

Torres Rojas, Genara

From: jharper@smw25.org
Sent: Wednesday, August 06, 2014 4:09 PM
To: Duffy, Daniel; American, Heavyn-Leigh
Cc: Torres Rojas, Genara; Van Duyne, Sheree
Subject: Freedom of Information Online Request Form

Information:

First Name: james
Last Name: harper
Company: smwlu 25
Mailing Address 1: 440 barell ave
Mailing Address 2:
City: carlstadt
State: NJ
Zip Code: 07072
Email Address: jharper@smw25.org
Phone: 201-394-1882
Required copies of the records: No

List of specific record(s):

Agency project number-ewr-924.300 Replacement of vehicle exhaust system.Review on site and copy as necessary the following documents,bid documents for the project,bid set of drawings for the project,bid proposal from Air Purifiers,Inc., all air purifiers application and certificate for payments,g-702 and 703s,all air purifiers certified payroll records and all air purifiers sub contractors payroll records.testing and bakancing report for the system and testing and balancing contractors certified payroll records.

THE PORT AUTHORITY OF NY & NJ

FOI Administrator

August 27, 2014

Mr. James Harper
SMWLU 25
440 Barell Avenue
Carlstadt, NJ 07072

Re: Freedom of Information Reference No. 15170

Dear Mr. Harper:

This is in response to your August 6, 2014 request, which has been processed under the Port Authority's Freedom of Information Code (the "Code") for copies of the following documents related to Project No. EWR-924.300 – Replacement of Vehicle Exhaust System: bid documents for the project, bid set of drawings for the project, bid proposal from Air Purifiers, Inc., all air purifiers application and certificate for payments, g-702 and 703s, all air purifiers certified payroll records and all air purifiers sub contractors payroll records. Testing and balancing report for the system and testing and balancing contractors certified payroll records.

Material responsive to your request for the bid submitted by Air Purifiers, Inc. and a copy of the contract and available under the Code can be found on the Port Authority's website at <http://www.panynj.gov/corporate-information/foi/15170-C.pdf>. Paper copies of the available records are available upon request.

Certain material responsive to your request is exempt from disclosure pursuant to exemptions (1) and (4) of the Code.

We have searched the Port Authority's files and found no records responsive to the remainder of your request.

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

Very truly yours,



Daniel D. Duffy
FOI Administrator

THE PORT AUTHORITY OF NY & NJ

Lillian D. Valenti
Director, Procurement

April 30, 2014

VIA FACSIMILE AND UPS NEXT DAY DELIVERY

Air Purifiers Inc.
1 Pine Street
Rockaway, NJ 07866

SUBJECT: NEWARK LIBERTY INTERNATIONAL AIRPORT –REPLACEMENT OF
VEHICLE EXHAUST SYSTEM AT AUTOMOTIVE SHOP IN BUILDING 11–
CONTRACT EWR-924.300
PURCHASE ORDER UEWR924300

Dear Mr. DiRezze:

The Port Authority of New York and New Jersey hereby accepts your proposal on the above Contract.

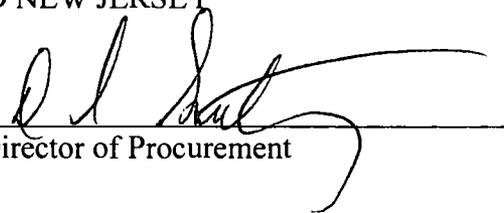
Your attention is directed to the clause of the Contract entitled “Time for Completion and Damages for Delay” and to the fact that before you may commence performance of the work you must furnish whichever of the documents mentioned in that clause are applicable.

Forwarded herewith for your use and compliance are “General Instructions Relating to the Direction and Processing of Correspondence and of Those Other Items Specified to be Submitted to the Port Authority Under the Terms of the Contract”.

In order to ensure that payments are processed properly, please include the above-referenced Purchase Order No. on all payment invoices and correspondence.

Very truly yours,

THE PORT AUTHORITY OF NEW YORK
AND NEW JERSEY

BY 

Director of Procurement

2 Montgomery Street, 3rd Floor
Jersey City, NJ 07302
T: 201 395 7477

Air Purifiers, Inc.

THE PORT AUTHORITY OF NY & NJ

①

0A04924300

J.D.

NEWARK LIBERTY INTERNATIONAL AIRPORT

REPLACEMENT OF VEHICLE EXHAUST SYSTEM AT
AUTOMOTIVE SHOP IN BUILDING 11

CONTRACT EWR-924.300

APRIL 2014

This proposal is not complete unless bidder's
Signature appears on page 19



One Pine Street
Rockaway, New Jersey 07866

973-586-3988
800-219-8772
Fax 973-586-3884
info@airpurifiersinc.com
airpurifiersinc.com

Industrial Pollution Control Systems

THE PORT AUTHORITY OF NY & NJ

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Schedule B

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Analysis of Bid .

ADVERTISEMENT

THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY

Sealed proposals for the following contract will be received by The Port Authority of New York and New Jersey in the office of the Director of Procurement, Attn: Bid Custodian, Two Montgomery Street, 3rd Floor, Jersey City, NJ 07302, until 2:30 PM on the date indicated where the proposals will then be publicly opened and read in the Bid Room.

Contract documents may be seen at the Contract Desk on the 3rd Floor, 3 Gateway Center, Newark, NJ and may be obtained upon receipt of a non-refundable payment of \$100.00 per set. If contract documents are not immediately available, prospective bidders are encouraged to pre-order the contract documents by sending the payment of \$100.00 per set in advance. The contract documents will be shipped by overnight delivery at no additional cost as soon as they become available. Only company checks or money orders payable to the order of The Port Authority of New York and New Jersey will be accepted. If checks or money orders for documents are mailed, address them to The Port Authority of New York and New Jersey, Contract Desk, 3rd Floor, 3 Gateway Center, Newark, NJ 07102. For availability of contract documents, go to <http://www.panynj.gov/business-opportunities/bid-proposal-advertisements.html?tabnum=3>. Questions by prospective bidders concerning the contract should be directed only to the person whose name and phone number is listed.

A VALID PHOTO ID IS REQUIRED TO GAIN ACCESS INTO EITHER BUILDING.

Contract EWR-924.300 – Newark Liberty International Airport - Replacement of Vehicle Exhaust System at Automotive Shop in Building 11. Estimate Range: under \$250K. Bids Due : Wednesday, April 9, 2014. The work under this contract consists generally of replacement of vehicle exhaust system and associated appurtenances and related Work at the Automotive Shop Building 11 on Brewster Road and the vicinity thereof in Newark Liberty International Airport in New Jersey.

New York, Monday, March 24, 2014

INFORMATION FOR BIDDERS

1. FORM AND SUBMISSION OF PROPOSALS

The Port Authority of New York and New Jersey, hereinafter called "the Authority", invites Proposals in the annexed form. Proposals will be received until 2:30 P.M. on Wednesday, April 9, 2014 in the office of the Director of Procurement, Attn: Bid Custodian, Two Montgomery Street, 3rd Floor, Jersey City, NJ 07302 at which time they will be opened and publicly read in the Bid Room. 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 space provided. This Contract booklet shall not be unstapled or taken apart.

The Proposal must be submitted upon the blank form bound herewith and must give all information required.¹ 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:

- A. If the bidder be a corporation, a statement of the names and residences of its officers, which should be included on the page following the Proposal.

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 should be included on the page following the Proposal.

If the bidder be an individual, a statement of his residence, which should be included on the page following the Proposal.

B.

- 1.) A statement of work which the bidder has on hand, including any work on which a bid has been submitted, containing a description of the work, the dollar value, the location by city and state, the current percentage of completion and the expected date for completion.
- 2.) Fill in below the name and address of the bidder's chief banking representative handling the bidder's account.

¹ While two or more copies of this booklet may be furnished to each prospective bidder, only one should be submitted. The extra copies are for the bidders use.

Banking Institution: PNC BANK
 Address: 3 NAUGHTWRIGHT Rd.
HACKETTSTOWN, NJ 07840
 Bank Representative: DONNA PICCIAILO
 Telephone Number: 570-460-1836 - CELL

- 3.) Fill in below the bidder's Federal Employer Identification Number (i.e., the number assigned to firms by the Federal Government for tax purposes); the bidder's Dun and Bradstreet number, if any; the name of any other credit service to which the bidder has furnished information and the number, if any, assigned by such service to the bidder's account.

Exemption (1/4)

Federal Employer Identification No.
054905898

Dun and Bradstreet No.

Other Credit Service	Account No.
----------------------	-------------

- C. The Form of Contract bound herewith, with the bidder's Lump Sum inserted in the clause thereof entitled "General Agreement". The amount must be given both in figures and in writing and, in case of discrepancy, the writing shall control. 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.
- D. The bidder's analysis of bid filled in on the form furnished herewith. The Contractor will be required to furnish a more detailed analysis of bid at a later date in accordance with the requirements of the Section of Division 1 of the Specifications referring to the Analysis of Bid.

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 attend a pre-award meeting and to furnish the Authority with information relating to his qualifications to perform the Work, including the following, which information shall be furnished within seven (7) days thereafter:

- A. A detailed list of all anticipated material suppliers and subcontractors and a detailed list of the plant and equipment which the bidder proposes to use, indicating which portions it already possesses.

- B. Detailed information relating to work which the bidder has completed for others, including personal and corporate references, sufficient to the Authority to determine the bidder's responsibility, experience and capacity to perform the Work. If required by the Chief Engineer, the foregoing information shall include information to demonstrate to the satisfaction of the Chief Engineer that the bidder has within the past five years been a contractor on at least one contract of the same general type, extent and complexity as the contract on which the Proposal has been submitted, and completed the work skillfully, in a satisfactory manner and on time.
- C. Information to supplement a) the statement of work on hand required to be submitted with the Proposal; and b) any statement submitted under the clauses hereof entitled "Certification of No Investigation (Criminal or Civil Anti-Trust), Indictment, Conviction, Suspension, Debarment, Disqualification, Prequalification Denial or Termination, etc, Disclosure of Other Required Information" or "Non-Collusive Bidding and Code of Ethics Certification; Certification of No Solicitation Based on Commission, Percentage, Brokerage, Contingent Fee or Other Fee".
- D. Moreover, in the event that the bidder's performance on a past Port Authority or PATH contract or contracts has been rated less than satisfactory, the Chief Engineer may give oral or written notice to the bidder to furnish information demonstrating to the satisfaction of the Chief Engineer that, notwithstanding such rating, such performance was, in fact, satisfactory, or that the circumstances which gave rise to such unsatisfactory rating have changed or will not apply to performance of the Contract, and that such performance will be satisfactory.
- E. If the bidder has performed a contract for the States of New York or New Jersey, or any governmental entity within such States and has filed a questionnaire or other document required to be submitted in order for the bidder to qualify to perform the contract, the bidder may be requested by the Chief Engineer to submit the most recent completed questionnaire or other such document, or if the most recent completed questionnaire or other such document is not available, to submit a written statement indicating the approximate date of the contract and the name of the governmental entity which awarded them the contract.
- F. Any additional information relevant to the bidder's Proposal. including information to supplement the bidder's initial analysis of bid.
- G. Detailed information in writing setting forth the affirmative action which the bidder proposes to take to ensure equal employment opportunities as required by clause A of the clause of the Form of Contract entitled "No Discrimination in Employment". This action which for the purpose of convenience is referred to as an "Affirmative Action Program", shall be in addition to the action required under clauses B through G thereof. Solely for the information of the bidder and without in any way limiting or defining the affirmative action program to be proposed by the bidder, there are available for inspection in the office of the Director, Office of Business Diversity and Civil Rights of the Port Authority of New York and New Jersey, copies of sample affirmative action programs.

In the event that any of the foregoing is requested and is not furnished within seven days thereafter or within such additional time as the Chief Engineer, in his sole discretion, may allow, the Authority may not be in a position to determine whether the bidder is qualified, whether the bidder understands the requirements of the contract or whether the bid is responsive and may, in its sole discretion, reject the bidder's Proposal.

The giving of such notice to the bidder in connection with any of the foregoing lists, statement or information shall not be construed as an acceptance of his Proposal. However, the Authority reserves the right in its sole and absolute discretion, to accept the Proposal of a bidder despite the fact that said bidder has not submitted any information, list or statement required pursuant to this Section within the above-stated time period.

4. ACCEPTANCE OR REJECTION OF PROPOSAL

Within sixty (60) 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 who is at present the Authority's Director of Procurement. No other act of the Authority, its Commissioners, officers, agents, or employees shall constitute acceptance of a Proposal. 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 who is at present the Authority's Director of Procurement and mailed to or delivered at the office designated in the Proposal or (b) omission of the Authority to accept a Proposal within sixty (60) 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.

5. WEBSITE POSTINGS OF CONTRACT DOCUMENTS

Recipients of Contract documents marked Confidential (Privileged) may not post them or any of them to a website except in accordance with the Authority's prior written approval, which may require a written non-disclosure agreement.

Recipients of Contract documents not marked Confidential (Privileged) may not post them or any of them to a website unless the website (1) is non-public, (2) is password protected and (3) is accessible only to the recipient's prospective subcontractors and suppliers. Recipient's prospective subcontractors and suppliers shall also be deemed recipients and shall be required to conform to the terms of this numbered clause. Recipients shall be deemed to include both bidders and those who do not submit bids.

No later than 180 days after the date of receipt of Proposals, all recipients shall remove all Contract documents from their websites.

6. DISPOSAL OF CONTRACT DOCUMENTS

All recipients of Contract documents, including bidders and those who do not bid and their prospective subcontractors and suppliers who may receive all or a part of the Contract documents or copies thereof, shall make every effort to ensure the secure and appropriate disposal of the Contract documents to prevent further disclosure of the information contained in the documents. Secure and appropriate disposal includes methods of document destruction such as shredding or arrangements with refuse handlers that ensure that third persons will not have access to the documents' contents either before, during, or after disposal. Documents may also be returned for disposal purposes to the Contract Desk on the 3rd Floor, 3 Gateway Center, Newark NJ 07102 or the office of the Director of Procurement, Two Montgomery Street, 3rd Floor, Jersey City, NJ 07302.

7. MINORITY AND WOMEN'S BUSINESS ENTERPRISES PROGRAM (MBE/WBE)

The Authority has a long-standing practice of making its contract opportunities available to as many firms as possible and has taken affirmative steps to encourage Minority Business Enterprises (MBEs) and Women's Business Enterprises (WBEs) to seek business opportunities with it.

"Minority-owned business" or "MBE" means a business entity which is at least 51 percent owned by one or more members of one or more minority groups, or, in the case of a publicly held corporation, at least 51 percent of the stock of which is owned by one or more members of one or more minority groups, and whose management and daily business operations are controlled by one or more such individuals who are citizens or permanent resident aliens.

"Women-owned business" or "WBE" means a business which is at least 51 percent owned by one or more women, or, in the case of a publicly held corporation, 51 percent 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 who are citizens or permanent resident aliens.

"Minority group" means any of the following racial or ethnic groups:

- A. Black persons having origins in any of the black African racial groups not of Hispanic origin;
- B. Hispanic persons of Puerto Rican, Mexican, Dominican, Cuban, Central, or South American culture or origin, regardless of race;
- C. Asian and Pacific Islander persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent or the Pacific Islands;
- D. Native American or Alaskan native persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification.

In the event that any portion of the Work is subcontracted in accordance with the clause of the Form of Contract entitled "Assignments and Subcontracts", every good faith effort to ensure MBE and WBE participation in the Work shall be made and documented. Such good faith efforts shall include at least the following:

- A. Attendance at pre-bid meetings, if any, scheduled by the Authority;
- B. Utilization of the Authority's Directory of certified MBE/WBEs available on-line (see Notification of M/WBE On-line Directory and Forms in back of Contract booklet) and/or proposing for certification other MBE/WBEs which appear to meet the Authority's criteria for MBE/WBE certification and which are technically competent to perform the Work which the bidder plans to subcontract;
- C. Active and affirmative solicitation of bids for subcontracts from MBE/WBEs;
- D. Advertisement in general circulation media, trade association publications and minority-focused media for a reasonable period before bids or proposals are due;
- E. Dividing the work to be subcontracted into smaller portions or encouraging the formation of joint ventures, partnerships or similar arrangements among subcontractors;
- F. Providing a sufficient supply of drawings and specifications of prospective work to MBE/WBEs and providing appropriate materials to each in sufficient time to review; and

- G. Utilizing the services of available minority and women's community organizations; contractors' groups; local, State and Federal business assistance/development offices and other organizations that provide assistance to MBE/WBEs.

