and New Jersey, whose names appear on the current list of the Treasury Department of the United States as acceptable as sureties to the Treasury Department.

In the event of a default by the Contractor in his obligation to furnish a satisfactory bond within seven days after he receives an acceptance of his Proposal, such default shall entitle the Authority in its discretion to terminate this Contract at any time within fourteen days after the acceptance of the Proposal, without any liability on the part of the Authority. Inasmuch as the damages to the Authority resulting from a termination by it upon the failure of the Contractor to furnish a satisfactory bond will include items whose accurate amount will be difficult or impossible to compute, such damages shall be liquidated in the sum of the following amounts:

(a) The excess, if any, of the total of the Estimated Total for the Sale and the Estimated Total for the Work quoted in the Proposal finally accepted over such total quoted in the Proposal of the Contractor; and

(b) The expense of such new advertisement of the Contract, if any, as may be deemed necessary by the Authority; and

(c) The sum of $1,000.00 for each day after receipt by the Contractor of the acceptance of his Proposal that the performance of the Contract is not commenced by reason of the failure of the Contractor to furnish the required bond.

In the recovery of the damages above specified, the Authority may proceed against the sum represented by the certified check deposited with it or against the Bid Bond and take such other action as it may deem best in the public interest.

If the Contractor furnishes a bond in accordance with the requirements of the Authority under this numbered clause, the Authority shall reimburse the Contractor for the net amount actually paid by him to the surety or sureties as the premium on such bond. The Contractor shall deliver to the Engineer receipts from the surety or sureties evidencing such payment and the amount thereof. Within fifteen days after receipt of such evidence satisfactory to the Engineer, the Authority shall pay to the Contractor by check the amount provided in this numbered clause.

If at any time the Authority shall be or become dissatisfied with any surety or sureties then upon any bond furnished in accordance with the requirements of the Authority, or if for any other reason such bond shall cease to be adequate security to the Authority, the Contractor shall, within five days after notice from the Authority so to do, substitute a new bond in such form and sum and signed by such other sureties as may be necessary in the opinion of the Authority to constitute adequate security.

CHAPTER II

COMPENSATION AND PAYMENTS

4. UNIT PRICES AND LUMP SUM.

Schedule of Unit Prices

The prices for Classified Materials and Classified Work listed in the following schedules of Unit Prices shall apply only to: (1) Classified Materials and Classified Work shown on the Contract Drawings T1, T2, T3, and T4; and (2) Classified Materials and Classified Work required in addition to those required by the Contract Drawings and Specifications in their present form. Consequently, no compensation based on the Schedules of Unit Prices will be payable for any Materials or Work required by the Contract Drawings or Specifications in their present form, even though of a similar nature to that listed in the Schedule of Unit Prices, except only as required by Contract Drawings T1, T2, T3 and T4.

The Chief Engineer may order such quantities of Classified Materials and Classified Work as may be found desirable, and the quantity to be ordered under this Contract will depend on various circumstances, including possible additions and revisions to design of the Bus Station, the number and type of tenants with whom leases are concluded, the time when such leases are concluded in relation to the time when other construction under this Contract is being performed, and the arrangements under each lease as to whether the tenant's contractor or the Authority's contractor will furnish the Materials and perform the Work. (In any event, however, the Contractor will not be required to perform only the Sale or only the Work for any given construction but will be required to perform both if he is required to perform one.)

Classified materials and Classified Work shall in no case be considered as Extra Materials or Extra Work.

In the case of each item of Classified Materials and Classified Work, the Materials sold and the Work performed will be measured and the Contractor's compensation will be computed as hereinafter provided in this numbered clause. In case of discrepancy between the prices quoted in writing and those quoted in figures, the writing shall control.

The Estimated Total for the Sale and the Estimated Total for the Work are solely for the purpose of fixing the amount of security to be maintained by the Contractor for the faithful performance of the Contract. Prior to the signature of the Contract by the parties, they were for the purpose of facilitating the comparison of Proposals and of computing damages in the event of a default by the successful bidder in the agreement created by the acceptance of his Proposal. The estimated quantities are given solely as a basis for the computation of the Estimated Total for the Sale and the Estimated Total for the Work. The Authority makes no representation as to what the actual quantities will be and shall not be held responsible even though the estimated quantities are not even

approximately correct, and the estimated quantities are subject to the above provisions of this numbered clause. Insofar as the Contractor's compensation is based upon Classified Materials and Classified Work, it will be computed from the actual quantities of Sale and Work performed, whether greater or less than the estimated quantities.

Lump Sums

The Lump Sum for Unclassified Materials and the Lump Sum for Unclassified Work are, respectively, full compensation for all Materials and Work required by the Contract Drawings and Specifications in their present form, excepting Classified Materials and Classified Work shown on Contract Drawings T1 through T6.

I

A. SCHEDULE OF UNIT PRICES FOR CLASSIFIED MATERIALS				
Item No.	Estimated Quantities	Items of Classified Materials With Prices Written	Figures	
			Prices	Amounts
1a	11,300 sq.ft.	Terrazzo Floor, Per Square Foot No Dollars Sixty-Six Cents	$ .66	$7458.00
2a	1000 Lin. Ft.	Terrazzo Base Per Linear Foot No Dollars Forty Three One Fifth Cents	.432	432.00
3a	1200 Sq. Ft.	Ceramic Tile Floor Per Square Foot No Dollars Ninety Cents	.90	1080.00
4a	550 Lin. Ft.	Ceramic Tile Cove Base Per Linear Foot No Dollars Ninety Cents	.90	495.00
5a	11,500 Sq.Ft.	Asphalt Tile Floor Per Square Foot No Dollars Twelve Cents	.12	1380.00

A. SCHEDULE OF UNIT PRICES FOR CLASSIFIED MATERIALS				
Item No.	Estimated Quantities	Items of Classified Materials With Prices Written	Figures	
			Prices	Amounts
6a	1200 Lin.Ft.	Rubber Tile Base per Linear Foot No Dollars Fourteen Two Fifth Cents	$ .144	172.80
7a	630 Sq.Ft.	Cement Mortar Floor, Per Square Foot No Dollars Twenty Cents	.20	126.00
8a	600 Lin. Ft.	Cement Mortar Base, Per Linear Foot No Dollars Twenty-Five Cents	.25	150.00
9a	400 Cu. Yds.	Lightweight Concrete Fill per cubic yard Thirty Dollars No Cents	30.00	12,000.00
10a	250 Sq. Ft.	4" Lightweight Blockwall Per Square Foot No Dollars Forty Cents	.40	100.00

I.

	A. SCHEDULE OF UNIT PRICES FOR CLASSIFIED MATERIALS			
Item No.	Estimated Quantities	Items of Classified Materials With Prices Written	Prices	Figures Amounts
11a	2000 Sq. Ft.	6" Lightweight Blockwall per Square Foot No Dollars Sixty Cents	$ .60	1200.00
12a	3000 Sq. Ft.	Ceramic Tile Wall Per Square Foot One Dollars One Cent	1.01	3030.00
13a	650 Sq. Yds.	Metal Lath on Blockwalls per Square Yard No Dollars Eighty Six Two Fifth Cents	.864	561.60
14a	1000 Sq. Yds.	Plaster and Metal Lath on Blockwall per Square Yard One Dollar Forty Cents	1.40	1400.00
15a	14,800 Sq.Ft.	Paint on Plaster Walls and Ceilings per Square Foot No Dollars Seven Cents	.07	1036.00

I.

A. SCHEDULE OF UNIT PRICES FOR CLASSIFIED MATERIALS				
Item No.	Estimated Quantities	Items of Classified Materials With Prices Written	Figures	
			Prices	Amounts
16a	1500 Sq.Yds.	Suspended plaster Ceiling Per Square Yard Three Dollars Twenty-Three Cents	3.23	4,845.00
17a	800 Sq.Yds.	Suspended Vermiculite Plaster Ceiling, Per Square Yard Three Dollars Forty One Cents	3.41	2,728.00
18a	200 Sq. Yds.	Suspended Metal Pan Ceiling, per Square Yard Thirteen Dollars Seventy Four Cents	13.74	2,748.00
19a	12	Toilet Room Door, Per Each One Seventy Dollars Cents	170.00	2,040.00
20a	265 Lin.Ft.	Type A-Storefront per Linear Foot Forty-Five Dollars Sixty Cents	45.60	12084.00

I.

A. SCHEDULE OF UNIT PRICES FOR CLASSIFIED MATERIALS				
Item No.	Estimated Quantities	Items of Classified Materials With Prices Written	Figures	
			Prices	Amounts
21a	80 Lin. Ft.	Type B Storefront per Linear Foot Forty Four Dollars Forty Cents	$44.40	$3552.00
22a	95 Lin. Ft.	Type C Storefront per Linear Foot Forty One Dollars Seventy Cents	41.70	3961.50
23a	155 Lin. Ft.	Type D Storefront per Linear Foot Forty Five Dollars Sixty Cents	45.60	7068.00
24a	1	Single Entrance in Type A Storefront Each Twelve Hundred Forty Eight Dollars No Cents	1248.00	1248.00
25a	7	Double Entrance in Type A Storefront per Each Seventeen Hundred Eighty Two Dollars No Cents	1782.00	12474.00

I.

A. SCHEDULE OF UNIT PRICES FOR CLASSIFIED MATERIALS				
Item No.	Estimated Quantities	Items of Classified Materials With Prices Written	Figures	
			Prices	Amounts
26a	1	Single Entrance in Type B Storefront Per Each Eleven Hundred Ninety Four Dollars No Cents	$1194.00	$1194.00
27a	2	Double Entrance in Type B Storefront Per Each Fourteen Hundred Ninety Four Dollars No Cents	1494.00	2988.00
28a	2	Single Entrance in Type C Storefront Per Each Eleven Hundred Fifty Two Dollars No Cents	1152.00	2304.00
29a	1	Double Entrance in Type C Storefronts, Per Each Fourteen Hundred Seventy Dollars No Cents	1470.00	1470.00
30a	4	Single Entrance in Type D Storefront per each Nine Hundred Ninety Three Dollars No Cents	993.00	3972.00
31a	1	Double Entrance in Type D Storefront per each Fifteen Hundred Six Dollars No Cents	1506.00	1506.00

I.

A. SCHEDULE OF UNIT PRICES FOR CLASSIFIED MATERIALS

Item No.	Estimated Quantities	Items of Classified Materials With Prices Written	Figures	
			Prices	Amounts
32a	25	FURNISHING WATER CLOSETS, PER EACH One Thirty Two DOLLARS no CENTS	$132.00	3300.00
33a	10	FURNISHING URINALS, PER EACH One Hundred Eight DOLLARS no CENTS	108.00	1080.00
34a	12	FURNISHING LAVATORIES, PER EACH One Hundred Ten DOLLARS Forty CENTS	110.40	1324.80
35a	4	FURNISHING SLOP SINKS, PER EACH One Hundred Fifty Six DOLLARS No CENTS	156.00	624.00

A. SCHEDULE OF UNIT PRICES FOR CLASSIFIED MATERIALS				
Item No.	Estimated Quantities	Items of Classified Materials With Prices Written	Figures	
			Prices	Amounts
36a	300 LIN. FT.	FURNISHING 4" DIA. SANITARY DRAINAGE PIPING, PER LINEAR FOOT Six DOLLARS No CENTS	6.00	1800.00
37a	100 LIN. FT.	FURNISHING 3" DIA. SANITARY DRAINAGE PIPING, PER LINEAR FOOT Five DOLLARS Forty CENTS	5.40	540.00
38a	100 LIN. FT.	FURNISHING 2" DIA. SANITARY DRAINAGE PIPING, PER LINEAR FOOT Three DOLLARS Sixty CENTS	3.60	360.00
39a	100 LIN. FT.	FURNISHING 3" DIA. SANITARY VENT PIPING, PER LINEAR FOOT Six DOLLARS No CENTS	6.00	600.00

A. SCHEDULE OF UNIT PRICES FOR CLASSIFIED MATERIALS				
Item No.	Estimated Quantities	Items of Classified Materials With Prices Written	Figures	
			Prices	Amounts
40a	100 LIN. FT.	FURNISHING $2\frac{1}{2}$" DIA. SANITARY VENT PIPING, PER LINEAR FOOT Three DOLLARS Ninety CENTS	3.90	390.00
41a	200 LIN. FT.	FURNISHING 2" DIA. SANITARY VENT PIPING, PER LINEAR FOOT Three DOLLARS Sixty CENTS	3.60	720.00
42a	100 LIN. FT.	FURNISHING $1\frac{1}{2}$" DIA. SANITARY VENT PIPING, PER LINEAR FOOT Two DOLLARS Thirty Four CENTS	2.34	234.00
43a	300 LIN. FT.	FURNISHING 2" DIA. COLD WATER PIPING WITH INSULATION, PER LINEAR FOOT Seven DOLLARS Twenty CENTS	7.20	2160.00

A. SCHEDULE OF UNIT PRICES FOR CLASSIFIED MATERIALS

Item No.	Estimated Quantities	Items of Classified Materials With Prices Written	Figures	
			Prices	Amounts
44a	100 LIN. FT.	FURNISHING $1\frac{1}{2}$" DIA. COLD WATER PIPING WITH INSULATION, PER LINEAR FOOT Six DOLLARS Sixty CENTS	6.60	660.00
45a	100 LIN. FT.	FURNISHING $1\frac{1}{4}$" DIA. COLD WATER PIPING WITH INSULATION, PER LINEAR FOOT Six DOLLARS Twenty Four CENTS	6.24	624.00
46a	100 LIN. FT.	FURNISHING 3/4" DIA. COLD WATER PIPING WITH INSULATION, PER LINEAR FOOT Five DOLLARS Forty CENTS	5.40	540.00
47a	100 LIN.FT.	FURNISHING $\frac{1}{2}$" DIA. COLD WATER PIPING WITH INSULATION, PER LINEAR FOOT Four DOLLARS Eighty CENTS	4.80	480.00

A. SCHEDULE OF UNIT PRICES FOR CLASSIFIED MATERIALS				
Item No.	Estimated Quantities	Items of Classified Materials With Prices Written	Figures	
			Prices	Amounts
48a	300 LIN.FT.	FURNISHING 1" DIA. HOT WATER PIPING WITH INSULATION, PER LINEAR FOOT Five DOLLARS Sixty Four CENTS	5.64	1692.00
49a	200 LIN. FT.	FURNISHING 3/4" DIA. HOT WATER PIPING WITH INSULATION, HER LINEAR FOOT Five DOLLARS Forty CENTS	5.40	1080.00
50a	200 LIN. FT.	FURNISHING ½" DIA. HOT WATER PIPING WITH INSULATION, PER LINEAR FOOT Five DOLLARS Forty CENTS	5.40	1080.00

A. SCHEDULE OF UNIT PRICES FOR CLASSIFIED MATERIALS				
Item No.	Estimated Quantities	Items of Classified Materials with Prices Written	Figures	
			Prices	Amounts
51a	4	Furnishing 3 ton Air Conditioning Units, each Twelve Hundred Thirty Five ..... Dollars ....No..... Cents	$1235.00	$4940.00
52a	3	Furnishing 5 ton Air Conditioning Units, each Fifteen Hundred .....Dollars .....No.....Cents	1500.00	4500.00
53a	3	Furnishing 7½ ton Air Conditioning Units, each Two Thousand ..... Dollars .....No..... Cents	2000.00	6000.00
54a	3	Furnishing 10 ton Air Conditioning Units, each Two Thousand Six Hundred Eighty ..... Dollars .....No..... Cents	2680.00	8040.00
55a	1	Furnishing 15 ton Air Conditioning Units, each Three Thousand ...Fifty..... Dollars ....No..... Cents	3050.00	3050.00

I.

A. SCHEDULE OF UNIT PRICES FOR CLASSIFIED MATERIALS				
Item No.	Estimated Quantities	Items of Classified Materials with Prices Written	Figures	
			Prices	Amounts
56a	1	Furnishing 20 ton Air Conditioning Units, each Four Thousand Four Hundred Fifteen. Dollars ....No..... Cents	$4415.00	$ 4415.00
57a	1	Furnishing 25 ton Air Conditioning Units, each Five Thousand Sixty .....Five.....Dollars .....No.....Cents	5065.00	5065.00
58a	5	Furnishing 30 ton Air Conditioning Units, each Five Thousand Five Hundred Fifty....Dollars .....No.....Cents	5550.00	27750.00
59a	10,000 lbs.	Furnishing Ductwork per pound No ..... Dollars .....Thirty.... Cents	.30	3000.00
60a	6,000 sq. ft.	Furnishing Duct Insulation, per square foot No ..... Dollars ....Sixty..... Cents	.60	3600.00

A. SCHEDULE OF UNIT PRICES FOR CLASSIFIED MATERIALS				
Item No.	Estimated Quantities	Items of Classified Materials with Prices Written	Figures	
			Prices	Amounts
61a	500 ft.	Furnishing 3/4 inch black, standard weight, welded steel pipe, per linear foot No ..... Dollars Thirty Five ..... Cents	$ .35	$ 175.00
62a	400 ft.	Furnishing 1 inch, black, standard weight, welded steel pipe, per linear foot No ..... Dollars Forty Eight ..... Cents	.48	192.00
63a	200 ft.	Furnishing 1¼ inch, black, standard weight, welded steel pipe, per linear foot No ..... Dollars Sixty ..... Cents	.60	120.00
64a	200 ft.	Furnishing 1½ inch, black, standard weight, welded Steel pipe, per linear foot No ..... Dollars Seventy Eight ..... Cents	.78	156.00

A. SCHEDULE OF UNIT PRICES FOR CLASSIFIED MATERIALS				
Item No.	Estimated Quantities	Items of Classified Materials with Prices Written	Figures	
			Prices	Amounts
55a	200 ft.	Furnishing 2 inch, black, standard weight, welded steel pipe, per linear foot No ..... Dollars Ninety Five ..... Cents	$ .95	$ 190.00
66a	200 ft.	Furnishing $2\frac{1}{2}$ inch, black, standard weight, welded steel pipe, per linear foot One ..... Dollars Sixty ..... Cents	1.60	320.00
67a	500 ft.	Furnishing 3 inch, black standard weight, welded steel pipe, per linear foot Two ..... Dollars Fifteen ..... Cents	2.15	1075.00
68a	25	Furnishing Air Conditioning Control Assemblies, each Two Hundred Sixty Four ..... Dollars No ..... Cents	264.00	6600.00

I.

A. SCHEDULE OF UNIT PRICES FOR CLASSIFIED MATERIALS				
Item No.	Estimated Quantities	Items of Classified Materials With Prices Written	Figures	
			Prices	Amounts
69a	5	Furnishing 8 inch by 6 inch double deflection type air registers, each Six ..... Dollars Eighty Five ..... Cents	$6.85	$ 34.25
70a	5	Furnishing 10 inch by 6 inch double deflection type air registers, each Seven ..... Dollars Thirty Five ..... Cents	7.35	36.75
71a	5	Furnishing 12 inch by 6 inch double deflection type air registers, each Eight ..... Dollars Ten ..... Cents	8.10	40.50
72a	5	Furnishing 16 inch by 6 inch double deflection type air registers, each Nine ..... Dollars Sixty ..... Cents	9.60	48.50

I.

A. SCHEDULE OF UNIT PRICES FOR CLASSIFIED MATERIALS				
Item No.	Estimated Quantities	Items of Classified Materials With Prices Written	Figures	
			Prices	Amounts
73a	5	Furnishing 20 inch by 6 inch double deflection type air registers, each Ten ..... Dollars Eighty ..... Cents	$ 10.80	$ 54.00
74a	5	Furnishing 24 inch by 6 inch double deflection type air registers, each Twelve ..... Dollars Seventy ..... Cents	12.70	63.50
75a	5	Furnishing 30 inch by 6 inch double deflection type air registers, each Sixteen ..... Dollars Twenty ..... Cents	16.20	81.00
76a	5	Furnishing 36 inch by 6 inch double deflection type air registers, each Nineteen ..... Dollars Forty ..... Cents	19.40	97.00

I.

A. SCHEDULE OF UNIT PRICES FOR CLASSIFIED MATERIALS

Item No.	Estimated Quantities	Items of Classified Materials With Prices Written	Figures	
			Prices	Amounts
77a	5	Furnishing 48 inch by 6 inch double deflection type air registers, each Twenty Six ..... Dollars ....Forty.... Cents	$ 26.40	$ 132.00
78a	5	Furnishing 6 inch square air diffusers, each Seventeen ....Sixty..... Dollars ..... Cents	17.60	88.00
79a	5	Furnishing 9 inch square air diffusers, each Twenty Three .....Dollars No .....Cents	23.00	115.00
80a	5	Furnishing 12 inch square air diffusers, each Twenty Eight .....Dollars Twenty ..... Cents	28.20	141.00

I.

A. SCHEDULE OF UNIT PRICES FOR CLASSIFIED MATERIALS				
Item No.	Estimated Quantities	Items of Classified Materials With Prices Written	Figures	
			Prices	Amounts
81a	5	Furnishing 15 inch square air diffusers, each Forty Two ..... Dollars Sixty ..... Cents	$ 42.60	$ 213.00
82a	5	Furnishing 18 inch square air diffusers, each Fifty Eight ..... Dollars Sixty ..... Cents	58.60	293.00
83a	5	Furnishing 6 inch circular air diffusers, each Seventeen ..... Dollars Forty ..... Cents	17.40	87.00
84a	5	Furnishing 8 inch circular air diffusers, each Twenty ..... Dollars Twenty ..... Cents	20.20	101.00

A. SCHEDULE OF UNIT PRICES FOR CLASSIFIED MATERIALS				
Item No.	Estimated Quantities	Items of Classified Materials With Prices Written	Figures	
			Prices	Amounts
85a	5	Furnishing 10 inch circular air diffusers, each Twenty One Dollars Ten Cents	21.10	105.50
86a	5	Furnishing 12 inch circular air diffusers, each Twenty Three Dollars Seventy Five Cents	23.75	118.75
87a	5	Furnishing 14 inch circular air diffusers, each Thirty Three Dollars Thirty Cents	33.30	166.50
88a	5	Furnishing 16 inch circular air diffusers, each Forty Dollars Twenty Cents	40.20	201.00

I.

A. SCHEDULE OF UNIT PRICES FOR CLASSIFIED MATERIALS				
Item No.	Estimated Quantities	Items of Classified Materials with Prices Written	Figures	
			Prices	Amounts
89a	300	Furnishing Type F27 Lighting fixture, each One Hundred Twenty .....Seven.....Dollars Thirty Eight .....Cents	$127.38	$ 38,214.00
90a	60	Furnishing Type F28 Lighting fixture, each .....Thirty.....Dollars .....Five.....Cents	30.05	1803.00
91a	300	Furnishing Type J Lighting fixture, each Twenty Nine.....Dollars .....Five.....Cents	29.05	8715.00
92a	200	Furnishing Outlet Box and Duplex Convenience Outlet, each .....Two.....Dollars .....Fifty.....Cents	2.50	500.00
93a	20	Furnishing Outlet Box and Cook Receptacle, each .....Two.....Dollars Twenty Eight.....Cents	2.28	45.60

A. SCHEDULE OF UNIT PRICES FOR CLASSIFIED MATERIALS				
Item No.	Estimated Quantities	Items of Classified Materials with Prices Written	Figures	
			Prices	Amounts
94a	700	Furnishing Fixture Outlet Box, each No .....Dollars Ninety Three .....Cents	$ .93	$ 651.00
95a	50	Furnishing Switch Outlet Box and Single Pole Switch, each Two .....Dollars Twenty Seven .....Cents	2.27	113.50
96a	50	Furnishing Telephone Outlet Box, each No .....Dollars Seventy Two .....Cents	.72	36.00
97a	15,000 L.F.	Furnishing Three-quarter inch Conduit Per Linear Foot, No .....Dollars Twenty Nine .....Cents	.29	4350.00

A. SCHEDULE OF UNIT PRICES FOR CLASSIFIED MATERIALS				
Item No.	Estimated Quantities	Items of Classified Materials With Prices Written	Figures	
			Prices	Amounts
98a	5000 LIN.FT.	Furnishing One Inch Conduit Per Linear Foot No Dollars Thirty Nine Cents	.39	1950.00
99a	500 Lin. Ft.	Furnishing One and One-Quarter inch Conduit Per Linear Foot No Dollars Sixty Four Cents	.64	320.00
100a	50,000 Lin. Ft.	Furnishing No. 12 wire per Linear Foot No Dollars Two & One Fifth Cents	.022	1100.00
101a	5,000 Lin. Ft.	Furnishing No. 10 Wire Per Linear Foot No Dollars Three Cents	.03	150.00

B. LUMP SUM FOR UNCLASSIFIED MATERIALS	
Writing	Figures
THREE MILLION SIX HUNDRED THOUSAND .... Dollars .....Cents	$3,600,000

C. RECAPITULATION	
	Figures
ESTIMATED TOTAL FOR CLASSIFIED MATERIALS.....	$255,445.55
LUMP SUM FOR UNCLASSIFIED MATERIALS.....	3600,000.00
ESTIMATED TOTAL FOR THE SALE (*)	$3,855,445.55

(*) The Estimated Total for the Sale shall be computed by adding the Estimated Total for Classified Materials to the Lump Sum for Unclassified Materials.

II. SCHEDULE OF UNIT PRICES FOR CLASSIFIED WORK

Item No.	Estimated Quantities	Items of Classified Work with Prices Written	Figures	
			Prices	Amounts
1b	11,300 Sq. Ft.	Terrazzo Floor, Per Square Foot One Dollars Three One Fifth Cents	1.032	11,661.60
2b	1000 Lin. Ft.	Terrazzo Base Per Linear Foot One Dollars Ninety Two Cents	1.92	1,920.00
3b	1200 Sq. Ft.	Ceramic Tile Floor per Square Foot One Dollars Twenty Cents	1.20	1,440.00
4b	550 Lin. Ft.	Ceramic Tile Cove Base Per Linear Foot One Dollars Twenty Cents	1.20	660.00
5b	11,500 Sq. Ft.	Asphalt Tile Floor per Square Foot No Dollars Ten Cents	.10	1,150.00

II. SCHEDULE OF UNIT PRICES FOR CLASSIFIED WORK

Item No.	Estimated Quantities	Items of Classified Work with Prices Written	Figures	
			Prices	Amounts
6b	1200 Lin. Ft.	Rubber Tile Base per Linear Foot Fourteen Two Fifth Dollars Cents	.144	$172.80
7b	630 Sq. Ft.	Cement Mortar Floor per Square Foot No Dollars Thirty Cents	.30	189.00
8b	600 Lin. Ft.	Cement Mortar Base per Linear Foot One Dollars No Cents	1.00	600.00
9b	400 Cu. Yards	Lightweight Concrete Fill per cubic yard Twelve Dollars No Cents	12.00	4800.00
10b	250 Sq. Ft.	4" Lightweight Blockwall per square foot No Dollars Eighty Cents	.80	200.00

II. SCHEDULE OF UNIT PRICES FOR CLASSIFIED WORK

Item No.	Estimated Quantities	Items of Classified Work with Prices Written	Figures	
			Prices	Amounts
11b	2000 Sq. Ft.	6"Lightweight Blockwall per square foot One Dollars No Cents	1.00	2000.00
12b	3000 sq. ft.	Ceramic Tile Wall per Square Foot One Dollars Twenty Six Cents	1.26	3780.00
13b	650 Sq. Yds.	Metal Lath on Blockwalls per square yard One Dollars Eighty Four Cents	1.84	1196.00
14b	1000 Sq. yds.	Plaster and Metal Lath on Blockwall per square yard Five Dollars Sixty Seven Cents	5.67	5670.00
15b	14,800 Sq.Ft.	Paint on Plaster Walls and Ceilings per Square foot No Dollars Ten Cents	.10	1480.00

II. SCHEDULE OF UNIT PRICES FOR CLASSIFIED WORK				
Item No.	Estimated Quantities	Items of Classified Work With Prices Written	Prices	Figures Amounts
16b	1500 Sq. Yds.	Suspended Plaster Ceilings per Square Yard Seven Dollars Eighteen Cents	$7.18	$10,770.00
17b	800 Sq.Yds.	Suspended Vermiculite Plaster Ceiling Per Square Yard Seven Dollars Eighteen Cents	7.18	5,744.00
18b	200 Sq.Yds.	Suspended Metal Pan Ceiling Per Square Yard Eight Dollars Ten Cents	8.10	1,620.00
19b	12	Toilet Room Door Per Each Eighty Dollars No Cents	80.00	960.00
20b	265 Lin. Ft.	Type A-Storefront Per Linear Foot Twenty-Five Dollars Twenty Cents	25.20	6678.00

II. SCHEDULE OF UNIT PRICES FOR CLASSIFIED WORK				
Item No.	Estimated Quantities	Items of Classified Work with Prices Written	Figures	
			Prices	Amounts
21b	80 Lin. Ft.	Type B Storefront per Linear Foot .....Dollars .....Cents		
22b	95 Lin. Ft.	Type C Storefront per Linear Foot .....Dollars .....Cents		
23b	155 Lin. Ft.	Type D Storefront per Linear Foot .....Dollars .....Cents		
24b	1	Single Entrance in Type A Storefront each .....Dollars .....Cents		
25b	7	Double Entrace in Type A Storefront per each .....Dollars .....Cents		
ESTIMATED TOTAL FOR CLASSIFIED WORK (*):				

(*) The Estimated Total for Classified Work shall be computed by applying the unit prices quoted to the estimated quantities and totaling the results.

II. SCHEDULE OF UNIT PRICES FOR CLASSIFIED WORK				
Item No.	Estimated Quantities	Items of Classified Work with Prices Written	Figures	
			Prices	Amounts
26b	1	Single Entrance in Type B Storefront per each _____ Dollars _____ Cents		
27b	2	Double Entrance in Type B Storefront per each _____ Dollars _____ Cents		
28b	2	Single Entrance in Type C Storefront per each _____ Dollars _____ Cents		
29b	1	Double Entrance in Type C Storefronts per each _____ Dollars _____ Cents		
30b		Single Entrance in Type D Storefront per each _____ Dollars _____ Cents		
31b	1	Double Entrance in Type D Storefront per each _____ Dollars _____ Cents		
ESTIMATED TOTAL FOR CLASSIFIED WORK (*):				

(*) The Estimated Total for Classified Work shall be computed by applying the unit prices quoted to the estimated quantities and totaling the results.

II. SCHEDULE OF UNIT PRICES FOR CLASSIFIED WORK

Item No.	Estimated Quantities	Items of Classified Work with Prices Written	Figures	
			Prices	Amounts
32b	25	Installing Water Closets per each Seventy Two Dollars No Cents	72.00	$1800.00
33b	10	Installing Urinals per each Seventy Two Dollars No Cents	72.00	720.00
34b	12	Installing Lavatories per each Sixty Six Dollars No Cents	66.00	792.00
35b	4	InstallingSlop Sinks per each Eighty Four Dollars No Cents	84.00	336.00

II. SCHEDULE OF UNIT PRICES FOR CLASSIFIED WORK

Item No.	Estimated Quantities	Items of Classified Work with Prices Written	Figures: Prices	Figures: Amounts
36b	300 lin. Ft.	Installing 4" dia. Sanitary Drainage Piping per linear foot Seven Dollars Twenty Cents	7.20	2160.00
37b	100 lin. Ft.	Installing 3" dia. Sanitary Drainage Piping per Linear Foot. Six Dollars Ninety Cents	6.90	690.00
38b	100 lin. Ft.	Installing 2" dia. Sanitary Drainage Piping per Linear Foot Five Dollars Forty Cents	5.40	540.00
39b	100 lin. Ft.	Installing 3" dia. Sanitary Vent Piping per Linear Foot Six Dollars Ninety Cents	6.90	690.00

II. SCHEDULE OF UNIT PRICES FOR CLASSIFIED WORK

Item No.	Estimated Quantities	Items of Classified Work with Prices Written	Figures	
			Prices	Amounts
40b	100 LIN. FT.	INSTALLING $2\frac{1}{2}$" DIA. SANITARY VENT PIPING PER LINEAR FOOT Six .....DOLLARS No .....CENTS	6.00	600.00
41b	200 LIN. FT.	INSTALLING 2" DIA. SANITARY VENT PIPING PER LINEAR FOOT Five .....DOLLARS Forty .....CENTS	5.40	1080.00
42b	100 LIN. FT.	INSTALLING $1\frac{1}{2}$" DIA. SANITARY VENT PIPING PER LINEAR FOOT Five .....DOLLARS Forty .....CENTS	5.40	540.00
43b	300 LIN. FT.	INSTALLING 2" DIA. COLD WATER PIPING WITH INSULATION PER LINEAR FOOT Five .....DOLLARS Forty .....CENTS	5.40	1620.00

II. SCHEDULE OF UNIT PRICES FOR CLASSIFIED WORK

Item No.	Estimated Quantities	Items of Classified Work with Prices Written	Figures	
			Prices	Amounts
44b	100 LIN. FT.	INSTALLING $1\frac{1}{2}$" DIA. COLD WATER PIPING WITH INSULATION PER LINEAR FOOT ...Five.....DOLLARS Forty .....CENTS	5.40	540.00
45b	100 LIN. FT.	INSTALLING $1\frac{1}{4}$"DIA. COLD WATER PIPING WITH INSULATION, PER LINEAR FOOT Five .....DOLLARS Four .....CENTS	5.04	504.00
46b	100 LIN. FT.	INSTALLING 3/4" DIA. COLD WATER PIPING WITH INSULATION, PER LINEAR FOOT ...Four.....DOLLARS Eight .....CENTS	4.08	408.00
47b	100 LIN. FT.	INSTALLING $\frac{1}{2}$" DIA. COLD WATER PIPING WITH INSULATION, PER LINEAR FOOT ....Four.....DOLLARS Twenty .....CENTS	4.20	420.00

II. SCHEDULE OF UNIT PRICES FOR CLASSIFIED WORK				
Item No.	Estimated Quantities	Items of Classified Work With Prices Written	Figures	
			Prices	Amounts
48b	300 LIN. FT.	INSTALLING 1" DIA. HOT WATER PIPING WITH INSULATION, PER LINEAR FOOT Four DOLLARS Eighty CENTS	$ 4.80	$1440.00
49b	200 LIN. FT.	INSTALLING 3/4" DIA. HOT WATER PIPING WITH INSULATION, PER LINEAR FOOT Four DOLLARS Eighty CENTS	4.80	960.00
50b	200 LIN. FT.	INSTALLING 1/2" DIA. HOT WATER PIPING WITH INSULATION, PER LINEAR FOOT Four DOLLARS Eighty CENTS	4.80	960.00

I. SCHEDULE OF UNIT PRICES FOR CLASSIFIED WORK

Item No.	Estimated Quantities	Items of Classified Work with Prices Written	Figures	
			Prices	Amounts
51b	4	Installing 3 ton Air Conditioning Units, each Six Hundred Thirty .....Dollars No .....Cents	630.00	2520.00
52b	3	Installing 5 ton Air Conditioning Units, each Six Hundred Sixty Five ..... Dollars No ..... Cents	665.00	1995.00
53b	3	Installing 7½ ton Air Conditioning Units, each Seven Hundred Thirty .....Dollars No .....Cents	730.00	2190.00
54b	3	Installing 10 ton Air Conditioning Units, each Eight Hundred Fifteen ..... Dollars No ..... Cents	815.00	2445.00
55b	1	Installing 15 ton Air Conditioning Units, each Eight Hundred Fifty .....Dollars No .....Cents	850.00	850.00

I. SCHEDULE OF UNIT PRICES FOR CLASSIFIED WORK

Item No.	Estimated Quantities	Items of Classified Work with Prices Written	Figures	
			Prices	Amounts
56b	1	Installing 20 ton Air Conditioning Units, each One Thousand One Hundred Fifteen Dollars ....No..... Cents	1,115.00	1,115.00
57b	1	Installing 25 ton Air Conditioning Units, each Twelve Hundred ....Eighty.. Dollars .....No.... Cents	1,280.00	1,280.00
58b	5	Installing 30 ton Air Conditioning Units, each Twelve Hundred ....Eighty.. Dollars ....No..... Cents	1,280.00	6400.00
59b	10,000 lbs.	Installing Ductwork per pound ....One..... Dollars ....Seventy..... Cents	1.70	17,000.00

I. SCHEDULE OF UNIT PRICES FOR CLASSIFIED WORK				
Item No.	Estimated Quantities	Items of Classified Work with Prices Written	Figures	
			Prices	Amounts
60b	6000 sq. ft.	Installing Duct Insulation, per square foot One ..... Dollars Fifty ..... Cents	$ 1.50	$9,000.00
61b	500 ft.	Installing 3/4 inch, black, standard weight welded steel pipe, per linear foot One ..... Dollars Twenty ..... Cents	1.20	600.00
62b	400 ft.	Installing 1 inch, black, standard weight welded steel pipe, per linear foot One ..... Dollars Eighty ..... Cents	1.80	720.00

I. SCHEDULE OF UNIT PRICES FOR CLASSIFIED WORK

Item No.	Estimated Quantities	Items of Classified Work with Prices Written	Figures	
			Prices	Amounts
63b	200 ft.	Installing $1\frac{1}{4}$ inch, black, standard weight, welded steel pipe, per linear foot Two ..... Dollars No ..... Cents	$2.00	$400.00
64b	200 ft.	Installing $1\frac{1}{2}$ inch, black, standard weight, welded steel pipe, per linear foot Two ..... Dollars Twenty ... Cents	2.20	440.00
65b	200 ft.	Installing 2 inch, black, standard weight welded steel pipe, per linear foot Two ..... Dollars Fifty ... Cents	2.50	500.00

I. SCHEDULE OF UNIT PRICES FOR CLASSIFIED WORK

Item No.	Estimated Quantities	Items of Classified Work with Prices Written	Figures	
			Prices	Amounts
66b	200 ft.	Installing 2½ inch, black, standard weight, steel pipe, per linear foot Three ..... Dollars Fifty ..... Cents	3.50	700.00
67b	500 ft.	Installing 3 inch, black, standard weight, steel pipe, per linear foot Four ..... Dollars No ..... Cents	4.00	2000.00
68b	25	Installing Air Conditioning Control Assemblys, each Two Hundred Seventy Five ..... Dollars No ..... Cents	275.00	6875.00

I. SCHEDULE OF UNIT PRICES FOR CLASSIFIED WORK

Item No.	Estimated Quantities	Items of Classified Work with Prices Written	Figures	
			Prices	Amounts
69b	5	~~Installing 8 inch by 6 inch double deflec-~~ tion type air registers, each Ten Dollars Eighty Cents	10.80	54.00
70b	5	Installing 10 inch by 6 inch double deflec-tion type air registers, each Ten Dollars Eighty Cents	10.80	54.00
71b	5	Installing 12 inch by 6 inch double deflec-tion type air registers, each Ten Dollars Eighty Cents	10.80	54.00

I. SCHEDULE OF UNIT PRICES FOR CLASSIFIED WORK

Item No.	Estimated Quantities	Items of Classified Work with Prices Written	Figures	
			Prices	Amounts
72b	5	Installing 16 inch by 6 inch double deflection type air registers, each Ten Dollars Eighty Cents	10.80	54.00
73b	5	Installing 20 inch by 6 inch double deflection type air registers, each Ten Dollars Eighty Cents	10.80	54.00
74b	5	Installing 24 inch by 6 inch double deflection type air registers, each Thirteen Dollars Twenty Cents	13.20	66.00

I. SCHEDULE OF UNIT PRICES FOR CLASSIFIED WORK

Item No.	Estimated Quantities	Items of Classified Work with Prices Written	Figures	
			Prices	Amounts
75b	5	Installing 30 inch by 6 inch double deflection type air registers, each Thirteen ..... Dollars Twenty ..... Cents	13.20	66.00
76b	5	Installing 36 inch by 6 inch double deflection type air registers, each Thirteen ..... Dollars Twenty ..... Cents	13.20	66.00
77b	5	Installing 48 inch by 6 inch double deflection type air registers, each Nineteen ..... Dollars Twenty ..... Cents	19.20	96.00

I. SCHEDULE OF UNIT PRICES FOR CLASSIFIED WORK				
Item No.	Estimated Quantities	Items of Classified Work with Prices Written	Figures	
			Prices	Amounts
78b	5	Installing 6 inch square air diffusers, each Twenty ..... Dollars Forty ..... Cents	20.40	102.00
79b	5	Installing 9 inch square air diffusers, each Twenty ..... Dollars Forty ..... Cents	20.40	102.00
80b	5	Installing 12 inch square air diffusers, each Twenty ..... Dollars Forty ..... Cents	20.40	102.00
81b	5	Installing 15 inch square air diffusers, each Twenty ..... Dollars Forty ..... Cents	20.40	102.00

I. SCHEDULE OF UNIT PRICES FOR CLASSIFIED WORK

Item No.	Estimated Quantities	Items of Classified Work with Prices Written	Figures	
			Prices	Amounts
82b	5	Installing 18 inch square air diffusers, each Twenty .....Dollars Forty .....Cents	20.40	102.00
83b	5	Installing 6 inch circular air diffusers, each Twenty ..... Dollars Forty ..... Cents	20.40	102.00
84b	5	Installing 8 inch circular air diffusers, each Twenty ..... Dollars Forty ..... Cents	20.40	102.00
85b	5	Installing 10 inch circular air diffusers, each Twenty ..... Dollars Forty ..... Cents	20.40	102.00

I. SCHEDULE OF UNIT PRICES FOR CLASSIFIED WORK				
Item No.	Estimated Quantities	Items of Classified Work With Prices Written	Figures	
			Prices	Amounts
86b	5	Installing 12 inch circulating air diffusers, each Twenty Dollars Forty Cents	$20.40	$102.00
87b	5	Installing 14 inch circular air diffusers, each Twenty One Dollars Sixty Cents	21.60	108.00
88b	5	Installing 16 inch circular air diffusers, each Twenty One Dollars Sixty Cents	21.60	108.00

II. SCHEDULE OF UNIT PRICES FOR CLASSIFIED WORK

Item No.	Estimated Quantities	Items of Classified Work with Prices Written	Figures	
			Prices	Amounts
89b	300	Installing Type F27 Lighting Fixture, each Fifty .....Dollars Eighty .....Cents	50.80	15,240.00
90b	60	Installing Type F28 Lighting Fixture each Twenty Eight .....Dollars Thirty .....Cents	28.30	1698.00
91b	300	Installing Type J Lighting Fixture, each Nineteen .....Dollars ..Thirty Five...Cents	19.35	5805.00
[illegible]	200	Installing Outlet Box and Duplex Convenience Outlet each Eight .....Dollars Twenty Five .....Cents	8.25	1650.00
93b	20	Installing Outlet Box and Clock Receptacle, each .....Eight.....Dollars Twenty Five .....Cents	8.25	165.00

II. SCHEDULE OF UNIT PRICES FOR CLASSIFIED WORK

Item No.	Estimated Quantities	Items of Classified Work with Prices Written	Figures	
			Prices	Amounts
94b	700	Installing Fixture Outlet Box, each Four .....Dollars Fifteen .....Cents	4.15	2905.00
95b	50	Installing Switch Outlet Box and Single Pole Switch, each Eight .....Dollars Twenty Five .....Cents	8.25	412.50
96b	50	Installing Telephone Outlet Box, each Five .....Dollars Ten .....Cents	5.10	255.00
97b	15,000	Installing Three-quarter inch Conduit Per Linear Foot No .....Dollars Ninety Three .....Cents	.93	13,950.00

II. SCHEDULE OF UNIT PRICES FOR CLASSIFIED WORK				
Item No.	Estimated Quantities	Items of Classified Work with Prices Written	Figures	
			Prices	Amounts
98b	5,000 L.F.	Installing One Inch Conduit Per Linear Foot No .....Dollars Ninety Eight .....Cents	$.98	4,900.00
99b	500 L.F.	Installing One and One-quarter inch Conduit Per Linear Foot One .....Dollars Fifty Six .....Cents	1.56	780.00
100b	50,000 L.F.	Installing No. 12 wire Per Linear Foot No .....Dollars Eight & One Fifth .....Cents	.082	4100.00
101b	5,000 L.F.	Installing No. 10 wire Per Linear Foot No .....Dollars Ten & Two Fifths .....Cents	.104	520.00
ESTIMATED TOTAL FOR CLASSIFIED WORK (*):				

(*) The Estimated Total for Classified Work shall be computed by applying the unit prices quoted to the estimated quantities and totaling the results.

B. LUMP SUM FOR UNCLASSIFIED WORK	
Writing	Figures
FIVE MILLION FIVE HUNDRED THIRTY FIVE THOUSAND.....Dollars .....Cents	$5,535,000.00

C. RECAPITULATION	
	Figures
ESTIMATED TOTAL FOR CLASSIFIED WORK.....	$ 210,356.90
LUMP SUM FOR UNCLASSIFIED WORK.....	$ 5,535,000.00
ESTIMATED TOTAL FOR THE WORK (*)	$ 5,745,356.90

(*) The Estimated Total for the Work shall be computed by adding the Estimated Total for Classified Work to the Lump Sum for Unclassified Work.

(Referencesbelow to the Contract Drawings include only Drawings T-1 through T-6 and future revisions or additions to the Contract Drawings.)

In the case of Item Nos. 1a and 1b (Terrazzo Floor), the area for payment under each item will be the number of square feet of terrazzo floor furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer, measured in place.

In the case of Item Nos. 2a and 2b (Terrazzo Base), the length for payment under each item will be the number of linear feet of terrazzo base furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer, measured in place.

In the case of Item Nos. 3a and 3b (Ceramic Tile Floor), the area for payment under each item will be the number of square feet of ceramic tile floor furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer, consisting in each case only of the area of the Material actually in place in the permanent construction.

In the case of Item Nos. 4a and 4b (Ceramic Tile Cove Base), the length for payment under each item will be the number of linear feet of ceramic tile cove base furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer, consisting in each case only of the length of material actually in place in the permanent construction.

In the case of Item Nos. 5a and 5b (Asphalt Tile Floor), the area for payment under each item will be the number of square feet of asphalt tile floor furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer, consisting in each case only of the area of the material actually in place in the permanent construction.

In the case of Item Nos. 6a and 6b (Rubber Tile Base), the length for payment under each item will be the number of linear feet of rubber tile base furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer, consisting in each case only of the length of material actually in place in the permanent construction.

In the case of Items Nos. 7a and 7b (Cement Mortar Floor), the area for payment under each item will be the number of square feet of cement mortar floor furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer, measured in place.

In the case of Items Nos. 8a and 8b (Cement Mortar Base), the length for payment under each item will be the number of linear feet of cement mortar base furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer, measured in place.

In the case of Items 9a and 9b (Lightweight Concrete Fill), the volume for payment under each items will be the number of cubic yards of lightweight concrete fill furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer, consisting in each case only of the volume of material actually in place in the permanent construction.

In the case of Items 10a and 10b (4" Lightweight Blockwall), the area for payment under each item will be the number of square feet of 4" Lightweight Blockwall furnished or installed as the case may be, required by the Contract Drawings or ordered by the Engineer, consisting in each case only of the area of Material (one side of the wall) actually in place in the permanent construction.

In the case of Items 11a and 11b (6" Lightweight Blockwall), the area for payment under each item will be the number of square feet of 6" Lightweight Blockwall furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer, consisting in each case only of the area of Material (one side of the wall) in place in the permanent construction.

In the case of Items 12a and 12b (Ceramic Tile Wall), the area for payment under each item will be the number of square feet of ceramic tile wall furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer, consisting in each case only of the area of Material (one side of the wall) in place in the permanent construction.

In the case of Items 13a and 13b (Metal Lath on Blockwalls), the area for payment under each item will be the number of square yards of metal lath on blockwalls furnished or installed as the case may be, required by the Contract Drawings or ordered by the Engineer, measured by the surface to which lath is applied.

In the case of Items 14a and 14b (Plaster and Metal Lath on Blockwall), the area for payment under each item will be the number of square yards of plaster and metal lath on blockwalls furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer, measured in place.

In the case of Items 15a and 15b (Paint on Plaster Walls and Ceilings), the area for payment under each item will be the number of square feet of plaster walls and ceilings on which paint is furnished or applied, as the case may be, required by the Contract Drawings or ordered by the Engineer.

In the case of Items 16a and 16b (Suspended Plaster Ceiling), the area for payment under each item will be the number of square yards of suspended plaster ceiling furnished or installed as the case may be, required by the Contract Drawings or ordered by the Engineer, measured in place.

In the case of Items 17a and 17b (Suspended Vermiculite Plaster Ceiling), the area for payment under each item will be the number of square yards of suspended vermiculite plaster ceiling furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer, measured in place.

In the case of Items 18a and 18b (Suspended Metal Pan Ceiling), the area for payment under each item will be the number of square yards of suspended Metal Pan ceiling furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer, consisting in each case only of the area of the material actually in place in the permanent construction.

In the case of Items 19a and 19b (Toilet Room Door), the number for payment under each item will be the number of toilet room doors furnished or installed, as the case may be, as required by the Contract Drawings or ordered by the Engineer.

In the case of Items 20a and 20b (Type A Store Front), the length for payment under each item will be the number of linear feet of Type A Store Front furnished or installed, as the case may be, as required by the Contract Drawings or ordered by the Engineer, measured in place.

In the case of Items 21a and 21b (Type B Store Front), the length for payment under each item will be the number of linear feet of Type B Store Front furnished or installed, as the case may be, as required by the Contract Drawings or ordered by the Engineer, measured in place.

In the case of Items 22a and 22b (Type C Store Front), the length for payment under each item will be the number of linear feet of Type C Store Front furnished or installed, as the case may be, as required by the Contract Drawings or ordered by the Engineer, measured in place.

In the case of Items 23a and 23b (Type D Store Front), the length for payment under each item will be the number of linear feet of Type D Store Front furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer, measured in place.

In the case of Items 24a and 24b (Single Entrance in Type A Store Front), the number for payment under each item will be the number of single door entrances in Type A Store Front furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer.

In the case of Items 25a and 25b (Double Entrance in Type A Store Front), the number for payment under each item will be the number of double door entrances in Type A Store Front furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer.

In the case of Items 26a and 26b (Single Entrance in Type B Store Front), the number for payment under each item will be the number of single door entrances in Type B Store Front furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer.

In the case of Items 27a and 27b (Double Entrance in Type B Store Front), the number for payment under each item will be the number of double door entrances in Type B store front furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer.

In the case of Items 28a and 28b (Single Entrance in Type C Store Front), the number for payment under each item will be the number of single door entrances in Type C store front furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer.

In the case of Items 29a and 29b (Double Entrance in Type C Store Fronts), the number for payment under each item will be the number of double door entrances in Type C Store Front furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer.

In the case of Items 30a and 30b (Single Entrance in Type D Store Front), the number for payment under each item will be the number of single door entrances in Type D Store Front furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer.

In the case of Items 31a and 31b (Double Entrance in Type B Store Front), the number for payment under each item will be the number of double door entrances in Type D Store Front furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer.

In the case of Items 32a and 32b through 35a and 35b (Furnishing various plumbing fixtures and installing various plumbing fixtures), the number for payment under each item will be the number of each of such various plumbing fixtures furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer.

In the case of Items 36a and 36b through 38a and 38b (Furnishing various sized sanitary drainage piping and installing various sized sanitary drainage piping), the length for payment under each item will be the number of linear feet of such various sized pipe, furnished or installed, as the case may be, as required by the Contract Drawings or ordered by the Engineer, consisting in each case only of the length of material actually in place in the permanent construction, measured along the centerline of the pipe.

In the case of Items 39a and 39b through 42a and 42b (Furnishing various sized sanitary vent piping and installing various sized sanitary vent piping), the length for payment under each item will be the number of linear feet of such various sized pipe furnished or installed as the case may be, as required by the Contract Drawings or ordered by the Engineer, consisting in each case only of the length of material actually in place in the permanent construction measured along the centerline of the pipe.

In the case of Items 43a and 43b through 47a and 47b (Furnishing various sized coldwater piping with insulation and installing various sized cold water piping with insulation), the length for payment under each item will be the number of linear feet of such various sized pipe, furnished or installed as the case may be, as required by the Contract Drawings or ordered by the Engineer, consisting in each case only of the length of material actually in place in the permanent construction, measured along the centerline of the pipe.

In the case of Items 48a and 48b through 50a and 50b (Furnishing various sized hot water piping with insulation and installing various sized hot water piping with insulation), the length for payment under each item will be the number of linear feet of such various sized pipe furnished or installed as the case may be, as required by the Contract Drawings or ordered by the Engineer, consisting in each case only of the length of material actually in place in the permanent construction measured along the centerline of the pipe.

In the case of Items 51a and 51b through 58a and 58b (furnishing various sizes of air-conditioning equipment and installing various pieces of air-conditioning equipment), the number for payment under each item will be the number of such pieces furnished or installed, as the case may be, as required by the Contract Drawings or ordered by the Engineer.

In the case of Items 59a and 59b (Furnishing Ductwork and Installing Ductwork), the weight for payment under each item will be the number of pounds of ductwork furnished or installed, as the case may be, as required by the Contract Drawings or ordered by the Engineer, consisting in each case only of the weight of Material actually in place in the permanent construction.

In the case of Items 60a and 60b (Furnishing Duct Insulation and Installing Duct Insulation), the area for payment under each item will be the number of square feet of duct insulation furnished or installed, as the case may be, as required by the Contract Drawings or ordered by the Engineer, consisting in each case only of the area of the Materials actually in place in the permanent construction.

In the case of Items 61a and 61b through 67a and 67b (Furnishing various sized black, standard weight, welded steel pipe and installing various sized black, standard weight, welded steel pipe), the length for payment under each item will be the number of linear feet of such various sized pipe furnished or installed, as the case may be, as required by the Contract Drawings or ordered by the Engineer, consisting in each case only of the length of material actually in place in the permanent construction measured along the centerline of the pipe.

In the case of items 68a and 68b (Furnishing Air Conditioning Control Assemblies and Installing Air Conditioning Control Assemblies), the number for payment under each item will be the number of Air Conditioning Control Assemblies furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer.

In the case of Items 69a and 69b through 77a and 77b (Furnishing various sized double deflection type air registers and installing various sized double deflection type air registers), the number for payment under each item will be the number of each of such various sized registers furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer.

In the case of Items 78a and 78b through 82a and 82b (Furnishing various sized square air diffusers), the number for payment under each item will be the number of each of such various sized diffusers furnished or installed, as the case may be,required by the Contract Drawings or ordered by the Engineer.

In the case of Items 83a and 83b through 88a and 88b (Furnishing various sized circular air diffusers and installing various sized circular air diffusers), the number for payment under each item will be the number of each of such various sized diffusers furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer.

In the case of items 94a and 94b (Furnishing Fixture Outlet Box and Installing Fixture Outlet Box), the number for payment under each item will be the number of such fixture outlet boxes furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer.

In the case of Items 89a and 89b through 91a and 91b (Furnishing various types of lighting Fixtures), the number for payment under each item will be the number of such various lighting fixtures furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer.

In the case of Item 92a and 92b (Furnishing Outlet Box and Duplex Convenience Outlet and Installing Outlet Box and Duplex Convenience Outlet), the number for payment under each item will be the number of such outlets furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer.

In the case of Item 93a and 93b (Furnishing Outlet Box and Clock Receptacle and Installing Outlet Box and Clock Receptacle), the number for payment under each item will be the number of such outlets furnished or installed as the case may be, required by the Contract Drawings or ordered by the Engineer.

In the case of Items 95a and 95b (Furnishing Switch Outlet Box and Single Pole Switch and Installing such Box and Switch), the number for payment under each item will be the number of such boxes and switches furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer.

In the case of Items 96a and 96b (Furnishing Telephone Outlet Box and Installing Telephone Outlet Box), the number for payment in each case will be the number of such boxes furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer.

In the case of Items 97a and 97b through 99a and 99b (Furnishing various sized conduit and installing various sized conduit), the length for payment under each item will be the number of linear feet of such various sized conduit furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer, consisting in each case only the length of material actually in place in the permanent construction.

In the case of Items 100a and 100b and 101a and 101b (Furnishing various sized wire and installing various sized wire), the length for payment under each item will be the number of linear feet of such various sized wire furnished or installed, as the case may be, required by the Contract Drawings or ordered by the Engineer, consisting in each case only of the length of material actually in place in the permanent construction.

5. REDUCTION OF PRICES.

If any Unclassified Materials or Unclassified Work required by the Contract Drawings and Specifications in their present form shall be countermanded or reduced, the Engineer shall have full authority on behalf of both parties to make such reduction in the lump sum for Unclassified Materials or lump sum for Unclassified Work as he may in his sole discretion deem equitable and reasonable, and in making such reduction, no allowance to the Contractor shall be made for anticipated profits.

The Chief Engineer shall have authority to agree in writing with the Contractor for reductions in the above lump sums in lieu of those for which provision is heretofore made in this numbered clause.

6. COMPENSATION FOR EXTRAS.

If Extra Materials be furnished or Extra Work be performed, the Contractor's compensation shall be increased by the following amounts, and such amounts only:

(a) In the case of Extra Materials procured or Extra Work performed by the Contractor himself, an amount equal to the actual net cost in money of such Materials and of the labor required for such Extra Work, plus fifteen per cent (15%) of such net cost, plus such rental for equipment (other than small tools) required for such Extra Work as the Engineer deems reasonable, and plus the net increase in premiums for liability insurance charged on the basis of the compensation for such Extra Materials and Extra Work.

(b) In the case of Extra Materials procured or Extra Work performed by a subcontractor, an amount equal to the actual net cost in money of such Materials and of the labor required for such Extra Work, plus fifteen per cent (15%) of such net cost, plus such rental for equipment (other than small tools) required for such Extra Work as the Engineer deems reasonable, plus five per cent (5%) of the sum of the foregoing cost, percentage of cost, and rental, and plus the net increase in premiums for liability insurance charged on the basis of the compensation for Extra Materials and such Extra Work.

As used in this numbered clause (and in this clause only):

"Materials" means temporary and consumable Materials as well as permanent materials; and "cost of Materials" means the price (including taxes actually paid by the Contractor as required by law upon the basis of such Materials), for which such Materials are sold for cash by the manufacturers or producers thereof, or by regular dealers therein, whether or not such Materials are purchased directly from the manufacturer, producer or dealer (or if the Contractor is the manufacturer or producer thereof, the reasonable cost to the Contractor of the manufacture and production), plus the reasonable cost of delivering such Materials to the construction site in the event that the price paid to the manufacturer, producer or dealer does not include delivery, and, in case of temporary Materials, less their salvage value, if any.

"Labor" means foremen, laborers and mechanics directly employed at the construction site, whether employed by the Contractor or by the subcontractors; and "cost of labor" means the proper proportion of wages actually paid to and received by such foremen, laborers, and mechanics, plus a proper proportion of (a) premiums actually paid by the employer for Workmen's Compensation Insurance upon the basis of such wages, (b) vacation allowances and union dues and assessments which the employer actually pays pursuant to contractual obligation upon the basis of such wages, and (c) taxes actually paid by the employer pursuant to law upon the basis of such wages.

In computing the Contractor's compensation insofar as it is based upon Extra Materials and Extra Work, no consideration shall be given to any items of cost or expense not expressly set forth above, it being expressly agreed that the costs and percentage additions hereinbefore provided cover items of cost and expense to the Contractor of any type whatsoever, including administration, overhead, superintendence, taxes (other than those enumerated above), profit to the Contractor and small tools.

Whenever any Extra Materials are furnished (whether by the Contractor directly or through a subcontractor), the Contractor shall, at the end of each day, submit to the Engineer a memorandum showing the amount and character of Extra Materials furnished, from whom they were purchased, and the amount to paid therefor.

Whenever any Extra Work is performed (whether by the Contractor directly or through a subcontractor), the Contractor shall, at the end of each day, submit to the Engineer (a) daily time slips showing the name and number of each workman employed on such Work, the number of hours which he is employed thereon, the character of his duties, and the wages to be paid to him, (b) a memorandum showing the rates and amounts of Workmen's Compensation Insurance premiums and state and federal taxes based on such wages, and vacation allowances and union dues and assessments which the employer actually pays pursuant to contractual obligation upon the basis of such wages, and (c) a memorandum of the equipment used in the performance of such Work, together with the rental claimed therefor.

The memoranda and time slips required under the immediately preceding two paragraphs are for the purpose of enabling the Engineer to determine the amounts to be paid by the Authority under this numbered clause; and accordingly, they shall constitute a condition precedent to such payment and the failure of the Contractor to furnish them with respect to any particular Materials or Work shall constitute a conclusive and binding determination on his part that such Materials or Work are not Extra Materials or Extra Work, and shall constitute a waiver by the Contractor of claims for payment upon that basis.

The Authority shall have access during normal business hours to all records and documents of the Contractor relating to any Extra Materials and Extra Work, and the Contractor shall obtain for the Authority similar access to the records and documents of subcontractors. Such access shall be given or obtained both before and after the rendition of either Certificate of Completion.

The Chief Engineer shall have authority to agree in writing with the Contractor on behalf of the Authority upon compensation for Extra Materials and Extra Work in lieu of the compensation for which provision is heretofore made in this numbered clause. Such compensation shall be stated separately for the Extra Materials and for the Extra Work.

7. MONTHLY ADVANCES.

On or about the fifteenth day of each month, the Engineer shall (upon receipt from the Contractor of such information as he may require) render the following two certificates to the Authority based upon the Engineer's estimates:

(a) A certificate showing (i) the approximate amount of Unclassified Materials (other than Extra Materials) delivered by the Contractor up to that time and a sum bearing the same proportion to the Lump Sum for Unclassified Materials as the Unclassified Materials delivered (other than Extra Materials) bears to the total Unclassified Materials required under this Contract (other than Extra Materials; (ii) The approximate amount of Classified Materials delivered by the Contractor up to that time and the approximate sum attributable to such Materials on the basis of the Schedule of Unit Prices for Classified Materials; (iii) the approximate amount of Extra Materials delivered by the Contractor up to that time and the approximate sum attributable to such Materials under the clause hereof entitled "Compensation for Extras".

(b) A certificate showing (i) the approximate amount of Unclassified Work performed by the Contractor up to that time and a sum bearing the same proportion to the Lump Sum for Unclassified Work as the Unclassified Work performed (other than Extra Work) bears to the total Unclassified Work required under this Contract (other than Extra Work); (ii) The approximate amount of Classified Work performed by the Contractor up to that time and the approximate sum attributable to such Classified Work on the basis of the Schedule of Unit Prices for Classified Work; (iii) the approximate amount of Extra Work performed by the Contractor up to that time and the approximate sum attributable to such Extra Work under the clause hereof entitled "Compensation for Extras", together with the sums applicable under the clause hereof entitled "Idle Salaried Men and Equipment".

As an aid to the Contractor and to facilitate his performance, the Authority shall, each month, within fifteen days after the receipt of such certificates, advance to the Contractor by separate checks the sums certified in each such certificate, minus, however, either (1) ten per cent of each sum certified pursuant to subparagraphs (a) (i) and (a) (ii) and subparagraphs (b) (i) and (b) (ii) of this numbered clause or (2) a total of five per cent of the Estimated Total for the Sale plus the Estimated Total for the Work, whichever is less, and minus all prior advances and payments to the Contractor or for his account.

8. FINAL PAYMENTS.

After the rendition of the Certificate of Completion of Sale or the Certificate of Completion of Work and upon receipt from the Contractor of such information as may be required, the Engineer shall certify in writing to the Authority and to the Contractor the total compensation earned by the Contractor in connection with the Sale or the Work, as the case may be.

If so required, the Contractor shall thereupon furnish to the Authority a detailed sworn statement of all claims, just and unjust, of subcontractors, materialmen and other third persons then outstanding or which he has reason to believe may thereafter be made on account of the Sale or Work, as the case may be.

Within thirty days after issuance of such certificate of total compensation earned (or within thirty days after receipt of the documents provided for in the immediately preceding paragraph, if required), the Authority shall pay to the Contractor by check the amount stated in said certificate, less all other payments and advances whatsoever to or for the account of the Contractor. All prior estimates and payments shall be subject to correction in this payment, which is throughout this Contract called the Final Payment for the Sale.

The acceptance by the Contractor, or by anyone claiming by or through him, of a Final Payment shall be and shall operate as a release to the Authority of all claims and of all liability to the Contractor for all things done or furnished in connection with the Sale or Work, as the case may be, and for every act and neglect

of the Authority and others relating to or arising out of such Sale or Work, including claims arising out of breach of contract, excepting only his claims for amounts withheld by the Authority as hereinafter provided and for interest upon such Final Payment, if this payment is improperly delayed. No payment, however, final or otherwise, shall operate to release the Contractor or his sureties from any obligations in connection with this Contract or the Performance Bond.

The Contractor's agreement as provided in the immediately preceding paragraph above shall be deemed to be based upon the consideration forming part of this Contract as a whole and not to be gratuitous; but in any event even if deemed gratuitous and without consideration, such agreement as provided in the immediately preceding paragraph above shall nevertheless be effective. Such release shall include all claims, whether or not they have yet arisen or have yet been asserted and whether or not in litigation and even though still under consideration by the Authority or the Engineer. Such release shall be effective notwithstanding any purported reservation of right by the Contractor to preserve such claim. The acceptance of any check designated as "Final Payment for Sale" or "Final Payment for Work" or bearing any similar designation shall be conclusively presumed to demonstrate the intent of the Contractor that such payment was intended to be accepted as final, with the consequences provided in this numbered clause, notwithstanding any purported reservation of rights.

9. WITHHOLDING OF PAYMENTS.

If (1) the Contractor fails to perform any of his obligations under this Contract or any other agreement between the Authority and the Contractor (including his obligation to the Authority to pay any claim lawfully made against him by any materialman, subcontractor or workman or other third person which arises out of or in connection with the performance of this Contract or any other agreement with the Authority) or (2) any claim (just or unjust) which arises out of or in connection with this Contract or any other agreement between the Authority and the Contractor is made against the Authority or (3) any subcontractor under this Contract or any other agreement between the Authority and the Contractor fails to pay any claim lawfully made against him by any materialman, subcontractor, workman or other third person which arises out of or in connection with this Contract or any other agreement between the Authority and the Contractor or if in the opinion of the Chief Engineer any of the aforesaid contingencies is likely to arise, then the Authority shall have the right, in its discretion, to withhold out of any payment (final or otherwise and even though such payment has already been certified as due) such sums as the Chief Engineer may deem ample to protect it against delay or loss or to assure the payment of just claims of third persons, and to apply such sums in such manner as the Chief Engineer may deem proper to secure such protection or satisfy such claims. All sums so applied shall be deducted from the Contractor's compensation. Omission by the Authority to withhold out of any payment, final or otherwise, a sum for any of the above contingencies, even though such contingency has occurred at the time of such payment, shall not be deemed to indicate that the Authority does not intend to exercise its rights with respect to such contingency. Neither the above provisions for rights of the Authority to withhold and apply monies nor any exercise or attempted exercise of, or omission to exercise, such rights by the Authority shall create any obligation of any kind to such materialmen, subcontractors, workmen or other third persons.

Until actual payment to the Contractor, his right to any amount to be paid under this Contract (even though such amount has already been certified as due) shall be subordinate to the rights of the Authority under this numbered clause.

If, however, the payment of any amount due the Contractor shall be improperly delayed by the fault of the Authority, the Authority shall pay the Contractor interest thereon at the rate of four per cent (4%) per annum for the period of delay, it being agreed that such interest shall be in lieu of and in liquidation of any damages to the Contractor because of such delay.

CHAPTER III

PROVISIONS RELATING TO TIME

10. TIME FOR COMPLETION AND DAMAGES FOR DELAY.

(1) The Contractor shall complete the performance of the entire Sale and Work on or before June 1, 1962.

(2) Because of the necessity to put into operation four lanes of traffic on George Washington Bridge Expressway as set forth in the clause of Specifications entitled "Conditions and Precautions" under the subheading "Area Available on Expressway", the Contractor shall complete by September 1, 1961 the construction of the underside of the Bus Station over such four lanes so that the Contractor's work will present no interference or danger to expressway traffic on such four lanes. If the opening of such four lanes to Expressway traffic is delayed until a later date than September 1, 1961 and if such delay is not due in whole or in part to interferences or danger from the Contractor's operation or to other fault of the Contractor, then the time for completion under this subparagraph (2) shall be extended to such later date.

The Contractor shall not commence the performance of the Contract until the latest of the following dates:

(a) If a performance bond is required, the date of receipt by him of notice from the Authority that the performance bond furnished by him is satisfactory;

(b) The date of receipt by him of notice from the Authority that the insurance procured by him in accordance with the clause hereof entitled "Liability Insurance Procured by Contractor" is satisfactory, as evidenced by the clause;

(c) If a certificate of qualification to do business as a corporation is required in accordance with (a) (3) of the clause of the Information for Bidders entitled "Papers Accompanying Proposals", the date of receipt by the Authority of a copy of such certificiate.

The time for completion shall not be extended on account of the time required to furnish the documents referred to in subparagraphs (a), (b), and (c) above, but the Authority shall give notice to the Contractor within five days after receipt of the performance bond or certificate of insurance as to whether or not such bond or insurance is satisfactory.

The Contractor's obligations for the performance and completion of the Sale and Work within the time provided for in this Contract are of the essence of this Contract. The Contractor guarantees that he can and will complete such performance (including Extra Materials and Extra Work), within the time above provided, subject, however, but only subject to the clause hereof entitled "Extensions of Time". Inasmuch as the damage and loss to the Authority which will result from the failure of the Contractor to complete such performance within the time above provided will include items of loss whose accurate amount will be incapable or very difficult of accurate estimation, the damages to the Authority for delay in the case of such failure on the part of the Contractor shall be liquidated in the sum of the following amounts: (i) One Thousand Dollars ($1,000.00) for each day by which the Contractor shall fail to complete performance of the Contract in accordance with subparagraph 1 above plus (ii) Two Thousand Dollars ($2,000.00) for each day by which the Contractor shall fail to complete performance of the Contract in accordance with subparagraph 2 above.

11. EXTENSIONS OF TIME.

The time above provided for completion of any part of the Sale or Work shall be extended (subject however to the provisions of this numbered clause) only if in the opinion of the Engineer the Contractor is necessarily delayed in completing such part by such time solely and directly by a cause which meets all the following conditions:

1. Such cause is beyond the Contractor's control and arises without his fault;

2. Such cause comes into existence after the opening of Proposals on this Contract and neither was nor could have been anticipated by investigation before such opening.

Variations in temperature and precipitation shall be conclusively deemed to have been anticipated before opening of Proposals on this Contract unless the monthly average temperature or monthly total precipitation varies by more than 10% from the monthly normal temperature or the monthly normal total precipitation, all as recorded by the U.S. Weather Bureau for the Battery in its publications, including that entitled "Local Climatological Data with Comparative Data - New York, New York".

In any event, even though a cause of delay meets all the above conditions, an extension shall be granted only to the extent that (i) the performance of the Contract is actually and necessarily delayed and (ii) the effect of such cause cannot be anticipated and avoided or mitigated by the exercise of all reasonable precautions, efforts and measures (including planning, scheduling and rescheduling), whether before or after the occurrence of the cause of delay, and an extension shall not be granted for a cause of delay which would not have affected the performance of the Contract were it not for the fault of the Contractor or for other delay for which the Contractor is not entitled to an extension of time.

Any reference herein to the Contractor shall be deemed to include subcontractors and materialmen, whether or not in privity of contract with the Contractor, and employees and others performing any part of the Contract, and all the foregoing shall be considered as agents of the Contractor.

The period of any extension of time shall be that necessary to make up the time actually lost, subject to the provisions of this numbered clause , and shall be only for the portion of the Contract actually delayed. The Engineer may defer all or part of his decision on an extension and any extension may be rescinded or shortened if it subsequently is found that the delays can be overcome or reduced by the exercise of reasonable precautions, efforts and measures.

As a condition precedent to an extension of time, the Contractor shall give written notice to the Engineer within 48 hours after the time when he knows or should know of any cause which might under any circumstances result in delay for which he claims or may claim an extension of time (including those causes which the Authority is responsible for or has knowledge of), specifically stating that an extension is or may be claimed, identifying such cause and describing, as fully as practicable at the time, the nature and expected duration of the delay and its effect on the various portions of the Contract. Since the possible necessity for an extension of time may materially alter the scheduling, plans and other actions of the Authority, and since, with sufficient opportunity, the Authority might if it so elects attempt to mitigate the effect of a delay for which an extension of time might be claimed, and since merely oral notice may cause disputes as to the existence or substance thereof, the giving of written notice as above required shall be of the essence of the Contractor's obligations and failure of the Contractor to give written notice as above required shall be a conclusive waiver of an extension of time.

It shall in all cases be presumed that no extension, or further extension, of time is due unless the Contractor shall affirmatively demonstrate to the satisfaction of the Engineer that it is. To this end the Contractor shall maintain adequate records supporting any claim for an extension of time, and in the absence of such records, the foregoing presumption shall be deemed conclusive.

12. IDLE SALARIED MEN AND EQUIPMENT.

If any salaried men or equipment of the Contractor or any subcontractor are necessarily kept continuously idle and wholly unoccupied at the construction site for a full day on each of five or more full days on which they would be engaged in the performance of the Work but for causes due solely to acts or omissions of the Authority or the Engineer occurring after the opening of Proposals on this Contract, and if such idleness is not due to any cause within the control of the Contractor or of any of his subcontractors or materialmen or his or their employees, then the Authority shall pay to the Contractor and the Contractor shall accept (in addition to any sums otherwise payable under this Contract, and in full satisfaction of and in liquidation of all claims for damages because of such act or omission of the Authority or the Engineer) an amount equal to that which the employer actually pays such salaired employees during such full days of idleness, plus a proper proportion of the premiums actually paid for Workmen's Compensation Insurance upon the basis of such salaries, a proper proportion of vacation allowances and union dues and assessments actually paid by the employer pursuant to contractual obligations on the basis of such salaries, and a proper proportion of the taxes actually paid by the employer pursuant to law upon the basis of such salaries and plus such rental for such idle equipment as the Engineer deems reasonable.

The Contractor shall give written notice to the Engineer before the end of the third of the above mentioned 5 or more full days (whether or not the Authority is aware of the existence of any circumstances which might constitute a basis for payment under this numbered clause), specifically stating that salaried men or equipment have been kept idle under circumstances which might result in payment under this numbered clause; and he shall furnish with such notice, for all the days that have occurred, and shall in addition furnish at the end of each additional day of the above mentioned 5 or more full days, (a) a memorandum showing the name, payroll title, salary rate and employer of each of the salaried men claimed to have been kept idle at the construction site, and the rates and amounts of Workmen's Compensation Insurance premiums and taxes based upon their salaries and the holiday and vacation allowances and union dues and assessments which the employer must actually pay pursuant to contractual obligations based on their salaries, and (b) a memorandum of the equipment claimed to be kept idle, together with the amount claimed as rental therefor. Said notice and memoranda are for the purpose of enabling the Engineer to verify the Contractor's claim at the time, and of enabling him to take such steps as may be necessary to remedy the conditions upon which the claim is based. The furnishing of such notice and memoranda shall be a condition precedent to payment under this numbered clause, so that the day on which notice is given shall be counted as not later than the third of the above mentioned 5 or more full days and no subsequent day shall be counted for which the above memoranda are not furnished at the end of such day.

13. DELAYS TO CONTRACTOR.

As between the Contractor and the Authority, the Contractor assumes the risk of all suspensions of or delays in performance of the Contract, regardless of the length thereof, arising from all causes whatsoever, whether or not relating to this Contract, including without limitation wrongful acts or omissions of the Authority, except only to the extent, if any, that compensation or an extension of time may be due as expressly provided for elsewhere in this Contract for such suspension or delays, and, subject only to such exception, the Contractor shall bear the burden of all costs, expenses and liabilities which he may incur in connection with such suspensions or delays, and all such suspensions, delays, costs, expenses and liabilities of any nature whatsoever, whether or not provided for in this Contract, shall conclusively be deemed to have been within the contemplation of the parties.

Notwithstanding any provisions of this Contract, whether relating to time of performance or otherwise, the Authority makes no representation or guaranty as to when the construction site or any part thereof will be available for the performance of the Contract or as to whether conditions at the construction site will be such as to permit the Contract to be performed thereon without interruption or by any particular sequence or method or as to whether the performance of the Contract can be completed by the time required under this Contract or by any other time.

Wherever in connection with this Contract it is required, expressly or otherwise, that the Authority shall perform any act relating to the Contract, including making available or furnishing any real property, materials, or other things, no guaranty is made by the Authority as to the time of such performance and the delay of the Authority in fulfilling such requirement shall not result in liability of any kind on the part of the Authority except only to the extent, if any, that an extension of time or compensation may be due as expressly provided for in the clauses hereof entitled "Extensions of Time" and "Idle Salaried Men and Equipment".

14. CANCELLATION FOR DELAY.

If the performance of the Contract or any portion of it shall, in the opinion of the Chief Engineer be materially delayed by any cause which affects the Contractor's ability to perform the Contract without affecting to the same degree the Authority's own ability to perform it, either directly or through others, the Authority shall have the right at any time during the existence of such delay to cancel this Contract as to any portion not yet performed, without prejudice to the rights, liabilities and obligations of the parties upon and under this Contract and the Performance Bond arising out of portions already performed, provided, however, that such right of cancellation shall not exist if the delay be due to any wrongful act or omission of the Authority.

CHAPTER IV

CONDUCT OF CONTRACT

15. AUTHORITY OF CHIEF ENGINEER

Inasmuch as the public interest requires that the project to which this Contract relates shall be performed in the manner which the Authority, acting through the Chief Engineer , deems best, the Chief Engineer shall have absolute authority to determine what is or is not necessary or proper for or incidental to the portion thereof specified in the clause hereof entitled "General Agreement"; and the Contract Drawings and Specifications shall be deemed merely his present determination on this point. In the exercise of this authority, he shall have power to alter the Contract Drawings and Specifications; to require the furnishing of materials and the performance of Work not required by them in their present form, even though of a totally different character from that now required; and to vary, increase and diminish the character, quantity and quality of, or to countermand, any Materials or Work now or hereafter required. Such variation, increase, diminution or countermanding need not be based on necessity but may be based on convenience.

If at any time it shall be impracticable in the judgment of the Chief Engineer to proceed with or continue the performance of the Contract or any part thereof, whether or not for reasons for which either of the parties is responsible, he shall have authority to suspend performance until such time as he may deem it practicable or desirable to proceed. Moreover, if at any time it shall be undesirable in the judgment of the Chief Engineer to proceed with or continue the performance of the Contract or any part thereof, for reasons beyond the control of the Authority or the Contractor, he shall have authority to cancel this Contract as to any portion not yet performed but without prejudice to the rights and obligations of the parties arising out of portions already performed.