Subsequent to acceptance by the Authority of the Contractor's Proposal, the Contractor shall use and document every good faith effort to comply with these requirements and to permit his MBE/WBE subcontractors to perform. Such good faith efforts shall include at least the following:

- i. Ensuring that progress payments are made in a timely fashion in accordance with the requirements of this Contract;
- ii. Not requiring bonds from and/or providing bonds and insurance for subcontractors where appropriate;
- iii. Soliciting specific recommendations on methods for enhancing MBE/WBE participation from Authority staff responsible for such participation; and
- iv. Nominating subcontractors for participation in business assistance programs sponsored by the Authority or the Regional Alliance of Small Contractors such as the Loaned Executive Assistance Program (L.E.A.P.).

Subsequent to acceptance by the Authority of the Contractor's Proposal, the Contractor shall also provide the Engineer, at his request, with a trade breakdown schedule showing when the Contractor's MBE/WBE subcontractors are scheduled to perform. The Contractor shall also submit to the Engineer, on a monthly basis, the Statement of Subcontractor's Payments annexed hereto as Schedule D.

Following approval by the Engineer under the clause entitled "Assignments and Subcontracts" of one or more subcontractors who are either MBEs or WBEs and listed in the MBE/WBE Directory or determined to be "eligible" by the Chief Engineer in accordance with this numbered clause, the Authority may, at its sole option, provide to said approved M/WBEs, without charge, whatever appropriate consultant services may be available under the L.E.A.P. Program; provided, however, that such consultant services will only be furnished pursuant to a request in writing from the Director, Office of Business Diversity and Civil Rights of the Port Authority of New York and New Jersey, 233 Park Avenue South - 4th Floor, New York, NY 10003.

Such services will be discontinued following a written request from the Contractor to the Director, Office of Business Diversity and Civil Rights of the Port Authority of New York and New Jersey, to discontinue them.

The L.E.A.P. services include advising on scheduling, purchasing, planning and other aspects of construction to firms to mitigate business or management problems which could negatively impact on their performance. These services do not include engineering or legal advice. The determination as to whether or not to follow the advice given lies solely with the M/WBE subcontractor. Prior to being accepted as a participant in the L.E.A.P. Program, the M/WBE subcontractor will be required to release the Authority and the individuals furnishing consultant advice of all liability and responsibility in connection therewith.

The Authority has compiled and made available on-line an MBE/WBE Directory which specifies the firms the Authority has determined to be (1) MBEs/WBEs and (2) experienced in performing work in the trades and contract dollar ranges indicated in the Directory. The Authority makes no representation as to the financial responsibility of such firms or their ability to perform Work required under this Contract. Subject to the following paragraph, only MBEs/WBEs listed in the Directory will count toward the MBE/WBE participation.

If the Contractor wishes to perform a portion of the Work through a firm not listed in the Directory² but which the Contractor believes should be eligible because it is (1) an MBE/WBE, as defined above and (2) technically competent to perform portions of the Work or the Contractor believes it is such a firm, the Contractor shall submit to the Director, Office of Business Diversity and Civil Rights of the Port Authority of New York and New Jersey, a written request for a determination that the proposed firm is eligible. This shall be done by completing and forwarding a) the form labeled "Schedule A" and, if appropriate, "Schedule B" which are annexed hereto and form a part hereof and b) technical references of jobs completed of similar scope and complexity on the form annexed hereto and made a part hereof labeled "MBE/WBE Approval Request" and such other information as may be necessary to permit the Authority to determine whether the firm is in fact an MBE/WBE and technically competent to perform portions of the Work.

- | | |
|---|--|
| 1. Queens Air Services Development Office
JFK International Airport
Building #141
Federal Circle, First Floor
Jamaica, NY 11430
(718) 244-6852
Fax (718) 244-7371
www.asdoonline.com | 2. Chinatown Manpower Project, Inc.
70 Mulberry Street
New York, NY 10031
(212) 571-1690
www.cmpny.org |
| 3. Association of Minority Enterprises of NY, Inc.
135-20 Liberty Avenue
Richmond Hill, NY 11419
(718) 291-1641
Fax (718) 291-1641
www.ameny.org | 4. Statewide Hispanic Chamber of Commerce of New Jersey
150 Warren Street, Suite 110
Jersey City, NJ 07302
(201) 451-9512
Fax (201) 451-9547
www.shccnj.org |

² The following organizations may be able to refer the Contractor to MBEs/WBEs who are technically competent to perform portions of the Work. Any referrals which are not listed in the Directory shall be submitted to the Authority for a determination as to eligibility as provided above.

5. Greater Newark Business Development Consortium
744 Broad Street, 26th Floor
Newark, NJ 07102
(973) 242-5563
www.gnbdc.org
6. Jamaica Business Resource Center
90-33 160th Street
Jamaica, NY 11432
(718) 206-2255
Fax (718) 206-3693
www.jbrc.org
7. Council for Airport Opportunity
Newark Liberty International Airport
Building 80
Newark, NJ 07014
(973) 961-4382
www.caonj.com
8. National Hispanic Business Group
1230 Avenue of the Americas,
7th Floor
New York, NY 10020
(212) 265-2664
www.nhbg.org
9. Greater Jamaica Development Corp.
90-04 161st Street
Jamaica, NY 11432
(718) 291-0282
Fax (718) 291-7918
www.gjdc.org
10. NYS Assn. Of Minority Contractors
Brooklyn Navy Yard
Building 280, 4th Floor, Suite 414
Brooklyn, NY 11205
(212) 246-8380
Fax (718) 246-8376
www.nysamc.org
11. Professional Women in Construction
315 E. 56th Street, Suite 202
New York, NY 10022
(212) 486-7745
Fax (212) 486-0228
www.pwcusa.org
12. NY/NJ Minority Purchasing Council
330 Seventh Avenue, 8th Floor
New York, NY 10001
(212) 502-5663
www.nynjmsdc.org

13. National Minority Business Council
120 Broadway, 19th Floor
New York, NY 10271
(212) 693-5050
www.nmbc.org

14. Queens Overall Economic Development
Office
120-55 Queens Boulevard, Suite 309 Kew
Gardens, NY 11424
(718) 263-0546
Fax (718) 263-0594
www.queensny.org

15. York College Small Business
Development Center
94-50 159th Street
York College,
Room S 107
Jamaica, NY 11451
(718) 262-2880
Fax (718) 262-2881
www.nyssbdc.org

16. Small Business Development Center -
Rutgers University, University Heights
43 Bleeker Street
Newark, NJ 07102
(973) 353-1927
Fax (973) 353-1110
www.msbdc.newark.rutgers.edu

17. New Jersey Association of Women
Business Owners (NJAWBO)
186 Princeton Hightstown Road
West Windsor, NJ 08550
(609) 799-5101
www.njawbo.org

18. New Jersey Air Services Development
Office
Newark Liberty International Airport
Building #80 - Second Floor
Newark, NJ 07114
(973) 961-4278
Fax (973) 961-4282
www.asdonline.com

19. Caribbean-American Chamber of Commerce
Brooklyn Navy Yard
63 Flushing Avenue
Brooklyn, NY 11205
(718) 834-4544
Fax (718) 834-9774
www.caribbeantradecenter.com

20. Northeast Region – Small Business
Resource Transportation Center
29-10 Thomson Avenue
Long Island City, NY 11101
(718) 482-5941
www.osdbu.dot.gov/regional/northeast.cfm

21. Asian Women in Business
42 Broadway, Suite 1748
New York, NY 10004
(212) 868-1368
Fax (212) 868-1373
www.awib.org

22. Asian American Business Development
Center
80 Wall Street, Suite 418
New York, NY 10005
(212) 966-0100
Fax (212) 966-2786
www.aabdc.com

23. New York State Federation of
Hispanic Chambers of Commerce
2710 Broadway
New York, NY 10025
(212) 222-8300
Fax (212) 222-8412
www.nysfhcc.com

24. Orange County Chamber of Commerce
30 Scott Corners Drive
Montgomery, NY 12549
(845) 457-9700 Ext. 1101
www.orangeny.com

25. Regional Alliance For Small
Contractors
625 Eighth Avenue, 2nd Floor,
North Wing
New York, NY 10018
(212) 268-2991
www.regional-alliance.org

26. Women Builders Council
500 Hampton Avenue
Brooklyn, NY 11235
(212) 367-2130
www.wbcnyc.org

All such requests shall be in writing addressed to the Chief Engineer. If any such firm is determined to be eligible it shall only be by a writing over the name of the Chief Engineer. In the event that such firm is found not to be eligible, the Chief Engineer will only consider as a substitute for such firm, a firm listed in the Authority's MBE/WBE Directory available on-line.

The Contractor shall submit the names of proposed MBEs/WBEs for work on this Contract if their names do not appear in the Authority's MBE/WBE Directory available on-line in accordance with the requirements of this clause and all other requirements of this Contract. MBEs/WBEs proposed as lessors of equipment or materialmen shall be deemed "subcontractors" for the purpose of this numbered clause and the clause hereof entitled "Assignments and Subcontracts" but shall not be deemed subcontractors for any other purpose.

The Contractor shall ensure that all approved MBE/WBE subcontractors maintain a regular on site presence at the construction site for the portions of the Work they are subcontracted to perform and that they exercise financial and operation management and control of such portions of the Work.

Nothing herein shall be deemed to supersede or to otherwise modify the clause of the Form of Contract entitled "Assignments and Subcontracts".

8. INSPECTION OF SITE

Each bidder or his authorized representative must make proper arrangements with the Resident Engineer at the construction site before inspecting the construction site. To make such arrangements call Catherine Nigro, at (201) 807-4013 or email at cnigro@panynj.gov.

9. QUESTIONS BY BIDDERS

Questions by prospective bidders concerning the Contract may be addressed to Marjorie Crump, at (201) 395-3453 or email at mcrump@panynj.gov, who however is authorized only to direct the attention of prospective bidders to various portions of the Contract so that they may read and interpret such portions for themselves. Neither Marjorie Crump nor any other employee or representative of the Authority is authorized to give interpretations of any portion of the Contract or to give information as to the requirements of the Contract in addition to that contained in the Contract. Interpretations of the Contract or additional information as to its requirements, where necessary, shall be communicated to bidders only by written addendum issued over the name of the Chief Engineer, which addendum shall be considered part of this Contract. Accordingly, nothing contained herein and no representation, statement or promise, oral or in writing, of the Authority, its Commissioners, officers, agents, representatives or employees 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" or elsewhere in this Contract. The provisions of this clause shall apply to questions addressed by prospective bidders both before and after their receipt of Contract Documents.

10. PREVAILING RATE OF WAGE CERTIFICATION

The bidders' attention is directed specifically to the clause of the Form of Contract entitled "Prevailing Rate of Wage" and to the fact that the Authority requires a certification in writing from the successful bidder, in such form as may be required pursuant to such clause, that he has paid and caused his subcontractors to pay at least the prevailing rate of wage and supplements required by such clause. This certification is required prior to his receipt of any payment from the Authority hereunder as provided in the clauses of the Form of Contract entitled "Monthly Advances" and "Final Payment" or at any other time.

11. CERTIFICATION OF NO INVESTIGATION (CRIMINAL OR CIVIL ANTI-TRUST), INDICTMENT, CONVICTION, SUSPENSION, DEBARMENT, DISQUALIFICATION, PREQUALIFICATION DENIAL OR TERMINATION, ETC; DISCLOSURE OF OTHER REQUIRED INFORMATION

By bidding on this Contract, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, that the bidder and each parent and/or affiliate of the bidder has not (a) been indicted or convicted in any jurisdiction; (b) been suspended, debarred, found not responsible or otherwise disqualified from entering into contracts with any governmental agency or been denied a government contract for failure to meet prequalification standards; (c) had a contract terminated by any governmental agency for breach of contract or for any cause related directly or indirectly to an indictment or conviction; (d) changed its name and/or Employer Identification Number (taxpayer identification number) following its having been indicted, convicted, suspended, debarred or otherwise disqualified, or had a contract terminated as more fully provided in (a), (b) and (c) above; (e) ever used a name, trade name or abbreviated name, or an Employer Identification Number different from those inserted in the Proposal; (f) been denied a contract by any governmental agency for failure to provide the required security, including bid, payment or performance bonds or any alternative security deemed acceptable by the agency letting the contract; (g) failed to file any required tax returns or failed to pay any applicable federal, state or local taxes; (h) had a lien imposed upon its property based on taxes owed and fines and penalties assessed by any agency of the federal, state or local government; (i) been, and is not currently, 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, including an inspector general of a governmental agency or public authority; (j) had any sanctions imposed as a result of a judicial or administrative proceeding with respect to any professional license held or with respect to any violation of a federal, state or local environmental law, rule or regulation; and (k) shared space, staff, or equipment with any business entity.

The foregoing certification as to "(a)" through "(k)" shall be deemed to have been made by the bidder as follows: if the bidder is a corporation, such certification shall be deemed to have been made not only with respect to the bidder itself, but also with respect to each director and officer, as well as, to the best of the certifier's knowledge and belief, each stockholder with an ownership interest in excess of 10%; if the bidder is a partnership, such certification shall be deemed to have been made not only with respect to the bidder itself, but also with respect to each partner. Moreover, the foregoing certification, if made by a corporate bidder, shall be deemed to have been authorized by the Board of Directors of the bidder, and such authorization shall be deemed to include the signing and submission of the bid and the inclusion therein of such certification as the act and deed of the corporation.

In any case where the bidder cannot make the foregoing certification, the bidder shall so state and shall furnish with the signed bid a signed statement which sets forth in detail the reasons therefor. If the bidder is uncertain as to whether it can make the foregoing certification, it shall so indicate in a signed statement furnished with its bid, setting forth an explanation for its uncertainty.

Notwithstanding that the certification may be an accurate representation of the bidder's status with respect to the enumerated circumstances provided for in this clause as requiring disclosure at the time that the bid is submitted, the bidder agrees to immediately notify the Authority in writing of any change in circumstances during the period of irrevocability, or any extension thereof.

The foregoing certification or signed statement shall be deemed to have been made by the bidder with full knowledge that it would become a part of the records of the Authority and that the Authority will rely on its truth and accuracy in awarding this Contract. In the event that the Authority determines at any time prior or subsequent to the award of the Contract that the bidder has falsely certified as to any material item in the foregoing certification; willfully or fraudulently submitted any signed statement pursuant to this clause which is false in any material respect; or has not completely and accurately represented its status with respect to the circumstances provided for in this clause as requiring disclosure, the Authority may determine that the bidder is not a responsible bidder with respect to its bid on this Contract or with respect to future bids and may, in addition to exercising any other rights or remedies available to it, exercise any of the rights or remedies set forth in the clause of the Form of Contract entitled "Rights and Remedies of Authority". In addition, bidders are advised that knowingly providing a false certification or statement pursuant hereto may be the basis for prosecution for offering a false instrument for filing (see e.g., New York Penal Law, Section 175.30 et seq.). Bidders are also advised that the inability to make such certification will not in and of itself disqualify a bidder, and that in each instance the Authority will evaluate the reasons therefor provided by the bidder.

Under certain circumstances the bidder may be required as a condition of this Contract award to enter into a Monitoring Agreement under which it will be required to take certain specified actions, including compensating an independent Monitor to be selected by the Port Authority. Said Monitor shall be charged with, among other things, auditing the actions of the bidder to determine whether its business practices and relationships indicate a level of integrity sufficient to permit it to continue business with the Port Authority.

As used in this clause, the following terms shall mean:

Affiliate - An entity in which the parent of the bidder owns more than fifty percent of the voting stock, or an entity in which a group of principal owners which owns more than fifty percent of the bidder also owns more than fifty percent of the voting stock.

Agency or Governmental Agency - Any federal, state, city or other local agency, including departments, offices, quasi-public agencies, public authorities and corporations, boards of education and higher education, public development corporations, local development corporations and others.

Employer Identification Number - The tax identification number assigned to firms by the Federal government for tax purposes.

Investigation - Any inquiries made by any federal, state or local criminal prosecuting or investigative agency, including an inspector general of a governmental agency or public authority, and any inquiries concerning civil anti-trust investigations made by any federal, state or local governmental agency. Except for inquiries concerning civil anti-trust investigations, the term does not include inquiries made by any civil government agency concerning compliance with any regulation, the nature of which does not carry criminal penalties, nor does it include any background investigations for employment, or Federal, state, and local inquiries into tax returns.

Officer - Any individual who serves as chief executive officer, chief financial officer, or chief operating officer of the bidder by whatever titles known.

Parent - An individual, partnership, joint venture or corporation which owns more than 50% of the voting stock of the bidder.

Space Sharing - Space shall be considered to be shared when any part of the floor space utilized by the submitting business 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 any other business or not-for-profit organization that is sharing space with the submitting business.

Staff Sharing - Staff shall be considered to be shared when any individual provides the services of an employee, whether paid or unpaid, to the bidder 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 bidder and the other business(es) 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.

Equipment Sharing - Equipment shall be considered to be shared whenever the bidder 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 a formal lease for the use of the equipment and exercises exclusive use of the equipment; or when the bidder owns equipment that it has formally leased to another business or not-for-profit organization, and for the duration of such lease the bidder has relinquished all right to the use of such leased equipment.

**12. NON-COLLUSIVE BIDDING AND CODE OF ETHICS CERTIFICATION;
CERTIFICATION OF NO SOLICITATION BASED ON COMMISSION, PERCENTAGE,
BROKERAGE, CONTINGENT FEE OR OTHER FEE**

By bidding on this Contract, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, that: (a) the prices in its bid have been arrived at independently without collusion, consultation, communication or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor; (b) the prices quoted in its bid have not been and will not be knowingly disclosed, directly or indirectly, by the bidder prior to the official opening of such bid to any other bidder or to any competitor; (c) no attempt has been made and none will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition; (d) this organization has not made any offers or agreements, or given or agreed to give anything of value (see definition of "anything of value" appearing in the clause of the Form of Contract entitled "No Gifts, Gratuities, Offers of Employment, etc.") or taken any other action with respect to any Authority employee or former employee or immediate family member of either which would constitute a breach of ethical standards under the Code of Ethics and Financial Disclosure dated as of April 11, 1996 (a copy of which is available upon request to the individual named in the clause hereof entitled "Questions by Bidders"), nor does this organization have any knowledge of any act on the part of an Authority employee or former Authority employee relating either directly or indirectly to this organization which constitutes a breach of the ethical standards set forth in said Code; (e) no person or selling agency, other than a bona fide employee or bona fide established commercial or selling agency maintained by the bidder for the purpose of securing business, has been employed or retained by the bidder to solicit or secure this Contract on the understanding that a commission, percentage, brokerage, contingent or other fee would be paid to such person or selling agency; (f) the bidder has not offered, promised or given, demanded or accepted, any undue advantage, directly or indirectly, to or from a public official or employee, political candidate, party or party official, or any private sector employee (including a person who directs or works for a private sector enterprise in any capacity), in order to obtain, retain, or direct business or to secure any other improper advantage in connection with this Contract.

The foregoing certification as to "(a)", "(b)", "(c)", "(d)", "(e)" and "(f)" shall be deemed to have been made by the bidder as follows: if the bidder is a corporation, such certification shall be deemed to have been made not only with respect to the bidder itself, but also with respect to each parent, affiliate, director and officer of the bidder, as well as, to the best of the certifier's knowledge and belief, each stockholder of the bidder with an ownership interest in excess of 10%; if the bidder is a partnership, such certification shall be deemed to have been made not only with respect to the bidder itself, but also with respect to each partner. Moreover, the foregoing certification, if made by a corporate bidder, shall be deemed to have been authorized by the Board of Directors of the bidder, and such authorization shall be deemed to include the signing and submission of the bid and the inclusion therein of such certification as the act and deed of the corporation.

In any case where the bidder cannot make the foregoing certification, the bidder shall so state and shall furnish with the signed bid a signed statement which sets forth in detail the reasons therefor. If the bidder is uncertain as to whether it can make the foregoing certification, it shall so indicate in a signed statement furnished with its bid, setting forth in such statement the reasons for its uncertainty. As a result of such disclosure, the Port Authority shall take appropriate action up to and including a finding of non-responsibility.

Failure to make the required disclosures shall lead to administrative actions up to and including a finding of non-responsibility.

Notwithstanding that the bidder may be able to make the foregoing certification at the time the bid is submitted, the bidder shall immediately notify the Authority in writing during the period of irrevocability of bids on this Contract or any extension of such period, of any change of circumstances which might under this clause make it unable to make the foregoing certification or required disclosure. The foregoing certification or signed statement shall be deemed to have been made by the bidder with full knowledge that it would become a part of the records of the Authority and that the Authority will rely on its truth and accuracy in awarding this Contract. In the event that the Authority should determine at any time prior or subsequent to the award of this Contract that the bidder has falsely certified as to any material item in the foregoing certification or has willfully or fraudulently furnished a signed statement which is false in any material respect, or has not fully and accurately represented any circumstance with respect to any item in the foregoing certification required to be disclosed, the Authority may determine that the bidder is not a responsible bidder with respect to its bid on this Contract or with respect to future bids on Authority contracts and may, in addition to exercising any other rights or remedies it may have, exercise any of the rights or remedies set forth in the clause of the Form of Contract entitled "Rights and Remedies of Authority".

In addition, bidders are advised that knowingly providing a false certification or statement pursuant hereto may be the basis for prosecution for offering a false instrument for filing (see e.g., New York Penal Law, Section 175.30 et seq.). Bidders are also advised that the inability to make such certification will not in and of itself disqualify a bidder, and that in each instance the Authority will evaluate the reasons therefor provided by the bidder.

Under certain circumstances the bidder may be required as a condition of this Contract award to enter into a Monitoring Agreement under which it will be required to take certain specified actions, including compensating an independent Monitor to be selected by the Port Authority. Said Monitor shall be charged with, among other things, auditing the actions of the bidder to determine whether its business practices and relationships indicate a level of integrity sufficient to permit it to continue business with the Port Authority.

13. BIDDER ELIGIBILITY FOR AWARD OF CONTRACTS - DETERMINATIONS BY AN AGENCY OF THE STATE OF NEW YORK OR NEW JERSEY CONCERNING ELIGIBILITY TO RECEIVE PUBLIC CONTRACTS

Bidders are advised that the Authority has adopted a policy to the effect that in awarding its contracts it will honor any determination by an agency of the State of New York or New Jersey that a bidder is not eligible to bid on or be awarded public contracts because the bidder has been determined to have engaged in illegal or dishonest conduct or to have violated prevailing rate of wage legislation.

The policy permits a bidder whose ineligibility has been so determined by an agency of the State of New York or New Jersey to submit a bid on a Port Authority contract and then to establish that it is eligible to be awarded the contract on which it has bid because (i) the state agency determination relied upon does not apply to the bidder, or (ii) the state agency determination relied upon was made without affording the bidder the notice and hearing to which the bidder was entitled by the requirements of due process of law, or (iii) the state agency determination was clearly erroneous or (iv) the state agency determination relied upon was not based on a finding of conduct demonstrating a lack of integrity or a violation of a prevailing rate of wage law.

The full text of the resolution adopting the policy may be found in the Minutes of the Authority's Board of Commissioners meeting of September 9, 1993.

PROPOSAL

To The Port Authority of New York and New Jersey:

The undersigned³ *AIR POMPIERS INC. A CORPORATION ORGANIZED UNDER THE LAWS OF THE STATE OF NEW JERSEY.*

(hereinafter called "the Contractor") hereby offers to perform all the obligations and to assume all the duties and liabilities of the Contractor provided for in the annexed Contract, at the price inserted by the undersigned in the clause of the Form of Contract entitled "General Agreement".

This offer shall be irrevocable for sixty (60) days after the date on which The Port Authority of New York and New Jersey opens this Proposal.

To induce the acceptance of this Proposal, the undersigned hereby makes each and every certification, statement, assurance, representation and warranty made by the Contractor in said 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.

³ Insert bidder's name at the top of the page. After the bidder's name, insert one of the following phrases:
If a corporation, give state of incorporation, using the phrase, "a corporation organized under the laws of the State of "
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 "
If a joint venture, give the information required above for each participant in the joint venture.

Unless expressly stated otherwise, the 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 of the Contract by the terms of the Form of Contract are made part of this Proposal.

The undersigned hereby designates the following as the bidders office⁴:

AIR PURIFIERS INC
1 PINE ST.
ROCKAWAY, NJ 07866

The telephone number of the bidder is:

973-586-3988

The fax number of the bidder is:

973-586-3884

The E-Mail address of the bidder is:

INFO@AIRPURIFIERSINC.COM

⁴ Insert office address.

SIGNATURE AND CERTIFICATE OF AUTHORITY⁵

PROCUREMENT
2014 APR -9 PM 2:39

Dated, April 4, 2014

(Signature of individual or name of corporation or partnership)

DAVID DI REZZE

(Signature of agent, partner or corporate officer)

By^{6 7} [Signature]

(Acknowledgment of signature to be taken on proper form on following page(s))

CERTIFICATE OF AUTHORITY, IF BIDDER IS A CORPORATION

I, the undersigned, as Secretary of the corporation submitting the foregoing Proposal, hereby certify that under and pursuant to the by-laws and resolutions of said corporation, each officer who has signed said Proposal on behalf of the corporation is fully and completely authorized so to do.

(Corporate Seal)

[Signature]
DAVID DI REZZE

⁵ If bidder is a joint venture, insert signatures as appropriate for one participant of the joint venture on this page and attach and complete an additional signature sheet in the same form as appears on this page for each other participant as required.

⁶ If Proposal is signed by an officer or agent, give title.

⁷ **NOTE:** The foregoing signature shall be deemed to have been provided with full knowledge that the foregoing Proposal, the accompanying Contract booklet, as well as any certification, statement, assurance, representation, warranty, schedule or other document submitted by the bidder with the Proposal will become a part of the records of the Authority and that the Authority will rely in awarding the Contract on the truth and accuracy of such Proposal and each such certification, statement, assurance, representation, warranty and schedule made therein by the Contractor. Knowingly submitting a false statement in connection with any of the foregoing may be the basis for prosecution for offering a false instrument for filing (see, e.g., N.Y. Penal Law, Section 175.30 et seq.).

PROCUREMENT
2014 APR -9 PM 2:39

ACKNOWLEDGMENT⁸

ACKNOWLEDGMENT OF BIDDER, IF A CORPORATION

State of NEW JERSEY

SS:

County of MORRIS

Exemption (1)

VP/SECT of AIR PURIFIERS INC, 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.

(Notary Seal)

LYDIA RUIZ
Commission # 2311523
Notary Public, State of New Jersey
My Commission Expires
February 20, 2019

Lydia Ruiz
(Notary Signature)

ACKNOWLEDGMENT OF BIDDER, 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.

(Notary Seal)

(Notary Signature)

ACKNOWLEDGMENT OF BIDDER, 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.

(Notary Seal)

(Notary Signature)

⁸ If bidder is a joint venture, insert signature as appropriate for one participant of the joint venture on this page and attach and complete an additional Acknowledgment sheet in the same form as appears on this page for each other participant as required.

STATEMENT ACCOMPANYING PROPOSAL⁹

Names and Residences of Officers, If Bidder is a Corporation

Name	Title	Residence ¹⁰	Exemption (1)
JOHN DIREZZE	PRES		
DAVID DIREZZE	VP+SECY		

Names and Residences of Partners, If Bidder is a Partnership

Name	General or Limited Partner	Residence ¹¹
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Bidder's Residence, If an Individual¹²

⁹ If bidder is a joint venture, insert signature as appropriate for one participant of the joint venture on this page and attach and complete an additional Statement Accompanying Proposal sheet in the same form as appears on this page for each other participant as required.

¹⁰ Give Street and Number of Residence. Do not give business address.

¹¹ Give Street and Number of Residence. Do not give business address.

¹² Give Street and Number of Residence. Do not give business address.

FORM OF CONTRACT

CHAPTER I

GENERAL PROVISIONS

14. 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 Contract as so defined shall constitute the complete and exclusive statement of the terms of the agreement between the parties and the Contract may not be explained or supplemented by course of dealing, usage of trade or course of performance.

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 Automotive Shop Building 11 on Brewster Road and the vicinity thereof at Newark Liberty International Airport in New Jersey.

"Work" shall mean all structures, equipment, plant, labor, materials (including materials and equipment, if any, furnished by the Authority) and other facilities and all other things necessary or proper for or incidental to performing replacement of vehicle exhaust system and associated appurtenances and related Work at the Automotive Shop Building 11 on Brewster Road and the vicinity thereof in Newark Liberty International Airport in New Jersey and "performance of Work" and words of similar import shall mean the furnishing of such facilities and the doing of such things.

"Work required by the Contract Drawings and Specifications in their present form" or words of similar import shall include all Work required by the Specifications in their present form (whether or not shown upon the Contract Drawings), all Work shown upon the Contract Drawings in their present form (whether or not mentioned in the Specifications), and all 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 Work" shall mean Work required by the Chief Engineer, Chief of Construction, Engineer of Construction or Engineer pursuant to the clause hereof entitled "Extra Work Orders" which is in addition to that 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.

"Shop Drawings" shall mean all drawings, diagrams, illustrations, schedules, including supporting data, which are specifically prepared for this Contract and submitted by the Contractor pursuant to the requirements of the Specifications or the Engineer to illustrate some portion of the Work. The terms "shop drawings", "placing drawings" and "working drawings" are used interchangeably in this Contract.

"Catalog Cuts" shall mean all standard drawings, diagrams, illustrations, brochures, schedules, performance charts and instructions submitted by the Contractor pursuant to the requirements of the Specifications or the Engineer to illustrate some portion of the Work.

"Director of Procurement" shall mean the Director of Procurement of the Authority for the time being, or her successor in duties, acting either personally or through her duly authorized representatives acting within the scope of the particular authority vested in them.

"Chief Engineer" shall mean the Chief Engineer of the Authority for the time being, or his successor in duties, acting personally.

"Director" shall mean the Director of Aviation of the Authority for the time being, or his successor in duties for the purpose of this Contract, acting personally or through his authorized representative for the purpose of this Contract, who is at present the Authority's Director of Aviation Operations.

"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.

"Chief of Construction" shall mean the Chief of Construction of the Authority for the time being, or his successor in duties, acting personally.

"Engineer of Construction" shall mean the designated Engineer of Construction for the facility at which the Work is being performed or his successor in duties, acting personally.

"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 (including materials and equipment, if any, furnished by the Authority) 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 Work (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".

"Subcontractor" shall mean anyone 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 furnished merely his own personal labor or his own personal services or who performs Work which consists only of the operation of construction equipment of which he is the lessor.

"Materialman" shall mean anyone who furnishes materials, plant or equipment (including temporary or consumable materials) to the Contractor or any subcontractor for use at or about the construction site in the performance of Work.

"Materialman" or "subcontractor", however, shall exclude the Contractor or any subsidiary or parent of the Contractor or any person, firm or corporation which has a substantial interest in the Contractor or in which the Contractor or the parent or the subsidiary of the Contractor, or an officer or principal of the Contractor or of the parent or the subsidiary of the Contractor has a substantial interest, provided, however, that for the purpose of the clause hereof entitled "Assignments and Subcontracts" the exclusion in this paragraph shall not apply to anyone but the Contractor himself.

"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.

"Lump Sum" shall mean the amount stipulated in the clause hereof entitled "General Agreement".

"Notice" shall mean a written notice.