16. AUTHORITY AND DUTIES OF ENGINEER.

In the performance of the Contract, the Contractor shall conform to all orders, directions and requirements of the Engineer and shall perform the Contract to the satisfaction of the Engineer at such times and places, by such methods and in such manner and sequence as he may require; and the Contract shall at all stages be subject to his inspection. The Engineer shall determine the amount, quality, acceptability and fitness of all parts of the Materials and Work and shall interpret the Contract Drawings, Specifications and any orders for Extra Materials and Extra Work. The Contractor shall employ no equipment, materials, methods or men to which the Engineer objects, and shall remove no materials, equipment or other facilities from the construction site without permission. Upon request, the Engineer shall confirm in writing any oral order, direction, requirements or determination.

The decision of the Engineer shall be conclusive, final and binding on the parties as to all questions arising out of, under, or in connection with this Contract (including questions of breach of Contract), excepting only questions of law.

The enumeration herein or in the Specifications of particular instances in which the opinion, judgment, discretion or determination of the Engineer shall control or in which the Contract shall be performed to his satisfaction or subject to his inspection, shall not imply that only the matters of a nature similar to those enumerated shall be so governed and performed, but without exception the entire Contract shall be so governed and so performed.

17. MINIMUM WAGES.

The Contractor shall pay (and shall cause all subcontractors to pay) to his or their workmen, laborers and mechanics (who are employed by him or them to work on an hourly or daily basis at any trade or occupation at or about the construction site) at least the prevailing rate of wage for others engaged in the same trade or occupation in the locality in which the Work is being performed; and if any of such workmen, laborers or mechanics are employed for more than eight hours in any calendar day, they shall be paid at an increased rate for overtime.

The provisions of this numbered clause are inserted in this Contract for the benefit of such workmen, laborers and mechanics as well as for the benefit of the Authority; and if the Contractor or any subcontractor shall pay any such workman, laborer or mechanic less than the rates of wages above described, such workman, laborer or mechanic shall have a direct right of action against the Contractor or such subcontractor for the difference between the wages actually paid and those to which he is entitled under this clause. If such workman, laborer or mechanic is employed by any subcontractor whose subcontract does not contain a provision substantially similar to the provisions of this clause (requiring the payment of at least the above minimum wages, and providing for a cause of action in the event of the subcontractor's failure to pay such wages), such workman, laborer and mechanic shall have a direct right of action against the Contractor. The Authority shall not be a necessary party to any action brought by any workman, laborer or mechanic to obtain a money judgment against the Contractor or any subcontractor pursuant to this numbered clause.

Nothing herein contained shall be construed to prevent the Contractor or any subcontractor from paying higher rates of wages than the minimum rates hereinbefore prescribed; and nothing herein contained shall be construed to constitute a representation or guarantee that the Contractor or any subcontractor can obtain workmen, laborers and mechanics for the minimum rates of wages hereinbefore prescribed.

18. EXTRA ORDERS.

No Extra Materials shall be furnished or Extra Work performed except pursuant to written orders of the Chief Engineer expressly and unmistakably indicating his intention to treat the Materials or Work described therein as Extra; and, exclusive of Extra Materials or Extra Work expressly authorized by or pursuant to a resulution of the Commissioners of the Authority or its Committee on Construction, the Chief Engineer shall have authority to order any item of Extra Materials or Extra Work, if the cost thereof to the Authority together with the cost of all other Extra Materials and Extra Work previously ordered and not expressly authorized as aforesaid will not be in the aggregate in excess of One Hundred Thousand Dollars ($100,000.00)

In the absence of such an order signed by the Chief Engineer if the Engineer shall direct, order or require any Materials or Work, whether orally or in writing, which the Contractor deems to be Extra, the Contractor shall nevertheless comply therewith, but shall within twenty-four hours give written notice thereof to the Chief Engineer and the Engineer, stating why he deems it to be Extra, and shall moreover furnish to the Engineer time slips and memoranda as required by the clause hereof entitled "Compensation for Extras". Said notice, time slips and memoranda are for the purpose of affording to the Chief Engineer an opportunity to verify the Contractor's claim at the time and (if he desires so to do) to cancel promptly such order, direction or requirement of the Engineer, of affording to the Engineer an opportunity of keeping an accurate record of the materials, labor and other items involved, and generally of affording to the Authority an opportunity to take such action as it may deem desirable in light of the Contractor's claims. Accordingly, the failure of the Contractor to serve such notice or to furnish such time slips and memoranda shall be deemed to be a conclusive and binding determination on his part that the direction, order or requirement of the Engineer does not involve the furnishing or performance of Extra Materials or Extra Work, and shall be deemed to be a waiver by the Contractor of all claims for additional compensation or damages by reason thereof, such written notice, time slips and memoranda being a condition precedent to such claims.

The provisions of this Contract relating generally to the Sale and the Work shall apply without exception to any Extra Materials or Extra Work required, except to the extent that the written order in connection with any particular item of Extra Materials or Extra Work may expressly provide that any particular provisions of the Specifications or Contract Drawings do not apply.

19. TITLE TO MATERIALS.

All Materials to be sold hereunder shall be and become the property of the Authority upon delivery at the construction site or upon being especially adapted for use in or as a part of the permanent construction, whichever may first occur, subject however to the Contractor's assumption of risk under the clause hereof entitled "Risks Assumed by Contractor", subparagraph (a).

The Contractor shall promptly furnish to the Authority such bills of sale and other instruments as may be required by it, properly executed, acknowledged and delivered, assuring to it title to such Materials, free of encumbrances and shall mark or otherwise identify all such materials as the property of the Authority.

20. ASSIGNMENTS AND SUBCONTRACTS.

Any assignment or other transfer by the Contractor of this Contract or any part hereof or any monies due or to become due hereunder without the express consent in writing of the Authority shall be void and of no effect as to the Authority,

provided, however, that the Contractor may subcontract portions of the Sale and the Work to such persons as the Engineer may, from time to time, expressly approve in writing. All further subcontracting by any subcontractor shall also be subject to such approval of the Engineer. Approval of a subcontractor may be conditioned on (among other things) the furnishing, without expense to the Authority, of a surety bond guaranteeing payment by the subcontractor of claims of materialmen, subcontractors, workmen and other third persons arising out of the subcontractor's performance of any part of the Sale or Work.

No consent to any assignment or other transfer, and no approval of any subcontractor, shall under any circumstances operate to relieve the Contractor of any of his obligations; no subcontract, no approval of any subcontractor and no act or omission of the Authority or the Engineer shall create any rights in favor of such subcontractor and against the Authority; and as between the Authority and the Contractor, all assignees, subcontractors, and other transferees shall for all purposes be deemed to be agents of the Contractor. Moreover, all subcontracts and all approvals of subcontractors shall be and, regardless of their form, shall be deemed to be conditioned upon performance by the subcontractor in accordance with this Contract; and if any subcontractor shall fail to perform his Work to the satisfaction of the Engineer, the Engineer shall have the absolute right to rescind his approval forthwith and to require the performance of such Work by the Contractor personally or through other approved subcontractors.

Nothing herein contained shall be construed to hinder, prevent or affect any assignment of any monies due or to become due hereunder made for the benefit of the Contractor's creditors pursuant to law.

21. CLAIMS OF THIRD PERSONS.

The Contractor undertakes to pay all claims lawfully made against him by subcontractors, materialmen and workmen, and all claims lawfully made against him by other third persons arising out of or in connection with or because of the performance of this Contract and to cause all subcontractors to pay all such claims lawfully made against them.

22. CERTIFICATES OF PARTIAL COMPLETION.

If at any time prior to the rendition of the Certificate of Completion of Work, any portion of the permanent construction has been satisfactorily completed, and if in the judgment of the Engineer such portion of the permanent construction is not necessary for the operations of the Contractor but will be immediately useful to and is needed by the Authority for other purposes, the Engineer may render to the Authority and to the Contractor a certificate in writing to that effect (herein called a Certificate of Partial

Completion), and thereupon or at any time thereafter the Authority may take over and use the portion of the permanent construction described in such Certificate and exclude the Contractor therefrom.

The rendition of a Certificate of Partial Completion shall not be construed to constitute an extension of the Contractor's time to complete the portion of the permanent construction to which it relates in the event that he has failed to complete the same in accordance with the terms of this Contract. Moreover, the acceptance of a Certificate of Partial Completion by the Authority shall not operate to release the Contractor or his sureties from any obligations under or upon this Contract or the Performance Bond.

23. CERTIFICATE OF COMPLETION OF SALE.

After the satisfactory delivery of all Materials whatsoever required to be sold and the making of such tests and inspections as may be necessary or desirable, the Engineer shall render to the Authority and to the Contractor a certificate in writing (herein called the Certificate of Completion of Sale) certifying that in his opinion all Materials under this Contract, including Extra Materials, have been delivered in accordance with the Contract Drawings and Specifications and the requirements of the Engineer, and certifying the date as of which such delivery was so completed.

The rendition of the Certificate of Completion of Sale shall not be construed to constitute an extension of the Contractor's time for performance in the event that he has failed to complete the Sale in accordance with the terms of this Contract. Moreover, the acceptance of the Certificate of Completion of Sale by the Authority shall not operate to release the Contractor or his sureties from any obligations under or upon this Contract or the Performance Bond.

24. CERTIFICATE OF COMPLETION OF WORK.

After the satisfactory completion of Work whatsoever required to be performed and the making of such tests and inspections as may be necessary or desirable, the Engineer shall render to the Authority and to the Contractor a certificate in writing (herein called the Certificate of Completion of Work) certifying that in his opinion all Work under this Contract, including Extra Work, has been completed in accordance with the Contract Drawings and Specifications and the requirements of the Engineer, and certifying the date as of which it was so completed.

The rendition of the Certificate of Completion of Work shall not be construed to constitute an extension of the Contractor's time for performance in the event that he has failed to complete the Work in accordance with the terms of this Contract. Moreover, the acceptance of the Certificate of Completion of Work by the Authority shall not operate to release the Contractor or his sureties from any obligations under or upon this Contract or the Performance Bond.

CHAPTER V

WARRANTIES MADE AND LIABILITIES ASSUMED BY THE CONTRACTOR

25. CONTRACTOR'S WARRANTIES.

The Contractor represents and warrants:

(a) That he is financially solvent, that he is experienced in and competent to perform the type of services contemplated by this Contract, that the facts stated or shown in the papers accompanying his Proposal are true, and, if the Contractor be a corporation, that it is authorized to perform this Contract and is qualified to do business in the state or states in which the construction site is located;

(b) That he is familiar with all general and special federal, state, municipal and local laws, ordinances and regulations, if any, which may in any way affect this Contract or its performance or those employed therein;

(c) That he has carefully examined the Contract Drawings and the Specifications and inspected the construction site and that from his own investigations he has satisfied himself as to the nature of the Materials, Work equipment and other facilities needed for the performance of this Contract, the general and local conditions, and all other matters which may in any way affect this Contract or its performance, and accordingly that he can and will perform the Contract in accordance with its requirements;

(d) That the conditions at the construction site are such that the Contract can be performed in strict accordance with the requirements thereof, and accordingly he accepts all conditions as they may eventually be found to exist and undertakes that all Materials and Work required because of any unforeseen condition (physical or otherwise) shall be wholly at his own cost and expense, anything in this Contract to the contrary notwithstanding; and

(e) That no Commissioner, officer, agent or employee of the Authority is personally interested directly or indirectly in this Contract or the compensation to be paid hereunder; and that no representation, statement or promise, oral or in writing of the Authority, its Commissioners, officers, agents or employees, has induced him to enter into this Contract excepting only those contained in this Form of Contract and the papers expressly made a part hereof.

26. RISKS ASSUMED BY THE CONTRACTOR.

The Contractor assumes the following distinct and several risks whether they arise from acts or omissions (whether negligent or not) of the Contractor, of the Authority, or of third persons, or from any other cause, and whether such risks are within or beyond the control of the Contractor, excepting only risks which arise solely from affirmative acts done by the Authority subsequent to the opening of Proposals on this Contract with actual and wilful intent to cause the loss, damage and injuries described in subparagraphs (a) through (c) below:

(a) The risk of loss or damage to the permanent construction prior to the rendition of the Certificate of Completion of Work, including Materials sold hereunder even though a Certificate of Completion of Sale has been issued, (other than loss or damage to the portions of the permanent construction with respect to which Certificates of Partial Completion have been issued), and the Contractor shall forthwith repair, replace and make good any such loss or damage to the permanent construction without cost to the Authority;

(b) The risk of claims, just or unjust, by third persons against the Contractor or the Authority on account of injuries (including wrongful death), loss or damage of any kind whatsoever arising or alleged to arise out of or in connection with the performance of the Contract (whether or not actually caused by or resulting from the performance of the Contract) or out of or in connection with the Contractor's operations or presence at or in the vicinity of the construction site or Authority premises, whether such claims are made and whether such injuries, damage and loss are sustained at any time both before and after the rendition of the Certificate of Completion of Sale or the Certificate of Completion of Work;

(c) The risk of loss or damage to any property of the Contractor, and of claims made against the Contractor or the Authority for loss or damage to any property of subcontractors, materialmen, workmen and others performing the Contract, occurring at any time prior to completion of removal of such property from the construction site or Authority premises or the vicinity thereof.

The Contractor shall indemnify the Authority against all claims described in subparagraphs (b) and (c) above and for all expense incurred by it in the defense, settlement or satisfaction thereof, including expenses of attorneys. If so directed, the Contractor shall at his own expense defend against such claims, in which event he shall not without obtaining express advance permission from the General Counsel of the Authority raise any defense involving in any way jurisdiction of the tribunal, immunity of the Authority, governmental nature of the Authority or the provisions of any statutes respecting suits against the Authority.

The provisions of this numbered clause shall also be for the benefit of the Commissioners, officers, agents and employees of the Authority, so that they shall have all the rights which they would have under this numbered clause if they were named at each place above at which the Authority is named, including a direct right of action against the Contractor to enforce the foregoing indemnity, except, however, that the Authority may at any time in its sole discretion and without liability on its part cancel the benefit conferred on them by this numbered clause, whether or not the occasion for invoking such benefit has already arisen at the time of such cancellation.

Neither the issuance of any Certificate of Completion nor the making of any Final Payment shall release the Contractor from his obligations under this numbered clause. The enumeration elsewhere in this Contract of particular risks assumed by the Contractor or of particular claims for which he is responsible shall not be deemed to limit the effect of the provisions of this numbered clause or to imply that he assumes or is responsible for only risks or claims of the type enumerated; and neither the enumeration in this numbered clause nor the enumeration elsewhere in this Contract of particular risks assumed by the Contractor or of particular claims for which he is responsible shall be deemed to limit the risks which the Contractor would assume or the claims for which he would be responsible in the absence of such enumerations.

Inasmuch as the Authority will (either by an existing or a future agreement) indemnify the State of New York and the City of New York against claims of the types described in subparagraph (b) above made against said State and City, the Contractor's obligation under subparagraph (b) above shall include claims by said State and City against the Authority for such indemnification, including those arising from acts or omissions (whether negligent or not) of said State or City, and it shall not be a defense to the Contractor that the Authority is not legally obligated to indemnify said State or City against such claims. In addition, as between the Contractor and said State and City, the Contractor assumes the risk of said claims and shall indemnify said State and City against such claims and for all expense incurred by them in the defense, settlement or satisfaction of such claims, including expenses of attorneys. Said State and City shall have a direct right of action against the Contractor to enforce the foregoing indemnity, except, however, that the Authority may at any time in its sole discretion and without liability on its part cancel the benefit conferred on them by this numbered clause, whether or not the occasion for invoking such benefit has already arisen at the time of such cancellation.

27. NO THIRD PARTY RIGHTS.

Nothing contained in this Contract is intended for the benefit of third persons, except to the extent that the Contract specifically provides otherwise by use of the words "benefit" or "direct right of action".

23. LIABILITY INSURANCE PROCURED BY CONTRACTOR.

The Contractor shall take out and maintain at his own expense Comprehensive General Liability Insurance, with a contractual liability endorsement covering the obligations assumed by the Contractor under this Contract in not less than the following limits:

Bodily Injury Liability:	$ 500,000	each person
	2,000,000	each occurrence
	2,000,000	aggregate products
Property Damage Liability:	2,000,000	each accident
	2,000,000	aggregate operations
	2,000,000	aggregate protective
	2,000,000	aggregate products
	2,000,000	aggregate contractual

Any policy providing for the above required insurance shall not name the Authority as an insured but shall contain a provision that the policy may not be cancelled, terminated or modified without fifteen days' written advance notice thereof to the Insurance Manager of the Authority. Moreover, such policy shall not contain any provisions for exclusions from liability other than provisions for exclusions from liability forming part of the standard, basic, unamended and unendorsed Comprehensive General Liability Policy and in addition shall not contain any exclusion for bodily injury to or sickness, disease or death of any employee of the Contractor which would conflict with or in any way impair coverage under the contractual liability endorsement of the liability assumed by the Contractor under the clause hereof entitled "Risks Assumed by the Contractor".

The Contractor shall also take out and maintain Workmen's Compensation Insurance in accordance with the requirements of law.

Within ten days after the acceptance of his Proposal, the Contractor shall deliver to the Insurance Manager of the Authority a certificate from his insurer evidencing policies of the above insurance and containing a separate express statement of compliance with each of the requirements above set forth in this numbered clause. Upon request of the Insurance Manager, the Contractor shall furnish the Authority with a certified copy of each policy itself, including the provisions establishing premiums.

The requirements of this numbered clause are for the greater assurance of the Authority that the Contractor will be financially able to discharge his obligations under the clause hereof entitled "Risks Assumed by the Contractor" and shall not in any way be construed as a limitation on the nature or extent of such obligations.

If at any time the above liability insurance should be cancelled, terminated or modified so that insurance is not in effect as above required, then, if the Engineer shall so direct, the Contractor shall suspend performance of the Contract at the construction site. If the Contract is so suspended, no extension of time shall be due on account thereof. If the Contract is not suspended (whether or not because of omission of the Engineer to order suspension), then the Authority may, at its option, obtain insurance affording coverage equal to that above required, the cost of such insurance to be payable by the Contractor to the Authority.

29. FIRE INSURANCE PROCURED BY AUTHORITY.

The Authority will procure, without charge to the Contractor, a policy of fire and supplemental insurance which will name the Contractor. A copy of said policy is available for examination during regular business hours in the Office of the Insurance Manager of the Authority, Room 1003, 111 Eighth Avenue at 15th Street, New York City. The provisions of said policy are hereby made a part of this Contract as though herein set forth in full.

The provisions of this numbered clause are not intended to create any rights in the Contractor other than rights which may be available to him under said policy itself, whatever such rights may be. Moreover, the Authority makes no representation or guaranty, either by the provisions of this numbered clause or otherwise, as to the effect of or the coverage under said policy, and no employee or agent of the Authority is authorized to make any such representation or guaranty or to offer any interpretation of or information on said policy. The Contractor warrants and represents that he has examined and is familiar with said policy and that in submitting his Proposal he has relied solely on his own examination and interpretation of said policy and not on any representations or statements, oral or written, of the Authority, its Commissioners, officers, agents or employees. The Contractor shall be responsible for complying with all obligations of the insured under said policy (other than the payment of premiums) in all cases involving a loss of which he bears the risk under this Contract.

The procurement of said policy by the Authority shall not in any way be construed to relieve the Contractor from any of the obligations and risks imposed on him by this Contract or to be a limitation on the nature or extent of such obligations and risks.

All negotiations and adjustments with the insurer concerning payment for any loss the risk of which is borne by the Contractor under this Contract shall be the responsibility of and shall be conducted by the Contractor. The Contractor shall, however, inform the Engineer of the progress of all such negotiations and notify him sufficiently in advance of all meetings thereon so that he or his representatives may attend said negotiations if they so desire.

Payment under said policy for any loss of which the Contractor bears the risk under this Contract shall be made to the Contractor, and any other payments under this policy shall be made to the Authority, except however that the Authority may, at its option and with or without cause, elect to take any payment under said policy for a loss to any of its property or for a loss to any Materials title to which has passed or would pass to the Authority under this Contract, and if such option is exercised such payment shall be credited against the Contractor's obligation under this Contract with respect to said loss. In any event, any payment to the Contractor under said policy for a loss to any of the Authority's property or for a loss to any Materials title to which has passed or would pass to the Authority under this Contract shall be held in trust by the Contractor for the benefit of the Authority and shall be applied only to making good said loss or to payment to the Authority as provided below. Such payment to the Contractor shall be held as a separate fund and not mingled with any other funds of the Contractor or any other persons.

If any payment under said policy for any loss whatsoever exceeds the cost of making good said loss, such excess shall be the property of the Authority and if received by the Contractor shall be payable to the Authority upon demand. The Authority shall not, however, be obligated to pay the Contractor the deficiency, if any, between the payment under said policy for any loss whatsoever and the cost of making good said loss. As used herein, "the cost of making good said loss" or words of similar import shall mean the amount which would be paid by the Authority under the clause hereof entitled "Compensation for Extras" if making good said loss were Extra Materials or Extra Work hereunder.

The determination of the Engineer shall be final and binding on the parties as to what portion of any payment under said policy should belong to the Contractor, what portion should be allocated to making good any loss to the Authority's property or any loss to Materials title to which has passed or would pass to the Authority under this Contract and what portion should be deemed an excess payable to the Authority as above provided. The Contractor shall keep and furnish at the end of each day to the Engineer daily time slips and memoranda, in the same form and detail as provided for under the clause hereof entitled "Compensation For Extras", with respect to all repair or making good of any loss for which a payment is made under said policy. Such daily time slips and memoranda are for the purpose of enabling the Engineer to make the determinations above provided, and accordingly the failure of the Contractor to furnish them with respect to any repair or making good of any loss shall constitute a conclusive and binding determination on his part that the amount paid for such loss exceeds the cost of making good said loss and is payable to the Authority as above provided.

CHAPTER VI

RIGHTS AND REMEDIES

30. RIGHTS AND REMEDIES OF AUTHORITY.

The Authority shall have the following rights in the event the Chief Engineer shall deem the Contractor guilty of a breach of any term whatsoever of this Contract:

(a) The right to take over and complete the performance of the Contract or any part thereof as agent for and at the expense of the Contractor, either directly or through other contractors.

(b) The right to cancel this Contract as to any or all of the portion yet to be performed.

(c) The right to specific performance, an injunction or any other appropriate equitable remedy.

(d) The right to money damages.

For the purpose of this Contract, breach shall include the following, whether or not the time has yet arrived for performance of an obligation under this Contract: a statement by the Contractor to any representative of the Authority indicating that he cannot or will not perform any one or more of his obligations under this Contract; any act or omission of the Contractor or any other occurrence which makes it improbable at the time that he will be able to perform any one or more of his obligations under this Contract; any suspension of performance of, or absence of progress on, any part of the Contract by the Contractor which makes it improbable at the time that he will be able to perform any one or more of his obligations under this Contract.

The Authority shall also have the rights set forth above in the event the Contractor shall become insolvent or bankrupt or if his affairs are placed in the hands of a receiver, trustee or assignee for the benefit of creditors.

The enumeration in this numbered clause or elsewhere in this Contract of specific rights and remedies of the Authority shall not be deemed to limit any other rights or remedies which the Authority would have in the absence of such enumeration; and no exercise by the Authority of any right or remedy shall operate as a waiver of any other of its rights or remedies not inconsistent therewith or to estop it from exercising such other rights or remedies.

31. RIGHTS AND REMEDIES OF CONTRACTOR.

Inasmuch as the Contractor can be adequately compensated by money damages for any breach (including a material breach) of this Contract which may be committed by the Authority, the Contractor expressly agrees that no default, act or omission of the Authority shall entitle him to cancel or rescind it or (unless the Engineer shall so direct) to suspend or abandon performance.

32. PERFORMANCE OF CONTRACT AS AGENT FOR CONTRACTOR.

In the exercise of its right to take over and complete the Contract as agent for the Contractor, for which provision is made in the clause hereof entitled "Rights and Remedies of Authority", the Authority shall have the right to take possession of and use or permit the use of any and all plant, materials, equipment and other facilities provided by the Contractor for the purpose of the Contract and the Contractor shall not remove any of the same from the construction site without express permission. Unless expressly directed to discontinue the performance of the entire Contract, the Contractor shall continue to perform the remainder thereof in such manner as in no way will hinder or interfere with the portions taken over by the Authority.

In the certificate of total compensation earned for the Sale or for the Work, as the case may be, the Engineer shall separately state the portion of the Sale or the Work performed by the Authority as agent for the Contractor, shall credit to the Authority the cost thereof, and shall credit to the Contractor the compensation earned thereby; and the difference between them shall be payable by the Contractor to the Authority, or vice versa, as the case may be. If such difference is in its favor, the Authority may deduct it from any moneys due the Contractor, and if such moneys be insufficient, the balance thereof shall be payable to it on demand; if in the Contractor's favor, it shall constitute part of the Final Payment for the Sale or for the Work, as the case may be.

The exercise by the Authority of its right to take over the Contract shall not release the Contractor or his sureties from any of his or their obligations or liabilities under this Contract or the Performance Bond.

33. NO ESTOPPEL OR WAIVER.

The Authority shall not be precluded or estopped by any acceptance, certificate or payment, final or otherwise, issued or made under this Contract or otherwise issued or made by it, the Engineer, or any officer, agent or employee of the Authority, from showing at any time the true amount and character of Materials furnished or Work performed, or from showing that any such acceptance, certificate or payment is incorrect or was improperly issued or made; and the Authority shall not be precluded or estopped, notwithstanding any such acceptance, certificate or payment, from recovering from the Contractor any damages which it may sustain by reason of any failure on his part to comply strictly with this Contract, and any moneys which may be paid to him or for his account in excess of those to which he is lawfully entitled.

Neither the acceptance of the Contract or any part thereof, nor any payment therefor, nor any order or certificate issued under this Contract or otherwise issued by the Authority, the Engineer, or any officer, agent or employee of the Authority, nor any permission or direction to continue with the performance of the Contract, nor any performance by the Authority of any of the Contractor's duties or obligations, nor any aid lent to the Contractor by the Authority in his performance of such duties or obligations, nor any other thing done or omitted to be done by the Authority, its Commissioners, officers, agents or employees shall be deemed to be a waiver of any provision of this Contract or of any rights or remedies to which the Authority may be entitled because of any breach thereof, excepting only a resolution of its Commissioners, providing expressly for such waiver. No cancellation, rescission or annulment hereof, in whole or as to any part of the Contract, because of any breach hereof, shall be deemed a waiver of any money damages to which the Authority may be entitled because of such breach. Moreover, no waiver by the Authority of any breach of this Contract shall be deemed to be a waiver of any other or any subsequent breach.

CHAPTER VII

MISCELLANEOUS

34. PROVISIONS OF LAW DEEMED INSERTED.

Each and every provision of law and clause required by law to be inserted in this Contract shall be deemed to be inserted herein and the Contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party, the Contract shall forthwith be physically amended to make such insertion.

35. INVALID CLAUSES.

If any provision of this Contract shall be such as to destroy its mutuality or to render it invalid or illegal, then, if it shall not appear to have been so material that without it the Contract would not have been made by the parties, it shall not be deemed to form part thereof but the balance of the Contract shall remain in full force and effect.

36. NON-LIABILITY OF THE AUTHORITY REPRESENTATIVES.

Neither the Commissioners of the Authority nor any officer, agent, or employees thereof shall be charged personally by the Contractor with any liability or held liable to him under any term or provision of this Contract, or because of its execution or attempted execution, or because of any breach hereof.

37. SERVICE OF NOTICES ON THE CONTRACTOR.

The Contractor shall maintain an office within the limits of the Port of New York District. Whenever provision is made in this Contract for the giving of any notice to the Contractor, its deposit in any post office or post office box, enclosed in a postpaid wrapper addressed to the Contractor at such office, or its delivery to such office, shall be sufficient service thereof as of the date of such deposit or delivery. Until further notice to the Authority, the Contractor's office will be that stated in his Proposal. Notices may also be served personally upon the Contractor; or if the Contractor be a partnership, upon any partner; or if a corporation, upon any officer, director, or managing agent.

38. MODIFICATION OF CONTRACT.

No change in or modification, termination or discharge of this Contract, in any form whatsoever, shall be valid or enforceable unless it is in writing and signed by the party to be charged therewith or his duly authorized representative, provided, however, that cancellation in the manner expressly provided in the clauses hereof entitled "Performance Bond", "Cancellation for Delay", "Authority of Chief Engineer " and "Rights and Remedies of Authority", and only such cancellation, shall be effective as so provided.

The authority of any person to order Extra Materials and Extra Work or to alter the Contract Drawings and Specifications does not include the power to cancel, modify or waive any provision of the Form of Contract, and no officer or other representative of the Authority shall have the power so to do unless and until hereafter so authorized by or pursuant to a resolution of the Commissioners of the Authority or by or pursuant to a resolution of their appropriate Committee.

PERFORMANCE AND PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS that we, the undersigned (*)

as principal; and (/)

(*) Insert Contractor's name. If a corporation, give the state of incorporation, using also the phrase "a corporation organized under the laws of .....".

If a partnership, give full names of partners, using the phrase "co-partners doing business under the firm name of .....".

If an individual using a trade name, give individual name, using also the phrase "an individual doing business under the trade name of .....".

(/) Insert name of surety or sureties. If space is insufficient add rider.

as sureties, are hereby held and firmly bound unto The Port of New York Authority in the penal sum of

.....Dollars

and.....Cents ($.....), for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, representatives, executors, administrators, successors and assigns. Each surety, however, if there is more than one, is bound only to a penal sum in the amount set opposite its name below and the individual liability of each surety is strictly limited to such amount, for which it shall be jointly and severally liable (*)

Name of Surety	Amount (In words and figures)

Signed, this.....day of .....,1960.

(*) Insert names and limits of sureties, if more than one. No surety may assume individual liability in an amount exceeding $1,000,000.00. If space is insufficient, add rider. This space is not applicable and should be left blank if there is only one surety.

The condition of the above obligation is that

WHEREAS, the above named principal has entered into a Contract in writing with The Port of New York Authority, a copy of which is hereby made a part of this bond as though herein set forth in full and which is designated Contract GWB-200.013, "George Washington Bridge Bus Station - Superstructure", and

WHEREAS, The Port of New York Authority has required this bond for the faithful performance of all obligations imposed by said Contract and also for the payment of all lawful claims of materialmen, subcontractors and workmen arising out of the performance of said Contract;

NOW, if the said principal shall well and faithfully do and perform the things agreed by him to be done and performed according to the terms and true intent and meaning of said Contract and if all lawful claims of materialmen, subcontractors and workmen arising out of the performance of said Contract are paid, then this obligation shall be void, otherwise the same shall remain in full force and effect; it being expressly understood and agreed that, provided that the sureties shall comply with the provisions hereof, the aggregate liability of all sureties for any and all claims hereunder shall in no event exceed the penal amount of this obligation as hereinbefore stated, and, if there is more than one surety, the liability of each individual surety shall in no event exceed the penal sum set opposite the name of such surety above.

This undertaking is for the benefit of The Port of New York Authority and all materialmen, subcontractors and workmen having lawful claims arising out of the performance of said Contract, and all such materialmen, subcontractors and workmen (as well as The Port of New York Authority itself)shall have a direct right of action upon this bond; but the rights and equities of such materialmen, subcontractors and workmen shall be subject and subordinate to those of The Port of New York Authority.

The sureties, for value received, hereby stipulate and agree that the obligations of said sureties and their bond shall be in no way impaired or affected by any extensions of time, modification, omission, addition or change in or to the said Contract or the Materials to be furnished or Work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provision or condition thereof (whether precedent or subsequent), or by any assignment, subletting or other transfer thereof or of any part thereof or of any Materials to be furnished or Work to be performed or any moneys due or to become due thereunder; and said sureties do hereby waive notice of any and all of such extensions, modifications, omissions, additions, changes, payments, waivers, assignments, subcontracts and transfers, and hereby expressly stipulate and agree that any and all things done and omitted to be done by and in relation to assignees, subcontractors and other transferees shall have the same effect as to said sureties as though done or omitted to be done by or in relation to said principal.

The sureties shall give the General Counsel of The Port of New York Authority the following notices:

(a) Written notice of an intent to pay any claim of a subcontractor, materialman or workman hereunder;

(b) Written notice within five days of the institution of an action by a subcontractor, materialman or workman hereunder.

The sureties shall not pay the claim of any subcontractor, materialman or workman hereunder until the expiration of thirty days after receipt by said General Counsel of notice under either subparagraph (a) or (b) above, describing the claim to be paid.

IN WITNESS WHEREOF, the principal and the sureties have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

.....
Principal

(Seal) By(*).....

.....
Surety

(Seal) By(†).....

APPROVED AS TO ACCEPTABILITY OF SURETIES AND AS TO AMOUNTS FOR WHICH SURETIES ARE INDIVIDUALLY LIABLE:

.....
(Credit Manager of Authority)

....., 1960.

(*) If bond is signed by an officer or agent, give title; if signed by a corporation, affix corporate seal.
(†) Add signatures of additional sureties, if any.

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

State of .....,)
) SS.:
County of .....,)

On this .....day of ....., 1960, before me personally came and appeared ....., to me known, who being by me duly sworn, did depose and say that he resides at .....; that he is the ....the corporation described in and which executed the foregoing instrument that he knows the seal of said corporation that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the directors of said corporation, and that he signed his name thereto by like order.

(Seal) .....

ACKNOWLEDGMENT OF PRINCIPAL, IF A PARTNERSHIP

State of .....,)
) SS.:
County of .....,)

On this .....day of ....., 1960, before me personally came and appeared ....., to me known, and known to me to be one of the members of the firm of .... described in and who executed the foregoing instrument and he acknowledged to me that he executed the same as and for the act and deed of said firm.

(Seal)

ACKNOWLEDGMENT OF PRINCIPAL, IF AN INDIVIDUAL

State of .....,)
) SS.:
County of .....,)

On this .....day of ....., 1960, before me personally came and appeared ...., to me known and known to me to be the person described in and who executed the foregoing instrument and he acknowledged to me that he executed the same.

(Seal) .....

AFFIX ACKNOWLEDGMENT AND JUSTIFICATION OF SURETY

SPECIFICATIONS

1. WORK REQUIRED BY THE SPECIFICATIONS.

These Specifications relate generally to the sale of materials for and the construction of the superstructure of the George Washington Bridge Bus Station, including certain parts of the steelwork and retaining walls therefor.

These Specifications require the doing of all things necessary or proper for or incidental to the above Sale and Work as shown on the Contract Drawings in their present form. All Materials and Work shown on the Contract Drawings even though not expressly mentioned in these Specifications, all Materials and Work mentioned in these Specifications even though not shown on the Contract Drawings, and all things not specified either on the Contract Drawings or in the Specifications but involved in carrying out their intent and in the complete and proper execution of the Sale and Work are required by these Specifications; and the Contractor shall perform the same as though they were specifically delineated, described and mentioned.

In the event that, in the opinion of the Engineer, the requirements relating to any part of the Sale or Work or the performance thereof set forth in the Specifications appear to conflict with the requirements for such Sale or Work or the performance thereof shown on the Contract Drawings, the requirements set forth in the Specifications shall prevail.

2. CONDITIONS AND PRECAUTIONS.

Areas Available

Subject to the progress of work by other contractors and to the conditions elsewhere stated herein, those areas to be occupied by the permanent construction will be made available to the Contractor upon the commencement of his first operations at the construction site, plus certain additional areas on the George Washington Bridge Expressway, as provided below.

Any additional property which the Contractor desires for his operations shall be obtained by him at his own expense.

The Contractor will be permitted to use only so much of the aforesaid areas as is necessary, in the opinion of the Engineer, for the performance of the Work, and he must at all times so conduct his operations as not to encroach upon or block the portions necessarily used by others. The Engineers may at any time make joint or exclusive assignments of particular portions thereof, either to the Contractor or to others, and may take over and use for other purposes any portions which in the opinion of the Engineer, are not required for the performance of the Work.

The Contractor shall daily clean up the areas used by him so that they are free at all times of refuse, rubbish, scrap material or debris.

Other Contractors

During the time that the Contractor is performing the Work, other persons will be engaged in other operations on or about the construction site including other construction for the Bus Station and the George Washington Bridge Expressway and vehicular traffic both on city streets and on the Expressway. The Contractor shall, therefore, so plan and conduct his operations as to work in harmony with others engaged at the site and not to delay, endanger or interfere with the operations of others, all to the best interests of the Authority and the public and as may be directed by the Engineer.

It is presently expected but not guaranteed that the structural steel for the Bus Station proper and bridges over Ft. Washington Avenue and Broadway which is to be both furnished and erected by others will be completed by April 1, 1961 under Contract GWB-200.012 and that the structural steel for the Bus Parking Structure which is to be both furnished and erected by others will be completed by May 1, 1961 under Contract GWB-200.014.

It is also presently expected but not guaranteed that the structural steel to be furnished only under Contracts GWB-200.012 and GWB-200.014 for erection by this Contractor will be made available for delivery commencing July 1, 1961 and will be completely delivered on or before November 1, 1961.

Area Available on Expressway

The construction by others of the George Washington Bridge Expressway cannot progress beyond a certain point until the 178th Street Ventilation Building can be demolished. Such demolition cannot commence until operation of the 178th Street Tunnel ceases. Such operation cannot cease until four of the ultimate twelve lanes of traffic on the Expressway go into operation, as shown on Contract Drawing No. 002. Once such four lanes go into operation, the Contractor will not be permitted to enter in any space on or above such four lanes, except above the completed underside of the Bus Station, so that the Contractor's Work will present no danger to Expressway traffic on such four lanes. It is presently expected but not guaranteed that such four lanes of traffic will go into operation on or about September 1, 1961.

Until such four lanes go into operation (whether that be on or after September 1, 1961) the Contractor may use the area shown cross-hatched on Contract Drawing 002 for performance of the Work, subject to use of such area by the Contractor building the expressway, and after such four lanes go into operation he shall be restricted to use of the area shown hatched on Contract Drawing 002, subject again to use by the Contractor building the Expressway. In addition, the Contractor will be excluded from all space on or over the Expressway once traffic in addition to the above four lanes goes into operation.

Snow Removal

The Contractor shall remove snow from the sidewalks abutting the area where Work is being performed.

Dimensions

The Contractor shall verify in the field all dimensions whether or not shown on the Contract Drawings. The materials shall be furnished and the Work performed so as to fit the actual dimensions, and any deviation between the actual dimensions and those shown on the Contract Drawings, or any omission of dimensions from the Contract Drawings, shall not be cause for additional compensation.

Streets To Be Kept Clear

Any obstruction in West 178th Street or West 179th Street will seriously interfere with traffic to and from the bridge, and traffic obstructions in the north-south avenues must also be avoided. Therefore no vehicles, equipment or materials shall be permitted to stand in 178th and 179th Streets or the north-south avenues except during the hours of 9:30 A.M. to 3:30 PM, Monday through Thursday, exclusive of the days before holidays, and the hours of 9:30 A.M. to 3: P.M. on Fridays and the days before holidays. No standing at all will be permitted on Saturdays, Sundays and holidays.

Watchmen

The Contractor shall employ uniformed watchmen to patrol and momentarily stop and start traffic on traffic lanes to allow material trucks and equipment to cross these lanes. The watchman shall patrol the construction area on a 24 hour, 7 day a week basis. The number of watchmen employed shall be as recommended by the Contractor and approved by the Engineer.

The uniformed watchmen's service shall be similar and equal to that provided by the William J. Burns, International Detective Agency, Inc. or the Pinkertons National Detective Agency, Inc. The watchmen's service shall be complete with an approved punch-clock system.

The Contractor will be reimbursed for the net cost of the Work in connection with the watchmen's service. The net cost shall be computed in the same manner as Extra Work and shall be subject to all the provisions of the clause of the Form of Contract entitled "Compensation for Extras" including the percentage addition to net cost. In no event, however, will the Contractor be reimbursed for the net cost of such Work performed beyond the time for completion provided in subparagraph (1) of the clause of the Form of Contract entitled "Times for Completion and Damages for Delay" as extended in accordance with the provisions of the clause of the Form of Contract entitled "Extensions of Time".

Precautions Over Fort Washington Avenue and Over Broadway

A part of the Contractor's operation will take place directly over Fort Washington Avenue and Broadway.

During the period when Work is being performed over these Avenues the Contractor shall close one-half of the traffic lanes, which would block or might endanger traffic, furnishing necessary labor or materials therefor at his own expense, and Work shall progress over those lanes which are closed. Such closing shall occur only on one of said avenues at a time. Such closing shall take place only between the hours of 1 A.M. to 6 A.M., Tuesdays through Fridays and between the hours of 3 A.M. and 6 A.M. on Saturdays thru Mondays. At all other times traffic shall be permitted to proceed in its normal traffic pattern and shall be rerouted by the Contractor when necessary as directed by the Engineer, the Contractor to furnish all facilities necessary or desirable for such rerouting. The Contractor shall conform to all traffic rules and regulations of the City of New York.

Fence Openings

Temporary fencing and barricades have been erected by others. The Contractor will be permitted to remove such portions of the fencing as may be required for his operations during working hours, provided that the public is continuously safeguarded by other satisfactory means during these operations. In all cases the fencing and barricades must be restored at the end of each working day.

Contractor's Responsibility

No requirement of, or omission to require, any precautions under this Contract shall be deemed to limit or impair any responsibility or obligations assumed by the Contractor under or in connection with this Contract, and the Contractor shall at all times maintain adequate protection to safeguard the public and all persons engaged in the Work or other construction and shall take such precautions as will accomplish such end, without undue interference with the public or the operations of the Authority.

2A. MATERIALS FURNISHED BY THE AUTHORITY.

The Authority will furnish without charge to the Contractor for installation by him in the permanent construction the following materials:

a. All incandescent, fluorescent and mercury vapor lamps required for the Contractor's installation in the permanent construction.

b. All fire alarm and sprinkler system equipment required for the Contractor's installation in the permanent construction, consisting of the following items:

Equipment listed is that of the Automatic District Telegraph Company, equivalent equipment of the Central Station Signals Company or the Automatic Fire Alarm Co. may be substituted.

[illegible]

Sprinkler Supervisory and Waterflow Alarm Service

1 - B400-2 Transmitter
1 - 3702 Fuse Box
2 - 455 10 AMP Fuses
1 - 6001 Padlock
1 - 2613T Transformer Unit
1 - 2613R Rectifier Panel
1 - E663 Cabinet

Manual Fire Alarm Service

6 - PA 922 Wall Shell
6 - B1046 CFANGS Box
2 - B1046 ANGS Box
1 - 5304-P Outside Protection Box
9 - 134 ASN 10 Bell
8 - 5302 Grills
1 - B575-C-110V Bell
1 - B536A2 Control Unit
1 - 546 Supervisory Transmitter Panel
1 - E798 Cabinet
1 - 3702 Fuse Box
2 - 455 Fuse 10 AMP

Sprinkler Supervisory and Waterflow Alarm Service

1 - 6120 GS Pressure Actuated Transmitter
1 - PA22200 Trim Kit
1 - #66 Pressure Switch
1 - PA22204 Trim Kit
4 - #613 Gate Valve Switches
1 - 6123 Waterflow Transmitter Special With Local Code Wheel

c. All current transformers required for the Contractor's installation in the permanent construction, to be furnished to and shall be installed by the Contractor.

It is presently expected but not guaranteed that the foregoing materials will be furnished to the Contractor by the time required for their installation.

Materials furnished to the Contractor shall be examined by him at the time they are furnished to him, and if there is any shortage, damage or other defect, the Contractor shall at that time bring it to the attention of the Engineer. Any shortage, damage or defect so brought to the Engineer's attention and acknowledged by him will be corrected by the Authority. If no shortage, damage or other defect is brought to the attention of or acknowledged by the Engineer at the time said materials are furnished to the Contractor, the materials shall thereafter conclusively be deemed to have been satisfactory in all respects, provided that if the Contractor demonstrates to the satisfaction of the Engineer that there was a shortage, damage or defect at the time the materials were furnished to the Contractor and that such fact could not reasonably have been ascertained at that time, then the shortage, damage or defect will be corrected by the Authority.

From the date the foregoing materials are furnished to the Contractor they shall form part of the materials included in the risk assumed by the Contractor as provided in subparagraph (a) of the clause of the Form of Contract entitled "Risks Assumed by the Contractor".

All materials or portions thereof in excess of those actually required in the permanent construction and which in the opinion of the Engineer may be suitable for use by the Authority shall be returned to the Authority at a location at the construction site designated by the Engineer upon the completion of the Work or when there is no longer any need for this material, whichever may first occur.

The Contractor, at his own expense, shall furnish all materials required by the Contract Drawings and Specifications with the exception of those materials expressly provided to be furnished to the Contractor by the Authority in accordance with this numbered clause.

The foregoing materials will be delivered to the construction site, tailboard of truck, and the Contractor shall unload same and transport them to the point of installation.

3. PROGRESS SCHEDULE AND ANALYSIS OF BID.

Within fifteen calendar days after the acceptance of the Proposal, the Contractor shall prepare a progress schedule for the approval of the Engineer. The progress schedule shall show the dates for the commencement and completion of the different portions of the contract. After the approval of the schedule, no change shall be made therin without the written approval of the Engineer.

The Engineer shall have the right at any time when in his judgment the construction is not proceeding in accordance with the approved progress schedule, to order the Contractor to increase the number of men employed, to use additional plant or equipment, or to take such other steps as may be necessary or required to assure the completion of the various operations within the time allotted therefor in the approved schedule.

Within fifteen calendar days after the acceptance of the Proposal, the Contractor shall prepare a detailed analysis of bid on forms furnished by the Authority with all of the spaces filled in without exception, and containing such information as the Engineer may require for each of the items enumerated in such forms.

4. REFERENCE DRAWINGS.

The following drawings, herein called "Reference Drawings", have not been prepared or obtained by the Authority for use in connection with this Contract, but were prepared for other purposes. These drawings are, however, furnished to the Contractor to give him such information as may be in the possession of the Authority and are numbered and entitled as follows:

GWB-200.012 STRUCTURAL STEEL FOR BUS STATION

DRAWING NUMBER	TITLE
1	Location Plan and Index
2	General Plan and Sections
3	Long Haul Bus Level - Plans
4	Suburban Concourse - Plans
5	Suburban Bus Level - Plans
6	Cross Sections at Bents
7	Building Frames Bents la to 5 Sheet No. 1
8	Building Frames Bents la to 5 Sheet No. 2
9	Building Frames at Bent 6b
10	Long Haul Level - Details
11	Suburban Concourse Details

Drawing No. (Cont'd.)	Title
12	Suburban Bus Level Details Sheet No. 1
13	Suburban Bus Level Details Sheet No. 2
14	Column Schedule
15	Bridge over Ft. Washington Ave. Plans and Sections
16	Bridge over Fort Washington Ave. Details Sheet No. 1
17	Bridge over Fort Washington Ave. Details Sheet No. 2
18	Bridge over Ft. Washington Ave. Details Sheet No. 3
19	Bridge over Ft. Washington Ave. Details Sheet No. 4
20	Bridges over Broadway Plans & Sections
21	Bridges over Broadway - Details
25	Miscellaneous Details
26	Details on Bent 15
[illegible]	[illegible]

GWB-200.014 - STRUCTURAL STEEL FOR BUS PARKING STRUCTURE

Drawing No.	Title
1	Location Plan and Index
2	Framing Plans
3	Sections and Cooling Tower Plans
4	Girder Details
5	Details

Drawing No. (Cont'd.)	Title
	Contract GWB-190.008, entitled "George Washington Bridge - Lower Level Expansion - New York Approach - Section No. 7", including the Contract Drawings therefor;
	Contract GWB-190.011 entitled "George Washington Bridge - Lower Level Expansion - New York Approach - Section No. 8, including the Contract Drawings therefor.
	N.J.F. 3 - Lower Level Expansion - New York Topography
	N.J.F. 8 - Lower Level Expansion - New York Topography
	GWB-190.042
	R3 - Lower Level Expansion - Electrical Installation - Power Distribution System One Line Diagram Sheet No. 3
	40 - Lower Level Expansion - Electrical Installation - Upper Level, Bent 29 to Ft. Washington Ave. Plan
	41 - Lower Level Expansion - Electrical Installation - Pinehurst Ave. to Broadway Plan
	42 - Lower Level Expansion - Electrical Installation - Broadway to East of Wadsworth Ave. Plan & Sections

The Authority reserves the right to alter the above mentioned Reference Drawings.

4A. CONTRACT DRAWINGS.

The Contract Drawings which accompany and form a part of these Specifications bear, in the case of Contract Drawings No's. 1 thru 58, the general title "The Port of New York Authority - GWB Bus Passenger Facility" and in all other cases the general title "The Port of New York Authority" - George Washington Bridge - Lower Level Expansion - Bus Station - Superstructure - Contract GWB-200.013". All drawings are separately numbered and entitled as follows:

DRAWING NO.	TITLE
	General
001	Location Plan and Index
002	Available Areas and Staging Plans
003	Engineers Field Office
	Architectural
100	General Plan & Sections
101	Long Haul Bus Level - Unit 1
102	Long Haul Bus Level - Unit 2
103	Suburban Concourse Level - Unit 1
104	Suburban Concourse Level - Unit 2
105	Suburban Bus Level - Fort Washington Ave. Bridge
106	Suburban Bus Level - Unit 1
107	Suburban Bus Level - Unit 2
108	Suburban Bus Level - Broadway Bridges
109	Suburban Bus Level - Bus Parking Area
110	Street Level - Bus Parking Area
111	Elevations - W. 178th Street & W. 179th Street, Fort Washington Ave. Bridge
112	Elevations - W. 178th Street & W. 179th Street, - Unit 1
113	Elevations - W. 178th Street & W. 179th Street, - Unit 2
114	Elevations - Broadway & Fort Washington Ave.
115	Elevations - W. 178th Street & W. 179th Street Bus Parking Area
116	Elevations - Broadway & Wadsworth Ave. Bus Parking Area
117	Cross Sections at Bent 1 and 1A
118	Cross Sections at Bent 2 and 3
119	Cross Sections at Bent 4 and 5
120	Cross Sections at Bent 6 and 7
121	Cross Sections at Bent 8 and 9
122	Cross Sections at Bent 10 and 11
123	Longitudinal Section - Fort Washington Ave. Bridge & Unit 1
124	Longitudinal Section - Unit 2
125	Cross Sections - Bus Parking Area
126	Exterior Wall Sections - Sheet 1
127	Exterior Wall Sections - Sheet 2
128	Exterior Wall Sections - Sheet 3

DRAWING NO.	TITLE

Architectural (cont'd)

129	Exterior Wall Sections - Sheet 4
130	Exterior Soffits - Plans
131	Exterior Soffits - Details
132	Roof-Plan & Details
133	Roof Truss Louvers & Glazing
134	Broadway Window & Panel Wall Details
135	Fort Washington Ave. Entrance 7 Wall Details
136	Subway Entrance Details
137	Broadway Entrances & Canopy Details
138	Entrance Details
139	Moving Stair & Stair Details - PMS-1 & PS-1
140	Moving Stair & Stair Details - PMS-2 & PS-2
141	Moving Stair & Stair Details - PMS-3-4 & PS-3-4
142	Moving Stair & Stair Details PMS-5-6-8 & PS-5-6-8
143	Moving Stair & Stair Details PMS-7-10 & PS-7-10-11A-11B-11C
144	Moving Stair & Stair Details - SCMS-11-12-13-SCS-12-13
145	Moving Stair & Stair Details - SCMS-14 & SCS-14
146	Moving Stair & Stair Details - PS-9 PMS-9 SCS-16 LHS-17
147	Moving Stair & Stair Details - SCS-15-18
148	Elevator Details & Miscellaneous Stair Details
149	Reflected Ceiling Plan - Long Haul Bus Level - Unit 1
150	Reflected Ceiling Plan - Long Haul Bus Level - Unit 2
151	Reflected Ceiling Plan - Suburban Concourse - Unit 1
152	Reflected Ceiling Plan - Suburban Concourse - Unit 2
153	Interior Elevations - Long Haul Bus Level
154	Interior Elevations - Suburban Concourse
155	Ticket Information Booth Details
156	Miscellaneous Interior Details
157	Toilet Details
158	Details - Suburban Bus Level - Sheet 1
159	Details - Suburban Bus Level - Sheet 2
160	Door Schedule - Sheet 1
161	Door Schedule - Sheet 2
162	Room Finish Schedule
164	Directional Signs
165	Details - Bus Parking Area
166	Details - Cooling Tower
167	Column and Expansion Joint Details
168	Dispatchers Booths
T-1	Long Haul Bus Level - Store Areas
T-2	Suburban Concourse Level - Store Areas
T-3	Typical Details
T-4	Typical Details
T-5	Suburban Concourse Level- Air Conditioning Store Areas
T-6	Long Haul Bus Level - Airconditioning Store Areas & Details

DRAWING NO.	TITLE
	Structural Drawings
200	Trans-Manhattan Expressway - Plan
201	Trans-Manhattan Expressway - Plan, Sections & Details
202	Long Haul Bus Level - Unit 1 - Plan & Details
203	Long Haul Level - Unit 2 - Plan & Details
204	Long Haul Bus Level - Mezzanine - Plan & Details
205	Long Haul Bus Level - Details
206	Long Haul Bus Level - Details
207	Suburban Concourse Level - Unit 1 - Plan & Details
208	Suburban Concourse Level - Unit 2 - Plan & Details
209	Suburban Concourse Level - Details
210	Suburban Bus Level - Bridge Over Fort Washington Ave.
211	Suburban Bus Level - Unit 1 - Plan & Details
212	Suburban Bus Level - Unit 2 - Plan & Details
213	Suburban Bus Level - Bridges Over Broadway - Plans and Details
214	Suburban Bus Level - Bus Parking Deck - Plans & Details
215	Suburban Bus Level - Bridge Over Fort Washington Ave. - Details
216	Suburban Bus Level - Units 1 & 2 - Details
217	Suburban Bus Level - Units 1 & 2 - Details
218	Suburban Bus Level - Bus Parking Deck - Details
219	Bus Parking Area - Utility Rooms - Plans & Details
220	Bus Parking Area - Utility Rooms - Details
221	Bus Parking Area - Cooling Tower & Miscellaneous Details
222	Exterior Walls - Plans & Details
223	Bearing Details for Roof Columns
224	Canopy - Broadway Entrance - Plan & Details
225	Soffit Supports - Plans and Details
226	Suburban Bus Level - Pavement Joints
227	Suburban Bus Level - Bridge Over Fort Washington Ave. - Steel to be Erected
228	Suburban Bus Level - Units 1 & 2 - Steel to be Erected
229	Suburban Bus Level - Bus Parking Area - Steel to be Erected
230	Exterior Walls - Plans and Elevations
231	Exterior Walls - Details
232	Miscellaneous Details
233	Expansion Joings at Bent 15
	Structural -- Roof and Concrete Frame
1	Plan Showing General Arrangement of Roof - Rev. 1 5-27-60
2	Solution "A" Roof Slab & Rib Beams (Cast in Situ) Plan & Section
3	Solution "A" Top & Bott. Steel in Slab & Junction of Slab & Edge - Beam
4	Solution "A" - Reinforcement of Roof Rib - Beams
5	Solution "A" - Reinforcement of Roof Rib - Beams
6	Solution "B" - Precast Roof Panels - Plan & Sections
7	Dwg. Giving Dimensions of Standard Precast Roof Unit
8	Drawing Showing Reinf. of Standard Precast Roof Unit
9	Solution "B" - Precast Roof Panels. Reinf. of Rib - Beams
10	Solution "B" - Precast Roof Panels. Reinf. of Rib - Beams
11	General Arrg't. Drawing of Roof Truss Girder (including those facing Fort Washington Ave. & Broadway)
12	Reinforcement of Standard Type Roof Truss
13	End Roof Truss Girders Facing Fort Washington Ave. (Reinforcement Details)

DRAWING NO.	TITLE
	Structural (cont'd) Roof and Concrete Frame
14	Canopy Facing Fort Washington Ave. (Dimensions & Reinforcement Details)-
15	Solution "B" - Special Type Prefabricated Roof Panels at Expansion Joints
16	Dwg. Showing outside Dimension of Main Central Columns
17	Main Center Line Columns - Standard type Reinforcement
18	No Drawing Prepared
19	No Drawing Prepared
20	Transverse Beam at Expansion Joint in Roof
21	Main Central Column at Expansion Joint (Exterior Dimension & Reinf. Details)
22	No Drawing Prepared
23	Central Spine Beam From Expansion Joint to B'way (Reinforcement Details)
24	No Drawing Prepared
25	No Drawing Prepared
26	South Elevation from Expansion Joint to Broadway Exterior Dimension Only
27	South Elevation from Fort Washington Ave. to Expansion Joint Exterior Dimensions only.
28	North Elev. from Broadway to Expansion Joint. Exterior Dimensions Only.
29	North Elev. from Expansion Joint to Fort Washington Ave. Exterior Dimensions only.
30	North Elev. Exterior Dimensions Only. Bus Parking Area
31	South Elev. Exterior Dimensions Only. Bus Parking Area
32	East Elev. Exterior Dimensions Only. Bus Parking Area
33	Reinforcement Details for all Elevations. Bus Parking Area
34	Exterior Dimensions of End Central Column Facing Broadway New Solution Rev. 1 7-4-60
35	South Elev. From Expansion Joint to Broadway. Reinforcement Details
36	Reinforcement Details of External Truss. South Elevation From Fort Washington Ave. to Exp. Joint.
37	North elevation from Expansion Joint to Broadway. Reinforcement Details.
38	Exterior Trusses. Details of Junction of Column Base to R.C. Retaining Wall.
39	No Drawing Prepared
40	Bridge Over Fort Washington Ave. North & South Elevation. Details of Junction Between Structures in Reinf. Conc. and in Steel.
41	End Central Column. East Facing Broadway. Reinforcement Details.
42	Solution "B". Dimensions and Reinforcement. Details of Non-Standard Precast Roof Units.
43	Construction Sequence
45	Roof Plan Showing Position of Roof Drains and Direction of Flow of Rainwater.

DRAWING NO.	TITLE

Structural (cont'd)
Roof and Concrete Frame

55	Westerly Centerline Column - Exterior Dimensions only
56	Central Spine Beam from the Washington Ave. to Exp. Joint - Reinforcement Details (Includes Westerly Centerline Column)
57	Bus Station - Detail of the Disposition of the Timber Planks of the Formwork on the Elevation Trusses
58	Bus Station - Detail of the Disposition of the Timber Planks of the Formwork on the Roof Trusses.

Mechanical

300	Flow Diagram
301	Sprinkler System
302	Long Haul Bus Level - Unit 1
303	Long Haul Bus Level - Unit 2
304	Suburban Concourse Level - Unit 1
305	Suburban Concorse Level - Unit 2
306	Sections'
307	Sections
308	Sections
309	Toilet Ventilation
310	Broadway Bridge Biping
311	Bus Parking Area - C.W. & H.W. Piping & Sections
312	Boiler Room - Plan & Sections
313	Cooling Towers
314	Cooling Towers Detail Sheet
315	Control Diagram
316	Expressway Ventilation
317	Detail Sheet

Plumbing

350	Long Haul Bus Level - Unit 1
351	Long Haul Bus Level - Unit 2
352	Suburban Concourse Level - Unit 1
353	Suburban Concourse Level - Unit 2
354	Suburban Bus Level - Fort Washington Ave. Bridge
355	Suburban Bus Level - Unit 1
356	Suburban Bus Level - Unit 2
357	Suburban Bus Level - Broadway Bridges
358	Bus Parking Area - Plans of Roof, Boiler Room and Cooling Towers

DRAWING NO.	TITLE
	Plumbing (cont'd)
359	Bus Parking Area - Plans Elevations 225.00' - 176.00' & Gas Meter Room
360	Details - Storm Water Piping in Typical Roof Columns
361	Details - Storm Water Piping in Roof Columns at Expansion Joint
362	Details - Sheet No. 1, Toilets & Mechanical Equipment Room
363	Fire Standpipe Riser Diagram & Details
364	Storm Drainage Riser Diagram
365	Sanitary Drainage & Riser Diagram
366	Automatic Cigarette Disposal Unit
	Electrical
400	Key Plan
401	Distribution System - Main One Line Diagram
402	Auxiliary One Line Riser Diagrams & Miscellaneous
403	General Notes and Symbols
404	Long Haul Bus Level - Unit 1 - Part I
405	Long Haul Bus Level - Unit 1 - Part II
406	Long Haul Bus Level - Unit 2 - Part I
407	Long Haul Bus Level - Unit 2 - Part II
408	Suburban Concourse - Unit 1 - Part I
409	Suburban Concourse - Unit 1 - Part II
410	Suburban Concourse - Unit 2 - Part I
411	Suburban Concourse - Unit 2 - Part II
412	Suburban Bus Level - Fort Washington Ave. Bridge
413	Suburban Bus Level - Unit 1
414	Suburban Bus Level - Unit 2
415	Suburban Bus Level - Broadway Bridges & Bus Parking Area
416	Expressway Ceiling Plan - Fort Washington Ave. to Broadway
417	Expressway Ceiling - Details
418	Expressway Malls - Plan & Detials
419	Fort Washington Ave. Plan
420	Boiler Room - Sheet 1
421	Boiler Room - Sheet 2
422	Cooling Tower - Plans
423	Electric Closets - Plans & Details - Sheet 1
424	Electric Closets - Plans & Details - Sheet 2
425	Bus Station Electric Service Room - Sheet 1
426	Bus Station Electric Service Room - Sheet 2
427	Elementary Wiring Diagrams - Sheet 1
428	Elementary Wiring Diagrams - Sheet 2
429	Freeze Protection Pipe Heating - Sheet 1
430	Freeze Protection Pipe Heating - Sheet 2
431	Panelboard Schedule
432	Miscellaneous Details
433	Lighting Fixture Mounting & Details
434	Stair Lighting - Boiler Room Area

DRAWING NO.	TITLE
435	N.Y. Distribution Room & Cable Room - Lighting Plans
436	Tenant Service - One Line Diagram
437	Communications Systems - Schematic Diagram
438	Power - One Line Riser Diagram
439	Cooling Tower Details
440	Miscellaneous Lighting Plans
	Standard Drawings *
1122901	Cast Aluminum Door Thresholds
131.003	Loose Lintel Schedule
135.002A	Metal Toilet Stalls Ceiling Hung Type
140.101	Handrailing Welded Pipe
322.003	Typical Domestic Hot Water Heater Piping - Gas
322.007	Domestic Water Meter Assembly Compound Type Sizes 3" -10"
322.030	Fire Hose Cabinet with Hose, Extinguishers & Axe Piping Arrg't #1
322.031	Fire Hose Cabinet with Hose, Extinguishers & Axe Piping Arrg't #2
322.032	Fire Hose Cabinet with Hose, Extinguishers & Axe Piping Arrg't #3
322.040	Roof Drain for Concrete Roof Slab
322.049	4" to 10" Plumbing Vent Flat Roof Flashing
322.058	Water Meter - Tenant Sub Metering
322.064	Sprinkler or Fire Standpipe Water Meter - New York Facilities
322.069	Drainage Funnel for Sprinkler Alarm Flow Test
322.072	Plumbing Submerged Inlets
322.075	Twin TAnk Stand
323.002	Pipe Saddle Support

The Contract Drawings do not show all of the details of the Sale and the Work are intended only to illustrate the character and extent of the Materials to be furnished and the extent of the Work to be performed. Accordingly, they may be supplemented during the performance of the Sale and the Work by the Engineer or by the Contractor subject to the approval of the Engineer, to the extent necessary to further illustrate the Sale and the Work.

After the Contract has been executed, the Contractor will be furnished ten copies of the Contract Drawings without charge. The Contractor shall pay $100.00 for each additional set of Contract Drawings obtained by him.

6. WORKING DRAWINGS AND CATALOG CUTS.

The Contractor shall make all working drawings which may be required in addition to the Contract Drawings or in addition to any other drawings which the Engineer may issue in supplementing the Contract Drawings.

The specific requirements elsewhere set forth in the Specifications for furnishing working drawings for any particular portion of the Contract shall not limit the obligation of the Contractor to furnish working drawings for any other portion when so required by the Engineer.

In preparing the working drawings, the Contractor may adopt a sheet of any reasonable size which best suits his needs, but, having adopted such size all sheets thereafter of a similar nature shall be of the same size as that adopted. Each drawing shall have a margin on the top, bottom and right-hand side of one-half inch and on the left-hand side a margin of one and one-half inches.

Before using any working drawings, the Contractor shall submit two blueprints thereof (or more if requested) for the approval of the Engineer. Within ten working days after receipt of the prints, the Engineer shall approve the same or require corrections or additions to be made thereon. If additions or corrections are required, the Engineer shall return within the ten-day period one of the two blueprints submitted and the Contractor shall make the corrections or additions shown thereon to be made. He shall resubmit two blueprints showing the drawing corrected as required. Each drawing shall be corrected as required until the approval of the Engineer is obtained. After each re-submission, the Engineer shall have a similar period of ten days in which to approve corrections.

As soon as approval has been given to any working drawing or shop bill, the Contractor shall within five days send to the Engineer six prints, except that when the Engineer specifically so directs nine prints shall be sent. After approval thereof, no change will be permitted thereon unless approved in writing by the Engineer.

Before final payment for the Work is made, the Contractor shall furnish to the Engineer one set of working drawings, all clearly revised, completed and brought up to date showing the permanent construction as actually made. These working drawings shall be either drawn in ink on tracing cloth or shall be ozalid transparencies on cloth or CB's on cloth, from any of which clear prints can be made.

The Contractor shall prepare and furnish to the Engineer, in duplicate, prints showing in detail all plant and equipment which he intends to use at the construction site.

The Contractor shall furnish catalog cuts where specifically required by the Specifications, and for other items where the Engineer may deem them necessary. The catalog cuts shall be submitted for approval, and nine copies shall be furnished to the Engineer within ten days after the date of such approval.

Approval of drawings or catalog cuts which are inconsistent with the requirements of the Contract Drawings and Specifications shall not be deemed to waive or change such requirements or to relieve the Contractor of his obligation to perform such requirements, unless the Engineer shall expressly and specifically state that he is waiving or changing such requirements.

The Contractor shall fill in the dates on which he will furnish such working drawings and catalog cuts in a schedule furnished by the Authority at the time of acceptance of the Proposal. The completed schedule shall be delivered to the Engineer for his approval within ten days after receipt by the Contractor.

All drawings, data, and other papers of any type whatsoever, whether in the form of writing, figures or delineations, which are prepared in connection with this Contract and submitted to the Authority shall become the property of the Authority. Except to the extent that rights are reserved to others under valid patents for which the Authority is not given a license under the provisions of the clause entitled "Workmanship and Materials", the Authority shall have the right to use or permit the use of all such drawings, data and other papers and any ideas or methods represented thereby for any purpose and at any time without additional compensation. No such papers shall be deemed to have been given in confidence. Any statement or legend to the contrary in connection with such drawings, data or other papers and in conflict with the provisions of this paragraph shall be void and of no effect.

7. WORKMANSHIP AND MATERIALS.

Materials and workmanship shall in every respect be in accordance with the best modern practice and whenever the Contract Drawings, Specifications or directions of the Engineer admit of a doubt as to what is permissible or fail to note the quality of any Materials or Work, the interpretation which calls for the best quality is to be followed. Materials to be installed as part of the permanent construction shall be new materials except as may be otherwise herein specifically required.

Wherever on the Contract Drawings or in the Specifications, a particular brand or make of material or equipment is shown or specified, any other brand or make which, in the sole opinion of the Engineer, is equal to that shown or specified may be substituted (except where specifically stated otherwise), but only after being submitted to and expressly approved by the Engineer. Notwithstanding such approval, however, the Contractor assumes the risk that such other brand or make is not equal to that shown or specified and he shall replace the substitute if at any time it shall appear not to be so equal. Such submission to the Engineer shall be made only by including the requested substitution in the list of materials required to be submitted to the Engineer in accordance with the clause hereof entitled "Inspections and Rejections" within forty-five calendar days after receipt of the acceptance of the Contractor's Proposal. After the approval of said list, no substitutions will be permitted, except that a brand or make named in the Specifications may be submitted for approval in lieu of a brand or make on said list. Any such submission shall not imply, or impose on the Engineer, any obligation whatsoever to discuss, disclose or justify the reasons for his opinion, approval, acceptance or rejection. Furthermore, the acceptance of any other brand or make shall not in any way entitle the Contractor to additional compensation therefor, but the Engineer may make such reduction in the Contractor's compensation as may be equitably warranted because of such acceptance in lieu of the standard.

The construction called for by the Contract Drawings and Specifications may be adapted for a particular brand or make of material or equipment. Therefore, if any Materials or Work not required by the Contract Drawings or Specifications in their present form is necessary or desirable because of the use of another brand or make of material or equipment (even though such other brand or make is approved by the Engineer or is mentioned in the Contract Drawings or the Specifications and stated to be acceptable), such Materials or Work shall be furnished or performed by the Contractor at his expense and subject to the approval of the Engineer.

In case of a discrepancy between a description or requirement in the Contract Drawings and Specifications for any material or equipment and a catalog number or other designation for the same material or equipment (even though stated to be acceptable), the description or requirement shall control.

In various paragraphs of these Specifications references are made to certain standard or tentative specifications or requirements of various organizations. Unless otherwise stated, these references are to be construed as referring to the specifications and requirements in effect on the date set for opening bids upon the present Contract. Copies of these specifications and requirements are on file in the office of the Chief Engineer where they may be seen during regular business hours.

All inventions, ideas, designs and methods contained in the Specifications and Contract Drawings in which the Authority has or may acquire patent, copyright or other property rights are hereby expressly reserved for the exclusive use of the Authority. The Specifications and Contract Drawings contain confidential information which is disclosed only to enable the Sale and the Work to be performed in accordance with this Contract. Said Specifications and drawings must not be used for any purpose detrimental to the interest of the Authority and must not be produced or copied in whole or in part or used for furnishing information to others without the written consent of the Authority, provided, however, that the Contractor may, when the performance of the Sale and the Work so requires, furnish said information to others for the purpose of engaging or informing subcontractors and materialmen.

If in accordance with this Contract the Contractor furnishes research, development or consulatative services in connection with the performance of the Contract and if in the course of such research, development or consultation patentable subject matter is produced by the Contractor, its officers, agents, employees, subcontractors or materialmen, the Authority shall have, without cost or expense to it, an irrevocable, non-exclusive, royalty-free license to make, have made, and use, either itself or by anyone on its behalf, such subject matter in connection with any activity now or hereafter engaged in or permitted by the Authority. Promptly upon request by the Authority, the Contractor shall furnish or obtain from the appropriate person a form of license satisfactory to the Authority, but as between the Contractor and the Authority

the license herein provided for shall nevertheless arise for the benefit of the Authority immediately upon the production of said subject matter and shall not await formal exemplification in a written license agreement as provided for above. Such license may be transferred by the Authority to its successors, immediate or otherwise, in the operation or ownership of any real or personal property now or hereafter owned or operated by the Authority, but such license shall not be otherwise transferable.

The right to use all patented material, compositions of matter, manufactures, apparatus, appliances, processes of manufacture or types of construction required in connection with this Contract shall be obtained by the Contractor without separate or additional compensation whether the same is patented before, during or after the performance of the Contract.

The Contractor shall indemnify the Authority against and save it harmless from all loss and expense incurred in the defense, settlement or satisfaction of any claims in the nature of patent infringement arising out of or in connection with the Authority's use, in accordance with the preceding two paragraphs of this numbered clause, of such patentable subject matter or patented material, compositions of matter, manufactures, apparatus, appliances, processes of manufacture or types of construction; provided, however, that nothing in this Contract shall be construed to require the Contractor to procure a patent license for or indemnify the Authority against patent claims arising out of or in connection with any patentable subject matter or patented material, compositions of matter, manufactures, apparatus, appliances, processes of manufacture or types of construction, if the complete details of the patented or patentable aspects thereof are contained in the Contract Drawings and Specifications. If requested by the Authority and if notified promptly in writing of any such claim, the Contractor shall conduct all negotiations with respect to and defend such claim without expense to the Authority. If the Authority be enjoined from using any of the facilities which form the subject matter of this Contract, and as to which the Contractor is to indemnify the Authority against patent claims, the Authority may, at its option and without thereby limiting any other right it may have hereunder or at law or in equity, require the Contractor to supply, temporarily or permanently, facilities not subject to such injunction and not infringing any patent and if the Contractor shall fail to do so, the Contractor shall, at its expense, remove all such facilities and refund the cost thereof to the Authority or take such steps as may be necessary to ensure compliance by the Authority with such injunction, to the satisfaction of the Authority.

7. INSPECTIONS AND REJECTIONS.

All Materials, Work, processes of manufacture and methods of construction shall be at all times and places subject to the inspection of the Engineer, acting personally or through his Inspectors. The Engineer shall be the judge of the quality and suitability of the Materials, Work, processes of manufacture and methods of construction for the purposes for which they are used. Should they fail to

meet his approval they shall be forthwith reconstructed, made good, replaced or corrected, as the case may be, by the Contractor at his own expense. Rejected material shall be removed immediately from the site. The fact that the Inspectors have accepted the material and workmanship shall not relieve the Contractor from his obligation to supply other material and workmanship when so ordered by the Engineer.

The Contractor, at his own expense, shall furnish such facilities and give such assistance for inspection as the Engineer may direct. In the case of materials required by the Specifications to be inspected in the factory or plant, and in the case of any other items which the Engineer may designate, the Contractor shall secure for the Engineer and his Inspectors free access to all parts of such factories or plants and shall furnish to the Engineer three copies of purchase orders, two copies of mill shipping statements and four copies of shipping statements. Moreover, in the case of such materials to be factory or plant inspected, the Contractor shall give at least ten days' notice to the Engineer of his intention to commence the manufacture or preparation of such materials.

Other than the materials and equipment specifically required to be inspected at the manufacturer's factory or plant, all materials will be inspected at the construction site and any portions thereof which are rejected by the Engineer shall be immediately removed from the construction site by the Contractor and shall be replaced with new materials by the Contractor at his own expense.

In the case of materials to be inspected at the construction site, the Contractor shall submit a list of all such materials in triplicate to the Engineer for his approval prior to ordering same. The list shall be submitted within forty-five calendar days after receipt of the notice of acceptance and shall contain the following information:

(a) In the case of fabricated materials for which working drawings are to be prepared, a brief description of the material and the statement "see working drawings".

(b) In the case of material or equipment listed in manufacturer's catalogs, the list shall contain the vendor's name, the manufacturer's name, brand name, style designation, catalog number and, where the Specifications require catalog cuts, the statement "see catalog cut".

(c) In the case of material or equipment for which working drawings are not to be prepared, and which are not listed in any catalog, the list shall contain a complete description of the material or equipment, which shall be in sufficient detail to describe completely the material or equipment and quality thereof.

Within ten working days after receipt of said list, the Engineer shall notify the Contractor of which items are approved and which disapproved. Within two working days thereafter, the Contractor shall re-submit a new list covering those items which were disapproved. After each such resubmission the Engineer shall have a similar period of ten days in which to approve or disapprove.

Should material or equipment be delivered to the construction site without haveing been placed on the aforementioned list and approved, it shall be immediately removed from the construction site by the Contractor at his own expense.

8. MANUFACTURERS' CERTIFICATION.

Where materials and equipment are required by these Specifications to conform to certain standard or tentative specifications or requirements of any organizations, including but not limited to the American Society for Testing Materials, American Standards Association, Association Rules for Grading Lumber, Federal Specifications, National Electrical Manufacturers Association, American Association of State Highway Officials, American Water Works Association and the International Municipal Signal Association, the Contractor shall furnish to the Engineer the manufacturer's written certification that each of the materials or equipment conforms to the foregoing standard or tentative specifications. The certification shall be delivered to the Engineer prior to installation of the materials to which it refers. Such certifications shall not be binding or conclusive on the Authority and may be rejected at any time by the Engineer if incorrect, improper or otherwise unsatisfactory in his opinion.

9. APPROVALS BY ENGINEER.

Any approval by the Engineer of any materials, workmanship, plant, equipment, drawings, program, methods or procedure, or of any other act or thing done or furnished or proposed by the Contractor to be done or furnished in or in connection with the performance of the Contract, shall be construed merely to mean that at that time the Engineer knows of no good reason for objecting thereto; and no such approval shall release the Contractor from his full responsibility for the accurate and complete performance of the Contract in accordance with the Contract Drawings and Specifications or from any duty, obligation or liability imposed upon him by the Form of Contract or from responsibility for injuries to persons or damages to property.

10. ERRORS AND DISCREPANCIES.

If, in the performance of the Contract, the Contractor discovers any errors or omissions in the Contract Drawings or Specifications, or in the marks, lines and elevations furnished by the Authority or in the Materials or Work furnished or performed by him, he shall immediately notify the Engineer and the Engineer shall promptly verify the same. If with the knowledge of such error or omission and prior to the correction thereof, the Contractor proceeds with any part of the Sale or the Work affected thereby, he shall do so at his own risk and the Materials and Work so furnished or performed shall not be considered as furnished or performed under and in performance of this Contract unless and until approved and accepted.

11. ACCIDENTS AND FIRST AID PROVISIONS.

The Contractor shall promptly report in writing to the Engineer and to the Authority's Claims Attorney all accidents whatsoever arising out of or in connection with the performance of the Contract, whether on or adjacent to the construction site, which result in death, injuries or property damage, giving full details and statements of witnesses. In addition, if death or serious injuries or serious damage is caused, the accident shall be reported immediately by telephone to both of the said representatives of the Authority.

The Contractor shall provide at the construction site such equipment and medical facilities as are necessary to supply first aid service, in case of accident, to any who may be injured in the progress of the Contract. He shall have standing arrangements for the removal and hospital treatment of any person who may be injured while engaged in the performance of the Contract.

If any claim is made by any third person against the Contractor of any subcontractor on account of any accident, the Contractor shall promptly report the fact in writing to the aforementioned representatives of the Authority, giving full details of the claim.

SAFETY AND SANITARY PROVISIONS.

In the performance of the Contract, the Contractor shall exercise every precaution to prevent injury to persons or damage to property. He shall, at his own expense, place such watchmen, design and erect such barricades, fences and railings, give such warnings, display such lights, signals and signs, exercise such precaution against fire, adopt and enforce such rules and regulations, and take such other precautions as may be necessary, desirable or proper, or as may be directed.

All reasonable precautions for fire prevention shall be exercised during the performance of the Contract. An adequate approved system for promptly extinguishing fires shall be provided at all times. Fire alarm signals, equipment and water lines shall be continually inspected, accessible and ready for instant use.