PROCUREMENT
2014 APR -9 PM 2:39

Whenever they refer to the 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.

15. GENERAL AGREEMENT

The Contractor agrees to perform replacement of vehicle exhaust system and associated appurtenances and related Work at the Automotive Shop Building 11 on Brewster Road and the vicinity thereof in Newark Liberty International Airport in New Jersey 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, all 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.

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 his duties and obligations under this Contract and the whole thereof, a compensation of:

FIFTY NINE THOUSAND Dollars
00 Cents
(\$ 59,000.00)¹³

(throughout this Contract called the "Lump Sum"), 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.

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 perform all Work as required without other compensation than that specifically provided, whatsoever changes may be made in the Contract Drawings and Specifications, whatsoever 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.

¹³ For sales tax exemptions, see clause entitled "Exemption from New Jersey Sales and Use Taxes".

16. AUTHORITY ACCESS TO RECORDS

The Authority shall have access during normal business hours to all records and documents of the Contractor relating to any amounts for which the Contractor has been compensated, or claims he should be compensated, by the Authority by payment determined on any basis other than by payment of a lump sum or unit price amount agreed upon in writing by the Contractor and the Authority; provided, however, such access shall extend to certified payroll records as described in the clause of the Form of Contract entitled "Prevailing Rate of Wage" regardless of the method by which the Contractor is compensated under this Contract. The Contractor shall obtain for the Authority similar access to similar records and documents of subcontractors. Such access shall be given or obtained both before and within a period of three years after Final Payment to the Contractor; provided, however, that if within the aforesaid three year period the Authority has notified the Contractor in writing of a pending claim by the Authority under or in connection with this Contract to which any of the aforesaid records and documents of the Contractor or of his subcontractors relate either directly or indirectly, then the period of such right of access shall be extended to the expiration of 6 years from the date of Final Payment with respect to the records and documents involved.

Upon request of the Authority, the Contractor shall furnish or provide access to the federal Form I-9 (Employment Eligibility Verification) for each individual performing Work under this Contract, including both citizens and non-citizens.

No provision in this Contract giving the Authority a right of access to records and documents is intended to impair or affect any right of access to records and documents which the Authority would have in the absence of such provision.

17. EXEMPTION FROM NEW JERSEY SALES AND USE TAXES

The tax laws of the State of New Jersey (New Jersey Sales and Tax Act, P.L. 1966, c. 30 (§54:32B et seq.)) exempt from New Jersey sales and use taxes "[r]eceipts from sales made to contractors or repairmen of materials, supplies, or services for exclusive use in erecting structures or building on, or otherwise improving, altering or repairing real property of...[o]rganizations described in subsections (a) and (b) of section 9 of the "Sales and Use Tax Act"...that are exempt from the tax imposed [thereunder]."¹⁴ In order to qualify for this exemption, the Contractor shall comply with the rules and regulations prescribed by the State of New Jersey Division of Taxation. The attention of Contractor is directed to Form ST-13, Contractor's Exempt Purchase of Certificate, available on the State of New Jersey Division of Taxation's website: www.state.nj.us/treasury/.

The Authority is an organization of the type described in subsection (a)(1) of section 9 of the Sales and Use Tax Act.¹⁵

In view of the foregoing, the Contractor shall not include in his price(s) any amounts for sales and use taxes on materials, supplies, or services for use in the performance of improvements, alterations, or repairs at the construction site. However, receipts for the rental of equipment to be used at the construction site may be subject to sales and use taxes, and therefore, the Contractor should include in his price(s) any amounts for sales and use taxes on rental of equipment.

¹⁴ N.J.S.A. 54:32B-8.22.

¹⁵ N.J.S.A. 54:32B-9.

If (i) any claim is made against the Contractor by the State of New Jersey for such sales or compensating use taxes, 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 State of New Jersey for such sales or compensating use taxes, then the Authority will reimburse the Contractor in an amount equal to the amount of such tax required to be paid in accordance with the requirements of law, provided that:

- A. the Contractor and any subcontractor, has or have complied with the rules and regulations of the State of New Jersey Division of Taxation relating to the procedure by which the tax exemption may be claimed, and has or have filed all the forms and certificates required by applicable laws, rules and regulations in connection with such exemption; 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 any subcontractor, has given immediate notice to the Authority of any such claim, has or have cooperated with the Authority and its designated attorney in contesting said claim, and has or have furnished 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 or longer if such a claim is pending or threatened at the end of such six years.

If the Authority elects to contest any such claim, it will bear the expense of such contest.

CHAPTER II

ADJUSTMENTS AND PAYMENTS

18. ADJUSTMENTS OF LUMP SUM

If any 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 adjustment by way of reduction in the Lump Sum as he may in his sole discretion deem equitable and reasonable, and in making such adjustment, 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 adjustments by way of reduction in the Lump Sum in lieu of those for which provision is heretofore made in this numbered clause.

19. COMPENSATION FOR EXTRA WORK

The Chief Engineer shall have authority to agree in writing with the Contractor on behalf of the Authority upon lump sum or other compensation for Extra Work in lieu of the compensation for which provision is hereinafter made in this numbered clause.

If such agreement on compensation is not made, and Extra Work be performed, the Contractor's compensation shall be increased by the following amounts and such amounts only:

- 1.) For Extra Work consisting of refuse container services, an amount equal to the actual net cost in money of the labor and materials required for the provision of such services, plus seven per cent (7%) of such net cost.
- 2.) For Extra Work consisting of performance of construction work at the construction site, an amount determined as follows:
 - a. In the case of Extra Work performed by the Contractor personally, an amount equal to the actual net cost in money of the labor and materials required for such Extra Work, plus twenty per cent (20%) of such net cost, plus such rental for equipment (other than small tools) required for such Extra Work as the Engineer deems reasonable.
 - b. In the case of Extra Work performed by a subcontractor, an amount equal to the actual net cost in money of the labor and materials required for such Extra Work, plus twenty per cent (20%) of such net cost plus such rental for equipment (other than small tools) required for such Extra Work as the Engineer deems reasonable, plus seven per cent (7%) of the sum of the foregoing cost, percentage of cost, and rental.

As used in this numbered clause (and in this clause only):

"Refuse Container Services" means the delivery, removal and emptying of refuse containers as required during the performance of Extra Work subject to approval by the Engineer.

"Labor" means foremen, surveyors, laborers, mechanics and other employees below the rank of superintendent, exclusive of timekeepers, directly employed at the construction site; whether employed by the Contractor or by the subcontractors, subject to the Engineer's authority to determine what employees of any category are "required for Extra Work" and as to the portion of their time allotted to Extra Work; and "cost of labor" means the wages actually paid to and received by such employees; however, all wages actually paid that are in excess of the prevailing wages in the performance of Extra Work shall be subject, on each occasion, to the initial and continuing approval of the Engineer in advance of the performance of such Extra Work; plus a proper proportion of (a) vacation allowances and union dues and assessments which the employer actually pays pursuant to contractual obligation upon the basis of such wages, and (b) taxes actually paid by the employer pursuant to law upon the basis of such wages. At the Contractor's option, the amount of ten per cent (10%) will be applied to all wages actually paid to cover all labor costs including (a) and (b) above, but excluding paid holidays. The Contractor shall notify the Engineer whether or not the ten per cent (10%) option will be chosen prior to the initial performance of any Extra Work or Net Cost Work, if applicable. Such selection shall also apply to all subcontractors and shall remain in effect for the duration of the Contract. "Employees" as used above means only the employees of one employer.

For whichever option is selected, in accordance with the clause of the Form of Contract entitled "Prevailing Rate of Wage", the Contractor and all subcontractors shall maintain complete and detailed payroll records, and such records shall be made available for inspection by the Authority.

"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 pursuant to 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.

"Work day" in reference to an item of equipment means a day other than a Saturday, Sunday or legal holiday except that if the particular item of equipment is actually utilized at the construction site by the Contractor or subcontractors under this or any other Contract with the Authority on a Saturday, Sunday or legal holiday said day shall be deemed a work day.

The rental for equipment, whether owned by the Contractor or subcontractors or rented from others and notwithstanding the actual price of any rental or actual costs associated with such equipment, shall be computed by the Engineer on the basis of the following:

A.

- 1.) Hourly rental for those items of equipment listed in the "Rental Rate Blue Book" published by Machinery Information Division, K-III Directory Corporation, 1735 Technology Drive, Suite 410, San Jose, California 95110, (hereinafter called "the Blue Book"), shall be 100% of the applicable rates as listed in said book, reduced to an hourly basis (see formula below) except that such applicable rates shall be reduced by 50% for all hours of rental payable hereunder in excess of 8 hours each day. The edition of this publication to be used shall be the one in effect on the date of the actual rental of the equipment. The "Estimated Operating Cost per Hour" as set forth for such item of equipment in the Blue Book shall be added to the hourly rental for each hour that such equipment is actually engaged in performing Extra Work. No amount for operating cost will be allowed during periods when such equipment is not actually engaged in performing Extra Work (i.e., standby rental time). None of the provisions of the Blue Book shall be deemed referred to or included in this Contract except as specifically set forth in this Section.
- 2.) If no listing of rental rate and/or hourly operating cost for the item of equipment is in the Blue Book, the Engineer shall determine the reasonable rate of rental and/or hourly operating cost of the particular item of equipment by such other means as he finds appropriate.
- 3.) In the event the Contractor is directed by the Engineer to immediately perform Extra Work within 24 hours of the direction to proceed, the Engineer shall determine the reasonable rate of rental and/all hourly operating cost of the items of equipment necessary to perform such Extra Work by such means as he finds appropriate. However, if the equipment is owned by the Contractor or owned by a subsidiary of the Contractor, the Blue Book rates will apply as set forth in this clause.

B. When utilizing the rental rates appearing in the Blue Book, the Engineer shall determine the applicable rate and the hourly rental determined therefrom by applying the following criteria:

- 1.) The rate to be applied for an item of equipment used on a particular Extra Work order shall be the monthly rates from the foregoing publication.

The pro rata portion which one hour bears to the applicable rate shall be determined in accordance with the following formula:

Hourly rate based on monthly rental.	1/176 of monthly rental from Blue Book
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- 2.) The rental rate shall be multiplied by the applicable regional adjustment factor shown for such item of equipment in the Blue Book. The adjustment factor shall not apply to the hourly operating cost.

- 3.) If the Engineer should determine that the nature or size of the equipment used by the Contractor in connection with Extra Work is larger or more elaborate, as the case may be, than the size or nature of the minimum equipment determined by the Engineer to be suitable for the Extra Work, the reasonable rental will not be based upon the equipment used by the Contractor but will be based on the smallest or least elaborate equipment determined by the Engineer to have been suitable for the performance of the Extra Work.
- C. In the case of equipment utilized only for Extra Work: (a) in addition to amounts determined as provided in subparagraphs A and B above, there will be added to the rental as computed above the taxes on the rental actually paid by the Contractor or subcontractor and the reasonable cost of transporting such equipment to and from the construction site, including applicable tolls, and (b) notwithstanding the number of hours during which such equipment is utilized, the minimum rental therefor will be for a period of eight hours.

In computing the Contractor's compensation insofar as it is based upon Extra Work, and notwithstanding any provision to the contrary appearing in the Blue Book, 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, taxes (other than those enumerated above), clean-up, consumables including gas and oil, drafting (including printing or other reproduction), coordination, field measurements, maintenance, repairs, insurance, profit to the Contractor and small tools.

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 in such form as set forth below, showing the name and number of each workman employed on such Work and the number of hours which he is employed thereon, (b) a memorandum showing the wages to be paid to each workman, and unless the Contractor has notified the Engineer that he has chosen the ten per cent (10%) option set forth above, the 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, (c) a memorandum showing the amount and character of the materials furnished for such Work, from whom they were purchased and the amount to be paid therefor, and (d) a memorandum of equipment used in the performance of such Work, listing the actual hours of operation for each piece of equipment, together with the rental and operating cost claimed therefor. Template forms for the daily time slips will be provided to the Contractor prior to the commencement of Work. The Contractor shall complete the forms on 8½" x 14" ledger paper, individually and sequentially numbered, for all Work performed by the Contractor and any subcontractors. Submit the completed form with the Contractor's original signature to the Engineer each day for verification by the Engineer. Upon verification, the Engineer will sign the form and provide the Contractor with a copy of the signed form. A duplicate copy of the signed form shall be submitted to the Engineer with the Contractor's billing documentation and accompanied by such memoranda as described in (b), (c) and (d) above.

Such memoranda and time slips 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 or his subcontractors to furnish them with respect to any Work shall constitute a conclusive and binding determination on his part that such Work is not Extra Work and shall constitute a waiver by the Contractor of claims for payment for such Work. The Contractor's compensation for Extra Work shall be subject to audit review by the Authority. The Engineer will notify the Contractor that an audit review will be conducted no later than 90 days from the date of such notification. The Engineer will also provide the Contractor with an estimated duration of the audit. During the audit review, the Contractor shall provide records to substantiate the memorandum and time slips submitted to the Engineer. Failure to provide such Contractor or subcontractor records may result in a reduction or total denial of material, equipment and labor costs for Extra Work. Upon completion of the audit review, the Contractor will be provided with the audit findings of the Authority. If the Contractor disagrees in whole or in part with the audit findings, the Contractor shall notify the Authority of such disagreement in writing within 30 days of receipt of said audit findings or the Authority will deem the audit findings to be final and acceptable to the Contractor. In the event that the Chief Engineer and the Contractor shall agree in writing upon a lump sum or other compensation for Extra Work in lieu of compensation as provided in the second paragraph of this clause, the daily time slips and memoranda required by this paragraph shall not be required subsequent to the date on which such agreement has been reached.

20. COMPENSATION FOR PREMIUM TIME

Where the Engineer directs that the Contractor perform Work at times other than those elsewhere specified in the Contract, and the Contractor directly or through a subcontractor is obligated by the provisions of his applicable collective bargaining agreement to pay premium time rates for such Work then, the Contractor shall be compensated for the cost differential between regular time rates and premium time rates at an amount equal to the total of the following:

- A. For premium time rates paid by the Contractor to his own forces, an amount equal to the premium time portion of the salaries and wages which the employer is required to pay and actually pays to its employees pursuant to the terms of his applicable collective bargaining agreement for the overtime period or periods described above, plus a proper proportion, if any, computed upon the basis of premium time salaries and wages of (1) taxes actually paid by the employer pursuant to law, (2) vacation allowances, other fringe benefits and union dues and assessments which the employer actually pays pursuant to contractual obligations, and (3) increased premiums paid by the Contractor personally, specifically allocable to the insurance required by this Contract, plus five per cent (5%) of such premium portion.
- B. For premium time rates paid by a subcontractor, an amount equal to the premium time portion of the salaries and wages which the employer is required to pay and actually pays to his employees pursuant to the terms of his applicable collective bargaining agreement for the overtime period or periods described above, plus a proper proportion, if any, computed upon the basis of premium time salaries and wages of (1) taxes actually paid by the employer pursuant to law, (2) vacation allowances, other fringe benefits and union dues and assessments which the employer actually pays pursuant to contractual obligations, and (3) increased premiums paid by a subcontractor, specifically allocable to the insurance required by this Contract, plus five per cent (5%) of such premium portion, plus two per cent (2%) of the foregoing cost.

All additions to the Contractor's compensation provided for in this numbered clause require the prior written approval of the Engineer and are conditioned on the Contractor's verifiable by the Authority payment of such amounts to his subcontractor.

The additions to the Contractor's compensation provided in this clause shall not apply where the Engineer directs the Contractor to perform work at times other than those specified elsewhere in the Contract and also determines that such work is required to mitigate previous delays in the Contractor's performance of Work.

21. COMPENSATION FOR EMERGENCY DELAYS

If the Contractor is specifically directed by the Engineer to suspend his operations as stipulated in the Section of Division 1 of the Specifications entitled "Airport Operations and Conditions" or if the Contractor is specifically directed not to start his operations at a time when operations are permitted to start as stipulated in such Section, and if solely because of such suspension or direction not to start any of the Contractor's or subcontractor's employees or equipment then engaged in or about to start such Work are necessarily kept idle at the construction site, during the hours when they would otherwise be engaged in the performance of the Work, then the Contractor's compensation shall be increased by an amount equal to the salaries and wages in amounts approved by the Engineer which the employer is required to pay and actually pays to such employees for the period or periods of such idleness, plus a proper proportion of (a) taxes actually paid by the employer pursuant to law upon the basis of such salaries and wages, and (b) vacation allowances and union dues and assessments which the employer actually pays pursuant to contractual obligations upon the basis of such salaries and wages, and in addition thereto such rental as the engineer deems reasonable for such equipment during the period or periods of such idleness. The rental for idle equipment shall be computed by the Engineer in accordance with the provisions of the clause of the Form of Contract entitled "Idle Salaried Men and Equipment".

In the event that the Contractor deems that any payment should be made pursuant to this numbered clause, he shall give prompt written notice to the Engineer stating the reasons why he believes such payments should be made and shall moreover, furnish to the Engineer at the end of each day, a memorandum showing the name, payroll title, salary rate and employer of each of the workmen, and description, owner and claimed rental rate for each item of equipment claimed to have been kept idle. Said notice and memorandum are for the purpose of enabling the Engineer to verify the Contractor's claim at the time. Accordingly, notwithstanding any other provisions hereof, the failure of the Contractor to furnish such notice and memorandum shall constitute a conclusive binding determination on his part that he is not entitled to compensation as provided herein and shall constitute a waiver by the Contractor of all claims for such payment, such notice and memorandum being conditions precedent to payment under this numbered clause.

22. MONTHLY ADVANCES

On or about the first day of each month, the Engineer shall (upon receipt from the Contractor of such information as he may require, including a certification in writing, in such form as may be required pursuant to the clause hereunder entitled "Prevailing Rate of Wage", that he has paid and caused his subcontractors to pay at least the prevailing rate of wage and supplements required by such clause) estimate and certify to the Authority the approximate amount of Work performed and compensation earned by the Contractor up to that time showing separately:

- A. The amount of Work (other than Extra Work) performed by the Contractor up to that time and a sum bearing the same proportion to the Lump Sum as the Work performed (other than Extra Work) bears to the Work performed and to be performed (other than Extra Work).

- B. The increases, if any, in the Contractor's compensation for which provision is specifically made elsewhere in this Contract.

As an aid to the Contractor and to facilitate his performance, the Authority shall, within fifteen days after the receipt of each such monthly certificate, advance to the Contractor by check the sums so certified, minus, however, either five per cent (5%) of the amounts certified pursuant to subparagraph A of this numbered clause or Twenty Five Thousand Dollars (\$25,000.00) whichever is less, and minus all prior advances and payments to the Contractor or for his account.

Within seven days of receipt of any sum attributable to Work performed by a subcontractor or materialman or within such later period as is provided in the subcontract or purchase agreement, the Contractor shall advance to the subcontractor or materialman said sum, less such amount, if any, as the Contractor is authorized to retain under the subcontract or purchase agreement.

Notwithstanding the above, the Authority shall have the right, at its sole discretion, to directly pay the subcontractors and material suppliers who perform Work for or furnish materials to the Contractor in connection with the Work of this Contract.

Prior to certifying any amount for payment hereunder, the Engineer may require that the Contractor submit a certification accurately and fully setting forth the total amount due and payable to each subcontractor and supplier for Work performed or materials provided by such subcontractor or supplier in connection with the Work of this Contract. Any payment made by the Authority to a subcontractor or supplier pursuant to the provisions of this numbered clause shall be made in reliance upon such certification and all such payments shall be considered as advances to the Contractor of the compensation payable hereunder. No such payment shall relieve the Contractor of any of its obligations hereunder.

Furthermore, within fifteen (15) days of the Contractor's receipt of the Authority acceptance of the Contractor's Proposal, the Contractor shall submit to the Engineer a listing of all subcontract and material supply agreements entered into by the Contractor for the performance of Work required by this Contract. Such listing shall include the names and addresses of each such subcontractor and supplier and the amounts payable under each such agreement. As and when any modifications are made to such agreements or any additional subcontracts or supply agreements are entered into, the Contractor shall inform the Engineer of such and shall indicate the amounts payable thereunder.

Nothing contained herein shall be deemed to create any additional rights in such subcontractors or suppliers or to alter the rights of the Authority as such are set forth in the clause hereof entitled "Withholding of Payments".

23. RELEASE OF MONIES PREVIOUSLY WITHHELD FROM MONTHLY ADVANCES UPON RENDITION OF A CERTIFICATE OF SUBSTANTIAL COMPLETION

After the rendition of the Certificate of Substantial Completion and with the approval of the Engineer, an amount up to 80% of the total amount of monies withheld from the Contractor's monthly advances in accordance with the preceding clause may be released to the Contractor. If, in the Engineer's judgment, no monies, or less than 80% of the total amount of monies withheld should be released it will be based on, but not limited to, the estimated value of the remaining Work, unresolved claims by subcontractors, the estimate of possible audit adjustments and an assessment of the risks to the Authority in making such a release of monies. This clause does not create a right to such a release of monies or to any specific percentage release, all of which shall remain purely the discretionary decision of the Engineer.

Prior to the release of any amount withheld from the Contractor's monthly advances by the Authority, the Contractor shall submit to the Engineer a certification of all unresolved requests for additional compensation including all items in dispute and potential claims which the Contractor had actual knowledge of or by reasonable inspection and inquiry should have known of, to the date of the certification. Any such items not made known to the Authority by inclusion in the certification of additional compensation requests submitted by the Contractor will be deemed to have been released by the Contractor. Notwithstanding the above provisions, before making any release of monies the Engineer may require the Contractor to submit further information for the Engineer's review and analysis, and shall require the Contractor to execute a separate written release of claims as described above in a form acceptable to the Authority.

Nothing contained herein shall be deemed to alter or diminish the rights of the Authority as such are set forth in the clauses hereof entitled "Withholding of Payments", "Final Payment", "Monthly Advances" or under any other clause of this Contract relating to compensation to the Contractor, any release of monies hereunder being purely at the discretion of the Engineer.

24. FINAL PAYMENT

After the rendition of the Certificate of Final Completion 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.

If so required, the Contractor shall thereupon (i) certify to the Authority in writing, in such form as may be required pursuant to the clause hereunder entitled "Prevailing Rate of Wage", that he has paid and caused his subcontractors to pay at least the prevailing rate of wage and supplements required by such clause and (ii) furnish to the Authority a detailed sworn statement of all claims, just and unjust, of subcontractors, materialmen and other third persons then outstanding and which he has reason to believe may thereafter be made on account of the Work.

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.

The acceptance by the Contractor, or by anyone claiming by or through him, of 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 Contract and for every act and neglect of the Authority and others relating to or arising out of the Contract, including claims arising out of breach of contract and claims based on claims of third persons, excepting only his claims for reimbursement for certain sales taxes as hereinbefore provided. No payment, however, final or otherwise, shall operate to release the Contractor from any obligations in connection with this Contract.

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 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" 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.

The Contractor agrees that he shall not be entitled to, and hereby waives any right he might otherwise have to, and shall not seek any judgment whether under this Contract 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 numbered clause or have the effect in any way of entitling the Contractor 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 Contract including this numbered clause, unless and until the Contractor should obtain a judgment on any claim arising out of or in connection with this Contract (including a claim based on breach of contract) for an amount not included in said Final Payment. In any case in which interest is allowable on the amount of the Final Payment, such interest shall be at the rate of 6% per annum for the period, if any, in which such interest is due.

25. 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 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 claims 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 right 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.

In the event that wages and/or supplements have been paid in an amount less than as required by this Contract, the Authority shall also have the right to withhold from the Contractor out of any payment, final or otherwise, on this, or any other open contract that the Contractor has with the Authority, so much as may be necessary to pay to laborers, mechanics, architects, draftsmen, engineers and technical workers, and others employed on the Work, the difference between the sums such persons should have received as wages and/or supplements and the amounts they actually received, and to pay such sums over to such persons. All such payments shall be deemed to be payments for the Contractor's account. In addition, the Contractor shall be required to pay to the Authority an amount equal to the Authority's cost of any investigation conducted by or on behalf of the Authority, that discovers a failure to pay wages and/or supplements as required by this Contract by the Contractor or its subcontractors, the cost of such investigation to be determined by the Chief Engineer personally. If the Contractor fails or refuses to pay for the cost of any such investigation after demand by the Authority, the Authority may deduct from any amount payable to the Contractor by the Authority, under the Contract or under any other open contract between the Contractor and the Authority, an amount equal to the cost of such investigation.

If, however, the payment of any amount due to the Contractor shall be improperly delayed by the fault of the Authority, the Authority shall pay the Contractor interest thereon at the rate of six percent (6%) 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

26. TIME FOR COMPLETION AND DAMAGES FOR DELAY

The Contractor shall complete the performance of all Work under this Contract as follows:

- I. Complete all Work required for the operation of the vehicle exhaust system by October 15, 2014.
- II. Complete all remaining Work within 150 calendar days of receipt by the Contractor of the acceptance of his Proposal.

The Contractor shall not commence the performance of the Work until the date of receipt by him of notice from the Authority that the insurance procured by him in accordance with the clause hereof entitled "Insurance Procured by Contractor" is satisfactory, as evidenced by the certificate(s) to be furnished in accordance with said clause.

The time for completion shall not be extended on account of the time required to furnish the documents referred to above, but the Authority shall give notice to the Contractor within ten days after receipt of the certificate of insurance as to whether or not such insurance is satisfactory.

The Contractor's obligations for the performance and completion of the Work within the time or times provided for in this Contract are of the essence of this Contract. The Contractor guarantees that he can and will complete the performance of the Work within the time hereinbefore stipulated or within the time as extended in accordance with the clause hereof entitled "Extensions of Time". Inasmuch as the damage and loss to the Authority which will result from delay in completing the performance of the Work within the time herein stipulated will include items of loss whose amount will be incapable or very difficult of accurate estimation, the damages to the Authority for each calendar day by which the Contractor does not complete performance of the Work within the time or times above stipulated or within such time or times as extended in accordance with the clause hereof entitled "Extensions of Time", shall be liquidated in the sum of Five Hundred Dollars (\$500) per calendar day.

27. EXTENSIONS OF TIME

The time above provided for completion of any part of the Contract 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:

- A. Such cause is beyond the Contractor's control and arises without his fault;
- B. 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 such Proposals on this Contract except to the extent that the actual monthly average temperature varies from a temperature which is 10 per cent (10%) above or below the monthly normal temperature and except to the extent that the actual number of days of precipitation (of 0.1 inch or more) per month exceeds a number equal to two plus the normal number of days of precipitation per month.

In any case, the variations in temperature and precipitation described in the immediately preceding sentence will be cause for an extension of time only if occurring between the actual time of commencement of the Work at the construction site and the time for completion stipulated in the clause hereof entitled "Time for Completion and Damages for Delay" (or such time as extended as provided for herein). In the case of portions of months the number of days will be pro-rated by the Engineer. Temperature and precipitation shall be as recorded by the U. S. Weather Bureau in its publications, including that entitled "Local Climatological Data with Comparative Data", which is applicable to the area in which the Work is to be performed, and in the case of precipitation, the normal number of days of precipitation (of 0.1 inch or more) per month as abstracted from the aforementioned publications are as follows:

Month	Normal number of days per month on which precipitation exceeds 0.1 inch
January	7
February	7
March	8
April	7
May	6
June	6
July	5
August	7
September	6
October	6
November	7
December	7

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 Work 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.

28. 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 two 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 salaried employees during such full days of idleness, plus 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 rental for idle equipment shall be computed by the Engineer in accordance with the provisions of the clause of the Form of Contract entitled "Compensation for Extra Work"; provided, however, that the seven per cent (7%) of the rental to be paid in accordance with said clause in the case of equipment utilized by subcontractors shall not be payable in connection with such idle equipment; and provided further that the provisions of subparagraph C of said clause shall not be applicable to such idle equipment.

The Contractor shall give written notice to the Engineer before the end of the second of the above mentioned 2 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 2 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 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 second of the above mentioned 2 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.

29. 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 wrongful acts or omissions of the Authority, its officers, agents, employees and contractors, 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 except to the extent, if any, that compensation may be agreed to by the Chief Engineer in writing pursuant to the clause hereof entitled "Compensation for Extra Work" for impact costs incurred by the Contractor in connection with the performance of Extra Work. Subject only to such exceptions, 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 elsewhere in this Contract.

30. 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, whether or not through the fault of the Contractor, 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 under this Contract 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. In the event of such cancellation, no allowance shall be made for anticipated profits.

CHAPTER IV

CONDUCT OF CONTRACT

31. AUTHORITY OF DIRECTOR

If at any time it shall be, from the viewpoint of the Authority, impracticable or undesirable in the judgment of the Director to proceed with or continue the performance of the Contract or any part thereof, whether or not for reasons beyond the control of the Authority, he shall have authority to suspend performance of any part or all of the Contract until such time as he may deem it practicable or desirable to proceed. Moreover, if at any time it shall be, from the viewpoint of the Authority impracticable or undesirable in the judgment of the Director to proceed with or continue the performance of the Contract or any part thereof whether or not for reasons beyond the control of the Authority, he shall have authority to cancel this Contract as to any or all portions not yet performed and as to any materials not yet installed even though delivered. Such cancellation shall be without prejudice to the rights and obligations of the parties arising out of portions already performed, but no allowance shall be made for anticipated profits.

32. 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 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 Work now or hereafter required. Such variation, increase, diminution or countermanding need not be based on necessity but may be based on convenience.

To resolve all disputes and to prevent litigation the parties to this Contract authorize the Chief Engineer to decide all questions of any nature whatsoever arising out of, under, or in connection with, or in any way related to or on account of, this Contract (including claims in the nature of breach of Contract or fraud or misrepresentation before or subsequent to acceptance of the Contractor's Proposal and claims of a type which are barred by the provisions of this Contract) and his decision shall be conclusive, final and binding on the parties. His decision may be based on such assistance as he may find desirable. The effect of his decision shall not be impaired or waived by any negotiations or settlement offers in connection with the question decided, whether or not he participated therein himself, or by any prior decision of the Engineer or others, which prior decisions shall be deemed subject to review, or by any termination or cancellation of this Contract provided, however, that notwithstanding the decision reached by the Chief Engineer in a review of determinations by the Chief of Construction or Engineer of Construction or Engineer that a particular item of Work is not Extra Work the Contractor shall be compensated therefor as provided in written orders of the Chief of Construction or Engineer of Construction or Engineer expressly and unmistakably indicating his intention to treat Work described therein as Extra Work issued in accordance with the provisions of the clause hereof entitled "Extra Work Orders" for amounts not in excess of \$250,000.

All such questions shall be submitted in writing by the Contractor to the Chief Engineer for his decision, together with all evidence and other pertinent information in regard to such questions, in order that a fair and impartial decision may be made. In any action against the Authority relating to any such question the Contractor must allege in his complaint and prove such submission, which shall be a condition precedent to any such action. No evidence or information shall be introduced or relied upon in such an action that has not been so presented to the Chief Engineer.

This numbered clause shall be governed by and construed in accordance with the law of the State of New York, without giving effect to its choice of law provisions.

33. 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 Work and shall interpret Contract Drawings, Specifications and any orders for 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 Contractor is requested to orally advise the Engineer of questions as they arise. Although such advice will not substitute for the written notice and information for which requirements are set forth elsewhere herein, it is anticipated that it will facilitate prompt decisions on the part of the Engineer and others.

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.

34. NOTICE REQUIREMENTS

No claim against the Authority shall be made or asserted in any action or proceeding at law or in equity, and the Contractor shall not be entitled to allowance of such claim, unless the Contractor shall have complied with all requirements relating to the giving of written notice of the information with respect to such claim as provided in this numbered clause. The failure of the Contractor to give such written notice and information as to any claim shall be conclusively deemed to be a waiver by the Contractor of such claim, such written notice and information being conditions precedent to 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, this Contract (including claims in the nature of breach of Contract or fraud or misrepresentation before or subsequent to acceptance of the Contractor's Proposal and claims of a type which are barred by the provisions of this Contract) for damages, payment or compensation of any nature or for extension of any time for performance of any part of this Contract.