The Contractor shall employ only such men as are physically fit and are free from contagious or communicable diseases.

During the progress of the Contract, the Contractor shall provide and maintain at all times in a neat and sanitary condition such toilet accommodations for the use of his employees as are necessary or as may be directed.

He shall use only machinery and equipment adapted to operate with the least possible noise, and shall so conduct his operations that annoyance to occupants of nearby property and the general public will be reduced to a minimum.

The Contractor shall daily clean up all refuse, rubbish, scrap materials and debris caused by his operations, to the end that at all times the construction site shall present a neat, orderly and workmanlike appearance. Before the Certificate of Completion of Work will be issued, the Contractor shall remove all surplus materials, falsework, temporary fences and other temporary structures, including foundations thereof, plant of any description and debris of every nature resulting from his operations and shall put the construction site in a neat, orderly condition.

DAILY PROGRESS, EQUIPMENT AND LABOR REPORTS.

The Contractor shall furnish to the Engineer at the end of each day, a memorandum showing for that day (a) the Materials furnished and Work performed, (b) the equipment used, (c) a statement of any unusual happening that occurred, and (d) the number of men in each trade classification that were employed. Such memorandum shall not be deemed to be a substitute for the notices, time slips, memoranda or other data required under the clauses of the Form of Contract entitled "Compensation for Extras" and "Extra Orders".

14. LAWS AND ORDINANCES.

In order to effectuate the policy of the Authority, the Contractor shall comply with all provisions of federal, state, municipal, local and departmental laws, ordinances, rules, regulations and orders which would affect the Contract and those engaged therein if said Work were being performed for a private corporation, except where stricter requirements are contained in the Specifications or Contract Drawings. However, he shall not apply for any permits or licenses in the name of or in behalf of the Authority.

15. IDENTIFICATION.

No person will be permitted on or about the construction site without a pass, permit or identification badge approved by the Engineer. The Contractor shall obtain such passes, permits or identification badges for his employees, subcontractors and materialmen whenever necessary. Identification badges shall be worn in a conspicuous and clearly visible position by all employees of the Contractor whenever they are working at the construction site.

16. SIGNS.

No advertisement, other than the name and address of the Contractor, will be permitted on any fences, temporary structures or elsewhere on the construction site and such advertisement will be permitted only upon the condition that it is first approved by the Engineer. In any event, the advertisement shall not exceed six feet by eight feet in overall dimensions.

The Authority has erected eight signs on the Building site. The Contractor shall preserve these signs, maintain lighting necessary for these signs and reinstall them on building as directed by the Engineer during progress of the Work. Upon the completion of the Work these signs shall become the property of the Contractor and shall be removed from the construction site.

17. CONTRACTOR'S FIELD OFFICE AND REPRESENTATIVE.

At a readily accessible point on or near the construction site, the Contractor shall maintain a field office provided with a telephone.

During the performance of any Work at the construction site, the Contractor shall have a representative thereat who shall be authorized by the Contractor to receive and put into effect promptly all orders, directions and instructions from the Engineer. The Contractor's representative shall be provided, at all times, with a conformed copy of this Contract and a set of the Contract Drawings.

Orders and directions may be given orally by the Engineer and shall be received and promptly obeyed by the Contractor or his representative or any superintendent, foreman or other employee of the Contractor who may have charge of the particular part of the Work in relation to which the orders or directions are given. A confirmation in writing of such orders or directions will be given by the Engineer when so requested by the Contractor.

18. ENGINEER'S FIELD OFFICE.

A field office for the Engineer is located near the construction site. The Contractor at his own expense shall provide daily janitorial service and shall maintain this field office in satisfactory condition, including the cost of present telephone service and the installation and costs of one additional trunk line, from the time when he commences Work under this Contract until such time as it is possible to establish an office in the Bus Station. As it becomes possible to establish an office in the Bus Station, office accommodations of approximately the same size as those in the field office, including heat, light, telephone and janitor service therefor shall also be provided and maintained for the Engineer until the Certificate of Final Completion is issued by the Engineer.

19. SURVEYS.

The Engineer will establish a bench mark and a base line at or adjacent to the location of the Contractor's operations. The Contractor shall perform all surveys which may be required for the performance of the Work. He shall carefully preserve any base line and bench mark which may be established by the Engineer.

The Contractor shall, in addition, furnish to the Engineer without additional compensation therefor, any or all information and data regarding points, lines, grades, elevations and other survey information established by the Contractor during the performance of the Work.

20. TEMPORARY STRUCTURES.

The Contractor shall design, furnish and construct all barricades, fences, staging, falsework, scaffolding sidewalk bridges, and other temporary structures required in the performance of the Work, whether or not of the type enumerated. All such temporary structures shall be of adequate strength for the purposes for which they are constructed and the Contractor shall maintain them in a satisfactory condition. Although the designs for such structures are to be prepared by the Contractor, they shall nevertheless be submitted to the Engineer for his approval before being used. Neither such approval, however, nor any requirements of the Engineer, the Specifications or the Contract Drawings shall relieve the Contractor of his responsibility for the design, construction and use of the temporary structures or from any obligations and risks imposed on him under this Contract, and any such approval or requirements shall be deemed merely to relate to

minimum standards and not to indicate that the temporary structures are adequate or that they meet the Contractor's obligations under this Contract. Where required, such structures shall be painted with an approved dark color paint and shall be repainted whenever necessary during the period that Work is being performed.

Upon completion of all Work under this Contract, temporary structures shall be removed from the construction site and disposed of by the Contractor.

The wood fence which surrounds the building foundation excavation shall be maintained by the Contractor in a satisfactory condition from the time he commences Work untilthe fence, or portions thereof, is no longer required to exclude the public from trespassing on the building area. The Contractor shall remove or relocate such portions of the fence as may be necessary from time to time to permit the performance of the Work.

21. UTILITY SERVICES.

The Contractor shall make arrangements for securing at his own expense any heat, light, power, water and other services which may be required for the performance of the Work.

22. PERMIT AND REQUIREMENTS FOR WELDING.

Prior to the commencement of any cutting or welding operations at the construction site, the Contractor shall notify the Engineer and obtain an Authority cutting and welding permit. The Authority will issue this permit without payment of a fee, and application forms may be obtained from the Contract Clerk in Room 1115 in the Port Authority Building, 111 Eighth Avenue, New York 11, N. Y. or from any Resident Engineer of the Authority, at his office at the facility. Unless otherwise approved by the Engineer, all cutting and welding operations shall be performed in accordance with the conditions whichforms a part of said permit. The permit application must be filled out and submitted in duplicate to the Engineer at least forty-eight hours prior to commencing welding or cutting operations at the construction site.

After the permanent lighting system for the building has been completely installed and placed in satisfactory operation, the temporary lighting system shall be removed by the Contractor and disposed of by him.

23. TEMPORARY HEAT.

Any heat required in the performance of the Work shall be furnished at the Contractor's expense. As certificates of partial completion are issued for sections of the building the Authority will assume the cost of heat for such areas.

24. MAINTENANCE OF TRAFFIC.

All necessary facilities shall be furnished by the Contractor for the benefit of street traffic. All sidewalks and street crossings adjacent to the construction shall be kept in a clean and neat condition. The Contractor shall bridge gutters and low places where water might collect and remove snow and ice promptly from the sidewalks.

Waste material of any character shall not remain on the streets under any circumstances but must be carted away immediately and properly disposed of. Such materials shall not be allowed to accumulate in or about the site.

25. PUBLICLY AND PRIVATELY OWNED UTILITY FACILITIES.

The positions shown on the Contract Drawings or existing utility facilities and new utility facilities are only approximate and are based upon the best available information. The exact position of the new utility facilities will be determined by the Engineer at the time of construction.

The owners of utility facilities shall have access at all times to such facilities at the construction site for the purpose of making inspection, repairs, alterations and additions thereto in the ordinary course of the owner's businesses.

Written notice shall be given by the Contractor to all individuals, companies or officials owning or having charge of publicly and privately owned utility facilities at the construction site of his intention to commence operations affecting such facilities at least one week in advance of the commencement of such operations, and the Contractor shall at the same time file a copy of such notice with the Engineer.

When the Contractor performs any Work in connection with maintenance of or alterations of any sort to publicly or privately owned utility facilities, he shall give the owners thereof all reasonable opportunity to inspect the Work which is being performed on their facilities.

The Contractor shall not, in any event, disturb or remove any facilities until the owner thereof has been notified and service otherwise provided for by the owner.

26. USE OF GEORGE WASHINGTON BRIDGE.

The Contractor will be permitted to use the George Washington Bridge, toll free, for the transportation of materials and equipment between New York and New Jersey for the performance of the Sale and Work. Such use of the George Washington Bridge shall be subject to prior arrangements with the Engineer in order to avoid interference with traffic and to insure safety of bridge traffic. Such toll free use shall not be extended to passenger automobiles.

27. FINAL INSPECTION.

When, in the opinion of the Contractor, the Sale or the Work is completed and ready for final inspection, he shall so notify the Engineer in writing and the Engineer will give the entire Materials or Work (including any portions with respect to which Certificates of Partial Completion have been issued) a minute and thorough inspection. Before any Certificate of Completion will be issued, any defects or omissions noted on this inspection must be corrected by the Contractor.

28. GUARANTEES.

The Specifications provide for certain guarantees of portions of the permanent construction. Although such guarantees shall be enforceable as provided, no requirement of this Contract with respect to guarantees by the Contractor shall be deemed to be a limitation upon any other rights which the Authority would have, either expressed or implied, in this Contract in the absence of such guarantees, the said guarantees being given only for the greater assurance of the Authority.

29. LIGHT AND POWER.

Electricity shall be used for all lighting purposes and a sufficient number of lights shall be provided for the proper illumination for all parts of the Work. Electric wires shall be kept thoroughly insulated and special precaution shall be taken to avoid short circuits, using Type RW wire and weatherproof sockets and fittings throughout.

The Contractor shall provide temporary lights to maintain a minimum lighting level of two foot candles with lights placed at a minimum height of twenty feet on all roadways, streets, detoured traffic lanes and pathways at locations at which construction will be undertaken.

All construction barricades shall be provided with red electric lights spaced not in excess of ten feet, operated on a twenty-four hour basis. Fixtures shall be the vapor proof type with tamper proof guards complete with rigid conduit throughout.

The entire temporary lighting system shall conform to the applicable requirements of the Department of Water Supply, Gas and Electricity of the City of New York. The Contractor shall provide all power required for the temporary lighting.

PAGES 142 THROUGH 149 - DELETED

CHAPTER II

CONSTRUCTION

30. CONCRETE.

Concrete shall mean a mixture of air-entraining Portland cement, fine aggregate, coarse aggregate and water.

Cement

Portland cement shall conform to the requirements for Type IA cement of the Standard Specifications for Air Entraining Portland Cement (A.S.T.M. Designation: C175) of the American Society for Testing Materials.

Samples for testing will be taken at the mill from the conveyor delivering to storage or at the points of discharge from bulk storage. After the samples have been taken, seals will be placed by the Engineer on all entrances to and exits from the bin. At any time should these seals be broken, except in the presence of an Inspector or with the written consent of the Engineer, the cement stored in that bin shall not be used until after it has been subjected to a complete retest.

At least twelve days shall be allowed after the sampling of cement for the completion of the seven-day test and cement shall be held in storage at the mill until the completion of the seven-day test.

Cement shall be delivered in either (a) strong cloth or approved paper bags containing ninety-four pounds net of cement per bag, with each bag plainly marked with the brand, name of manufacturer and place of manufacture, and sealed in an approved manner, or (b) in bulk provided the following conditions are complied with:

> Cement shall be loaded at the mill into weather-tight containers constructed for transporting cement. The cement may be delivered in these containers or may be transferred to and shipped in a barge especially adapted for transporting cement. Cement shall not be transported until the equipment and means of transport have been approved by the Engineer. Cement shall not be loaded, transferred or unloaded except in the presence of the Engineer or an Inspector. At the batching plant, the Contractor shall provide a weather-tight storage bin of sufficient capacity to insure an adequate supply of cement for the work at all times. He shall provide a weather-tight steel storage hopper immediately above an approved

device for weighing cement. All facilities for transporting and storing cement shall be constructed so that they may be sealed by the Engineer. At any time should these seals be broken, except in the presence of an Inspector, or with the written consent of the Engineer, the cement stored in that bin shall not be used until after it has been subjected to a complete retest. The transfer of cement from the shipping containers to its final introduction into the weighing device shall be by means of an approved conveying apparatus which shall be completely enclosed and weather-tight.

The Contractor at all times shall keep in storage an adequate supply of tested and accepted cement. Cement approved by the Engineer shall not be used for any purpose other than for the Work under this Contract, except that, upon the written request of the Contractor and his statement that the quantity of approved cement in storage is adequate for all needs of the Work, the Engineer may release a limited quantity of the same for use elsewhere.

At the construction site, cement shall be stored in bags at some point convenient thereto, in a suitable weather-tight building or steel storage facility in such a manner as to keep it free from dampness, and so that the quantity on hand can be readily determined at all times. Each shipment shall be stored separately to provide for ready identification and inspection, and stock longest in storage shall be the first used.

Fine Aggregate

Fine aggregate shall be clean, natural siliceous sand consisting of hard, strong, durable, uncoated particles, and shall be free from injurious amounts of soft or flaky particles, shale, loam, alkali, organic matter, or other deleterious substances. It shall contain not more than three per cent (3%) by weight of silt or other particles capable of passing through a No. 200 sieve. The percentage of material finer than No. 200 sieve shall be determined in accordance with the Standard Method of Test for Amount of Material Finer than No. 200 Sieve in Aggregates (A.S.T.M. Designation: C117) of the American Society for Testing Materials.

Fine aggregate shall be tested in accordance with the Tentative Method of Test for Organic Impurities in Sands for Concrete (A.S.T.M. Designation: C40) of the American Society for Testing Materials. Materials which show a color darker than the reference standard color solution shall not be used.

Fine aggregate shall be graded within the following limits:

Sieve Size	Per Cent Passing (By Weight) Minimum	Maximum
No. 4	95	100
No. 8	75	95
No. 16	45	80
No. 30	25	60
No. 50	10	30
No. 100	0	8

The grading of fine aggregate shall be determined in accordance with the Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates (A.S.T.M. Designation: C136) of the American Society for Testing Materials.

The fineness modulus of fine aggregate from any one source shall be such that the fineness modulus of subsequent deliveries shall not vary by more than fifteen hundredths (0.15) from the fineness modulus of the first delivery from said source. The uniformity of fine aggregate shall be determined by its grading expressed as fineness modulus. The fineness modulus shall be obtained by adding the cumulative percentages of aggregate retained on each of the following sieves, and dividing the sum by 100:

No. 100 (149 micron)
No. 50 (297 micron)
No. 30 (590 micron)
No. 16 (1190 micron)
No. 8 (2380 micron)
No. 4 (4760 micron)

Fine aggregate shall be of such quality that mortar composed of the fine aggregate and Portland cement shall have compressive strengths at the ages of seven days and twenty-eight days not less than those of mortar composed of graded standard sand and the same cement. The Standard Method of Test for Measuring Mortar-making Properties of Fine Aggregate (A.S.T.M. Designation: C87) of the American Society for Testing Materials shall be followed in determining the compressive strengths.

Coarse Aggregate

Coarse aggregate shall consist of clean, hard, strong, durable gravel or crushed stone, except that coarse aggregate for Class "A" concrete shall be curshed stone only. Crushed stone shall be dolomitic limestone or trap rock. Coarse aggregate shall be free from injurious amounts of soft, friable, thin, elongated or laminated pieces, alkali, loam, clay, organic or other deleterious matter, and shall be free from an amount of material finer than No. 200 sieve in excess of one-half of one per cent.

Coarse aggregate shall be of nominal three-quarter inch size, and shall be graded within the following limits:

Sieve Size	Per Cent Passing (By Weight) Minimum	Maximum
1½ inch	100	---
1 inch	90	100
3/4 inch	60	80
3/8 inch	15	40
No. 4 (4760 micron)	0	5

The grading of coarse aggregate shall be determined in accordance with the Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregate (A.S.T.M. Designation: C136) of the American Society for Testing Materials.

The fineness modulus of coarse aggregate from any one source shall be such that the fineness modulus of subsequent deliveries shall not vary by more than ten-hundredths (0.10) from the fineness modulus of the first delivery from said source. The uniformity of coarse aggregate shall be determined by its grading expressed as fineness modulus. The fineness modulus shall be obtained by adding the cumulative percentages of aggregate retained on each of the following series of sieves, and dividing the sum by 100:

No. 100	(149	micron)
No. 50	(297	micron)
No. 30	(590	micron)
No. 16	(1190	micron)
No. 8	(2380	micron)
No. 4	(4760	micron)
3/8 inch		
3/4 inch		

Coarse aggregate prepared by combining two or more separated sizes of material shall be remixed by proportioning and mixing on a conveyor belt, or the sizes shall be weighed separately at the batching plant.

Notice of Loading

Notice shall be given at least forty-eight hours in advance of the loading of cement and aggregates to permit sampling and inspection of material by the Engineer while it is being loaded at the point of production.

Water

Water for mixing and curing concrete and mortar shall be fresh, clean water suitable for drinking purposes.

Reinforcement

Reinforcing bars shall conform to the requirements for the same of the clause hereof entitled "Concrete Reinforcement".

Wire mesh shall conform to the requirements for the same of the clause hereof entitled "Concrete Reinforcement".

Forms

Forms shall be so constructed that the finished concrete will conform to the shapes, lines and dimensions shown on the Contract Drawings. They shall be substantially built and sufficiently tight to prevent leakage of water and grout and shall be properly and securely braced in order to maintain their true position and shape. If any form loses its proper shape or position, it shall be immediately repaired to the satisfaction of the Engineer or removed and immediately replaced with a new form.

Bolts and ties shall be of approved design. They shall be left in the concrete and so connected to the forms that when the forms are removed no metal will be less than two inches from the surface of the concrete. The use of through bolts will not be permitted.

The inside of forms shall be thoroughly cleaned before concrete is placed in contact with the form and, except where a scored finish is required, shall be coated with a non-staining mineral oil or other approved material, applied before reinforcement is placed.

The Engineer may permit the use of the sides of excavated trenches as forms for footings and piers to the extent that soil conditions permit. Such trenches shall be accurately cut with bottom level and sides of proper shape and width. Should the Engineer consider sides of such excavated trenches unsuitable for use as forms, wood or steel forms shall be used.

Undressed lumber free of loose knots may be used for forms for unexposed footings and piers. Metal forms shall be sufficiently strong to retain their shape and to produce an accurate surface.

Wood forms for walls, beams, slabs and columns shall be of dressed boards, sound, and free from loose knots and other defects that may cause undesirable results when the concrete is placed. Metal forms shall be sufficiently strong to retain their shape and so designed as to produce an accurate, smooth surface. Joints in forms shall be kept to a minimum and shall be so small and tight that the concrete surfaces will be free from ridges, fins and other imperfections.

When Contract Drawings require "smooth finish" for any concrete surface, forms used shall be plywood, three-quarters of an inch thick, sheet steel or lined wood forms. Wood forms shall be lined with smooth, durable, grainless and non-staining board. Form lining, if used, shall have close-fitting square joints between the separate pieces and shall not be sprung into place. Joint cracks shall be filled flush with the surface of the forms with a mixture of equal parts of Portland cement and beef tallow.

Removal of Forms

Before any forms are removed the concrete shall have attained sufficient strength to prevent injury due to such removal. The time for the removal of forms shall be subject to the approval of the Engineer. Care shall be exercised in removing forms in order not to damage the concrete.

Holes and voids in the surfaces of the concrete, resulting from bolts and ties, shall be wet and filled with mortar of the same proportion of fine aggregate and cement as in the concrete, after which the exposed mortar surfaces shall be finished smooth and even with a wood float except those exposed to view in the finished structure, which shall be finished with a steel trowel. All fins and other surface irregularities shall be removed promptly by chipping, grinding or other approved methods to give a uniform finish. Where no surface finish for concrete surfaces produced by the use of forms is indicated on the Contract Drawings, such surfaces shall not be treated after the removal of the forms except as provided in this paragraph.

Proportioning Ingredients

Aggregates and the proportion of concrete will be inspected at the batching or mixing plant.

Concrete shall be mixed in the proportions specified in the following table:

Ingredients	Quantity and Slump				
	Class"A"	Class"B"	Class"C"	Class"D"	Class"E"
Cement-pounds	94	94	94	94	94
Fine Aggregate-pounds	150	170	185	210	265
Coarse Aggregate-pounds	285	320	340	390	435
Water-maximum gallons	4.75	5.00	5.50	6.00	7.00
Slump-maximum inches	3	4	4	4	5

In addition to the above classes of concrete mixes, there is specified hereinafter a concrete mix for the sidewalls and roof of the structure, plus a lightweight structural concrete and a lightweight concrete fill.

The Contract Drawings show the locations in which each class of concrete, if required, is to be installed.

The weights of aggregate shown in the foregoing table are those of saturated surface-dry aggregate and the volume of surface water carried on the aggregate as used shall be deducted from the volume of water shown above. The Engineer, to secure the optimum mixture, may change the weight of fine aggregate by an amount not to exceed ten per cent of the weight of fine aggregate shown above; however, the combined weight of fine and coarse aggregate will be maintained.

The slump shall be determined in accordance with the Standard Methods of Test for Slump of Portland Cement Concrete (A.S.T.M. Designation: C-143) of the American Society for Testing Materials.

To determine the optimum concrete mixture, the Engineer will make trial batches of concrete mixed with the aggregates and cement which are proposed for use. At least ten days before the concrete is to be placed, the Contractor shall inform the Engineer of the source from which he proposes to obtain the materials, in ample time to permit of these tests, and shall furnish at his own expense whatever quantities of these materials may be required for the test. If the Contractor desires to change the source of his materials, new tests will be made.

Cement shall be measured by weight on a scale separate from those used for other materials. The Contractor shall provide weighing equipment of sufficient capacity to weigh all cement required for a batch in one operation. The error of the cement-weighing mechanism shall not exceed one per cent of the amount of material weighed. When approved by the Engineer, cement may be measured in full bags of ninety-four pounds each, but no fraction of a bag shall be used unless weighed. Either the entire contents of the weighing hopper or the entire contents of the measured number of bags shall be completely delivered into the concrete mixer.

The quantities of aggregate required for each batch of concrete shall be measured by weight. Due allowance shall be made for the moisture carried by the aggregates. The Contractor shall provide weighing equipment, of sufficient capacity to weigh all fine and coarse aggregates required in a batch in one filling of the weighing hopper. No aggregates shall be used until the weighing equipment has been approved by the Engineer. Weighing equipment shall be of such construction and accuracy that it will rapidly measure without delay the aggregates required in each batch. The error of the aggregate weighing mechanism shall not exceed one per cent of the amount of material weighed.

The quantity of water required for each batch of concrete shall be accurately determined, either by weight or by volume, and the Contractor shall provide an approved measuring and controlling device therefor. Due allowance shall be made for the moisture carried by and weighed with the aggregates. The water measuring device shall be equipped with inlet and discharge valves so interconnected that either one or the other but not both may be operative at any time and both valves shall be free from leakage when in a closed position. Volumetric measuring devices shall have either an adjustable overflow outlet or an adjustable discharge outlet, each calibrated to indicate the amount of water measured. Weight measuring devices shall be of either the simple or compound lever or dial meter type, free from springs, and calibrated to indicate the amount of water measured. The error of the water measuring device shall not exceed one per cent of the amount of water measured.

Mixing Concrete

Concrete shall be mixed in truck-type concrete mixers at the construction site, subject to the following provisions:

(a) A supply of inspected and accepted cement and aggregates for the exclusive use of the Authority in volumes sufficient in the opinion of the Engineer to insure a satisfactory rate of supply to the construction site shall be maintained by the Contractor at the plant at which the concrete ingredients are placed in the truck mixers.

(b) The method of operation and condition of truck mixers shall be acceptable to the Engineer.

(c) The use of truck mixers shall be confined to the transportation of measured quantities of materials to the construction site and the mixing and discharge of the materials at the construction site under the supervision of an Inspector.

(d) The Contractor shall have a sufficient number of truck mixers available to insure continuous delivery of the concrete at the rate required for the proper handling, placing, and finishing of the concrete.

(e) Truck mixers shall be of the revolving-drum type, suitably mounted and fitted with adequate blades capable of combining aggregates, cement and water into a thoroughly uniform mass of concrete, and of discharging the mixture without segregation.

(f) The Engineer may, from time to time, make slump tests of individual samples taken at approximately the one-quarter and three-quarter points of the load. If these slumps differ by more than two inches, the truck mixer shall not be used further until conditions causing lack of uniformity in consistency have been corrected.

(g) Each truck mixer shall be equipped with a water tank, suitable for accurately measuring and controlling the quantity of water for each batch of concrete and so constructed as to adequately contain and transport various measured amounts of water without loss by leakage or surging. The water tank shall be connected to the mixing drum by means of one or more valves and pipes so arranged and of such size that the full volume of water contained in the tank may be transferred into the drum within a time interval of not more than five minutes. If the water transfer system does not function completely within the specified interval of five minutes a mechanical water pump will be required.

(h) Truck mixers shall be equipped with a metal plate, attached by the manufacturer, indicating the volume of mixed concrete the equipment is intended to produce. The quantities of materials transported and the volume of mixed concrete produced shall not exceed the manufacturer's rated capacity except that when the manufacturer's rated capacity is greater than fifty-seven and one-half per cent of the gross volume of the mixing drum the volume of concrete produced shall be limited to not more than fifty-seven and one-half per cent of the gross volume of the mixing drum. In locations where the rate of depositing is slow, the Engineer may restrict the volume of concrete that may be mixed in a truck mixer to a volume less than the manufacturer's rated capacity of the truck mixer.

(i) Truck mixers which are known to be unsatisfactory mechanically or truck mixers which develop unsatisfactory mechanical conditions during use shall be immediately repaired or withdrawn from use.

(j) Immediately before being placed in service each day the water tank of each truck mixer shall be filled with water and that portion of the tank normally used to contain mixing water shall be discharged into the mixing drum; the drum shall be revolved and the water completely discharged from the drum before materials are loaded. During use, after each load has been discharged, the mixing drum shall be washed internally with water, while the mixer is revolving at sufficient speed to clean the mixer thoroughly, and any measured water, wash water or

concrete remaining from any preceding load shall be completely discharged from the truck mixer.

(k) Water for washing purposes, in excess of the measured amount necessary to produce the desired quantity and quality of concrete, may be transported by truck mixers provided that the discharge of excess water into the mixing drum can be accomplished only through the operation of a water-tight valve separate from that used for discharging measured water. Water for washing purposes may be transported in an auxiliary tank equipped with an indicating gage and entirely separated from the main water tank by a water-tight wall, or may be transported in a single tank with the measured water, provided that the orifice for discharging the measured water is centrally located within the tank and is so arranged that none of the excess water can be discharged through that orifice at any position of tilt, cant, or sway of the truck.

(l) Water, cement, fine aggregate and coarse aggregate shall be measured accurately to within one per cent of the desired amounts before being loaded into the truck mixer.

(m) Mixing of materials into concrete during transportation from the point of loading to the construction site will not be permitted. No water shall be transferred into the mixing drum before arrival of the truck mixer at the construction site. During transfer of the water from the tank into the drum, the drum shall be revolved in the mixing direction and the discharge door of the drum of horizontal-type mixers shall be partly open to permit the release of air pressure within the drum. The mixing speed of the truck mixers shall be not less than four revolutions per minute (r.p.m.) of the drum, nor greater than a speed resulting in a peripheral velocity of the drum of two hundred-twenty-five feet per minute. After all of the water required in the batch has been transferred into the mixing drum, and before any material is discharged from the truck mixer, the drum shall be revolved without interruption, not less than fifty nor more than one hundred revolutions at mixing speed.

(n) Mixed concrete shall be discharged from truck mixers without segregation of the ingredients. The discharge door shall be opened sufficiently so that neither the coarse aggregate nor the mortar shall be restrained. Any unmixed materials or any mixed concrete not discharged from a truck mixer within a time interval of one and one-half hours after loading shall not be incorporated in the structure and shall be removed immediately by the Contractor from the construction site.

Where concrete or mortar is separately required in small batches of less than a cubic yard and the Engineer has specifically approved, concrete may be mixed by hand, provided the methods of mixing, transferring and placing the concrete are first approved by the Engineer.

Concrete or mortar which has partially hardened or has attained its initial set shall not be remixed or retempered and shall be discarded.

Control Tests

From time to time during the mixing and placing of concrete, the Engineer will take samples from the concrete after it is mixed and will make specimens for laboratory control tests in accordance with the Standard Method of Making and Curing Concrete Compression and Flexure Test Specimens in the Field (A.S.T.M. Designation: C31) of the American Society for Testing Materials. The specimens will be tested in accordance with the Tentative Method of Test for Compressive Strength of Molded Concrete Cylinders (A.S.T.M. Designation: C39) of the American Society for Testing Materials. The Engineer will also make frequent observations of the consistency of the freshly mixed concrete as measured by the slump. The Contractor shall provide the labor necessary for and the means of obtaining all samples of concrete.

Preparation for Placing Concrete

Surfaces on or against which concrete is to be deposited shall be thoroughly cleaned of all loose or objectionable materials. Laitance accumulated from previous pours shall be removed by picking, chipping and thoroughly cleaning all surfaces against which concrete will be placed. In all cases of joining old with new concrete, the old surfaces shall be thoroughly cleaned by washing with a strong stream of fresh water or by compressed air, or both. If required to insure adequate bond, a coating of mortar containing cement and fine aggregate of the same proportions as the concrete to be placed shall be applied immediately before placing the new concrete, without additional compensation therefor.

Bent dowels, whether placed by the Contractor or others, shall be straightened where necessary. Such dowels shall not be heated. Dowels and other steel or metal to be embedded in concrete including such portions of steel work as may be required to be embedded shall be cleaned of all loose rust, scale, paint, grease or other objectionable material.

Construction Joints

The number, location and details of construction joints shall be approved by the Engineer. Their planes shall be approximately normal to the direction of the pressure on them and they shall be provided with suitable keys and dowels. Construction joints shall be placed at points of minimum shear, unless otherwise shown on the Contract Drawings or directed by the Engineer. Lips or other irregulariteis between adjoining sections of concrete shall be avoided and effective devices shall be used to secure the forms tightly against concrete previously placed.

Depositing Concrete

Concrete shall be deposited only in the presence of the Engineer and by methods approved by him. Concrete shall be placed in the dry and the Contractor shall take all precautions necessary to prevent water from entering or lying in any excavation or other space where concrete is being placed or while it is setting. Concrete shall not be placed on or next to frozen surfaces.

Concrete shall be transferred from the mixer to the place of deposit as rapidly as practicable and with sufficient speed that concrete will be free from partially or completely hardened areas of contact between increments of the same pour. Such methods shall be used as will preclude segregation.

The Contractor shall use suitable methods and equipment to place concrete of the required consistency and to place it as rapidly as possible. Neither proportions of materials nor consistency of the concrete shall be changed to accommodate undesirable methods or inadequate equipment for mixing and placing concrete. The method and equipment used to transport the concrete from the mixer to the forms shall be approved by the Engineer.

Concrete shall be deposited vertically in the forms as nearly as practicable in its final position and in approximately horizontal layers. Subject to the foregoing requirements, concrete shall be conveyed by approved conveyors, pipes, chutes, or spouts to a point not more than five feet from its final position in the structure.

Concrete shall be thoroughly compacted by spading the coarse aggregate away from the form and into the plastic mass. The concrete shall be rodded around embedded materials, and worked into the corners and spaces to be filled. Spading shall be accomplished through use of approved equipment.

Where spading is inadequate or insufficient to obtain rapid consolidation, the concrete shall be compacted by mechanically vibrating the concrete within the mass with mechanical vibrators. The type, number and method of application of mechanical vibrators shall be approved by the Engineer. Internal vibration, where required by the Engineer to secure satisfactory consolidation, shall be applied to the concrete for time intervals approximating ten seconds and at points not more than thirty inches apart. Vibrators shall not be used to move concrete horizontally in the form.

Every effort shall be made to avoid the formation of laitance and the accumulation of excessive water on the surface of the concrete as it is deposited. Any water accumulated shall be removed by approved methods before other concrete is placed.

Concrete, when deposited, shall have a temperature of not less than fifty degrees F. When necessary, the Contractor shall provide approved facilities to heat water and aggregates to such temperature as will be necessary to meet the above requirement but in no event shall the temperature of concrete exceed one hundred degrees F. Suitable means shall be provided for maintaining a temperature in the concrete of at least fifty degrees F., for not less than three days after the concrete is placed. Thereafter for a period of seven days, the concrete shall not be exposed to a temperature below thirty-two degrees F. No salts, chemicals or admixtures of any kind shall be added to the concrete, without the written approval of the Engineer.

Protection and Curing

Careful attention shall be given by the Contractor to the proper curing and protection of all concrete in the structure. The concrete shall be protected from the elements, freezing, flowing water and from defacement of any nature during construction operations.

Immediately after placing or finishing, concrete surfaces not covered by forms shall be protected from the loss of surface moisture for a period of not less than seven days, by covering with Kraft-paper quilts or wet burlap, lapped four inches at edges and ends. Water shall be added whenever necessary to keep burlap wet during the seven-day period.

Concrete and Cement Finish

The Contract Drawings indicate the location and extent of additional treatment of concrete surfaces. Where no such additional treatment is shown on the Contract Drawings, none will be required.

Concrete finishes as shown on the Contract Drawings shall be in accordance with the following requirements:

"Smooth Finish" shall be a surface of concrete obtained by the use of special forms as specified under the subheading entitled "Forms". All fins and other irregularities in the exposed surfaces of concrete shall be removed by rubbing the irregularities with a carborundum brick and clean fresh water. Any mortar patches shall be rubbed with a carborundum brick as above specified.

"Scored Finish" shall be a surface of concrete obtained by roughening in an approved manner or etching with sharp pointed steel tools to key or otherwise improve the mechanical bond of the surface. Such scoring or roughening shall disturb or otherwise roughen at least ten percent of the area so scored. The forms for concrete to have a scored finish shall be entirely free from all oil or other material which might impair the bond of the concrete surface with the material to be subsequently applied.

"Float Finish" shall be a surface of concrete obtained by the use of a wood float. Float finish shall be applied to horizontal surfaces immediately after screeding and before initial setting has begun.

Where "Float Finish" on vertical surfaces is indicated on the Contract Drawings, it shall mean the use of a wood float on vertical surfaces of concrete from which the forms have been stripped within twenty-four hours after the concrete was poured.

"Trowel Finish" shall be a surface of concrete obtained by the use of a steel trowel, after screeding and floating the surface of the concrete immediately after pouring, to produce a dense, smooth, even surface suitable for painting or the application of floor covering. The troweling shall not take place until the surfaces have set sufficiently to sustain knee boards without damage. Troweling shall eliminate all irregularities and leave the concrete surface with a smooth, hard finish, free from marks and blemishes.

"Broom Finish" for pavement slabs shall mean a surface of concrete obtained by pulling a stiff bristled broom across the surface of the concrete immediately after mechanical smoothing operations have been completed. Brooming shall be done at right angles to the center line of the roadway or as directed and for the full width of the slab in one operation.

The surface of the pavement shall be tested after the longitudinal and hand lute screeding but before the initial set of the concrete, with a standard ten foot straight edge laid in successive positions parallel to the center line of the pavement in contact with the surface and the whole area tested from one side to the other. Any irregularities shall be promptly corrected to the satisfaction of the Engineer. The surface of the completed pavement shall not vary more than one-eighth of an inch within ten feet.

The sides of the concrete pavement slabs shall be rounded with approved edging tools, to the minimum radius obtainable in the opinion of the Engineer. Edging and any other hand finishing operations which may be necessary shall be done from a bridge which shall not be permitted to come in contact with, or rest upon, the fresh concrete at any point.

Hand finishing will be permitted on variable width sections of the pavement and other places where the use of the finishing machine would be impractical. Hand finishing shall be accomplished by means of a hand-operated strike-off template of either steel or steel-shod wood construction. This striking template shall be operated forward with a combined longitudinal and transverse motion, and shall be so manipulated that neither end will be raised off the side forms.

Inspection and Testing of Concrete

The following testing and inspection will be performed in connection with concrete:

1. Inspection of concrete aggregates will be made whenever they are being loaded at their source of supply.

2. Continuous inspection will be made of the concrete ingredients at the concrete batching plant and/or

3. Continuous inspection will be made of the concrete ingredients at the concrete mixing plant located at the construction site.

4. Cylinders of concrete will be taken and tested in accordance with the subclause hereof entitled "Control Tests".

5. Portland cement will be inspected at the manufacturer's plant. For all cement designated for this Contract and inspected by the Authority at the manufacturer's plant, the Contractor shall pay to the Authority the amount of fifteen cents per barrel of cement for cement delivered in carload lots and the amount of thirty cents per barrel of cement delivered in truckload lots even though the quantity shipped for the Contract be greater than the amount of concrete incorporated in the permanent construction. The Authority shall from time to time render to the Contractor statements of the amounts to be paid to the Authority under this numbered clause and within fifteen days after receipt of each such statement the Contractor shall pay the amount thereof. The Contractor, however, authorizes the Authority to, and the Authority may at its option, collect such amounts out of any sum payable under this Contract.

Shoring Concrete Forms

In addition to conforming to the requirements of the clause hereof entitled "Temporary Structures", concrete forms shall comply with the following requirements:

1. Forms shall conform to the shape, lines and dimensions of the member as called for on the Contract Drawings. Forms shall be substantial and sufficiently tight to prevent leakage of mortar; and shall be properly braced or tied together so as to maintain position and shape and insure safety to workmen and passerby. Temporary openings shall be provided where necessary, to facilitate cleaning and inspection immediately before depositing concrete.

2. Where the height of the shores exceeds ten feet, adequate diagonal bracing shall be provided in both longitudinal and transverse directions. In addition, adequate diagonal braces shall be provided at the ends of the framework. Diagonal bracing shall extend from the top to bottom of shores.

3. The unbraced length of wood shores supporting forms shall not exceed fifty times the least dimension. Should the Contractor desire to use metal shores or frames, they shall be approved by the Engineer before delivery to the construction site. Shores shall be adequately secured at the top and shall be properly wedged at top or bottom, if required.

4. Where shores rest upon the ground, adequate mud sills, or other bases, shall be provided to support the shores adequately.

5. Qualified workmen shall be detailed constantly during the placing of concrete to insure that there is no movement of shores, braces or other supports. The name of the foreman in charge of the formwork shall be posted in the field office of the Contractor.

6. Wherever the shore height exceeds fourteen feet, or the load on the forms exceeds one hundred fifty pounds per sq. ft. or power buggies are used, or two stage shores are used, the Contractor shall certify to the Engineer, prior to commencing construction of the forms, that the form design has been checked and approved as adequate by a licensed professional engineer who has had at least five years of experience as a structural engineer. Before placing any concrete, the Contractor shall certify that the forms have been constructed in conformance with the design which was checked and approved by the said engineer.

30A. CLASS F ROOF AND SIDEWALL CONCRETE.

Concrete shall mean a mixture of Portland cement, fine aggregate, coarse aggregate and water.

Concrete shall be cast-in-place except for roof panels which may be precast or cast in place at the Contractor's option.

Cement

Portland cement shall conform to the requirements for Type 1A cement of the Standard Specifications for Air Entraining Portland Cement (A.S.T.M. Designation: C175) of the American Society for Testing Materials and shall be obtained from the same mill throughout.

Samples for testing will be taken at the mill from the conveyor delivering to storage or at the points of discharge from bulk storage. After the samples have been taken, seals will be placed by the Engineer on all entrances to and exits from the bin. Should these seals be broken at any time, except in the presence of an Inspector or with the written consent of the Engineer, the cement stored in the bin shall not be used until after it has been subjected to a complete retest.

At least twelve days shall be allowed after the sampling of cement for the completion of the seven-day test and cement shall be held in storage at the mill until the completion of the seven-day test.

Cement shall be delivered in either (a) strong cloth or approved paper bags containing ninety-four pounds net of cement per bag, with each bag plainly marked with the brand, name of manufacturer and place of manufacture, and sealed in an approved manner, or (b) in bulk provided the following conditions are complied with:

Cement shall be loaded at the mill into weathertight containers constructed for transporting cement. The cement may be delivered in these containers or may be transferred to and shipped in a barge especially adapted for transporting cement. Cement shall not be transported until the equipment and means of transport have been approved by the Engineer. Cement shall not be loaded, transferred or unloaded except in the presence of the Engineer or an Inspector. At the batching plant, the Contractor shall provide a weathertight storage bin of sufficient capacity to insure an adequate supply of cement for the work at all times. He shall provide a weathertight steel storage hopper immediately above an approved device for weighing cement. All facilities for transporting and storing cement shall be constructed so that they may be sealed by the Engineer. At any time should these seals be broken,

except in the presence of an Inspector, or with the written consent of the Engineer, the cement stored in that bin shall not be used until after it has been subjected to a complete retest. The transfer of cement from the shipping containers to its final introduction into the weighing device shall be by means of an approved conveying apparatus which shall be completely enclosed and weathertight.

The Contractor at all times shall keep in storage an adequate supply of tested and accepted cement. Cement approved by the Engineer shall not be used for any purpose other than for the Work under this Contract, except that, upon the written request of the Contractor and his statement that the quantity of approved cement in storage is adequate for all needs of the Work, the Engineer may release a limited quantity of the same for use elsewhere.

At the construction site, cement shall be stored in bags at some point convenience thereto, in a suitable weathertight building or steel storage facility in such a manner as to keep it free from dampness, and so that the quantity on hand can be readily determined at all times. Each shipment shall be stored separately to provide for ready identification and inspection, and stock longest in storage shall be the first used.

Fine Aggregate

Fine aggregate shall be clean, natural siliceous sand consisting of hard, strong, durable, uncoated particles, and shall be free from injurious amounts of soft or flaky particles, shale, loam, alkali, organic matter, or other deleterious substances. It shall contain not more than three per cent (3%) by weight of silt or other particles capable of passing through a No. 200 sieve. The percentage of material finer than No. 200 sieve shall be determined in accordance with the Standard Method of Test for Amount of Material Finer than No. 200 Sieve in Aggregates (A.S.T.M. Designation: C117) of the American Society for Testing Materials.

Fine aggregate shall be tested in accordance with the Tentative Method of Test for Organic Impurities in Sands for Concrete (A.S.T.M. Designation: C40) of the American Society for Testing Materials. Materials which show a color darker than the reference standard color solution shall not be used.

Fine aggregate shall be graded within the following limits:

Sieve Size	Per Cent Passing (By Weight) Minimum	Maximum
No. 4	95	100
No. 8	75	95
No. 16	50	80
No. 30	30	60
No. 50	10	25
No. 100	3	10

The grading of fine aggregate shall be determined in accordance with the Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates (A.S.T.M. Designation: C136) of the American Society for Testing Materials.

The fineness modulus of fine aggregate from any one source shall be such that the fineness modulus of subsequent deliveries shall not vary by more than fifteen hundredths (0.15) from the fineness modulus of the first delivery from said source. The uniformity of fine aggregate shall be determined by its grading expressed as fineness modulus. The fineness modulus shall be obtained by adding the cumulative percentages of aggregate retained on each of the following sieves, and dividing the sum by 100:

No. 100 (149 micron)
No. 50 (297 micron)
No. 30 (590 micron)
No. 16 (1190 micron)
No. 8 (2380 micron)
No. 4 (4760 micron)

Fine aggregate shall be of such quality that mortar composed of the fine aggregate and Portland cement shall have compressive strengths at the ages of seven days and twenty-eight days not less than those of mortar composed of graded standard sand and the same cement. The Standard Method of Test for Measuring Mortar-making Properties of Fine Aggregate (A.S.T.M. Designation: C87) of the American Society for Testing Materials shall be followed in determining the compressive strengths.

Coarse Aggregate

Coarse aggregate shall consist of clean, hard, strong, durable gravel. Coarse aggregate shall be free from injurious amounts of soft, friable, thin, elongated or laminated pieces, alkali, loam, clay, organic or other deleterious matter, and shall be free from an amount of material finer than No. 200 sieve in excess of one-half of one per cent.

Coarse aggregate shall be nominally three-eighths inch "pea gravel" and shall be graded within the following limits:

Sieve Size	Per Cent Passing (By Weight) Minimum	Maximum
3/8 inch	100	--
No. 4 (4760 micron)	70	95
No. 8 (2380 micron)	0	10

The grading of coarse aggregate shall be determined in accordance with the Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregate (A.S.T.M. Designation: C136) of the American Society for Testing Materials.

The fineness modulus of coarse aggregate from any one source shall be such that the fineness modulus of subsequent deliveries shall not vary by more than fifteen hundredths (0.15) from the fineness modulus of the first deliveries from said source. The uniformity of coarse aggregate shall be determined by its grading expressed as fineness modulus. The fineness modulus shall be obtained by adding the cumulative percentges of aggregate retained on each of the following series of sieves, and dividing the sum by 100:

No. 100 (149 micron)
No. 50 (297 micron)
No. 30 (590 micron)
No. 16 (1190 micron)
No. 8 (2380 micron)
No. 4 (4760 micron)

Coarse aggregate prepared by combining two or more separate sizes of material shall be remixed by proportioning and mixing on a conveyor belt, or the sizes shall be weighed separately at the batching plant.

Notice of Loading

Notice shall be given at least forty-eight hours in advance of the loading of cement and aggregates to permit sampling and inspection of material by the Engineer while it is being loaded at the point of production.

Water

Water for mixing and curing concrete shall be fresh, clean water suitable for drinking purposes.

Reinforcement

Reinforcement shall conform to the requirements for the same of the clause hereof entitled "Concrete Reinforcement".

Forms

Forms shall be so fabricated that the finished concrete will conform to the shapes, lines and dimensions shown on the Contract Drawings. They shall be substantially built and sufficiently tight to prevent leakage of water and grout and shall be properly and securely braced in order to maintain their true position and shape. If any form loses its proper shape or position, it shall be removed immediately and replaced with a new form or repaired to the satisfaction of the Engineer.

The use of through bolts will not be permitted. Through ties of aluminum wire or ties similar and equal to Richmond "Snap-Tys" which do not appear in finished concrete surface are acceptable. Reinforcement shall be supported by the use of chairs, spacers or other devices which will not appear in the surface of the finish concrete upon removal of the form and such devices shall be submitted to the Engineer for approval before being used in the construction.

Reinforcement which will be exposed at the completion of any pour and which will not be encased with or covered by concrete during the same working day shall be protected immediately with clear plastic sheet or other waterproof film taped securely into place so that the reinforcement and the concrete surface from which it emerges is maintained completely free from water. Rust stains or other discolorations of concrete surfaces during construction will be cause for rejection of the element so stained and the Contractor shall forthwith replace any such member in its entirety together with such other members which are structurally integral with such stained member.

Forms for roof panels shall be lined with steel or with a plastic sheet liner, similar and equal to "Lustreform" as manufactured by U.S. Rubber Co., or shall be constructed of steel or plastic reinforced with fibreglass. In the case of plastic forms or forms which have a plastic sheet liner, no form oil or parting agent shall be used. In the case of steel or steel lined forms, No. C-30 form coating, as manufactured by the Sun Oil Company, mixed with five parts of mineral spirits shall be applied to the inside of forms before reinforcement is placed.

Forms for wall truss members, beams, roof trusses and columns shall be of new dressed boards, approximately four to five inches in nominal size and sound and free from loose knots and other defects. The inside of forms shall be thoroughly clean and shall be coated with an approved form lacquer or epoxy resin form coating before reinforcement is placed. Joints in wood forms shall be so small and tight that the finished concrete surfaces will be free from ridges, fins and other imperfections.

Removal of Forms

Before any forms are removed the concrete shall have attained sufficient strength to prevent injury due to such removal. The time for the removal of forms shall be subject to the approval of the Engineer. Care shall be exercised in removing forms in order not to damage the concrete.

Proportioning Ingredients

Aggregates and the proportion of concrete will be inspected at the batching or mixing plant.

Concrete shall be sized in the proportion specified in the following table:

Quantity and Slump

Ingredients	
Cement-pounds	94
Fine Aggregate-pounds	160
Coarse Aggregate-pounds	235
Water-maximum gallons	$5\frac{1}{4}$
Slump-maximum inches	4

The weights of aggregate shown in the foregoing table are those of saturated surface-dry aggregate and the volume of surface water carried on the aggregate as used shall be deducted from the volume of water shown above. The Engineer, to secure the optimum mixture, may change the weight of fine aggregate by an amount not to exceed ten per cent of the weight of fine aggregate shown above; however, the combined weight of fine and coarse aggregate will be maintained.

The slump shall be determined in accordance with the Standard Methods of Test for Slump of Portland Cement Concrete (A.S.T.M. Designation: C-143) of the American Society for Testing Materials.

To determine the optimum concrete mixture, the Engineer will make trial batches of concrete mixed with the aggregates and cement which are proposed for use. At least ten days before the concrete is to be placed, the Contractor shall inform the Engineer of the source from which he proposes to obtain the materials, in ample time to permit of these tests, and shall furnish at his own expense whatever quantities of these materials may be required for the test. If the Contractor desires to change the source of his materials, new tests will be made.

Cement shall be measured by weight on a scale separate from those used for other materials. The Contractor shall provide weighing equipment of sufficient capacity to weigh all cement required for a batch in one operation. The error of the cement-weighing mechanism shall not exceed one per cent of the amount of material weighed. When approved by the Engineer, cement may be measured in full bags of ninety-four pounds each, but no fraction of a bag shall be used unless weighed. Either the entire contents of the weighing hopper or the entire contents of the measured number of bags shall be completely delivered into the concrete mixer.

The quantities of aggregate required for each batch of concrete shall be measured by weight. Due allowance shall be made for the moisture carried by the aggregates. The Contractor shall provide weighing equipment, of sufficient capacity to weigh all fine and coarse aggregates required in a batch in one filling of the weighing hopper. No aggregates shall be used until the weighing equipment has been approved by the Engineer. Weighing equipment shall be of such construction and accuracy that it will rapidly measure without delay the aggregates required in each batch. The error of the aggregate weighing mechanism shall not exceed one per cent of the amount of material weighed.

The quantity of water required for each batch of concrete shall be accurately determined, either by weight or by volume, and the Contractor shall provide an approved measuring and controlling device therefor. Due allowance shall be made for the moisture carried by and weighed with the aggregates. The water measuring device shall be equipped with inlet and discharge valves so interconnected that either one or the other but not both may be operative at any time and both valves shall be free from leakage when in a closed position. Volumetric measuring devices shall have either an adjustable overflow outlet or an adjustable discharge outlet, each calibrated to indicate the amount of water measured. Weight measuring devices shall be of either the simple or compound lever or dial meter type, free from springs, and calibrated to indicate the amount of water measured. The error of the water measuring device shall not exceed one per cent of the amount of water measured.

Mixing Concrete

Concrete shall be mixed in truck-type concrete mixers at the construction site, subject to the following provisions:

(a) A supply of inspected and accepted cement and aggregates for the exclusive use of the Authority in volumes sufficient in the opinion of the Engineer to insure a satisfactory rate of supply to the construction site shall be maintained by the Contractor at the plant at which the concrete ingredients are placed in the truck mixers.

(b) The method of operation and condition of truck mixers shall be acceptable to the Engineer.

(c) The use of truck mixers shall be confined to the transportation of measured quantities of materials to the construction site and the mixing and discharge of the materials at the construction site under the supervision of an Inspector.

(d) The Contractor shall have a sufficient number of truck mixers available to insure continuous delivery of the concrete at the rate required for the proper handling, placing, and finishing of the concrete.

(e) Truck mixers shall be of the revolving-drum type, suitably mounted and fitted with adequate blades capable of combining aggregates, cement and water into a thoroughly uniform mass of concrete, and of discharging the mixture without segregation.

(f) The Engineer may, from time to time, make slump tests of individual samples taken at approximately the one-quarter and three-quarter points of the load. If these slumps differ by more than two inches, the truck mixer shall not be used further until conditions causing lack of uniformity in consistency have been corrected.

(g) Each truck mixer shall be equipped with a water tank, suitable for accurately measuring and controlling the quantity of water for each batch of concrete and so constructed as to adequately contain and transport various measured amounts of water without loss by leakage or surging. The water tank shall be connected to the mixing drum by means of one or more valves and pipes so arranged and of such size that the full volume of water contained in the tank may be transferred into the drum within a time interval of not more than five minutes. If the water transfer system does not function completely within the specified interval of five minutes a mechanical water pump will be required.

(h) Truck mixers shall be equipped with a metal plate, attached by the manufacturer, indicating the volume of mixed concrete the equipment is intended to produce. The quantities of materials transported and the volume of mixed concrete produced shall not exceed the manufacturer's rated capacity except that when the manufacturer's rated capacity is greater than fifty-seven and one-half per cent of the gross volume of the mixing drum the volume of concrete produced shall be limited to not more than fifty-seven and one-half per cent of the gross volume of the mixing drum. In locations where the rate of depositing is slow, the Engineer may restrict the volume of concrete that may be mixed in a truck mixer to a volume less than the manufacturer's rated capacity of the truck mixer.

(i) Truck mixers which are known to be unsatisfactory mechanically or truck mixers which develop unsatisfactory mechanical conditions during use shall be immediately repaired or withdrawn from use.

(j) Immediately before being placed in service each day the water tank of each truck mixer shall be filled with water and that portion of the tank normally used to contain mixing water shall be discharged into the mixing drum; the drum shall be revolved and the water completely discharged from the drum before materials are loaded. During use, after each load has been discharged, the mixing drum shall be washed internally with water, while the mixer is revolving at sufficient speed to clean the mixer thoroughly, and any measured water, wash water or

concrete remaining from any preceding load shall be completely discharged from the truck mixer.

(k) Water for washing purposes, in excess of the measured amount necessary to produce the desired quantity and quality of concrete, may be transported by truck mixers provided that the discharge of excess water into the mixing drum can be accomplished only through the operation of a water-tight valve separate from that used for discharging measured water. Water for washing purposes may be transported in an auxiliary tank equipped with an indicating gage and entirely separated from the main water tank by a water-tight wall, or may be transported in a single tank with the measured water, provided that the orifice for discharging the measured water is centrally located within the tank and is so arranged that none of the excess water can be discharged through that orifice at any position of tilt, cant, or sway of the truck.

(l) Water, cement, fine aggregate and coarse aggregate shall be measured accurately to within one per cent of the desired amountsbefore being loaded into the truck mixer.

(m) Mixing of materials into concrete during transportation from the point of loading to the construction site will not be permitted. No water shall be transferred into the mixing drum before arrival of the truck mixer at the construction site. During transfer of the water from the tank into the drum, the drum shall be revolved in the mixing direction and the discharge door of the drum or horizontal-type mixers shall be partly open to permit the release of air pressure within the drum. The mixing speed of the truck mixers shall be not less than four revolutions per minute (r.p.m.) of the drum, nor greater than a speed resulting in a peripheral velocity of the drum of two hundred-twenty-five feet per minute. After all of the water required in the batch has been transferred into the mixing drum, and before any material is discharged from the truck mixer, the drum shall be revolved without interruption, not less than fifty nor more than one hundred revolutions at mixing speed.

(n) Mixed concrete shall be discharged from truck mixers without segregation of the ingredients. The discharge door shall be opened sufficiently so that neither the coarse aggregate nor the mortar shall be restrained. Any unmixed materials or any mixed concrete not discharged from a truck mixer within a time interval of one and one-half hours after loading shall not be incorporated in the structure and shall be removed immediately by the Contractor from the construction site.

Where concrete or mortar is separately required in small batches of less than a cubic yard and the Engineer has specifically approved, concrete may be mixed by hand, provided the methods of mixing, transferring and placing the concrete are first approved by the Engineer.

Concrete or mortar which has partially hardened or has attained its initial set shall not be remixed or retempered and shall be discarded.

Control Tests

From time to time during the mixing and placing of concrete, the Engineer will take samples from the concrete after it is mixed and will make specimens for laboratory control tests in accordance with the Standard Method of Making and Curing Concrete Compression and Flexure Test Specimens in the Field (A.S.T.M. Designation: C31) of the American Society for Testing Materials. The specimens will be tested in accordance with the Tentative Method of Test for Compressive Strength of Molded Concrete Cylinders (A.S.T.M. Designation: C39) of the American Society for Testing Materials. The Engineer will also make frequent observations of the consistency of the freshly mixed concrete as measured by the slump. The Contractor shall provide the labor necessary for and the means of obtaining all samples of concrete.

Preparation for Placing Concrete

Surfaces on or against which concrete is to be deposited shall be thoroughly cleaned of all loose or objectionable materials. Laitance accumulated from previous pours shall be removed by picking, chipping and thoroughly cleaning all surfaces against which concrete will be placed. In all cases of joining old with new concrete, the old surfaces shall be thoroughly cleaned by washing with a strong stream of fresh water or by compressed air, or both. If required to insure adequate bond, a coating of mortar containing cement and fine aggregate of the same proportions as the concrete to be placed shall be applied immediately before placing the new concrete, without additional compensation therefor.

Bent dowels, whether placed by the Contractor or others, shall be straightened where necessary. Such dowels shall not be heated. Dowels and other steel or metal to be embedded in concrete including such portions of steel work as may be required to be embedded shall be cleaned of all loose rust, scale, paint, grease or other objectionable material.

Construction Joints

The number, location and details of construction joints shall be approved by the Engineer. Their planes shall be approximately normal to the direction of the pressure on them. Construction joints shall be placed at points of minimum shear, unless otherwise shown on the Contract Drawings or directed by the Engineer. Prior to pouring concrete which will abut the previously poured concrete at construction joints, the existing surface shall be coated to within one inch of the edges of the member with an opoxy adhesive conforming to the requirements for Grout (Adhesive) Epoxy Resin Base, Flexible, Filled of U. S. Air Force Specifications (Designation: AFP 88-116-1) for Repairs to Airfield Rigid Pavements. Lips or other irregularities between adjoining sections of concrete shall be avoided and effective devices shall be used to secure the forms tightly against concrete previously placed.

Depositing Concrete

Concrete shall be deposited only in the presence of the Engineer and by methods approved by him. Concrete shall be placed in the dry and the Contractor shall take all precautions necessary to prevent water from entering or lying in any excavation or other space where concrete is being placed or while it is setting. Concrete shall not be placed on or next to frozen surfaces.

Concrete shall be transferred from the mixer to the place of deposit as rapidly as practicable and with sufficient speed that concrete will be free from partially or completely hardened areas of contact between increments of the same pour. Such methods shall be used as will preclude segregation.

The Contractor shall use suitable methods and equipment to place concrete of the required consistency and to place it as rapidly as possible. Neither proportions of materials nor consistency of the concrete shall be changed to accommodate undesirable methods or inadequate equipment for mixing and placing concrete. The method and equipment used to transport the concrete from the mixer to the forms shall be approved by the Engineer.

Concrete shall be deposited vertically in the forms as nearly as practicable in its final position and in approximately horizontal layers. Subject to the foregoing requirements, concrete shall be conveyed by approved conveyors, pipes, chutes, or spouts to a point not more than five feet from its final position in the structure.

Concrete except for pre-cast roof panels shall be compacted by mechanically vibrating the concrete within the mass with high frequency mechanical vibrators. The type, number and method of application of mechanical vibrators shall be approved by the Engineer. Internal vibration to secure satisfactory consolidation shall be applied to the concrete for time intervals approximating ten seconds and at points not more than thirty inches apart. Vibrators shall not be used to move concrete horizontally in the form.

In the case of concrete members having sizes or shapes or being so reinforced that internal vibration is impossible, vibrators shall be externally applied with the amplitude of the vibration normal to the surfaces of concrete which will be vertical in the completed structure.

In the case of pre-cast roof panels, vibration shall only be used after all all the concrete has been placed in the forms and then only in such manner that the amplitude of the vibration is normal to the legs of the panels.

Every effort shall be made to avoid the formation of laitance and the accumulation of excessive water on the surface of the concrete as it is deposited. Any water accumulated shall be removed by approved methods before other concrete is placed.

Concrete, when deposited shall have a temperature of not less than fifty degrees F. When necessary, the Contractor shall provide approved facilities to heat water and aggregates to such temperature as will be necessary to meet the above requirement but in no event shall the temperature of concrete exceed eighty degrees F. Suitable means shall be provided for maintaining a temperature in the concrete of at least fifty degrees F., for not less than three days after the concrete is placed. Thereafter for a period of seven days, the concrete shall not be exposed to a temperature below thirty-two degrees F. No salts, chemicals or admixtures of any kind shall be added to the concrete.

Protection and Curing

Careful attention shall be given by the Contractor to the proper curing and protection of all concrete in the structure. The concrete shall be protected from the elements, freezing, flowing water and from defacement of any nature during construction operations.

Immediately after placing or finishing, concrete surfaces not covered by forms shall be protected from the loss of surface moisture for a period of not less than seven days, by covering with Kraft-paper quilts or wet burlap, lapped four inches at edges and ends. Water shall be added whenever necessary to keep burlap wet during the seven-day period.

Concrete and Cement Finish

The Contract Drawings indicate the location and extent of additional treatment of concrete surfaces, such as light sandblasting.

Interior exposed surfaces of the concrete roof structure, including the soffits of canopies at the east and west end of the roof and extending to the interior frames of louvres or glazed areas in roof trusses but not including columns and sidewall and trusses shall be painted as follows:

Prime coat shall be a mixture of two quarts of material conforming to Federal Specification TT-V-121C (1) Varnish, spar, water-resisting and one pint of mineral spirits conforming to TT-T-291a (1) Thinner; paint, volatile mineral spirits (petroleum-spirits) and one gallon of material conforming to Federal Specification TT-P-24(a) Type II, Paint, oil, concrete and masonry, exterior, eggshell finish, ready-mixed, white and tints. The prime coat shall be deliberately tinted with lampblack in oil so that it will be distinguishable from the finish coat.

The finish coat shall be material conforming to Federal Specification TT-P-24a type II, paint, oil, concrete and masonry, exterior, eggshell finish, ready-mixed, white and tints applied without modification.

The finish coat should approximate the color of Portland cement concrete but shall match color sample of concrete furnished by the Engineer,

Inspection and Testing of Concrete

The following testing and inspection will be performed in connection with concrete:

1. Continuous inspection will be made of the concrete ingredients at the concrete batching plant.

2. Cylinders of concrete will be taken and tested in accordance with the subclause hereof entitled "Control Tests".

3. Portland cement will be inspected at the manufacturer's plant. For all cement designated for this Contract and inspected by the Authority at the manufacturer's plant, the Contractor shall pay to the Authority the amount of fifteen cents per barrel of cement for cement delivered in carload lots and the amount of thirty cents per barrel of cement delivered in truckload lots even though the quantity shipped for the Contract be greater than the amount of concrete incorporated in the permanent construction. The Authority shall from time to time render to the Contractor statements of the amounts to be paid to the Authority under this numbered clause and within fifteen days after receipt of each such statement the Contractor shall pay the amount thereof. The Contractor, however, authorizes the Authority to, and the Authority may at its option, collect such amounts out of any sum payable under this Contract.

Shoring Concrete Forms

In addition to conforming to the requirements of the clause hereof entitled "Temporary Structures", concrete forms shall comply with the following requirements:

1. Where the height of the shores exceeds ten feet, adequate diagonal bracing shall be provided in both longitudinal and transverse directions. In addition, adequate diagonal braces shall be provided at the ends of the framework. Diagonal bracing shall extend from the top to bottom of shores.

2. The unbraced length of wood shores supporting forms shall not exceed fifty times the least dimension. Should the Contractor desire to use metal shores or frames, they shall be approved by the Engineer before delivery to the construction site. Shores shall be adequately secured at the top and shall be properly wedged at top or bottom, if required.

3. Where shores rest upon the ground, adequate mud sills, or other bases, shall be provided to support the shores adequately.

4. Qualified workmen shall be detailed constantly during the placing of concrete to insure that there is no movement of shores, braces or other supports. The name of the foreman in charge of the formwork shall be posted in the field office of the Contractor.

5. Wherever the shore height exceeds fourteen feet, or the load on the forms exceeds one hundred fifty pounds per sq. ft. or power buggies are used, or two stage shores are used, the Contractor shall certify to the Engineer, prior to commencing construction of the forms, that the form design has been checked and approved as adequate by a licensed professional engineer who has had at least five years of experience as a structural engineer. Before placing any concrete, the Contractor shall certify that the forms have been constructed in conformance with the design which was checked and approved by the said engineer.

Samples for Concrete Finish

Prior to the commencement of any production in the pre-casting yards, in the case of pre-cast roof panels, and prior to the ordering, fabricating or erection of any concrete materials for similar sections in the permanent construction, the Contractor shall produce the following samples, using a limited amount of the materials hereinbefore required:

(a) If the Contractor elects to pre-cast the triangular roof panels, nine panels conforming to the details for standard panels shown on the Contract Drawings shall be fabricated at the plant or yard which he intends using in the performance of the Work from which the Engineer will select a sample panel. This sample panel will then be used as a guide for acceptance of subsequently produced panels. The approved panel shall be true to line and dimension and shall have exposed surfaces with the following characteristics:

1. No honeycombs, alligators or cracks of any size.

2. No air bubble voids, exceeding one-quarter inch in largest dimension.

3. Discoloration, laitance, effluorescense, variation of finish in one plane and apparent joint lines shall be cause for rejection of any panel, sample or otherwise.

The Contractor shall continue making sample panels in groups of nine until such an approved sample is produced, all at no additional compensation.

Panels which are approved as matching the sample in the above characteristics may be used in the Work.

(b) If the Contractor elects to employ cast-in-place methods for the concrete roof, interconnected roof panels and beams forming a section of the triangular roof section connected to the upper or lower chords of trusses (high roof) shall be poured at the construction site with each panel and beam situated in its final position. The same guide for surface finish and physical characteristics as listed in (a) above shall apply. The Engineer, using the standards outlined hereinbefore, will either approve or reject the roof section as a sample for subsequent Work. Sample sections which have been rejected shall be completely removed and disposed of away from the construction site. The Contractor, without separate or additional compensation therefor, shall continue to make such roof sections until such an approved section is produced.

(c) One central interior column and one bay length of sidewall truss including at least two feet of vertical column, two joints and the connecting beam at Elev. 225.0, the two diagonals from the supporting column to the above named joints and the two diagonals from the joints to the roof line joint together with at least six feet of the roof edge beam on both sides of the roof line joint, situated and poured in sequence as they will be cast in the permanent construction, or elsewhere at the option of the Contractor, shall be made at the construction site in conformity with all applicable provisions of (a) and (b) hereinbefore.

Samples shall contain all the reinforcement shown on the Contract Drawings for each member.

31. CONCRETE REINFORCEMENT.

Shop Drawings

Shop drawings for concrete reinforcement shall be prepared and submitted for approval as required by the clause of the Specifications hereof entitled "Working Drawings and Catalog Cuts".

Material

Reinforcement bars shall be deformed bars conforming to the requirements for open-hearth, intermediate or structural grade bars of the current specifications for Billet-Steel for High Strength Billet-Steel for Concrete Reinforcement (A.S.T.M. Designation: A15) of the American Society for Testing Materials. Structural grade bars shall be used where welding is required. High strength bars for roof and sidewalls concrete (Class F), except as otherwise noted on the Contract Drawings shall conform to the requirements for High Strength Bars A.S.T.M. Designation: A432 of the American Society for Testing Materials. Welding of high strength reinforcement shall be control welding as approved by the Engineer and shall be restricted to the "Thermit" process. Five percent of all butt welds shall be tested in tension.

Wire mesh shall conform to the Tentative Specifications for Welded Steel Wire Fabric for Concrete Reinforcement (A.S.T.M. Designation: A185) of the American Society for Testing Materials. Wire sizes are expressed gauge numbers of the United States Steel Wire Gauge.

The Contractor shall furnish to the Engineer certified mill test reports.

Placing Reinforcing Steel

Reinforcement shall accurately conform in size and position to the requirements of the Contract Drawings.

Before any reinforcement is placed, any loose rust or mill scale or coatings, including ice, which would reduce or destroy the bond with concrete shall be removed.

Bars shall be placed accurately and securely, using approved bars, spacers, chairs, clips and other supports necessary to hold them in place. At intersections, the rods shall be securely wired together.

The number and location of splices shall be subject to the approval of the Engineer. Where rods are spliced they shall be lapped for a length of not less than thirty diameters and securely wired together, except for bars in compression in beams and columns which shall be lapped for a length of not less than twenty-four diameters.

Wire mesh shall be furnished in rolls bent to the form shown on the Contract Drawings and shall be lapped a distance at least equal to the space between parallel wires.

32. LIGHTWEIGHT STRUCTURAL CONCRETE.

Lelite Coarse Aggregate		Norlite Coarse Aggregate	
	3,000 psi		3,000 psi
	Pounds		Pounds
Cement 1A	94	Cement 1A	94
Natural Sand	196	Natural Sand	192
Saturated Lelite	161	Saturated Norlite	163
Water	4.5 gal.	Water	5.0
Darex	0.5	Darex	0.6
WT./Cf	110.4	WT./Cf	104.0
Slump	3" ± 1	Slump	3" ± 1

The weight of sand shown in the tabulated proportions will be determined by the Engineer and may be changed by an amount not to exceed plus or minus by five (5) percent, but the total weight of fine and coarse aggregate per bag of sand will not be changed and shall be as shown in the tabulation.

Proper allowances shall be made during measurement of the fine aggregate for water introduced into the batch therewith and a corresponding correction shall be made to the water added to the batch at the mixer.

The coarse aggregate shall be saturated with water several hours before measurement and shall be maintained saturated during measurement into the batch. No corrective allowances shall be made either to the weight of coarse aggregate or to the water added to the batch for moisture carried by the coarse aggregate.

The Contract Drawings show the locations in which each class of concrete, if required, is to be installed.

The weights of aggregate shown in the foregoing table are those of saturated surface-dry aggregate and the volume of surface water carried on the aggregate as used shall be deducted from the volume of water shown above. The Engineer, to secure the optimum mixture, may change the weight of fine aggregate by an amount not to exceed ten per cent of the weight of fine aggregate shown above; however, the combined weight of fine and coarse aggregate will be maintained.

The slump shall be determined in accordance with the Standard Methods of Test for Slump of Portland Cement Concrete (A.S.T.M. Designation: C-143) of the American Society for Testing Materials.

To determine the optimum concrete mixture, the Engineer will make trial batches of concrete mixed with the aggregate and cement which are proposed for use. At least ten days before the concrete is to be placed, the Contractor shall inform the Engineer of the source from which he proposed to obtain the materials, in ample time to permit of these tests, and shall furnish at his own expense whatever quantities of these materials may be required for the test. If the Contractor desires to change the source of his materials, new tests will be made.

Cement shall be measured by weight on a scale separate from those used for other materials. The Contractor shall provide weighing equipment of sufficient capacity to weigh all cement required for a batch in one operation. The error of the cement-weighing mechanism shall not exceed one per cent of the amount of material weighed. When approved by the Engineer, cement may be measured in full bags of ninety-four pounds each, but no fraction of a bag shall be used unless weighed. Either the entire contents of weighing hopper or the entire contents of the measured number of bags shall be completely delivered into the concrete mixer.

The quantities of aggregate required for each batch of concrete shall be measured by weight. Due allowance shall be made for the moisture carried by the aggregates. The Contractor shall provide weighing equipment, of sufficient capacity to weigh all fine and coarse aggregates required in a batch in one filling of the weighing hopper. No aggregates shall be used until the weighing equipment has been approved by the Engineer. Weighing equipment shall be of such construction and accuracy that it will rapidly measure without delay the aggregate required in each batch. The error of the aggregate weighing mechanism shall not exceed one per cent of the amount of material weighed.

The quantity of water required for each batch of concrete shall be accurately determined, either by weight or by volume, and the Contractor shall provide an approved measuring and controlling device therefor. Due allowance shall be made for the moisture carried by and weighed with the aggregates. The water measuring device shall be equipped with inlet and discharge valves so interconnected that either one or the other but not both may be operative at any time and both valves shall be free from leakage when in a closed position. Volumetric measuring devices shall have either an adjustable overflow outlet or an adjustable discharge outlet, each calibrated to indicate the amount of water measured. Weight measuring devices shall be of either the simple or compound lever or dial meter type, free from springs, and calibrated to indicate the amount of water measured. The error of the water measuring device shall not exceed one per cent of the amount of water measured.

Mixing Lightweight Structural Concrete

The lightweight aggregate shall be stockpiled and prewetted before using. Mixing of lightweight concrete shall be done only in machine mixers. The aggregates and seventy-five percent of the mixing water shall be mixed for a period of three minutes before the remainder of the water and the cement is added to the mixer. All the ingredients shall then be mixed for a period of approximately ten minutes. Fine and coarse aggregate shall be damp when weighed.

Lightweight structural concrete shall weigh from 113 pounds minimum to 115 pounds maximum per cubic foot depending on required psi.

Strength of Concrete

Method 2 of ACI Building Code shall be used for determining the strength of lightweight structural concrete.

33. LIGHTWEIGHT CONCRETE FILL.

Lightweight concrete fill shall be a mixture of air-entraining Portland cement, fine aggregate, coarse aggregate, air-entraining compound and water.

Portland cement shall conform to the requirements for Type 1A cement of the Tentative Specifications for Air-Entraining Portland Cement (A.S.T.M. Designation: C175) of the American Society for Testing Materials.

Fine aggregate shall be Waylite fine aggregate, as manufactured by the Waylite Company or Lelite fine aggregate, as manufactured by the Lehigh Materials Company. Fine aggregate shall pass a No. 4 sieve and not more than twenty-eight per cent shall pass a No. 50 sieve.

Coarse aggregate shall be either Waylite coarse aggregate, as manufactured by Waylite Company or Lelite coarse aggregate, as manufactured by the Lehigh Materials Company. Coarse aggregate shall be graded in accordance with the following tabulation:

Sieve Size	Total Per Cent Passing by Weight
1 inch	100
3/4 inch	90 - 100
3/8 inch	20 - 55
No. 4	0 - 10
No. 8	0 - 5

Air entraining compound shall be neutralized vinsol resin or "Darex" whichever type has been added to the cement at the mill.

Water shall be clean, fresh water suitable for drinking purposes.

Lightweight concrete shall be mixed in either of the two following proportions:

Materials	Quantity	
	Lelite Fill	Waylite Fill
Cement - pounds	94	94
Fine Aggregate - pounds	175	112
Coarse Aggregate - pounds	148	110
Water - maximum - gallons	11	$8\frac{1}{2}$
Vinsol Resin - maximum - av. oz.	.38	.21

Lightweight concrete shall be mixed only in machine mixers and after all the ingredients are in the mixer, for an interval of not less than ten nor more than fifteen minutes. Fine and coarse aggregate shall be saturated with sater when eighed and no allowance shall be made for water contained in the aggregates. The ratios of fine to total aggregate given in the foregoing tabulation of proportions may be varied by the Engineer in an amount not exceeding ten per cent by total weight of aggregate. The ratio of total weight of aggregate per increment of cement will not be changed. The freshly mixed lightweight concrete shall be as dry as possible.

Surfaces on or against which lightweight concrete is to be deposited shall be cleaned of all loose or objectionable materials by picking, chipping and thoroughly cleaning the surfaces.

Lightweight concrete shall be protected from the elements, flowing water and from defacement of any nature during the construction operations.

Lightweight concrete shall be cured for not less than seven days by covering with "sisalkraft" paper or wet burlap.

The surface of lightweight concrete shall be finished as specified in the subheading hereof entitled "Concrete and Cement Finish".

Cement Mortar Topping

Furnish and install cement mortar topping in locations, as follows:

(1) In locations where floor finishes of cement mortar topping are required.

Cement mortar topping shall mean a mixture, measured by volume, consisting of one part Portland cement and two parts fine aggregate; all with water for required plasticity.

Cement mortar topping which is located over concrete fill, shall be placed within twenty-four hours after placing such fill.

Cement mortar topping shall be screeded, tamped and floated to the required grades and finally given a hard steel trowel finish, leaving uniform, true and satisfactory surfaces without trowel marks or inequalities of any sort.

Cement mortar topping for floors shall be cured and protected by covering with a fiber-reinforced, asphalt-cement, laminated kraft paper approved by the Engineer. Such paper shall be removed when directed by the Engineer.

34. CONCRETE SIDEWALKS.

Concrete for sidewalks shall be placed to the elevation shown on the Contract Drawings. Concrete for sidewalks shall have a wood float finish. The edges and joints shall be tooled for a width of two inches and the corners rounded to a radius of $\frac{1}{4}$ inch. Sidewalks shall be scored in approximate five feet squares with expansion joints spaced not more than 30 feet apart. In addition expansion joints shall be placed wherever sidewalks and platforms abut adjoining construction. Expansion joints shall be $\frac{1}{4}$ inch wide.

35. ASPHALT PLANK.

Asphalt plank where shown on the Contract Drawings shall be 3/4 inch thick, 12 inches wide and of maximum manufactured lengths similar and equal to "Standard" asphalt plank as produced by Servicised Products Corp. Similar plank as produced by Johns-Manville or Carey Manufacturing Co. will be acceptable.

Asphalt plank shall be laid with tight butt joints over membrane waterproofing, bedded in a troweled on bed of plastic asphalt. Transverse joints shall be staggered. Plastic asphalt shall be placed at the rate of approximately one gallon of plastic to 40 square feet of area. Each plank shall be shoved into place forcing a small amount of plastic into the joints.

Plastic asphalt shall conform to the Federal Specification for Cement; Bituminous, Plastic (Designation 55-C-153), Type I.

36. PRECAST CONCRETE PLANK

Precast Concrete plank, steel reinforced, shall be not less than 2 3/4 inches thick, tongue and grooved similar and equal to those manufactured by Porete Manufacturing Co. or the Concrete Plank Co., Inc. Concrete plank shall be installed in accordance with the manufacturer's specifications and recommendations.

Concrete plank shall be capable of supporting a live load of not less than 50 pounds per square foot which shall be so certified by the manufacturer in writing.

Shop drawings for concrete plank shall bs submitted to the Engineer for approval in accordance with the clause hereof entitled "Working Drawings and Catalog Cuts".

37. PREMOULDED JOINT FILLER AND SEALER.

Premoulded joint filler shall be either Type I cork or Type V bituminous fiber for use in the locations as indicated on the Contract Drawings. Type I cork and Type V bituminous fiber shall conform to the requirements of the Standard Specifications for Premoulded Expansion Joint Fillers for Concrete, Non-Extruding and Resilient Types (Designation: D544 current edition) of the American Society for Testing Materials.

The joint sealer shall conform to the requirements of the Federal Specifications for Filler Joint Sealer, Hot-Poured Type (for concrete) (Designation: SS-F-336a) of the Federal Specifications Board.

38. STRUCTURAL STEEL.

Structural steel shall include all steel not provided under other clauses of the Specifications. The Contractor shall also provide for the erection of structural steel supplied and not installed under the terms of Contracts GWB-200.012 and GWB-200.014 Steelwork.

Structural steel shall consist of Class I and III Structural Steel.

Class I Structural Steel shall conform to the Tentative Specifications for Steel for Bridges and Buildings (A.S.T.M. Designation: AT-56T) of the American Society for Testing Materials.

Class III shall conform to the Tentative Specifications for Structural Steel for Welding (A.S.T.M. Designation: A373-58T) of the American Society for Testing Materials.

Structural steel shall mean structural steel as defined in Section 2 - Definition of Structural Steel, of the Code of Standard Practice for Steel buildings and Bridges set forth in the Steel Construction Manual of the American Institute of Steel Construction.

Except as otherwise shown on the Contract Drawings or specified herein, the structural steel materials, design, fabrication and erection shall conform to the provisions of the Building Code of the City of New York which would be applicable if the Authority were a private corporation and to the applicable provisions of the Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings (Riveted, Bolted and Arc-Welded Construction) of the American Institute of Steel Construction.

The Contractor shall furnish mill test reports for structural steel and the structural steel will be inspected at the mill and fabrication shop.

Substitutions

Substitution of sections, or modifications of details, or both shall be made only when approved by the Engineer.

Shop Drawings

Shop drawings for the structural steel shall be submitted for approval by the Engineer in accordance with the provisions of the clause hereof entitled "Working Drawings and Catalog Cuts".

Shop Painting

All steel surfaces shall receive one shop coat of red lead iron oxide and linseed oil paint.

Red lead shall conform to the requirements for ninety-five per cent grade red lead of the Standard Specifications for Red Lead (A.S.T.M. Designation: D83) of the American Society for Testing Materials.

Iron Oxide shall conform to the requirements for Class II, Type A pigment of the Standard Specifications for Red and Brown Iron Oxide Pigments (A.S.T.M. Designation: D84) of the American Society for Testing Materials.

Raw linseed oil shall conform to the requirements of the Standard Specifications for Raw Linseed Oil (A.S.T.M. Designation: D234) of the American Society for Testing Materials.

Bodied linseed oils shall conform to the requirements for low acid Type II oil having a viscosity of Z-2 of the Federal Specification for Linseed Oil, Heat Polymerized (Designation: TT-L-201).

Turpentine shall conform to the requirements for steam distilled wood turpentine of the Standard Specification for Spirits of Turpentine (A.S.T.M. Designation: D13) of the American Society for Testing Materials.

Naphtha shall conform to the requirements for Type II thinner of the Federal Specification for Naphtha, Petroleum, Aromatic (Federal Specification: TT-N-97).

Liquid drier shall conform to the requirements for Lead-Manganese Type Class B drier of the Standard Specifications for Liquid, Paint Driers (A.S.T.M. Designation: D600) of the American Society for Testing Materials.

Shop paint shall be prepared by mixing, grinding and thinning its ingredients in the following proportions by weight.

Red Lead	1000
Iron Oxide	330
Raw Linseed Oil	430
Bodied Linseed	50
Turpentine	50
Liquid Drier	40
Naphtha	20

Finished paint shall weigh not less than 19.0 pounds per gallon.

No surfaces shall be painted before they have been cleaned thoroughly with wire brushes, or other proper and effective means, of all loose scale-shavings, filings, dirt, dust or other

objectionable material. Grease and oil shall be removed with gasoline, benzine or other similar volatile cleaner. Painting shall be done in dry weather or under cover and the surfaces of the steel shall be free from moisture and frost when painted. Erection marks shall be painted on painted surfaces.

Grout

Where grout is required by the Contract Drawings, the method of placing shall be approved by the Engineer.

The materials for grout, except water, shall be factory pre-mixed, similar and equal to "Embeco" pre-mixed grout (Mix I), as manufactured by The Master Builders Company. The materials for grout shall be delivered to the construction site in moisture resistant containers bearing the brand name and the manufacture's name, together with the manufacturer's printed specifications for mixing. The addition of any materials other than water to factory pre-mixed grout will not be permitted. Grout shall be mixed in a mortar mixer for not less than three minutes or, subject to such restrictions as may be imposed by the Engineer it may be hand mixed by turning the entire mix over until even distribution of the components is obtained. The minimum amount of water required to produce a flowable grout that will completely fill the space to be grouted shall be used but in no case shall the amount of water exceed the manufacturer's specifications. Grout shall not be retempered by adding additional water and any mixed grout not placed within a period of twenty minutes shall be discarded.

Erection

This Contractor shall also erect all structural steel supplied and not installed under the terms of Contracts GWB-200.012 and GWB-200.014 Steelwork.

Before starting erection, the Contractor shall submit complete detailed erection drawings in accordance with the requirements of the clause hereof entitled "Working Drawings and Catalog Cuts".

Bearing plates and bases shall be set and wedged or shimmed to exact elevation and line and grouted in place.

All shop connections shall be riveted or welded and all field connections shall be bolted with high strength steel bolts which together with nuts and washers and installation therefor shall conform to the requirements of the Specifications for Assembly of Structural Joints Using High Strength Steel Bolts as approved by the Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation date February 1954.

39. SHEAR CONNECTORS.

Nelson Studs, K.S.M. Products Inc. studs or approved equal shall be used as shear connectors. Studs shall be automatically and welded to the steel.

Weld base of the studs shall be three-quarters inch or seven-eights inch in diameter. The studs are to be welded on centers indicated on the Contract Drawings. All stud welds shall be made in accordance with the recommendations of the manufacturers.

40. EXPANSION PLATES.

Bronze expansion plates shall be Lubrite Expansion Plates (with trepanned graphite inserts) as manufactured by Merriman Brothers, Inc., Boston, Mass. No substitutes therefor will be permitted. The top bolts for attaching plates shall be made of bronze.

41. MISCELLANEOUS IRON AND STEEL.

Miscellaneous iron and steel shall include all steel and iron work not provided under other clauses of the Specifications including but not limited to the following:

All structural steel shown on the Contract Drawings supplied and not installed under the terms of Contract GWB-200.012 and GWB-200.014 Steelwork, or specifically provided under other clauses of the Specifications.

Loose lintels.

Catwalk and railing.

Steel and iron work in connection with aluminum.

Steel and iron work shown on the Contract Drawings in conjunction with expansion joints.

Door saddles.

Hangers and furring channel for acoustic pan ceiling.

Access doors.

Pipe railing.

Safety treads.

Ship ladder.

Ladders.

Column Guards.

Steel Curbs.

Iron and steel shown in drawings for door frames, except for such items as are specifically provided under other clauses of the Specifications.

[illegible]

Scuttles.

Steel Stairs

Expansion Joints

Safety Stair Treads

Beam Guard Rail

MISCELLANEOUS METALS.

Shop drawings for miscellaneous metal items specified herein shall be prepared and submitted for approval as required by the clause hereof entitled "Working Drawings and Catalog Cuts".

Materials

Except as otherwise specified miscellaneous metal materials including structural steel rolled sections shall conform to the requirements of the Tentative Specifications for Steel for Bridges and Buildings (A.S.T.M. Designation: A7) and the Tentative Specifications for Structural Steel for Welding (A.S.T.M. Designation: A373) of the American Society for Testing Materials.

Large bearing plates shall be supported on steel wedges or shims until the supported members have been plumbed, following which the entire bearing area shall be grouted solid. Grout shall contain premixed "Embeco" as manufactured by the Masters Builders, Inc.

Erection with high strength steel bolts shall be subject to the provisions of the Specifications for Assembly of Structural Joints Using High Strength Steel Bolts approved by the Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation, dated February 1954.

Wrought iron shall conform to the requirements for Grade B wrought iron of the Standard Specifications for Single and Double Refined Wrought Iron Bars (A.S.T.M. Designation: A189) of the American Society for Testing Materials.

Steel for checkered steel plates shall contain not more than fifteen hundredths of one per cent of carbon, four hundredths of one per cent of phosphorus and five hundredths of one per cent of sulphur. Plates shall be capable of being bent 180° flat, without sign of fracture, with the checkers on the inside of the bend.

Pipe for railings shall conform to the requirements for black steel pipe of the Standard Specifications for Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Ordinary Uses (A.S.T.M. Designation: A120-47) of the American Society for Testing Materials.

Cast iron shall conform to the requirements of Class 25 of the Standard Specifications for Gray Iron Castings (A.S.T.M. Designation: A48) of the American Society for Testing Materials.

Gratings shown on the Contract Drawings for sidewalk on the West side of Broadway shall be similar and equal to Type BT, Size #6 gratings, as manufactured by the Borden Metal Products of Elizabeth, N. J. shall be galvanized and shall be provided with approved fasteners.

Fresh air plenum lining above Expressway from Bent #1 to approximately six feet East of Bent #5 and duct end closures shall be similar and equal to cellular steel units designated UK-18-18, as manufactured by H. H. Robertson Company, Pittsburgh, Pa.

Cast steel castings shall be made either by the open-hearth, electrical furnace or crucible process and shall conform to the following requirements:

a. Class I Steel Castings shall be grade 90-60 steel castings of the Standard Specifications for High Strength Steel Castings for Structural Purposes (A.S.T.M. Designation: A148-58).

b. Class II Steel Castings shall be grade 120-95 Steel Castings of the Standard Specifications for High Strength Steel Castings for Structural Purposes (A.S.T.M. Designation: A148-58)

Steel pins shall conform to the requirements of the current edition of Specifications for Quenched and Tempered Steel Bolts and Studs of the American Society for Testing Materials (A.S.T.M. Designation: A325).

Fabrication and Installation

Steel or iron shall be accurately fabricated with riveted, welded, bolted or screwed connections, as indicated on the Contract Drawings or approved by the Engineer. All exposed rivets, bolts or screws shall be finished or cut-off flush with the adjacent metal or nuts, unless otherwise indicated on the Contract Drawings or approved by the Engineer. Bolts shall have nuts drawn up tight and threads upset, to prevent backing off of nuts. Screws shall be countersunk and screwed up tight.

Fastenings shall be concealed where practicable. Thickness of metal and details of assembly and supports shall be as shown on the Contract Drawings. Joints exposed to weather shall be formed to exclude water. Items of miscellaneous metal to be built into adjoining construction shall be provided with suitable anchors for concrete or masonry or with attachments for bolting to the structures, as required, and shall be delivered and set in place at the proper time during the progress of the Work.

Where welding is required or permitted, it shall be continuous along entire line of contact, except where spot welding is indicated on the Contract Drawings, specified or approved by the Engineer, and shall conform to the requirements for shielded metal arc welding of the Standard Code for Arc and Gas Welding in Building Construction of the American Welding Society, a copy of which is on file in the office of the Chief Engineer. Exposed welds shall be ground smooth. Shop drawings showing welding shall indicate the size, length, spacing and type of welds.

Galvanizing where shown on the Contract Drawings shall conform to the Standard Specifications for Zinc (Hot-Galvanized Coatings on Structural Steel Shapes, Plates and Bars and Their Products (A.S.T.M. Designation: A123-47) of the American Society for Testing Materials and shall be capable satisfactorily withstanding a four-dip Preece test.

Shop Painting

All surfaces of miscellaneous metal fabricated from steel and iron shall be cleaned of all grease, oil, loose rust, scale and other loose and objectionable materials and shall be given a shop coat of an approved rust inhibitive red lead and linseed oil paint. In addition galvanized surfaces shall be given a coat of approved zinc paint prior to the application of the red lead paint.

Shop painting shall be done in dry weather or under cover and the steel or iron surfaces shall be free from moisture and frost when painted. If the shop coat of paint becomes damaged or marred during handling, storage and installation, the damaged or marred spots shall be repainted with paint similar to that applied in the shop, without additional compensation therefor.

In the case of the structural steel in the bridges over Broadway, steel surfaces that are bonded with poured masonry are so indicated on the Contract Drawings and shall not be painted. All other steel surfaces shall be given a heavy coat of bitumastic paint similar and equal to "Bitumastic No. 50" paint as manufactured by the Koppers Company, Inc. or "CA 50" paint as manufactured by the Barret Division of the Allied Chemical and Dye Corporation.

Excepting surfaces that are bonded with concrete, all surfaces of steel and iron after being inspected and approved by the Inspector and before leaving the shop, shall be given a shop coat of paint mixed in the proportion of twenty-five pounds of dry red lead, to two-thirds of a gallon of raw linseed oil; one-third of a gallon of boiled linseed oil and not more than 1/4 pint turpentine.

Red lead shall conform to the requirements for ninety-five per cent grade red lead of the Standard Specifications for Red Lead (A.S.T.M. Designation: D83-41) of the American Society for Testing Materials.

Raw linseed oil shall conform to the requirements of the Standard Specifications for Raw Linseed Oil (A.S.T.M. Designation: D234-48) of the American Society for Testing Materials.

Boiled linseed oil shall conform to the Standard Specifications for Boiled Linseed Oil (A.S.T.M. Designation: D260-48) of the American Society for Testing Materials.

Turpentine shall conform to the requirements for steam distilled wood turpentine of the Standard Specifications for Spirits of Turpentine (A.S.T.M. Designation: D13-34) of the American Society for Testing Materials.

Steel Pipe Railing

Where pipe railings are indicated on the Contract Drawings, the railing shall be constructed of iron pipe with top and center rail joined together with welded connections. Where size of railing is not shown on Contract Drawings, it shall be one and one-half inch inside diameter iron pipe. Railing shall be secured to masonry with pipe sleeves and caulked with lead. All work shall be carefully fitted and welded together and to adjoining work, using countersunk head rivets for such connections and bolts for exposed field connections.

Safety Treads

Where the Contract Drawings indicate concrete steps to have abrasive nosings, the nosings shall consist of abrasive "Ferrulun" as manufactured by the American Abrasive Metals Company or approved equal. All treads shall have a hatched surface and be equipped with anchors on the under side to build into the concrete. Treads shall be secured to anchors by bronze machine screws countersunk into top of treads so as to make treads replaceable.

Ship Ladder

A ship ladder type of steel stair shall be furnished and installed where indicated on the Contract Drawings. The ladder shall be constructed of 10 inch channel strings, one-quarter inch checkered steel plate treads, with rounded nosings and without risers. Apipe railing shall be provided at both sides of steps and at the platforms of one and one-half inch inside diameter full weight wrought iron galvanized pipe and fittings with uprights of same size pipe secured to strings and concrete platform. All necessary angle clips and bolts shall be provided for securing in place at top and bottom.

Ladders

Ladders shall be constructed of flats and rods as indicated on the Contract Drawings. All parts of ladders shall be assembled by welding. Ladders shall be fastened with clip angles expansion bolted to masonry walls 12 inches thick and thru-bolted on walls less than 12 inches thick. Where indicated on the Contract Drawings, ladders shall terminate in a gooseneck by twisting strings 90°. Goosenecks shall extend above the high level of roof or parapet as indicated on the Contract Drawings. The lower end of ladder shall be secured to the vertical surface above the roof surface.

Column Guards

Steel column guards of gauge indicated on Contract Drawings shall extend 5'-0" above floor level, and shall be anchored in accordance with details shown on the Contract Drawings.

Steel Curbings

The Contractor shall furnish and install the steel curbings as indicated on the Contract Drawings. Bulb angles shall be of standard stock size rolled steel shapes as indicated. Where bending of the angle is required to conform to the desired curves of the curbing, the outstanding leg of the angle shall be removed. The curbing shall be furnished with 2 inches x 1/2 inch by 8 inch flat steel anchors welded at two feet on centers.

Partitions shall be primed with a shop coat of rust-inhibitive paint.

Access Panels

When access doors or panels are called for on the Contract Drawings they shall be of No. 14 U. S. Standard gauge or heavier steel, in suitable angle frames. When they occur in plastered surfaces the frames shall have wings of expanded metal lath. Doors shall be hinged on side, screwed in place, and set flush with the finished wall or ceiling surface.

Steel Stairs

The Contractor shall provide all stringers, sub-treads and risers, structural steel supports newels, balustrades, railing and wall hand-rails for steel stairs; all in conformity with the Contract Drawings.

All stringers and supports shall be designed to sustain a live load of 100 lbs. per sq. ft. of stairs in addition to the full dead load. The installation shall conform to the building code of the City of New York.

Where platforms and other parts of the staircase require suspension or support on struts, the suspension struts shall be placed within the partitions wherever possible and practical, so they will be concealed from view.

Scuttle

The Contractor shall furnish and install a scuttle as indicated on the Contract Drawings similar and equal to an "Easy Access" scuttle as manufactured by Babcock-Davis Company or approved equal.

The cover and curb material shall be of No. 14 U. S. Standard gauge galvanized iron. The cover of the scuttle shall be made of one piece, with flanged sides, hemmed on all edges. The cover shall be welded to make the unit rigid. A three inch by three-quarter inch box section, channel shaped, shall be fastened to the inside of the cover; this section shall hold the non-hardening latex that acts as a draft seal.

Cover shall be attached to curb with special compensating hinges. The compensating hinge shall consist of ten sections riveted together and equipped with proper spaces to make a laminated unit that prevents side play. Cover shall be equipped with automatic locking bars that lock the cover in both open and closed position.

Expansion Joints

Where expansion joints occur in plaster walls and ceilings, they shall be formed of No. 14 U. S. Standard gauge pressed steel sheet as shown on the Contract Drawings.

43. SAFETY STAIR TREADS.

Where called for on the Contract Drawings, the Contractor shall furnish and install replaceable type extruded aluminum safety stair treads with integral longitudinal aluminum oxide wearing strips. Treads shall be secured with an adhesive and countersunk aluminum screws or bolts through lead shields.

Safety treads shall be similar and equal to Type No. 182 as manufactured by Wooster Products, Inc.

44. BEAM GUARD RAIL.

Beam guard rail where shown on the Contract Drawings shall be constructed of aluminum alloy .156 inches thick. The construction, design and material for the guard rail shall conform to the Specifications for Alcoa Aluminum Beam Guard Rail as published by the Aluminum Company of America. Guard Rail connections to ferrous metal shall be insulated with stainless steel washers.

45. MEMBRANE WATERPROOFING

Materials

Asphalt for use above ground level shall conform to the requirements for Type B asphalt, and for use below ground level shall conform to the requirements for Type A asphalt, of the Standard Specifications for Asphalt for Dampproofing and Waterproofing (A.S.T.M. Designation: D449-49) of the American Society for Testing Materials.

Coal-tar pitch for use above ground level shall conform to the requirements for Type A coal-tar pitch and for use below ground level shall conform to the requirements for Type B coal-tar pitch, of the Standard Specifications for Coal-Tar Pitch for Roofing, Dampproofing and Waterproofing (A.S.T.M. Designation: D450-41) of the American Society for Testing Materials.

Primer for use with asphalt shall conform to the Standard Specifications for Primer for Use With Asphalt in Dampproofing and Waterproofing (A.S.T.M. Designation: D41-41) of the American Society for Testing Materials.

Primer for use with coal-tar pitch shall conform to the Standard Specifications for Creosote for Priming Coat with Coal-Tar Pitch in Dampproofing and Waterproofing (A.S.T.M. Designation: D43-41) of the American Society for Testing Materials.

Fabric, for use with coal-tar pitch shall be coal-tar saturated, and for use with asphalt shall be asphalt saturated, and shall conform to the Standard Specifications for Woven Cotton Saturated with Bituminous Substances for Use in Waterproofing (A.S.T.M. Designation: D173-44) of the American Society for Testing Materials.

Application

Membrane waterproofing shall be three ply waterproofing consisting of three layers of fabric applied to the surface to be waterproofed. Each layer shall be mopped with hot asphalt or coal-tar pitch in such a manner that fabric will not come into contact with fabric or with the surfaces to which the fabric is applied. The Contractor may elect to use either asphalt or coal-tar pitch for the hot mop coats, and whichever is elected shall be used throughout. After either asphalt or coal-tar pitch has been selected the Contractor shall use the fabric and primer specified hereinbefore for use with the material selected.

The surfaces which are to receive waterproofing shall be thoroughly cleaned of loose dirt, grease or other objectionable materials which would interfere with the bond of the waterproofing to the surfaces, and shall be completely dry. Internal corners shall be fitted with a filler piece and external corners shall be beveled to avoid cracking the waterproofing.

The clean surfaces shall be given one coat of primer, applied at the rate of not less than one gallon per one hundred square feet. The primer coat shall then be mopped with a layer of hot asphalt or coal-tar pitch applied at the rate of not less than five gallons per one hundred square feet to form a complete coating, free from blowholes or ruptures. Coal-tar pitch or asphalt shall not be heated in excess of three hundred seventy-five degrees Fahrenheit. Immediately after the mop coat, a first layer of fabric shall be applied, smoothed out and mopped with hot asphalt or coal-tar pitch. Additional layers of fabric shall be applied and each mopped with hot asphalt or coal-tar pitch. Each layer shall be lapped over the preceding layer at least two inches more than the lap necessary to secure the required number of plies at all points. Each layer of fabric shall be applied without wrinkles, buckles, pockets or blisters, and shall be completely covered with asphalt or coal-tar pitch. Individual sheets of fabric shall lap adjacent sheets not less than six inches at the ends.

Waterproofing for interior construction shall be turned up on walls and masonry partitions at least six inches and shall be turned up on pipes passing through the floor construction so as to form flashing.

At floor drains, waterproofing shall be carefully lapped at the drain flanges with a ply of membrane forming a collar bonded to the drain.

Where steam or other pipes subject to temperature change pass through surfaces to be waterproofed, flanged sleeves shall be furnished and installed to which waterproofing shall be carefully bonded. Other pipes shall have waterproofing completely bonded to the pipes.

At angles, corners and around pipes, waterproofing shall be reinforced on both sides of corners or angles for a distance of ten inches and completely around pipes. If asphalt products are used, reinforcing fabric shall be asphalt impregnated fabric; otherwise plain cotton fabric shall be used. The reinforcing fabric shall be in addition to the number of plies of waterproofing fabric required.

Waterproofing for exterior construction shall be protected from puncture before backfilling operations are commenced, as indicated on the Contract Drawings. Where grout protection coat is shown on the Contract Drawings, it shall mean a sound coat of mortar, at least three-quarters of an inch thick, mixed in the proportion by volume of one part Portland cement to two parts sand troweled smooth.

Protection

After the waterproofing has been applied it shall be protected from damage or wear. If the waterproofing becomes damaged or in any way pervious and, in the judgment of the Engineer, it cannot be effectively patched or otherwise repaired, it shall be removed and replaced to the extent necessary to waterproof the structures satisfactorily.

DAMPPROOFING.

The Contractor shall dampproof the interior face of the exterior walls to receive applied finishes from lower floor slab at Long Haul Bus Level to underside of Suburban Bus Level above and including all surfaces in occupancy spaces on exterior walls.

Exterior walls shall include, without being limited to, walls which are exposed to outside temperatures and walls which are adjacent to soffited areas.

Dampproofing shall consist of coating masonry surfaces with asphalt primer and asphalt.

Primer shall conform to the Standard Specifications for Primer for Use with Asphalt in Dampproofing and Waterproofing (A.S.T.M. Designation: D41) of the American Society for Testing Materials.

Asphalt to be used for dampproofing shall conform to the requirements for Type "A" asphalt of the Tentative Specifications for Asphalt for Dampproofing and Waterproofing (A.S.T.M. Designation: D449) of the American Society for Testing Materials.

The surfaces to be dampproofed shall be cleaned of all laitance, dirt, oil, grease or other foreign material which may affect the bond between the surface and the dampproofing and shall be dry when the dampproofing is applied.

Dampproofing shall be applied uniformly and evenly. Surfaces not sealed with one coat of primer shall receive one or more additional coatings of primer until the surfaces are fully sealed. Asphalt shall be mopped on hot in one or more coatings until the surfaces are uniformly and completely sealed. The dampproofing shall be protected against abrasion and puncture at all times. Damaged surfaces shall be softened by heating and recoated satisfactorily.

48. GRANITE MASONRY

Exposed surfaces of granite shall have a polished finish of uniform high gloss which shall be free from scratches, dull spots or other imperfections. Grantie masonry shall match in color and texture the samples on file in the office of the Chief Engineer. The Contractor shall submit for approval samples of the granite he proposes to use. These samples shall be of sufficient size and quality to indicate the full arrangement of color, quality, texture and exposed surface finish which he proposes to furnish.

Granite shall be of medium texture, of sound, durable stones free from flaws and seams or structural defects. All stone shall be well-seasoned and free from quarry sap or any stain-producing mineral after weathering. Exposed surfaces shall be free from knot spots, spalls, chips, stains, discolorations or other defects which would affect the appearance of the granite. Reasonable variations in color will be permitted, as well as occasional irregular distribution of component minerals such as waves or knots, which, in the opinion of the Engineer would not impair the appearance or structural properties of the granite. The granite shall be obtained from a recognized and established quarry of sufficient capacity to furnish all granite needed in the Work. Dog or drill marks on the exposed surfaces of stones will not be permitted. All surfaces shall be out of wind, free from waves, projections or depressions, and with the surfaces flush at the joint edges.

Beds and joints shall be full and square for a distance back from the face edge of at least two inches; the remainder shall be roughed off to clear the square with no depressions in any joint surface deeper than two inches and with no depressions in any bed surface deeper than one inch. No additional joints shall be introduced unless permission therefor is given in writing by the Engineer.

Stones shall be of the size indicated on the Contract Drawings. No mitered joints will be permitted. Cutting shall produce arrises which are sharp and true. Bed surfaces shall be horizontal and end joints shall be at right angles to the vertical unless otherwise shown on the Contract Drawings.

Cutting of all anchor, grab or Lewis holes shall be done at the cutting plant; holes will not be permitted in the exposed surfaces and shall not be cut within two inches of any exposed surface.

Stones shall be so loaded for delivery as to minimize danger of spalling or breaking of the stone during transit, unloading and storage at the site. Where necessary to insure against damage, the stones shall be crated. All stones shall be delivered in the proper sequence required for setting.

Stones shall be kept clear of the ground at all times and shall be protected in such manner as to prevent staining or marring or the accumulation of water in holes. Should a stone become stained, marred or otherwise damaged, the Contractor shall either remove the stains or shall replace the stained stones. No patched, chipped, cracked, broken or otherwise defective stones shall be set. Any stone which is too small shall be replaced by one of the proper size.

Setting Granite Masonry

Materials used in the mortar for setting and pointing granite masonry shall conform to the requirements of the clause hereof entitled "Mortar Materials".

The mortar for setting granite shall be composed of one part white non-staining Portland cement to three parts clean sand. Pointing mortar shall be composed of one part white non-staining Portland cement and two parts of clean sand and sufficient lime putty to make a stiff mix.

All stones shall be cleaned and thoroughly set with water immediately before being set and the bed which is to receive the stones shall be cleaned and well moistend. Dirty stones shall be scrubbed with clean water and fibre brushes and then thoroughly rinsed with clean water.

Stones shall be set to correct position as shown on the Contract Drawings. Heavy hammering or the use of pinch bars on the exposed faces of the stones will not be permitted. Stones shall not be dropped or slid during setting, nor will hammering or turning of stones on the wall be allowed. Stones shall be carefully set without jarring the stones already laid and shall be handled with a Lewis or other approved appliance which will not cause disfigurement. All stones shall be well imbedded in mortar and settled in place with a suitable wood en maul before the mortar has set. Care shall be taken not to smear the face surfaces of stones during setting and pointing operations. If such faces become smeared with mortar, they shall be promptly cleaned. Pinning up of stones with spalls will not be permitted and spalls will not be permitted in beds. Wedges shall be thoroughly soaked in water before being used and shall be withdrawn before the mortar has set. The wedge holes shall be thoroughly wet and filled with mortar. Stones becoming loose after the mortar has set shall be reset in fresh mortar after removing all of the mortar previously placed in the joints. Stones weighing one hundred pounds or more shall be trial bedded to insure uniform mortar bearing. If any inaccuracies occur at joints in the exposed faces of stones, due to incorrect setting, the Contractor will be required to dress such stones in a manner that will produce an unbroken surface at the joints.

All granite shall be anchored or doweled in accordance with the approved working drawings. Steel anchors or clamps shall be thoroughly galvanized after fabrication. Dowels unless otherwise specified shall be of heavy bronze type of size as detailed. Anchors, dowels, etc. shall be inserted in mortar filled holes in the granite.

Joints in granite masonry shall be three-sixteenths of an inch thick and shall not vary from such thickness by more than one-sixteenths of an inch.

No granite masonry shall be laid in freezing weather, except with specific permission of the Engineer, and under such conditions, the materials shall be warmed so as to insure that the temperature of the masonry does not fall below fifty degrees F. until the mortar has set thoroughly.

Pointing, Cleaning and Protection

Exposed face joints shall be raked out three quarters of an inch deep for pointing and shall be filled solid with mortar mized in the proportions as set forth above for pointing mortar. Joints shall be tooled slightly concave.

Bed joints below sidewalk level shall be raked out three quarters of an inch deep and shall be filled with a caulking compound as provided in the clause hereof entitled "Caulking".

Joints shall be kept wet at the surfaces and protected for at least seventy-two hours. No pointing shall be done when there is a likelihood of the temperature of the air falling below forty degrees F.

During the progress of the Work the surfaces of the masonry shall be protected at all times. Upon completion of the walls and other Work likely to damage or soil the stones, the exposed stonework shall be entirely cleaned by a method approved by the Engineer, removing all mortar stains, dirt and other discoloration. The use of acids or cleaning compounds or wire brushes will not be permitted.

Corners and projections of the masonry shall be protected with boards or other approved means, against damage until the completion of the Work.

Shop Drawings

The Contractor shall prepare all necessary shop drawings in accordance with the clause hereof entitled "Working Drawings" showing the bedding, bonding and jointing of all the granite work and typical and special anchoring of same. Dimensions and setting number of each stone shall be indicated on the drawings. No cutting shall be done on work except from approved shop drawings.

49. CONCRETE BLOCK MASONRY.

Materials

Concrete masonry units shall be produced from "Waylite", "Lelite", sand or cinder aggregate conforming to the requirements of the Standard Specifications for Hollow Load-Bearing Concrete Masonry Units (A.S.T.M. Designation: C90) of the American Society for Testing Materials. Units eight inches and more in width shall be Grade A.

Solid load bearing concrete block shall conform to the requirements for Grade B Solid Load-Bearing Concret Masonry Units (A.S.T.M. Designation: C145) of the American Society for Testing Materials.

Solid block shall be used where called for on the Contract Drawings or where specifically called for in these specifications and for all stair enclosure walls. Load bearing block shall be used on all other locations.

Steel rod joint reinforcement, if required by the Contract Drawings, shall conform to the requirements for reinforcing bars specified in the clause hereof entitled "Concrete Reinforcement".

Anchors and ties shall be non-corrodible type approved by the Engineer and where shown shall conform to the requirements of the Contract Drawings. Crimped metal ties shall be formed from not less than No. 16 U.S. Standard gauge galvanized sheet steel. Wire ties shall be formed from not less than No. 6 U.S. steel wire gauge galvanized wire.

Mortar for setting concrete masonry units shall conform to the requirements for either Type B or Type C mortar as specified in the clause hereof entitled "Mortar".

Setting Concrete Masonry Units

Concrete masonry units shall be laid true and plumb with the cells vertical in horizontal courses with the vertical uniformly staggered not less than three inches. Unless otherwise shown on the Contract Drawings joints shall be not more than three-eights of an inch thick. The face shells of each unit shall be fully bedded in mortar when laid, with the vertical joints completely filled and shall be shoved to a bearing. Concrete masonry units shall be cut accurately to fit around all pipes, ducts and other openings with all voids filled with mortar. The Contractor shall furnish and install special units such as corner blocks, door jamb blocks and fillers to form all corners and offsets of the sizes required to maintain a proper bond. Unless otherwise shown on the Contract Drawing concrete masonry units shall be bonded together at all corners and angles by alternate lapping.

Weather exposed joints shall be compressed and compacted with an approved convex jointing tool to form smooth, even, concave joints. Other exposed joints shall be trowel struck smooth and flush.

50. COLD GLAZED ENAMEL.

The Contractor shall furnish and install a cold glazed enamel surface in the locations as indicated on the Contract Drawings. The finish shall be similar and equal to "Vitricon" as manufactured by the Vitricon, Incorporated and shall match in color, texture and finish, samples on file in the office of the Chief Engineer. Cold glaze enamel shall be applied to concrete block masonry and concrete surfaces in the field. The surfaces to receive cold glazed enamel and the method of applying the material shall be in conformance with the printed instructions of the manufacturer of the material.

51. CERAMIC GLAZED BRICK MASONRY

Materials

Ceramic Glazed face brick shall conform to the requirements for Grade SW Type FBX brick of the Standard Specifications for Facing Brick (Solid Masonry Unit Made from Clay or Shale) (A.S.T.M. Designation: C216) of the American Society for Testing Materials. Brick shall be standard size (two and one-quarter inches by three and three-quarter inches by eight inches). Ceramic glaze shall conform to the requirements of the Standard Specifications for Ceramic Glazed Facing Tile and Brick (A.S.T.M. Designation: C126) of the American Society for Testing Materials.

Ceramic glazed face brick shall match in color, color range and texture the samples on file in the office of the Chief Engineer. Ceramic glazed face brick with not more than ten core holes per unit and the ceramic glazes shall be similar to the brick on file in the Engineer's office.

The Contractor shall submit six samples of each king of face brick for the approval of the Engineer. After ceramic glazed face brick samples have been approved, three sample panels two feet by three feet shall be prepared for each kind of face brick with dummy joints for the approval of the Engineer. In addition, the Contractor shall lay up a sample panel at least three feet high and five feet long, of each king of ceramic glazed face brick, with mortar as herein specified, at the job site.

Ceramic glazed face brick shall be packin in suitable cartons or trays to protect them from chipping. Each package shall bear the quality label and the name or trade mark of the approved amnufacturer. Utmost care shall be taken in unloading and stacking of units on the job. Where units have to be stored outdoors, they shall be stored on platforms and shall be protected with tarpaulins or other approved means. Units shall not be removed from the packages until they are on the scaffold or at the position where needed.

Common brick shall conform to the requirements for Grade MW brick of the Standard Specifications for Building Brick (Solid Masonry Units Made from Clay or Shale) (A.S.T.M. Designation: C62) of the American Society for Testing Materials.

Anchors and ties for brick masonry shall be non-corrodible type approved by the Engineer and where shown shall conform to the requirements of the Contract Drawings. Crimped metal ties shall be formed from not less than No. 16 U.S. Standard gauge sheet steel.

Mortar for setting brick masonry shall conform to the requirements for either type B or type C mortar as specified in the clause hereof entitled "Mortar".

Note: Check for flashing blocks, flue tile, etc.

Setting Ceramic Glazed Brick

The surfaces against or on which mortar is placed shall be thoroughly cleaned and wetted before the mortar is placed. Units with greater than 12 percent absorption shall be thoroughly wetted before laying. Items required to be built in with the masonry, including anchors, wall plugs and accessories, shall be built in as the erection progresses. Unless otherwise shown or specified, the space around buitl-in items shall be filled solidly with masonry.

Glazed brick shall be laid "stacked with all vertical joints in line" and anchored to back-up as hereinafter specified. Carefully tool face joints matching those of approved sample panel. Units shall be laid in full unfurrowed mortar beds and shoved to a solid bearing. All horizontal and vertical joints shall be completely filled with mortar when and as laid. Vertical joints shall be all of the same width except for inconspicuous variations required. Back joints against other surfaces shall be slushed, grouted, or shoved full as the course is laid.

Cracked, spalled, broken, irregular shaped or brick not within approved color range, shall not be used on the face of any glazed brick wall.

Cutting and Patching

Ceramic glazed brick masonry shall not be cut or patched without the specified spproval of the Engineer in each instance. Patching shall be carefully done and shall match the adjacent masonry in quality and appearance.

Protection and Cleaning

Masonry shall not be laid when the ambient temperature is below forty degrees F. If the ambient temperature drops below forty degrees F. within the thirty-six hour period immediately after the masonry has been placed, the Contractor shall furnish temporary heat in order to maintain the temperature at forty degrees F. or above, during such period of time. No materials which are frozen or which contain frost shall be used in the construction of masonry.

Upon completion of the work, all surfaces of ceramic glazed brick shall be cleaned with a soap powder and clean water applied with a stiff fiber brush. After scrubbing the tile surfaces shall be rinsed with clean water, and lumps of mortar shall be removed by the use of wooden paddles. Metal cleaning tools, or metal brushed or acid solutions shall not be used. Where imperfections occur in the jointing, the mortar shall be raked back not less than one-half inch in depth and the joint pointed full and tooled smooth to match adjoining work. Units shall be properly protected against damage from subsequent building operations, both before and after cleaning.

52. STRUCTURAL FACING TILE

Structural facing tile units shall conform to the requirements of the Standard Specifications for Glazed Masonry Units (A.S.T.M. Designation: C126) of the American Society for Testing Materials. Tile shall be glossy or matt glaze finish as shown on Contract Drawings.

Structural facing tile units, packed in paper cartons at the factory and having modular face dimensions of the 6T Series, shall conform to the requirements for Select Quality Tile, of the Specifications of the Facing Tile Institute, and shall match in color, texture and quality the samples on file in the office of the Chief Engineer, which will be made available to the Contractor for inspection.

The glaze shall be free from chips, crazes, blisters, crawling or other imperfections detracting from the appearance of the finished wall.

Setting and Pointing

Material used in mortar for setting and pointing structural facing tile shall conform to the requirements of the clause of the Specification hereof entitled "Mortar Materials". Mortar for structural facing tile shall be mixed in the proportion by volume of one part Portland cement, one part lime putty, and six parts of sand or of one part of masonry cement and three parts of sand.

Structural facing tile masonry shall be laid in running bond, except as indicated on the Contract Drawings (where so indicated on the Contract Drawings, units shall be laid in block bond with all vertical joints in line). Alternate vertical joints shall be in vertical alignment and over midpoints of adjacent tiles. Intersections shall be laid up in log-cabin style. Except as otherwise indicated on the Contract Drawings, vertical coursing shall be five and one-third inches, and the thickness of vertical face joints shall be approximately the same as the adjoining bed joints but in no case greater. All tile shall be laid up plumb, square, level, in bond or properly anchored, and with uniform thickness of joints. Joints shall be 1/4 inch, with slight humoring of masonry where necessary, to come up to sill or other fixed heights.

Except for cleaning down, the structural facing tile masonry shall be completely finished as the partitions, furring and backing are carried up, including the finishing of face joints after the mortar has taken its initial set.

Each tile shall be end-buttered with mortar and shoved into a full, uniform and continuous bed of mortar without furrows. Longitudinal and transverse vertical joints of each course including space between furring and backing, shall be filled solidly with mortar before starting the next course. Face joints shall be tooled with an approved convex jointer (to produce a concave joint) until the mortar is uniformly and tightly compacted.

At vertical external corners of partitions, furring and openings, bullnosed fittings shall be provided.

Structural facing tile masonry shall be laid-up from the sides on which the glaze occurs.

Units shall not be laid when the ambient temperature is below thirty-two degrees F. on a rising temperature or below forty degrees F. on a failing temperature or when there is a probability of such temperatures occurring within forty-eight hours, unless special provisions are made for heating the spaces surrounding the work. Structural units shall be bonded to backing walls with a bonding course in every four courses for units not over six inches in height. Bonding shall extend four inches into backing where possible but in no case less than two inches where bonding is not indicated on the drawings and where, by the nature of the construction, bonding is not feasible, structural units shall be anchored to the backing masonry with metal anchors spaced two feet apart horizontally and located in every third joint vertically.

Cutting of structural facing tile units shall be executed with an approved power-driven saw, and all tile shall have edges and exposed faces free of chips or other defects resulting from the cutting.

Anchors and Ties

Anchors and ties shall be heavily galvanized steel or iron wire or strip type. Wire anchors shall be not less than 0.12 inches (in diameter). Strip anchors shall be not less than 0.03 inches (22 gage) thick by 7/8 inches wide except strip anchors for use with dovetail slots in concrete shall be not less than 0.06 inches (16 gage) thick by 3/4 inches wide. Strip anchors shall be deformed or corrugated and wire anchors shall be looped or bent at ends. Anchors shall be of sufficient length to extend from within one-half inch of the exposed face of the wall into the dovetailed slots in concrete backing or four inches into masonry backing. Ties for bonding walls formed of two sets of units back to back shall be wire or strip anchors as hereinbefore specified or may be six inch long strips of galvanized wire lath of such width as to extend to within one-half inch of the faces of the wall.

Cleaning and Protection

Upon completion of the work, all surfaces of structural facing tile shall be cleaned with a soap powder and clean water applied with a stiff fiber brush. After scrubbing the tile surfaces shall be rinsed with clean water, and lumps of mortar shall be removed by the use of wooden paddles. Metal cleaning tools, or metal brushes or acid solutions shall not be used. Where imperfections occur in the jointing the mortar shall be raked back not less than one-half inch in depth and the joint pointed full and tooled smooth to match adjoining work. Structural facing units shall be properly protected against damage from subsequent building operations, both before and after cleaning.

53. ARCHITECTURAL CAST STONE.

Architectural cast stone shall be furnished and installed for all stone copings and panels where called for by the Contract Drawings and as specified herein.

Shop Drawings and Samples

Shop and setting drawings for cast stone shall be submitted for approval in accordance with the clause hereof entitled "Working Drawings and Catalog Cuts". Shop drawings shall show all sizes, sections and dimensions, arrangements of joints and the bonding, anchoring and support of stone. Each section shall be numbered on setting drawings for identification in setting.

The Contractor shall prepare and submit for the approval of the Engineer, two samples, approximately one foot square, of cast stone he proposes to furnish for the various uses. Samples shall match the samples on file in the office of the Engineer in surface finish, density and color. Samples shall have been cured for at least twenty-eight days before submittal.

Materials

Architectural cast stone shall mean a mixture of white Portland cement, aggregate and water, to produce a stone of maximum density and strength.

White Portland cement shall conform to the requirements for Type I cement of the Standard Specifications for Portland Cement (A.S.T.M. Designation: C150-56) of the American Society for Testing Materials.

Water shall be clean, fresh water suitable for drinking purposes.

Reinforcement shall conform to the applicable requirements of the clause hereof entitled "Concrete Reinforcement".

Mastic pointing compound shall be of a color to harmonize with the stone work, shall be sufficiently plastic to form a permanent bond and watertight joint, shall not stain the cast stone, and shall be as recommended by the manufacturer. The compound shall have the approval of the Engineer.

Anchors, dowels, setting loops, and clamps shall be formed of genuine wrought iron, hot-dip galvanized after fabrication and formed so as to prevent any movement of the cast stone. Anchoring devices, setting loops and sinkages shall be concealed after the stone has been set.

Workmanship

Architectural cast stone shall be manufactured of selected aggregate and white Portland cement. The compressive strength of each unit shall be not less than seven-thousand pounds per square inch at twenty-eight days and the average absorption of three or more specimens from each sample shall not exceed six per cent by weight. Tests shall be as specified below.

All pieces shall be free from surface defects. Exposed surfaces shall either be cut by machining and tooling to fully expose the aggregate or shall be otherwise treated to produce a finish equal to the approved samples.

Cast stone panels shall be provided with a built-up welded and galvanized steel reinforcement, carefully calculated for all structural stresses, strains and temperature changes.

Panels shall be cast in accurate molds, designed to withstand high-frequency vibration. Reinforcement and other steel shall be accurately placed. Vibrations shall be continuous during pouring until the required thickness is reached and all excess water is brought to the surface. All panels shall have been cured for not less than twenty-eight days before delivery to the construction site.

All sections shall be true to dimensions with clean edges and arrises.

Architectural cast stone shall be delivered in perfect condition. Panels shall be properly stored, away from the ground and protected from soil, stain or damage of any kind. Stained or damaged units or units deviating from the compressive strength and absorption requirements specified above will be subject to rejection.

Sampling, test specimens and method of tests shall conform to the requirements of the Federal Sepcifications for Stone; Architectural, Cast (Designation SS-S-721).

Setting

Architectural cast stone shall not be set when the ambient temperature is below forty degrees F.

Mortar for cast stone shall conform to the requirements for Class B or Class C mortar as specified in the clause hereof entitled "Mortar".

Panels shall be installed in a full bed of mortar and shoved up with the joints full. Each stone shall be set level and true to line with uniform joints of one-quarter of an inch.

Exposed surfaces shall be kept free of mortar.

Pointing and Cleaning

Before pointing, the architectural cast stone panels shall have been thoroughly cleaned with fiber brushes, soap and water, then rinsed with clean water. Joints shall be raked to a depth of three-quarters of an inch and pointed with the specified mastic compound. All excess pointing material shall be removed.

Protection

Surfaces of installed architectural cast stone shall be protected by adequate means, as approved by the Engineer, from damage and stain due to subsequent construction operations. The protection shall be removed at a time as approved by the Engineer.

54. MORTAR.

Mortar shall mean a mixture of cement, sand and water to which, in special cases, may be added lime putty.

Materials

Portland cement shall conform to the requirements for Type 1 cement of the Standard Specifications for Portland Cement (A.S.T.M. Designation: C150) of the American Society for Testing Materials.

Non-staining cement shall be white Portland Cement conforming to the requirements for Type 1 cement of the Standard Specifications for Portland Cement (A.S.T.M. Designation: C150) of the American Society for Testing Materials and shall be similar and equal to Trinity White Portland Cement as produced by General Portland Cement Company or Medusa White Portland Cement as produced by Medusa Portland Cement Company.

Quicklime shall conform to the requirements for calcium lime of the Standard Specifications for Quicklime for Structural Purposes (A.S.T.M. Designation: C5) of the American Society for Testing Materials.

Lime putty shall be made with either hydrated lime or quicklime and water. The quicklime shall be completely slaked by soaking in water for at least seven days before being used in mortar. Hydrated lime shall be soaked in water for at least twenty-four hours before being used in mortar.

Hydrated lime shall conform to the requirements for Type N hydrated lime of the Standard Specifications for Hydrated Lime for Masonry Purposes (A.S.T.M. Designation: C207) of the American Society for Testing Materials.

Masonry cement shall conform to the Tentative Specifications for Masonry Cement (A.S.T.M. Designation: C91) of the American Society for Testing Materials.

Sand for use in mortar shall conform to the Tentative Specifications for Aggregate for Masonry Mortar (A.S.T.M. Designation: C144) of the American Society for Testing Materials.

Water shall be clean, fresh water suitable for drinking purposes.

Pigments for coloring mortar, if required, shall be pure and substantially non-fading mineral pigments, used in accordance with the directions of the Engineer.

Mixing and Proportioning

The class of mortar to be used with various types of masonry are given in the appropriate clause of the Specifications for that masonry. Mortar shall be mixed in the following proportions by volume:

CLASS	PORTLAND CEMENT	MASONRY CEMENT	NON-STAINING CEMENT	LIME PUTTY	SAND
A	1	____	____	1/5	3
B	____	1	____	____	3
C	1	____	____	1	6
D	____	____	1	____	3
E	____	____	1	____	2
F	____	____	1	1	6

Mixing

Except as otherwise specified mortar shall be mixed in an approved type power operated batch mixer. The time for mixing shall be such as to produce a plastic, homogeneous mortar.

Retempering of mortar after it has reached its initial set will not be permitted.

Where mortar is required in small batches of less than a cubic yard and the Engineer specifically approves, mortar may be mixed by hand in clean, satisfactory, wooden or metal boxes prepared for that purpose, provided the methods of mixing and transferring the mortar are first approved by the Engineer.

55. PNEUMATIC MORTAR.

Where shown on the Contract Drawings the Contractor shall encase structural steel with pneumatic mortar. Other methods of encasing the steel may be used by the Contractor upon prior approval by the Engineer.

The term "pneumatic mortar" as used in these Specifications or on the Contract Drawings shall mean a mixture of Portland cement and sand pneumatically applied by suitable mechanism and competent operators, to which mixture water is added immediately previous to its expulsion from the nozzle.

Cement and sand shall conform to the requirements for these materials as specified in the clause of the Specifications entitled "Concrete", except that the sand, or fine aggregate as it is therein termed, shall be screened of all particles larger than one-quarter inch in size. Only fresh clean water from City Mains shall be used in pneumatic mortar.

The mixture of cement and sand shall be based on dry and loose volumes in the proportions of one part of cement and three parts of sand. The water content shall be maintained at a practicable minimum and not in excess of three gallons per bag of cement as placed. The cement and sand shall be thoroughly mixed before being charged into the machine. The sand shall contain not less than three nor more than six per cent moisture by weight.

Before pneumatic mortar is applied, the surfaces of reinforcing rods, wire mesh reinforcement and structural members to which it is bonded shall be thoroughly cleaned of grease, paint, loose rust, scale and dirt. Pneumatic mortar shall not be applied when the temperature of the surrounding air is below 50 degrees F., or to surfaces in which frost is present.

The velocity of the material as it leaves the nozzle shall be maintained uniformly at such a rate as will produce minimum rebound. The nozzle shall be held in such a position and at such distance that the stream of flowing material will impinge at approximately right angles to the surface being covered without excessive impact. Rebound or accumulated loose sand shall be removed from the surface to be covered prior to placing of the successive layers of pneumatic mortar.

Pneumatic mortar shall be applied in not less than three coats with the semi-final coat being applied so that the final coat shall be not less than one-quarter of an inch in thickness. All irregularities shall be removed by rodding, or cutting with a steel-edged screed of approved design, or by a trowel or steel float. The screeding shall generally be done about three hours after the material has been applied but under no circumstances shall it be done withile the material is soft enough to slough off. Before each successive coat is applied, the preceding coat shall have set and shall have been cleaned thoroughly and wetted before the succeeding coat is applied. The final coat shall have a natural gun finish.

Wherever the application of pneumatic mortar is not completed for any coat, the material shall be flattened to a thin edge; before the remaining portion of the coat is applied the flattened or thin portions shall be cleaned and set. If deposits of sand occur in any coat, they shall be thoroughly removed and replaced with new material. The finished surfaces shall be kept thoroughly wet for a period of at least five days after the final coat has been applied. If any cracks appear in the surfaces, they shall be cut out, the adjacent surfaces roughened, new material carefully and thoroughly packed into the cracks, and the area finished off to a smooth, uniform and dense surface.

56. ALUMINUM.

Shop drawings for all aluminum work shall be submitted for approval as required by the clause hereof entitled "Working Drawings". The drawings shall clearly indicate the design dimensions, reinforcement, anchorage and other details incorporated.

Field fastenings shall be of the concealed type. Bolts, nuts, screws and rivets shall be of the aluminum alloy or stainless steel and shall have finished heads to match adjacent metals.

Aluminum members shall be fabricated true to required profiles and free from warp, wave, buckle or other defects. Members shall be joined by mechanical connections. Screws exposed in the finished work shall have countersunk heads. Rivets shall be countersunk and finished flush.

Joints shall be tightly fitted, smooth and weathertight with provision for expansion and contraction to prevent distortion. Faces of metal in contact shall have a hairline joint.

Field welding or burning will not be permitted.

After fabrication, all aluminum surfaces that will be exposed and not otherwise specified in the finished construction shall be given No. 20401 alumilite finish of the Aluminum Company of America.

Before shipment from the place of manufacture, surfaces of aluminum which will be in contact with masonry, shall be given a heavy coat of alkali resistant bituminous paint, resistant to alkaline, mortar, plaster, etc.

Aluminum doors, including subframing, glass mouldings shall be constructed of sections as indicated on the Contract Drawings manufactured by the Kawneer Company or equal.

The alumilite finish shall be uniform and free from scratches and other surface imperfections.

Hardware for aluminum doors shall conform to the requirements specified in the clause hereof entitled "Hardware".

Extruded Porcelainized Aluminum Panels

The extruded porcelainized aluminum panels above the Trans-Manhattan Expressway and where otherwise indicated and detailed on the Contract Drawings shall be Type 6061. T6, Pes #1 or Pes #3 alloy especially prepared for porcelain enameling. All extrusions shall be finished both sides with two coats of acid-resisting porcelain enamel. Extruded aluminum shall be .125 inch thick. The thickness of the enamel coating shall be between .0025 and .005 inches on both sides. The finish on the exposed of front face shall be free from visible defects and any other defects that would tend to impair the usefulness of the material. The porcelain enameling shall conform to the requirements of the Tentative Specification for Porcelain Enamel Aluminum (A.L.S. 105-57) of the Porcelain Enamel Institute. Surfaces of aluminum which will be in contact with steel supporting members or other dissimilar parts shall be kept from direct contact with such parts by a one-sixteenth inch thick vinyl gasket.

Porcelain shall match the color, texture and finish of the sample on file in the office of the Engineer.

The entire assembly shall be designed for a wind load of not less than 20 pounds per square foot.

The Contractor shall furnish and install a steel suspension system for the extruded porcelainized aluminum panels. Supports shall consist of, among other things, approved adjustable anchor inserts and clip angles for hangers (1" x 3/16" at 4'-0" on center maximum), runner channels ($2\frac{1}{2}$" at 4'-0" on centers maximum), furring channels (3/4" at 2'-0" on centers maximum), panel fastenings (2'-0" on centers maximum), braces and other approved incidental materials required to make the installation rigid. Panel lengths shall be 16 feet minimum, shall be butt jointed with intersecting connections for alignment and leveling. Interior of butted joints shall be sealed with 2" vinyl tape.

58. ORNAMENTAL METALS.

Interior and exterior or ornamental metals, not elsewhere specified shall be furnished and installed as specified herein and as shown on the Contract Drawings.

The required accessories, fastenings and other related supplementary parts necessary to complete the assemblies shall be furnished and installed even though not specifically shown on the Contract Drawings or specified herein.

Reinforcement, anchorage, structural shapes and supports of ferrous metal shall comply with the requirements of the clause herewith entitled "Miscellaneous Metals".

The Contractor shall prepare and submit shop drawings of all ornamental metals in accordance with the requirements of the clause hereof entitled "Working Drawings and Catalog Cuts". Shop drawings shall show in detail the various parts of the assemblies, methods of joining, thickness and alloy of metal, types of finishes and fastenings.

Representative samples of types of material and finish shall be submitted to the Engineer for approval.

Materials

Ornamental metals shall be of the gauge and thickness shown on the Contract Drawings. Gauges shown or specified shall be Browne and Sharpe for non-ferrous and U. S. Standard for ferrous metals. Where gauges are not shown or specified, aluminum and brass shall be not less than one-eighth inch thick and stainless steel not less than No. 18 gauge. Ornamental metals of aluminum shall be of uniform quality and shall meet the applicable American Society for Testing Materials Specifications governing the alloys specified. Unless otherwise approved by the Engineer or specified herein, aluminum alloys and tempers shall be as follows:

Use	Aluminum Assn. Alloy Designation	Temper
Castings	214	F
Structural Shapes	6061	T6
Plates and Sheets	1100	H14
Pipe	6063	T6
Extrusions	6063	T5
Bolts, Screws	2024	T4
Bars and Rods	6063 or 6061	T5 or T6
Gratings	6061 or 6062	T6
Nuts	6061	T6

Where dark anodized aluminum surfaces are required, aluminum shall be of Anoclad Type 40 extrusions which shall be marked at the plant with the reflective readings expected after anodizing dark gray. Reflective range shall be not less than seven nor more than nine.

Screws, nuts, washers, bolts, rivets and/or fastening devices used in connection with aluminum members shall be made of aluminum non-magnetic stainless steel or other non-ferrous and non-corrosive materials compatible with aluminum and shall be of suitable design and size to perform the functions for which they are use. Exposed screws, bolts and rivets shall have finished heads matching in color the work which they adjoin. Plated or coated materials will not be accepted.

Finishing hardware, having component parts which are exposed, shall have such parts made of aluminum, non-magnetic stainless steel or other non-ferrous and non-corrosive materials compatible with aluminum. Design and size of finishing hardware shall be such as to adequately perform the functions for which it is used and such hardware shall be free of defects affecting its appearance, strength or durability.

In addition to any rough and finishing hardware required to be furnished and installed under this clause the Contractor shall receive, check, store, maintain inventory, distribute and apply Finishing Hardware required for and in connection with ornamental metals. Such finishing hardware will be furnished and delivered under the clause hereof entitled "Hardware".

Flux on welded surfaces shall be removed with 10 percent nitric acid solution and then washed with hot and cold water until all surfaces are thoroughly clean.

Concealed surfaces of aluminum in contact with and/or adjoining concrete, masonry, mortar, plaster and/or ferrous metals, shall be given a protective coating, consisting of an approved brand of bituminous paint or zinc chromate primer in a synthetic resinous vehicle. Either of such protective coatings shall be resistant to the alkali action of mortar and plaster and applied in accordance with the manufacturer's directions.

Stainless steel shall have a nominal composition containing not less than 17 percent chromium and not less than 8 percent nickel. Unless otherwise specified or called for on the Contract Drawings, exposed exterior stainless steel surfaces shall have a No. 2B finish and all exposed interior stainless steel surfaces shall have a No. 4 finish. Fastenings for stainless steel shall be chromium nickel stainless steel.

Before shipment, aluminum surfaces which will be exposed in the finished construction shall be protected with two coats of clear methacrylate lacquer. Such coating shall be of such composition to permit removal with a solvent without damage to the aluminum finish. Immediately prior to Final Inspection the Contractor shall remove the protective coatings.

Unless otherwise specified or called for on the Contract Drawings, weather exposed exterior aluminum surfaces shall be polished to a satin finish and oxidized to obtain the No. 215-C1 (one hour) finish of the Aluminum Company of America. Interior surfaces shall be similarly finished to obtain the No. 204 C1 (half hour) finish of the Aluminum Company of America.

Where caulking is required, adjacent metal surfaces shall be protected from stain by masking or taping.

Fabrication, Workmanship and Installation

Ornamental metals shall be fabricated in accordance with the approved shop drawings. Members shall be clean and straight and true to approved shapes and dimensions. Corners shall be square, clean and tight. At face joints the intersecting members shall be mitered or coped to a uniform hairline tight fit and the resulting joints shall be made fast by welding or concealed mechanical connections, or a combination thereof. Unless otherwise shown on the Contract Drawings, all joints shall be weathertight and strong enough to develop the strength of the connected members. Welding at exposed or contact surfaces shall be dressed flush with such surfaces. Ornamental metals shall be installed in their correct locations and shall be erected plumb, straight, square, level, at the proper elevation and plane and in correct alignment with adjoining construction. Ornamental metals shall be securely embedded in, connected, anchored and braced to the supporting construction.

Washers, bolts, screws, anchors and other fastening devices required in connection with field erection of structural steel or carbon steel parts shall be zinc-coated.

Unless otherwise shown on the Contract Drawings or specified in the clause herein or shown on subsequently approved shop drawings, exposed parts of the ornamental metals shall be connected to each other and to the subframing by concealed type fasteners.

The Contractor shall perform all cutting, fitting, drilling and tapping of the ornamental metals and the supporting construction required for and in connection with the proper execution of said metals.

Existing conditions and dimensions affecting the ornamental metals shall be determined prior to fabrication.

All exposed members of the ornamental metals shall be suitably reinforced to prevent buckling, warping and waving in exposed surfaces. Thicknesses of metal shall be increased as necessary to fulfill this requirement.

Ornamental metals shall conform to required clearances for the installation of other trades.

Ornamental metals shall be mortised, reinforced, drilled, tapped and/or otherwise prepared for the application of finishing hardware.

Ornamental metals shall be free of defects affecting its strength, durability, and appearance.

Exterior Wall Louvers

Exterior wall louvers shall be of the design indicated on the Contract Drawings of extruded or bent plate construction with stormproof blades and with insect screening set in removable aluminum frames. Provision shall be made for the attachment of ductwork to louvers where required.

Frames, mullions, louver blades, braces and gutters shall be formed from aluminum of not less than the gauge thicknesses indicated on the Contract Drawings. Joinery shall be accomplished by concealed mechanical connections and/or welding. Insect wire screening shall be woven to eighteen by fourteen mesh to the inch from Alcoa aluminum wire not less than eleven-thousandths of an inch in diameter.

Finish for louvers in the concrete frame on Fort Washington Avenue, on 178th and 179th Streets and for the cooling tower in the Bus Parking Area shall be similar and equal to "Anoclad #30" and the finish for louvers in panel walls on 178th and 179th Street and on the Broadway elevations (East and West) shall be "Anoclad #20" of the Aluminum Company of America.

Aluminum Railings

Aluminum railings shall be provided where indicated on the Contract Drawings.

Unless otherwise detailed, aluminum stair railings shall be flush welded or sleeve joint construction secured and anchored as indicated. Secure aluminum handrail and posts to steel stair as detailed.

Railings installed in galvanized steel sleeve inserts shall be caulked with molten sulphur. Where wall brackets are indicated they shall be spaced on not more than five feet centers, and shall be cast aluminum.

Screens between members of the railing shall be constructed of #8 W & M (.192) gauge wire, in a 2-inch diamond mesh (triple crimped) with an aluminum channel frame, secured to the vertical members with stainless steel clips, except that where solid panels are shown such panels shall be ribbed porcelainized aluminum both sides as detailed on the Contract Drawings. Porcelainized aluminum is specified in the clause hereof entitled "Porcelainized Aluminum".

Aluminum Exterior Panels

Aluminum panels in concrete frame on Fort Washington Avenue, 178th and 179th Streets shall be Anoclad #30.

59. ALUMINUM STORE FRONTS AND ENTRANCES.

Extruded sections of aluminum shall be fabricated from aluminum alloy 6063-T5 of the Aluminum Company of America. Rolled sections shall be formed from sheets of aluminum alloy 5052-1/4 H, of the Aluminum Company of America.

Field fastenings shall be of the concealed type. Bolts, nuts, screws and rivets shall be of aluminum alloy or stainless steel and shall have finished heads to match adjacent metals.

Aluminum members shall be fabricated true to required profiles and free from warp, wave, buckle or other defects. Members shall be joined by concealed shop welding, mechanical connection or a combination thereof. Screws exposed in the finished Work shall have countersunk heads. Rivets shall be countersunk and finished flush. Welded joints shall be dressed smooth and flush and shall be free from porosity, cracks or blow holes and shall be finished to match adjacent metal surfaces.

Joints shall be tightly fitted, smooth and weathertight with provision for expansion and contraction, if necessary, to prevent distortion. Faces of metal in contact shall have a hairline joint.

Sash assemblies shall include face members, gutters and setting blocks and shall be complete with face and gutter lugs and fastening clips. Corner and division bars, shall have steel bar stiffeners, shall be self-adjusting and capable of receiving window glass at any angle within a range of ninety to one hundred sixty-five degrees without altering the position of the bar.

Door frames, doors and sash shall be prepared to receive hardware including mortising, securing, reinforcing, drilling and tapping as required.

Glazing beads in door frames shall have corners mitered and tightly fitted and shall be applied on the interior of the window glass.

Transom sash shall have corners mitered, reinforced and joined by concealed welding. Transom sash shall be hinged and/or fixed and where required steel reinforcing shall be provided in the transom bar.

Trim members shall be secured with concealed spring clips.

Surfaces of aluminum, which will be in contact with steel supporting members or other dissimilar metal parts, shall be kept from direct contact with such parts by continuous coat of bituminous paint.

Finish

Surfaces of aluminum members installed on the exterior of the building shall have an alumilited finish equivalent to the Anoclad Type 20 and surfaces of aluminum installed in the interior of the building shall have an alumilited finish equivalent to the No. 204-Cl thirty minute Alumilite satin finish of the Aluminum Company of America. Alumilite finish shall be uniform and free from scratches or other surface imperfections.

Before shipment from the place of manufacture, all exposed and concealed aluminum surfaces of windows shall be given a protective coating of an approved brand of a clear methacrylate lacquer, similar and equal to Dupont Corporation #1234, which will protect the metal against stain, discoloration and other surface injuries. Before application of the lacquer, all accumulations of dirt, grease or other objectionable material shall be removed by cleaning with alcohol or a diluted solution of phosphoric acid.

Before shipment from the place of manufacture, surfaces of aluminum, which will be in contact with masonry, shall be given a heavy coat of alkali resistant bituminous paint, resistant to alkaline mortar, plaster, etc. All steel construction or anchors coming in contact with non-ferrous materials shall be insulated by a heavy coating of bituminous paint.

Shop Drawings

Shop drawings for this work shall be prepared and submitted for approval as required by the clause of the general provisions hereof entitled "Working Drawings".

Hardware for aluminum doors shall conform to the requirements specified in the clause hereof entitled "Hardware".

61 CAULKING.

Furnish and install caulking as shown on the Contract Drawings, including, but not limited to, caulking in locations, as follows:

(1) At joints between masonry and adjoining window frames, louver frames and door frames.

(2) Caulking at expansion joints and control joints in stone base and masonry.

(3) At joints between stone and metal.

(4) Caulking shown and/or required between metal and masonry but not specified in other clauses of the Specifications.

Materials

Caulking compound shall be an approved Thiokol sealant. Such sealant shall be of colors to match materials it adjoins in each location, shall consist of a polysulfide base compound and an accelerator compound, and shall be Self-Leveling Type or Non-Sagging Type as best suited for each situation in the opinion of the Engineer. Such sealant shall be DAP Flexiseal as made by Dicks-Armstrong-Pontius, Inc, and shall conform to the Tentative Specification for Polysulfide Base Compounds for the Building Trades, current edition, as issured by Thiokol Chemical Corp.

Primer shall be as made and/or recommended by the manufacturer of the approved Thiokol sealant.

Installation

Surfaces adjoining recesses, grooves and/or joints which are to be caulked, shall be masked by the Contractor in an approved manner prior to starting the caulking operations, and such masking shall be removed as such operations are completed.

Thiokol sealant and primer shall not be installed until the recesses, grooves and/or joints, receiving such sealant, are clean and dry in the opinion of the Engineer.

Any surfaces of Portland cement mortar and/or masonry forming any part of a recess, groove and/or joint which is to receive Thiokol sealant, shall be coated with primer prior to placing such sealant.

Thiokol sealant shall be installed by use of an approved type caulking gun. Such sealant shall completely fill the recess to a depth of not less than one-half inch of groove or joint. Before such sealant has set, the exposed faces shall be dressed with approved type tools to produce finished surfaces as shown on the Contract Drawings.

Adjacent surfaces, which have been soiled by caulking operations, shall be cleaned immediately and left in a neat, clean condition.

Liquid Floor Hardener

The Contractor shall furnish and apply two coats of liquid floor hardener to all interior and exterior "Trowel Finish" concrete floors not subsequently covered with asphalt tile or other floor covering material, including but not limited to, platforms, intermediate and floor landing stair platforms and stair treads.

Liquid floor hardener shall be an approved, colorless, aqueous solution basically consisting of zinc and/or magnesium fluosilicate, or of sodium silicate. Each gallon of the fluosilicate solution shall contain not less than two pounds of crystals. The sodium silicate solution shall be thirty-two percent by volume of forty-two degree Baume' sodium silicate. The ingredients for liquid floor hardener shall be delivered to the job site in sealed containers bearing the manufacturer's name and trade name together with the manufacturer's complete specifications for application. The materials shall be factory pre-mixed and additional dilution as required shall conform to the manufacturer's specifications and recommendations, except that in no case shall the soulution contain less than one pound of crystals per gallon of solution when applied to the floor.

Concrete floors to receive liquid hardener shall be thoroughly cured, at least ten (10) days old and shall be cleaned free from dust, dirt, oil, grease or any other foreign material. Twenty-four hours shall be allowed between each application. Each application shall be flushed over the floor surface and spread with a push broom or other approved means in such a manner that high spots are saturated. After the final coat has dried the surplus crystal material shall be removed from the surface by scrubbing and mopping with water.

61A. FLASHINGS.

Wherever the Contract Drawings show flashings to be exposed, such flashings shall be Monel Metal. All other flashings shown on the Contract Drawings shall be Monel metal or copper at the Contractor's option.

Monel metal flashings shall be of No. 20 U. S. Standard gauge Nickel-copper alloy (roofing temper) conforming as to metal content to the requirements of the Tentative Specifications for Nickel Copper Alloy Plate, Sheet and Strip (A.S.T.M. Designation: B127-41T) of the American Society for Testing Materials.

Where copper flashings are indicated on the Contract Drawings or specified herein, the copper shall conform to the requirements for Type ET P copper of the Tentative Specifications for Copper Sheet, Strip and Plate (A.S.T.M. Designation: B152-48T) of the American Society for Testing Materials.

Through wall flashing shall be 10 ounce copper; all other copper flashing shall be 16 ounce.

Solder shall conform to the requirements for Grade 50A Solder of the Tentative Specifications for Soft Solder Metal (A.S.T.M. Designation: B 32-48T) of the American Society for Testing Materials. Flashings shall generally not exceed eight feet in length, shall be free from longitudinal joints and shall be soldered at the ends, unless otherwise specified.

Cap and base flashings shall be installed in roof areas covered by built-up roofing. Cap flashings shall be installed with a full bed of mortar above and below the metal, shall extend four inches into the mortar joints of the brick walls, turn up 1/2 inch and shall lap the base flashings at least three inches. End joints of cap flashings shall be interlocked and shall not be soldered. Where cap flashings are stepped, the ends of the flashings shall be turned into the vertical joints of the brick walls and shall be caulked with Kuhl's Elastic Caulking Compound. Base flashings shall extend up on the vertical walls at least ten inches above the plane of the roof and shall be extended out from the walls a distance of at least six inches. End joints shall be interlocked and soldered. Crimped type expansion sheets twelve inches in length shall be provided at approximately 24 foot intervals and at distances not greater than eight feet from all returns of the vertical brick walls.

Flashings with metal reglets shall be furnished and installed on the walls around the parking roof. End joints of these flashings shall be interlocked and soldered.

Openings in the roof of the building for pipes and ventilators shall be provided with cap and base flashings. These flashings shall extend out on the roof not less than nine inches. Unless otherwise shown on the Contract Drawings, cap flashings for openings for pipes shall be caulked into the hubs of the pipes.

Through wall flashings and flashing over window and door openings shall be of the keyed type. End joints of through wall flashings shall have a three inch "Z" overlap. At floor and roof levels they shall extend continuously around the perimeter of the walls in which they are to be installed.

Interlocked soldered joints shall be formed by turning adjoining sheets up at the edges and folding them over so that the finished beam shall be four ply and shall finish three-quarters of an inch wide; the seams shall be malleted down.

62. COLD PROCESS ROOFING.

Roofing shall be cold process synthetic rubber or plastic deck coating as hereinafter specified.

Preparation of Deck Surfaces

The entire concrete roof deck surface, shown on the Contract Drawings to receive roofing, shall be free from oil, grease, dirt and other foreign and objectionable matter. Surface laitance and minor irregularities shall be removed with wire brushes and the surfaces left clear and smooth for application of roofing.

* * *

Neoprene - Hypalon Roofing

Roofing shall consist of multiple neoprene and hypalon synthetic rubber coatings with fabric reinforcement where required hereinafter or shown on the Contract Drawings applied in accordance with the instructions of the manufacturer.

Materials shall be stored in cool dry areas and shall be the following:

Primer for deck should be one part neoprene coating and two parts xylene.

Thinner and cleaning compound for tools and equipment should be xylene.

Caulking compound should be neoprene or Hypalon caulking compound of nonstaining grade.

Reinforcing fabric, width as noted hereinafter shall be of the following:

(a) Untreated woven glass tape, equivalent cloth weight 6 oz. per square yard, with thread count 42 x 32.

(b) White extra strength cotton cloth pressure sensitive tape.

(c) Nylon tape equivalent to nylon taffeta, unsized, plain woven, 70 denier, heat set, 70 x 100 thread count.

(d) Adhesive for application of tapes shall be the roof coatings themselves or as recommended by coating supplier.

Building expansion joints where shown on the Contract Drawings shall be flashed with neoprene sheeting 1/16" thick x 6" wide, (Pre-cured). Adhesive for sheeting to be a neoprene contact bond cement or the neoprene roof coating.

Pipe flashing shall be prefabricated, neoprene pipe flashing.

The foregoing materials are as recommended by E. I. du Pond de Nemours and Company, manufacturers of the neoprene and Hypalon base materials. Other materials of similar quality and generally conforming to the foregoing and approved by Du Pont for use with neoprene/hypalon roof coatings will be acceptable.

Entire roof deck surface and all vertical or sloping surfaces of curbs and cants which are to receive roof coatings should be primed with one coat of primer liberally applied by roller or spray coating. Sufficient quantity shall be used to flow into any cracks in the surface of the slab. Approximately one hour shall be allowed for the primer to dry during good drying weather. On cloudy, humid days, approximately two hours shall be allowed.

Any remaining imperfections in the surface of the deck greater than one-half inch in diameter and one-quarter inch in depth and all shrinkage cracks greater than one-eighth inch in width occurring at perimeter, roof openings, or at any other location in the deck should be caulked by gun or trowel.

Fabric reinforcement for flashing shall be applied where concrete deck meets vertical surfaces at joints with dissimilar materials, at shrinkage cracks requiring caulking as noted above, at all construction or other joints in the deck where separation or differential motion may occur and at roof penetrations. If shrinkage cracks greater than hair-line width are apparent anywhere in the surface of the roof deck, they should receive a 4" wide strip of tape similarly applied. Reinforcement is required at concrete curbs or other concrete vertical or sloping surfaces monolithic with the concrete deck. To apply the fabric reinforcement, a quantity of neoprene coating shall be applied in a 7" wide strip centered on edge of all roof openings, or surface intersections to a uniform wet film thickness of 15 mils, using a 6" wide roller coater. If glass or nylon fabric is used, a 6" wide tape shall be laid into the wet coating and pressed down to achieve intimate uniform contact.

If pressure sensitive cotton fabric is used, the coating shall be allowed to dry to a tacky finish before applying the 6" wide tape. Tape shall be thoroughly pressed down into coating to assure continuous over-all contact. At cant strips or other dissimilar materials, when the first tape has dried approximately thrity minutes a second 6" tape shall be laid in the same manner, overlapping the first strip approximately two inches and extending up vertical surface for at least six inches.

Special care should be exercised to assure complete adhesion of the fabric to the substrate and to itself at laps to prevent voids or blisters.

All tapes shall receive one coat of neoprene to about a 15 mil wet film prior to over-all coating of roof deck.

After the fabric coating is dry to the touch, an over-all coating of neoprene should be applied to an approximate wet film thickness of 28 mils, using a roller coater. This coat should be allowed to dry several hours to a tack-free state at which point the deck is considered to be temporarily watertight. A second coating of neoprene should be applied to an additional 28 mil wet film thickness. Not less than 1 3/4 gallons per 100 sq. ft. of neoprene should be used in the application of each of these two over-all coats. Both coats shall extend over cants and up vertical surfaces for at least six inches. At no place shall over-all dry film thickness be less than 15 mils.

When the final neoprene coating is dry (minimum of 24 hours), the first coat of HYPALON shall be applied with roller or by spray to a wet film thickness of 12 mils. When that coat is dry, apply a second coat in the same manner and to the same wet film thickness. A minimum of 3/4 gallon per 100 sq. ft. per coat is required.

Prior to application of the final coating, roof should be inspected and the surface brushed clean of all loose dirt, dust and other foreign materials. If inspection reveals damage to the coating or flashing, care must be taken to repair such damage and reflash or retape if required. When damage is sufficient to require renewal of coatings, two coats of neoprene and one coat of HYPALON must then be applied to the repaired areas so that a continuous rubber membrane of 17 mils exists over the entire surface prior to application of the final coat.

Minimum over-all dry film thickness of the completed roof membrane should be not less than 20 mils.

When coatings are applied by spray, caution must be exercised, particularly during windy weather to prevent overspray from defacing adjacent walls, buildings and property.

No coatings shall be applied until surface of deck or previous coating is thoroughly dry of moisture.

The deck shall be kept free of non-essential traffic and unrelated construction work during application of the roof coatings. The final coat shall be withheld until all other construction work on the roof is complete. No corallary work should be done on the roof at any time until the latest coating has had at least one week's curing period. If heavy traffic or storage of materials on the roof is unavoidable, temporary roof protection such as plywood should be provided.

Two different colors of both neoprene and HYPALON shall be used to facilitate visual gauging of coating thicknesses and to prevent skips and holidays in the roof coatings.

Attention is called to the fact that the solvent used in the coatings is very flammable and the proper precautions against exposure to open flame must be taken, and strict safety enforced.

In addition, the effect of sunlight reflected from the light colored HYPALON coatings necessitates use of dark glasses to protect eyes against glare during application.

Sprayed Plastic Roofing

Sprayed plastic roofing shall consist of successive coats of a primer, glass cloth reinforcement, where required, and vinyl plastic roofing applied to surfaces of the concrete roof deck.

Primer shall be liquid vinyl primer suitable for spray equipment which will secure maximum sealing adhesion.

Cloth reinforcement shall be woven glass fibre cloth in vinylized sheets conforming to the following requirements:

a. Not less than 1.9 lbs. per sq. yard
b. Nominal five thousandths of an inch thick
c. Nominal 16 mesh per inch.

Vinyl plastic roof coating shall be a rapid air setting liquid vinyl suitable for spray coatings and having the following properties:

a. Tensile strength of 1500 lbs. per squre inch.
b. Elongation of at least 200 per cent without fracture.
c. Solid contents of not less than thirty per cent.

Materials believed to comply with the foregoing are Vinyl Bond B Primer and Cocoon vinyl plastic as manufactured by R. M. Hollingshead Corp. of Camden, New Jersey.

Primer shall be applied to all roof deck surfaces which are to receive roofing thoroughly saturating the deck. Following the application of the primer, a wet application of liquid vinyl shall be applied to the deck at a minimum rate of six gallons per one hundred square feet and shall provide a continuous, uniform covering over the entire area. Total final minimum thickness after curing shall be not less than 30 mils.

Flashing shall be accomplished with woven glass fibre cloth sheeting covered with liquid vinyl, also to a minimum thickness of 30 mils. Flashing shall be installed where the concrete deck meets vertical surfaces or dissimilar materials, at shrinkage cracks, at construction or other joints in the ceck where separation or differential motion may occur and at roof penetrations. Flashing shall extend for at least three inches on both sides of the joint, crack or deck edge at openings. At plane intersections, flashing shall be carried up at least six inches on the vertical.

No coatings shall be applied until surface of deck or previous coating is thoroughly dry of moisture.

The deck shall be kept free of non-essential traffic and unrelated construction work during application of the roof coatings. The final coat shall be withheld until all other construction work on the roof is complete. No corallary work should be done on the roof at any time until the latest coating has had at least one week's curing period. If heavy traffic or storage of materials on the roof is unavoidable, temporary roof protection such as plywood should be provided.