The requirements as to the giving of written notice and information with respect to claims shall be as follows:

- A. In the case of any claims for Extra Work, extension of time for completion, idle salaried men and equipment, or any other matter for which requirements are set forth elsewhere in this Contract as to notice and information, such requirements shall apply.

- B. In the case of all other types of claim, notice shall have been given to the Engineer, personally, as soon as practicable, and in any case, within 48 hours, 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 Contractor, including daily records showing all costs which the Contractor may be incurring or all other circumstances which will affect any claim to be made, which records shall be submitted to the Engineer, personally.

The above requirements for notices and information are for the purpose of enabling the Authority to avoid waste of public funds by affording it promptly the opportunity to cancel or revise any order, change its plans, mitigate or remedy the effects of circumstances giving rise to a claim or take such other action as may seem desirable and to verify any claimed expense or circumstances as they occur, and the requirements herein for such notice and information are essential to this Contract and are in addition to any notice required by statute with respect to suits against the Authority.

The above referred to notices and information are required whether or not the Authority is aware of the existence of any circumstances which might constitute a basis for a claim and whether or not the Authority has indicated it will consider a claim.

No act, omission, or statement of any kind shall be regarded as a waiver of any of the provisions of this numbered clause or may be relied upon as such waiver except only either a written statement signed by the Executive Director of the Authority or a resolution of the Commissioners of the Authority expressly stating that a waiver is intended as to any particular provision of this numbered clause, and more particularly no discussion, negotiations, consideration, correspondence, or requests for information with respect to a claim by any Commissioner, officer, employee or agent of the Authority shall be construed as a waiver of any provision of this numbered clause or as authority or apparent authority to effect such a waiver.

Since merely oral notice or information may cause disputes as to the existence or substance thereof, and since notice, even if written, to other than the Authority representative above designated to receive it may not be sufficient to come to the attention of the representative of the Authority with the knowledge and responsibility of dealing with the situation only notice and information complying with the express provisions of this numbered clause shall be deemed to fulfill the Contractor's obligation under this Contract.

35. EQUAL EMPLOYMENT OPPORTUNITY

In order to conform with the policy of the Authority the Contractor agrees that the provisions of N.J.S.A. 10:2-1 through 10:2-4, dealing with discrimination in employment on public contracts, and the Rules and Regulations promulgated pursuant thereto, are hereby made a part of this Contract and are binding upon him and that it shall not be a defense to the Contractor in any action arising directly or indirectly out of such legislation and Rules and Regulations that the Authority may not be subject thereto.

The provisions of this numbered clause are for the benefit of the Attorney General of the State of New Jersey, Division on Civil Rights in the Department of Law and Public Safety of the State of New Jersey, and the Director thereof, as well as for the benefit of the Authority, and said Division and Director shall have a right of action against the Contractor to effectuate the intent of this clause.

36. NO DISCRIMINATION IN EMPLOYMENT

During the performance of this Contract, the Contractor agrees as follows:

- A. The Contractor will not discriminate against any employee or applicants for employment because of race, creed, color, national origin, sex, age, disability or marital status, and will undertake or continue existing programs of affirmative action to ensure that minority group persons are afforded equal employment opportunity without discrimination. Such programs shall include but not be limited to, recruitment, 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,
- B. 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 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,
- C. 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 with the Authority, 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,
- D. The Contractor will include the provisions of A. through C. of this numbered clause 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 with the Authority,
- E. The Contractor will submit to the Authority every two weeks a report indicating the number of workers employed at the construction site as of the 1st and 15th days of each month and the projected number of workers to be so employed during the following month. This report shall also indicate the trade in which such workers are employed and, with respect to current employment (but not projected employment), shall indicate the number of such workers who are members of the following groups:
 - 1.) Black persons having origins in any of the Black African racial groups not of Hispanic origin;
 - 2.) Hispanic persons of Puerto Rican, Mexican, Dominican, Cuban, Central or South American culture or origin, regardless of race;
 - 3.) Asian and Pacific Islander persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent or the Pacific Islands;
 - 4.) American Indian or Alaskan Native persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification.

- F. The Contractor agrees that he will fully cooperate with the office of the Attorney General of the State of New Jersey and with the Authority which seeks to deal with the problem of unlawful or invidious discrimination, and with all other State efforts to guarantee fair employment practices under this contract, and said Contractor will comply promptly with all requests and directions from the Attorney General of the State of New Jersey and the Authority in this connection, both before and during construction.
- G. Full cooperation as expressed in F. foregoing shall include, but not be limited to, being a witness or complainant in any proceeding involving questions of unlawful or invidious discrimination if such is deemed necessary by the Attorney General of the State of New Jersey, permitting employees of said Contractor to be witnesses or complainants in any proceeding involving questions of unlawful or invidious discrimination, if such is deemed necessary by the Attorney General of the State of New Jersey, signing any and all documents involved in any proceeding involving questions of unlawful or invidious discrimination, the execution of which are deemed necessary by the Attorney General of the State of New Jersey, participating in meetings, submitting periodic reports on the racial aspects of present and future employment, assisting in inspection at the construction site, and promptly complying with all State directives deemed essential by the Attorney General of the State of New Jersey to insure compliance with all Federal and State laws, regulations and policies against racial or other unlawful or invidious discrimination.
- H. Upon the basis of a finding by the Attorney General of the State of New Jersey that the Contractor has not complied with these nondiscrimination requirements and that by reason thereof there has been a material breach of this Contract, the Executive Director of the Authority shall have the sole discretion and power to declare this Contract null and void upon 10 days' notice to the Contractor. In such event the Contractor shall become liable for any and all damages which shall accrue to the Authority including, but not limited to, the difference between the total cost of completion and the contract price under this Contract.
- I. The provisions of this numbered clause which refer to the Attorney General are inserted in this Contract for the benefit of the Attorney General of the State of New Jersey as well as for the benefit of the Authority, and said Attorney General shall have a direct right of action against the Contractor to effectuate the intent of this clause.

37. AFFIRMATIVE ACTION REQUIREMENTS - EQUAL EMPLOYMENT OPPORTUNITY

The Contractor shall comply with the provisions set forth hereinafter. These provisions are modeled on the conditions for bidding on federal government contracts adopted by the Office of Federal Contract Compliance in 1978.

The Contractor and each subcontractor must fully comply with the clause entitled "Equal Employment Opportunity" and the requirements in this numbered clause. The Contractor commits himself to the goals for minority and female utilization set forth below and all other requirements, terms and conditions of this numbered clause by submitting a properly signed Proposal.

The Contractor shall appoint a company executive to assume the responsibility for the implementation of the requirements, terms and conditions of this numbered clause.

- A. The goals for minority and female participation, expressed in percentage terms, for the Contractor's workforce at the construction site under this Contract are as follows:

Minority, except laborers	30%
Minority, laborers	40%
Female, except laborers	6.9%
Female, laborers	6.9%

These goals are applicable to all construction Work performed at the construction site under the Contract.

The Contractor's compliance with this numbered clause shall be based on his implementation of the clause entitled "Equal Employment Opportunity", and specific affirmative action obligations required herein of minority and female employment and training must be substantially uniform throughout the length of the Contract and in each trade. The transfer of minority or female employees or trainees from contractor to contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the Contract. Compliance with the goals will be measured against the total work hours performed.

B.

- 1.) The Contractor shall provide written notification to the Director, Office of Business Diversity and Civil Rights of the Port Authority of New York and New Jersey, within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under this Contract. The notification shall list the name, address and telephone number of the subcontractor; employer identification number; estimated dollar amount of the subcontract; estimated start and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.
- 2.) The Contractor shall submit a Workforce Projection Schedule, which shall be correlated to the progress schedule, within thirty days after acceptance of the Contractor's Proposal, for the approval of the Engineer. The Contractor shall maintain and periodically update it at intervals as required by the Engineer. The Workforce Projection Schedule shall include the time period in which each trade shall be utilized, the average number of workers required per trade on a weekly basis, the peak period for each trade, and the number of workers required per trade for the peak period on a weekly basis.

C.

- 1.) As used in this numbered clause:
 - a. "Director" means Director, Office of Business Diversity and Civil Rights of the Authority;
 - b. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U. S. Treasury Department Form 941;

- c. "Minority" includes:
- (i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
 - (ii) Hispanic persons of Puerto Rican, Mexican, Dominican, Cuban, Central or South American culture or origin, regardless of race;
 - (iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
 - (iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).
- 2.) Whenever the Contractor, or any subcontractor at any tier, subcontracts a portion of the Work involving any construction trade, he shall physically include in each subcontract in excess of \$10,000 such provisions as are necessary for the Contractor to achieve the aggregate goals set forth above.
- 3.) The Contractor shall implement the specific affirmative action standards provided in 6.) a. through p. hereof. The goals set forth above are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in the total workforce at the construction site under the Contract including employees of the Contractor and the subcontractors. The Contractor is expected to make substantially uniform progress toward his goals in each craft during the period specified. These goals may be achieved through utilization of journeyworkers and apprentices. In the event they are not achieved through the utilization of journeyworkers, the maximum number of apprentices provided for in the applicable collective bargaining agreement may be utilized to achieve said goals.
- 4.) Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations hereunder.
- 5.) In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.
- 6.) The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these provisions shall be based upon his effort to achieve maximum results from his actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:
- a. 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 his unions have employment opportunities available, and maintain a record of the organizations' responses.

- b. Develop maximum job opportunities for apprentices appropriate to the conditions of the Work and subject to the applicable collective bargaining agreement, in conjunction with training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship 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 6.) a. above.
- c. 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 and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.
- d. Provide immediate written notification to the Director when the 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 his obligations.
- e. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such working environment, with specific attention to minority or female individuals working at such sites or in such facilities.
- f. 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 his EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company 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 company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.
- g. Review, at least annually, the company'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 onsite supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. 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.
- h. 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.

- i. Direct his recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations 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.
 - j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth.
 - k. Tests and other selection requirements shall comply with 41 CFR Part 60-3.
 - l. Conduct, at least annually, an inventory and evaluation at least 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.
 - m. 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.
 - n. 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.
 - o. 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.
 - p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.
- 7.) Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (6.) a. through p.). 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 as fulfilling any one or more of his obligations under 6.) a. through p. hereof 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, ensures 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 his individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's non-compliance.

- 8.) Goals for minorities and for women have been established. The Contractor, however, is required 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. Consequently, the Contractor may be in violation hereof if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved his goals for women generally, the Contractor may be in violation hereof if a specific minority group of women is under-utilized).
- 9.) 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.
- 10.) The Contractor shall not enter into any subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.
- 11.) The Contractor shall carry out such sanctions and penalties for violation of this clause and of the clause entitled "Equal Employment Opportunity", including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered by the Authority. Any Contractor who fails to carry out such sanctions and penalties shall be in violation hereof.
- 12.) The Contractor, in fulfilling his obligations hereunder shall implement specific affirmative action steps, at least as extensive as those standards prescribed in 6.) hereof so as to achieve maximum results from his efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of these provisions, the Authority shall proceed accordingly.
- 13.) The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports, including the Monthly Employment Utilization Report, relating to the provisions hereof as may be required and to keep records. Records shall at least include for each employee the name, address, telephone numbers, 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), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.
- 14.) Nothing herein provided shall be construed as a limitation upon the application of any laws which establish 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).

38. AFFIRMATIVE ACTION PROGRAMS

The Contractor assures that he will undertake an affirmative action program as required by 14 CFR Part 152, Subpart E, to insure that no person shall on the grounds of race, creed, color, national origin, or sex be excluded from participating in any employment activities covered in 14 CFR Part 152, Subpart E. The Contractor assures that no person shall be excluded on these grounds from participating in or receiving the services or benefits of any program or activity covered by this subpart. The Contractor assures that he will require that his covered suborganizations provide assurances to the Contractor that they similarly will undertake affirmative action programs and that they will require assurances from their suborganizations, as required by 14 CFR Part 152, Subpart E, to the same effect.

39. PREVAILING RATE OF WAGE

The Contractor shall pay or provide (and shall cause all subcontractors to pay or provide) 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 and supplements for others engaged in the same trade or occupation in the locality in which the Work is being performed as determined by the Engineer.

For purposes of this Contract, the Engineer has determined that the prevailing rates of wage and supplements are those established by the Secretary of Labor of the United States pursuant to the Davis-Bacon Act (40 U.S.C.A. 276a) for the locality in which the Work is to be performed. The schedule of wages and supplemental benefits which are currently in effect is attached hereto. However, the applicable rates shall be those which are in effect on the date of opening of Proposals.

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 or provide any such workman, laborer or mechanic less than the rates of wages and supplements 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 and supplements actually paid or provided 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 or provision of at least the above minimum, and providing for a cause of action in the event of the subcontractor's failure to pay or provide such wages and supplements) such workman, laborer or 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 or providing higher supplements than the minimum 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 herein before prescribed. All wages actually paid that are in excess of the prevailing wages in the performance of Extra Work and Net Cost Work, if applicable, shall be subject, on each occasion, to the initial and continuing approval of the Engineer in advance of the performance of such Extra Work and Net Cost Work, if applicable.

The Contractor shall post at the Work site, in a place that is prominent, accessible and visible to all employees of the Contractor and his subcontractors during the daily time period that the Contractor and/or subcontractor performs Work at the site, the appropriate prevailing wage and supplement schedules. The Contractor must inform all employees, including those of his subcontractors, that they may obtain a copy of the prevailing wage and supplement schedule from the Contractor.

The Contractor and every subcontractor shall make and maintain weekly payroll records during the course of the Work and for the period set forth in the clause hereof entitled "Authority Access to Records" for all employees employed in the Work. Such records shall contain the name, address and last four digits of the social security number of each such employee (Contractors and subcontractors must maintain the full social security number of each employee and shall provide them upon request to the Port Authority Inspector General), the employee's correct payroll classification, rate of pay and supplements, daily and weekly number of hours worked, deductions made and actual wages and supplements paid. The Contractor shall submit these weekly payroll records to the Authority (on forms furnished by the Authority) of all his payroll records and those of each of his subcontractors as the Authority may require with the Contractor's monthly Payment Application, together with an affidavit by the Contractor and by each subcontractor to the effect that such payroll records are correct and complete, the wage and supplement rates contained therein are not less than those required by the provisions of this Contract, and the classifications set forth for each employee conform with the Work performed. Such copies and summaries and the original payroll records shall be available for inspection by the Authority (including its Inspector General), and the Contractor and his subcontractors shall permit such representatives to interview employees during Work hours at the construction site.

The Engineer may at any time request the Contractor to prepare a daily report on the Authority form entitled *Contractor Daily Sign-In Sheet*, copies of which can be obtained from the Engineer. The *Contractor Daily Sign-In Sheet* shall be completed as follows:

- 1.) At the beginning of each workday the Contractor shall:
 - a. fill in the top of the *Contractor Daily Sign-In Sheet*, including the location, date, contractor/subcontractor name and contract number;
 - b. ensure that each employee, including those of subcontractors, has printed and signed his or her name and indicated his or her work classifications, the last four digits of his or her social security number, and his or her starting time;
- 2.) At the end of each workday, the Contractor shall:
 - a. ensure that each employee, including those of subcontractors, has signed out and indicated his or her ending time;
 - b. sign the Certification Statement at the bottom of the form to indicate that the information contained in the *Contractor Daily Sign-In Sheet* is true and accurate; and
 - c. submit the original completed form to the Engineer's representative.

In an area of his office at the site of the Work which is accessible to his employees, the Contractor shall display such printed material as may be provided by the Engineer setting forth information for the employees of the Contractor and his subcontractors concerning the wage and supplemental benefit requirements set forth in this numbered clause. The Contractor shall also cause each of his subcontractors to display such material in a similarly accessible place in any office which the subcontractor maintains at the site of the Work.

The Contractor's failure to comply with any provision of this numbered clause shall be deemed a substantial breach of this Contract.

40. EXTRA WORK ORDERS

No Extra Work of a cost in excess of \$250,000 shall be performed except pursuant to written orders of the Chief Engineer expressly and unmistakably indicating his intention to treat the Work described therein as Extra Work; and, no Extra Work of a cost of \$250,000 or less shall be performed except pursuant to written orders of the Chief Engineer, Chief of Construction, Engineer of Construction or Engineer expressly and unmistakably indicating his intention to treat the Work described therein as Extra Work.

In the absence of such an order signed by the Chief Engineer in the case of Extra Work of a cost in excess of \$250,000 and by the Chief Engineer or Chief of Construction or Engineer of Construction or Engineer in the case of Extra Work of a cost of \$250,000 or less, if the Engineer shall direct, order or require any Work, whether orally or in writing, which the Contractor deems to be Extra Work, the Contractor shall nevertheless comply therewith, but shall within twenty-four (24) hours give written notice thereof to the Chief Engineer and the Engineer, stating why he deems it to be Extra Work, and shall moreover furnish to the Engineer time slips and memoranda as required by the clause hereof entitled "Compensation for Extra Work". 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 performance of 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.

41. PERFORMANCE OF EXTRA WORK

The provisions of this Form of Contract relating generally to Work and its performance shall apply without exception to any Extra Work required and to the performance thereof. Moreover, the provisions of the Specifications relating generally to the Work and its performance shall also apply to any Extra Work required and to the performance thereof, except to the extent that a written order in connection with any particular item of Extra Work may expressly provide otherwise.

42. TITLE TO MATERIALS

All materials to become part of the permanent construction 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 the 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.

43. ASSIGNMENTS AND SUBCONTRACTS

Any assignment or other transfer by the Contractor of this Contract or any part hereof or of any of his rights hereunder or of any monies due or to become due hereunder and any delegation of any of his duties 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 Work to such persons as the Engineer may, from time to time, expressly approve in writing. For each individual, partnership or corporation proposed by the Contractor as a subcontractor, the Contractor shall submit to the Authority a certification or, if a certification cannot be made, a statement by such person, partnership or corporation to the same effect as the certification or statement required from the Contractor pursuant to the clauses of the "Information For Bidders" entitled "Certification of No Investigation (Criminal or Civil Anti-Trust), Indictment, Conviction, Suspension, Debarment, Disqualification, Prequalification Denial or Termination, Etc; Disclosure of Other Required Information" and "Non-Collusive Bidding and Code of Ethics Certification; Certification of No Solicitation Based on Commission, Percentage, Brokerage, Contingent Fee or Other Fee" 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 Work. Approval of a subcontractor may be rescinded for, among other things, failure of the Contractor to furnish the subcontractor's certificate of insurance, as required by the Form of Contract clause entitled "Insurance Procured by Contractor", within the time set forth in said clause.

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 the Contract to the satisfaction of the Engineer, the Engineer shall have the absolute right to rescind his approval forthwith and to require the performance of the Contract by the Contractor personally or through other approved subcontractors.

44. 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.

45. CERTIFICATES OF PARTIAL COMPLETION

If at any time prior to the rendition of the Certificate of Final Completion, 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 from any obligations under or upon this Contract.

46. CERTIFICATE OF SUBSTANTIAL COMPLETION

Prior to the rendition of the Certificate of Final Completion, the Engineer may deem the entire Work to be substantially completed when, in the judgment of the Engineer, the permanent construction has been satisfactorily completed to the point where the Work is fit for its intended purpose and use. The Engineer may, if such a determination of substantial completion is made and at such time, render to the Authority and to the Contractor a certificate in writing to that effect (herein called the Certificate of Substantial Completion), and thereupon or at any time thereafter the Authority may take over and use the permanent construction described in such Certificate and exclude the Contractor therefrom. Whether to make a determination of a substantial completion as to any portion of the Work, and whether to render such a Certificate, shall be the discretionary determination of the Engineer based upon an examination and appraisal of the completed Work, and no right to such a determination or certification is established in the Contractor by this provision.

The rendition of such Certificate of Substantial Completion shall not relieve the Contractor of his obligation hereunder to complete the Work of this Contract nor shall it 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 Substantial Completion by the Authority shall not operate to release the Contractor from any obligations under or upon this Contract.

When the Contractor is of the opinion that the Work is substantially complete as described above, the Contractor may submit to the Engineer a written request that the Engineer inspect the Work so as to determine, in the Engineer's sole opinion, whether substantial completion has been achieved. The Contractor's written request shall list the specific items of Work that are incomplete. Upon such a request, the Engineer will respond within 30 days with a Certificate of Substantial Completion or provide a written explanation of the reasons why the Work is not substantially complete including a list of open items necessary to achieve substantial completion. Nothing contained herein shall be deemed to preclude the Engineer from making a determination of substantial completion in the absence of a request therefor by the Contractor.

47. CERTIFICATE OF FINAL COMPLETION

After the satisfactory completion of all Work whatsoever required 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 Final Completion) 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 Final Completion 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 Final Completion by the Authority shall not operate to release the Contractor from any obligations under or upon this Contract.

48. NO GIFTS, GRATUITIES, OFFERS OF EMPLOYMENT, ETC.

During the term of this Contract, the Contractor shall not offer, give or agree to give anything of value either to an Authority employee, agent, job shopper, consultant, construction manager or other person or firm representing the Authority, or to a member of the immediate family (i.e, a spouse, child, parent, brother or sister) of any of the foregoing, in connection with the performance by such employee, agent, job shopper, consultant, construction manager or other person or firm representing the Authority of duties involving transactions with the Contractor on behalf of the Authority, whether or not such duties are related to this Contract or any other Authority contract or matter. Any such conduct shall be deemed a material breach of this Contract.

As used herein "anything of value" shall include but not be limited to any (a) favors, such as meals, entertainment, transportation (other than that contemplated by the Contract or any other Authority contract), etc., which might tend to obligate the Authority employee to the Contractor, and (b) gift, gratuity, money, goods, equipment, services, lodging, discounts not available to the general public, offers or promises of employment, loans or the cancellation thereof, preferential treatment or business opportunity. Such term shall not include compensation contemplated by this Contract or any other Authority contract.

Where used in this clause, the term "Authority" shall be deemed to include all subsidiaries of the Authority. Currently, those subsidiaries are the Port Authority Trans-Hudson Corporation (PATH), the Newark Legal and Communications Center and the New York and New Jersey Railroad Corporation.

In addition, during the term of this Contract, the Contractor shall not make an offer of employment or use confidential information in a manner proscribed by the Code of Ethics and Financial Disclosure dated as of April 11, 1996 (a copy of which is available upon request to the Office of the Secretary of the Authority).

The Contractor shall include the provisions of this clause in each subcontract entered into under this Contract.

CHAPTER V

WARRANTIES MADE AND LIABILITY ASSUMED BY THE CONTRACTOR

49. 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 any papers submitted or referred to in connection with his Proposal are true, and, if the Contractor be a corporation, that it is authorized to perform this Contract;
- B. That he has carefully examined and analyzed the provisions and requirements of this Contract and inspected the construction site, that from his own investigations he has satisfied himself as to the nature of all things needed for the performance of this Contract, the general and local conditions and all other matters which in any way affect this Contract or its performance, and that the time available to him for such examination, analysis, inspection and investigations was adequate;
- C. That the Contract is feasible of performance in accordance with all its provisions and requirements and that he can and will perform it in strict accordance with such provisions and requirements;
- D. 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
- E. That, except only for those representations, statements or promises expressly contained in this Contract, no representation, statement or promise, oral or in writing, of any kind whatsoever by the Authority, its Commissioners, officers, agents, employees or consultants has induced the Contractor to enter into this Contract or has been relied upon by the Contractor, including any with reference to: (1) the meaning, correctness, suitability, or completeness of any provisions or requirements of this Contract; (2) the nature, existence or location of materials, structures, obstructions, utilities or conditions, surface or subsurface, which may be encountered at the construction site; (3) the nature, quantity, quality or size of the materials, equipment, labor and other facilities needed for the performance of this Contract; (4) the general or local conditions which may in any way affect this Contract or its performance; (5) the price of the Contract; or (6) any other matters, whether similar to or different from those referred to in (1) through (5) immediately above, affecting or having any connection with this Contract, the bidding thereon, any discussions thereof, the performance thereof or those employed therein or connected or concerned therewith.

Moreover, the Contractor accepts the conditions at the construction site as they may eventually be found to exist and warrants and represents that he can and will perform the Contract under such conditions and that all materials, equipment, labor and other facilities required because of any unforeseen conditions (physical or otherwise) shall be wholly at his own cost and expense, unless specifically provided for elsewhere in this Contract.

Nothing in the Contract Drawings or Specifications or any other part of the Contract is intended as or shall constitute a representation by the Authority as to the feasibility of performance of this Contract or any part thereof. Moreover, the Authority does not warrant or represent either by issuance of the Contract Drawings and Specifications or by any provision of this Contract as to time for performance or completion or otherwise that the Contract may be performed or completed by the times required herein or by any other times.

The Contractor further represents and warrants that he was given ample opportunity and time and by means of this paragraph was requested by the Authority to review thoroughly all documents forming this Contract prior to opening of Proposals on this Contract in order that he might request inclusion in this Contract of any statement, representation, promise or provision which he desired or on which he wished to place reliance; that he did so review said documents, that either every such statement, representation, promise or provision has been included in this Contract or else, if omitted, that he expressly relinquishes the benefit of any such omitted statement, representation, promise or provision and is willing to perform this Contract without claiming reliance thereon or making any other claim on account of such omission.

The Contractor further recognizes that the provisions of this numbered clause (though not only such provisions) are essential to the Authority's consent to enter into this Contract and that without such provisions, the Authority would not have entered into this Contract.

50. 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 D below:

- A. The risk of loss or damage to the permanent construction prior to the rendition of the Certificate of Final Completion (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 loss, damage to or alterations of the structures to be demolished occurring prior to completion of demolition by the Contractor (such structures being still included, however, in the term "Work"). In the event of such loss, damage or alterations, the Contractor shall nevertheless complete the performance of the Work, including the demolition, without additional cost to the Authority and without compensation for lost salvage value;
- C. The risk of claims, fines or penalties, just or unjust, made by third persons or assessed by courts or governmental agencies or entities against the Contractor or the Authority on account of injuries (including wrongful death), loss, damage or liability of any kind whatsoever arising or alleged to arise out of or in connection with the performance of the Work (whether or not actually caused by or resulting from the performance of the Work) 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, including claims against the Contractor or the Authority for the payment of workers' compensation, whether such claims, fines or penalties are made or assessed and whether such injuries, damage, loss and liability are sustained at any time both before and after the rendition of the Certificate of Final Completion;

- D. 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 Work, 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 C and D above and for all expense incurred by it in the defense, settlement or satisfaction thereof, including expenses of attorneys, except where indemnity would be precluded by applicable law. If so directed, the Contractor shall defend against any claim described in subparagraphs C and D above, 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, such defense to be at the Contractor's cost.

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 by action of its Board of Commissioners may at any time in its sole discretion and without liability on its part cancel the benefit conferred on any of 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 a Certificate of Completion nor the making of Final Payment shall release the Contractor from his obligations under this numbered clause. Moreover, 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 (a) to limit the effect of the provisions of this numbered clause or of any other clause of this Contract relating to such risks or claims, (b) to imply that he assumes or is responsible for risks or claims only of the type enumerated in this numbered clause or in any other clause of this Contract, or (c) to limit the risks which he would assume or the claims for which he would be responsible in the absence of such enumerations.

Inasmuch as the Authority has agreed to indemnify the City of Newark against claims of the types described in subparagraph C above made against said city, the Contractor's obligation under subparagraph C above shall include claims by said city against the Authority for such indemnification, including those arising from acts or omissions (whether negligent or not) of said city.

51. 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".

52. INSURANCE PROCURED BY THE AUTHORITY

In order to reduce the cost of this Contract, the Authority will procure and will maintain in force and pay the premiums on:

- A. A policy of public liability (Comprehensive - Commercial General Liability, including Contractual) insurance on which the Contractor and the subcontractors will be insureds issued by an insurance company satisfactory to the Authority, with current coverage limits of \$50 million per occurrence for bodily injury and property damage liability.

B. A policy of workers' compensation and employer's liability insurance fulfilling the Contractor's and the subcontractor's obligations under the applicable State Workers' Compensation Law for those employees of the Contractor and the subcontractors employed pursuant to this Contract in operations conducted at the site of the Work hereunder. Coverage under this policy may, as appropriate, include one or more of the following endorsements:

- 1.) Longshore and Harbor Workers' Compensation Act Coverage Endorsement. (Applies when performing work on or around navigable waters).
- 2.) Maritime Coverage Endorsement (Applies to masters or members of the crews of vessels, if vessels are used).
- 3.) Federal Employer's Liability Act Coverage Endorsement. (May apply to railroad related Work).

Determination in any instance as to the appropriateness of the included coverage described in B.1, 2 and 3 above will be made based upon information to be provided by the Contractor relating to the mode of performance of Work to be done under the Contract.

The policy described in B above will not provide coverage for any workers' compensation for the Contractor and/or subcontractors who perform any asbestos work. In such cases, the Contractor or subcontractors shall procure and maintain, at their own expense, the workers' compensation insurance in accordance with the requirements of law in the state(s) where the Work will take place, including employer's liability insurance (in limits of not less than \$1 million per occurrence).

Should the Contractor and/or subcontractors be required to procure the workers' compensation insurance, within ten days after the acceptance of his Proposal the Contractor shall deliver to the General Manager, Risk Financing, The Port Authority of NY & NJ, Treasury Department, 225 Park Avenue South, 12th Floor, New York, N.Y. 10003 (Attn: Contract Insurance Review), an original certificate, stating the Contract number, from the insurer. A duplicate certificate evidencing the above insurance shall also be delivered to the Engineer. With regard to insurance required to be procured by a subcontractor, the Contractor shall deliver the certificate described above at least ten days before the subcontractor commences Work.

The requirements for insurance procured by the Contractor or subcontractors shall not in any way be construed as a limitation on the nature or extent of the obligations of the Contractor or subcontractors.

C. A policy of builder's risk insurance, covering the improvements or other Work to be effectuated by the Contractor and the subcontractors, with coverage limits of \$50 million per occurrence for all locations combined (subject to a \$50 million annual aggregate for flood and earthquake damage and a limit of \$10 million per occurrence for damage to off-site storage and property in-transit). The deductible is \$10,000 per occurrence for all losses except those caused by flood and earthquake, where a \$50,000 deductible per occurrence with respect to flood, and a \$25,000 deductible per occurrence with respect to earthquake are in effect. The policy form contains various exclusions, including but not limited to the following property exclusions: automobiles; aircraft; and Contractor's and subcontractors' machinery, tools, and equipment and property of a similar nature, including forms, shoring, scaffolding, temporary structures, rental property/equipment and similar property, not intended to become a permanent part of a building or structure. The Contractor and the subcontractors must refer to the policy form to determine all properties and perils included and excluded and to determine their rights and responsibilities as insureds under the policy form. The Contractor and the subcontractors are responsible for payment for all losses within the deductibles and losses not covered by the builder's risk policies.

The current policies described in A, B and C of this numbered clause are available for examination by appointment in the office of the General Manager, Risk Financing, The Port Authority of NY & NJ, Treasury Department, 225 Park Avenue South, 12th Floor, New York, N.Y. 10003. The policies under A above are subject to certain liability coverage exclusions, which include, but are not limited to, exclusions from liability from claims arising from pollution and exposure to asbestos.

The Contractor and subcontractors shall comply with all obligations of the insured under or in connection with all of the policies described in A, B and C above.

The Authority shall have the right at any time and from time to time at its option to procure insurance substituting in whole or in part for any or all of the policies described in A, B and C above or to require that the Contractor and the subcontractors themselves obtain insurance substituting in whole or part for that above referred to, provided always, however, that the Contractor and the subcontractors shall be afforded coverage as stipulated by the Authority and the Authority shall either pay the premiums on such substitute insurance or reimburse the Contractor and the subcontractors therefor.