Guarantee

As a condition to approval by the Engineer of the roofing material proposed by the Contractor in accordance with the clause hereof entitled "Inspections and Rejections", the Contractor shall obtain from the manufacturer a written agreement for the benefit of the Authority in the following form, signed by the manufacturer of the roofing material proposed and directed to the Authority for the attention of the Chief Engineer.

Roofing Manufacturer's Agreement in Connection with Port Authority Contract

In order to induce the Port of New York Authority (Herein called the "Authority") to approve the undersigned (here in called "manufacturer") as the supplier of the roofing materials to the supplied in connection with the above Port Authority Contract, we agree to the following for the benefit of the Port Authority:

1. The manufacturer assumes the obligation of making all repairs or replacements required to remedy any leaks or other defects in workmanship or materials occuring in the roof within 10 years after the date of completion of the roof, excluding leaks or other defects caused solely by accident, abuse or defects in the roof deck or base over which the manufacturer's roofing materials are applied or in other material furnished by others.

2. Nothing in this Agreement shall make the manufacturer liable for damage to the portions of the building other than the materials supplied by it or for damage to the contents of the building.

3. The manufacturer shall inspect the roof periodically during construction at sufficiently frequent intervals to observe all stages of the roof installation. Immediately after completion of the roof in accordance with the manufacturer's specifications and with the requirements of the above captioned contract, the manufacturer shall furnish to the Engineer a written certificate to that effect. The manufacturer's obligations under this agreement (other than the obligation to inspect under this paragraph and the obligations under paragraph 5) shall not be effective until such certificate can be furnished.

4. The manufacturer shall inspect the roof two years after the aforementioned date of completion and immediately submit a written report to the Authority on its then existing condition, with an estimate of what repairs or replacements may be advisable.

5. The manufacturer shall notify the Engineer at a reasonable time prior to any inspection to be made pursuant to subparagraphs (3) and (4) above, so that the Engineer may be present at such inspection.

6. The manufacturer shall furnish a standard bond covering the roof executed by a surety company authorized to do business in the state in which the construction site is located, but no variations from or inconsistencies between the provisions of said bond and the provisions of this agreement shall limit or impair the obligations assumed herein.

7. Neither the furnishing of the certificate provided for in paragraph 3 nor the written report provided for in paragraph 4 shall be binding or conclusive upon the Authority, it being expressly understood that such certificate and report are furnished solely for the information of the Authority and that they may be rejected at any time by the Engineer if incorrect, improper or otherwise unsatisfactory in his opinion and notwithstanding that they may have been originally accepted by him.

8. The date of completion of the roof for the purpose of this agreement shall be the date of completion stated in the certificate issued under subparagraph (3) above, except that if the Port Authority Engineer within thirty days after receipt of such certificate notifies the Contractor and the manufacturer of rejection of such certificate for good cause then such certificate shall not be considered as establishing the completion date unless the manufacturer shows that its contractual obligations have been met.

9. The Authority shall have a direct right of action against the manufacturer under this agreement and the aforementioned Contractor shall not be a necessary party thereto.

10. The foregoing obligations of the manufacturer shall be discharged without expense to the Authority.

_____
(Name of Manufacturer)

By_____

Title_____

Date_____

The Authority will furnish to the Contractor, without charge, printed forms of the aforementioned agreement and the Contractor shall cause the manufacturer to execute one of said forms and return it to the Authority addressed to the attention of the Engineer of Construction. The Contractor shall also cause the manufacturer to furnish the Authority a standard bond covering the roof executed by a surety company, authorized to do business in the state in which the construction site is located.

The roof shall not be deemed to meet the requirements of this Contract unless and until the certificate provided for in subparagraph (3) above is furnished, but such certificate, and the report provided for in subparagraph (4) above, shall not be binding or conclusive on the Authority with respect to the obligations hereunder of the Contractor and may be rejected at any time by the Engineer if incorrect, improper or otherwise unsatisfactory in his opinion and notwithstanding that they may have been originally accepted by him.

The Contractor agrees that he will at his own expense make all repairs or replacements required to remedy any leaks or other defects (excluding leaks or other defects shown by him to have been caused solely by accident or abuse) occurring in the roof within five years after the date of completion of the roof. The date of completion of the roof shall be as determined by the Engineer.

The foregoing requirements for an agreement by the roofing manufacturer shall not limit, impair or reduce any obligations which the Contractor would have under or in connection with this Contract in the absence of such requirements or agreement.

64. HOLLOW METAL DOORS AND FRAMES.

Shop drawings for hollow metal doors and frames shall be prepared and submitted for approval as required by the clause hereof entitled "Working Drawings and Catalog Cuts". Shop drawings shall include the details of welding for hardware reinforcements.

Representative section samples of hollow metal doors and frames shall be submitted to the Engineer for approval. Samples shall be of sufficient size to show the materials, construction and workmanship proposed for use.

Materials

Hollow metal doors and frames shall be made of open hearth, full pickled, cold-rolled and annealed patent leveled sheet furniture steel, entirely free from scale, waves and other defects. Gages shown on Contract Drawings and specified herein for sheet steel shall refer to United States Standard Gage for sheet iron and steel.

Sound deadening material and heat retarding filler shall conform to the requirements for labeling of the National Board of Fire Underwriters.

Glass and glazing for hollow metal doors shall conform to the requirements of the clause hereof entitled "Glass and Glazing".

Hardware for hollow metal doors shall conform to the requirements of the clause hereof entitled "Hardware".

Fabrication and Workmanship

Hollow metal doors shall be of the flush type on both sides, one and three-quarter inches in thickness, except as otherwise shown on the Contract Drawings and shall be made from two formed plates of No. 18 gauge steel, rigidly connected and reinforced inside with continuous interlocking members spaced not more than six inches on centers. Glass metal panels or louvers shall in each case be set in a molded steel frame with welded corners and the frame attached to the door with countersunk screws. Louvers shall be of approved type similar and equal to those manufactured by the Ventilouver Company, Inc.

Sound deadening and heat retarding filler shall be solidly packed and shall extend the full height of each door.

Doors shall have a box reinforcement of not less than No. 16 gauge steel to receive and support the lock and escutcheon and a continuous reinforcement to receive the butts or a bar reinforcement consisting of three-sixteenth inch plate at least eight inches longer than the butt. Door check reinforcement shall be not less than one-eighth of an inch in thickness. Reinforcements shall be welded in place. Mortises shall be made in the doors to receive the locks and hinges, and where necessary or required, reinforcements shall be provided.

Door frames shall be of the unit type with combination buck and jamb with plain flat profiles. Door frames shall be fabricated from No. 14 gauge sheet steel. Side members shall be provided with steel anchors spaced approximately two feet on centers. Angle knees shall be provided for fastening the frame to the floor as well as temporary spreaders to hold the frame in proper position until after the adjacent construction has been completed.

Finish

Metal surfaces shall be cleaned thoroughly with wire brushes, or by other proper and effective means, of loose scale, shavings, filings, dirt, dust or other objectionable material. Grease and oil shall be removed with gasoline, benzine, or other similar volatile cleaner.

Before fabrication of the doors, the inside surfaces shall be cleaned and shop painted one coat of approved rust-inhibitive primer, baked on. The inside surfaces of the frames shall also receive a shop coat of primer, baked on.

After fabrication, the outside surfaces of the frames and doors shall be cleaned thoroughly and filled with an approved enamel filler applied in a sufficient number of coats and sanded to attain uniform and smooth surfaces. One shop coat of approved primer shall then be applied.

After they have been placed in position and the adjacent construction has been completed, the doors and frames shall be painted in colors selected by the Engineer. The painting shall conform to the requirements of the clause hereof entitled "Field Painting".

Labels

Where required by the Contract Drawings, hollow metal doors and frames shall bear appropriate labels of the Underwriters' Laboratories, Inc.

65. HOLLOW METAL PARTITIONS.

Shop drawings for hollow metal partitions shall be prepared and submitted for approval as required by the clause hereof entitled "Working Drawings and Catalog Cuts". The drawings shall clearly indicate the design, dimensions, hardware, reinforcement, glass, top fillers (if required), anchorage and other details. If so requested by the Engineer, samples of hollow metal partitions shall be submitted for approval. Such samples, when required, shall be of sufficient size to show the materials, construction and workmanship involved in fabrication of the partitions.

Hollow metal partitions shall be the flush type similar and equal to "Aetnawall" standard partitions as manufactured by the E. J. Boyle Division, Aetna Steel Products Corporation, Type CC partitions as manufactured by the E. F. Hauserman Company or "New Executive" type partitions as manufactured by The Mills Company.

Materials

Hollow metal partitions shall be formed from open-hearth, fully pickled, cold rolled and annealed, patent leveled, sheet furniture steel free from scale, waves or other defects. Gauges specified herein refer to United States Standard gauges for sheet iron and steel.

Insulation filler material shall be incombustible and shall conform to the requirements for labeling of the Underwriters' Laboratories, Inc. Insulation filler will not be required for mineral board top fillers.

Mineral board top fillers where required by the Contract Drawings shall consist of not less than two inch by two inch wood framing covered on both sides with one-quarter inch thick gypsum board.

Double steel top fillers where required by the Contract Drawings shall be fabricated from preformed sheet steel channel sections and steel sheets with insulation filler to match the partition panels.

Fabrication

Hollow metal partition frames, cornice, mullions, base, transom bars, doors, sash and glazing moulds shall be formed from not less than No. 18 gauge steel sheets. Panel sections and panel reinforcements shall be formed from not less than No. 20 gauge and posts from not less than No. 16 gauge sheet steel. The base shall be adjustable, removable, snap-on type. End filler panels where required shall match the partition panels.

Partition units shall be accurately fabricated and assembled free from dents or tool marks, warpage, buckles and open joints. Lines shall be straight and true, arrises and angles sharp, miters formed in true alignment and similar abutting profiles shall accurately intersect. Exposed welded joints shall be ground and finished smooth and flush. Corners shall be tightly joined and welded.

Where necessary or required to provide lateral stiffness, structural steel reinforcement shall be provided in mullions and transom bars with adequate blocking or other supports.

Sinkages and reinforcement shall be furnished and installed in doors and frames. Steel reinforcement of ample size shall be secured in place with flush rivets or by welding. Reinforcement shall be punched and/or drilled and tapped to receive the hardware.

Finish

The exposed surfaces of hollow metal partitions shall be thoroughly cleaned and shall be shop primed with the manufacturer's standard material. Finish painting is specified in the clause hereof entitled "Field Painting".

Glass and Glazing

The glass for hollow metal partitions shall be the following types as and where called for on the Contract Drawings:

Clear Glass shall mean one-quarter inch thick polished plate glass for doors and bank type partitions and double strength A quality clear window glass for other types of glazed partitions.

Obscure Glass shall mean seven-thirty seconds of an inch thick obscure glass for doors and bank type partitions and one-eighth inch thick obscure glass for other types of glazed partitions.

Samples of glass proposed for use shall be submitted to the Engineer for approval. Putty for setting shall conform to the requirements specified in the clause hereof entitled "Glass and Glazing".

Hardware

Hardware for hollow metal partitions shall be the manufacturer's standard type and manufacture and shall conform to the applicable requirements of the Federal Specification for Hardware, Builders; Locks and Door-Trim (Designation: FF-H-106a). Finish shall be US 10 as designated in the foregoing Specification.

Unless otherwise shown on the Contract Drawings, each door shall be equipped with the following hardware:

1 pair butts
1 mortise latch set
1 door closer - surface mounted liquid type.

Installation

Hollow metal partitions shall be erected plumb, level and true to line rigidly secured in place. Hardware shall be accurately applied and adjusted permitting doors to operate smoothly and efficiently.

Field connections shall be made with concealed type fastenings wherever possible.

The Contractor shall provide openings and cut-outs where required for the installation of ducts, pipes or other materials where required by the Contract Drawings, and he shall do all field drilling required for anchorage.

Mineral board for top fillers, if required by the Contract Drawings, shall be secured in place with countersunk nails spaced not more than six inches apart. The joints in mineral board fillers shall be taped and spackled as specified in the clause hereof entitled "Field Painting".

66. TOILET COMPARTMENTS.

Shop drawings for toilet compartments shall be prepared and submitted for approval by the Engineer in accordance with the requirements of the clause hereof entitled "Working Drawings and Catalog Cuts".

Toilet compartments and entry screens, if required, shall be furnished and installed at the locations shown on the Contract Drawings.

Compartments and screens shall be of the flush panel type with ceiling hung front stiles similar and equal to the Century type as manufactured by the Sanymetal Products Company, ceiling hung types as manufactured by the Henry Weis Manufacturing Company, Inc., or "Marblmetal" type as manufactured by the Mills Metal Compartment Company.

Overhead structural supports shall be furnished and installed in accordance with the applicable requirements of the clause hereof entitled "Miscellaneous Metals".

The facing sheets for doors, stiles and dividing partitions shall be formed from open-hearth, pickled, cold-rolled and annealed, patent leveled, furniture steel cemented under pressure to a laminated, corrugated fiber board or glass fiber core.

Stile and dividing partition panel faces shall be formed from not less than No. 20 United States Standard gauge sheet steel and door panel faces shall be formed not less than No. 22 United States Standard gauge sheet steel. The edges of doors and panels shall be finished with steel edge mouldings inserted under pressure, or with welded steel reinforcing channels. The doors and panels shall be accurately fabricated and neatly assembled, free from dents, tool marks, warpage, buckles or open joints. The door and dividing partition panels shall be approximately one inch thick and stiles shall be approximately one and one-quarter inches thick. The top edge of stiles shall be equipped with a reinforcing channel not less than No. 12 U. S. Standard gauge thick welded to a leveling cross bar not less than one-half inch by seven-eighths in size.

Door and dividing partition panels shall be not less than fifty-eight inches high, spaced twelve inches between the finished floor elevation to the bottom of the door. Dividing partitions shall be fastened to the wall by at least two approved type wall brackets, and shall have not less than one-half inch nor more than one inch clearance. Doors shall be adjusted to swing freely without binding and to remain half-open when not in use, except that entry screen doors shall normally remain closed.

Hardware shall be formed from chromium-plated cast brass or bronze, or from stainless steel and shall include for each compartment door, a gravity hinge with top pivot, slide bar latch with combination keeper and bumper, coat hook and bumper. The latch and coat hook shall be omitted from entry screen doors. Entry screen doors shall have a door pull and push plate. Brackets, connectors and fastenings shall be formed from wrought iron, steel or malleable iron. Trim caps for pilaster panels shall be chrome plated or stainless steel approximately three inches high.

Each compartment shall be equipped with one chrome-plated, cabinet type paper holder conforming to Type 438 of the Federal Specification for Plumbing Fixtures; (for) Land Use (Designation: WW-P-541a).

Compartment doors, pilasters and partitions shall be primed and finished with baked-on enamel in accordance with the manufacturer's specifications. The color shall be as selected by the Engineer from the manufacturer's standard colors. Color samples shall be submitted to the Engineer for approval.

Enameled surfaces shall be protected against damage during transit, erection and the completion of adjoining construction and shall be suitably cleaned immediately prior to final inspection.

67. ROLLING DOORS.

The rolling door shall consist of interlocking slat rolling door chain operated, provided with reduction gears, sprocket and 5/0 galvanized hand chain. The reduction gears shall be such that the maximum pull on hand chain shall not exceed thirty-five pounds.

Doors curtains shall consist of interlocking continuous slats with a crown not less than thirteen-sixteenths of an inch and interlocking centers of not less than two and five eighths inches. The slats shall be rolled and not drawn and shall be formed in easy curves without sharp bends from open-hearth steel of No. 16 U. S. Standard Gauge. The curtain shall be finished at the bottom with two stiffening angles. The piping or tubing supporting the curtain shall have a deflection of no more than threee hundredths of an inch per foot of span. The guiding grooves for the curtain shall be mounted so that the entire curtain shall hang vertically and be tangent to the circumference of the supporting pipe when the door is closed. The slats shall be protected with flanged end-locks so that the slats will not rub in the guiding grooves. All springs shall be adjusted with the wheels outside of the supporting brackets. Load-carrying bearings shall be precision ball bearings, grease packed and dust sealed.

Exposed portions of rolling door shall receive one shop coat of an approved metallic paint and shall be painted in the field, as specified in the clause hereof entitled "Field Painting".

Shop Drawings for this work shall be prepared and submitted for approval as required by the clause of the general provisions hereof entitled "Working Drawings".

67A. FREIGHT ELEVATOR.

General Requirements

The Contractor shall furnish and install one freight elevator complete and in readiness for use, including but not limited to the drive machine with motor and generator set, guide rails, electrical wiring, equipment and controls, elevator car and car doors, shaftway doors and frames, counterweight system and safety devices, together with all additional appurtenant equipment, fastenings and fittings required for a complete installation.

The elevator installation shall conform to the applicable requirements of the Safety Code for Elevators, Dumbwaiters and Escalators (Designation: A17.1) together with the supplements thereto dated 1955 and 1957, and the New York City Building Code.

Electrical materials and equipment shall comply with the applicable Standards of the Underwriters Laboratories, Inc., and materials commonly bearing Underwriters labels shall be so labeled.

The installation of electrical materials and equipment shall conform to the Standards of the National Board of Fire Underwriters as embodied in the National Electrical Code and to other applicable Standards of the National Board of Fire Underwriters as interpreted by the New York Fire Insurance Rating Organization.

The Contractor shall prepare and submit to the Engineer for approval complete shop drawings showing the design and location of all equipment, clearances, and other pertinent data together with electrical wiring diagrams and catalog cuts or other suitable reproductions of the electrical equipment. Shop drawings shall conform to the requirements of the clause hereof entitled "Working Drawings and Catalog Cuts".

Freight Elevator

The freight elevator shall be of the worm gear traction type with single automatic push button variable voltage control for use with or without an attendant.

Capacity Speed Travel

The elevator shall have a rated capacity of 4000 pounds, exclusive of the weight of the car plus all necessary equipment thereon or attached thereto, at a speed of 100 feet per minute. The elevator shall serve a total of two landings and two openings.

Machine

The geared traction machine shall be designed to meet the severe service encountered in elevator operation. A properly grooved sheave shall be driven through a worm and gear by a moderate speed motor. The sheave wheel shall be mounted with heavy anti-friction bearings on a rigid shaft or shall be firmly pressed onto a shaft supported by sleeve or anti-friction bearings of ample capacity.

The gear housing, brake support and motor support shall be a single casting or they shall be mounted on a rigid bedplate. The gear housing shall be divided horizontally at the center line of the shaft to provide access to the worm gear. A gasketed inspection hand-hole shall be provided in the lower half of the housing to permit inspection of the gear. Suitable drain plugs, overflow pipes and oil level indicator shall be provided.

The sheave and gear spider shall be cast integral. The bronze worm gear shall be securely bolted to the spider. The sheave material shall be of semi-steel of the proper hardness to give minimum wear of sheave and cables.

The worm gear shall be machined from a heavy ring casting special gear bronze and shall have accurately hobbed teeth. Bolts which secure the gear to the spider shall be fitted into reamed holes to secure a snug fit.

The worm and its shaft shall be accurately machined in one piece, of special forged steel. The brake wheel shall be securely mounted on the worm shaft and machined to obtain a smooth and accurate face. The worm shaft shall be mounted on at least two bearings, one of which shall be an oversize double acting preloaded ball bearing or a self-aligning thrust bearing, and the other a bronze sleeve guide bearing. An oil seal shall be provided at the motor end of the worm shaft. The thrust bearing shall be removable without dismantling the machine.

The brake shall be spring actuated, electrically released, of heavy construction and having a proper braking area for the load and speed specified. There shall be two shoes actuated by two separate compression springs. The brake shall have sufficient power to stop and hold the car with contract load.

Hoisting Motor

The motor shall be reversible and shall have high starting torque with low starting current and shall be designed to stand the severe loads encountered in elevator service. It shall have sufficient capacity to operate with the contract load and speed without overheating.

The elevator machine shall be furnished with soundproofing to minimize noise transmission.

Control System

A control system shall be furnished to govern the starting, stopping and direction of travel of the elevator. The system shall be of the generator field control type in which control is primarily accomplished by the use of an individual generator for each elevator with which the voltage applied to the hoisting motor is adjusted by varying the strength and direction of the generator field.

Control equipment shall be full magnetic, shall be suitable for the motor hereinbefore specified and the type of operation specified hereinafter and shall provide smooth acceleration and retardation.

In stopping, the elevator shall be slowed down by regenerative or dynamic braking before the brake is applied.

The control system shall include but not be limited to, a motor generator set, electro-magnetic starter and suitable controller which shall apply uniformly varying direct current voltage to the hoisting motor. The motor generator set shall consist of a separately excited generator of proper characteristics for the hoist motor, a motor suitable for the supply voltage specified above and an exciter (if required). The armature of the motor, generator and exciter, where used, shall be mounted on a single forged steel shaft and the entire armature assembly shall be statically and dynamically balanced to insure a smooth running quiet motor generator set.

Excitation for the hoist motor and the generator shall be supplied by an exciter or other suitable means. The exciter if used may be part of the motor generator set or a separate exciter set may be supplied.

The motor generator set shall be equipped with two sleeve type or ball bearings with automatic lubrication and properly designed seals to prevent oil leakage.

The motor generator set shall be mounted on rubber isolation pads to minimize transmission of vibration to the building.

The magnetic starter shall include the necessary accelerating and running switches, starting resistance and overload relay. The general design shall conform to the controller specifications. The starter may be separate or incorporated in the controller.

Push Button Control

The elevators shall be arranged for single automatic push button control, with operating device consisting of a bank of push buttons in the car marked to correspond to the floors served. The momentary pressure of a floor button shall dispatch the car to the corresponding landing.

Single buttons shall be placed in the halls at each floor, the momentary pressure of which shall bring the car to that landing.

This control device shall be arranged so that the person operating the elevator from the car has complete control of the operation until the car reaches the floor selected by him, and the car gate and hoistway door have been opened and closed. The car shall remain inoperative for a pre-determined time period after the car has reached the floor to allow for discharge of passengers.

Electric Position Indicator

A horizontal electric position indicator shall be installed over the entrance in the cab to indicate to the passengers the location of the car in the hoistway. The cover plate shall be of the design selected mounted flush with the cab wall and shall contain indications for each floor served. Each indication shall be illuminated from the rear by an individual light which shall be of sufficient intensity to permit easy reading of the indicator but shall be non-glaring. The light for each indication shall be enclosed in a light tight compartment and arranged so that it will illuminate only one indication. Change of illumination shall be instantaneous and shall be accomplished approximately midway between floors.

Fan

The car station panel shall contain a keyed type two speed fan switch for operating the car fan.

Direction Arrows

Illuminated direction arrows in an approved fixture shall be furnished and installed in the rear of the cab to indicate the direction of car travel.

Guides

The guides shall be accurately machined standard section guide rails with tongued and grooved joints for car and counterweight. Substantial machined fish plates shall be used to form the rail joints.

These guides shall be erected plumb within 1/8" and in a strong substantial manner. They shall be strongly and properly supported and placed so as not to become distorted by eccentric loading or by application of safety devices.

Rails shall be suitably bottomed in the pit and shall extend to the underside of the overhead slab or grating.

The Contractor shall provide all necessary rail backing as required.

Hoist and Governor Cables

The hoist cables shall be high traction steel especially designed for elevator service. They shall be securely attached at both ends into the shackles, in approved manner.

The governor cables shall be not less than 3/8" iron especially designed for elevator service. The two ends shall be securely fastened together at the car and shall be attached to the safety operating mechanism. The governor cable shall pass over the governor sheave and over a tension device at the bottom of the hoistway.

Buffers

Approved buffers with the necessary blocking and supports shall be furnished and installed.

Oil buffers shall have a sufficient stroke and be so designed that they will bring the car and counterweight to rest from governor tripping speed at an average rate of retardation not exceeding gravity.

Oil buffers shall be of the spring return type except where the counterweight buffer is attached to the counterweight it may be of the gravity return type. Means shall be provided for checking the oil level.

Spring buffers may be used in lieu of oil buffers where permitted.

Terminal Stopping Device

Upper and lower normal terminal stopping devices shall be provided and arranged to stop the car automatically from any speed obtained under normal operation within the top and bottom over-travels independent of the operating device, final terminal stopping device and the buffers.

Final terminal stopping devices shall be provided and arranged to stop the car and counterweight automatically from speed specified within the top clearance and bottom over-travel independent of the operation of the normal terminal stopping device but with the buffers operative and when operated shall prevent normal operation.

Counterweight

Counterweights shall be designed for smooth and economical operation and shall consist of a structural steel frame securely riveted or bolted, and necessary cast iron sub-weights. These sub-weights shall be held within the frame by not less than two tie rods passing through holes in all weights. The rods shall be equipped with locknuts secured by cotter pins at each end.

Car Frame and Platform

The car frame shall be made of rolled steel members rigidly assembled. The safety device shall be mounted under the car and securely fastened to the car frame.

The platform shall consist of a steel frame and double wood floor. The underside shall be fireproofed by sheet steel of not less than #27 gauge. Finish flooring shall be clear maple, blind nailed.

Substantial supports shall be provided for all auxiliary apparatus.

Car Enclosure

The car enclosure shall include but not be limited to, car gates, lighting fixture and telephone recess with approved outlet box assembly.

The car shall be enclosed on all sides not used for entrance. Enclosure shall be not less than No. 14 U.S.S. gauge steel six feet high and not less than No. 16 U.S.S. gauge perforated steel extending to the car top. Top of enclosure shall be of solid steel to support a load of 300 pounds or an area of any four square feet. Provide hinged panels and openings at front and back on top of car. Sides of car enclosure shall be flush on the interior. Color of enamel finish on interior shall be as selected by the Engineer.

Car entrances shall be provided with counterbalanced, vertical lift, screen gates each consisting of No. 10 gauge, $1\frac{1}{2}$ inch diamond mesh with reinforced steel frame and rubber bottom edge. Each frame shall be connected to the gate by cable or chain and the weights shall be arranged to prevent displacement or falling in event of cable or chain failure. The gates shall be motorized for automatic door sequence operation.

The lighting in the car shall consist of two incandescent fixtures of approved design.

Certificate frame shall be mounted in hinged door over telephone recess. Door shall be equipped with pistol grip handle and latch.

Car Door Contact

The car doors shall be equipped with an approved contact which will prevent operation of the car unless the doors are closed.

Governor and Safety

A mechanical safety shall be mounted under the car platform and securely bolted to the frame. It shall be actuated by a centrifugal governor mounted in the overhead and connected to the safety tripping mechanism by a continuous governor cable attached to the car frame, passing over the governor sheave and a weighted tension sheave in the pit.

The governor jaws shall grip the cable in a minimum time after the governor reaches tripping speed and shall be held in engagement with the cables by springs and the tension of the governor rope. The governor jaws shall be so designed that the governor rope may slide through them after the safety has been set without damage to the rope.

The operation of the governor on overspeed shall open a switch disconnecting the power from the elevator, and shall trip the safety mechanism. The safety mechanism when tripped shall engage the rails with sufficient force to stop the car from governor tripping speed with full load in car. The pressure of the two pairs of jaws on the rails shall be equalized.

The safety shall be designed so that the jaws will engage the rails in not more than 30" of car travel, after the governor jaws grip the governor rope.

The mechanism shall gradually and smoothly bring the car to a stop from governor tripping speed, with an average rate of retardation within the approved limits.

The governor shall be accurately adjusted and sealed.

Hoistway Doors

Each entrance shall be equipped with vertical bi parting hoistway doors complete with unit frame, sill, struts, hanger support and cover, fascia and dust cover or toe guard. The unit frame, sill, struts and hanger support and cover shall be erected prior to the erection of the rough walls and shall be set in proper relation to the elevator car guides. Door panels shall be installed after the walls are finished The following requirements regarding doors, frames, sills and supports are hereby revised to conform to the manufacturers standard requirements for vertical bi parting hoistway doors.

Each door panel shall be 1-3/8" thick of not less than No. 18 U.S.S. gauge furniture steel substantially reinforced with continuous vertical members and contain effective sound deadening material. Each door panel shall be reinforced as required for hangers, interlock, door closer or operator and keyways. Each door panel shall have a removable non-metallic guide which shall ride in a suitable groove placed in the door sill. Vision panels shall be provided when required.

Each unit door frame shall be formed from #14 U.S.S. gauge steel welded or bolted at corners to form the unit and shall be fastened to the sill and hanger support. Each frame shall be backed with suitable sound deadening material.

Each door sill shall be of cast iron, not less than 7/16" thick, with nonslip surface. The grooves for the door guides shall be accurately machined for minimum clearances. Each sill shall be supported on steel anchors securely fastened to the floor construction.

The struts shall be steel angles of proper size, fastened to the sill and to the guide rails or to the building beam above. They shall rigidly support the unit frame.

The door hanger support shall be of not less than 3/16" steel and shall be bolted to the struts. The cover plate shall be of not less than #14 gauge steel, shall extend the full door travel and shall be in sections for ease in servicing the hangers. The cover fastenings shall be arranged to permit removal of the cover without removing the fastenings from the header.

The fascia shall be of #14 gauge steel reinforced to insure a flat surface and fastened to the hanger support and to the sill above. The dust cover shall be of #14 gauge steel and shall be attached to the hanger support at the highest landing. The toe guard shall be of #14 gauge steel and shall be fastened to the sill at the lowest landing.

All exposed surfaces shall have all oil, dirt and other impurities removed and shall be thoroughly cleaned before painting. Materials shall be treated for rust prevention before finishing. Exposed areas of doors and unit frames shall have a smooth surface and shall have an enamel finish in color as selected.

Each door shall be provided with either ball bearing hangers or with two point suspension sheave type hangers suitable for the type of doors and door operation specified. The hangers shall be securely fastened to the door sections which shall be provided with reinforcements at the point of attachment. The hangers shall have provisions for vertical and lateral adjustment.

Ball bearing hangers shall consist of stationary and traveling members supported by hardened steel balls set in spacing retainers. Suitable means shall be provided to limit the movement of the door sections due to up-thrust, and have two ball bearing up-thrust rollers for each door section. Ball bearing hangers shall extend full width of door sections.

Two point suspension sheave type hangers shall consist of hardened steel sheaves equipped with suitable ball or roller bearings mounted on a malleable iron or steel bracket. The sheaves shall roll on a high carbon cold rolled or drawn steel track so shaped as to permit free movement of sheaves without regard to vertical adjustment of sheave bracket or housing.

Car and Hoistway Door Operators

An electric operator shall be furnished and installed, designed to operate the car and hoistway doors simultaneously at a maximum speed of approximately two feet per second.

The door operator shall open the car and the hoistway door at which the car is stopping by suitable means and close these doors before the car can leave the landing. The doors shall be opened electrically and shall be closed by either electric or spring power. The doors shall accelerate smoothly and shall be checked in both the opening or motions electrically or by other suitable means so that they will operate smoothly and quietly.

Interlocks

Each hoistway entrance shall be equipped with an approved type interlock. The interlock shall prevent operation of the car away from the landing until the doors are locked in the closed position and shall prevent opening the doors at any landing from the corridor side unless the car is at rest at that landing or is in the leveling zone and stopped at that landing.

Hoistway Door Unlocking Device

Approved hoistway door unlocking devices shall be provided to permit authorized persons to gain access to hoistway when the elevator car is away from the landing.

Machine Beams and Buffer Braces

The Contractor shall furnish and install all necessary steel beam supports for the elevator machine, governors, rope hitches, and necessary braces and supports for buffers.

Controller

The Controller shall be designed to give the required operation as herein specified. Panel shall be non-hygroscopic ebony asbestos or other approved material, and shall be securely mounted on a substantial self-supporting steel frame.

The switches handling power circuits shall be equipped with contacts designed to prevent sticking due to fusing. The acceleration and speed control of the elevator shall be controlled by adjustable time relays.

All panel wiring shall be neatly formed and tied. All leads except for control and signal circuits shall be provided with either solder or solderless lugs. Control and signal wires shall be brought to accessible washer type or soldered terminals or studs. The wiring on the back of the panel shall be the flame-resisting type.

Top of Car Operating Device

An inspection and maintenance station shall be mounted on top of the elevator car. This station shall contain up and down direction buttons and an emergency stop button. This car may be operated by constant pressure on the appropriate direction button.

A keyed switch shall be provided in the car station to make the normal operating device inoperative while the top of the car operating device is in use.

Painting

In addition to other painting specified herein, all ferrous metal surfaces not lubricated or factory finished shall be given one coat of an approved rust-inhibitive paint.

Installation by Others

The following items will be furnished and installed by others:

a. Hoistway with framing and supports for elevator machine beams.

b. Installation of electrical power feeder to the terminals of the elevator control panel including necessary main line switch, circuit breaker or fuses.

c. Hoistway outlets for car lights and fan and machine room outlet for the elevator signal equipment.

d. Telephone outlet four feet above the center of the shaft for telephone trail cable.

Spare Parts, Tools and Supplies

The Contractor shall furnish to the Engineer a complete parts list including catalog numbers for the component parts and equipment. In addition he shall furnish and deliver a complete spare set of fuses, and electrical contacts. He shall also furnish and deliver a complete set of tools required for dismantling and assembling the machine equipment. Such tools shall be mounted on a hardwood rack located where directed by the Engineer.

Tests

The Contractor shall perform all tests required by the Building Code of the City of New York which would be applicable if the Authority were a private corporation and such additional tests as the Engineer may deem necessary. Tests shall be performed in accordance with the requirements for Inspection of Elevators (Inspectors Manual) (Designation: A17.2) of the American Standards Association.

Any damage to the elevator or parts thereof caused by the tests or any damage to the building structure caused by the failure of any part of the elevator equipment to operate properly, shall be made good by the Contractor to the Engineer' satisfaction at the Contractor's expense.

The Contractor shall furnish all labor, materials, and instruments necessary for the required tests. Power for the tests will be furnished by the Authority.

Samples

Samples of stainless steel and rubber tile flooring showing the finish, color and manufacture shall be submitted to the Engineer for approval.

Guarantee

The Contractor guarantees that the elevator installation will be free from defects in design, workmanship and materials and will operate properly for a period of one year from the date of the Certificate of Final Completion. The Contractor shall at his expense immediately repair or adjust the installation in the event any defect or improper operation occurs in said period.

Although such guarantee shall be enforceable for the period of time required above and although the Contractor is required to make repairs or replacements without cost or expense to the Authority during such period, no requirement of this Contract with respect to a guarantee by the Contractor shall be deemed to be a limitation upon any other rights which the Authority would have, expressed or implied, in this Contract, in the absence of such guarantee, the said guarantee being given only for the greater assurance of the Authority.

68. MOVING STAIRS.

Fabrication and Delivery

The Contractor shall furnish, deliver and install moving stairs in accordance with the requirements of the Specifications and the Contract Drawings, including but not limited tok the driving motor and gear units, controls, safety services, structural steel truss, step treads, risers and comb plates, floor plates, hand rails, balustrades, electrical wiring and all additional appurtenant equipment, fastenings and fittings required for a complete installation.

The design, installation and operation of the moving stairs shall conform to the applicable requirements of the Safety Code for Elevators, Dumbwaiters, and Escalators (Designation: A17.1-1955) together with the Supplement thereto (Designation: A17a-1955) both of the American Standards Association and to the Building Code of the City of New York.

Moving stairs shall be of the cleat-step reversible type, for ascending or descending transportation service and shall operate on an incline of thirty degrees from the horizontal. Moving stairs shall be designed for quiet, smooth operation.

Moving stairs shall be similar and equal to those manufactured by the Otis Elevator Company, Westinghouse Electric Corporation, or the Peelle Company and no substitutions will be permitted, and moving stairs shall be the latest production model being manufactured at the time work is to be commenced.

Maintenance Service

The Contractor shall furnish regular maintenance and emergency call back service on the moving stair work for a period of three (3) months after the date of the Certificate of final completion. All work will be done during regular working hours of regular working days, except as may be required to keep the moving stairs in operation, or restore them to operation, for rush

This service shall include regular weekly examinations of the installation by competent and trained employees and shall include all necessary adjustments, greasing, oiling, cleaning of all equipment supplies and parts to keep the equipment in good operable condition, except such parts made necessary by misuse, accidents, or negligence by parties other than the contractor.

Current Supply

Moving Stairs shall be designed to operate from a nominal 480 volt, three phase, three wire, sixty cycle, alternating current supply terminating in a fused, three pole, horsepower rated disconnect switch furnished proximate to the machine location of each moving stair.

Capacity Speed and Travel

Moving stairs are designated by numbers indicated on the Contract Drawings. Moving stairs bearing the letter designation "SC" shall be two-speed moving stairs having nominal step speeds of 90 and 120 feet per minute. All other moving stairs shall be single speed having a nominal step speed of 90 feet per minute. Moving stairs shall be thirty-two (32) inches or forty-eight (48) inches wide, measured in accordance with current practice and applicable codes.

Drive Machine and Motor

Each drive machine unit shall be of the worm and gear type driven by an induction motor of the open ventilated type. The driving shaft, gearing and motors shall have dustproof bearings with suitable and accessible means for lubrication.

The drive machine, motor and controller shall be located within or below the upper end of truss, as dictated by the clearances required in each case.

Controller

Each controller shall be installed in a dust tight enclosure. They shall be of the push button operated, fully magnetic, continuous duty and reversing type, designed to protect the motor against overload.

Stop buttons and key operated directional button shall be provided and mounted at the top and bottom newel posts of each moving stair. Key operated speed switches shall be provided for the dual speed moving stairs at the same locations. Stop buttons shall be of the hooded or guarded type to prevent accidental operation. Provision shall be made in each control panel for stopping the moving stairs by means of electrical interlocks installed on the frames of access doors to the rooms or pits under the moving stairs and by means of micro-switches under the metal landing and floor plates. When the circuits through the interlocks or the circuits through the micro-switches are interrupted by opening of the access doors or by lifting the landing or floor plates, the escalator shall stop and shall remain inoperative. Key operated switches which shall short out such interlocks and micro-switches shall be provided in each pit so that moving stairs may be operated by authorized maintenance personnel from the pit. Key operated switches to stop the stairs shall also be provided in each pit to facilitate safe maintenance. The Contractor shall furnish, install and wire the interlocks and micro-switches.

Key operated buttons or switches shall be master keyed to the existing moving stair switch locks.

Safety Devices

Safety devices shall be entirely accessible for easy servicing, maintenance and inspection and shall be provided and installed for each moving stair as follows:

A broken step chain safety device shall be installed which will be equipped with electrical contacts which will open the power circuit and cause the safety brake to be applied in the event that either or both of the step chains break or if the tension on the chains drops below or exceeds a predetermined value, or one or both step chains permits the lower carriage to move.

An overspeed governor shall be installed and shall be designed to cut off the current supply to the motor in the event the moving stairway should exceed the rated speed by more than forty per cent.

A non-reversing device shall stop the moving stair and apply the service brake in the event the direction of travel of an ascending stair is accidentally reversed to the descending direction. Such device shall be inoperative while the stair is descending.

An upthrust track safety switch shall be installed on each of the four tracks for each moving stair at the lower and upper radii which will stop the moving stairs if there is an upward deflection of the step as it enters the horizontal or leveling section of the top [illegible].

Comb plate safety switches shall be installed at both the upper and lower comb plates which shall stop the stairs when an object is wedged between the comb plates and the step and when the comb plate is lifted.

The safety brake shall automatically stop the moving stair smoothly in approximately sixteen (16) inches of travel, but in no event in a distance more than that from the edge of the comb plate to the nearest skirt safety switch, whenever the current supply is interrupted from any cause or by any safety device and shall hold the stairway stationary with a full load. Since the normal service brake is to be mounted on driving machine, an emergency brake shall be mounted on main driving sprocket which shall operate in event drive chain between driving machine and stairway breaks.

The broken handrail device shall automatically stop the moving stair in the event either handrail breaks or either tension device reaches its limit of travel. A broken handrail drive chain safety switch shall be provided which will stop the stairs in the event either handrail chain breaks.

A broken main dirve chain, blet or gear safety switch shall be installed which will stop the stairs in the event such chain, belt or gear breaks or stips.

Micro switches shall be installed in the skirt panals on each side of the moving stair which will stop the stair movement when subjected to the pressure exerted by an object wedged between the stair and the skirt.

Emergency stop buttons shall be provided in full public view, within twenty-five feet of top and bottom of each moving stairway. Location shall be 5' - 6" above finished floor on column or wall as directed. Buttons shall be designed for momentary pressure operation and shall cut off the current supply to the motor, and automatically stop the moving stair by means of the service brake. Required wiring and conduit between emergency stop buttons and terminals located in adjacent portion of truss shall be by others.

Safety Device Indicators

A flush indicator drop panel shall be furnished and completely wired and installed in the wall adjacent to escalators which will indicate the safety switch which stopped the moving stair. A flush aluminum cover shall conceal the panel from view.

Truss

The truss shall be constructed of structural steel and shall provide easy access to the operating mechanisms for inspection and maintenance. The truss shall carry the entire load of the escalator stair-way together with the full capacity load, the exterior balustrade, truss covering, drive machine and motor, whether or not such equipment is inside or suspended from the truss. The Contractor shall provide and install complete moving stair units, integrally supported from the truss. Enclosure of machine rooms, if exterior to trusses will be provided by others. Panels of the inclined portion of the truss shall not exceed four feet in length, the panel angle being at right angles to the incline.

The minimum clearance at both top and bottom pits, between the steps and the bottom pan shall be eight inches for the entire horizontal truss member lengths. Where possible trusses shall be extended at the upper end so that at least twenty-four inches of clear space shall be provided beyond the line of travel of the steps to facilitate maintenance and fire control.

Drip Pans

Drip pans of oil tight construction shall be furnished for the entire length of the moving stairway truss and machine room and shall be of sufficient strength to support a maintenance man.

Tracks

The tracks shall be constructed of drawn steel or other approved metal alloy. The tracks shall be of such design and strength as to insure perfect alignment and smooth, quiet and safe operation of the running gear. The carriages and curved tracks at the top and bottom landings shall have machined and hardened wearing surfaces. The track system shall provide for continuous support of the chain wheels from sprocket to sprocket.

Step Drive Units and Chains

The top member of each step drive unit shall be carried on two brackets attached to the truss or shall be mounted on supporting brackets or pedestals provided with rollers which operate on tracks located at each side of the truss, andshall be removable. Bearings shall be of the ball or roller type and shall be dustproof, self-aligning and adjustable. The chain sprockets shall distribute the load evenly on the sprocket teeth and on the chain rollers. The drive units and sprocket assemblies shall maintain the proper tension on the step chains by either mechanical means, tension weight, or compression springs.

The step chains shall be of the endless roller type constructed of steel links with hardened pins and rollers designed to accurately engage the drive sprockets.

An automatic operating service brake shall operate on the motor shaft of each drive unit. The brake shall be mechanical applied and electrically released and shall automatically stop the moving stairs without jar whenever the power is interrupted.

Steps, Risers and Treads

Horizontal step treads shall be supported on reinforced steel or aluminum frames, designed to carry the treads and the maximum load per step under eccentric loading without distortion. The vertical rise between steps shall not exceed eight and one-half inches and the horizontal distance between the noses of the steps shall be at least fifteen and three-quarter inches. The clearance between the steps shall be not more than one-eighth inch.

Step demarcation, details of which shall be submitted to the Engineer for approval, shall be provided and shall consist of milled grooves on the treads, moulded nylon rear tread strip or other approved means, in addition to the understair lighting specified hereinafter.

The step wheels shall be designed to rotate and shall be mounted to prevent rocking of the step. The steps, wheels and attachments shall be easily removable without disturbing the balustrades or dismantling the chains.

The step treads shall be die cast white metal of the cleat type. The cleats shall be not more than one-eighth inch in width and the grooves not more than one-quarter inch wide and not less than three-eighth of an inch in depth. The step treads shall have squared edges and shall be so spaced that the ends are flush with the risers and the end cleats are located for minimum clearance with the skirt panels.

Step risers shall be fabricated from aluminum or stainless steel. Back of step riser shall be lined or coated with sound deadening material.

Comb Plates and Illuminators

The comb plates shall be constructed of approved white metal with the teeth spaced to provide for a minimum of clearance with the step tread cleats. The comb plates shall be formed in easily removable sections so as to facilitate replacement.

The moving stair newels at both top and bottom landings, shall be equipped with translucent, plastic signs six by eight inches in size, with the words "Grasp Handrail" incised therein in a contrasting color.

In addition to the foregoing, the Contractor shall furnish and install three green fluorescent tube fixtures at both top and bottom landings of each moving stair so placed and mounted as to illuminate the crack between each tread.

Handrails

Handrails shall be of the traction type with suitable tension devices or shall be of the mechanically geared type. Handrails shall be driven from the main drive unit and shall operate at the same speed and direction as the stairway steps. Handrail wheels shall have ball or roller type bearings.

Handrails shall be constructed of laminated canvas and rubber or shall be of the sectionalized rubber, plastic and metal type of an approved design. Handrails shall operate on brass or bronze guides except where in contact with the drive sheaves.

Handrails shall be formed or marked so as to make their motion readily visible. Except as otherwise approved by the Engineer, markings shall be of a contrasting color spaced not more than three feet apart. The handrails shall enter or leave the balustrade on the underside.

Handrail safety guards shall be furnished where the handrails enter and leave the moving stair newels.

Landing and Floor Plates

Landing and floor plates shall be formed from aluminum, supported on truss, over full width of truss at each landing, extending from comb plate and floor line of balustrade to end of truss. Exposed strips around pan shall harmonize with step and comb plate.

Balustrades

Balustrades shall be the extruded type consisting of interior paneling, deck dovers, skirt panels, and mouldings.

The interior panels shall have exposed surfaces of type 302 stainless steel with a No. 2D finish. The panels shall be suitably reinforced and locked without standing seams or battens to prevent distortion or warping of the exterior surface and an approved sound deadening material shall be applied to the interior of the panels.

The skirt panels shall be rigidly reinforced and provided with means of a positive and permanent adjustment to provide uniform one-sixteenth inch clearance with moving step.

The deck covers shall be constructed of extruded aluminum except that the compound curved sections shall be aluminum castings. Mouldings shall be of the same material as the deck covers.

Aluminum Finish

The exposed surfaces of aluminum shall have a thirty minute alumilite finish, No. 204-R1 as designated by the Aluminum Company of America. Prior to shipment aluminum surfaces shall be given a protective coating of clear methacrylate lacquer. Before Final Inspection, such protective lacquer coating shall be removed with solvent by the Contractor and the exposed surfaces left in a clear condition.

Lubricating System

An effective lubrication system shall be furnished for all bearings and other wearing parts. The points requiring lubrication shall be easily accessible in each case. All required grease gun connections shall be of the same type fo fit the same gun.

Tests

Before placing any moving stair in operation, the Contractor shall, in the presence of the Engineer, conduct all operating and safety tests required by the A.S.A. Code and New York City Building Code. Any damage to moving stairs caused by the tests, or damage to the existing structure caused by failure of the moving stairs to operate properly shall be forthwith repaired, the condition corrected and proper operation restored by

the Contractor without separate or additional compensation therefor. The Contractor shall furnish all labor, materials and instruments necessary for the required tests.

Samples

The Contractor shall submit to the Authority for approval, duplicate samples of the materials and finishes for the balustrade deck cover and mouldings, step risers, step cleats, combs, floor plates and skirt panels.

Shop Drawings

Shop drawings shall be prepared and submitted in accordance with the clause of the Principal Contract entitled "Working Drawings and Catalog Cuts" for each moving stair for the following:

(a) Layouts of each moving stair in plan and elevation, fully dimensioned, showing the machine, controller, drive, step chains, step frames, tracks, handrails, truss and all other parts.

(b) Complete drawings of the step treads, comb plates, balustrades with interior and skirt panels, mouldings, covers and other details.

(c) Complete wiring diagram, schematic diagram and connection diagram showing all electrical connections, functions, sequence of operations of all devices and apparatus associated with the motor stairs.

Maintenance

The manufacturer of the moving stairs will be required to enter into a fifteen year maintenance agreement with the Authority for the continuing maintenance of moving stairs installed under this contract, as a separate agreement between the Authority and the manufacturer for a separate price not to be included in the price under this Contract.

69. CERAMIC FLOOR TILE.

Ceramic mosaic floor tile shall be furnished and installed where required by the Contract Drawings. Before any material is delivered to the job site, the Contractor shall submit representative samples of tile to the Engineer for approval. Sufficient mosaic floor tiles shall be submitted to form a panel not less than twelve inches square, but in no case shall less than six tiles of each kind or type be submitted. Delivered materials shall match approved samples in all respects. Tile colors shall be as selected by the Engineer from manufacturer's standards.

Materials

Ceramic mosaic floor tile shall conform to the requirements for Type I, Class B, Form 3 floor tile of the Federal Specification for Tile, Ceramic, Floor, Wall, and Trimmers (Designation: SS-T-308). Floor tile shall be standard grade in accordance with the Simplified Practice Recommendations for Clay Tiles for Floors and Walls (Designation: R61-44) of the United States Department of Commerce, National Bureau of Standards.

Tile shall be delivered to the job site in unopened grade-sealed containers. A manufacturer's "Master Grade Certificate" shall be furnished the Engineer for each kind of tile and signed by both the manufacturer and Contractor, certifying to the grade, type and quantity of tile, together with satisfactory information for identification of the containers to which they apply. Each container shall be branded with, or have sealed within, the shipping mark and other designations corresponding with the information given on the master grade certificate.

Containers in which tiles and other materials are packed shall be kept dry until tiles and other materials are removed and checked. Tiles shall be protected from staining before they are set in place.

Ceramic, mosaic floor tile shall be vitreous body, unglazed, two inches square in size, one-quarter inch thick.

Portland cement shall conform to the requirements for Type I cement of the Standard Specifications for Portland Cement (A.S.T.M. Designation:C150) of the American Society for Testing Materials.

White Portland cement shall be similar and equal to Trinity White Portland cement as produced by the General Portland Cement Company or Medusa White Portland cement as produced by the Medusa Portland Cement Company.

Hydrated lime shall conform to the requirements for Type N hydrated lime of the Standard Specifications for Hydrated Lime for Masonry Purposes (A.S.T.M. Designation: C207) of the American Society for Testing Materials.

Portland cement mortar for floor tile setting beds shall be mixed in the proportion, by volume, of one part Portland cement to three parts of sand to which is added lime putty in an amount equal to twenty-five percent of the volume of Portland cement.

Neat cement grout for finishing joints shall be composed of white Portland cement and water, mixed to the consistency of thick cream.

Preparation of Surfaces

Grounds, door bucks, plugs, supports and connections for plumbing fixtures and fittings shall be in place and pipe chases and other openings shall have been properly closed before the Contractor proceeds with the application of tile mortar.

Concrete sub-floors to receive floor tile setting bed mortar shall have a rough finish and shall be cleaned of plaster, mortar droppings, dust or any other objectionable matter which would interfere with the bond of the mortar to the concrete sub-floor.

No tile shall be laid when the ambient temperature is below thirty-two degrees Fahrenheit on a rising temperature or below forty degrees Fahrenheit on a falling temperature, or when there is a probability of such temperatures occurring within forty-eight hours, unless special provisions are made for heating the spaces surrounding the work. No tile shall be used if it is likely to contain frost.

Installation

Concrete sub-floors to receive floor tile shall be uniformly moistened prior to the application of mortar setting beds.

Upon the clean, moistened surfaces a mortar setting bed shall be placed to a thickness of not less than three-quarters of an inch. The mortar shall be screeded to the elevations required by the Contract Drawings. Placing of the mortar bed shall be limited to an area which can be covered with floor tile before initial set takes place. Dry Portland cement shall then be uniformly dusted over the mortar bed and the tiles laid.

The tiles shall be firmly pressed into the mortar and carefully tamped until they form a true and even surface as fixed by straight edges placed at regular intervals. Joints between paper backed ceramic mosaic floor tile shall have the same width as the joints between tiles on the sheets.

After the mortar setting bed has sufficiently hardened, the paper sheets of ceramic mosaic floor tile shall be moistened and removed and the joints filled with neat cement grout.

Broken, cracked, marred or otherwise defective tile shall be replaced before the mortar has set. Tile shall fit neatly around all openings, projections and vertical surfaces. Where necessary tile shall be cut. Cutting, as far as practicable, shall be done by power saws. Cut edges shall be smooth, straight and free from chipping. Hand-cut tiles shall be filed or ground smooth on the cut edges.

After the neat cement grout has hardened all tiles shall be thoroughly cleaned with soap and water. When soap and water fail to produce a satisfactory, clean surface, tiles may be cleaned with a weak solution of acid and then rinsed with clean water.

Tiles which become marred, scratched, chipped or broken prior to the issuance of the Certificate of Final Completion shall be removed and replaced by the Contractor at his own expense.

Protection and Curing

Immediately after grouting, tile floors shall be covered with an approved, reinforced Kraft paper with sealed edges and ends lapped four inches.

After cleaning, the paper shall be relaid and finally removed immediately prior to final inspection.

70. CERAMIC WALL TILE.

Ceramic wall tile and base shall be furnished and installed where required by the Contract Drawings. Before any material is delivered to the job site, the Contractor shall submit representative samples of tile and base to the Engineer for approval. Sufficient tiles shall be submitted to form a panel not less than twelve inches square, but in no case shall less than six tiles of each kind or type be submitted. Delivered materials shall match approved samples in all respects. Tile colors shall be as selected by the Engineer from manufacturer's standards.

Materials

All ceramic wall tile shall conform to the Federal Specification for Tile, Ceramic, Floor, Wall, and Trimmers (Designation: SS-T-308) and shall be standard grade in accordance with the Simplified Practice Recommendations for Clay Tiles for Floors and Walls (Designation: R61-44) of the United States Department of Commerce, National Bureau of Standards.

All tile shall be delivered to the job site in unopened grade-sealed containers. A manufacturer's "Master Grade Certificate" shall be furnished the Engineer for each kind of tile and signed by both the manufacturer and Contractor, certifying to the grade, type and quantity of tile, together with satisfactory information for identification of the containers to which they apply. Each container shall be branded with, or have sealed within, the shipping mark and other designations corresponding with the information given on the master grade certificate.

Containers in which tiles and other materials are packed shall be kept dry until tiles and other materials are removed and checked. Tiles shall be protected from staining before they are soaked or set in place.

Tile shall be non-vitreous body, matt glazed, cushion-edged, four and one-quarter inches square in size.

Trim shapes for the various types of tile specified above shall be made of the same body and shall have the same finish as specified for tile.

Portland cement shall conform to the requirements for Type I cement of the Standard Specifications for Portland cement (A.S.T.M. Designation: C150-55) of the American Society for Testing Materials.

White Portland cement shall be similar and equal to Trinity White Portland cement as produced by the General Portland Cement Company or Medusa White Portland cement as produced by the Medusa Portland Cement Company.

Hydrated lime shall conform to the requirements for Type N hydrated lime of the Standard Specifications for Hydrated Lime for Masonry Purposes (A.S.T.M. Designation: C207-49) of the American Society for Testing Materials.

Portland cement mortar for the float coat shall be mixed in the proportion, by volume, of one part Portland cement to three parts of sand to which is added lime putty in an amount equal to twenty-five percent of the volume of Portland cement.

Neat cement shall be used for finishing joints and shall be composed of white Portland cement and water, mixed to the consistency of thick cream.

Preparation of Surfaces

Grounds, door bucks, plugs, supports and connections for plumbing fixtures and fittings shall be in place and pipe chases and other openings shall have been properly closed before the Contractor proceeds with the application of tile mortar.

No tile shall be laid when the ambient temperature is below thirty-two degrees Fahrenheit on a rising temperature or below forty degrees Fahrenheit on a falling temperature, or when there is a probability of such temperatures occurring within forty-eight hours, unless special provisions are made for heating the spaces surrounding the work. No tile shall be used if it is likely to contain frost.

Tiles shall be soaked in clean water for not less than forty-eight hours prior to setting.

Upon the thoroughly wet but not saturated surface of the scratch coat a float coat of mortar shall be placed. Temporary screeds shall be attached to the scratch coat with blobs of mortar to provide a true and plumb plane at the proper distance back from the finished wall line. The float coat shall be applied to a minimum thickness of three-eighths of an inch rodded and floated over areas not greater than will be covered by tiles before the mortar reaches its initial set.

Immediately before setting, a skim coat of neat cement shall be applied to the back of the soaked tiles. Each tile shall be set and tapped firmly into place and brought flush with adjacent units. Bases and trim shapes shall be backed fully with mortar.

Approved spacing gauges or other devices shall be used to obtain joints of a uniform width of approximately three sixty-fourths of an inch. Joints shall be in straight lines perpendicular and parallel to the floor.

Broken, cracked, marred or otherwise defective tile shall be replaced before the mortar has set. All necessary corners, coves, angles, combinations or other trim shapes shall be furnished and installed. Tile shall fit neatly around all openings. Where necessary tile shall be cut. Cutting, as far as practicable, shall be done by power saws. Cut edges shall be smooth, straight and free from chipping. Hand-cut tiles shall be filed or ground smooth on the cut edges.

After the setting mortar has hardened sufficiently to hold the tile firmly in place, loose mortar shall be raked out and the glazed surfaces thoroughly washed with clean water. While still moist, the joints shall be filled with a neat white Portland cement grout. Grout shall be recessed to the depth of the cushion. Prior to hardening, any excess mortar shall be washed off with a sponge and water.

After the pointing mortar or neat cement has hardened all tiles shall be thoroughly cleaned with soap and water. Under no condition shall glazed tile be cleaned with any acid solution.

Tiles which become marred, scratched, chipped or broken prior to the issuance of the Certificate of Final Completion shall be removed and replaced by the Contractor at his own expense.

71. GLASS MOSAICS.

Glass Mosaics shall match in color, color range and texture the samples on file in the office of the Engineer. The tile shall be similar and equal to"Vitricolor" Venetial Glass Mosaics as supplied by Agency Tile Supply Corporation, 522 West 29th Street, New York, New York and manufactured by "Vetricolor" S.R.L. Italy.

Tile shall be furnished and installed where required by the Contract Drawings. Before any material is delivered to the job site, the Contractor shall submit representative samples of tile to the Engineer for approval. Sufficient tiles shall be submitted to form panels not less than twenty-four inches square. Delivered materials and finished surfaces shall match approved samples in all respects. Tile colors shall be as selected by the Engineer from manufacturer's standards.

Surfaces to be tiled shall be clean and free from dust, scale and mortar. No curing agents, sealers, oils or coatings shall be applied to masonry or other surfaces that are to receive tile.

The Tile Contractor shall examine all surfaces prior to starting the work to determine that they are sound, clean and suitable to receive the mosaic.

Materials

All tile shall be delivered to the job site in unopened grade sealed containers. A manufacturer's "Letter of Quality" shall be furnished the Engineer for each kind of tile and signed by both the manufacturer and the Supplier, certifying to the grade, type, quality and quantity of tile. Each container shall be branded with, or have sealed within, the shipping mark and other designations corresponding with the information given on the Letter of Quality.

Containers in which tiles and other materials are packed shall be kept dry until tiles and other materials are removed and checked. Tiles shall be protected from staining before they are set in place.

Portland cement shall conform to the requirements for Type I cement of the Standard Specifications for Portland cement (A.S.T.M. Designation: C150-55) of the American Society for Testing Materials.

White Portland cement shall be similar and equal to Trinity White Portland cement as produced by the General Portland Cement Company or Medusa White Portland cement as produced by the Medusa Portland Cement Company.

Hydrated lime shall conform to the requirements for Type N hydrated lime of the Standard Specifications for Hydrated Lime for Masonry Purposes (A.S.T.M. Deisgnation: C207-49) of the American Society for Testing Materials.

Portland cement mortar for the float coat shall be mixed in the proportion, by volume, of one part Portland cement to three parts of sand to which is added lime putty in an amount equal to twenty-five percent of the volume of Portland cement.

Tile setting liquid shall be similar and equal to Laticrete Tile Setting Liquid as produced by the United States Rubber Company, Naugatuck Chemical Division, Naugatuck, Connecticut.

Preparation of Surfaces

Grounds, door bucks, plugs, supports and connections for plumbing fixtures and fittings shall be in place and pipe chases and other openings shall have been properly closed before the Contractor proceeds with the application of tile mortar.

No tile shall be laid when the ambient temperature is below thirty-two degrees Fahrenheit on a rising temperature or below forty degrees Fahrenheit on a falling temperature, or when there is a probability of such temperatures occurring within forty-eight hours, unless special provisions are made for heating the spaces surrounding the work. No tile shall be used if it is likely to contain frost.

Dry masonry and concrete surfaces shall be stoned and/or broomed to remove loose mortar, plaster, cement, dust or soil and then uniformly dampened with water.

Mixing

The Laticrete Mosaic Setting Liquid shall be mixed in a clean container with Portland cement to a heavy troweling consistency. No more than 1 (one) bag of cement shall be used with each 5 (five) gallon pail of Laticrete. Up to 100# of clean fine sand may be added to each bag of cement. Blend sand and cement dry, and then add the dry mixture to the laticrete and mix until smooth.

Application

A. Thin Mortar Method - The Latricete mortar shall be applied with a deep saw-toothed notched trowel using sufficient material to bed the tile completely. Tile shall be applied while the mortar surface is wet and tacky. As the work progresses, the sheets shall be aligned and rubbed with a wooden block to insure bond and imbed tile in the Laticrete mortar. Allow tile to set until firm before wetting to remove paper. At this point rub down the mosaic with a pumice stone, or hard wood block to insure an even surface by

sinking the mosaic properly into the installing material.

B. Regular Mud Bed Method - A water resistant scratch and float coat shall be prepared using a 1:1 dilution of Laticrete #3642 concentrate and water with the regular dry mix of sand/cement/lime. After the float coat is applied, plumbed and allowed to become firm, the dope or neat coat of Laticrete Tile Setting Liquid and cement is mixed and applied. The Laticrete mortar is applied and the tile set as described in A above.

After the tile is set, the face shall be wet with water, and the paper stripped off. All loose or damaged tile shall be replaced, and if necessary to align sheets, the tile is thoroughly wetted and rubbed with block to rework dope coat to plastic state. Joints may then be straightened and aligned.

Grouting

To insure weather and water resistant joints, grouting shall be done carefully using Laticrete Liquid and a good quality prepared grout. The Laticrete #3642 Concentrate shall be diluted with 2 parts water, and added to the dry grout while mixing to a thin cream consistency. (If Laticrete #3701 yellow label is used, dilute with only 1/2 part water.) The grout is then applied and worked into the joints with a stiff brush, trowel, or sponge float. All joints must be completely filled, leaving no voids. Excess grout shall be removed with squeegee or trowel. Clean tile surface with a damp sponge before grout hardens, and polish with a dry cloth. Only small areas shall be grouted at one time.

72. TERRAZZO.

Terrazzo floor finish shall consist of a terrazzo topping not less than five-eighths of an inch thick laid between white-metal.

Samples

Before commencing operations, the Contractor shall submit to the Engineer for approval floor designs of terrazzo finish, showing the division strips and details of the junction of the terrazzo finish with other surfaces or materials, and shall furnish two or three finished samples of the various kinds and colors of terrazzo finish, in pieces approximately four inches by eight inches.

Materials

Marble chips shall be sound, hard and of such colors and sizes as will produce a floor finish which will match the samples on file in Engineers office at Room 1115, 111 Eighth Avenue at 15th Street, N.Y.C.

Dividing strips shall be made of combination strips of one-eighth inch by one-fourth inch whitemetal top members attached to No. 18 Brown and Sharpe gauge whitemetal strips. Strips shall be not less than one and one-half inches deep and shall have perforated web or shall be provided with suitable anchors.

Portland cement shall conform to the requirements for Type 1 cement of the Standard Specifications for Portland cement (A.S.T.M. Designation: C150-49) of the American Society for Testing Materials. In addition, the Portland cement for terrazzo topping shall be white Portland cement and shall be similar and equal to Trinity White Portland Cement as produced by General Portland Cement Company, Medusa White Portland Cement Company, or Atlas White Portland Cement as produced by the Universal Atlas Cement Corporation, to which shall be added coloring pigment in the proportion necessary to obtain the required color shade.

Sand shall conform to the Standard Specifications for Aggregate for Masonry Mortar (A.S.T.M. Designation: C144-44) of the American Society for Testing Materials.

Abrasive aggregate shall be an oxide aluminum abrasive in crystaline formation, ceramically bonded and vitrified. Abrasive aggregate shall be colored to match the color of the marble chips as nearly as possible.

Water shall be clean fresh water suitable for drinking purposes.

Coloring pigments for tinted matrix shall be of the best quality mineral color, sun and lime-proof, of high purity and having a specific gravity equal to that of the cement. Pigments shall be accurately measured, mixed dry, and shall be of such fineness and tone that the quantity used to produce the desired color of matrix when dry shall not exceed 5% of the weight of the cement used.

Reinforcing mesh shall be galvanized wire mesh with wires of No. 14 U. S. Steel Wire Gauge spaced one inch on centers.

Installation

Before terrazzo floor finish is placed, the surfaces upon which it will be placed shall be thoroughly cleaned of all loose and objectionable material. The surfaces shall then be covered with dry sand to form a cushion not less than one-quarter of an inch in thickness screeded to a true surface. The sand cushion shall then be covered with two-ply reinforced waterproof building paper, weighing not less than thirty pounds per one hundred square feet, lapped at least two inches at the joints.

A cement mortar bed consisting of one part by volume of Portland cement to four parts of sand, mixed with water to form a homogeneous stiff mix shall be placed over the building paper and screeded to a uniform even surface five-eighths of an inch below the finished floor level. Dividing strips, separating the floor into sections as shown on the Contract Drawings or as required by the Engineer, shall be set into the mortar bed within an hour after it is placed.

The space between the dividing strips shall be filled with terrazzo topping and struck off to the required surface plane. Terrazzo topping shall consist of marble chips and Portland cement mixed dry in the proportion by weight of two hundred pounds of

marble chips to one hundred pounds of cement, colored by the addition of pigment to match the required shade of marble chips. Water shall then be added to make the mix plastic but not too slushy. Marble chips shall then be sprinkled over the surface, using sufficient chips to fill all spaces and leaving cement showing only as joints between chips and on the finished surface. The terrazzo topping shall be thoroughly tamped and rolled, using care not to displace the dividing strips. The terrazzo topping shall be floated to a dense, uniform finish level with the dividing strips and showing, in the finished surface, at least eighty per cent marble surfaces or abrasive aggregate and marble surfaces in the case of abrasive finish. On completion of the rolling, terrazzo topping shall be troweled to a dense even surface.

Terrazzo finish shall cure for at least six days before being ground. During this period it shall be covered uniformly with a one-inch layer of clean, wet sand, kept wet by being sprinkled with clean water at intervals of not more than ten hours. After the sand is removed, the finish shall be machine rubbed, first using abrasive stones containing grit capable of passing a No. 24 mesh sieve, for the initial rubbing, and then using abrasive stones containing grit capable of passing No. 80 mesh sieve. A thin grout of Portland cement of the same kind and color as the matrix shall then be applied and worked in, filling all joints. The grout on the surfaces shall be removed by machine, using a stone containing grit not coarser than those passing a No. 80 mesh sieve. The finish shall be thoroughly cleaned with fresh water.

Terrazzo Base

Cast in place terrazzo base shall be provided in locations noted on Schedule of Finishes. Terrazzo finish shall be not less than one-half inch in thickness and shall be fully backed with mortar. Base shall be treated and polished to match the flooring. All base shall have a one inch radius sanitary cove in the floor angle, and shall be divided into not over four foot lengths with white-metal strips as specified above. Base finishing flush with vertical surfaces shall be capped with a metal screed strip, set and maintained flush, straight and in correct alignment.

Mortar backing shall consist of one part by volume of Portland cement and three parts of sand, mixed with water, and shall be applied on the walls to the height of the base and scored horizontally in rows spaced approximately one inch apart.

Abrasive Finish

Abrasive finish shall consist of a mortar coating, one-quarter inch in thickness, mixed in the proportion by volume of two parts of abrasive aggregates, three parts of marble granules and two and one-half parts of Portland cement. The materials shall be thoroughly mixed dry before water is added to obtain the proper consistency. The surface shall then be thoroughly compacted by rolling to produce a finish having about eighty per cent of marble granules and abrasive aggregate. The surface shall then be cured and rubbed as hereinbefore specified for terrazzo topping.

Stair Treads and Platform

Terrazzo treads shall be precast terrazzo not less than one and one-half inches thick, with rounded nosings. Treads shall be reinforced with steel rods, suitably spaced, for the full length of the treads. Treads shall be carefully bedded, fitted and anchored to the stair framing.

Platforms, except precast screed strips, shall be cast in place terrazzo, not less than one and one-half inches thick, reinforced with galvanized wire mesh, with wires of No. 14 U. S. Steel Wire Gauge, spaced one inch on centers. Platforms shall be divided by whitemetal dividing strips.

Protection and Cleaning

Within one hour after final cleaning and polishing and immediately after drying of surface water, terrazzo surfaces shall be given a heavy coating of sealing material. Such sealing material shall be "Briten All" as manufactured by Vestal Company or "Terrazine" as manufactured by Hilyard Chemical Company. Application shall be made with a spreading mop, working the base material into the minute pores of the cement matrices and marble chips. The coating shall be left to penetrate and the surface to dry for at least one-half hour. Floor surfaces shall be covered with reinforced Kraft paper similar to Sisalkraft. Upon completion of all Work, terrazzo surfaces shall be given a thorough scrubbing and resurfacing, removing all dirt and bonded surface matter.

73. GLASS AND GLAZING.

Materials

Each pane of glass shall bear the manufacturer's label indicating the quality of the glass, its weight and its thickness. Labels shall remain in place until final cleaning prior to final inspection. Absence of a label will be cause for rejection.

Unless otherwise specified glass shall conform to the Federal Specification for Glass; Flat for Glazing Purposes (Designation: DD-G-451a). Unless otherwise specified, the requirements for types and qualities indicated hereinafter for glass refer to the requirements for such types and qualities set forth in the aforementioned Federal Specification.

(a) Polished plate glass for exterior shall be one-half inch in thickness and for interior 1/4 inch in thickness unless otherwise indicated on the Contract Drawings and shall conform to the requirements for Type I Glazing Quality Polished Glass.

(b) Clear glass designated Type B on the Contract Drawings shall conform to the requirements for Type II, double strength, A quality clear window glass and shall be used for glazing not otherwise specified herein or indicated on the Contract Drawings.

(c) Clear wire glass designated Type C shall conform to the requirements for Type IIIa polished wire glass and shall be one-quarter of an inch in thicknesss unless otherwise indicated on the Contract Drawings.

(d) Obscure glass shall conform to the requirements for Type IIIc rolled figured sheet glass and shall be one-eighth of an inch in thickness unless otherwise indicated on the Contract Drawings.

(e) Clear wire glass designated Type E on the Contract Drawings shall be flat polished horizontal/vertical glass with crossed wires, approximately seven-thirty-seconds of an inch in thickness as manufactured by "Detag" - Furth/Bayern, Germany, and distributed by Louis Fischer, Inc., 25 Montrose Avenue, Brooklyn 6, New York as per sample on file in the Engineer's Office.

(f) Tempered glass shall be similar and equal to "Tuf-Flex" tempered plate glass as manufactured by Libby, Owens Ford Glass Company.

Putty for glazing in wood shall conform to the requirements for Type II white lead - whiting putty of the Federal Specification for Putty; Pure - Linseed Oil, (for) Wood - Sash-Glazing (Designation: TT-P-791a).

Glazing compound for use in metal windows, doors and partitions shall conform to the requirements for Type 1 elastic glazing compound of the Federal Specification for Putty and Elastic - Compound; (for) Metal-Sash Glazing (Designation: TT-P-781a). The compound for use in doors and partitions shall be tinted to match the finish of the doors and partitions.

Installation

Glass shall be accurately cut to fit the frame with all edges smooth and regular. Glass shall be set in such manner that there will be at least one-quarter of an inch covered by the bead on all edges. Glass shall be fitted without springing or forcing. No putty shall be applied until rabbets and glazing beads for wood frames have been primed as specified in the clause hereof entitled "Painting".

Glass for interior frames secured in place with metal or wood beads shall be set without a putty bed but shall be back and face puttied after setting to prevent rattling.

Glass set in metal window sash and exterior frames shall be bedded in putty or glazing compound and shall be back and face puttied. Glass in metal window sash shall be secured in place with spring type glazing points prior to the application of compound.

Obscure glass shall be set with the smooth face out and the roughened side toward the area to be obscured.

Putty and compound shall be smoothly finished to true even lines and surfaces.

Mirrors

Plate glass for mirrors shall be silvering quality, one-quarter of an inch thick plate glass. Mirror glass shall be given a heavy coating of silver, an electroplated coating of copper, a baked-on coat of paint and a final coating of bitumastic enamel which shall be impervious to moisture and not harmful to the silver coating. Mirror frames shall be fabricated from an approved plain section of No. 16 gauge (Brown and Sharpe) sheet brass. Brass frames shall be chromium plated in accordance with the requirements for Type FC plate of the Standard Specifications for Electro-deposited Coatings of Nickel and Chromium on Copper and Copper-Base Alloy (A.S.T.M. Deisgnation: B141-55) of the American Society for Testing Materials. The mirrors shall have a solid backing sheet of No. 20 gauge (Brown and Sharpe) brass sheet, securely attached to the mirror frame. The backing sheet shall be insulated from the back of the mirror with an approved moisture proof insulating sheet. The frames for the mirrors shall show three-quarters of an inch on the face of the mirror. Mirror frames shall be secured with approved theft-proof fastenings.

Cleaning

Before final inspection, the glass and mirrors shall be carefully cleaned and any glass which has been broken, scratched or otherwise damaged shall be replaced by the Contractor at his own expense.

74. PLASTIC LOUVERS AND FRAMES.

The Contractor shall furnish and install the roof truss louvers and frames where shown and as detailed on the Contract Drawings.

Louver blades shall be similar and equal to "Resolite" fire-snuff fiberglass as manufactured by Resolite Corp. Fiberglass shall be not less than one-tenth (1/10") inch thick and material not so conforming will be rejected by the Engineer. Fiberglass shall be smooth semi-clear cola.

Aluminum frames to receive louver blades shall include but not be limited to bent plate jambs, sills and mullions, clips, strips, closures, plates, bolts, blocking and stiffening required to form a rigid assembly. Unless otherwise detailed or approved by the Engineer, fastenings shall be 18-8 stainless steel through neoprene washers. Aluminum shall be mill finish.

Shop drawings for plastic louvers and frames shall be submitted to the Engineer for approval as required by the clause hereof entitled "Working Drawings and Catalog Cuts".

5. FURRING AND LATHING.

Metal lath shall be furnished and placed on all surfaces to be plastered or to receive wall tile except block masonry surfaces and except where otherwise shown on the Contract Drawings.

Materials for furring and lathing shall be protected from rusting. They shall be delivered to the construction site without undue exposure to the weather and, upon delivery, they shall immediately be stored under cover in a dry, ventilated space. Materials shall not be in contact with the ground at any time.

Materials

Metal furring, studding, runners, hangers, braces, lath and other metal accessories not required to be galvanized shall be coated with an approved rust-inhibitive paint.

Plain lath shall be an approved flat expanded metal lath without ribs, formed into a diamond mesh pattern. It shall be formed from sheet steel and shall weigh not less than three and four-tenths pounds per square yard after expansion but before painting. Plain lath at exterior locations shall be galvanized.

Rib lath, if required, shall be formed from expanded metal and shall weigh not less than six and three-quarter pounds per square yard. Ribs shall be three-fourths of an inch in height, six inches apart or of a design providing equivalent rigidity unless otherwise required by the Contract Drawings.

Rib lath shall be installed on the interior surfaces of exterior walls wherever such wall surfaces are to receive plaster.

Lathboard for acoustic tile ceilings, if required, shall be three-eighths inch thick, similar and equal to plain "Rocklath" as manufactured by the U. S. Gypsum Company, "Standard" gypsum lath as manufactured by the National Gypsum Company or plain "Celo-Rok Anchor Lath" as manufactured by the Celotex Corporation.

Runner and furring chanels as required for the suspended ceilings specified herein and for other furring required by the Contract Drawings shall be formed from No. 16 U.S. Standard gauge cold-rolled open-hearth steel and from hot-rolled open-hearth steel conforming to the following requirements:

Size	Material	Minimum Weight Per Thousand Lineal Ft.
1-1/2 inches	hot-rolled steel	1050 pounds
1-1/2 inches	hot-rolled steel	850 pounds
1-1/2 inches	cold-rolled steel	475 pounds
1 inch	hot-rolled steel	600 pounds
1 inch	hot-rolled steel	410 pounds
3/4 inch	cold-rolled steel	300 pounds

Corner beads shall be formed from not less than No. 26 U. S. Standard gauge galvanized sheet steel and shall have expanded wings not less than two and five-eighths inches in width.

Screeds shall be zinc-coated galvanized and shall be formed from not less than No. 26 U. S. Standard gauge sheet steel, having expanded metal wings not less than two inches wide.

Tie wire for assembling and connecting furring and/or lathing shall be .0475 inch diameter Monel wire.

Hangers for suspending runner and furring channels shall be bars, one inch by three-sixteenths of an inch, made of open-hearth steel.

Access doors in suspended ceilings shall be furnished and installed where required by the Contract Drawings. Access doors and frames shall be formed from sheet steel and shall have expanded or perforated metal wings where adjacent to plastered ceiling surfaces. The frames shall be formed from

not less than No. 16 U. S. Standard gauge sheet steel and the doors shall be formed from not less than No. 14 U. S. Standard gauge sheet steel. Access doors shall have screw driver operated camlocks and concealed hinges. Access doors as manufactured by the Inland Steel Products Company or Knapp Brothers Manufacturing Company will be acceptable. Doors and frames shall be given a shop coat of an approved rust inhibitive primer and shall be field painted two coats to match adjacent surfaces.

Installation

Furring for suspended ceiling construction and other furring required by the Contract Drawings shall include steel channel studding, metal furring and runner channels, bracing and accessories. Braces, wedges and other incidental materials required to make the installation rigid shall be provided. The Contractor shall frame openings in the ceiling construction, using furring strips and/or other frames so that registers, grilles, louvers, lighting fixtures and similar items finish flush with the surface of the ceiling or as otherwise indicated on Contract Drawings.

Furring shall be accurately fitted and secured to adjoining construction in a substantial manner approved in advance by the Engineer. Bracing and furring channels shall be secured by stays and shall be wired with at least two turns of Monel Wire.

Inserts, anchors and wires necessary to secure and support suspended ceilings and metal furring shall be set in forms before concrete is poured.

Wherever suspended metal lath and plaster ceilings are indicated on the Contract Drawings or specified herein they shall be constructed as follows:

a. One and one-half inch hot-rolled steel runner channels weighing eight hundred fifty pounds per one thousand lineal feet shall be bolted to steel hangers. Hangers shall be spaced not more than four feet on centers both ways. The spacing of runner channels and hangers may be increased from four feet to five feet if one and one-half inch hot-rolled steel channels weighing 1050 pounds per one thousand lineal feet are used.

b. Furring channels shall be one inch hot-rolled steel channels placed on one foot centers at right angles under the runner channels and wired thereto with at least two turns of Monel wire, or fastened with approved galvanized steel clips. Furring channels for runners spaced four feet apart shall weigh not less than 410 pounds per one thousand lineal feet and for runners spaced five feet apart shall weigh not less than 600 pounds per one thousand lineal feet.

Wherever suspended acoustical tile ceilings are indicated on the Contract Drawings or specified herein, they shall be constructed as follows:

a. One and one-half inch cold-rolled steel runner channels shall be bolted to steel hangers. Hangers and runner channels shall be spaced not more than four feet on centers both ways.

b. Furring channels shall be three-quarter inch cold-rolled steel channels spaced sixteen inches apart secured to the runner channels as specified for the runner channels for metal lath and plaster ceilings.

c. Lathboard for acoustic tile ceilings shall be secured to the furring channels with pronged clips spaced not more than sixteen inches apart.

Abrasions appearing on painted metal surfaces after erection is completed shall be retouched.

Metal lath shall be laid with its long dimension at right angles to the furring channels and shall be wired to the channels with Monel wire ties. Ties shall be spaced every six inches along the furring channels and one tie shall be provided on side laps in the lath between channels. Lath shall lap at sides and ends at least one inch; and laps shall occur only over supports.

Plain lath shall be used in all instances unless otherwise indicated on the Contract Drawings or herein specifically provided.

Exterior angles of walls which are to be plastered shall be provided with metal corner beads accurately and substantially secured in place in an approved manner. Plaster returns around doors and windows shall have corner beads.

Corner beads shall extend for the full length of plastered, exterior corners and where the length of the corner does not exceed ten feet, corner beads shall be installed in one piece.

Metal screeds shall be furnished and installed where plaster abuts other materials, when a strip is required and where otherwise indicated on the Contract Drawings. The Contractor shall submit samples of furring channels, lath and accessories.

76. PLASTERING.

Except as otherwise specified herein or shown on the Contract Drawings, plastering shall be at least equal to the applicable requirements of the American Standard Specifications for Gypsum Plastering (Designation: ASA No.: A42.1-1955).

Materials

Materials for use in plastering, with the exception of sand, shall be delivered to the construction site in sealed containers or bags and shall be stored in a dry, well ventilated space, under cover and off the ground, until used in the preparation of plaster.

Aggregates for plaster shall conform to the Tentative Specifications for Inorganic Aggregates for Use in Interior Plaster (A.S.T.M. Designation: C35-52T) of the American Society for Testing Material.

Water shall be clean, fresh water suitable for drinking purposes.

Gypsum plaster and calcined gypsum shall conform to the requirements for gypsum neat plaster and gypsum gauging plaster for finishing coat of the Standard Specifications for Gypsum Plasters (A.S.T.M. Designation: C28-50) of the American Society for Testing Materials.

Quicklime shall pass a thirty-mesh sieve and shall conform to the requirements for calcium lime of the Standard Specifications for Quicklime for Structural Purposes (A.S.T.M. Designation: C5-26) of the American Society for Testing Materials, except that lime putty formed from the above specified quicklime shall have a plasticity figure of not less than 200 when tested in accordance with the Standard Methods of Physical Testing of Quicklime and Hydrated Lime (A.S.T.M. Designation: C110-49) of the American Society for Testing Materials.

Hydrated Lime shall conform to the Standard Specifications for Special Finishing Hydrated Lime (A.S.T.M. Designation: C206-49) of the American Society for Testing Materials.

Fiber shall be goat or cattle hair or pure manila fiber, one-half of an inch to two inches long, free from grease, oil, dirt and other impurities and shall be completely soaked in water and separated before being mixed in plaster.

Proportions for Gypsum Plaster

Gypsum plaster shall consist of a mixture of gypsum plaster and sand mixed in the following proportions by volume:

(a) The first or scratch coat on metal lath shall be mixed in the proportion of one part of gypsum neat plaster to two parts of sand. If the plaster for the scratch coat is unfibered, one bushel of fiber shall be added for each cubic yard of sand used.

(b) The brown coat, or base coat on masonry surfaces shall be mixed in the proportion of one part of gypsum neat plaster to three parts of sand. If the plaster for the brown coat is unfibered, one-half bushel of fiber shall be added for each cubic yard of sand used. The finish coat for gypsum plaster shall be mixed in the proportion, by volume, of three parts of lime putty to one part of calcined gypsum.

Proportions for Vermiculite Gypsum Plaster

Vermiculite gypsum plaster shall consist of a mixture of gypsum plaster and approved light weight aggregate mixed in the following proportions:

(a) The first or scratch coat on metal lath shall be mixed in the proportion of two cubic feet of aggregate to one hundred pounds of gypsum neat plaster.

(b) The second coat on metal lath and the base coat on masonry surfaces shall be mixed in the proportion of three cubic feet of aggregate to one hundred pounds of gypsum neat plaster.

A finish coat will not be required for Vermiculite gypsum plaster. The finished surfaces of the brown coat or base coat shall be cork floated and lightly troweled to a true, even surface with all angles plumb and square.

Mixing

Except as otherwise approved or when hand mixing is permitted, plaster shall be mixed in a batch type mixer at the construction site. Frozen, caked or lumpy materials shall not be used. The mixer shall be cleaned of all set or hardened material before materials for the next batch are loaded. When the mixer is used intermittently, sand and water shall be run in the mixer for a few minutes after each batch and the mixer are completely emptied.

Each batch of plaster shall be mixed separately. Plaster shall be thoroughly mixed to obtain uniformity of color and workable consistency of mass, and only in such quantities as will be used before it has started to set. Retempering of plaster which has started to set will not be permitted and plaster which has set shall be discarded.

When hand mixing is permitted, the mixing boxes shall be watertight and shall be thoroughly cleaned of set or hardened material prior to placing of fresh materials for each batch. Only one batch at a time shall be mixed in a box. Waterproof protection shall be provided under each box and water barrel. Tools shall be cleaned after mixing each batch.

Application

Except as otherwise required by the Contract Drawings, or specified herein, plaster shall be not less than five-eighths of an inch thick measured from the outer surface of the metal lath or from the surface of the masonry base. Where, in certain cases gypsum plaster is to be applied in a thickness of more than five-eighths of an inch, the scratch coat, or base coat, shall be applied to the required thickness in increments not exceeding one-half inch.

Surfaces to receive plaster shall be clean and free from loose material, dirt and foreign or objectionable matter. The exterior openings to spaces where plastering will be performed shall be kept closed, if required by the Engineer, to properly regulate drying and curing of the plaster. Plaster shall be protected from rapid drying and from frost.

Unless otherwise specified herein, plaster on metal lath shall be applied in three coats. The scratch coat on metal lath shall be applied with enough pressure to fill the meshes and satisfactorily key the plaster. The scratch coat shall be brought up to a thickness equal to approximately one-half of the total thickness of plaster required. The scratch coat shall be cross-scratched diagonally to a rough texture for application of the brown coat. After the scratch coat has hardened but before it has dried, the brown coat shall be applied. The brown coat shall be to such thickness as to finish flush with screeds and grounds and, unless otherwise specified herein, shall be rodded and brought to a true, uniform surface, shall be lightly broomed and allowed to set and dry before the finish coat is applied. The gypsum-lime putty white finish coat shall be applied, allowed to dry and then brushed with water and troweled to a smooth, glossy finish. The finished plaster shall be true and out of wind, with all angles plumb, true and square, troweled to an even surface without waves, stains, cracks or defacement of any sort.

Plaster on masonry surfaces shall be applied in two coats by the "double-up" method. The base coat shall be applied with sufficient force and thickness to form a satisfactory bond, then doubled back to finish flush with screeds and grounds. Unless otherwise specified herein the plaster shall be straightened to a true surface with rod and darby and left rough to receive the finish coat. The finish coat shall be applied in the manner specified for plaster finish coat on metal lath.

Portland Cement Plaster

Portland cement plaster shall consist of a mixture of Portland cement and sand applied in three coats on metal lath: a scratch coat, a brown coat and a finish coat, or applied in two coats on masonry surfaces: a brown coat and a finish coat.

Portland cement shall conform to the requirements for Type I cement of the Standard Specifications for Portland Cement (A.S.T.M. Designation: C150-52) of the American Society for Testing Materials.

Portland cement plaster shall be mixed in the proportion, by volume, of one part of Portland cement to three parts of sand, to which is added lime putty in an amount equal to twenty-five per cent of the volume of Portland cement. The scratch coat of Portland cement plaster applied to metal lath shall contain one pound of fiber for each sack of Portland cement used. The brown coat for two coat Portland cement plaster shall be similarly fibered.

Portland Cement Plaster on Metal Lath

The scratch coat on metal lath shall be applied with sufficient pressure to force the plaster through and key it firmly into the lath. The exposed surfaces of the scratch coat shall be scored horizontally. and vertically with suitable tools in lines approximately one inch apart. Plaster shall be carried to the top of the cement base (or below the top of the base for a wood base), with the finish coat troweled after the base is placed. Each coat shall be kept moist until the application of the subsequent coat.

The brown coat shall not be applied until the scratch coat has thoroughly set. The scratch coat shall be dampened evenly immediately prior to the application of the brown coat. The brown coat shall be brought out to the face of the grounds or screeds, rodded straight and true and floated to a smooth even finish.

After the brown coat has become thoroughly set, it shall be dampened evenly and the finish coat shall be applied in sufficient thickness to produce the surface required. The finish coat shall be finished with a float and a rubber sponge to a fine, even texture and lightly troweled with a steel trowel to true, smooth surfaces. The finish coat shall be finished at angles and against other surfaces in true, sharp lines. The finished surface shall be free from scratches, tool marks or blemishes of any kind. At the end of each day's operations, plaster shall be finished to a corner or to a place where the direction of the wall changes.

Portland Cement Plaster on Masonry Surfaces

Plaster shall be applied to masonry surfaces in two coats. The brown (base) coat shall be applied approximately one-eighth inch thick with sufficient force to form a satisfactory bond and then doubled back to finish flush with screeds and grounds. The brown coat shall be brought to true even surfaces with rod and darby, and damp-cured for not less than forty-eight hours before the finish coat is applied.

The finish coat shall be applied and finished as specified for Portland cement plaster on metal lath.

Scratch Coat for Wall Tile

The scratch coat of plaster, against which wall tile is to be set in a float coat of mortar, shall be Portland cement plaster mixed in the proportions hereinbefore specified and shall be applied to wall construction in thickness not less than one-quarter of an inch. After the plaster has set but while it is still damp, the surfaces shall be cross-scored or cross-scratched with suitable tools in lines approximately one inch apart.

Protection, Cleaning and Patching

Plaster shall be protected against freezing, premature drying out, damage, marking, marring or other defacing. Cracks or other defects in the surfaces shall be carefully cut out to the extent of such defects and shall be properly patched with new materials, after which the new surfaces shall be finished off to match the adjacent surfaces.

Care shall be exercised to avoid soiling or spattering plaster or cement mortar on other parts of the building construction. The Contractor shall clean off all plaster on adjacent building construction, such as door frames, windows and other surfaces which are not required to be plastered. Floors shall be cleaned of all plaster and debris, and left broom-clean upon completion of plastering.

After other construction is completed, cutting, patching, repairing and pointing up shall be thoroughly and neatly performed. Cracks and indentations in plastered surfaces shall be thoroughly raked out or cut out, the surfaces moistened and the imperfections filled with new plaster. The surfaces shall be troweled flush with adjoining surfaces. In addition, the surfaces around fixtures, outlet boxes, switch plates, fittings, piping, tile and other materials or appliances abutting or extending into plaster shall be pointed up and finished flush with the adjacent plaster. Where gypsum plaster is to be joined to other gypsum plaster which has been applied or installed for more than forty-eight hours, the abutting edge of the existing plaster shall be beveled to a plane so that the joint assumes approximately a forty-five degree angle.

77. METAL PAN ACOUSTICAL CEILINGS.

Shop drawings for metal pan acoustical ceilings shall be submitted for approval in accordance with the clause hereof entitled "Working Drawings and Catalog Cuts". The drawings shall clearly indicate the design, dimensions, anchorages and other details.

Six representative samples of acoustical units shall be submitted for approval. The size of such samples shall be as specified hereinafter or as shown on the Contract Drawings. Samples shall clearly indicate the design, color and texture or finish of the acoustical units the Contractor proposes to furnish.

The acousitcal units shall be delivered to the Construction site in their original sealed packages bearing the name of the manufacturer and the brand. The Contractor shall protect the acoustical units from damage and moisture intrusion. Acoustical units, which, in the opinion of the Engineer, become damaged or otherwise unfit for use during delivery, handling, storage or installation, shall be replaced by the Contractor at his own expense.

Materials

Metal pan acoustical units shall conform to the requirements for Type II A, Grade 2, Class A acoustical units of the Federal Specification for Acoustical Units; Prefabricated (Designation: SS-A-118b). Except where required by the Contract Drawings, units shall be unperforated and sound absorbant material shall be omitted. Acoustical units shall be formed from aluminum not less than .040 inches thick. Aluminum panels shall be 12 inches wide by up to 48 inches long, as required dead flat and square edged for fine line joints. Units shall be similar and equal to Simplex flush aluminum panels.

Metal edge mouldings if required shall be channel shaped aluminum not less than .040 B. & S. Gauge in thickness. The material and finish of edge mouldings shall match the metal pan acoustical units.

Tee bars shall be formed from steel. Clips for securing tee bars to supporting channels shall be formed from No. 12 U. S. Standard Gauge spring steel.

Installation

The metal pan acoustical units shall be installed on a mechanical suspension system consisting of tee bars, clipped to one and one-half inch channels erected as specified in the clause hereof entitled "Furring and Lathing". The tee bars shall be spaced not more than two feet on centers.

Metal pans shall be so constructed that they will snap into the tee bars or snap bars and remain in place. The entire ceiling or any portion thereof shall be capable of being removed and relocated without damage to the material. The incombustible sound-absorbing element or pad shall be spaced away from the perforated metal pan by means of pad supports or a metal grid. If pad supports are used, they shall be five-eighths of an inch wide by three-eighths of an inch high and of a length equal to the length of the pan. Pad supports shall be formed from the same material used in manufacturing the pan, or if grids are used they shall be formed from No. 14 Brown and Sharpe gauge galvanized wire, welded into a rectangular mesh design. Cross wires shall be crimped at regular intervals to hold the pad away from the surface of the pan. The use of blanket type insulation will not be permitted. The channel-type metal-edge moldings shall be secured at points not more than eighteen inches apart.

Joints in acoustical units shall be straight and true and the exposed surfaces shall be level, true to line and plane and flush at joints. Corners and arrises shall be full and sharp without worn or broken pieces. The units shall be neatly joined to adjacent construction and shall fit neatly to appurtenances extending from the ceiling construction. Upon completion of installation, units shall be cleaned and left free from defects.

In areas where there are movable partitions, the acoustical units shall be continuous over the partitions. The pattern of the acoustical units shall be set up with either a true joint or a simulated joint six inches either side of column center lines in both directions. In areas where movable partitions do not occur and which are completely enclosed with masonry partitions the pattern shall be started at the center of the room extending thence toward the walls in each direction.

Cutting and fitting around the walls, ceilings, diffusers, furred beams or ducts and any other appurtenances extending through the ceilings shall be done neatly. Edges shall be kept in alignment and care shall be taken to secure a level surface of tile.

Finish

Metal pan acoustical units shall have an anodized satin finish No 202R1.

73. LUMINOUS CEILING AREAS.

Shop drawings shall be prepared and submitted for approval as required by the clause hereof entitled "Working Drawings and Catalog Cuts".

Where electric light luminous ceiling areas occur in the ceilings, the frame work to receive the enclosing gypsum plaster sheets shall be a type of clip-on steel members not less than No. 18 U. S. Standard gauge sheet steel.

The enclosing face shall consist of plain gypsum wall board one-half inch thick with recessed edges similar and equal to "Gold Bond" wall board as manufactured by the National Gypsum Company or "Sheetrock" gypsum wall board as manufactured by the United States Gypsum Company.

Wall board surfaces shall be spackled, nail heads covered and joints taped and then allowed to dry for at least forty-eight hours. Spackled and taped surfaces shall be sand papered smooth and the dust removed and painted in flat non-gloss white as selected.

79. CARPENTRY AND MILLWORK.

Carpentry and millwork shall be furnished and installed where shown on the Contract Drawings and as specified herein.

The Contractor shall prepare and submit shop drawings for carpentry and millwork to the Engineer for approval in accordance with the clause hereof entitled "Working Drawings and Catalog Cuts". Shop drawings shall indicate at large scale, construction details and methods of jointing and attachment.

Representative samples of materials and finishes, as requested, shall be submitted to the Engineer for approval. No finished item of this clause shall be installed until such times as plastering is entirely dry.

Materials

Alternate materials and/or methods of installation shall be subject to approval of the Engineer.

Materials of every kind entering into the construction shall be the best obtainable for its particular use. All wood shall be well seasoned, sound stock, free from sap, shakes or any defects which would impair its appearance, utility or strength.

Each specie of lumber shall conform to the requirements of the latest published standard grading rules of the lumber association under whose rules the particular specie is graded. Lumber shall bear the official grade mark and its moisture content shall conform to the rules of the respective association. Unless otherwise approve, lumber shall be kiln-dried.

Except as otherwise dimensioned, sizes shown on the Contract Drawings are nominal sizes.

Grounds, nailers, blocking and similar items shall be Construction Grade Douglas Fir, S4S.

Wood Treatment

Wood in contact with concrete, masonry and/or structural steel as well as wood exposed to the weather shall receive a pressure treatment with a suitable solution of Pentachlorophenol of not less than five per cent concentration and meeting the requirements of the American Wood Preservers Association Specification P8. Wood preservative treatment shall conform to the Standards of the National Wood Manufacturers Association as a minimum.

Rough Hardware

Rough hardware, metal fastenings and anchors shall be provided as required for the proper installation of the Carpentry and Millwork. Nails, spikes, screws, bolts and similar items shall be of sizes and types to rigidly secure members in place. Nailers, blocking and similar items shall be fastened to supporting construction by three-eighth inch diameter fasteners, at intervals not exceeding two feet. Heads and nuts of fasteners shall be counter-sunk to provide flush surfaces where required. Nailers, blocking and similar items shall be toggle bolted to hollow masonry; expansion bolted to solid masonry and concrete; to sheet steel with approved type self-tapping screws; and to steel with approved type power driven fasteners.

Grounds, Nailers and Blocking

Provide continuous wood nailers for nailing of metal base flashings, metal gravel stops and fascias; wood blocking at top of taised curbs, metal copings and gutters; blocking and nailers wherever else required. Anchor to supporting construction, firmly and securely in place, accurately leveled.

Provide wood grounds wherever required, set true, rigid and in perfect alignment. In general, grounds in plaster shall be one and one-half inches wide by the thickness of finished plaster, wider where so shown or required. Install temporary grounds where necessary. Provide blocking required for securing equipment and as required by other trades. Toggle bolt grounds to hollow masonry; expansion bolt to concrete and solid masonry.

Minimum width of nailers for metal base flashings shall be three and five-eights inches. Thickness of nailers shall be the same thickness as the thermal insulation which they abut.

Shelving

Furnish and install one shelf in each Slop Sink Closet.

Shelves shall be twelve by one inch nominal size, and supported on four by one inch nominal size cleats rabbeted to support shelves.

Each shelf shall extend across back of closet and be supported on cleating at back edge and two ends. Fasten cleating to walls at eighteen inch intervals by one-quarter inch expansion or toggle bolts, as required.

80. PANEL WALLS AND ALUMINUM PANELS.

The panel walls shall consist of a system of extruded aluminum mullions and sills with insulated panels designed for a wind load of not less than 20 pounds per square foot.

The panels shall be factory assembled porcelain enameled aluminum panels as indicated on the Contract Drawings. Type A shall consist of an aluminum outer facing and a galvanized steel interior sheet enclosing a paper honeycomb core. Type B shall consist of a porcelainized aluminum outer and interior facing enclosing a paper honeycomb core. Type C shall consist of an aluminum outer facing and a laminated plastic interior panel enclosing a paper honeycomb core. The laminated plastic interior panel shall be similar and equal to "Formica" on 1/2" thick exterior grade plywood.

All porcelain enameled metal shall be Type 6061 aluminum alloy especially prepared for porcelain enameling. All sheets and panels shall be finished in acid-resisting porcelain enamel, and further, must pass standard spall and adherence tests. The front and back facings shall be flanged with welded corners, nested together, mechanically fastened and the edges sealed with an approved pressure-sensitive vinyl tape two inches wide. The finished panels shall be of such widths and of such lengths as required to fit the areas shown on the Contract Drawings. Vertical joints shall be lapped and sealed on the abutting edges with an approved tape or sealer. Horizontal joints between panel sections shall be butt type sloped to weather.

The porcelain enamel facing sheets shall be enameled both sides. Porcelain enamel sheets shall conform to the applicable specifications published by Porcelain Enamel Institute, Inc. The enamel finish shall comply with the requirements for Class A enamel on both sides of the sheet. Enamel shall match the color, texture and finish of the sample on file in the Office of the Engineer.

The Contractor shall furnish and install all supplementary horizontal and vertical sub-framing required for the support of panels and appurtenant trim even though such sub-framing may not be shown on the Contract Drawings. The foregoing sub-framing supports shall be galvanized vertical channel supports between framing shall be not less than No. 14 U.S. Standard gauge. Fastenings shall be approved by the Engineer and wherever possible shall be concealed. All fastenings shall be Type 302 or 303 stainless steel. Lugs on back of panel sections shall be stainless steel of similar type. Panel lugs shall be welded in place prior to galvanizing. Other fastenings may be cadmium plated.

Exterior weather exposed joints between panel sections, trim and between procelain enamel surfaces and other abutting materials shall be sealed to a depth of not less than one-eighth inch with "Thiokol" compound similar and equal to "Hornflex" as produced by the A.C. Horn Company.

All material shall be accurately erected, plumb, level and true by the manufacturers thereof or their authorized erectors. Material shall be carefully handled and protected against damage. Damaged units shall be rejected upon completion of erection, porcelain enamel surfaces shall be thoroughly cleaned. All joints shall be weathertight.

The porcelain enamel panels specified herein shall be similar and equal to "Laminall" panels produced by The Erie Enameling Company, modified as specified herein.

Shop drawings for this work shall be prepared and submitted for approval as required by the clause of the general provisions hereof entitled "Working Drawings".

81. MULTIPLE SEATING.

The seats shown on Contract Drawings shall be similar and equal to the Eames plastic side chair designated MSS as manufactured by Herman Miller Company of Zeeland, Mich. The side chair consists of a plastic chair shell, with shockmounts attached and a multiple seating cast aluminum spider. Color of plastic shell to be selected by the Engineer.

Horizon tube supports, posts, fastenings and other appurtenances shall be as designated on Contract Drawings.

Shop drawings shall be prepared and submitted for approval as required by the clause hereof entitled "Working Drawings and Catalog Cuts".

82. ASPHALT TILE.

Samples

The Contractor shall submit four nine by nine inch samples of asphalt floor tile of each color selected, two one foot lengths of asphalt tile base and a one-quart sample of each type of adhesive which he proposes to use. Tile samples shall show the quality, color range and texture.

Materials

Asphalt tile shall be similar and equal to that manufactured by Kentile, Inc., Johns-Manville, Mastic Tile Corp., or The Tile-Tex Division, The Flintkote Company. Floor tile shall be one-eighth inch thick and, unless otherwise shown on the Contract Drawings, nine inches square. Base shall be one-eighth inch thick of the height shown on the Contract Drawings having a moulded cove bottom edge and a rounded top furnished in lengths not less than twenty-four inches.

The colors of asphalt tile for floors will be selected by the Engineer from the manufacturer's standard color groups. The tile for borders will be selected from color group (D). The tile for fields will be selected from color group (D). Tile base shall be black.

Adhesive shall be that recommended by the manufacturer of the tile.

Cleaner shall be similar and equal to "Texope 5" as manufactured by the Texo Corporation, "Liquid Utility Cleaner" as manufactured by the Penetone Company or "First" as manufactured by Piatt and Smille Chemicals, Incorporated.

Floor finishing material shall be a water emulsion resin floor finish similar and equal to "Saf-T-Sheen" as manufactured by the National Chemical and Manufacturing Company, "Stop" as manufactured by the Sanitek Products Corporation or "Saf-Ite" as manufactured by the Enterprise Paper Company.

Installation

Asphalt tile shall have and be maintained at a temperature of not less than seventy degrees Fahrenheit prior to and during installation. A room temperature of not less than seventy degrees Fahrenheit shall be maintained, in the areas where asphalt tile is installed, for forty-eight hours before, during and for forty-eight hours after installation.

The surfaces to receive asphalt tile shall be dry and thoroughly cleaned free of dirt, grease, oil or other objectionable material that would interfere with the bond of the adhesive.

Asphalt tile shall be laid in adhesive applied with a notched steel trowel. The notches in the trowel shall be one-sixteenth of an inch in depth spaced three-sixteenths of an inch apart. After laying any excess adhesive shall be removed with a solvent which will not damage the tile. Asphalt tile which does not bond completely shall be removed, the adhesive and tile heated by blow torch or other approved means and the tile reset.

Asphalt tile shall be laid in straight, true lines with tight butt joints. In areas where borders are required, the tiles comprising the field shall not be cut to maintain a uniform border width except where projections exceed the width of the border. Borders shall be not less than nine inches wide except where cutting is required to maintain a uniform field, they shall be not less than four inches wide. Unless otherwise required by the Contract Drawings borders shall not occur at movable partitions.

Asphalt tile reducing strips shall be furnished and installed wherever the elevation of asphalt tile flooring is above that of adjacent floor surfaces.

In those areas where asphalt tile base is required it shall be installed around projecting and free standing columns which occur in such areas.

Cleaning and Finishing

The floor surfaces shall be allowed to stand, without use, for a period of ten days. Immediately prior to Final Inspection, the surfaces shall be thoroughly cleaned, using the cleaner specified herein strictly in accordance with the manufacturer's specifications and recommendations.

After the floor surfaces are thoroughly clean and dry, one coat of finish shall be applied with a clean linen mop or sheepskin applicator. After the first coat of finish is dry a second coat shall be applied in the same manner.

Floor finish shall be applied strictly in accordance with the manufacturer's specifications and recommendations.

Protection

The Contractor shall adequately protect the surfaces of asphalt tile which will be subjected to traffic with builder's paper or by other approved means, until the space or area in which the tile has been installed is completed.

83. MISCELLANEOUS SPECIALTIES.

Miscellaneous specialties as specified herein shall be furnished and installed where shown on the Contract Drawings.

The Contractor shall prepare and submit shop drawings of all miscellaneous specialties to the Engineer for approval in accordance with the clause hereof entitled "Working Drawings and Catalog Cuts".

Representative samples of all materials, as requested, shall be submitted to the Engineer for approval.

Toilet and Shower Accessories

Furnish and install the following toilet and shower accessories:

(1) Over each lavatory - One Powdered soap dispenser, chrome-plated Model B-33CP as made by the Bobrich Dispenser, Inc., or approved equal.

(2) In shower compartment - one soap dish and grab, recessed type with plastic liner, No. 230, as made by Charles Parker Co., or approved equal.

(3) In Dressing Compartment - one towel bar chrome-plated, No. 324 as made by G.M. Ketcham Manufacturing Co. One curtain rod of one inch O.D.

Slop Sink Closet Accessories

In each Slop Sink Closet furnish and install the slop sink closet accessories listed below:

Two - No. 100 pail hooks as made by Kaytel, Inc. Hooks shall be fabricated of one-quarter inch steel and shall be welded to back plates.

Four - No. 1 mop and broom holders as made by Kaytel, Inc. Mop and broom holders shall be fabricated of not less than No. 12 U. S. S. gauge steel and provided with rubber grip.

Pail hooks and mop and broom holders shall be mounted on hardwood strips which shall be secured to wall with expansion bolts.

. HARDWARE.

General Requirements

The Contract Drawings contain a schedule of hardware set numbers, which correspond to the set numbers listed herein under the sub-clause entitled "Schedule of Hardware". The hardware descriptions under said schedule show the various types and finishes of hardware giving the catalog numbers and other designations of certain manufacturers. Before any hardware is ordered or installed, the Contractor shall submit for approval a list as required by the clause hereof entitled "Inspections and Rejections", giving catalog references and locations for all hardware which he proposes to furnish, together with samples of each type. All samples so submitted and approved shall be suitably marked and may be installed in the building. No changes shall be made in the approved list or substitutions made for the samples submitted without the written approval of the Engineer.

Hardware shall be free from imperfections affecting its appearance and serviceability. Hardware shall be suitable for and shall be adapted to its required use and shall fit its designated location; and should any hardware, even though required by the Contract Drawings or Specifications, fail to meet the intended requirements or require modification to suit or fit the designated location, the Contractor shall make the correction and modification necessary in ample time to avoid delay in the manufacture and delivery of the hardware, without additional compensation.

Bolts, screws and other parts required for the application of the hardware shall be of the proper size and type and shall match the hardware in material and finish. Exposed screws shall be counter-sunk oval head type wherever possible and bolts shall have cap nuts. Counter-sunk screw heads shall seat properly and flush with the surface. Unless otherwise specified all butts shall have flat button tips and exterior out seinging doors shall be equipped with fast pin butts. Butts shall have oilite bearings, similar and equal to those manufactured by McKinney Mfg. Co. Butts shall be the following sizes:

For Doors up to 32 inches wide - $4\frac{1}{2}$" X $4\frac{1}{2}$" (Std. Weight)
For doors 33" to 40" wide - 5" X $4\frac{1}{2}$" (Std. Weight)
For doors 41" wide & over - 5" X $4\frac{1}{2}$" (Extra Heavy)

Overhead surface type door closers shall be the full rack and pinion type having a solid one-piece shaft and pinion supported by two sets of ball bearings, with two key adjustment screws providing for two-speed, full arc control and cushioning or back check action.

Wherever possible, hardware shall be applied in the shop and shall be dleivered there in ample time to be properly fitted and attached. No hardware on doors shall be installed until the construction and plastering adjacent thereto have been completed and the plaster dried out. Knobs, handles and pulls shall be kept suitably rapped and protected until immediately prior to final inspection.

Hardware shall be carefully packed and stored with no parts or screws omitted and shall be legibly and accutately labeled as to its set number and location in the building in accordance with the door schedule. Templates shall be furnished for all hardware installed on metal door or frames to insure its accurate fitting and setting.

Each lock shall be master keyed for the areas designated by the Engineer and shall be grand master keyed. After the locks have been installed, keys shall be fitted and made to work freely. At the time of final inspection, the Contractor shall frunish to the Engineer three keys for each cylinder lock and three master keys for each master key system and three grand master keys with each key labeled in accordance with the designation shown on the door schedule.

Lock strikes shall have wrought boxes similar to Lockwood No. 17, finished to match the strikes.

Door knobs shall have wrought stainless steel tops, $2\frac{1}{4}$" diameter with solid cast, one piece, stainless steel shanks of screwless type similar to Lockwood design "Elmwood" (HAE 4035K).

Roses shall be $2\frac{1}{2}$" diameter, wrought stainless steel of screwless type similar to Lockwood design "Elmwood" (HAE 413).

Overhead stops and holders shall be bronze.

Stops or holds shall be furnished wherever required to prevent door or hardware from striking adjacent construction or other doors or other door hardware.

Immediately preceding final inspection, all hardware shall be carefully cleaned by methods which will not damage it.

Finishes

Hardware for aluminum and glass doors shall have ~~alumilited aluminum~~ finish, US 28, except locks and overhead stops and holders which shall have dull chrome finish, US 26D.

Door closers (Overhead) shall have sprayed silver bronze finish.

Butts for exterior doors shall be stainless steel. Butts for interior doors shall be steel, dull chromium plated, US 26D.

Knobs, roses, push plates, pull plates, armor plates, kick plates, door pulls and floor closer plates shall be stainless steel, finish US 32D.

All other items of hardware shall have finish US26D, Dull Chromium.

Schedule of Hardware

The plate numbers listed herein have been taken from the catalogs of Lockwood Mfg. Co., Mc Kinney Mfg. Co., Oscar C. Rixson Co., Glynn-Johnson Corp., and Brookline Mfg. Co.

Locksets of the Lockwood Mfg. Co. are designated as follows:

LOCKSET	LOCK FUNCTION
A	B 5100-5/8
B	G 5166-3/4
C	B 5100-3/4
D	G 5165-3/4
E	B 5156-3/4
F	B 5155-3/4
J (Latch)	B 5184
K	DA 2232-3/4 x round or flat strike as required.
L (Deadlock)	B 5117-3/4

Set No. 1 (Each Pair)

1-1/2 Pair Butts
1 Set Exit Device 83B
1 Closer C 830K
3 Silencers GJ64

Set No. 2 (Each Pair)

2 Rixson S. A. Floor closers #26
1 Rixson threshold Type #1 x 700 x Abr. Al.
2 Lockwood flush bolts #8115 - 12"
1 Lock K x 26D
2 Brookline Pulls #090 x Engr. "Pull" x 28
2 " Bars #200X- 2 x Engraved "Push" x 28
2 GJ overhead holders #130

Set No. 2A

2 Rixson S. A. floor closers #26
1 Rixson threshold Type #1 x 700 x Abr. Al.
2 Brookline Pulls #090 x Engr. "Pull" x 28
2 " Bars #200X- 2 x Engraved "Push" x 28
2 GJ overhead holders #130

Set No. 3

1-1/2 pair butts
1 Lockset A
1 Door Closer C1130K
1 Knob bumper GJ-WB05XT
3 Silencers GJ 64

Set No. 4

1-1/2 pair butts
1 Lockset A
1 Door Closer C830K
1 Knob bumper x GJ-WB05XT
3 Silencers GJ64

Set No. 5

1-1/2 pair butts
1 Lockset A
1 Door Closer C830K
1 Overhead Stop GJ310 series
3 Silencers GJ 64

Set No. 6

1-1/2 pair butts
1 Lock L
1 Push Plate #80 x Cut for cyl. x 32D
1 Pull Plate #80 x 994 x cut for cyl. x 32D
1 Closer C30K
1 Overhead Stop GJ 310 series
2 Kick Plates 8" high
3 Silencers GJ 64

Set No. 10A (Pair)

3 Pair butts
2 flush bolts 8111-12"
1 Locksets D
1 Pair dummy trim
1 closer C30K
2 Kick plates 8" high
2 overhead holders GJ 120
4 silencers GJ 64

Set No. 11

1-1/2 pair butts
1 Lockset E
1 Closer C30K
1 overhead holder GJ120
1 "Armor" plate 24" high
3 silencers GJ 64

Set No. 12 (Each Door)

1 Rixson S. A. floor closer #26
1 " threshold Type #1 x 700 x Abr. Al.
1 lock K
1 Brookline Bar #200X -x Engr. "Push" x 28
1 " pull #090 x Engr. "Pull" x 28
1 Overhead holder GJ 130

Set No. 12A (Each Door)

1 Rixson S. A. floor closer #26
1 " threshold Type #1 x 700 x Abr. Al.
1 Brookline bar #200X -x Engr. "Push" x 28
1 " pull #090 x Engr. "Pull" x 28
1 Overhead holder GJ130

Set No. 13

1-1/2 pair butts
1 Latchset J
1 Overhead stop GJ 310 series

Set No. 14

1-1/2 pair butts
1 lockset A
1 closer C30K
1 knob bumper GJ-WB05XT
3 Silencers GJ 64

Set No. 7 (Pair)

3 Pair butts
2 Flush Bolts 8111 - 12"
1 Lockset B
1 Pair Dummy Trim
1 Closer C830K
2 "Armor" Plate 24" High (Pull Side of Baggage Room - Push side of all other doors)
2 Overhead Holders GJ120
4 Silencers GJ 64

Set No. 7A (Pair)

3 Pair butts
2 Flush Bolts 8111 - 12"
1 Lockset B
1 Pair Dummy Trim
1 Closer C830K
4 Silencers GJ 64

Set No. 8

1-1/2 pair butts
1 Set exit devices 83B
1 Door Closer E830K
1 Overhead stop GJ 120 x No. H.O.
1 Kick plate 12" high

Set No. 9

1-1/2 pair butts
1 Lockset C
1 Closer C30K
1 Overhead stop GJ 310 series
1 Kick Plate 8" high
3 Silencers GJ 64

Set No. 10 (Pair)

3 Pair butts
2 flush bolts 8111 - 12"
1 Locksets D
1 Pair dummy trim
1 closer C30K
2 "Armor" plates 24" high
2 overhead holders GJ 120
4 silencers GJ 64

Set No. 15

1-1/2 pair butts
1 Lockset F
1 closer C30K
1 knob bumpers GJ-WB05XT
3 Silencers

Set No. 16

1 rim or mortise cylinder to suit door manufacturers locking device.

Set No. 17

1-1/2 pair butts
1 Latchset J
1 door closer D830K
1 wall stop 1320E

Set No. 18

1-1/2 pair butts
1 lockset A
1 closer C830K
3 silencers GJ 64
1 Knob Bumper GJ-WB05XT

Set No. 18A

1-1/2 pair butts
1 lockset A
1 closer C830K
3 silencers GJ 64

Set No. 19 (2 Doors)

2 Rixson floor closers 20
2 " inter. pivots M19
2 locks L
2 push plates #80 x Cut for Cyl. x 32D
2 pull plates #80 x 994 x cut for cyl. x 32D
2 overhead stops GJ310 series
4 kick plates 8" high
6 silencers GJ 64

Set No. 20 (Each Pair)

2 Rixson D. A. floor closer #40
4 Brookline bars #090 - 2 x Back to back mounting x 28
2 overhead holders GJ 200
1 Rixson Threshold type #1 x 700 x Abr. Al.

Set No. 21

1-1/2 pair butts
1 locksets F
1 closer C30K
1 Overhead stop GJ 310 series
2 Kick plates 8"high
3 silencers GJ 64

Set No. 22

1-1/2 pair butts
1 Lockset F
1 closer E830 x GJ arm post
1 overhead stop GJ 82S

Set No. 23

1-1/2 pair butts T4B7862PC-5 x $4\frac{1}{2}$
1 set 3 point lock 301C x less cylinder 26 D
1 Mortise Cylinder
1 closer D830K

85. FIELD PAINTING.

Materials

White lead shall conform to the Standard Specifications for Basic Carbonate White Lead (A.S.T.M. Designation: D 81) of the American Society for Testing Materials.

Red lead, when used with synthetic vehicle, shall conform to the requirements for ninety-seven per cent grade red lead of the Standard Specifications for Red Lead (A.S.T.M. Designation D 83) of the American Society for Testing Materials. Red lead, when used with linseed oil, shall conform to the requirements for ninety-five per cent grade red lead of the Standard Specifications for Red Lead (A.S.T.M. Designation: D 83) of the American Society for Testing Materials.

Chrome oxide green shall conform to the Standard Specifications for Chrome Oxide Green (A.S.T.M. Designation: D 263) of the American Society for Testing Materials.

Leaded zinc oxide shall conform to the Standard Specifications for Leaded Zinc Oxide (A.S.T.M. Designation: D 80) of the American Society for Testing Materials.

Magnesium silicate shall conform to the Tentative Specifications for Magnesium Silicate Pigment (A.S.T.M. Designation: D 605) of the American Society for Testing Materials.

Other pigments used in the manufacture of paint shall conform to the applicable Tentative or Standard Specifications of the American Society for Testing Materials.

Raw linseed oil shall conform to the Standard Specifications for Raw Linseed Oil (A.S.T.M. Designation: D 234) of the American Society for Testing Materials.

Boiled linseed oil shall conform to the Standard Specifications for Boiled Linseed Oil (A.S.T.M. Designation: D 260) of the American Society for Testing Materials.

Turpentine shall conform to the requirements for Gum Spirits of Turpentine or Steam-Distilled Wood Turpentine of the Standard Specifications for Spirits of Turpentine (A.S.T.M. Designation: D13-51) of the American Society for Testing Materials.

Driers shall conform to the requirements for Class B driers of the Standard Specifications for Liquid Paint Driers (A.S.T.M. Designation: D600-43) of the American Society for Testing Materials.

Mineral Spirits shall conform to the Standard Specifications for Petroleum Spirits (Mineral Spirits) (A.S.T.M. Designation: D 235-39) of the American Society for Testing Materials.

Zinc primer shall conform to the requirements for Type I primer of the Federal Specification for Primer, Paint; Zinc Dust-Zinc Oxide (for Galvanized Surfaces) (Designation: TT-P-641b).

Acetic acid solution shall be a five (5%) per cent solution of acetic acid (CH_3COOH).

Cement paint powder shall conform to the requirements for Type I, Class A Cement-Paint Powder of the Federal Specification for Paint; Cement-Water, Powder Whites and Tints (Designation: TT-P-21).

Semigloss enamel shall conform to the Federal Specification for Enamel; Interior, Semigloss, Tints and White (Designation: TT-E-508).

Flat enamel shall be an alkyd resin vehicle base paint of approved formulation and manufacture.

Shellac shall conform to the requirements for refined Type I medium body shellac of the Federal Specification for Varnish Shellac (Designation: TT-V-91b).

Rubber base paint shall conform to the Federal Specification for Paint; Rubber Base (For), Cement Floors (Designation: TT-P-91a).

Synthetic vehicle shall be made by adding suitable thinners and driers to No. 2570 Amalite Solution as manufactured by American Alkyd Industries, No. P-296 Beckosol Solution as manufactured by Reichold Chemicals, Inc., No. 750 Esterol Solution as manufactured by Paramet Corporation, No. 1240-M Aroplaz Solution as manufactured by U.S. Industrial Chemicals, Inc. or No. 2466 Glyptal Solution as manufactured by the General Electric Company. The vehicle shall contain not less than fifty percent non-volatile oleoresinous material, and not more than fifty percent volatile thinners, by weight. The phthalic anhydride content of the non-volatile portion as determined by the Standard Method of Test of Phthalic Anhydride Content of the Alkyd Resins and Resin Solutions (A.S.T.M. Designation: D563-52) of the American Society for Testing Materials, and shall be not less than twenty-three percent.

Bitumastic paint shall be similar and equal to "Bitumastic No. 50" paint as manufactured by the Koppers Company, Inc. or "CA50" paint as manufactured by the Barrett Division of the Allied Chemical & Dye Corporation.

Iron oxide shall conform to the requirements for Class II Type A pigment of the Standard Specifications for Red and Brown Iron Oxide Pigments (A.S.T.M. Designation: D84-51) of the American Society for Testing Materials.

Naptha shall conform to the requirements for Type II thinner of the Federal Specification for Naptha, Petroleum, Aromatic (Federal Specification: TT-N-97).

Red lead and oil paint shall be mixed in the proportions of twenty-five pounds of dry red lead to two-thirds of a gallon of raw linseed oil and one-third of a gallon of boiled linseed oil,

to which may be added not more than 1/32 gallon of turpentine. Finished paint shall weigh not less than 24.0 pounds per gallon. It shall have suitable brushing characteristics and when applied to a vertical steel surface it shall dry to a condition suitable for repainting within twenty-four hours without running, sagging or streaking.

White lead and oil primer shall consist of an approved mixture of linseed oil, white lead, turpentine and drier.

Exterior oil paint shall conform to the requirements for Type I, Class A paint of the Federal Specification for Paint; Oil, Exterior, Ready-Mixed White and Light Tints (Designation: TT-P-102).

Zinc chromate primer shall be of approved manufacture and formulation.

Semi-gloss synthetic vehicle paint shall consist of a mixture of synthetic vehicle and pigments, having satisfactory brushing, leveling and drying characteristics. The first coat of paint shall have a pigment content of not less than twenty-five percent by volume of the non-volatile portion of the paint. The pigment shall be of a suitable opacity and color and may contain not more than twenty-five percent by weight of extender pigment. The second coat of paint shall have a pigment content of not less than twenty percent by volume of the non-volatile portion of the paint. The pigment content shall be of suitable opacity and color and may contain not more than fifteen percent by weight of extender pigment. Paint shall set to touch in not less than one hour nor more than four hours and shall dry hard, tough and glossy in not less than six hours nor more than eighteen hours.

Cement-paint shall be a mixture of cement-paint powder and clean water. The quantity of mixing water shall be in accordance with the manufacturer's recommendations. In preparing cement-paint, approximately one-half of the recommended amount of water shall be mixed with cement-paint powder to form a thick paste, after which the remaining water shall be gradually stirred into the paste, until the paint reaches the consistency of heavy cream. Batches of cement-paint shall be limited to amounts which can be used within four hours from the time of mixing. Cement-paints which have thickened after mixing shall be discarded.

Preparation of Surfaces

Ferrous-metal surfaces which have been shop painted shall be thoroughly cleaned of concrete, mortar, plaster, shavings, dirt and dust and other objectionable material. Grease and oil shall be removed with gasoline, benzine or other similar volatile cleaner. Care shall be exercised to prevent damage to the shop coat.

Unpainted ferrous-metal surfaces, including damaged surfaces of materials which have been shop painted, shall be thoroughly cleaned with wire brushes or by other proper and acceptable means, of loose scale, rust, shavings, filings, dirt and dust and other objectionable material. Grease and oil shall be removed with gasoline, benzine or other similar volatile cleaner. The surfaces shall be free from moisture or frost. Such unpainted surfaces shall be given one coat of red lead and oil paint.

Zinc coated (galvanized) surfaces shall be thoroughly cleaned of concrete, mortar, plaster, shavings, dirt and dust and other objectionable material. Grease and oil shall be removed with gasoline, benzine or other similar volatile cleaner. The surfaces shall be free from moisture or frost.

Zinc-coated surfaces shall then be given one coat of zinc primer.

Copper surfaces shall be thoroughly cleaned of concrete, mortar, plaster, shavings, dirt and dust and other objectionable material. Grease and oil shall be removed with gasoline, benzine or other similar volatile cleaner. Copper surfaces shall then be washed with acetic acid solution which shall be allowed to remain on the surfaces for not less than five minutes. The solution and its reaction products shall then be completely removed with clean fresh water and the surfaces thoroughly dried. Care shall be exercised to prevent acid solution, copper salts or water from damaging adjacent surfaces. Copper surfaces shall then be primed with one coat of zinc chromate primer.

Lime plaster surfaces, except those which are to receive resin emulsion paint, shall be allowed to dry for thirty days or at the discretion of the Engineer shall be cured by either Method A or Method B as follows:

Method A

Plaster surfaces shall be allowed to dry until tests made with an approved moisture meter indicate in the opinion of the Engineer that the surfaces are suitable for painting.

Method B

Zinc sulphate solution shall be applied to the plaster surfaces with stiff bristled brushes and allowed to dry for at least twenty-four hours, after which time the loose crystals shall be removed. Zinc sulphate solution shall not be applied until the finish coat of plaster has been allowed to dry for at least three days.

Lime plaster surfaces shall then be spackled, patched, repaired and otherwise pointed up to true, smooth surfaces. Cracks and indentations shall be thoroughly raked or cut out, the surface moistened and said imperfections filled with finishing plaster and allowed to dry for forty-eight hours. Spackled and patched areas shall be sandpapered and the dust removed.

Concrete, masonry and cement plaster surfaces shall be thoroughly cleaned of incrustations and efflorescence by washing with clean fresh water without the use of soap or other organic cleaners. Grease and oil shall be removed with gasoline, benzine or other similar volatile cleaner.

Wallboard surfaces shall be spackled, nail heads covered and joints taped and then allowed to dry for at least forty-eight hours. Spackled and taped surfaces shall be sandpapered smooth and the dust removed.

In wood surfaces to be painted, knots, pitch streaks or visible sap spots shall be painted with two coats of shellac. Not less than two hours shall elapse between the application of the first and second coats of shellac.

The surfaces of close-grained woods such as pine, maple, cherry or gum shall be primed with one coat of white lead and oil primer.

The surfaces of open-grained woods such as oak, birch, ash, mahogany, chestnut or walnut shall be treated with paste filler. Paste filler shall be thinned to brushing consistency with turpentine and applied, in two coats with stiff, short-bristled brushes. After the filler has been allowed to dry for one hour the surfaces shall be rubbed across the grain with coarse burlap or pads of excelsior until the surplus filler has been removed.

After the white lead and oil primer or paste filler has dried, nail holes and other indentations shall be filled with putty and the putty brought flush with the adjacent surfaces. The wood surfaces shall then be sanded smooth with No. 00 sandpaper and the dust removed.

The surfaces of pipe, duct and equipment insulation such as canvas jackets and troweled on asbestos or magnesia insulation, to be painted, shall be cleaned of all loose foreign and objectionable material and shall then be primed with white lead and oil primer.

Application

The surfaces to be painted shall be free from moisture.

Paint shall be applied by brush and shall not be applied to any surface when the temperature of the surrounding atmosphere is less than forty degrees F. Each coat of paint shall be thoroughly dry before a following coat is applied. Brushes and paint pails or containers shall be maintained at all times free from paint skin, extraneous thinner, adulterant, dirt and other objectionable material. Paint shall be thoroughly mixed before application and shall be frequently stirred during application, and the pigment shall be maintained satisfactorily in suspension. Caking or the settling of pigment into a hard mass will be cause for rejection.

Paint other than aluminum paint shall be brushed, cross-brushed and laid off uniformly without visible laps, sags, curtains, holidays or objectionable brush-marks. Care shall be exercised so that paint does not splatter on surfaces not required to be painted. Tarpaulins or other suitable covers (with supports) shall be used to protect adjacent and underlying surfaces. Paint applied or splattered on surfaces not required to be painted shall be promptly removed.

Aluminum paint shall be applied uniformly without visible laps, sags, curtains, holidays, and with a minimum of brush work. It shall be flowed on rather than brushed out and finish brush strokes shall be made all in the same general direction. Where two coats of aluminum paint are required the first of these shall be tinted with not less than two ounces of prussian blue paste to each gallon of synthetic vehicle.

Approximately one hour before application of cement paint, surfaces of cement masonry and cement plaster shall be thoroughly moistened with water applied by spray. The surfaces shall be sprayed not less than three times for five to ten seconds duration. At the time of application of cement paint, surfaces shall be moist but without free surface water. Cement paint shall be applied with stiff bristle brushes and shall be thoroughly worked into indentations and irregularities of the surfaces. At least twenty-four hours shall elapse between the application of the first and second coats of cement paint. The first coat of cement paint shall be slightly moistened with water by spraying immediately before the application of the second coat. After the second coat has been applied and has dried for twenty-four hours paint surfaces shall be sprayed three times each day for at least two days.

Finishes

The final coat of paint shall match in color, tint and hue samples on file in the office of the Chief Engineer.

The first coat shall be of the same color and hue but of lighter tint than the final coat.

In addition to the painting indicated in the finish schedule on the Contract Drawings, the following surfaces shall be painted as specified:

(a) All surfaces above luminous ceiling, including surfaces of concrete slab above ductwork, piping and conduit.

(b) All exposed interior and exterior ferrous metal surfaces, including structural and miscellaneous iron and steel, whether or not furnished or installed under this Contract, which is not fireproofed or encased. Two coats of aluminum paint, to be furnished to the Contractor as hereinafter specified, shall be applied to all exterior ferrous metal surfaces. Interior ferrous metal surfaces shall be prepared as hereinbefore specified and shall then receive two coats of semi-gloss synthetic vehicle paint.

(c) Plaster and wallboard surfaces shall receive two coats of interior oil paint.

(d) Insulated piping, ducts and equipment, exposed to view in either public or maintenance areas, shall be primed as hereinbefore specified and shall then be given two coats of semi-gloss synthetic vehicle paint.

(e) Conduit and uninsulated piping and ducts, exposed to view in either public or maintenance areas, including hangers and associated fixtures, shall be prepared as hereinbefore specified for the kind of surface and shall be given two coats of semi-gloss synthetic vehicle paint.

Pipe Identification

Pipe systems throughout the building shall be identified by color coded tapes depending upon the material within the pipe. The Engineer will determine the color coded tape for each pipe system. The color code will be generally as follows:

CLASS	COLOR
Fire Protection Equipment	Red
Dangerous Materials	Yellow
Safe Materials	Green
Protective Materials	Bright Blue
Extra Valuable Materials	Purple

Pipe markers shall consist of approved gummed labels with the name of the material printed in large black letters on the proper background color. Labels shall be made of an approved plastic or fabric. They shall be of such length as to completely circumscribe the pipe and overlap not less than one inch upon one edge. The legend shall be printed the width of the label.

Flow markers shall consist of labels similar to the pipe markers with a large black arrow printed on the same background color, to indicate the direction of flow of the pipe.

A pipe marker and a flow marker shall be placed on each pipe on each side of walls or floors through which the pipes pass. Such markers shall also be placed adjacent to valves and fittings and in all instances the markers shall be so located as to be clearly visible to a person standing on the floor.

Aluminum Paint Furnished By The Authority

The Authority will furnish to the Contractor a sufficient quantity of aluminum paste and alkyd resin varnish in the proportions to prepare aluminum paint for use in the performance of the Work. The Contractor shall only use aluminum paint in the performance of the Work which has been prepared from the paste and varnish furnished by the Authority.

The foregoing paste and varnish vehicle will be made available to the Contractor at the Port Authority Building, 111 Eighth Avenue, New York, N.Y. Varnish vehicles will be made available in five gallon and fifty-five gallon containers. Aluminum paste will be made available in ten and one-hundred pound containers. The Contractor shall mix aluminum paint in the proportion of two and one-half pounds of aluminum paste to one gallon of varnish vehicle.

The Contractor shall submit a written request to the Engineer stating the quantity of varnish vehicle and aluminum paste required together with the desired size of the containers. Such request shall be made within sixty days of the date that the paint will be used. Upon receipt of a stock requisition in triplicate to be issued to the Contractor by the Authority, the Contractor shall obtain and transport the aforementioned materials from the aforementioned facility to the construction site.

The Authority will deduct from the Contractor's compensation an amount equal to $1.35 per gallon for each gallon of the foregoing varnish vehicle and $.50 per pound for each pound of the foregoing paste made available to the Contractor. The Authority will deduct such amount from either the monthly advances or the final payment.

Any varnish vehicle or aluminum paste in unopened containers in excess of that required by the Contractor shall be promptly returned to the Authority. The Authority will not deduct any amounts from Contractor's compensation for such returned varnish vehicle and paste.

84. DIRECTIONAL SIGNS.

Directional signs, both illuminated and non-illuminated, shall be furnished and installed where shown and in accordance with the Contract Drawings. Directional signs shall be complete with housing, lettering, wiring, ballasts and sockets.

Sheet aluminum and extruded aluminum shall conform to the applicable requirements of the clause hereof entitled "Miscellaneous Aluminum". Polished plate glass shall conform to the requirements of the clause hereof entitled "Glass and Glazing".

Opaque and translucent plastic shall be similar and equal to Plexiglass as manufactured by the Rohm and Haas Company. Color of plastic and design of lettering shall be as approved by the Engineer.

Lampholders shall be of ninety degree, turn-lock, metal backed type.

Directional signs shall be installed with lettering as required for each location. Ballasts, branch circuit wiring to signs and final electrical connections and lamping shall be as specified in the clause hereof entitled "Electrical Installation".

Directional signs shall be provided with all fastenings, brackets, hangers and all other items as required for a complete installation in accordance with the Contract Drawings.

Shop Drawings for this work shall be prepared and submitted for approval as required by the clause of the general provisions hereof entitled "Working Drawings".

CONFORMED COPY
R.K.A.
A.L.E.
CATEGORY I

THE PORT OF NEW YORK AUTHORITY

GEORGE WASHINGTON BRIDGE BUS STATION

SUPERSTRUCTURE

CONTRACT GWB-200.013

PART II OF II

DECEMBER 1960

THIS PROPOSAL IS NOT COMPLETE UNLESS BIDDER'S SIGNATURE APPEARS ON PAGE 8

CONTRACT GWB-200.013
SUPERSTRUCTURE
PART II OF II

TABLE OF CONTENTS

Page

INFORMATION FOR BIDDERS..... 1

Form and Submission of Proposals..... 1

Papers Accompanying Proposals..... 1

Qualification Information..... 3

Acceptance or Rejection of Proposal..... 4

Return of Certified Checks..... 4

Available Documents..... 5

Inspection of Site..... 6A

Questions by Bidders..... 6A

PROPOSAL..... 7

ACKNOWLEDGMENTS..... 9

STATEMENT ACCOMPANYING PROPOSAL.....10

BID BOND.....11

ACKNOWLEDGMENTS.....13

FORM OF CONTRACT.....14

Chapter I -- General Provisions

Definitions.....14

General Agreement..... 19

Exemption for New York City Sales & Federal Excise Taxes: Purchase of Materials & Rental of Equipment.....20A

Page

Performance Bond..... 21

Chapter II -- Compensation and Payments

Unit Prices and Lump Sum..... 23

Reduction of Prices..... 76

Compensation for Extras..... 76

Monthly Advances..... 79

Final Payment..... 81

Withholding of Payments..... 83

Chapter III -- Provisions Relating to Time

Time for Completion and Damages for Delay..... 84

Extensions of Time..... 86

Idle Salaried Men and Equipment..... 87

Delays to Contractor..... 89

Cancellation for Delay..... 89

Chapter IV -- Conduct of Contract

Authority of Chief Engineer..... 90

Authority and Duties of Engineer..... 90

Minimum Wages..... 91

Extra Orders..... 92

Page

Title to Materials..... 93

Assignments and Subcontracts..... 93

Claims of Third Persons..... 94

Certificate of Partial Completion..... 94

Certificate of Completion of Sale..... 95

Certificate of Completion of Work..... 95

Page

Contract Drawings..... 121

Working Drawings and Catalog Cuts..... 128

Workmanship and Materials..... 130

Inspections and Rejections..... 131

Manufacturers' Certification..... 133

Approvals by Engineer..... 134

Errors and Discrepancies..... 134

Accidents and First Aid Provisions..... 134

Safety and Sanitary Provisions..... 135

Daily Progress, Equipment and Labor Reports..... 135

Laws and Ordinances..... 136

Identification..... 136

Signs..... 136

Contractor's Field Office and Representative..... 136

Engineer's Field Office..... 137

Surveys..... 137

Temporary Structures..... 137

Utility Services..... 138

Permit and Requirements for Welding..... 138

Maintenance of Traffic..... 139

Publicly and Privately Owned Utility Facilities..... 139

Use of George Washington Bridge..... 140

Final Inspection..... 140

Guarantees..... 140

Light and Power..... 141

Page

Chapter II -- Construction

Concrete..... 150

Class F Roof and Sidewall Concrete..... 167A

Concrete Reinforcement..... 168

Lightweight Structural Concrete..... 169

Lightweight Concrete..... 172

Concrete Sidewalks..... 175

Asphalt Plank..... 175

Precast Concrete Plank..... 175

Premoulded Joint Filler Sealer..... 176

Structural Steel..... 177

Shear Connectors..... 181

Expansion Plates..... 181

Miscellaneous Iron & Steel..... 182

Miscellaneous Metals..... 182

Safety Stair Treads..... 189

Beam Guard Rail..... 189

Membrane Waterproofing..... 190

Dampproofing..... 193

Granite Masonry..... 197

Concrete Block Masonry..... 200

Cold Glazed Enamel..... 202

Ceramic Glazed Brick..... 203

Structural Facing Tile..... 205

Architectural Cast Stone..... 207

Page

Mortar..... 209

Pneumatic Mortar..... 211

Aluminum..... 213

Ornamental Metal..... 215

Aluminum Storefronts & Entrances..... 220

Caulking..... 222

Flashings..... 225

Cold Process Roofing..... 229

Hollow Metal Doors and Frames..... 238

Hollow Metal Partitions..... 240

Toilet Compartments..... 243

Rolling Doors..... 245

Freight Elevator..... 245A

Moving Stairs.....246

Ceramic Floor Tile..... 254

Ceramic Wall Tile..... 257

Glass Mosaics..... 261

Terrazzo..... 264

Glass and Glazing..... 268

Plastic Louvers and Frames..... 270

Page

Furring and Lathing..... 271

Plastering..... 275

Metal Pan Acoustical Ceilings..... 282

Luminous Ceiling Areas..... 284

Carpentry and Millwork..... 285

Panel Walls and Aluminum Panels..... 287

Multiple Seating..... 289

Asphalt Tile..... 290

Miscellaneous Specialties..... 292

Hardware..... 293

Field Painting..... 301

Directional Signs..... 311

Chapter III

Mechanical

Page

General Description of the Heating, Ventilating and Air Conditioning System..... 312

General Requirements..... 313

Piping Material Requirements..... 313

Motors..... 319

Sheet Metal and Accessories..... 320

Tests..... 324

Air Compressor for the Expansion Tank..... 325

Insulation..... 327

Centrifugal Pumps (Double Suction)..... 327

Packaged Automatic Hot Water Boilers No. 1 and 2..... 330

Burner Equipment (Gas)..... 332

Unit Heaters..... 333

Cabinet Heaters..... 334

Vanexial Fan Requirements..... 336

Fan Motors..... 338

Field Tests..... 339

Motor Operated Dampers..... 339

Cooling Towers..... 343

Vibration Eliminators..... 345

Water Treatment Systems..... 345

Hot Water Booster Coils..... 345

Unit Heaters (Gas Fired)..... 358

General Requirements of the Sprinkler Installation..... 360

Sprinkler Installation..... 361

Sprinkler Equipment..... 363

Tags, Identification Signs and Flow Diagrams..... 365

Tests..... 366

Chapter IV

Plumbing

Page

General Description of Plumbing Systems..... 367

Pipe and Fittings..... 368

Joints..... 370

Flexible Pipe Couplings..... 371

Valves..... 372

Cast Iron Water Service Pipe..... 374

Supports, Hangers and Pipe Sleeves..... 376

Plumbing Fixtures..... 378

Automatic Cigarette Disposal Unit..... 381

Fire Standpipe Equipment..... 381

Roof Drains and Floor Drains..... 384

Wall Hydrants..... 386

Fresh Air Plates..... 386

Pressure Gauges..... 386

Escutcheons..... 386

Vacuum Breakers..... 387

Hose Bibbs..... 387

Roof Couplings..... 387

Vent Terminations..... 387

Air Chambers..... 387

Nipples..... 387

Cleanouts..... 388

Plugged and Capped Outlets for Future Connections..... 388

Page

Flap Valves..... 388

Domestic Hot Water Heaters (Winter Season)..... 388

Domestic Hot Water Heaters (Summer Season)..... 390

Hot Water Circulating Pumps..... 391

Thermometers..... 391

Pressure Relief Valve..... 392

Water Meters..... 392

Air Release Valves..... 392

Soap System..... 393

Gas Hot Water Heater..... 393

Gas Boosters..... 393

Gas Meter Cops..... 393

Cellar Drainer..... 394

Inverted U Covers..... 394

Monel Metal Troughs..... 394

Insulation..... 396

Tests..... 399

Catalog Cuts..... 401

Page

Chapter V -- Electrical Installation

General Description of the Electrical Installation..... 402

General Requirements of the Electrical Installation..... 402

Rigid Metallic Conduit..... 405

Electrical Metallic Tubing..... 408

Flexible Conduit..... 409

Tagging Conduit..... 409

Duct Banks..... 410

Cleaning and Testing Conduit..... 411

Electrical Boxes..... 412

Wire and Cable..... 416

Terminals..... 425

Tagging of Wires and Cables..... 425

Electric Services..... 426

Current Limiting Fuses..... 428

Bus Duct..... 428

Dry-Type Distribution Transformers..... 429

Low Voltage Switchgear..... 430

Switches..... 432

Fuses..... 432

Receptacles..... 432

Switch & Receptacle Wall Plates..... 433

Panelboards.....433

Low Voltage Automatic Transfer Switches..... 435

Contactors..... 435

Safety Switches..... 436

Page

Distribution Fuses and Fuse Holders 436

Nameplates 437

Floodlight Poles 437

Street Lighting Standards 439

Mercury-Vapor Ballasts and Supports 440

Grounding 442

Lighting Fixtures 443

Electric Pipe Heating 456

Supervisory Data Centers, East and West 457

Motor Control Centers 460

Pump Alternator Cabinet 461

Dispatcher Booth Heater 462

Intercommunication System 463

Metering 472

Fire Alarm and Sprinkler Supervisory Systems 473

Telephone System 474

Equipment Mounting 475

Manhole and Handhole Record Drawings 475

Field Tests 476

CHAPTER III

MECHANICAL

87. GENERAL DESCRIPTION OF THE HEATING, VENTILATING AND AIR CONDITIONING SYSTEM.

The heating system will consist generally of the generation of hot water in two automatic gas fired hot water boilers.

Hot water circulating pumps and hot water piping will distribute hot water to different heating systems and zones.

Areas with outside glass exposures will have fin tube radiation where shown on Contract Drawings. Tenant areas will be provided with hot water coils in the air conditioning systems.

Public areas will be heated and ventilated by a hot air heating system.

A long distance bus loading area will be ventilated by supplying fresh air.

Expressway will be ventilated by supplying fresh air.

A series of exhaust systems will be provided together with the necessary equipment. The air conditioning system will consist generally of installation of two cooling towers with condenser water circulating pumps and piping to different tenant areas. Self contained air conditioning units will be installed in each air conditioned area.

Tempered outside air will be distributed to each tenant area.

Quiet Operation

All equipment furnished and installed by the Contractor shall operate under all conditions of load without sound or vibration which is objectionable in the opinion of the Engineer.

Where sound or vibration conditions arise which are considered objectionable by the Engineer, the Contractor shall eliminate same in a manner approved by the Engineer.

Shop Drawings

The Contractor shall prepare and submit to the Engineer for approval shop drawings prepared in accordance with the clause of the Principal Contract entitled "Working Drawings and Catalog Cuts" for the following items:

1. Boilers with safety controls and gas piping.
2. Pumps
3. Air Handling Units
4. Fans
5. Ductwork
6. Grilles, Registers, Diffusers
7. Unit Heaters
8. Cabinet Heaters
9. Thermometers and Gauges
10. Cooling Towers
11. Supports for A.H.U. Pumps, Fans and Piping
12. Controls
13. Sprinkler System
14. Vibration Eliminators
15. Strainers, Valves, Pressure Reducing Valves
16. Piping
17. Expansion Tank
18. Air Compressor

Clearance

All Work shall be neatly installed so as to be readily accessible for operation, maintenance and repair, without the reduction of necessary headroom and passage clearance.

Dimensions of equipment shall permit its entrance into space allocated to it and shall permit ready access to it and adjoining equipment for maintenance and repair. Equipment which does not fit into its allocated space with sufficient clearance for proper maintenance will be rejected as unsuitable. Equipment shall be checked for space allocation before submission for approval and major differences in size indicated on the submission to avoid inaccessible locations and crowded conditions.

The foregoing is intended merely as a general description of the Work to be accomplished and does not outline the Work required by the Contract Drawings and Specifications. Accordingly, it shall be construed as in aid of, and supplemental to (but in no case as limiting, impairing or decreasing) the requirements elsewhere set forth with respect to the Work to be performed.

88. GENERAL REQUIREMENTS.

The mechanical installation shall comply with the provisions of the Local Municipal and State Codes, which would be applicable if the building were privately owned, except as may be otherwise specifically required by the Contract Drawings or Specifications.

The Contractor shall furnish to the Engineer for approval, complete details, cuts and performance characteristics of equipment to be furnished and installed under provisions of this clause of the Specifications. The Contractor shall check field conditions and verify locations and dimensions for installation as may be necessary.

PIPING MATERIAL REQUIREMENTS.

All pipe for operating pressures of 125 PSI gauge or less, shall conform to the requirements for black, standard weight pipe of the Tentative Specifications for Welded Seamless Steel Piping (A.S.T.M. Designation: A120) of the American Society for Testing Materials.

Piping shall be Schedule 40.

Fittings

Connections for piping two and one-half inches in size and smaller shall be made with 125 pound cast iron banded pattern screwed fittings conforming to the Standard Specifications for C st-Iron Screwed Fittings (A.S.A. Designation: B16.4) of the American Standards Association.

All piping three inches and larger shall be welded throughout. Welded fittings shall be long sweep type and shall be of the same size, weight and material as the pipe. Where connections must be made to valves and equipment, forged welding neck flanges shall be used and these shall conform to 150 pound Working Pressure for Schedule 40 piping. All welded fittings shall be similar and equal to those manufactured by Tube Turn, Inc. All welded connections shall be made using approved type welding rings of the same material as the pipe. Welding rings shall be similar and equal to type "CCC" as manufactured by the Robvon Backing Ring Company.

All welded joints shall be done by the shielded metallic arc process in accordance with the requirements of the Standard Code for Pressure Piping (A.S.A. Designation: B31.1) of the American Standards Association. Welding shall be done by certified welders qualified under A.S.A. code.

Nipples used shall be extra heavy and shall be of the same material as the adjacent pipe.

Screwed unions with ground joints shall be similar and equal to Figure No. .0832 as manufactured by the E.M. Dart Manufacturing Company.

Increases or reductions in size of horizontal steam mains shall be made with eccentric fittings.

Pipe Installation

Horizontal water lines shall have a minimum pitch of one-eighth inch in ten feet for complete drainage. Water pipe branch connections shall be made with swing joints where possible so as to take up pipe movement. Anchors of approved type shall be provided at all points necessary to insure that the movement of pipes will be taken up by the loops and swing joints without straining the fittings.

Main water line expansion shall be taken up by installing expansion loops. All loops shall have steel fittings.

Threaded joints shall be made tight, without using a joint compound, except oil and graphite, which shall be placed on the male threads only.

Flanged joints shall be made up square and tight, using one-sixteenth inch thick ring gaskets cut from Service Sheet Packing similar and equal to Style No. 50 as manufactured by Johns-Manville.

Flexible connectors on pumps shall be manufactured byKeflex Manufacturing Division U. S. Flexible Metallic Tubing Co. or Universal Metal Hose Company.

All piping shall be marked with color cooled pipe identification conforming A.S.A. Standards. Pipe markers shall be placed maximum distance 50 ft. on centers.

Pipe Sleeves

Where pipes pass through floors, pipe sleeves shall be used. The sleeves shall be set flush with the underside of the floor slab and extend one inch above the finished floor and shall be grouted in place. Sleeves shall be furnished with two lugs and set into poured concrete.

Where pipe passes through walls and masonry partitions, pipe sleeves shall be inserted and grouted in place. Pipe through all partitions shall be provided with split, smooth finish, cast iron escutcheon plates. The space between pipe and sleeve shall be packed with "Fiberglas". Escutcheon plates shall be provided on both sides of walls and on floors.

Hangers

Hangers shall be spaced as follows:

(a) Pipe two inches in size and smaller:

Not more than eight feet on centers.

(b) Pipe larger than two inch size:

Not more than ten feet on centers.

Horizontal piping shall be securely supported and held in place by "Unistrut" pipe roller supports as manufactured by Unistrut Products Company or similar. Pipe branches shall be supported by adjustable steel clevis hangers similar to Fig. 260 as manufactured by the Grinnel Co., Inc.

Where pipes are covered, the Contractor shall provide pipe covering protection saddles at the hangers similar and equal to Grinnel Fig. 186 according to the thickness of the covering.

Trapeze type hangers of steel construction may be used for two or more pipes, which have a uniform slope throughout, and shall have protection saddles where necessary as indicated above.

Anchors of approved type shall be provided at all points necessary to insure that the movement of pipes will be taken up by the loops and swing joints without straining the fittings.

Spring hangars shall be furnished and installed for pipe supports under the bridges and under the Bus Parking Area. Hangers shall be of the pre-engineered type, similar and equal to Fig. 13-268 as manufactured by Grinnell Co., Inc.

Valves

The valves shall adhere to the following schedule depending on pressure, type and use. The valves shall be of an approved manufacturer similar and equal to the Jenkin Valve Figures indicated below:

Type	Size	Pressure	Jenkins Fig. No.
Globe	Up to 2"	150 psi	106-A
Globe	$2\frac{1}{2}$" & larger	125 psi	142 or 613

All valves shall be tested by the Contractor before installation.

Strainers

Strainers for condensate, air and water shall be similar to those manufactured by Crane Co. or an approved equal. Screwed strainers shall be No. $988\frac{1}{2}$. Flanged strainers shall be No. $989\frac{1}{2}$. The screens for the above strainers shall be constructed of material appropriate for the fluid. Strainers shall be provided with the blowdown valves.

Basket Strainers

Basket type strainers shall be similar and equal to series 510 as manufactured by Zurn Industries, Inc. The pressure drop through the strainers shall not exceed 0.4 psi at 1000 GPM flow.

Where indicated on Contract Drawings valves shall be chain operated. Sprocket rim and chain guide shall be similar and equal to Figure No. 657 as manufactured by Jenkins Brothers.

Check valves shall be 125 pound iron body, brass trimmed and shall be similar and equal to No. 373 as manufactured by Crane Co. CCheck valves shallbe suitable for horizontal or vertical installation.

Valves shall be installed on all mains, branch piping at each side of all equipment, as required for proper maintenance and in accordance with standard practice and complete control of apparatus.

The Contractor shall provide drains by means of capped 3/4" globe valves at low points of pipe mains and shall provide automatic air vents at high points, whether or not shown on the Contract Drawings or specified herein.

Wash-Out of Piping System

Protection during installation and wash-out after installation shall ensure exclusion or removal of foreign materials before regualr operation of valves and pumps.

(a) High velocity washout shall be carried out, before finally closing header ends and risers, as necessary to demonstrate general freedom from foreign matter.

(b) Temporary screens shall then be inserted in pipe before pumps and flow control valves.

(c) A mixture of one pound of soda ash per 1000 lbs. of water shall be introduced to fill the system, heated to 180° F and circulated at that temperature for two days minimum. Temporary water heaters and pumps shall be provided if necessary.

(d) After inspection and cleaning of screens and dirt pockets the screens shall be reinstalled in service the system washed clean of soda ash, and circulation shall be resumed at 100% design flow for 4 hours minimum.

(e) Screens shall then be cleaned and reinstalled and the test shall again be applied for four hours.

Valves Tags

Each valve except radiator and unit heaters valves shall be provided with a polished brass tag, $1\frac{1}{2}$" in diameter and formed from No. 20 U.S. Standard gauge brass. Tags shall be stamped with numbers, one half inch high and filled in with red enamel, and shall be attached to the valve stems by means of two inch brass "S" hooks.

The Contractor shall furnish and hang three printed valve charts and piping diagrams mounted in 24" x 36" glazed metal frames which shall show valve numbers and location and purpose of each valve.

The valve chart and piping diagrams shall be black line on white background.

Spring Supports

Spring supports shall be supplied for bearing up a portion of pipe loads otherwise borne by equipment and where shown on Contract Drawings.

For support of suspended pipes and valves where future maintenance or repairs may be made to equipment by disconnecting a pipe flange at the equipment, vertical support rod adjustment shall be supplied; and the hangar and spring assembly shall be adequate for picking up the additional load.

Springs shall be so designed that when compressed to solid height or stop, fibre stress of 70,000 psi shall not be exceeded. Yoke, cylinder or bracket confinement shall eliminate lateral play. A pointer and scale calibration shall be provided for the sprung load range.

Each spring shall be substantially enclosed by a cylinder.

All pipe hangers and accessories shall be manufactured by Grinnel Corp., or approved equal.

Vibration Eliminators

Vibration eliminators for air handling units, fans, pumps, air handling units, and all suspended equipment shall be rubber-in-shear unit isolators or rail type isolators, as manufactured by Vibration Eliminator Company.

Thermometers

Thermometers, shall be nine inch scale, separable socket, adjustable angle, industrial type in three-quarter inch screwed well and shall be as manufactured by the Weksler Thermometer Corporation or H. O. Trerice Co. Thermometers shall be located as shown on the Contract Drawings.

All separable socket thermometers in the water lines shall fit interchangeably into all wells, to check out calibration errors.

Gauges

Pressure gauges shall be iron case similar and equal to Ashcroft Figures Nos. 1010 and 1014, as manufactured by the Manning, Maxwell and Moore Company. They shall be of the Bourdon tube spring type and each gauge shall be installed to be clearly visible from the operating level of the pump or piece of equipment and shall have all the requisite piping. Gauges shall be installed where indicated on the Contract Drawings.

Sensory elements, separable sockets, and pressure gauges inserted into water piping shall be screwed into tapped half couplings welded into the pipe.

Each gauge shall have shut-off cock and drain plug. Similar and equal gauges as manufactured by H. O. Trerice Company will be acceptable.

90. MOTORS.

Compressor, fan and pump motors, one-third horsepower and larger shall be squirrel cage induction motors suitable for three-phase, 60 cycle, 460 volt service. Motors one-quarter horse power and smaller shall be suitable for operation with single phase, 60 cycle, 120 volt service. Motors shall conform to the applicable requirements of the Standards of the Electric Manufacturers Association.

Motor Starters

Manual motor starters shall be single pole, mounted in a general purpose enclosure, shall have a thermal overload heater except where otherwise indicated on the Contract Drawings of the size required for the rating of the motor, and shall be similar and equal to Form CR1061 of the General Electric Company. Combination magnetic starters for 440 volt motors shall be 3 pole, 440 volt, fusible, front operated, with a 120 volt operating coil and a 480/120 volt control transformer, similar and equal to Form CR7008 as manufactured by General Electric Company.

For 208 volt motors the control transformer shall be omitted.

Starters shall be sized in accordance with the motors they control.

All motor thermal overload relays shall conform to the name-plate ampere rating of the respective motor and to the motor time-current heating characteristics during acceleration.

All combination magnetic starters shall be equipped with "start-stop" push buttons located in the cover of the starter and with auxiliary contact as required. Moter control centers for boiler room and Cooling Towers shall be as herein specified.

91. SHEET METAL AND ACCESSORIES.

Ductwork

Ducts and casings shall be constructed from galvanized sheet metal, in accordance with the following schedule:

Maximum Width (Inches)	U. S. Standard Gauge Galvanized Sheet Metal
Up to 30	24
31 to 48	22
49 to 60	20
61 and over	18

Galvanized sheet metal shall be similar and equal to copper bearing galvanized sheet steel as manufactured by the Wheeling Steel Corp., Bethlehem Steel Corp. or an approved equal.

The bracing of sheet metal shall be as follows:

Maximum Width (Inches)	Size of Bracing (Inches)	Max. Spacing Bracing (Inches)
Up to 15	Reinforced Bar Slip	48
16 to 24	1 x 1 x 1/8 angles	48
25 to 60	$1\frac{1}{4}$ x $1\frac{1}{4}$ x 1/8 angles	48
61 and over	$1\frac{1}{4}$ x $1\frac{1}{4}$ x 1/8 angles	24

Ducts with a maximum dimension of fifteen inches may be constructed using a reinforced bar slipjoint. All ductwork larger than fifteen inches shall use a pocket slip joint. Ducts made in four foot sections shall not require any angle bracing, however, ductwork constructed in larger than four foot sections shall require bracing at every four feet, but not necessarily at the joint in accordance with the bracing schedule shown above.

Exhaust ducts from the kitchen equipment and from exhaust hoods shall be of 16 gauge black iron with gastight gasketed joints. Hoods will be installed by others.

A manual reset thermostatic device shall be provided in the exhaust duct set at minimum of 200° F. to stop the fan automatically in case of fire inside of the duct.

Bracing angles shall be spaced so as not to interfere with the outlets. The cutting of angles will not be permitted. The bracing angles shall be installed on all four sides of the ductwork and shall be welded where they meet at the corner to form a solid four-sided brace. In addition, elbows thirty inches and wider in any dimension shall have an additional angle to the cheek of the elbow at a forty-five degree angle. All duct elbows shall have an inside radius no smaller then the width of the duct.

Square elbows shall be provided with double walled vanes spaced not more than four inches on centers and shall be similar and equal to "Ducturns", as manufactured by Tuttle and Bailey, Inc., or an approved equal. All vanes shall be fabricated from the same material as the duct elbow.

Equalizing air takeoffs for branch ducts from the mains shall be fitted with volume controllers similar and equal to Model AG-45, as manufactured by Titus Manufacturing Corp.

The ductwork shall be supported by galvanized hangers spaced as indicated below. Hangers shall be one inch by one-eighth inches thick.

Maximum Width (Inches)	Spacing of Hangers
Up to 30	8 feet
30 to 60	6 feet
61 and over	4 feet

Panel type access doors shall be furnished and installed in the ductwork where indicated on the Contract Drawings. The access doors shall have turning clamps at one edge and fixed clamps at the other edge, in order to be able to remove the door and to fasten it tightly into the standing seam framed in the duct opening, which shall be lined with a felt strip. The sizes shown on the Contract Drawings are the clear openings. [illegible]

Diffusers

The Contractor shall furnish and install diffusers of the adjustable square four way blow type, as shown on the Contract Drawings.

Diffusers shall be similar and equal to type KFA-40 as manufactured by the Carnes Corp. or type HAV as manufactured by Universal Diffuser Corp. All diffusers shall be equipped with air equilizing grids. Volume controllers shall not be installed, except where a branch or main duct has more than one diffuser taken at the bottom of the duct. Each diffuser shall be an adjustable air supply outlet capable of furnishing air quantities as shown on the Contract Drawings with the neck velocity not exceeding 600 feet per minute.

Diffusers when installed in the ceiling shall not project down more than 1/8 of an inch in its lowest position.

The finish of diffusers shall be white baked on enamel to match as closely as possible the color and finish of plastic luminous ceiling.

Grilles and Registers

Supply air registers shall be of the double deflection type with opposed blade dampers and shall be similar and equal to Model 200V as manufactured by the Carnes Corp. or Model VERD as manufactured by the Universal Diffuser Corp.

Exhaust and return air registers shall have opposed blade dampers and shall be similar and equal to Model 600 as manufactured by the Carnes Corp. The finish of the diffusers shall be as required by the Architect.

Air turns shall be similar and equal to Model 1250 "Variturn" as manufactured by the Carnes Corp.

Where relief openings pass through partitions, the Contractor shall furnish and install a grille at each side of the partition using a connecting duct between grilles. Grilles shall be no vision type.

Registers and grilles in the Building shall be made [illegible] with the finish as required by the Engineer. Supply air registers for the expressway and Long Haul Bus Level ventilation shall be made of stainless steel.

Dampers

Dampers for control and balancing of air distribution shall be made from the same material as the ductwork. The dampers shall be of rigid construction and shall be free from rattling and vibration with edges hemmed for stiffening and wrapped with felt or neoprene gaskets to provide a tight closing. The dampers shall be installed with their operating levers readily accessible and damper shafts shall be three-eighths of an inch in diameter for ductwork up to twenty inches and one-half inch diameter shafts for the larger ductwork. Shafts shall be of sufficient length to extend beyond insulation, if required, to permit operation of control levers.

Butterfly dampers shall be equipped with a dial type locking quandrant similar and equal to that manufactured by Parker-Kalon. All damper levers and quandrants shall be placed on the side of the duct readily available to the ceiling access doors shown on the Contract Drawings and shall be left in the normally open position (before balancing). Where indicated on Contract Drawings the Contractor shall provide splitter dampers.

Motorized dampers, both of the two-position and modulating type for ductwork, shall be of the opposed type and shall be installed ready and equipped with mounting brackets for external mounting of damper motors and linkages. The dampers shall be similar and equal to those made by the manufacturer of the automatic controls, as herein specified.

Fire dampers for ducts passing through fire walls and wherever else required, shall be constructed of steel plate in accordance with the requirements of the New York Fire Insurance Rating Organization and shall be equipped with one hundred and sixty-five degree fusible links, and shall close in the direction of normal air flow, as indicated on the Contract Drawings. The Contractor shall furnish an access door 12" x 12" for resetting of dampers and shall install suitable angle stops.

Where indicated on Contract Drawings, fire doors shall be installed in ductwork. Fire doors shall be constructed from at least $\frac{1}{4}$" steel plate with reinforcing angles. Double thickness asbestos woven connections shall be used at inlet and outlet at air handling units and heating and ventilating units.

92. TESTS.

Test data for air flow shall be prepared by the Contractor, under the supervision of a Licensed Professional Engineer, whose stamp and signature shall appear on the submitted report.

For air handling units and fan systems, the air flow to and from the units shall be tested by means of a pitot tube, velometer and anemotherm. The traverse for a duct of rectangular cross-section shall be to divide the total area into a large number of small equal areas and to take a reading in the center of each small area. The number of areas and readings shall be not less than 16 and need not be more than 64. When less than 64 are taken the number of equal spaces should be such that the centers of the areas are not more than six inches apart. A sketch showing traverse shall accompany the readings in the report. The readings shall be taken in straight sections of duct runs and enough straight run shall be allowed, in order to get laminar flow for proper readings.

Registers, grilles and louvers shall be checked and adjusted by using either a direct reading or dial face anemometer. Diffusers shall be checked by using an anemotherm or velometer with a minimum of six readings per diffuser.

All tests shall be conducted in the presence of the Engineer.

The final submission of the test data shall include sketches of duct layouts indicating location of diffusers, registers, fans and air handling units, and air flow. All the above data shall be bound in booklet form and three copies shall be submitted for the approval of the Engineer.

The Contractor shall perform operational tests of the equipment furnished and installed by him and shall demonstrate the conformance of such equipment with requirements of the Specifications and Contract Drawings.

In addition to the operating tests, the Contractor shall impose pressure tests on all piping. Pressures shall be as required by the Engineer. All such tests shall be conducted in the presence of the Engineer and each satisfactory test completion shall be certified by the Engineer.

[illegible] shall be hydrostatically tested [illegible] using 30 psi pressure.

92A. AIR COMPRESSOR FOR THE EXPANSION TANK.

The Contractor shall furnish and install an air compressor with the receiver similar and equal to Model B-131-B as manufactured by Joy Manufacturing Company. The air pressure controller shall maintain a constant pressure in the expansion tank not exceeding 25 psi, and as set by the pressure controller. The pressure controller shall be adjustable between 0 and 25 psi.

92B. INSULATION.

All hot water and condenser water piping shall be insulated with one inch thick $7\frac{1}{4}$ pound density Fiberglas insulation.

Pipe insulation shall be applied over clean, dry surfaces and adjoining section shall be firmly butted together. The factory applied wrapping shall be sealed smoothly over all joints.

Insulation shall be banded on 18 inch centers. All indoor piping in the skin areas shall have aluminum jacketing such as Al-Cor-Jac, childers or an approved equal. All piping under the bridges and Bus Parking Area shall have 55 lb. waterproof felt jacketing with aluminum bands.

Insulation shall be as manufactured by Owens Corning Fiberglas, Pittsburgh Corning Corp., Johns-Manville or an approved equal.

All valves, flanges and fittings shall be insulated with premoulded matching halves if manufactured, or on the job fabricated mitered segments of pipe insulation of the same material and equal in thickness to the adjoining pipe insulation if the above pre-moulded is not manufactured. Premoulded fittings shall be "Fit-Rite" as manufactured by Fibrous Glass Products, or an approved equal. The density of all fittings, shall be such that equal thermal insulation to the adjoining covering be achieved.

Hot Water Generators (Boilers) & Breechings Insulation and Expansion Tank

Boilers, Expansion tank and Breechings shall be insulated with 85% Magnesia, Kaylo or an approved equal - 2-inch thick applied to a clean dry surface, staggering all joints and bringing all edges into firm contact. Blocks shall be secured in place with 1-inch x 25 gauge galvanized steel bands spaced on not over 12-inch centers. All joinings and voids shall be filled with insulating cement similar to Eagle Pitcher One Coat well trowelled into opening and entire installation covered with 1-inch galvanized wire netting laced together at all edges with #16 gauge soft annealed wire. Over this trowel smooth, a one-half inch thick coat of insulating cement, such as Eagle Pitcher One Coat or an approved equal. After first coat has dried it shall be covered with one coat of Finishing Cement, similar to Baldwin Hill 102 or an approved equal, containing 25% Portland Cement to provide a hard finish.

Duct Insulation

All ducts except as specified below shall be insulated with one-inch thick six pound density Fiberglas board, with a factory applied vapor barrier of reinforced aluminum foil facing, similar to type FF as manufactured by Owens-Corning Fiberglas Corp.

The duct insulation shall be applied over suitable mechanical fasteners, such as welded pins, on 12 to 18 inch centers. A minimum of two rows of fasteners per side shall be used and the insulation shall be secured with suitable speed washers or clips.

For exposed and concealed ducts, butt all joints tightly and seal all breaks and joints by adhering a 4-inch embossed aluminum foil vapor barrier tape with an adhesive such as Minnesota Mining and Manufacturing Company's EC-1329 or an approved equal.

Exposed ducts, including those installed in skin areas shall be furnished with 8 ounce canvas, adhered with a lagging adhesive such as Benjamin Foster Sealfas, or an approved equal and finish with a brush coat of the same lagging adhesive.

Ducts for kitchen range exhaust systems shall be insulated with one inch of air space, two inch thick 85% magnesia blocks wired on and 1/2 inch finish of asbestos and Portland cement troweled to a smooth and hard surface.

Ducts supplying air to the long haul bus level and exhaust ducts for toilets, cooling tower, pedestrian underpass and electric closets shall not be insulated.

93. CENTRIFUGAL PUMPS (DOUBLE SUCTION).

General

Pumps shall be of the single stage horizontally split case double suction type with suction and discharge connections in the lower half of the casing, allowing removal of the rotating element without disturbing the pipe connections. Pumps shall be selected on the basis of data in schedule.

Casing

The casing shall be of close grained gray cast iron. Casing shall be capable of withstanding a hydrostatic test pressure 105% of the maximum pumping pressure under which the pump could operate at the design speed.

Impeller

The impeller shall be made of cast bronze and will be of the double suction type. Impeller shall be accurately keyed to the shaft and fixed in an axial position by shaft sleeve nuts, or other positive positioning device. Impellers shall be held tightly to the shaft so that the impeller will not become loose should pump accidentally rotate in reverse direction.

Wearing Rings

Renewable bronze wearing ring shall be shrunk on the impeller and with the case wearing ring shall form a single step type passageway. Wearing rings shall fit with close tolerances so as to permit a minimum of recirculation. Positive locking of the case wearing rings shall be provided so that the case wearing rings will not rotate or change position in the case.

Pumps shall be equipped with leak-proof mechanical seals.

Shaft and Shaft Sleeves

Shafts shall be made of high grade carbon steel and shall be protected through the stuffing box by means of bronze shaft sleeves. They shall be so designed as to prevent leakage between the shaft itself and the shaft sleeve.

Bearings

Heavy duty ball bearings with a high safety factor shall be provided. The outboard bearing is to be of the duplex angular-contact ball thrust type, while the inner bearing may be a single radial thrust type ball bearing. Bearings are to be mounted in a double-section cylindrical or cartridge type housing, the space between the inner and outer section to form a water cooling chamber, so that bearings may be water cooled if hot liquid is handled. Bearings are to be grease lubricated, and connections are to be furnished so that fresh grease may be injected into the bearing housings. Bearing housings are to be dust tight.

Miscellaneous Fittings

Drain connections shall be provided at all low points in the pump volute as well as at the drip pocket underneath the stuffing box and all other points where drainage should be possible. The volute shall be provided with air vents so that the pump can be freed from air pockets. Stuffing boxes shall be provided with water seal piping from volute water seal rings, and all other required miscellaneous fittings shall be provided.

Bedplate

A cast iron or steel bedplate of suitable size for mounting pump and driver shall be furnished. Pump and driver shall be carefully aligned then bolted and doweled in place at the factory prior to shipment.

Coupling

An approved flexible coupling shall be provided. Coupling halves shall fit tightly to the shafts of the pump and the driver so as not to become loose during operation.

Miscellaneous

Copies of the pump characteristic curves showing BHP, head and efficiently plotted against capacity shall be submitted before approved. Pumps shall be as manufactured by Peerless Pump, Aurora Pump Co. or an approved equal.

Pump motors shall be sized not to overload under any operating conditions.

All pumps shall operate at 1750 RPM, and shall have an efficiency of not less than 75% at operating conditions.

All pumps shall be mounted on 12" high reinforced concrete bases and on vibration eliminator rails.

Hot Water Pumps Schedule

Pump No.	Function	GPM	Heat Ft.	Minimum Motor HP
1	North Zone	670	110	30
2	" "	670	110	30
3	South Zone	600	110	30
4	" "	600	110	30
5	Dom. H.W. Htg.	200	25	3
6	" " "	200	25	3
	Condenser Water Pumps Schedule			
7	A.C. Tenants	1100	150	60
8	" "	1100	150	60

94. PACKAGED AUTOMATIC HOT WATER BOILERS NO. 1 AND 2.

General

Each boiler shall be furnished as a complete factory assembled low pressure unit, and shall be suitable for space requirements as indicated on Contract Drawings, consisting of the boiler, fuel burning equipment, induced or forced draft fans, a full complement of boiler fittings and control, all piped, wired and mounted on a structural steel base. Both the boiler and the burner shall be factory tested before shipment under full load firing conditions with the fuel for which it is intended. The complete package unit shall bear the A.G.A. and Underwriter's Laboratories Cla "B" label. Boiler and trim shall comply to the ASME and State and Local Codes for 30 lbs. design water pressure. A certificate of the Hartford Steam Boiler Inspection and Insurance Company shall be furnished with each unit. Boilers shall be in strict accordance with F.I.A. requirements.

Boilers shall be similar and equal to "Type CC 300 Boiler Horsepower" packaged automatic boilers as manufactured by Superior Combustion Industries, Inc. Similar and equal boilers as manufactured by Preferred Utilities Manufacturing Co. or Cleaver-Brooks Co. will be acceptable.

Boiler Capacity

Each boiler shall have a guaranteed rating of 10,040,000 BTU's per hour output and shall be capable of maintaining boiler water temperature at 210° F. Each boiler shall be guaranteed to operate at a minimum of 80% thermal efficiency. The boiler shall contain not less than five square feet of heating surface per boiler horsepower, with heating surface measured on the fire side as per ASME code.

Boiler Design

Each boiler shall be of the all welded steel horizontal fire tube type with full length furnace containing multi-passes, down-draft or up-draft design. The boiler shall be designed, constructed and hydrostatically tested in accordance with the requirements of the ASME Boiler Construction Code and State Code for an allowable working pressure of 30 lbs. water.

The cover doors, both front and rear shall be gas-tight, and insulated doors shall swing open, thus permitting access to all fire surfaces without removal of burner or control equipment. At the rear of the boiler, a gravity receding type pressure relief door with observation port shall be furnished. Each boiler shall be provided with adequate handholes and manhole, boiler feed and outlet openings; bottom blowdown connection.

The combustion chamber, shall be lined with high grade pre-cast refractory and so designed that all air used for combustion is preheated before it enters the combustion chamber. The baffles separating the furnace and gas passages shall be of high grade refractory. Tube size shall not be less than $2\frac{1}{2}$"

Boiler Trim

Each boiler shall be furnished with altitude gauge, thermometer, low water cut-off, aquastat control governing burner operation, fan control interlocked with burner controls to prevent operation of burner unless proper draft is established; required number and type of safety relief valves furnished in sufficient size to provide ample relieving capacity in accordance with the ASME Boiler Code. The safety valves shall be set to relieve at 30 p.s.i.g.

Low water cut-off shall be similar and equal to No. 63 as manufactured by McDonnel & Miller, Inc. and probe type low water cut off similar and equal to Warrick Co.

Miscellaneous

The following information shall be furnished by the Contractor to the Engineer before approval of equipment:

1 - Total square feet of heating surface
2 - Cubic feet of furnace volume
3 - Pounds of water full
4 - Number of passes
5 - Number of tubes
6 - Type of burner
7 - Induced or forced draft fans
8 - Number of draft fans, fan manufacturer, fan CFM at 70° F
9 - Motor horsepower for burner
10 - Thermal efficiency of unit at full rating
11 - Percentage of CO_2 Content at full rating
12 - Range of firing equipment

Boilers shall not exceed dimensions as indicated on the Contract Drawings

95. BURNER EQUIPMENT (GAS).

General

Each boiler shall be furnished with automatic gas burning equipment designed to operate with natural gas having a calorific value of 1040 b.t.u. per cubic ft. with $1\frac{1}{2}$ psi pressure at the main pressure regulator. The burner shall consist of a concentric gas firing ring with the proper number of stainless steel jets and required amount of air for good combustion. The regulation of the jets shall be such as to provide the type and flame best suited for the furnace. The burner shall include a main gas hydramotor valve of the slow-opening, quick-closing type; butterfly type valve for adjustment of firing rate, a lubricated plug cock.

Each boiler shall be furnished with the main gas pressure regulator.

The burner shall utilize a constant gas-electric pilot ignition system completely piped and wired to the boiler. This system shall include gas pressure regulator, solenoid valve, igniter electrode and transformer.

Burner Controls

Each boiler shall be equipped with a complete control system for fully automatic operation when used in conjunction with the above fuel. The burner shall be of the full modulating type with mandatory low fire start, being capable of automatically adjusting the fuel firing rate and combustion air supply in response to changing demands. The burner shall modulate between 40% and 100% capacity of the boiler.

The sequence of burner operation shall be controlled by an electronic programming control and scanner (Fireye FP-2) as manufactured by Electronic Corporation of America, or an approved equal, providing pre-purge and post-purge cycles and with full protection against flame failure during both ignition and normal burner operating periods. Operation of the Programming relay shall be governed by excess limit controls, the electronic flame failure device, and the low water cut-off. A flame failure of low water condition shall cause the burner to shut down on safety. The system must be reset manually before the burner can be restarted after a safety shutdown.

The burner-blower controls shall be interlocked to prevent burner operation without required mechanical draft. Means shall be provided for automatically delaying burner operation while allowing the draft mechanism to scavenge the boiler passes of combustion gasses after the flame failure or other burner stoppage.

Burners shall be A.G.A. approved.

Burners shall be equipped with the interlock switches for the gas booster controls.

The factory wired control panelboard shall be permanently mounted to the boiler furnished with magnetic starting switches with thermal overload and under voltage protection, motor starters and relays fully wired. Included on the boiler control panel boards shall be one (1) Edwards #340, 4" alarm bell, or an approved equal, and three (3) signal lights of the neon type to indicate flame failure - gas, high operating temperature limit, and high pressure. Furnish Allen-Bradley name plates, or an approved equal, properly labeled under each of the indicating lights.

The burner shall be as manufactured by Superior Combustion Industries, or an approved equal.

Boiler Breechings

Boiler breechings shall be constructed of No. 10 U. S. Standard gauge sheet steel and shall be firmly supported in place and shall be tight and free from leakage. 12" x 12" cleanout doors shall be installed in each breeching.

Expansion Tank

The Contractor shall furnish and install expansion tank constructed of riveted or welded black steel sheets and designed in accordance with the A.S.M.E. Code for Unfired Pressure Vessels.

Tank shall be provided with necessary tappings and shall be complete with protected gauge glasses and shut-off valves, drain cocks, pressure gauges, and spring loaded safety relief valves with discharge extended to the nearest drain. Relief valves shall be set for 30 p.s.i. The tank shall be of the size and capacity as indicated on the Contract Drawings. The Contractor shall furnish and install approved structural supports for the tank.

96. UNIT HEATERS.

General

The Contractor shall furnish and install unit heaters which shall be of the BTU per hour capacity, air delivery, discharge velocity, maximum final air temperature, and motor RPM as specified in schedule. Ratings shall be based on the Standard Code of the Industrial Unit Heater Association and the American Society of Heating and Air-Conditioning Engineers. Units shall be designed for operating pressures up to 150 psi gauge and temperatures up to 400° F.

Fans

The units shall have fans designed for quiet operation. Fan guard shall be provided for all horizontal delivery units. All unit heaters shall have Class III or less sound classification.

Casings

The unit heaters shall be die formed from high quality furniture steel of not less than 20 gauge. All parts shall be rust protected by Bonderite treatment or galvanizing and then finished with a baked enamel beige, grey or brown.

Coils

Coils shall be of the extended surface type utilizing flat plate type fins and round tubes. Tubes shall be a heavy gauge copper or copper alloy and shall be not less than 1/2" O.D. Heating element shall be encased so as to prevent air by passing element.

Fins shall be mechanically bonded to the tubes by an expanded process. No solder or other bonding medium shall be used.

Motors

Electric motors shall be of the current characteristics specified and shall be of the totally enclosed fan duty type. Motors shall be resiliently mounted. Means shall be provided for cooling motors when coil is full of water and fan is not operating. All motors 1/6 HP and less to have a permanent sealed-in lubrication.

All unit heaters shall be as manufactured by The Trane Co., Modine Manufacturing Co., Warren Webster & Co. or Herman Nelson.

All projection type unit heaters shall have adjustable louver cone diffusers. All horizontal type unit heaters shall have adjustable louver fin diffusers.

CABINET HEATERS.

The Contractor shall furnish and install where shown on plans Cabinet Heaters of size and types indicated, constructed to conform to the following:

Casings of heavy gauge steel, phosphatized and finished with baked enamel. Cabinets shall have well rounded corners and have removable fronts for access to interior. Cabinet heaters shall be recessed in the wall.

Heating elements shall be of copper tube and aluminum fins. Tubes to be silver brazed to steel headers. Provisions to be made in header for air vent. Element to be multi-pass serpentine type held rigidly in casing with provision for expansion and contraction.

Fans shall be forward curved, double inlet, aluminum and mounted on permanently lubricated ball bearing supported shaft. Fan drive shall be V-belt type with adjustable pitch motor sheave to permit 30% adjustment of fan speed. All motors to have built in thermal overload automatic reset.

Cabinet heaters as manufactured by Warren Webster & Co., Modine or Trane Co.

All unit heaters and cabinet heaters shall be controlled by individual line voltage thermostats.

Unit Heaters Schedule

Unit No.	Area Served	Capacity Btu/hr.	Motor HP	Max. RPM	Unit Heater Type
1	Skin Area S.C.	90,000	1/6	1050	Horizontal
2	"	90,000	1/6	1050	"
3	"	90,000	1/6	1050	"
4	"	90,000	1/6	1050	"
5	"	90,000	1/6	1050	"
6	"	90,000	1/6	1050	"
7	"	90,000	1/6	1050	"
8	Fan Room No. 1	60,000	1/6	1050	"
9	Fan Room No. 3	73,000	1/6	1050	"
10	Skin Area S.C.	100,000	1/6	1050	"
11	"	100,000	1/6	1050	"
12	"	100,000	1/6	1050	"
13	"	100,000	1/6	1050	"
14	Fan Room No. 2	60,000	1/6	1050	"
15	Fan Room No. 4	60,000	1/6	1050	"
16	Skin Area L.H.L.	100,000	1/6	1050	"
17	"	100,000	1/6	1050	"
18	"	100,000	1/6	1050	"
19	"	100,000	1/6	1050	"
20	Mech. Equip. Rm.	40,000	1/15	1050	"
21	Skin Area L.H.L.	90,000	1/6	1050	"
22	"	90,000	1/6	1050	"
23	"	90,000	1/6	1050	"
24	Elec. Distrib. Rm.	124,000	1/6	1050	"
25	"	124,000	1/6	1050	"
26	Toilet Boiler Rm.	20,000	1/20	800	Cabinet
27	Ft. Wash. Av. Ent.	92,000	1/6	800	Cabinet
28	"	92,000	1/6	800	"
29	Broadway Entr.	92,000	1/6	800	"
30	"	92,000	1/6	800	"
31	Bus Pkg. Stairway	32,000	1/6	800	"

Capacities of unit heaters are based on 200° average water temperature and 60° F entering air.

The Contractor shall submit for approval, shop drawings of all of the equipment which he plans to furnish and install as part of the Work in accordance with the clause hereof entitled "Working Drawings". Catalog cuts may be substituted provided they show sufficient information. The shop drawings shall include necessary dimensions and materials list.

The Contractor shall prepare clear, complete and detailed working drawings of the complete fan installation. These drawings shall include plans showing the size and location of all necessary anchor bolts.

97. VANEXIAL FAN REQUIREMENTS.

Each fan shall have a maximum sound level of eighty-five decibels as measured in conformance with the latest edition of the Standard Test Code for Centrifugal and Axial Fans, approved jointly by the National Association of Fan Manufacturers and the American Society of Heating and Ventilating Engineers.

The fans shall be Joy Axivane Fans, Model 84-26½-860 for 100,000 CFM and Model 45-21-860 for 30,000 CFM, Model 23¼-14-860 for 4,000 CFM, and Model 48-21-1750 for 57,000 CFM Series 100, manufactured by the Joy Manufacturing Company. Similar fans manufactured by the Buffalo Forge Company will be acceptable.

The fans shall be direct driven. The brake horsepower shall not exceed horsepower at operating point shown in the schedule. Each impeller shall be mounted directly on the shaft of the motors. The impeller shall be cast aluminum or steel. The hum and blades may be cast integral or may be separate, except that for fan 48-21-1750 for 57,000 CFM, the blades must be adjustable. If separate, they must be of such design to assure permanence of blade position. Impellers shall be accurately balanced for all speeds up to and includingten per cent above the speed for which the fans are designed. Each impeller housing shall be cylindrical, fabricated from steel plate and shall be formed or machined to insure proper clearance between housing and impeller. Each housing shall be reinforced with structural angles or plates and shall be provided with structural steel supports to attach the fan housing to concrete piers as indicated on the Contract Drawings. The housings and supports shall be suitably stiffened where required.

Each 84" and 48" fan shall be provided with an inlet bell and a transition piece or discharge diffuser at the fan outlet end and a connecting piece from damper to partition, except that the 48" fans will not require a connecting piece or damper.

84" and 48" fan inlets shall be protected by inlet screens constructed of No. 10 U.S. Standard wire gauge (.135 inch) steel wire electrically welded. Screens shall have radial and circumferential members and shall be bound by a steel frame. All parts of the screen shall be galvanized after fabrication. Galvanizing shall conform to the requirements contained hereinbefore.

Fan shafts shall be cold-rolled or forged steel and shall be based on unit stress not in excess of thirty per cent of the elastic limit of the material.

Since the fans will be operated in various combinations, the operating characteristics of the fans shall be such that they will operate satisfactorily in parallel, dividing the load equally.

Fans shall be designed on the basis of a speed at least ten percent in excess of the operating speed and the operating speed shall not exceed sixty-six percent of the critical speed.

Each fan shall have a brass nameplate showing the name of the manufacturer, type of fan, fan number, shop order number, serial number of fan, maximum safe speed and maximum operating speed of the fan in revolutions per minute, operating horsepower cubic feet of air per minute and total pressure (at the air density of 0.075 pounds per cubic foot).

The 48" fans shall have special diffusers and support plates as shown on the Contract Drawings.

The fan manufacturer shall weld six 3/8" thick steel ribs to each fan section and fan section welding ring base support.

Ribs shall be triangular in shape; 3" x 3" x 3/8" thick; welded with 1/4" fillet weld.

Locate ribs equidistant around fan section.

The Contractor shall submit performance curves for the fans he proposes to furnish. Data for the curves shall be obtained from tests made in accordance with the requirements for axial flow fan tests of the latest edition of the Standard Test Code for Centrifugal and Axial Fans approved jointly by the National Association of Fan Manufacturers and the American Society of Heating and Ventilating Engineers. The curves shall be plotted with cubic feet per minute as the abscissa and the following as ordinates:

1. Total pressure in inches of water.
2. Static pressure in inches of water.
3. Total efficiency in percentages.
4. Static efficiency in percentages.
5. Horsepower input to fan.
6. K. W. input to motor.

The performance curves shall be plotted to such a scale as will make it possible to read the data accurately. On each performance curve sheet shall be stated the following information:

Contractor's name
Name of fan manufacturer
Catalog name and number of fan
Number of revolutions per minute
Volume of air delivered
Static pressure
Total pressure
Static efficiency of fan
Total efficiency of fan
Horsepower input to fan
Kilowatt input to motor

8. FAN MOTORS.

Fan motors shall be squirrel cage induction motors and shall be of totally enclosed construction for three-phase, sixty cycle, 440 volt operation, and shall conform to the latest applicable requirements of the Standards of the A.I.E.E. and the N.E.M.A. The motors shall be suitable for starting with across-the-line starters. Motors shall be rated at fifty degree centigrade rise above a maximum ambient of forty degrees C. The motor end shields and frames shall be cast iron or steel. Bearings shall be ball or roller type for grease lubrication and provided with suitable seals. Motor b ases shall be provided with suitable steel supports fixed securely to the fan housing. There shall be large size terminal boxes provided with conduit openings of the proper size to suit conduits being installed.

Motors for 45" fans shall be two speed, two winding.

Motor insulation shall be N.E.M.A. Class A. A brass plate shall be attached to each motor giving the name of the manufacturer, motor horsepower, voltage, frequency, full load current, type and serial number of motor. The Contractor shall submit certified test curves of the motors to the Engineer.

FIELD TESTS.

When the fan installation is complete and electric power is available, the fans shall be put in operation and shall be run at full speed for twenty-four hours continuously. Any defects shall be corrected by the Contractor at his own expense and the test rerun until satisfactory in the opinion of the Engineer. Power for the test run will be furnished by the Authority, but the Contractor shall supply all other necessary labor and material at his own expense. The Contractor shall notify the Engineer in writing at least five days before he intends to run the tests.

MOTOR OPERATED DAMPERS.

An electrically operated damper shall be furnished for the outlet of each 84" fan. The purpose of the damper is to prevent backflow of air through the fan when the fan is not in operation. It is required, therefor, that when the damper is closed, it shall be as nearly airtight as possible and further, when fully open, shall offer minimum resistance to the flow of air while the fan is operating. The motor driving the damper operating mechanism shall be electrically interconnected to the fan motor so that the damper will open and remain open while the fan is operating and will close and remain closed when the fan is not operating. When the damper is open, it shall remain in that position without chattering. Approved limit switches shall be installed which will control the movement of the damper blades at both limits of its motion.

Each damper shall consist of a structural steel frame to support the damper blades. Six damper blades shall be provided for each damper. The blades shall have a streamline shape as shown on the Contract Drawings. The blades shall be fabricated from No. 14 U.S. Standard gauge stainless steel sheets. The shafting shall be cold-rolled steel not less than one and one-half inches in diameter. The shafts shall be supported at both ends on approved ball or roller anti-friction bearings in flanged housings. The bearings shall be mounted on the damper frame by hex-head cap screws and lock washers. The bearings shall be constructed for grease lubrication. An approved manual pressure type grease gun shall be provided.

The damper blades shall be interconnected so that they will operate simultaneously upon the operation of the operating arm. The movement of the operating arm shall be accomplished by the rotation of a crank on the output shaft of a reversible double reduction worm gear unit direct connected to an electric motor. The reducer output shaft shall have a torque of approximately one hundred and fifty (150) pound feet and shall operate at a speed of approximately one revolution per minute.

Propeller Fans

The Contractor shall furnish and install propeller fans where shown on Contract Drawings. Fans shall be direct driven similar and equal to Type "Q" as manufactured by ILG Electric Ventilating Co.

Where shown on Contract Drawingsfans shall be equipped with the automatic shutters.

Centrifugal Fans

The Contractor shall furnish and install unit blower type centrifugal fans where shown on Contract Drawings. Fans shall be belt driven and shall be rated and tested in accordance with the joint test code of the National Association of Fan Manufacturers, and American Society of Heating and Air Conditioning Engineers, and shall bear the certified rating label of NAFM.

Fans shall be similar and equal to Herman Nelson Unit Blower as manufactured by American Air Filter Company, Inc.

Exhaust fans shall be interlocked with the motorized dampers located in the discharge air duct. Dampers shall close when the fan is stopped.

Exhaust fans in the electric closets shall be controlled by the line voltage thermostats. The fan shall start when the termperature in the closet will read 90 $^{\circ}$F.

Fans Schedule

Fan No.	System Served	Capacity CFM	S.P. inches	Motor HP	Fan Type	RPM
1	Expressway Ventilation	100 000	1	50	Vaneaxial	860
2	"	100 000	1	50	"	"
3	"	100 000	1	50	"	"
4	"	100 000	1	50	"	"
5	"	100 000	1	50	"	"
6	"	100 000	1	50	"	"
7	Long Haul B.L. Ventilation	30 000	0.5	7½	"	860/430
8	"	30 000	0.5	7½	"	860/430
9	Electric Closet #3	300	0.25	1/6	Centrifugal	600
10	Electric Closet #1	800	0.1	1/20	Propeller	1550
11	Comm. Closet	500	0.25	1/16	Centrifugal	660
12	Electric Service Room	2840	0.25	½	Centrifugal	330
13	Electric Closet #2	800	0.1	1/20	Propeller	1550
14	Electric Closet #5	800	0.1	1/20	"	1550
15	Electric Closet #6	800	0.1	1/20	"	1550
16	Distribution Rm.	13 000	0.1	1	"	490
17	Boiler Room	13 000	0.1	1	"	490
18	Toilet in Boiler Room	425	0.1	1/80	"	1550
19	Toilets Suburban Concourse	4840	0.5	1	Centrifugal	300
20	Toilets Suburban Concourse	2310	0.5	1/2	"	440
21	Toilets Long Haul Level	1300	0.5	1/2	"	590
22	Pedestrian Underpass	4000	0.25	1/2	Vaneaxial	860
23	Expressway Ventilator	57000	0.8	30	Vaneaxial	1750
24	"	"	"	"	"	1750
25	"	"	"	"	"	"
26	"	"	"	"	"	"
27	"	"	"	"	"	"

Fin-Tube Radiation

The Contractor shall furnish and install fin-tube radiation where shown on Drawings.

Heating elements shall consist of $1\frac{1}{4}$" copper tubing with $4\frac{1}{4}$" square aluminum fins mechanically bonded to the tube.

Capacity of the heating element shall be minimum 1420 Btu/h per ft. at 200°F. average water temperature and 65° entering air.

The Contractor shall furnish published data indicating that the radiation has been approved in accordance with I.B.R. Code for Fin tube type radiation.

Enclosures for these elements shall be as shown on architectural drawings.

Fin tube radiation shall be similar and equal to element type 3 as manufactured by John J. Nesbitt, Inc. Expansion joints shall be similar and equal to "Tru-Perimeter Expansion Joint" as manufactured by Warren Webster & Company.

Where indicated on the Contract Drawings piping around columns shall be concealed in column enclosures. These enclosures shall consist of back panels, rounded front panels, and trim strips. Hangars for supporting piping shall be included. Column enclosures shall be suitable for cutting and fitting at the job site to conform to column dimensions, and shall be finished to match the enclosure.

101. COOLING TOWERS

General

The Contractor shall furnish and install where shown on the plans, two "TMA" 250 Blow Through Cooling Towers as manufactured by Baltimore Aircoil Company, Inc., or an approved equal and as hereinafter described. Units shall be installed in a workmanlike manner and in accordance with the manufacturer's recommendations.

Cooling towers shall be of the sectional counterflow type design consisting of pan, fan, surface and spray sections with eliminators. Each section shall be die-made with matching flanges and bolt holes to assure alignment and ease of assembly. Guide pins shall be furnished between sections to further assure proper alignment.

Capacity

Each cooling tower shall have a capacity of not less than 250 tons refrigerating effect when circulating 750 GPM at 95 deg. F. entering water temperature, 85 deg. F. leaving water temperature, and 78 deg. F. entering air wet bulb temperature. The tower manufacturer shall submit performance curves of the towers, and shall guarantee the specified capacity.

Casing

The surface and spray section casing shall be constructed of not less than 1/8" hot dipped galvanized steel. The entire casing shall be coated with zinc-chromatized aluminum paint.

Fan Assembly

The fan sections shall have forwardly-curved, centrifugal type fans, statically and dynamically balanced. The fan wheels and housings shall be constructed of hot dipped glavanized steel finished with a prime coat of zinc chromate followed by a second coat of zinc-chromatized aluminum paint. Fan discharge cowls shall be provided.

The fan bearings shall be of the heavy duty, self-aligning sleeve type, constructed of cast phosphor-bronze with graphite-filled oil grooves. Oil cups for the bearings shall be extended to the outside of the fans for ease of lubrication.

Fans shall have a capacity of 69,000 CFM at ½ inch external static pressure.

Two 20 HP drip proof ball bearing fan motors shall be furnished, having "Special A" insulation. The motor shall be suitable for operation on 440 volt, 60 cycle, 3 phase current and shall be mounted on an adjustable motor base.

A "V" belt fan drive shall be furnished, designed for not less than 120% of the motor nameplate horsepower. The drive shall be covered by a hot dipped galvanized guard.

Pan Section

The pan shall be constructed of not less than 1/4" steel electrically welded for maximum rigidity and water-tightness. It shall be hot-dipped galvanized after fabrication and painted with zinc-chromatized aluminum paint for maximum corrosion protection. Pump suction, drain overflow, and make-up connections shall be included.

The float valve shall be a compound lever, positive acting brass type actuated by a larger diameter seamless copper float ball.

A large area, hot-dipped galvanized steel strainer shall be included. The strainer shall be removable and shall have a closed top to prevent cavitation.

The pan shall be provided with an easily removable water-tight access door to provide access to the interior of the pan.

A waste water bleed line, connected from the spray header to the overflow connection, shall be furnished. The line shall be properly sized to allow for water bleed-off, at least equal to the amount of water evaporated, and a valve shall be furnished in the line to control the water flow.

Eliminators

The eliminators shall be constructed of not less than 24 gauge hot-dipped galvanized steel, encased in 16 gauge hot-dipped galvanized steel frames. They shall have a minimum of 3 breaks with a hooked leaving edge to remove the entrained moisture. The eliminator shall be removable in easily handled sections, and further protected against corrosion by a coat of zinc-chromatized aluminum paint.

Wet Deck Surface

The surface shall be all steel for protection against fire, fungus attach, warpage and change in weight due to water absorption. It shall be made of not less than 24 gauge hot-dipped galvanized steel sheets that are formed into a waved pattern for maximum water cooling efficiency. The surface shall be painted with zinc-chromatized aluminum paint.

Spray Tree

The spray tree shall be made of full-weight galvanized steel pipe. The nozzles shall be of the centrifugal non-clog brass type with removable orifices for cleaning. They shall be arranged on not more than 8" centers to provide complete water coverage of the wet deck surface.

Cooling Towers Test

After the towers are installed the Contractor shall test the capacity of the towers in accordance with performance curves.

Guarantee

The Contractor shall furnish the cooling tower manufacturer's guarantee of the cooling tower fill and all interior parts for a minimum of five years excepting only defects due to accident or abuse, with an adequate water treatment service during this time. The Contractor shall submit a letter to the Authority stating this guarantee.

102. VIBRATION ELIMINATORS.

All fans shall be mounted on vibration isolator rials with rubber in shear type. Small utility sets shall have vibration hangar supports. Air handling units shall also be mounted with vibration rails under the fan section. Vibration eliminators shall be as similar and equal to those manufactured by the Vibration Eliminator Co.

102A. WATER TREATMENT SYSTEMS.

The Contractor shall furnish and install Water Treatment Systems that consist of feeding into the circulating water of all hot water heating systems, cooling tower water piping system the proper chemicals to prevent deposition of scale and slime deposits and to prevent rusting, corrosion and pitting of the metal surfaces with which the water comes in contact. The Contractor shall furnish and install any necessary feeding devices for feeding the chemical solutions into the water circuits. Shop drawings for water service treatment systems shall be submitted for approval of an Engineer.

The Contractor shall employ as a subcontractor for all the Work under this clause either Water Service Laboratories, Inc., or Hammond-Montel, Inc., or a company of equal competence approved by the Engineer.

The Contract Drawings show only the location of the water treatment equipment, but not the water treatment layout.

The make-up water connections and fill line connections to the boilers shall be equipped with pressure reducing valves set at 15 psi.

102B. HOT WATER BOOSTER COILS.

The Contractor shall furnish and install hot water coils where indicated on contract drawings. Coil No. 1 shall have face dimensions 24" wide x 57" long, Coil No. 2 shall be 18" wide x 21" long both shall be two rows deep. Coils shall be of the continuous tube type constructed with copper tubes, copper headers, heavy gauge casing, hot dipped galvanized after fabrication and copper fins permanently bonded. All joints between tubes, headers and return bends shall be made with a high silver brazing alloy.

Coil shall be furnished with a pitched casing and removable plugs in the headers, unless completely drainable by gravity.

Piping to the coil shall be arranged for counter flow of air and water.

Coil shall be similar and equal to type HW as manufactured by American Air Filter Co.

Automatic Temperature Controls

The Contractor shall furnish and install all materials, equipment and services necessary for the proper installation of a system of a pneumatic temperature controls. The control system shall be the product of a single manufacturer.

All pneumatic tubing and shielded electronic wiring shall be furnished and installed by the Automatic Temperature Control Manufacturer. Line voltage power wiring shall be by the electrical contractor. Flexible capillary conduit wiring shall not be utilized as control wiring. The temperature control system shall be as manufactured by Minneapolis-Honeywell Regulator Co., or Johnson Service Co.

General

Motorized dampers shall be constructed so as to be rigid and shall have channel iron frames and galvanized blades. Damper blades shall not exceed 10 inches in width. Bearings shall be of the brass trunion type. All dampers located in the outside air intake shall have galvanized blades, with two coats of black enamel finish. In addition, all outside air dampers shall have solid stops and the edges of shall be crimped and wrapped with neoprene gaskets to provide a tight closing.

Local equipment mounting panels shall be installed in close proximity to the unit served.

Each panel shall contain all relays and switches for the system and shall contain proper nameplates and gages as required.

Controls shall be installed under direct supervision of the control manufacturer. A factory service engineer shall place all controls into operation and leave them in satisfactory operating condition.

All pneumatic control valve and damper positioners shall be equipped with positive positioning relays.

Remote (control point setting) throttling range adjustment of system components shall be provided at local fan room panels.
All room thermostats shall be mounted neatly and in the location shown on Contract Drawings.

Air Compressor and Piping

A. Furnish and install (2) two electric motor-driven air compressors with one ASME approved type storage tank. Each compressor shall be equipped with a suction filter, motor starter, and pressure switch. Each compressor shall be sized to handle the entire control installation requirements - while not operating more than one-third of the time. Compressors shall be mounted on vibration eliminators and shall operate on 75 to 90 pounds pressure. In the high pressure air line this contractor shall install a water-cooled moisture condenser with automatic trap. Each compressor shall be equipped with belt guard, air filters, relief valve high and low pressure air gages, and pressure reducing valve stations. The pressure switches on the air compressors shall be adjusted for sequence operation, one set for 70 to 80 lbs. and the other for 60 to 70 lbs. Provide a sequence alternating switch to permit changing lead compressor.

The air compressors and receivers shall be installed in the boiler room.

B. The low pressure control air piping for the entire system shall be of copper tubing with soldered fittings and longruns; and compression type fittings at the instruments.

Copper tubing shall be hard temper type and all control air piping shall be horizontally level or vertically plumb except that reasonable pitch shall be provided to drip pockets. Wherever possible all air lines shall be run concealed. No air lines shall be run alongside duct work which is to be insulated until after the insulation is applied. The entire pneumatic piping system shall be tested under a pressure of 30 pounds for a period of 10 hours during which time the pressure drop shall not be noticeable.

Gages and Meters

Visible calibrated indicators (air gages or meters) shall be provided at all valve and damper motor locations to allow check of actual valve or damper position vs. position as called for by control signal from control device. Each indicator shall be appropriately identified by name plate on which chart of control signals and corresponding valve or damper motor positions shall be plotted or listed. All valve and damper motors shall be equipped with position indicators.

Relay Mounting Panels

Provide a local equipment mounting panel in close proximity to the unit served. The panel shall contain all relays and switches for the systems and shall contain proper nameplates and air pressure gages as required. Nameplates on air pressure

gages shall describe the meaning of the air pressure. Provide one air pressure gage to indicate main control air pressure to the system. All local panels shall be of steel construction with gray hammer-tone finish and shall be wall-mounted or free standing.

Air Handling Units No. 2 and 3 Controls

When the supply air fan is stopped, the outside air damper shall close and the return air damper shall open and the heating coil 3-way valve shall open fully When the fan is started, these dampers and the hot water three-way control valve shall be controlled as follows:

Discharge controller in conjunction with space thermostat shall maintain desired space conditions by modulating in sequence, the heating coil 3-way valve and the outside air and return air dampers.

As the space temperature increases, outside air damper shall modulate open and the return air damper shall modulate closed. If the space temperature continues to increase, valve shall modulate towards the coil bypass position. As the space temperature decreases the three way valve shall modulate to admit more water flow thru the heating coil. If the space temperature continues to decrease, the outside air damper shall modulate toward the closed position and the return air damper shall modulate open. Low-limit mixed air temperature controller shall be capable of overcalling the discharge controller and the space thermostat to prevent freezing of the heating coil. If the mixed air temperature drops below 55° F the low-limit controller shall modulate the outside air damper closed and the return air damper open to restore the mixed air temperature to 55° F.

The outside air thermostat shall reset the control point of the space thermostat in accordance with outside conditions.

Air Handling Units No. 1 and 4 Controls

When the supply fan is stopped, the outside air dampers shall close fully, the heating coil 3-way valve shall open fully and the damper normally closed during the fan operation shall open. Discharge air thermostat shall modulate the heating coil 3-way valve to maintain discharge air temperature at 45° F.

Air Handling Unit No. 5 Controls

When the supply fan is stopped, the outside air dampers shall close fully, the heating coil 3-way valve shall open fully and the damper normally closed during the fan operation shall open.

Room thermostat thru the discharge air thermostat shall modulate the heating coil 3-way valve to maintain the space temperature.

Each system shall contain a freeze protection thermostat with 20" capilary located on the leaving side of the heating coils. If the air temperature of

any section of the heating coil drops below 35° F, the supply fan for that system shall stop and an alarm bell at the control panel shall ring. These freeze thermostats shall be equipped with manual reset switches.

Hot Water Heating Zone Controls (Typical for 2 Zones)

A thermostat located in the outside air shall start the hot water circulating pump whenever the outside air temperature drops below 65° F. Immersion thermostat located in the hot water supply line shall modulate three way valve to maintain the desired hot water supply temperature. The outside air thermostat shall reset the control point of the immersion thermostat upwards as the outside air temperature decreases from 65 to 0° F.

Condenser Water System Controls

Condenser water pumps shall be started and stopped manually from the supervisory data centers or locally in the cooling tower equipment room.

A temperature controller located in the condenser water supply shall modulate a motorized valve to recirculate some condenser water return bypassing the cooling towers, to maintain a condenser water supply temperature at 85° F.

Motorized valve shall be slow acting type. The valve shall bypass maximum 200 GPM and on further temperature drop the temperature controller shall stop and start tower fans in steps to maintain water temperature at 85° F.

Boiler Controls

Boilers Nos. 1 and 2 shall be controlled to maintain a constant water temperature of 210° F.

Hot Water and Condenser Water Circulating Pumps Controls

Within each pair of pumps, the controls for each pump motor shall be so arranged, that it can be selected "Hand-off-automatic" with "off" and "running" indications (Amber and red lights). In the "Automatic" position it shall be electrically interlocked with its mate and shall alternate with its mate during each 48 hour cycle (24 hours "Permissive" position, 24 hours "Locked-Out" position.) Means shall be provided in the "Automatic" position to bypass both the interlock and the timer in order that either pump motor will continue operating.

Condenser water pumps shall have provision for the parallel operation of two pumps. The hot water circulating pumps shall be piloted by an outdoor thermostat located in the shade outside the Boiler Room.

A modulating type motorized bypass valves controlled by a differential pressure controllers shall be installed in piping systems between supply and return mains.

Domestic Hot Water Control in Winter Time

A thermostat located in domestic hot water shall control a three-way mixing valve at each storage tank to maintain a required water temperature.

Booster Coils Controls

Booster coils shall be controlled by room thermostats controlling three-way mixing valve.

Self Contained Air Conditioning Unit Controls

The unit fan shall be started and stopped manually. When the summer-winter switch is set for summer cycle, the room thermostat shall control the compressor to maintain the space temperature. The hot water mixing valve shall bypass all water. In the winter cycle compressors shall be inactive and the room thermostat shall modulate the three-way mixing valve to maintain the room temperature.

Air Conditioning unit No. 1 shall be controlled by the return air bulb thermostat located in the unit.

Supervisory Data Center

Each Contractor shall furnish and install a temperature indication and control panel as indicated on the Contract Drawings in the Boiler Room and in the Maintenance Room.

Each panel shall contain a precision temperature indicator, push button temperature indicator, push button temperature indicator switches, and control point adjusters.

Each panel shall contain a graphic presentation of air handling units, hot water heating zones and condenser water system.

These graphic presentations shall be on reverse engraved and pointed plaster sheets.

Push buttons temperature indication switches and remote control point adjustors shall be mounted on the graphic presentations at their relative true locations.

Presentation of duct layout, dampers, valves, heating coils, pumps, temperature indication push buttons and control point adjustors shall be color-coded for ease of identification.

Heating coils - red, ducts and labeling - black, control lines - white, background colors - light gray. All symbols, buttons, switches and lights shall be identified by reverse labeling.

The panel shall contain the following equipment as indicated on Contract Drawings

1. Start and stop lightedswitches for air handling units 1, 2, 3, 4, 5, all supply and exhaust fans, hot water circulating pumps, cooling tower fans, condenser water circulating pumps.

2. Temperature indication push buttons for:

   a) Outside air (1)
   b) Return air (air handling units #2 and 3)
   c) Mixed air (air handling units #2 and 3)
   d) Discharge air (all air handling units)
   e) Hot water supply (2 zones with provision for 1 future)
   f) Hot water return (2 zones with provision for 1 future)
   h) Condenser water supply (1)
   k) Condenser water return (1)
   m) Public spaces (3)
   n) Skin area (11)

3. Pilot Lights (Running indication)

   a) all fans
   b) all pumps (plus two future)
   c) Low limit annunciators (5)

4. Control point adjustors

a) Discharge air temperature (5)
b) Hot water supply temperature (2) with provision for 1 future
c) Condenser water supply temperature (1)

5. Low limit freeze protection alarm (1)

Running lights shall be energized from the load side of the motor starters. Terminal strips shall be provided for all electrical connections to the Supervisory data center.

A lighted canopy shall be provided across the top of the panel with light switch on the panel.

The panels shall be floor mounted. They shall be constructed of 3/16" gauge steel. The panels shall be free of all irregularities and shall be properly reinforced, anchored and supported to provide a rigid installation. Mechanical and electrical parts of the supervisory data centers shall be installed as one unit. The cabinet shall be fabricated by the Control System Manufacturer.

Air Handling Units

The Contractor shall furnish and install air handling units as indicated on the Contract Drawings.

Units shall be similar and equal to those manufactured by the Kennard Nelson Division, American Air Filler Co.

All units shall be of the same manufacture.

Each unit shall be furnished and installed complete, including but not limited to, a fan section with forward curved, multi-blade, centrifugal type fans mounted on a common shaft, motor with an adjustable sound absorbing base, bearings, V-belt drive with guard, a coil section including a two-row or four-row deep heating coil and filters.

Air handling units No. 2 and 3 shall have a drain pan and provision for the future 6-row cooling coil.

Entire framework and casing shall be formed of not less than 11 gauge steel and shall be phosphatized and exterior finished with an alkyd-phenolic paint primer, while all interior exposed metal surfaces or interior of units shall be spray coated with an asphalt-asbestos fiber compound. The fan wheel and discharge cowl shall be made of aluminum.

Drain pan shall be double metal enclosing 1" thick insulation. Inner pan shall be 1 copper steel mastic coated on inside and pitched toward side drain connection.

Fire resistant fiber glass insulation board 6 lbs. density furnished in one-half inch thickness shall be applied with adhesive in frame members and on all panels. The exposed surfaces of all insulation shall be sprayed with an asphalt and asbestos protective coating. The fan housings shall be treated in the same manner as the exposed insulation.

The entire unit casing shall be constructed of removable panels to permit access for inspection and service.

Each motor shall be of the required minimum horsepower as indicated in the schedule and shall operate at 1750 RPM. The coil capacity, static pressure, face velocity across the coils and fan discharge shall be as indicated in "Air Handling Unit Schedule".

The rating of the air handling units shall be certified in accordance with the Standard Test Codes Air Moving and Conditioning Association, Inc. (AMCA) and the American Society of Heating and Air Conditioning Engineers (A.S.H.A.E.).

Each unit shall be mounted as indicated on the Contract Drawings.

Filters

All air handling units shall be equipped with filter sections, containing automatic renewable media filters similar and equal to Model "H Roll-O-Matic" as manufactured by American Air Filter Company, Inc. All metal surfaces shall be of corrosion resistant construction. Each unit shall be complete with initial loading of media, 1/6 H.P. motor drive, control panel, and a media runout switch for each section of filter.

The drive shall be capable of serving all sections and shall be actuated by a dual timer control capable of infinite adjustment of media feed rate. Motor and drive shall not be exposed to the dirty air stream. All factory and field wiring shall be in conduit or flexible metal sheathing. The filter media shall be of continuous, bonded fibre glass material having a nominal thickness of 2" which when clean shall not compress more than 1/4" when subjected to air flow at 500 fpm. It shall have a graduated or varying density in direction of air flow, with the larger interstices on the air entering side and gradually increasing density toward the air leaving side with corresponding decrease in glass fibre size. It shall be charged with the proper amount of an odorless and flameproof adhesive which will trap and hold a maximum amount of dust. This adhesive shall not flow while in storage or when subjected to temperatures up to 150° F. The media shall be supported on both faces in the air stream by wire rods parallel to direction of media travel.

The initial resistance of the clean media shall not exceed 0.16" w.g. at its rated velocity of 500 fpm. The dual timer control shall be set so that the operating resistance under normal conditions is between 0.35 and 0.45" w.g.

Activated Charcoal Filters

The Contractor shall furnish and install activated charcoal filters for the air handling units No. 1, 2, 3 and 4.

Filters shall be similar and equal to model CF1-A-1 as manufactured by Minneapolis Honeywell Regulator Co. Activated carbon cells shall contain not less than 45 pounds each of activated coconut shells.

Filter section shall be arranged to provide the necessary access to the carbon filter cells.

The filters sections shall be factory built by the air handling unit manufacturer.

Water Coils in Air Handling Units

Hot water coils shall be of the continuous tube type constructed with copper tubes, copper headers, heavy gauge casings, hot dipped galvanized after fabrication and copper fins permanently bonded. All joints between tubes, headers, and return bends shall be made with a high silver brazing alloy, Type WD, as manufactured by John J. Nesbitt, Inc., Kennard Corporation, or an approved equal.

Water coils shall be furnished with positive means of removing moisture from individual tubes by means of a pitched casing and individual drain headers or removable gasketed headers, unless completely drainable by gravity. Piping to the coils shall be arranged for counter flow of air and water.

Air Handling Units Schedule

Unit No.	Area Served	Unit CFM	Minimum O. Air CFM	Coils	Total S.P. Inch	F.P.M. Across Coil	Outlet Velocity FPM	Min. Fan HP
1	North Tenants	21250	100% 21250	2 Rows Heating	1-3/4	433	1400	10
2	West Public Areas	27550	33% 9200	2 Rows Heating Future 6 rows Cooling	1-3/4	460	1490	15
3	East Public Areas	20300	33% 6800	2 Rows Heating Future 6 Rows Cooling	1-3/4	412	1340	10
4	South Tenants	22440	100% 22440	2 Rows Heating	1-3/4	456	1480	10
5	Boiler Room	14200	14200 100%	4 Rows Heating	1-1/4	460	1200	7-1/2

Air Vents and Radiator Valves

Air vents in hot water mains shall be similar and equal to No. 67 "Auto-Vent Eliminator" as manufactured by Bell & Gosset Co. Air vents for fin tube radiation, unit heaters and heating coils shall be similar and equal to No. 17 Sr. as manufactured by Bell & Gosset Co.

Radiator valves for fin-tube radiation shall be similar and equal to No. 902 or 117 as manufactured by the American Radiator and Standard Sanitary Corporation.

Tenant Toilets Exhaust Fan

The exhaust fans for the tenant toilets shall be of the unit blower type centrifugal fans similar and equal to Model No. DAZK 0401 Herman Nelson as manufactured by American Air Filter Company. The fan shall have a capacity of 100 CFM at 3/8" S.P. The fan shall be rated and tested in accordance with the joint test code of the National Association of Fan Manufacturers, and American Society of Heating and Air Conditioning Engineers, and shall bear the certified rating label of NAFM.

Supply Air Diffusers for Air Conditioned Tenant Areas

Round air diffusers shall be similar and equal to Model E diffuser as manufactured by the Carnes Corporation.

Each diffuser shall be equipped with a radial deflector similar and equal to Model RD as manufactured by the Carnes Corporation.

Square air diffusers shall be similar and equal to series K as manufactured by the Carnes Corporation. Diffusers shall be equipped with the equalizing deflectors.

Self-Contained Air Conditioning Units

Self-contained air conditioning units shall include all the elements for cooling, dehumidifying, air cleaning and circulating air, return air grilles and provision for outside air connection. The cabinet shall be constructed of not less than 16 gauge steel, chemically treated to resist rust. The cabinet shall be thermally and accoustically insulated with 1/2" thick fiberglass insulation.

Standard 2" thick permanent type filters shall be furnished and installed.

Compressors shall be hermetically sealed in a heavy case with the motor protected from dust, dirt and moisture. Compressors shall be spring mounted. The refrigerant used shall be of the Freon group.

The fan shall be Vee belt driven, double inlet centrifugal type and shall be statically and dynamically balanced. Motor pulley shall be adjustable to vary fan speed. Fan motor shall be sized for ductwork connection. Fan and motor bearings shall be prelubricated, sealed, ball bearings "lifetime" type.

The cooling coils shall be constructed of non-ferrous materials with seamless tubes and fins. Drip pan shall be rust protected and easily cleaned.

The condenser shall be of the water-cooled type and shall be built in accordance with ASME Standards and shall be fabricated of copper or aluminum-finned copper tubing, or a tube within a tube, for efficient heat transfer.

The control panels shall incorporate all the necessary controls with all wiring completed.

Magnetic across-the-line starters shall be provided for all motors. Additional controls shall consist of oil pressure protection switch, dual pressure control and non-recycling control relay. Each unit shall be furnished with a one-row hot water coil installed in the unit.

Air conditioning units capacities shall be certified in accordance with ARI Standards. Means for modulating head pressure control shall be installed as recommended by the unit manufacturer. The units shall be similar and equal to those manufactured by the Carrier Corp. or Chrysler Airtemp Division of Chrysler Corp. All units shall be of the same manufacturer. A.C. Unit No. 1 shall be 10 tons nominal capacity.

Room Air Conditioner

The Contractor shall furnish and install a room air conditioner where indicated on the Contract Drawings.

Air conditioner shall have a capacity of 22,500 BTU/h and shall be similar and equal to the "Power King P-25" as manufactured by the Airtemp Division, Chrysler Corp.

103. UNIT HEATERS (GAS FIRED)

General

The Contractor shall furnish and install gas fired propeller fan unit heaters and shall have the minimum BTU/hour output, air delivery and motor RPM as specified in schedule. Unit heaters shall be approved by American Gas Association.

Fans and Motors

The units shall have propeller type fan designed for quiet operation and mounted directly on motor. Fan guard shall be provided. Motor shall be totally enclosed type.

Casing

Casing shall be die-formed from furniture steel and shall be protected by "Bonderite" treatment and finished with high quality enamel baked at 2500° F.

Heat Exchanger and Burner

Tubes of the heat exchanger shall be individually fired and shall be of stainless steel, corrugated and internally braced to insure quiet operation during warming up and cooling down periods. Tubes shall have gas tight, welded seams and they shall be welded to the top and bottom headers. Burners shall be fabricated of stainless steel and shall have elongated, raised ports. Integral draft diverter shall be of a luminized steel.

Controls

The unit shall be furnished with the following safety controls: automatic gas valve, safety pilot, high limit control and pressure regulator. Proper and safe venting practice shall be in accordance with the standards of National Board of Fire Underwriters. Thermostatic control shall be provided as indicated on Contract Drawing.

The units shall be similar and equal to those manufactured by the Modine Manufacturing Company, or Peerless Manufacturing Division.

Unit Heaters Schedule

Unit Heater No.	BTU/hr. Output	BTU/hr Input	Air CFM	Air Discharge FPM	Motor RPM
1	60,000	75,000	850	530	1050
2	40,000	50,000	618	400	1050

Flues

Flues shall be Type "B" as manufactured by Dura-Vent Corporation.

Operating and Maintenance Instructions

The Contractor shall furnish printed instructions covering the operation and maintenance of each item of equipment, furnished under this Specification prepared and bound into book form. The instructions shall include the following:

1. Schematic piping and wiring diagrams.
2. Valve charts and Schedules
3. Lubrication Charts
4. Manufacturer's data and capacity data on all equipment
5. Operating instructions for all items
6. Maintenance procedures.

Nine copies of the operating instructions shall be furnished prior to the issuance of the Certificate of Final Completion.

Service and Guarantee

The Contractor hereby guarantees the heating, air conditioning and ventilation systems against defects in workmanship and material for a period of one year after the date of Certificate of Final Completion.

For the greater assurance of the Authority, the Contractor shall furnish written guarantees with provisions to the effect set forth in the foregoing paragraph.

During the one year period the Contractor shall furnish promptly such labor and materials as are necessary to repair or replace those portions of the installation which are or become defective to meet the requirements of the Contract Drawings and Specifications at his own expense.

104. GENERAL REQUIREMENTS OF THE SPRINKLER INSTALLATION.

Notwithstanding the fact that the Contract Drawings specifically show only certain portions of the sprinkler installation, these Specifications require the furnishing and installation of a Sprinkler System complete in all details and in accordance with the Standards of the National Board of Fire Underwriters and the Fire Insurance Rating Organization and the requirements of the Factory Insurance Association. The Contractor shall furnish and install such system in conformity with the foregoing standards and requirements and obtain the written approval of the Fire Insurance Rating Organization and the Factory Insurance Association for such system without any additional compensation. Moreover, in furnishing and installing the sprinkler system, the Contractor shall, at his own expense, put into effect such changes from and additions to the requirements of the Contract Drawings and Specifications in their present form as may be necessary to conform with the foregoing standards and requirements and to obtain the approval of said Organization and Association. Before making any such changes, or additions, however, the Contractor shall promptly notify the Engineer of any changes in or additions to the requirements of the Contract Drawings and Specifications which may be required and shall not proceed with such changes or additions without the approval of the Engineer. No approval of the Fire Insurance Rating Organization or the Factory Insurance Association of the Contract Drawings or Specifications has been obtained by or in behalf of the Authority.

The foregoing requirements of the Fire Insurance Rating Organization and Factory Insurance Association are not on file in the office of the Chief Engineer.

The Contractor shall prepare detailed working drawings delineating all portions of the systems including the hydraulically designed systems in the pier shed ceiling and shall submit such shop drawings to the Engineer for his approval. After the Engineer has approved the shop drawings, the Contractor shall submit them to the Fire Insurance Rating Organization and the Factory Insurance Association for approval. Working drawings shall be prepared in accordance with the requirements of the clause hereof entitled "Working Drawings and Catalog Cuts" and with the applicable standards of the National Board of Fire Underwriters and shall be corrected and completed to the extent necessary to obtain the approval of the Fire Insurance Rating Organization and the Factory Insurance Association.

No operations in connection with the furnishing and installation of the sprinkler systems shall be commenced prior to the approval of the Fire Insurance Rating Organization and the Factory Insurance Association and notification by the Engineer to so commence.

Installation of material and equipment shall be in accordance with the applicable standards of the National Board of Fire Underwriters as interpreted by the Fire Insurance Rating Organization.

Material and equipment shall be so designed and manufactured that it will comply with the applicable standards of the National Board of Fire Underwriters and shall be labeled or listed in the latest Fire Protection Equipment List published by the Underwriters Laboratories, Inc.

The Contractor shall furnish to the Engineer for approval by him the complete details and performance characteristics as furnished by the manufacturers thereof of all equipment to be furnished and installed in the systems.

The Authority will furnish to the Contractor certain items of fire alarm and supervisory equipment listed in the clause hereof entitled "Materials Furnished by the Authority", which shall be installed by the Contractor. The Contractor shall furnish and install all other items of equipment and materials including conduit and wire, necessary to complete the fire alarm and sprinkler supervisory system. Tamper switches for sprinkler supply Post Indicator Valves, ADT No. 611, will be installed by others. However, wire, conduit and all other materials and equipment necessary to connect these tamper switches into the supervisory system shall be furnished and installed by the Contractor.

105. SPRINKLER INSTALLATION.

Pipe above ground shall conform to the requirements for black threaded standard weight (Schedule 40) pipe of the Standard Specifications for Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Ordinary Uses (A.S.T.M. Designation: A120) of the American Society for Testing Materials.

Fittings shall conform to the requirements for 125 pound cast-iron, screwed fittings of the Standard Specifications for Cast Iron Screwed fittings 125 and 250 Pound (A.S.A. Designation: B16.4-1949) of the American Standards Association.

Cast iron flanges and flanged fittings shall conform to the Standard Specifications for Cast Iron Pipe Flanges and Flanged Fittings, Class 125 (A.S.A. Designation: B16.1-1948) of the American Standards Association.

Flanged joints shall be made up with one-sixteenth inch thick ring gaskets cut from service sheeting packing as manufactured by Johns-Manville, Inc.

Standard weight, black steel pipe sleeves two sizes larger than the pipe shall be installed in all walls, partitions, ceilings and floors through which pipes will pass. Such sleeves shall extend one inch above any finished floor. The space between pipes and sleeves passing through ceilings, walls, floors and firewalls shall be caulked with asbestos rope and sealed with asbestos and cement.

Cast iron floor, ceiling and wall escutcheon plates of approved design shall be installed wherever sprinkler piping passes through unfinished walls, ceilings or floors, including exterior walls.

Satin finished chrome-plated brass escutcheon plates of approved design shall be installed wherever sprinkler piping passes through finished walls, ceilings or floors.

Sprinkler piping shall be run so as to avoid interference with other piping and equipment and shall clear electrical outlets and lighting fixtures by not less than six inches.

Piping runs shall be installed parallel with or at right angles to walls, beams and girders and shall be straight and uniformly graded with proper provision for expansion and contraction. Mains and laterals shall be kept to the highest elevations possible, with the required pitch for the lines being maintained, or shall be drained with auxiliary approved drains.

Branch lines shall be run above the bottom chord of bar-joist, open web joists or open truss construction.

All piping for sprinklers in hung ceiling areas shall be concealed

Pipe hangers, rods, inserts and clamps shall be those approved for their respective uses by the Underwriters Laboratories, Inc.

The Contractor shall provide a drain valve for all sprinkler valve headers. An adjustable two and one-half inch pipe stanchion support with base flange, adjusting nut and saddle shall be installed under the headers under each riser, and shall be bolted to the floor.

Valves

Gate valves two inches in size and smaller shall be solid wedge, rising stem bronze valves with screwed ends except segregating valves which control supply to special hazards, which shall be O.S.& Y valves. Gate valves two and one half inches in size and larger shall be flanged, iron body, bronze mounted, solid wedge, O.S. & Y. Valves.

Check valves two and one-half inches and larger in size, shall be bronze mounted, swing checks with flanged iron body. Check valves two inches in size and smaller shall be swing check, regrinding or renewable disc, screw cap, full flow bronze valves with screwed ends.

Globe and angle valves shall be screwed bronze valves with renewable medium hard rubber or composition discs.

106. SPRINKLER EQUIPMENT.

Wet system alarm valves shall each be equipped with a retarding chamber so as to effectively reduce the possibility of false alarms due to pressure surges in the supply mains.

Sprinklers shall be of a temperature rating suitable to the location in which they are installed. Higher temperature sprinklers shall be installed where appropriate.

Sprinkler heads for hung ceiling areas shall be satin finished chrome plated with satin finish chrome plated brass escutcheons. Sprinkler heads or dry pipe systems shall be of the dry pendant type in hung ceiling areas. The Contractor shall submit to the Engineer for approval one sample of each type of head and ceiling escutcheon plate he proposed to furnish.

Where two systems originate from one watermain an eight inch header shall be used.

Drains and test connections from alarm and the piping system in valve group location shall discharge to a common funnel drain and shall be so arranged that water will not be discharged on, or overflow on the floor during normal or full pressure test operations. No drain line, auxiliary or otherwise, shall run across or discharge upon the floor. Where no permanent drainage system is available in the immediate location of the drain, the drain line shall be conducted outside the building at a location and in a manner suitable to the Engineer. Disposal in a manner unsuitable from the public health standpoint will not be permitted.

Inspector's test outlets shall be installed with test valve located not more than seven feet above the finished floor and with the one-half inch outlet located outside the building where approved by the Engineer.

The Siamese Fire Department connection shall be of the flush type with ninety degree angle-type body with clapper valves modified for overhead piping connections. Siamese connection shall be installed three feet above grade. It shall be satin chrome plate over brass finish with enameled screw plugs and chrome plated brass chains. Three-quarter inch, forty-five degree, angle-type, automatic ball drip shall be provided at the low point.

The sprinkler Siamese Fire Department connection shall be located three feet zero inches horizontally on center from the fire standpipe Siamese Fire Department connection, should both be required under this Contract. Sprinkler and Standpipe Siamese connections shall be of a single manufacture.

Fixed iron ladders of approved type shall be furnished and installed to provide access to sprinkler control, test or segregating valves wherever the valves are located more than seven feet above the floor.

The Contractor shall furnish and install one locked, red enameled, metal cabinet, containing twelve sprinkler heads of the type and temperature rating of the sprinklers installed in the system, and sprinkler wrenches in each sprinkler room or valve group location. Cabinets shall be attached to the wall and shall have sprinkler heads of each degree rating in the proportion to twelve that the number of heads of each degree rating installed bears to the total number of heads in the entire installation. There shall be not less than one head for each rating and type.

The Contractor shall furnish and install approved wire guards on all sprinkler heads located at a height of seven feet or less above the floor, under stairs, on landings or where otherwise subject to damage.

The entire piping system shall be sterilized, flushed and tested in accordance with the requirements of the Fire Insurance Rating Organization and the Factory Insurance Association and the requirements of building codes which would be applicable if the Authority were a private corporation.

The Contractor shall furnish to the Engineer a complete typewritten record of all tests conducted by him, one copy of which shall be bound in each of the six hereinafter mentioned bound books.

The Contractor shall obtain a letter or certificate of approval from the Fire Insurance Rating Organization, covering the entire sprinkler system, including underground piping installed by him, and shall furnish it to the Engineer prior to issuance of the Certificate of Final Completion.

Field Painting

Painting for the sprinkler system shall conform to the applicable provisions of the clause hereof entitled "Field Painting".

107. TAGS, IDENTIFICATION SIGNS AND FLOW DIAGRAMS.

The Contractor shall furnish and attach tags to each valve of sprinkler and compressed air systems. The tags shall be made of No. 20 B & S gauge polished brass sheet and shall be one and one-half by two and one-half inches in size. The tags shall be numbered. The valve number shall be one-half inch in height and shall be filled with red enamel. Associated system numbers shall be indicated by one-quarter inch high letters. The number shall be preceded by the letters "SP" for sprinkler and "A" for compressed air. The tags shall be attached to the valve stems or frames (not to handwheel) with two inch brass "S" hooks. In addition, standard approved red enamel metal signs with white letters identifying each sprinkler system shall be furnished and installed. Additional signs required for sprinkler systems under Rating Organization requirements shall be furnished and installed.

The Contractor shall prepare and furnish to the Engineer prior to the time of final inspection, the following items for each system:

(a) An eight and one-half inch by eleven inch flow diagram for each wet or dry valve, showing the area served by the valve and the location of risers, principal mains, test, segregating, control and drain valves and their numbers, and a cut of the wet pipe or dry pipe valve and any installed quick opening device with appropriate numbering shown. The diagram shall be placed in an approved, dust-tight, glazed stainless steel metal frame and shall be mounted on the wall near the alarm valve with which it is associated. A valve schedule showing all valve numbers, locations, descriptions of their functions, and normal condition shall be shown on the flow diagram. Diagrams shall be prepared in ink, and clear positive photostats shall be placed in the frames. One representative framed sample of each diagram shall be submitted to the Engineer for approval before any are mounted.

(b) Six bound chart books, which shall contain copies of shop drawings, all the above mentioned diagrams, test data and results, plus descriptive literature, and manufacuturers' printed operating, maintenance and resetting instructions and any installed quick opening device.

108. TESTS.

Upon completion of the sprinkler systems, but before painting, the Contractor shall perform acceptance tests at his own expense, including such tests or portions of tests as may be required in conjunction with the test of automatic actuating and alarm systems, if any.

The sprinkler systems shall be tested and remain tight against not less than two hundred and fifteen pounds gauge hydrostatic pressure for a period of not less than two hours, with no loss in pressure.

The Contractor shall notify the Engineer of the time when he expects to conduct these tests and the Engineer will in turn notify the Fire Insurance Rating Organization and the Factory Insurance Association. After approval by the Engineer of the proposed time of tests, the Contractor shall perform the tests in the presence of the Engineer and a representative of the Fire Insurance Rating Organization.

Equipment or materials which do not meet the requirements of the tests specified shall be repaired or replaced as directed by the Engineer, and the tests rerun until satisfactory results are obtained, all at the expense of the Contractor.

CHAPTER IV

PLUMBING

109. GENERAL DESCRIPTION OF PLUMBING SYSTEMS.

The plumbing systems shall consist generally of the following:

2 - 15" Combined Storm & Sanitary House Sewers.
1 - 8" Sanitary House Sewer
2 - 12" Storm House Sewers
2 - 6" Domestic Cold Water Services
1 - 6" Fire Standpipe Water Service
1 - 6" Sprinkler Water Service
3 - Gravity systems of sanitary drainage and vent piping
4 - Gravity systems of storm drainage
1 - Domestic cold water, hot water and hot water circulating piping system, connecting fixtures with low pressure cold water services and domestic hot water heaters.
1 - Fire Standpipe system for fire protection, including service connection, siamese connections, automatic ball drips, hose racks, hose cabinets, valves, and fire hose, together with all appurtenances therefor.
2 - Systems of gas piping
Systems of soap piping for toilet room lavatories as shown on drawings
4 - Systems of clear water drainage

The foregoing is intended merely as a general description of the various plumbing systems and does not outline the Work required by these Specifications and the Contract Drawings. Accordingly, the provisions of this numbered clause are to be considered in aid of and supplemental to (but in no case as limiting, impairing or descreasing), the requirements elsewhere set forth with respect to the Work to be performed.

The Contractor shall furnish to the Engineer for approval complete details and performance characteristics, as furnished by the manufacturers of the equipment to be furnished and installed under the provisions of this chapter of the Specifications, together with working drawings required by the Engineer in connection with its installation in accordance with the requirements of the clause hereof entitled "Working Drawings and Catalog Cuts".

110. PIPE AND FITTINGS.

House Sewers, underground drainage and vent pipe and fittings, and the 15" size pipe of storm and combined house drains in Expressway Ceiling shall be extra heavy cast-iron, bell and spigot soil pipe and fittings and shall conform to the Standard Specifications for Cast-Iron Soil Pipe and Fittings (A.S.T.M. Designation: A74-42) of the American Society for Testing Materials.

Sanitary drainage pipes above ground shall conform to the requirements for standard weight, galvanized steel pipe of the Standard Specifications for Black and Hot-Dipped Zinc-Coated Welded and Seamless Steel Pipe for Ordinary Uses (A.S.T.M. Designation: A120-47) of the American Society for Testing Materials. Drainage fittings shall be galvanized, recessed-drainage-type cast iron screwed fittings conforming to the Standard Specifications for Cast-Iron Screwed Drainage Fittings (A.S.A. Designation: B16.12-1942) of the American Standards Association.

Vent pipe above ground shall conform to the requirements hereinabove specified for sanitary drainage pipe above ground. Fittings shall be galvanized, malleable iron screwed fittings.

Storm drainage pipe and fittings above ground, except those leaders cast in the longitudinal center-line concrete roof columns on the Suburban Bus Level, shall conform to the requirements hereinabove specified for sanitary drainage pipe and fittings above ground.

The storm leaders cast in the longitudinal center-line concrete roof columns on the Suburban Bus Level shall be made of extra strong galvanized steel pipe (Schedule 80) conforming to the Standard Specifications for Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Ordinary Uses (A.S.T.M. Designation: A120-57T) of the American Society for Testing Materials. The fittings shall be extra strong black steel butt weld fittings conforming to the Standard Specifications for Steel Butt-Welded Fittings (A.S.A. Designation: B16.9) of the American Standards Association equal to those as manufactured by Tube Turns. Upon completion of fabrication of that portion of piping made of galvanized extra heavy steel pipe and welding fittings it shall be given a coat of galvanizing by the hot bath method in conformance with method for galvanizing pipe in aforementioned specification for pipe (Galvanized)

Welded joints shall be made by the shielded metallic arc process in accordance with the requirements of the Standard Code for Pressure Piping (A.S.A. Designation: B31.1) of the American Standards Association. Welding shall be done by certified welders qualified under A.S.A. Code.

Welds shall be made by the use of chill rings similar to Type CCC as made by the Robvon Backing Ring Company.

Clear water drainage pipe shall conform to the requirements for galvanized, standard weight (Schedule 40) steel pipe of the Standard Specifications for Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Ordinary Uses (A.S.T.M. Designation: A120-47) of the American Society for Testing Materials. Fittings shall be galvanized rececced drainage type fittings as specified hereinbefore for sanitary drainage piping above ground.

Water pipe for cold, hot and hot circulating water piping shall conform to the requirements for regular weight pipe of the Standard Specifications for Seamless Red Brass Pipe, Standard Sizes (A.S.T.M. Designation: B43-52) of the American Society for Testing Materials; fittings shall conform to the requirements for Class B, (250 pound) Composition 1 of Federal Specifications WW-P-.460 for Pipe Fittings Bronze (Screwed) 125 pound and 250 pounds. Brass flanges and flanged fittings for use with water piping at equipment connections as shown on the Contract Drawings shall conform to the 125 Pounds Steam Pressure Flange and Flanged Fittings Standard No. SP-2 Grade "A" Steam Bronze, of the Manufacturers Standardization Society of the Valve and Fittings Industry.

The discharge piping from air release valves, pressure relief valves, balldrips, etc. shall be of red brass pipe as hereinbefore specified for water pipe. The fittings for this piping shall be Class A, standard (125 pound) bronze screw fittings conforming to Federal Specifications WW-P-460. The discharge piping from air release valves shall be racked with, and in freezing areas bundled in the frost-proofing of the attendant hot water supply and/or hot water circulating piping, and extended to discharge to a floor or funnel drain, slop sink, etc. in the nearest mechanical equipment room or as otherwise called for on the Contract Drawings.

Fire standpipe system piping shall conform to the requirements for Schedule 40 black standard steel pipe of the Standard Specifications for Black and Hot-Dipped Zinc Coated Welded and Seamless Steel Pipe for Ordinary Uses (A.S.T.M. Designation: A120-47) of the American Society for Testing Materials.

Fittings for the fire standpipe system shall be N. Y. City approved black malleable iron, screwed fire line fittings for working water pressure of three hundred fifty pounds per square inch.

Gas system piphg shall conform to the requirements for Schedule 40, black standard steel pipe of the Standard Specifications for Black and Hot-Dipped Zinc-Coated Welded and Seamless Steel Pipe for Ordinary Uses (A.S.T.M. Designation: A120-47) of the American Society for Testing Materials.

Fittings for gas system piping shall ba galvanized, malleable iron screwed fittings.

[illegible]

111. JOINTS.

Bell and spigot joints in cast iron soil pipe shall be caulked solidly with hemp or picked oakum and poured full of lead, using a minimum of twelve ounces of lead for each inch of pipe size per joint. After the lead has cooled the joints shall be thoroughly caulked, using approved caulking irons, faced smooth, and made tight without the use of putty, paint or cement.

Threaded joints, except in brass pipe, shall be made up to be tight without caulking or the use of any filler except approved pipe joint compound, which shall be placed on the male threads only. Threaded joints in brass pipe shall be made up with a single strand of cotton wicking wrapped around the male thread with raw linseed oil or approved pipe joint compound.

Flanged joints shall be made square and tight, using one-sixteenth inch thick ring gaskets cut from service sheet packing, similar and equal to Style No. 50 Packing, as manufactured by the Johns-Manville Corporation, except that at flat-faced valves, flat-faced gaskets shall be used. Flanged joints for the fire standpipe system shall be provided with an approved type of copper gasket. Each flange shall be provided with steel machined bolts having semi-finished hexagonal nuts. Bolts and nuts shall be dipped in a mixture of graphite and oil immediately prior to installation.

Joints connecting lead and cast-iron pipe or iron pipe shall be made with extra-heavy, cast-brass ferrules at least four inches long, wiped onto lead pipe and caulked into the cast-iron pipe in the manner hereinbefore specified for cast-iron joints or screwed into drainage fittings.

Joints connecting brass and steel pipes shall be made with threaded brass fittings. All burrs or cuttings on screwed joints shall be removed prior to making up the joints.

Joints in cast iron bell and spigot water pipe shall be as hereinafter specified in Clause "Cast Iron Water Service Pipe".

In joints made by the use of flexible pipe couplings, hereinafter specified, the pipes on each side of said couplings shall be in such mean alignment and have the required pipe ends mean separation between them to allow for the maximum axial or lateral movement obtainable at each such joint in which movement may be caused by expansion, contraction and deflection of the pipes and/or structure.

112. FLEXIBLE PIPE COUPLINGS.

Flexible pipe couplings where called for on the drawings shall be mechanical type, to mechanically engage and lock the grooved pipe ends in a positive couple and to allow for some degree of angular deflection, and contraction and expansion. Each coupling shall consist of galvanized, malleable iron housing clamps in two parts, a single C-shaped composition sealing gasket natural rubber (Victaulic type "R") with internal sealing lips projecting diagonally inward so that internal pressure serves to increase the tightness of seal when installed, and two track-headed steel bolts as required to assemble the housing clamps. The couplings shall be victaulic, style no. 77-D, as manufactured by Victaulic Company of America.

113. VALVES.

Valves for cold and hot water piping two inches in diameter and smaller shall be gate valves of the inside screw type and shall be capable of operating at a working steam pressure of 125 pounds per square inch. All valve parts, except the hand wheel shall be of bronze. They shall be provided with non-rising spindles and solid wedges. The wedges shall be of solid bronze and shall be provided with guides for preventing chattering when the valves are partially opened. The valves shall be of the screwed type and shall be similar and equal to Fig. No. 370 as manufactured by the Jenkins Bros. Inc., Fairbanks Valve Co. or the Walworth Co.

Loose key valves for cold and hot water piping two inches in diameter and smaller shall be capable of operating at a working steam pressure of 125 pounds per square inch. All valve parts including the loose key handle shall be of bronze. They shall be provided with non-rising spindles and solid wedges. The wedges shall be of solid bronze and shall be provided with guides for preventing chattering when the valves are partially opened. The valves shall be of the screwed type and shall be similar and equal to Fig. 318 as manufactured by the Jenkins Bros., Inc., Fairbanks Valve Co. or the Walworth Co.

Globe valves where indicated on plans for cold and hot water piping two inches in diameter and smaller shall be capable of operating at a working steam pressure of 150 pounds per square inch. All valve parts except the hand wheel shall be of bronze. They shall be provided with a medium soft renewable composition disc No. 294-S for cold and hot water service. The valves shall be of the screwed type and shall be similar and equal to Fig. 106A as manufactured by the Jenkins Bros. Inc., Fairbanks Valve Co. or the Walworth Co.

Valves for cold and hot water piping larger than two inches in diameter shall be gate valves of the outside screw and yoke type and shall be capable of operating at a working steam pressure of 125 pounds per square inch. They shall have iron, steel or semi-steel bodies, bonnets and yokes. Hand wheels shall be of cast iron with a hexagonal hole tapered to fit the yoke sleeve. All other parts shall be of bronze. They shall be provided with rising spindles. The wedges shall be of solid bronze or bronze-faced and shall be provided with guides for preventing chattering when the valve is partially opened. They shall be of the flanged type and shall be similar and equal to Fig. 651-A as manufactured by the Jenkins Bros. Inc., Fairbanks Valve Co. or the WalworthhCo.

Exterior valves (curb and sidewalk) for domestic cold water, fire standpipe and sprinkler water services shall be iron body gate valves, bronze fitted, solid wedge, non-rising spindle, fitted with square nut, hub ends, capable of operating at a working water pressure of 175 pounds per square inch. Valves shall open by turning to the right in conformance to valve operation on exterior utilities. Valve shall be similar and equal to Fig. 327 as manufactured by the Jenkins Bros. Inc., Fairbanks Valve Company or the Walworth Company. The Contractor shall furnish and install adjustable cast iron valve box for each control valve. Cover plate of valve box shall be labeled "Water", "Standpipe" and "Sprinkler" respectively. An iron exterior tee handle for control of valve nut shall be furnished.

Check valves for cold and hot water piping two inches in diameter and smaller shall be bronze swing check valves with renewable composition discs No. 294-S screw-in caps, and screwed ends. Valves shall be similar and equal to Fig. 352 as manufactured by the Jenkins Bros. Inc., Fairbanks Valve Company or the Walworth Company.

Check valves for cold and hot water piping larger than two inches in diameter shall be iron body, swing check valves capable of operating at a working steam pressure of 125 pounds per square inch. They shall be bronze mounted and provided with renewable composition disc No. 294-S for cold and hot water service. They shall be of the flanged type and shall be similar and equal to Fig. 295 as manufactured by the Jenkins Bros. Inc., Fairbanks Valve Co. or the Walworth Co.

Gas cocks at equipment, not otherwise hereinafter specified, shall be screwed, all bronze, tee head similar and equal to Fig. No. 594 as manufactured by the Walworth Company.

Gas cocks on the gas services at the points of entry into the property and the gas control valves at meter and meter by-pass shall conform to the requirements of the Consolidated Edison Company of New York, Inc. Gas meter installation hook-up shall be for low pressure with by-pass. The meter shall be installed on an approved pipe stand. The installation of the gas services and meter shall be in accordance with the requirements of Consolidated Edison Company.

Gate valves for fire standpipe system shall be gate valves of the outside screw and yoke type and shall be capable of operating at a working water pressure of 175 pounds per square inch. They shall have iron, steel or semi-steel bodies, bonnets and yokes. The spindles, glands, yoke bushings and seat rings shall be of bronze. The wedges shall be of solid bronze or bronze-faced and shall be provided with guides for preventing chattering when the valve is partially opened. Hand wheels shall be of malleable iron, steel or semi-steel and shall be black enamelled; they shall have cast thereon the word "Open" and an arrow indicating the direction of rotation. Valves shall be of the flanged type and shall be similar and equal to Fig. 825F as manufactured by the Jenkins Bros., Inc., Fairbanks Valve Company or the Walworth Co.

Check valves for fire standpipe system shall be iron body, swing check valves capable of operating at a working water pressure of 200 pounds per square inch. They shall be bronze mounted, provided with renewable composition disc. They shall be of the flanged type and shall be similar and equal to Fig. 295F as manufactured by the Jenkins Bros. Inc., Fairbanks Valve Co. or the Walworth Company.

Each valve, except individual shut-off valves at fixtures, shall be provided with a polished brass tag one and one-half by two and one-half inches in size made from No. 20 U.S. Standard gauge brass or heavier. Tags shall be stamped with numbers one-half inch high, filled in with black enamel and shall be attached to the valve stems by means of two inch heavy brass "S" hooks. Marking of tags shall bear a symbol relative to the system served in addition to the valve number for the purpose of easy identification, for example CW-1 for cold water, HW-1 for hot water, HWC-1 for hot water circulating, G-1 [illegible] Valves at capped outlets [illegible] be [illegible] the service [illegible] extend[illegible]

The Contractor shall provide a printed valve chart in glass frame which shall show valve numbers, and the purpose and location of each valve. Chart shall be hung where directed by the Engineer. The Contractor shall also furnish a bound chart book for the Engineer's office.

Fire standpipe valves shall be provided with a metal disc at least three inches in diameter with white figures two inches high on red background attached to valve as above specified. The Contractor shall furnish a reproduction of the fire line riser diagram mounted under glass and framed for hanging where directed by the Engineer, showing clearly noted thereon each control valve number in accordance with the Fire Department Standards. Each manually operated shut-off valve for the fire standpipe system shall be locked in its normal operating position.

114. CAST IRON WATER SERVICE PIPE.

Cast iron water service piping for Domestic Water, Fire Standpipe and Sprinkler systems shall be centrifugally cast bell and spigot type conforming to the requirements for Class 150, Type I pipe of the Federal Specification for Pipe; Water, Cast-Iron (Bell and Spigot) (Designation: WW-P-421a).

Fittings for use with Class 150 pipe shall conform to the requirements for Class D fittings of the Standard Specifications for Cast-Iron Pressure Fittings (Designation: AWWA C100-52T) of the American Waterworks Association.

Piping and fittings shall be provided with lugs or harness bead, shall be cement lined and shall be coated inside and out with a bituminous seal coat. The lining and coatings shall comply with the requirements for Cement Mortar Lining for Cast-Iron Pipe and Fittings (Designation: A21-.4-1953) of the American Standards Association.

The tapping sleeve and valve for connecting to the existing service shall be of the clamp type, with a flanged end joint connection and a hub outlet, conforming to the requirements of Standard Detail Drawing No. 10251-X-A of the Department of Water Supply, Gas and Electricity of the City of New York. Prior to backfilling, bolts and nuts shall be coated with two applications of bitumastic paint similar and equal to No. 50 as manufactured by the Koppers Company or No. CA-50 as manufactured by the Barrett Division of the Allied Chemical and Dye Corporation.

Joints in cast iron underground water service piping shall be rodded and banded. The rods shall conform to Standard Drawing No. 030.014. Joints required by the Contract Drawings to be clamped shall be furnished and installed with a malleable iron, bell-joint type, Style 60 joint clamp as manufactured by the Dresser Manufacturing Company. The rods, bands and bell joint clamps shall be given a shop coat of bitumastic paint similar and equal to No. 50 as manufactured by the Koppers Company or No. CA-50 as manufactured by the Barrett Division of the Allied Chemical and Dye Corporation. Banding details shall conform to Standard Drawing No. 030.014.

The material, equipment, workmanship, disinfecting and testing of water supply piping shall conform to the requirements of the Department of Water Supply, Gas and Electricity of the City of New York for similar installations, with additions or modifications as shown on the Contract Drawings or specified herein.

After each underground service piping has been installed, but prior to backfilling, it shall be subjected to a hydrostatic test of two hundred pounds per square inch for a two hour period.

After underground piping has been installed, but prior to completion of the final outlet connection, the Contractor shall flush the piping. In the event the final outlet connection will be made to a sprinkler and/or a fire standpipe system, the flushing of the piping shall be at the rate of 750 gallons per minute.

The Contractor shall notify the Engineer sufficiently in advance of performing the foregoing hydrostatic test and flushing of water service piping, so that representatives of the Fire Insurance Rating Organization and the Factory Insurance Association may be present at the time such test and flushing is performed.

Tests for purity of water in new pipe lines and in existing lines dewatered by the Contractor, will be made by an approved water testing laboratory and paid for by the Contractor and no part of the water supply system will be accepted by the Engineer until it has satisfactorily met the requirements of such tests.

The Contractor shall make good any damage caused by his operations to existing pipe lines and appurtenances. Water removed or flushed from pipe lines shall be disposed of in such a manner as not to cause damage to property. Leaks or other evidence of unsatisfactory workmanship shall be corrected and the systems re-tested until satisfactory to the Engineer.

The foregoing tests and flushing of pipe lines including the furnishing of materials and equipment required for such tests shall be performed by the Contractor without separate or additional compensation therefor.

115. SUPPORTS, HANGERS AND PIPE SLEEVES.

Vertical piping shall be supported on every floor and at least every 15 feet with heavy steel pipe friction type pipe rest hangers. House trap assembies of cast iron soil piping shall be supported behind each bell regardless of length of pipe so that no sagging can occur.

Pipe hangers shall be of the clevis type of steel or malleable iron and shall be adjustable by means of a threaded device. Hanger rods shall be of the following diameter:

Pipe Diameter	Rod Diameter
Up to 2 inch	3/8 inch
$2\frac{1}{2}$ and 3 inch	1/2 inch
4 and 5 inch	5/8 inch
6 inch	3/4 inch
8 inch and larger	7/8 inch

Hangers shall be spaced as follows:

(a) For brass and steel pipe two inches in size and smaller: Not more than eight feet on centers.

(b) For brass and steel pipe larger than two inche size: Not more than ten feet on centers.

Trapeze type hangers of steel construction may be used for two or more pipes which have a uniform slope throughout.

To prevent cutting of the finished structure, the Contractor shall install No. 20 U. S. Standard gauge sheet metal sleeves on the forms before concrete is poured. These are to be used where pipes pass through walls or slabs and shall be sufficiently large to receive the permanent piping. They shall be collapsed and removed before any permanent piping is installed.

Sleeves of standard weight black steel pipe sleeves shall be provided for all exposed piping passing through the floor slabs, partitions and building walls. These sleeves in the floors shall extend one inch above the finished floor surface but shall be flush with the bottom of the slab.

Sleeves for pipes passing thru waterproofed floors shall be fitted with flashing riser sleeves similar and equal to Zurn ZP-8443 riser sleeve, duracoated cast iron with clamping collar. Pipe sleeve to extend 2" above finished floor and be flush with underside of slab.

Pipes passing thru retaining and foundation walls thru sleeves of pipe, shall have the annular space between the pipe and sleeve at both ends yarned with oakum packed to a depth of 2" leaving a space 1" deep from each end to be filled with molten lead and caulked tight as for joints in cast iron soil pipe.

The water and fire standpipe piping crossing the North Broadway Bridge shall be supported from each lateral beam as shown in detail on Contract Drawing No 357.

Hanger rods from all pipe hangers, racks, etc. shall be supported from the structural steel members of the structure by the use of approved beam clamps, etc.

Piping in the pipe galleries (areas enclosed by the soffits on the north and south sides of the Bus Station) at the Suburban Concourse in Unit #1 between Column Lines A-Ac-Dc-E; in Unit #2 between Column Lines A-Ab, Db-E; at the Long Haul Level in Unit #1 between Column Lines Ad-B and D-Db shall be supported from channels furnished under "Structural Steel Contract" on eight feet two and one-half inch centers between the beams of framing for Suburban Bus Level and Suburban Concourse respectively.

Malleable iron concrete inserts similar and equal to Grinnel Company, Inc., Type CB, Universal Figure 282 insert may be used for hanger rods supporting a gross load of not more than 300 pounds including weight of water if pipe was filled.

The piping in the Bus Parking Area shall be supported from girders, beams and columns of structure and from additional structural members installed for support of piping, as shown in detail on the Contract Drawings.

The pipe support materials and equipment specified herein and/or called for on the Contract Drawings is solely for the purpose of establishing a minimum requirement, and any materials similar and equal to same manufactured by the Central Iron Manufacturing Co., Grinnell Company, Fee and Mason or Carpenter and Paterson, Inc. will be acceptable.

Grouting

The Contract Drawings indicate concrete foundations for certain equipment to be furnished and installed under the provisions of this numbered clause. The Contractor shall set the equipment on steel shims on said concrete foundations and then grout them into place. There shall be a minimum thickness of one inch of grout between the bases and the tops of the concrete foundations or the floors, as the case may be.

Grout shall be an approved mixture of one part by volume of Portland cement and two parts by volume of sand, mixed with water. The steel shims shall remain in place after the grouting of the bases. The surfaces of the grout shall be troweled to a smooth, even finish.

116. PLUMBING FIXTURES.

The plumbing fixtures and trim designated hereinafter have been selected from the catalogs of the American Radiator and Standard Sanitary Corporation except as otherwise noted and bear their catalog numbers. Fixtures and trim which are similar and equal in the opinion of the Engineer, and are of approved design, such as those manufactured by the Eljer Company, The Crane Company, or the Kohler Company will be acceptable. Trim shall be chromium upon nickel plating. Fixture supply and waste piping from fixture key stops and traps to wall roughing piping shall be made of chromium plated brass pipe and with chromium plated cast brass set screw escutcheons. Flush valves to have "Non Hold-Open" feature and capped stops.

Water closets shall be F2495 "Glenco" white vitreous china siphon jet closet with elongated bowl, wall outlet, one and one-half inch top spud, fitted with Sloan No. 310-YW chromium plated "Royal" flush valve with one inch quiet screw-driver straight stop, vacuum breaker, wall and spud escutcheons, nickel silver combination handle pedal; Church No. 9900 White Moltex open front seat with self-sustaining hinge. Fixture shall be supported on J. R. Smith improved combined wall closet fitting with cantilever foot support, complete with gaskets, bolts, chrome plated nuts and washers.

Urinals shall be F6271-1 "Expello" white vitreous china, blow out urinal with flushing rim, outlet connection to be three inches inside, one and one-half inch top spud, fitted with Sloan No. 340 chromium plated "Royal" flush valve with one inch quiet screw-driver straight stop, vacuum breaker, elbow connections, wall and spud escutcheons, nickel silver foot pedal, supported on J. R. Smith No. 6A combination urinal fitting and carrier with cantilever foot support, complete with gasket, bolts, chromium plated nuts and washers.

Lavatories shall be F381 "Buena" white vitreous china, front overflow, anti splash rim, twenty inches by eighteen inches, modified with curtain punched in rear between shell for J. R. Smith No. 12A-1 carrier with cantilever foot support, concealed coated arms, levelling device and chrome plated escutcheons. Slabs shall be modified drilled on right for Watrous M869 chrome plated push down type liquid soap dispenser, and shall be complete with N-2098 Aquaseal compression valve fitting with coupling nuts and spray spout, R2699$\frac{1}{4}$" offset tailpieces, R2607 3/8" wall supplies with loose key stops, escutcheons and reducing couplings, R2532 perforated strainer with 1$\frac{1}{4}$" tailpiece, R7013 1$\frac{1}{4}$" x 1$\frac{1}{2}$" cast brass P-trap and R7034 1$\frac{1}{2}$" brass nipple with cast set screw escutcheon, Watrous M-869 chrome plated push down type liquid soap dispenser.

Service sinks shall be F7655-2 "Ardmore" vitreous china, twenty-four inches by twenty-two inches, with wall hanger, R4551-2 strainer, P7798-1 enameled inside adjustable trap standard with supporting flange and cleanout plug, outlet threaded three inches inside, fitted with R-5022 Re-Nu exposed type faucet, spout with bucket hook and top brace, R5214 chromium plated brass metal rim guards for front and two sides.

Showers shall be 32" x 32" terrazzo receptor composed of black and white marble chips and white porcelain cement cast integral with 2" brass drain and double thick 18 gauge bonderized galvanized steel rim similar or equal to "Weisway" Cat. No. 32 ST as manufactured by Henry Weis Mfg. Co., Inc. Trim shall consist of T-10-C Leonard thermostatic valve with built-in combination and check valve with volume control, R-1350 bent shower arm, N-1303 Heritage ball joint shower head with volume regulator, MODIFIED vandal resistant, R-1870 38" chrome plated recess curtain rod, 1" O.D.

Electric water coolers shall be wall mounted with stainless steel top, 18-8 finish, 20 gauge bonderized steel 14 x18 x 27" cabinet, 2 stream mound building type with guard, self closing hand operated stop with automatic stream regulator, $1\frac{1}{2}$ x $1\frac{1}{4}$" P trap with cleanout, 3/8" I.P.S. connection, copper cooling coil and storage tank, insulated evaporator, pre-cooler, expansion valve, temperature control, adjustable; hermetically sealed compressor motor unit, built-in overload protector with capacitor; 1/5 H.P. 115 volt; 50/60 cycle single phase Freon #12 refrigerant. Unit to deliver 17.6 G.P.H. at an entering water temperature of 70° F. and a room temperature of 70° F., color of cabinet in each case to be selected by the engineer, similar and equal to Model No. WM-11-A as manufactured by Halsey W. Taylor Co.

The shower for the P. A. Resident Engineers office shall be a Weisway "Budgeteer" 36" x 36" x 78" shower unit, Catalog No. 36-B complete, as manufactured by Henry Weiss Mfg. Co., Inc. Receptor to be one piece heavy gauge enameling iron sealed in porcelain enamel green on black Foot-Grip No Slip receptor surface, cast brass waste factory installed, with stainless steel strainer. Walls 18 gauge Bonderized galvanized steel, extra smooth, finished white Weisway high temperature baked synthetic enamel both sides, corner assembly members and top frame bonderized galvanized steel finished to match walls. Trimmed with one SF polished chrome plated brass two valve unit with renewable nylon seats, adjustable head and lever handles; cast brass waste with stainless steel strainer for two-inch iron pipe, soap dish, curtain rod, white plastic curtain with chromium plated brass rings.

117. AUTOMATIC CIGARETTE DISPOSAL UNIT.

The automatic cigarette disposal unit, called for and detailed on Drawing Nos. 350 and 366, respectively shall be made of No. 12 U.S. Standard gauge stainless steel, except as otherwise shown on said drawing or specified herein. It shall be of welded seamless construction with joints and crevices eliminated and traces of welding removed. Corners, both horizontal and vertical, shall be coved on a one inch radius with intersections meeting in spherical sections.

The water supply, waste and pressure tube pipe connections shall be of I.P.S. stainless steel pipe welded integrally to the unit. Fittings and strainer shall be of stainless steel.

The entire unit shall have a No. 4 stainless steel finish.

The Contractor shall provide an electric day and night timer and a $1\frac{1}{4}$-inch solenoid valve controlled from a pressure switch, all interlocked as shown on Contract Drawings Nos. 366.

The solenoid valve and other operating equipment located in furred spaces adjacent to the unit shall be accessible through a 24-inch square anodized aluminum access door located in public passage side of space and finished to match treatment in area.

118. FIRE STANDPIPE EQUIPMENT.

Siamese connections shall be "ABC" five inches by three inches by three inches, Fig. No. 163 as manufactured by the Croker Fire Prevention Corporation. They shall be of the concealed flush type with 90° angle or straight type body with clapper valves for piping connections as shown on the Contract Drawings. Siamese connections shall be installed at a height of two feet and not less than 18 inches above finished grade. Siamese shall have brass caps and chains with all exposed parts a satin finish chromium plate over nickel plating finish. The Contractor shall furnish and install a three-quarter inch angle type automatic ball drip for each siamese connection.

Hose racks shall have neither castings nor rivets and shall be provided with a steel covered top and nozzle holder forming parts of the rack cover but shall not consist of springs or clips. Hose racks shall be painted Fire Department enamel red; the racks shall have a two and one-half inch cast brass rack nipple with satin finish chromium plating over nickel plate, with iron pipe thread on one end and City of New York Fire Department thread on the other end for direct attachment to hose valve, and a special arrangement for hose pins so each fold drops freely without jamming or tangling.

Hose shall be one and one-half inch one hundred per cent pure linen, yellow label hose, branded by the manufacturer and bearing the label of the Underwriters Laboratories, Inc. with couplings attached, in lengths not exceeding fifty feet. Expansion ring couplings shall bear the label of the Underwriters Laboratories, Inc. and shall be cast brass with satin finish chromium plating over nickel plate finish having pin lugs and threads the same as those used by the City of New York Fire Department.

Hose nozzles shall be one and one-half inches by fifteen inches by five-eighth inches in size and shall be cast brass with satin finish chromium plate over nickel plate, similar and equal to Fig. No. 24 as manufactured by the Croker Fire Prevention Corporation with threads the same as those specified for couplings and shall be of a type approved by the New York City Bureau of Fire Prevention.

Roof manifold shall be Vertical 5" x 2½" x 2½" x 2½" 3-valve manifold with satin finish chromium plate over nickel plate, similar to "ABC" approved Fig. No. 127 as manufactured by The Croker Fire Prevention Corporation.

Hose valves shall be rough brass chromium plated satin finish, with steel rim painted Fire Department Red and of two and one-half inch angle line pattern and shall be similar and equal to Class A, Fig. 719-A valves as manufactured by Jenkins Bros., Inc.

Capped hose valves at roof manifolds shall be manufactured from rough brass and have chromium plated satin finish, shall be 2½" size and have Fig. 658 cap and chain and shall be similar and equal to Class A, Fig. 715-A valves as manufactured by Jenkins Bros., Inc.

An "ABC" Fig. CS-12 two and one-half by one and one-half inch malleable iron, galvanized spanner wrench with hanging chain shall be provided at each hose rack.

Hose valves in hose cabinets shall be installed at an elevation of five feet, six inches above the finished floor level, except those valves at roof manifolds which shall have valves set at three feet above the sidewalk and roadway level.

Hose reducers shall have 2½" female by 1½" male N.Y.C. Fire Department hose threads, and be of cast brass with satin finish chromium plate over nickel plate, similar and equal to Fig. No. 17 as manufactured by the Croker Fire Prevention Corporation.

Fire standpipe hose cabinets on the Suburban Concourse and Long Haul Level shall be of the sizes shown on the Contract Drawings and shall be "ABC" steel fire hose cabinets similar and equal to Fig. 126 as manufactured by the Croker Fire Prevention Corporation. They shall have boxes of the recess type with door and trim complete with hardware. Cabinets shall be provided with full panel clear polished wire plate glass lettered "Fire Hose and Extinguisher" in red letters at least two and one-half inches in height. The fire hose cabinet shall have a steel recess cabinet with door and trim of anodized aluminum as called for on drawings. Steel parts of the fire cabinet shall be constructed of No. 16 U. S. Standard gauge sheet steel and shall receive one factory prime coat of grey paint.

The fire hose cabinets on the Long Haul Level at the Broadway and Subway entrances, and on the Suburban Concourse at the Fort Washington Avenue entrance shall have solid anodized aluminum doors, the door shall have the words "Fire Hose and Extinguisher" in letters at least $2\frac{1}{2}$" high cut out and backed by a red glass with a light behind. These cabinets, in addition to the knockout provided for the standpipe branch pipe, shall be provided on both sides with knockout for electric conduit to lamp to be provided as required hereinafter for the electrical installation.

The fire hose cabinets on the Suburban Bus Level shall be of the size and arrangement as shown on Contract Drawing 363. They shall be provided with an eight inch hole in the bottom to allow the installation of the three inch fire standpipe branch and its attendant heating cable and frostproofing into the cabinet up to and including the hose valve. In addition the box shall be provided with two one inch knockouts in bottom at right hand side, exact location to be determined later, for electric heating cable power and controls to be furnished and installed as specified in the chapter hereof entitled "Electrical Installation". They shall be provided with anodized aluminum doors with glass as specified hereinbefore for those on the Suburban Concourse and Long Haul Level.

All cabinets shall be provided with a Croker Fire Prevention Corporation Figure No. 31 regulation pick head fire axe with painted handle. Axe supports shall be attached to wall of cabinet.

119. ROOF DRAINS AND FLOOR DRAINS.

The drains hereinafter specified are listed by catalog numbers of the J. A. Zurn Manufacturing Company. Drains which are similar and equal in the opinion of the Engineer and are of approved design, such as those manufactured by the Jay R. Smith Manufacturing Company or Josam Manufacturing Company will be acceptable.

Roof and floor drain locations and sizes shall be as shown on the Contract Drawings.

Roof drains on the upper level of the roof over the Bus Station (Elevation 255.0') shall be Zurn Z-100 Dura-coated cast iron bottom outlet female threaded drain body with removable bayonet-locking mushroom dome strainer; clamping collar with integral gravel guard; corrosion-resistant clamping bolts, of iron pipe sizes as shown on the Contract Drawings

Roof drains on the lower level of the roof over the Bus Station (Elevation 245.0') shall be Zurn Z-115 Dura-coated Cast Iron side outlet female threaded drain body with removable, bayonet-locking mushroom dome strainer; clamping collar with integral gravel guard; corrosion-resistant clamping bolts, of iron pipe sizes as shown on the Contract Drawings.

Roof Drain on the west canopy of the roof over the Bus Station (Elevation 245.0') shall be Zurn Z-100 drain as specified hereinbefore for the Upper Level of the roof over the Bus Station (Elevation 255.0') of iron pipe size as shown on the Contract Drawings.

Roof drain on the east canopy of the roof over the Bus Station (Elevation 245.0') shall be Zurn Z-187 Dura-coated cast iron scupper roof drain having female threaded drain body with removable 45° oblique type combination strainer and clamping collar, corrosion-resistant clamping bolts, of iron pipe size as shown on the Contract Drawing.

Roadway drains for the Suburban Bus Level (Elevation 225.0') at Fort Washington Avenue Bridge, Units No. 1 and 2 and Broadway Bridges and the Long Haul Bus Roadway (Elevation 193.0') shall be Zurn Z-1-541-PA roadway drains, heavy cast steel duracoated body with drainage flange and clamping collar, cast steel duracoated anti-tilt extra heavy tractor type twelve and one-half inches in diameter traffic grate to sustain a wheel load of 10,000 pounds, cast iron duracoated anti-freeze sediment bucket, bottom outlet to caulk four inch iron pipe connection. Bucket to be free standing to eliminate transmission of shock. Drainage flange to measure four and one-half inches from top of drain to flashing flange which shall have weep holes. The clamping collar shall be omitted on the drains for the Fort Washington Avenue Bridge, Broadway Bridge and the Long Haul Bus Roadway.

The Roadway Drains for the Suburban Bus Level (Elevation 225.0') at the Bus Parking Area shall be Zurn Z-1-541-APA roadway drains, heavy cast steel duracoated body with drainage flange and clamping collar, cast steel duracoated anti-tilt extra heavy tractor type, sixteen inch diameter traffic grate to sustain a wheel load of 10,000 pounds, cast iron duracoated anti-freeze sediment bucket, bottom outlet to caulk five and six inch iron pipe connection. Bucket to be free standing to eliminate transmission of shock. Drainage flange to measure four and one-half inches from top of drain to flashing flange which shall have weep holes.

The Floor Drains for the Fan Rooms and the Electrical Room in the Bus Station; and in the Electrical Equipment Room, Electrical Cable Room, Cooling Tower Level and Condenser Water Pump Level shall be Zurn ZN-500 Clear-Flo floor drain with heavy-duty bronze top, 8-3/4" diameter, duracoated cast iron drain body with flashing flangeless clamping collar, bottom outlet for inside caulk.

Floor drains for Mechanical Equipment Room of Bus Station and Boiler Room of Bus Parking Area shall be Zurn Z-520 Easy-Level floor drain with bronze deep flange grate, 9-5/8" diameter top, duracoated cast iron drain body, corrosion resistant leveling screws. Flashing flange with clamping color bottom outlet for inside caulk.

Floor Drains for Toilet Rooms shall be Zurn Z-415 "Triumph" floor drains with dura-coated cast iron body, bottom outlet, flashing flange with damping collar, nickel bronze strainer adjustable for finish floor to be 1½" above flashing flange. Strainer to be type H, 8" square.

Floor Drains for Service Sink Closets shall be Zurn A-415 "Triumph" floor drains same as specified hereinbefore for Toilet Rooms, except the nickel bronze strainer shall be type V, 8" square, hinged.

120. WALL HYDRANTS.

Wall hydrants on domestic cold water system for exterior hose service shall be bronze of the one inch size, loose key handle control and shall be similar and equal to Figure No. Z-1396 as manufactured by the J. A. Zurn Manufacturing Company. Exposed face plate shall have a satin finish chromium plate over nickel plating. Hydrant shall be elevated twenty-four inches to the center line of box above the level of the sidewalk where possible or at center-line elevations as called for on the drawings.

121. FRESH AIR PLATES.

Fresh air plates shall be bronze with concealed pipe expanders and spanner locks, shall be similar and equal to Figure 530 as manufactured by the Jay R. Smith Company and shall have a satin finished, chromium-plate over nickel plating. Center line of plate shall be two feet above finished grade of sidewalk where possible or at center-line elevations as called for on the drawings.

122. PRESSURE GAUGES.

Pressure gauges with valve control shall be installed where shown on the Contract Drawings. The pressure gauges shall have iron case with brass face or rim. The bourdon spring shall be of phosphor bronze. The gauge shall be five and one-half inch diameter. Guages shall be 0# - 100# range.

123. ESCUTCHEONS.

Adjustable escutcheons of approved size and manufacture provided with set bolts to hold them in place shall be installed where exposed pipes pass through floors, ceilings and walls and shall be of galvanized iron. On insulated piping the escutcheons shall be held in place by internal spring tension.

124. VACUUM BREAKERS.

Vacuum breakers shall be similar and equal to Figure No. C7830, bronze breakers as manufactured by the Crane Company and shall be installed exposed. A check valve shall be installed between the vacuum breaker and the connection to the fixture or equipment supplied. Finish to match finish of adjacent equipment.

125. HOSE BIBBS.

Hose bibbs where shown on the Contract Drawings shall be similar and equal to Standard R-4400 and R-4401 faucets, C.P. finish of size as indicated on drawings. The latter shall be installed where protected by vacuum breaker and check valve. Bibbs in large toilet rooms shall be similar to R-4410 plain faucet with loose key and wall escutcheon.

126. ROOF COUPLINGS.

Where vents terminate through roof levels, the Contractor shall provide suitable roof couplings to receive flashings. Roof couplings shall be galvanized couplings similar and equal to Figure 462 as manufactured by the Grabler Manufacturing Company. Vents shall terminate at height of adjacent parapet coping level.

127. VENT TERMINATIONS.

The sanitary vents in the Bus Parking Area shall terminate to the atmosphere as described in the preceding paragraph "Roof Couplings"

The sanitary vents in the Bus Station shall rise in the exterior reinforced cast concrete roof columns to a distance of seventeen feet six inches above the Suburban Bus Roadway level and pass horizontally through the interior face of said columns and terminate thru a 90° elbow turned up vertically beneath the louvered roof. No vents shall pass thru and terminate above the precast concrete roof of the Bus Station.

128. AIR CHAMBERS.

All hot and cold water branches to each fixture shall be provided with an individual air chamber at least twelve inches long and of the same diameter pipe as the branch pipe serving that fixture. In addition, a two feet air chamber shall be provided at the end of each fixture supply header serving a battery of fixtures.

129. NIPPLES.

All close, shoulder or short nipples used on the sanitary and storm drainage, vent, water or fireline systems shall be extra heavy pipe thickness.

130. CLEANOUTS.

The Contractor shall furnish and install cleanouts at the ends of all drains, soils, wastes; in traps and at changes of direction; so that the entire system will be accessible throughout. These cleanouts shall be closed gas tight with heavy cast brass plugs made up with graphite for future easy removal. Cleanouts in cast iron soil pipe shall be provided with a caulking ferrule and a threaded brass plug. Where cleanout extensions occur in finished floor areas, the round brass bodies shall be installed flush with the finished floor surface and shall be similar to Figure 500 Jay R. Smith Cast Bronze Deck Plate Cleanout with scoriated top.

131. PLUGGED AND CAPPED OUTLETS FOR FUTURE CONNECTIONS.

Plugged and capped outlets for future connections to the sanitary drainage and vent piping, where shown on the Contract Drawings, shall be full size of the stack or branch served. Capped branches shall not exceed a developed length of two feet. The plugs shall be brass with raised nut and the caps shall be galvanized standard malleable iron, and both shall be installed with graphite on the threads for their easy removal.

The capped valved outlets for future connections from the domestic cold and hot water headers shall be 2" size for cold water and 1" size for hot water future connections.

132. FLAP VALVES.

The Contractor shall furnish and install brass flap valves at terminations of all indirect wastes and drains where same spill over sinks, drains or into Expressway drainage pits. Flap valves shall be similar to Figure 940 as manufactured by Jay R. Smith Manufacturing Company.

133. DOMESTIC HOT WATER HEATERS. (WINTER SEASON)

The Contractor shall furnish and install two Patterson-Kelley or approved equal Copper lined hot water service and storage heaters, size 36" diameter by 144" long, having an actual storage capacity of 608 gallons each and a heating capacity sufficient to raise the temperature of 1,200 gallons of water per hour from 40° F to 140° F. when supplied with 100 gpm of boiler water entering at 200° and leaving at 180° F. temperature.

Thickness of material and construction to be in accordance with the A.S.M.E. Code and the manufacturer is to furnish a test and inspection certificate from the Hartford Steam Boiler Inspection and Insurance Co., or similar approved company, for 125# WP in shell, 125# WP in tubes. All seams on inside of steel shell to be protected by a strip of copper spot welded over same, to prevent any abrasion of the inner copper shell or lining. All welding is to be done in accordance with ASME Code.

The inner copper shell or lining to be of copper weighing not less than 3# per sq. ft. All seams in this inner copper shell of lining are to be welded by the carbon arc or Heliarc process with pure copper or Everdur welding rod.

Manhole to be of the elliptical type, 11" x 15". The copper lining is to be flared over the inner face of the steel reinforcing ring, the copper to be welded, continuously around the edge of same. Manhole plate is to be of heavy Everdur.

A neck type nozzle is to be provided on the head opposite the manhole head to contain the heating element. This nozzle is also to be copper lined with a separate sheet of copper extending through same and welded to the steel at the outer edge and to the lining of the head at the inner end. All screwed pipe connections on the shell are to be reinforced by extra heavy Everdur couplings. These Everdur couplings are to be welded inside and outside with Everdur rod to the steel shell and the copper lining is to be welded to the bottom of each coupling.

Where flanged connections are used, a heavy steel nozzle drilled in accordance with manufacturer's standard is to be welded to the outside of the steel shell. The copper lining is to be drawn through the neck to the outside edge of the flange and welded continuously around the edge of same. Steel flange to be counterbored to receive a metal layer of Everdur copper lining to be welded to this metal layer.

The tube sheet is to be of heavy forged steel plate lined on the side facing the water chamber with sheet copper 1/16" thick. This lining is to be spun into each tube hole and the copper tubes are to be expanded over same.

The heating element is to consist of a nest of U shaped seamless drawn copper tubes, both ends expanded into the tube sheet as described above. Heater is to contain not less than 50 sq. ft. of seamless drawn copper tubing $1\frac{1}{4}$" o.d. #16 BWG.

The tubes are to be supported at the overhang by means of a baffle type copper tube support, which is to be held in place by means of an Everdur cross bar extending across the face of the tube support baffle and to within an inch of the shell on both sides. Lugs of suitable size, made of Everdur, are to be welded to the shell, properly located to secure an exact alignment of the tubing and the tube support cross bar is to be bolted to these lugs. All bolts used on the inside of the heater are to be of Everdur and are to be provided with Everdur nuts and lock nuts.

Each sheet of copper lining to be welded to the steel shell, for support. A separate expansion joint must be furnished each 12" of the length of copper, the expansion joint to be the full circumference of the shell.

Before installing lining the shell must be coated with bitumastic cement to eliminate galvanic corrosion between the copper lining and steel shell.

The heater is to be furnished with two $1\frac{1}{2}$" approved vacuum breakers of the type manufactured exclusively for copper lined heaters.

Each heater is to be furnished with the necessary tappings for connections as follows: 1-4" cold water in, 1-4" hot water out, 1-2" cold water out and 1-2" hot water in for summer heater connections, 1-$1\frac{1}{2}$" mud blow, 2-$1\frac{1}{2}$" for relief valve and 2-shell vacuum breakers, 1-3/4" for thermometer, 1-$1\frac{1}{4}$" for winter temperature regulator, 1-$1\frac{1}{4}$" for summer temperature regulator, plus outlets for coil vacuum breaker, and air vent.

Heater is to be set on steel cradles furnished by manufacturer.

Hot Water Heater Support

The hot water heater support shall be of structural steel members bolted together and welded all as shown on Standard Drawing No. 322.075.

134. DOMESTIC HOT WATER HEATERS. (SUMMER SEASON)

The Contractor shall furnish and install one (1) hot water supply unit #20G50 as manufactured by the Viking Superior Corp; or approved equal, capable of delivering 2000 gallons per hour of hot water at 100° F temperature rise. Fuel, natural gas with a heating value of 1040 BTU per cubic foot. Unit to be provided complete with steam trim, a two stage gas burner, operating and limit controls, safety controls including approved manual shut off valve, gas pressure regulator electrically operated, automatic gas valve, and draft failure switch with barometric draft control. Unit to be provided with McDonald Miller #150 pump control and low water cut off and 101 electric water valve McDonald Miller or approved equal, type C7005A flame rectifier, RA 890B or E protectorelay and mounting base for 100% safety shut-off, and electric ignition, one type L4006A immersion aquastat and one type P404A pressure control, steam safety valve and air vent valve. Electric equipment to be for 115 volts AC power.

In addition to the above the Contractor shall furnish and install the following attendent equipment: Two Bell and Gossett pumps #1522 or 1531 with high temperature seal, $1\frac{1}{2}$" discharge size, 1/2 H.P. 3 phase 440 V motor with 40 foot head or Pdb-37 for 30 foot head with a 3/4 H.P. motor, pumps to be all bronze, also an aquastat L4006 for the pump motor will be needed to control the hot water tank. The inside of the base should be lined with transite or mill board asbestos.

An L. J. Wing Mfg. Co. induced draft fan size 14D - 1/4 C for 120 Volt single phase A.C. with Field double-acting damper, pre-purge and draft switch, magnetic starter with hand-off automatic selector switch in cover, and vibration eliminators.

The Contractor shall submit, for approval of the Fire Insurance Rating Organization, details and diagrams of gas piping to the burner combustion controls and wiring for the Summer Season Domestic Hot Water Heaters.

135. HOT WATER CIRCULATING PUMPS.

Hot water circulating pumps for Building Lopp shall be similar and equal to Chicago Pump Company Type FCP vertical split case bronze fitted centrifugal pumps. Each pump to have a capacity of 20 GPM against a TDH of 43 feet. Each pump shall be direct connected by a flexible coupling and mounted on a cast iron base to a 3/4 HP 480 volt, 3 phase, 60 cycle, 1750 R.P.M. motor. Electrical controls to be furnished under "Electrical Section of this Contract".

136. THERMOMETERS.

There shall be furnished and installed in each of the two domestic hot water storage heaters a twelve inch scale aluminum case, 135 degree reclined angle type, red reading glass thermometer with 8" x 2" extension neck separable socket, three-quarter inch standard iron pipe size connection. Range shall be 30 to 240 degrees F, similar and equal to Fig. No. 58233 as manufactured by Moeller Instrument Co.

There shall be furnished and installed in the hot water circulation pipe on the suction side of circulation pumps a twelve inch scale aluminum case, red reading glass thermometer with 3-1/2" stem with separable sockets three-quarter inch standard iron pipe size connection of straight stem (Fig. No. 17203) or regular angle form (Fig. No. 27203) as manufactured by Moeller Instrument Co.

There shall be furnished and installed in the cold water side and the hot water side of the hot water generator circulation loop between the gas fired hot water generator and storage heaters a twelve inch scale aluminum case, red reading glass thermometer with 3-1/2" stem with separable socket, three quarter inch standard iron pipe size connection of straight stem, regular, reclined or inclined angle as may be required.

There shall be furnished and installed in each of the two hot water circulation loops in the Bus Station at their point of junction in Fan Room No. [illegible] a twelve inch scale aluminum case, red reading glass thermometer with 3-1/2" stem with separable socket, three quarter inch standard iron pipe size connection of angle required and subject to approval.

137. PRESSURE RELIEF VALVE.

The Contractor shall furnish and install an approved pressure relief valve on each of the domestic hot water storage heaters, two on the gas [illegible] fired domestic hot water generator (one for boiler water and one for domestic hot water). They shall be of manufacture [illegible] and pressure settings as recommended by the manufacturer of the hot water storage heaters and gas fired hot water generators.

138. WATER METERS.

Water meters shall be of size and type as shown on Contract Drawings and shall be similar to those manufactured by the Neptune Meter Company, Hersey Manufacturing Company or the Pittsburg Meter Company. Meter assembly shall be installed as shown on Contract and Standard Drawings.

The domestic cold water service meters shall be six inch size of the "Trident" Compound Type similar to those manufactured by the Neptune Meter Co. They shall be preceded by a six inch fish trap or strainer with a cast iron body and a removable brass, bronze or tinned copper basket, similar to "Trident" sediment trap as manufactured by the Neptune Meter Co.

Water meter for the fire standpipe system shall be 6" size of the "Protectus" type as manufactured by the Neptune Meter Company. Meter assembly shall be installed as shown on Standard Drawing.

Water meter for the sprinkler system shall be 6" size and of the type specified hereinbefore for the fire standpipe system.

Meters shall be installed in accordance with the regulations of the New York City Department of Water Supply, Gas and Electricity, which would be applicable if the Authority were a private corporation.

139. AIR RELEASE VALVES.

Automatic air vent valves for the hot water piping shall be ball float type valve similar and equal to V. D. Anderson Company valve No. 171. Discharge piping from valve shall be piped to a floor drain in the nearest fan or equipment room, service sink, etc. as shown on Contract Drawings. [illegible] socket of a tee [illegible] vertical position.

140. SOAP SYSTEM.

Concealed piping shall be Schedule 40 black steel pipe conforming to Standard Specifications for Black and Hot-Dipped Zinc Coated Welded and Seamless Steel Pipe for Ordinary Uses (A.S.T.M. Designation: A120-46) of the American Society for Testing Materials, with black standard malleable iron screw fittings.

Exposed piping shall be polished chrome plated finish.

Soap dispensers shall be Watrous M869 chrome plated push down type liquid soap dispensers.

Soap tanks shall be Watrous Figure M-851-852-SS, [illegible] stainless steel tanks polished to a bright [illegible] finish. The Contractor shall furnish and install a shut-off cock at each tank.

Soap tanks shall be one gallon size for two and one-half to three lavatories, and five gallon size for four to seven lavatories.

141. GAS HOT WATER HEATER.

The 45 gallon gas domestic hot water heater for the P. A. Resident Engineer's field office shall be similar and equal to Permaglass Automatic Gas Water Heater Model PG-45 as manufactured by the A. D. Smith Corporation. Heater shall be of the vertical round type, 45 gallon storage capacity, equipped with gas pressure regulator and flue back draft diverter. Burner shall be suitable for natural gas as supplied by the Consolidated Edison Company of New York, Inc.

142. GAS BOOSTERS.

Gas boosters shall be similar and equal to The Spencer Turbine Company's Model LOFWE gas booster rated 225 CFM gas with specific gravity of .6, at a differential boost of 24 oz., equipped with a 3 H.P. 220/440 volt, 3 phase, 60 cycle, 3500 RPM motor including across-the line starter with overload and low voltage protection.

143. GAS METER COPS.

Gas meter cops (Combination back pressure and anti-suction valves) shall be similar and equal to Norwalk Valve Division of Eclipse Fuel Engineering Company Catalog No. 4060 F 6" I.P.S. meter cop with flanged ends.

144. CELLAR DRAINER.

The cellar drainer located in the Electrical Equipment Room of the Bus Station shall be similar and equal to Penberthy Model 1M electric sump pump with 1/3 H.P. motor for 120 volt, single phase, 60 cycle A. C. for solid conduit connection. Pump to be copper and bronze construction throughout, tobin bronze impeller shaft, heavy copper float, mercury switch and motor overload protection.

145. INVERTED U COVERS.

All horizontal piping in the floor fill shall be protected by No. 20 U. S. Standard gauge sheet metal inverted U-covers nailed to the slab. Piping not required to be insulated shall be covered with 1/2-inch fibre glass insulation in addition to the inverted U-covers when in the floor fill. U-covers shall be of sufficient size to cover the insulation.

146. MONEL METAL TROUGHS.

Monel metal troughs for the structural expansion dams shall be 16 gauge Nickel-Copper Alloy (roofing temper) conforming as to metal content to the requirements of the specifications for Nickel-Copper Alloy Plate Sheet and Strip (A.S.T.M. Designation: B-127) of the American Society for Testing Materials.

All sectional joints to be lapped 2" and welded watertight on the inside and outside of troughs, ends of troughs to be closed watertight by welding, drainpipe connections to be through iron pipe size monel metal pipe couplings welded to troughs on the inside and the outside.

The troughs for the Fort Washington Avenue Bridge shown on Contract Drawing No. 354 shall be constructed in approximately 18-19 foot sections to provide ease of installation and removal for maintenance, each section closed watertight at the ends to form individual troughs and each provided with 4" I.P.S. outlets on low end, ends between troughs to be lapped or fitted with caps of monel metal turned up at edges to prevent water drippage. Troughs to be set on angle iron brackets attached to the structure on eight foot centers and to pitch from building centerline to building line. Troughs to be 6" wide by 11" deep and to slope with the roadway.

The troughs for the top Broadway Bridges shown on Contract Drawing No. 357, shall each be 6" wide by 9" deep, fabricated in sections of length determined by the Contractor and each installed on the job as continuous troughs, sloped toward the drain outlets, supported from angle iron bracket attached to the structure on five foot centers.

Troughs shall be stiffened longitudinally by the use of 1" x 3/16" monel metal flats run continuous on inside top edges spot welded to side of troughs on one foot centers, braced laterally on five foot centers by 1/8" x 1" monel metal flats placed 2/3 distance up from bottom of trough and welded to the sides.

The flashings extending from both sides of the expansion dams down into the troughs to a distance two inches below the tops of troughs shall be 16 gauge monel metal. They shall be held to the sides of the expansion dams by the use of 1/4" x 1" monel metal flats continuously welded to the flashings and drilled for 3/8" stainless steel bolts tapped in to the expansion dam angles on nine inch centers, or by drilling the expansion dam angles on said centers and welding 3/8" stainless steel nuts on the far side of angles to receive the 3/8" stainless steel bolts. The monel metal flashing shall be made watertight to the expansion dam angles by a 1/8" x 1" continuous neoprene gasket placed between them.

147. INSULATION.

All cold water piping throughout shall be covered with 1/2" thick molded sectional 7-1/4 pound density Fiberglas Low Pressure Pipe Insulation with an integral white fire retardant vapor barrier jacket. Vapor seal the longitudinal and circumferential joints with the sealing strip supplied, adhered with Benjamin Fosters 81-99 (Saftee Ductfas), and secured with three aluminum bands per section (applied in the center of the section, and on each edge of the circumferential sealing strip).

All cold water fittings, valves and flanges shall be insulated with 1/2" thick molded or mitered fittings applied with staples (two on the long radius, and one on the short). The vapor barrier shall consist of a flood coat of Benjamin Foster 30-36, with 6 ounce canvas laid in while wet. A second flood coat of Benjamin Foster 30-36 shall be applied over the canvas. The adhering material, canvas and finish coat shall overlap the adjacent vapor barrier jacket by at least two inches. Benjamin Foster 30-36 shall be applied at manufactured consistency.

All hot water and hot water circulation piping shall be covered with 1/2" thick molded sectional 7-1/4" pound density Fiberglas Low Pressure Pipe Insulation with an integral white fire retardant vapor barrier jacket stapled on maximum of nine inch centers and secured with three aluminum bands per section.

All hot water and hot water circulating fittings, valves and flanges shall be insulated with mitered or molded fittings applied with staples, and finished with Benjamin Foster 30-36 and 6 ounce canvas. On piping smaller than 4" I.P.S., one-half inch cement may be used. There shall be pasted a 6 ounce canvas finish applied with Banjamin Foster 30-36 over cement on all exposed lines. All canvas shall overlap the adjacent covering by two inches.

All horizontal storm drainage piping, including piping from roadway drains, below Elevation 225.0' shall be covered as specified for cold water piping. Vertical piping below Long Haul Level shall be covered.

All horizontal storm drainage and roadway drainage fittings for above piping including the first and last fittings in their entirety, shall be covered like cold water fittings, including all vertical fittings below Long Haul Level.

All horizontal and vertical sanitary drainage piping below the Long Haul Level shall be covered as specified for cold water piping. No frost proofing required.

All horizontal and vertical sanitary drainage fittings for above piping below-the-Long Haul Level including the first and last fittings in their entirety, shall be covered like cold water fittings. No frost proofing required.

All horizontal clear water drain piping throughout the Bus Station only shall be covered as specified for cold water piping.

All drain pipe fittings for horizontal clear water drainage piping throughout the Bus Station only shall be covered as specified for cold water fittings, including the first and last fittings.

All horizontal branch waste piping for electric water coolers, from point of fixture roughing outlet to intersection with main soil or waste stack shall be covered as specified for cold water piping.

All horizontal branch waste pipe fittings for electric water coolers, from point of fixture roughing outlet to intersection with main soil or waste stack shall be covered as specified for cold water fittings, including the first and last fittings.

All exposed insulated piping shall be covered with "Al-Cor-Jac", or equal, aluminum sheet covering and impregnated kraft paper with two inch lapped joints and banded with aluminum bands. Thickness of aluminum jacket shall be .006 inches.

The gas fired domestic hot water heater shall be covered with one and one-half inch, eighty five percent magnesia block lagging, securely wired on with No. 14 U. S. wire gauge soft annealed wire. Over the magnesia blocks stretch two inch hexagonal mesh galvanized wire No. 19 gauge and cover with two coats of asbestos cement to one-half inch thickness. The second coat shall be one part Portland cement and two parts asbestos cement troweled down smooth and hard.

Hot water storage heaters shall be covered with 1" Fiberglass PF-617 (9 pound cubic foot density) board, bringing all joints and edges into firm contact, securely wired on. Over the insulation apply 1" hexagonal mesh wire netting. Two 1/2" coats of asbestos cement shall be applied, with the second coat being applied after twenty-four hours, and consisting of one part Portland cement and two parts asbestos cement troweled down smooth and hard.

Water meters and fish traps or strainers shall be insulated with 2" Aerocor Type PF-338 ($1\frac{1}{2}$ pound density) Fiberglas blanket, compressed one-half its thickness to give 1" thickness 3 pound density, and wired on. Finish with asbestos cloth sewed neatly.

Frostproofing Insulation in Freezing Areas

Frostproofing insulation shall be installed in areas subject to cold weather conditions in the following locations: below Long Haul Bus Level (Expressway Ceiling), in floor fill of Suburban Bus Level and above, across North Broadway Bridge, where else so noted on drawings, and all areas subject to freezing temperatures.

Individual cold water piping, fire standpipe, sprinkler service, gas piping, storm and sanitary house traps subject to freezing shall be protected from freezing by means of electric heating cable, two layers of Johns-Manville Asbestos Roll Fire Felt, each layer one-quarter inch thick followed with two one-inch thick layers of 7.1/4 pound density moulded sectional Fiberglas dual-temp pipe insulation with a white fire retardant jacket. Vapor seal the longitudinal and circumferential joints with the sealing strip supplied, adhered with Benjamin Fosters 81-99 (Saftee Ductfas), and secured with the aluminum bands per section (applied in the center of the section, and on each edge of the circumferential sealing strip). All longitudinal and circumferential joints shall be staggered.

Exposed cold water piping, fire standpipe, sprinkler service, gas piping, storm and sanitary house traps shall, in addition to insulation specified heretobefore, be covered with "Al-Cor-Jac" aluminum sheet covering and impregnated kraft paper with two-inch lapped joints and banded with aluminum bands. On vertical runs the Al-Cor-Jac shall be shingle lapped so water will not run into joints and horizontal joints shall have the lap at five or seven o'clock position. Exposed fittings and valves shall be formed of mitered segments of pipe insulation wired in place and smoothed off, or premolded fittings of the same thickness as the adjacent pipe insulation. The vapor barrier shall consist of a flood coat of Benjamin Foster 30-36 and 6 ounce canvas laid in while wet. A second flood coat of Benjamin Foster 30-36 shall be applied over the canvas. The adhering material, canvas and finish coat shall overlap the adjacent vapor barrier jacket by at least two inches. The Benjamin Foster 30-36 shall be applied at manufacturing consistency.

Cold water, hot water and hot water circulation shall each be individually insulated as hereinbefore specified. In addition, the insulated lines shall be wrapped together in a common nested covering consisting of two one inch thick layers of 2" Aerocor Type 338 Fiberglas blanket with reinforced foil faced flame resistant kraft, each layer compressed to one-half its thickness and wired on with copper clad wire. The finished frostproofing insulation shall be 2" thick, 3 pound density. Over the outer layer of insulation shall be applied "Al-Cor'Jac", or equal, aluminum sheet covering and impregnated kraft paper with two inch lapped joints and banded with aluminum bands. Where fire standpipe is included in the bundle it shall have no other insulation but the frostproofing insulation.

Sanitary drainage and storm drainage piping shall be insulated with two one inch thick layers of 7-1/4 pound density molded Fiberglas dual temp pipe insulation with a white fire retardant jacket. Joints shall be sealed as specified for cold water, and all longitudinal and circumferential joints shall be staggered. Over the outer layer shall be applied "Al-Cor-Jac", or equal, aluminum sheet covering and impregnated kraft paper with two inch lapped joints and banded with aluminum bands.

All storm and sanitary drainage pipe and fittings in the Bus Parking Area shall be frost proofed except those portions located in the Boiler Room and Electrical Switchgear Room.

148.. TESTS.

Upon completion of the several portions of the drainage systems, water systems, gas and fire line systems, and any other piping installed by the Contractor, he shall notify the Engineer of the readiness for inspection and tests. The following tests shall be made:

(a) A water test shall be applied to every part of the entire sanitary drainage, venting and storm water drainage systems. All openings in the piping shall be tightly closed and the entire system shall be filled with water to the point of overflow above the roof.

(b) Water supply piping shall be tested when completely roughed and before fixtures are installed by capping or plugging all outlets and applying a hydrostatic pressure of 125 pounds per square inch and sustained for a period of one hour.

(c) All gas piping shall be tested upon completion with compressed air at a pressure equal to a six inch column of mercury which shall be maintained for at least ten minutes. A mercury gauge shall be used.

(d) All fire standpipe shall be tested to a hydrostatic pressure of three hundred pounds per square inch as required by the New York City Bureau of Fire Prevention requirements. Said tests to meet Engineer's approval and any expense incurred therewith shall be absorbed by the Contractor.

(e) Upon completion of fixture installation, the fixtures, drains and house traps shall be filled with water and a thick penetrating smoke, produced by one or more approved smoke machines, shall be introduced into the entire systems. As the smoke appears at the stack openings, such openings shall be tightly closed and a pressure equivalent to a one inch water column shall be applied.

(f) After the underground cast iron water service piping for Domestic Water, Fire Standpipe and Sprinkler Systems, respectively has been installed, each service shall be individually tested as hereinbefore specified in the clause herewith entitled "Cast Iron Water Service Pipe".

(g) Leaks or other evidence of unsatisfactory workmanship shall be corrected and the systems re-tested until satisfactory to the Engineer.

(h) Tests shall be performed before backfilling, painting or insulation is applied and with the pipe joints exposed to view. Leaks or other evidence of unsatisfactory materials or workmanship shall be corrected immediately, and at the Contractor's expense, and the systems re-tested until satisfactory to the Engineer.

The above tests shall be performed without separate or additional compensation therefor.

149. CATALOG CUTS.

The Contractor shall furnish to the Engineer for approval catalog cuts or similar reproductions prepared in accordance with the clause hereof entitled "Working Drawings and Catalog Cuts" for the following items:

1. Plumbing Fixtures
2. Water Meters
3. Hot Water Heaters
4. Thermometers
5. Floor and Roof Drains
6. Valves
8. Wall Hydrants
9. Hot Water Circulating Pumps
10. Fire Standpipe Equipment
11. Fresh Air Inlet Plates
12. Cleanout Deck Plates
13. Pressure Gauges
14. Pressure Relief Valve
15. Vacuum Breakers
16. Hot Water Heater Support
17. Hot Water Storage Heaters
18. Gas Fired Hot Water Generator.
19. Monel Metal Troughs
20. Flexible Pipe Couplings
21. Gas Boosters
22. Gas Meter Cops
23. Monel Metal Troughs
24. Insulation & Frostproofing (Samples)
25. Hot Water Generator Circulators
26. Indused Draft Fan
27. Cigarette Disposal Unit
28. Cellar Drainer

ELECTRICAL INSTALLATION

150. GENERAL DESCRIPTION OF THE ELECTRICAL INSTALLATION

The electrical installation consists generally of the furnishing and installation of the following electrical systems and equipment:

a. Service Entrance Equipment
b. Distribution Systems
c. Interior and Exterior Lighting
d. Telephone System
e. Fire and Sprinkler Alarm System
f. Public Address and Paging System
g. Exposed Pipe Heating System
h. Watch Engineer & Indicating System.

The foregoing is intended merely as a general description of the various electrical systems and does not outline the Work required by the Specifications and Contract Drawings. Accordingly, the provisions of this clause shall be construed in aid of and supplemental to, but in no case limiting, impairing or decreasing, the requirements elsewhere set forth with respect to the Work to be performed.

151. GENERAL REQUIREMENTS OF THE ELECTRICAL INSTALLATION.

Codes

All Work shall be systematically, carefully and neatly performed and shall conform, as a minimum, to the Standards of the National Board of Fire Underwriters as embodied in the National Electrical Code and to such other standards as may be hereinafter specified.

Electrical materials and equipment shall be so designed and manufactured that they comply with the applicable Standards of the Underwriters Laboratories, Inc., and materials commonly bearing Underwriters' labels shall be so labeled.

Attention is called to the fact that in some of the manholes, chambers or other enclosures, in which Work is to be performed under this Contract, there are energized high and low voltage cables.

The Contractor shall test each manhole for flammable, toxic or otherwise harmful gases or vapors before permitting any personnel to enter the manhole. If such gases or vapors are detected, the Contractor shall ventilate the manhole by blowing in fresh air and shall continue to do so while men are in the manhole. The testing for and removal of harmful gases or vapors shall be performed by the Contractor without separate or additional compensation therefor.

Manholes in which Work is to be performed under this Contract may be filled with water. The Contractor shall remove any water encountered in new and existing manholes, and shall keep the floors of such manholes dry while his men are working in them. Should the Contractor be required to perform work in the manhole at any time subsequent to his first operation therein, he shall be required to dewater the manhole and maintain such manhole in a dry condition without separate or additional compensation therefor.

The Contractor shall prepare and submit to the Engineer for approval, detailed shop drawings, catalog cuts and wiring diagrams in accordance with the requirements of the clause hereof entitled "Working Drawings and Catalog Cuts".

Shop drawings will be required for the following:

1. Service Entrance Equipment
2. Switchgear
3. Transformers
4. Panelboards
5. Contactors
6. Motor Controllers
7. Lighting Fixtures
8. Safety Switches
9. Public Address System Components
10. Indication Panels
11. Pull Boxes Larger than 18 inches
12. Cast Boxes
13. Floodlight & Lamp Standards & Details
14. Bus Duct

Catalog cuts will be required for the following:

1. Time Switches
2. Control Devices
3. Metering Equipment
4. Current Transformer Cabinets
5. Pipe Heating Thermostats

152. RIGID METALLIC CONDUIT.

Unless otherwise designated on the Contract Drawings, all conduit shall be rigid metallic conduit.

The minimum size of rigid metallic conduit shall be three-quarter inch, except that concealed home runs to panelboards shall be not smaller than one inch. Conduit which is unmarked as to size shall be three-quarter inch. Unless otherwise shown on the Contract Drawings, all rigid metallic conduit shall be Class A.

Class A Conduit

Class A conduit, including couplings, nipples, elbows and bends, shall be hot-dipped galvanized steel conduit conforming to the Standard for Rigid Metallic Conduit of the Underwriters' Laboratories, Inc. The male threads of conduit and the above fittings unless cut at the construction site shall be hot-dipped galvanized in such manner as to keep threads clear of excess zinc. Female threads may be electrogalvanized instead of hot-dipped.

Conduit accessories such as lock-nuts, bushings and connectors for hot-dipped galvanized conduit shall be zinc plated.

Installation

Rigid metallic conduit shall be installed in true alignment and sloped for drainage wherever possible. They shall be reamed free from burrs and shall be carefully cleaned after installed. Inside surfaces shall be free from all imperfections likely to damage conductors during installation. Male threads of steel or silicon bronze conduit shall be amply coated with red lead and screwed tight. Male threads of aluminum conduit shall be coated with zinc-dust-petroleum jelly lubricant. Where required, conduit unions shall be provided. Running threads will not be permitted. Each conduit entering a metal box, except a threaded cast box, shall be securely fastened with two locknuts and a bushing. Except as otherwise specified, bushing one inch and smaller shall be Type A insulated bushings; bushings one and one-quarter inches and larger shall be Type B insulated bushings, both as manufactured by the OZ Electrical Manufacturing Company. All bushings, except grounding bushings, for Class B (black enameled) conduit shall be Type A. bushings. Grounding bushings where required shall be Type BL Bushings of the same manufacture. Bushing caps shall remain in place until just before conductors are installed. Equivalent bushings manufactured by the Thomas & Betts Company,

the Appleton Electric Company or the Union Insulating Company will be acceptable. Continuous ground shall be secured by bonding where required. All free ends of conduits not containing conductors shall be threaded and provided with plumber's caps or with couplings and plugs where flush terminations are desired.

Exposed rigid metallic conduits shall be installed parallel with or at right angles to the lines of the building, except as otherwise shown, and supported in an approved manner. Concealed rigid metallic conduits shall be installed in as direct a line as possible and shall be rigidly supported by approved methods and materials.

Openings for rigid metallic conduits through roofs and external walls shall be sealed and made watertight in an approved manner or as shown on the Contract Drawings. Metallic flashings shall be so installed as to prevent contact with the conduit. The material for and the installation of base flashings for conduits through roofs shall conform to the requirements of the clause hereof entitled "Sheet Metal".

Expansion fittings shall be installed in all rigid metallic conduits which cross expansion joints or are firmly attached to independent structures. Except as otherwise specified, expansion fittings for exposed conduits shall be Type AX with Type AJ bonding jumper, both as manufactured by the OZ Electrical Manufacturing Company. Conduit runs subject to motion at right angles to the direction of the run, and all concealed conduits, shall be equipped with OZ Type EXDS expansion fittings, except that they shall have a polychloroprene, instead of a rubber jacket. Equivalent expansion fittings of the Appleton Electric Company will be acceptable. Conduit runs subject to motion in excess of the capacities of the fittings specified above shall be provided with other approved means of compensating for the motion. Unless otherwise specified or required, expansion fittings shall be installed at the midpoint of their extension.

Class B Conduit

Class B conduit shall be black enameled steel conduit conforming to the requirements of the Standard for Rigid Metallic Conduit of the Underwriters' Laboratories, Inc. Fittings and accessories for Class B conduit may be black enameled.

Class C Conduit

Class C conduit shall be aluminum conduit conforming to the requirements of the Standard for Rigid Metallic Conduit of the Underwriters' Laboratories, Inc. Fittings and accessories for Class C conduit shall be made of aluminum except that stainless steel may be used with the approval of the Engineer.

Class D Conduit

Class D conduit shall be silicon bronze conduit conforming to the requirements of the Standard for Rigid Metallic Conduti of the Underwriters' Laboratories, Inc. Fittings and accessories for Class D conduit shall be made of silicon bronze.

153. ELECTRICAL METALLIC TUBING.

Electrical metallic tubing including nipples, elbows and bends, shall be electro-galvanized tubing conforming to the requirements of the Standard for Electrical Metallic Tubing of the Underwriters' Laboratories, Inc.

The minimum size of electrical metallic tubing shall be three-quarter inch, except that concealed home runs to panelboards shall be not smaller than one inch. Tubing which is unmarked as to size shall be three-quarter inch.

Installation

Electrical metallic tubing shall be installed in true alignment and sloped for drainage wherever possible. It shall be carefully cleaned after installation. Inside surfaces shall be free from all imperfections likely to damage conductors during installation. Couplings and connectors for electrical metallic tubing shall be of the compression type similar and equal to those manufactured by the Appleton Electric Company. Equivalent couplings and connectors manufactured by the Thomas and Betts Company or the Tomic Sales and Engineering Company will be acceptable. Ends of tubing shall be provided with connectors and bushings. Except as otherwise specified, bushings one inch and smaller shall be Type A insulated bushings and bushings one and one-quarter inches and larger shall be Type B insulated Bushings, both as manufactured by the OZ Electrical Manufacturing Company. Grounding bushings, where required, shall be Type BL bushings of the same manufacture. Bushing caps shall remain in place until just before conductors are installed. Equivalent bushings manufactured by the Thomas and Betts Company, the Appleton Electric Company or the Union Insulating Company will be acceptable. Continuous ground shall be obtained by bonding where required. All free ends of tubing not containing conductors shall be provided with connectors and plumber's caps, or with couplings and plugs where flush terminations are desired.

Exposed electrical metallic tubing shall be installed parallel with or at right angles to the lines of the building, except as otherwise shown, and supported in an approved manner.

Concealed electrical metallic tubing shall be installed in as direct a line as possible and shall be rigidly supported by approved methods and materials.

Expansion fittings shall be installed in all electrical metallic tubing which crosses expansion joints or is firmly attached to independent structures. Except as otherwise specified, expansion fittings for exposed tubing shall be Type TX with Type TJ bonding jumper, both as manufactured by the OZ Electrical Manufacturing Company. Runs of electrical metallic tubing subject to motion at right angles to the direction of the run, and all concealed runs in masonry shall be equipped with OZ Type EXDS expansion fittings, except that they shall have a polychloroprene, instead of a rubber jacket. Equivalent expansion fittings manufactured by the Appleton Electric Company will be acceptable. Runs of electrical metallic tubing subject to motion in excess of the capacities of the fittings specified above shall be provided with other approved means of compensating for the motion. Unless otherwise specified or required, expansion fittings shall be installed at the midpoint of their extension.

154. FLEXIBLE CONDUIT.

Flexible Steel Conduit

Flexible steel conduit shall be galvanized and shall conform to the requirements of the Standard for Flexible Steel Conduit of the Underwriters' Laboratories, Inc.

Liquid-Tight Flexible Conduit

Liquid-tight flexible conduit one and one-quarter inch and smaller shall be similar and equal to "Sealtite" Type UA flexible conduit, as manufactured by the American Metal Hose Branch of the American Brass Company. It shall be equipped with Thomas and Betts Company or Appleton Electric Company fittings. Liquid-tight flexible conduit larger than one and one-quarter inch shall be Type EF flexible conduit of the same manufacture, equipped with the same fittings. Equivalent liquid-tight flexible conduit manufactured by the American Flexible Conduit Company or the National Electric Products Corporation will be acceptable.

Explosion-Proof Flexible Conduit

Explosion-proof flexible conduit, complete with fittings, shall be similar and equal to "Pyle - O - Flex" Series FY flexible conduit, as manufactured by the Pyle-National Company. Equivalent explosion-proof flexible conduit manufactured by the Appleton Electric Company or the Crouse-Hinds Company will be acceptable.

155. TAGGING CONDUIT.

All concealed conduits, except branch lighting circuit conduits shall be tagged at the ends and in all intermediate boxes, chambers, manholes, handholes and other enclosures.

Conduit tags shall be made of brass, one thirty-second of an inch thick and three quarters of an inch wide, embossed with the designations shown on the Contract Drawings, or as directed by the Engineer, in five-sixteenths inch high letters and numbers. Tags shall be fastened to conduits with No. 14 A.W.G. weatherproof copper wire, except that where this method is not practicable, they shall be fastened to the adjacent masonry by means of approved expansion bolts.

DUCT BANKS.

Concrete encasement for conduits shall conform to the requirements of the clause hereof entitled "Concrete". Except as otherwise indicated on the Contract Drawings or specified herein, the encasement shall provide a minimum cover of three inches on top and bottom, and two inches on the sides.

Conduits for concrete-encased duct banks shall be securely held in place by approved window-type spacer supports as shown on the Contract Drawings and shall be laid with joints staggered. Where, in the opinion of the Engineer ground conditions are such as to require concrete forms, forms shall be constructed of materials and in a manner approved by the Engineer. No variations greater than one-half inch in fifty feet will be permitted from a straight line except where necessary to by-pass obstructions. The end of each conduit run which is not to contain wiring under this Contract shall be plugged or capped. Where necessary, sweeps shall be provided to permit conduits to enter manholes and structures at right angles. Conduits shall be sloped for drainage wherever possible.

Where Contract Drawings show junctions of new duct banks with existing duct banks or duct banks installed by others, the junction shall be reinforced with rectangular steel wire mesh 33-1010, encased in four inches additional thickness of concrete around existing and new duct banks. The additional encasement shall extend at least four feet in each direction from the junction.

CLEANING AND TESTING CONDUIT

After conduits and accessories have been installed and all concreting operations completed, all conduit runs shall be satisfactorily cleared of all obstructions and foreign matter. Any defects which might damage cable upon installation shall be corrected.

Conduits installed under this Contract in which wires and cables will be installed by others, shall be tested in the presence of the Engineer by pulling through each conduit twenty-foot lengths of 600 volt, single conductor, Class "A: or "B" wires of the sizes given in the following table or, where called for, a flexible cylindrical mandrel having an outside diameter one-quarter inch less than the inside diameter of the conduit. Where conduits installed under this Contract are connected to conduits installed by others, the entire run to the nearest box, manhole or other termination point shall be tested by the Contractor.

Conduit Size	Wire Size or Mandrel
3/4 inch	4 - No. 8 A.W.G. Single-Braided
1 inch	3 - No. 4 A.W.G. Double-Braided
1¼ inch	3 - No. 1 A.W.G. Double-Braided
1½ inch	3 - No. 00 A.W.G. Double-Braided
2 inch	3 - 250 MCM Double-Braided
2½ inch	3 - 400 MCM Double-Braided
3 inch and larger	Mandrel

Any defects or stoppages occuring in portions of the conduit run installed by the Contractor shall be corrected at the Contractor's own expense. Defects or stoppages occurring in portions not installed by the Contractor shall be corrected by the Contractor and he will by compensated therefor in accordance with the provisions of the clause of the Form of Contract entitled "Compensation for Extra Work".

ELECTRICAL BOXES.

Electrical outlet, junction, pull and device boxes shall be furnished and installed as specified herein and where shown on the Contract Drawings and at all other locations where, in the opinion of the Engineer, they are required to facilitate the pulling, supporting or connecting of wires and cables.

Boxes shall be of the material, finish, type and size specified and required for the location, kind of service, number of wires and cables and the fixture of fitting to be used. They shall conform to the requirements of the Standard for Cabinets and Boxes (Designation: UL-50) and to the Standard for Outlet Boxes and Fittings (Designation: UL-514), both of the Underwriters' Laboratories, Inc., as each may be applicable.

All boxes shall be complete with covers suitable to the purpose for which they will be used, except that boxes in or on which no device or fixtures are to be installed under this Contract shall be equipped with flat or raised blank covers, as required. All ceiling fixtureoutlet boxes shall be equipped with 3/8" boltless fixture studs.

Each box designation given herein denotes the general type of box required. Specific requirements as to size, material, and special features shall be as specified or required.

Boxes installed outdoors or in locations subject to flooding shall be provided with cover gaskets of neoprene or other approved material. All submersible boxes shall be tank-tested at the factory. Surface mounted boxes required to be watertight shall be provided with external mounting lugs.

Threaded conduit entrances shall be tapped with not less than three full threads and, if necessary, hubs or bosses shall be provided.

Boxes in which fireproofed wires and cables are to be installed shall be of sufficient size to permit the firepoofing to be applied without difficulty and without crowding.

All tapped holes shall be packed with heavy, waterproof grease or provided with well-greased plugs or screws to prevent the entrance of foreign matter. All unused openings shall be satisfactory plugged or capped.

Screws for corrosion-resisting boxes shall be made of approved stainless steel, silicon bronze or other corrosion-resisting material electrochemically compatible with adjacent materials.

Unless otherwise shown on the Contract Drawings, boxes shall be supported independently of the conduits by approved means.

The Contractor shall submit for approval, before installation, details of all boxes larger than eighteen inches in maximum dimension.