Neither the procurement of the above insurance or any substitute insurance nor the extent of the coverage or the limits of liability thereunder shall be construed to be a limitation on the nature or extent of the Contractor's obligations, or to relieve the Contractor of any such obligations, and the procurement of the above insurance is only for the purpose of reducing the cost of the Contract without constituting any representation by the Authority as to the adequacy of the insurance to protect the Contractor against the obligations imposed on the Contractor by law (except the applicable State Workers' Compensation Law) or by this or any other contract.

Notwithstanding any provision of this clause, however, no subcontractor shall be or have the right to be covered under the policies of insurance above referred to until the subcontractor has been expressly approved in writing by the Engineer, as required under this Contract, and such approval may be withheld, among other reasons, until execution by the subcontractor of agreements affirming his obligations provided in this clause with respect to the above insurance.

The provisions of this numbered clause are not intended to create any rights for the Contractor other than rights which may be available to the Contractor under said policies themselves, 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 policies, and no employee or agent of the Authority is authorized to make any such representation or guaranty, either by the provisions of this numbered clause or otherwise, as to the effect of or the coverage under said policies, 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 policies. The Contractor warrants and represents that he has examined and is familiar with the above stated coverages and that in submitting his Proposal he has relied solely on his own interpretation thereof and not on any representations or statements, oral or written, of the Authority, its Commissioners, officers, agents, employees, consultants or contractors.

All negotiations and adjustments with any 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 unless the applicable policy provides otherwise. The Contractor shall, however, inform the Engineer of the progress of all such negotiations and notify the Engineer sufficiently in advance of all meetings thereon so that the Engineer or designated representatives may attend said negotiations if they so desire.

The Authority shall be entitled to all returned premiums, dividends and credits which may become payable at any time for any reason whatsoever in connection with the aforementioned insurance. The Contractor hereby assigns to the Authority all such returned premiums, dividends and credits and the subcontractors shall be deemed to have assigned to the Authority all such returned premiums, dividends and credits by becoming subcontractors under this Contract. The Contractor shall execute and cause the subcontractors to execute any instrument necessary or convenient to evidence the Authority's right to such returned premiums, dividends and credits.

Notwithstanding any payment by the Authority of any insurance premiums, the Authority shall not be deemed the employer of any employees hired by the Contractor or any subcontractor covered by such insurance nor shall it be liable for any of the obligations of such employer.

The Contractor and the subcontractors shall cooperate to the fullest extent with the Authority in all matters relating to the aforementioned insurance and shall comply with all requirements of all insurance policies procured by the Authority. They shall also at their own expense furnish the Engineer or a duly authorized representative with copies of all payrolls, correspondence, papers, records and other things necessary or convenient for dealing with or defending against any claims and for procuring or administering the aforementioned insurance including furnishing the name of any of their employees, officers, or agents whose presence or testimony is necessary or convenient in any negotiations or proceedings involving such insurance.

53. INSURANCE PROCURED BY CONTRACTOR

The Contractor, and all subcontractors, shall maintain and pay the premiums on the policy or policies of insurance for coverage(s) as hereinafter described, which shall cover their operations hereunder, shall be effective throughout the effective period of this Contract, and shall afford coverage(s) in not less than the amounts set forth below:

- A. Commercial Automobile Liability Insurance: covering "any" vehicles on the broadest commercially available form:
 - 1.) Vehicles operating in the Air Operations Area without an authorized escort require a Combined single limit for bodily injury and property damage liability – \$25 million per each accident.
 - 2.) Vehicles operating in the Air Operations Area with an authorized escort require a Combined single limit for bodily injury and property damage liability - \$5 million per each accident.
 - 3.) Vehicles operating outside of the Air Operations Area require a Combined single limit for bodily injury and property damage liability - \$2 million per each accident.
- B. Lead Abatement Liability Insurance

The Contractor shall procure Lead Abatement Liability Insurance, on an occurrence basis, with a limit of liability of \$5 million/occurrence. The policy shall include coverage for environmental cleanup on land and on water. The policy shall be endorsed to include coverages for premises-operation, products-completed operations (for 2 years after the completion of the Contract), broad form property damage, independent contractors, personal injury, blanket contractual liability. The policy shall not contain a sunset provision, commutation clause, or any other provision which would prohibit the reporting of a claim and the subsequent defense and indemnity that would normally be provided by the policy. Self-funded, policy fronting, or other non-risk transfer insurance mechanisms are not acceptable to the Authority, unless full disclosure is made to the Authority prior to any consideration being given. The liability of the Contractor shall not be limited in any manner to the provision of coverages of applicable limits of liability contained within any section of the Contract. The Authority shall be provided a waiver of subrogation.

The policy shall provide transportation coverage for the hauling of lead-based material from the construction site to the final disposition location. Deductibles shall not reduce the limit of liability. The policy shall have coverage for cross-liability/severability of interest. The policy form must "pay on behalf of" rather than "indemnify the insured". The Contractor's insurance shall be primary insurance as respects the Authority, its representatives, officials and employees. Any insurance or self-insurance maintained by the Authority shall be excess of this insurance and shall not contribute with it. The policy shall provide pollution coverage as respects lead-based paint for all phases of the abatement process. The policy shall not contain any provision or definition that would serve to eliminate third party over-claims, including exclusions of the premises owner. The policy must be modified to include, "The insolvency or bankruptcy of the insured or of the insured's estate will not relieve the insurance company of its obligations under this policy".

In addition, the liability policy(ies) shall name the Port Authority of New York and New Jersey, its related entities, their commissioners, directors, officers, partners, employees and agents as additional insureds. The liability policy(ies) and the certificate(s) of insurance shall contain separation of insured conditions and severability of interests clauses for all policies. These insurance requirements shall be in effect for the duration of the Contract and include any warranty/guarantee period and any maintenance period. An act or omission of one of the insureds shall not reduce or void coverage to the other insureds. Furthermore, the Contractor's insurance shall be primary insurance as respects to the above additional insureds. Any insurance or self-insurance maintained by the above additional insureds shall not contribute to any loss or claim.

The certificate(s) of insurance and liability policy(ies) must contain the following endorsement for the above liability coverages:

"The insurer(s) shall not, without obtaining the express advance written permission from the General Counsel of the Authority, raise any defense involving in any way the jurisdiction of the Tribunal over the person of the Authority, the immunity of the Authority, its Commissioners, officers, agents or employees, the governmental nature of the Authority or the provisions of any statutes respecting suits against the Authority".

The Contractor shall deliver certified copies of the policy(ies) described above or certificate(s) of insurance evidencing the existence thereof to the Engineer at the location where the Work will be performed, within ten (10) days after the acceptance of his Proposal. Such policy(ies) or certificate(s) shall state the Contract number and shall contain a valid provision or endorsement that the policy(ies) may not be canceled, terminated, changed or modified without giving thirty (30) days written advance notice thereof to the Authority.

Certified copies of all renewal policies or certificates evidencing their existence shall be delivered to the Engineer at the location where the Work will be performed at least ten (10) days prior to the expiration date of each expiring policy. If at any time any of the certificates or policies shall be or become unsatisfactory to the Authority as to form or substance, or if the carrier issuing any such certificate or policy shall be or become unsatisfactory to the Authority, the Contractor shall promptly obtain a new and satisfactory certificate and policy. Upon request of the General Manager, Risk Financing, the Contractor shall furnish the Authority with a certified copy of each policy stated above.

The requirements for insurance procured by the Contractor shall not in any way be construed as a limitation on the nature or extent of the contractual obligations assumed by the Contractor under this Contract. The insurance requirements are not a representation by the Authority as to the adequacy of the insurance to protect the Contractor against the obligations imposed on him by law or by this or any other contract.

CHAPTER VI
RIGHTS AND REMEDIES

54. 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 Work 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 Work 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 but not be limited to the Contractor's failure to procure insurance satisfactory to the Authority within the time limit specified in the Clause hereof entitled "Insurance Procured by Contractor" and 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 or failure to proceed with any part of the Work 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; any false certification at any time by the Contractor as to any material item certified pursuant to the clauses of the Information For Bidders entitled "Certification of No Investigation (Criminal or Civil Anti-Trust), Indictment, Conviction, Suspension, Debarment, Disqualification, Prequalification Denial or Termination, Etc; Disclosure of Other Required Information" and "Non-Collusive Bidding and Code of Ethics Certification; Certification of No Solicitation Based on Commission, Percentage, Brokerage, Contingent Fee or Other Fee", any false certification at any time by the Contractor or a subcontractor pursuant to the clause "Prevailing Rate of Wage Certification" set forth in the Information for Bidders, or the willful or fraudulent submission of any signed statement pursuant to such clauses which is false in any material respect; or the Contractor's incomplete or inaccurate representation of its status with respect to the circumstances provided for in such clauses.

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.

55. RIGHTS AND REMEDIES OF CONTRACTOR

Inasmuch as the Contractor can be adequately compensated by money damages for any 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 constitute a material breach of this Contract, entitling him to cancel or rescind it or (unless the Engineer shall so direct) to suspend or abandon performance.

56. PERFORMANCE OF WORK AS AGENT FOR CONTRACTOR

In the exercise of its right to take over and complete Work 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 Work and the Contractor shall not remove any of the same from the site of the Work without express permission. Unless expressly directed to discontinue the performance of all Work, 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 which provision is made in the clause hereof entitled "Final Payment", the Engineer will separately state the amount of Work performed by the Authority as agent for the Contractor, credit to the Authority the cost thereof, and 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.

The exercise by the Authority of its right to take over the Work shall not release the Contractor from any of its obligations or liabilities under this Contract.

57. 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 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 Work 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 Work, 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 Work, 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

58. SUBMISSION TO JURISDICTION

The Contractor hereby irrevocably submits himself to the jurisdiction of the Courts of the State of New York and to the jurisdiction of the Courts of the State of New Jersey in regard to any controversy arising out of, connected with, or in any way concerning the Proposal or this Contract. The Contractor agrees that service of process on the Contractor in relation to such jurisdiction may be made, at the option of the Authority, either by registered or certified mail addressed to the applicable office as provided for in the clause hereof entitled "Service of Notices on the Contractor", by registered or certified mail addressed to any office actually maintained by the Contractor or by actual personal delivery to the Contractor if the Contractor be an individual, to any partner if the Contractor be a partnership or to an officer, director or managing or general agent if the Contractor be a corporation.

Such service shall be deemed to be sufficient when jurisdiction would not lie because of the lack of basis to serve process in the manner otherwise provided by law. In any case, however, process may be served as stated above whether or not it might otherwise have been served in a different manner.

59. 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 therein, 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.

60. 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.

61. NON-LIABILITY OF THE AUTHORITY REPRESENTATIVES

Neither the Commissioners of the Authority nor any officer, agent, or employee 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.

62. SERVICE OF NOTICES ON THE CONTRACTOR

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 his office, or its delivery to his office, shall be sufficient service thereof as of the date of such deposit or delivery, except to the extent, if any, otherwise provided in the clause entitled "Submission to Jurisdiction". 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 a corporation, upon any officer, director, or managing or general agent; or if a partnership upon any partner.

63. 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 any change in or modification, termination or discharge of this Contract expressly provided for in this Contract shall be effective as so provided.

The authority of any person to order 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.

64. PUBLIC RELEASE OF INFORMATION

The Contractor and all his subcontractors shall not issue or permit to be issued any press release, advertisement, or literature of any kind, which refers to the Authority or the services performed in connection with this Contract, without first obtaining the written approval of the Chief Engineer. Such approval may be withheld if for any reason the Chief Engineer believes that the publication of such information would be harmful to the public interest or is in any way undesirable. This provision shall survive termination or expiration of this Contract.

SPECIFICATIONS

DIVISION 1

GENERAL PROVISIONS

65. CONSTRUCTION REQUIRED BY THE SPECIFICATIONS

These Specifications relate generally to performing replacement of vehicle exhaust system and associated appurtenances and related Work at the Automotive Shop Building 11 on Brewster Road and the vicinity thereof in Newark Liberty International Airport in New Jersey.

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.

66. 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, together with an area shown on Contract Drawing No. G002 and designated "Area Available For Contractor's Use", except as follows:

- A. The entire construction site will not be available to the Contractor between October 15 and April 15.
- B. The Contractor shall remove all materials and equipment from the designated "Area Available For Contractor's Use" and elsewhere at the construction site when the construction site is not available to him.

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.

67. CONSTRUCTION SITE SECURITY REQUIREMENTS

The Port Authority of New York and New Jersey operates facilities and systems at which terrorism or other criminal acts may have a significant impact on life safety and key infrastructures. The Authority reserves the right to impose multiple layers of security requirements on the performance of the Work of the Contract, including on the Contractor, subcontractors and materialmen, depending upon the level of security required, as determined by the Authority. The Contractor shall comply, and shall ensure that his subcontractors and materialmen comply, with the following security requirements:

- A. Identity Checks, Background Screening and Issuance of Photo Identification Cards

No person will be permitted on or about the construction site without a Facility Photo ID issued by the Authority. Facility Photo IDs are required for employees of the Contractor, subcontractors and materialmen. All employees of the Contractor, subcontractors and materialmen shall wear Facility Photo IDs in a conspicuous and clearly visible position whenever they are working at the construction site.

As part of the requirement for the issuance of Facility Photo IDs, the Contractor shall perform background checks through the Secure Worker Access Consortium (SWAC) and obtain SWAC ID cards with a "HIGH" SWAC approval level for all workmen and materialmen on this Contract. Information on the SWAC process, including office locations and hours of operation, is available on the following website:

<http://www.secureworker.com/> .

The Contractor shall coordinate with the Engineer at least 5 business days in advance to obtain Facility Photo IDs. The SWAC ID card, a state issued driver's license and an additional form of identification shall be presented by each workman and materialman in order to be issued a Facility Photo ID by the Authority. Facility Photo IDs will be issued at no cost to the Contractor.

The Contractor shall ensure that all workmen and materialmen renew their SWAC ID and Facility Photo ID prior to the respective ID cards' expiration dates. Any workman or materialman with an expired SWAC ID or expired Facility Photo ID shall not be permitted access to the construction site.

B. Construction Site Access Control

- 1.) The Authority may provide for construction site access control, inspection and monitoring by security guards retained by the Authority. However, this provision shall not relieve the Contractor of his responsibility to secure equipment and Work at the construction site at his own expense.
- 2.) At the beginning of each work period or work shift, the Contractor shall furnish to the security guards, if any, or to the Engineer a memorandum showing for that work period or work shift:
 - a. The name and company affiliation of each employee of the Contractor or of a subcontractor who is expected to enter the construction site and,
 - b. The name of each firm expected to deliver materials, service equipment or perform other services and a description of such materials or services.

C. High Security Areas

- 1.) If Work under this Contract is required in high security areas, as may be designated as such by the Authority, the Contractor shall comply with certain security procedures while performing Work in such areas. The security procedures may require that the Contractor, subcontractors or materialmen performing Work in such areas be escorted to and from these areas by security personnel designated by the Authority. Further, the Contractor, subcontractors or materialmen may be required to be monitored by security personnel designated by the Authority while performing Work in certain high security areas.
- 2.) Prior to the start of Work at the construction site, the Contractor will be provided with a description of the high security areas from the Authority, which will be in effect on the date that Work commences. The description of high security areas may be changed at any time by the Authority during the duration of this Contract. The Contractor shall notify the Authority no less than twenty-four hours prior to the performance of any Work in a high security area. The Contractor shall conform to the security procedures as may be established by the Authority and the escorting and monitoring of workmen and materialmen hereunder.

The Authority may impose, increase, and/or upgrade security requirements for the Contractor, subcontractors and materialmen during the duration of this Contract to address changing security conditions and/or new governmental regulations. The Contractor will be compensated for changes to the security requirements as directed by the Engineer at the Net Cost of 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 Form of Contract entitled "Compensation for Extra Work". Performance of such Net Cost Work shall be as directed by the Engineer and shall be subject to all provisions of the Contract relating to performance of Extra Work. Compensation for said Net Cost Work shall not be charged against the total amount of compensation authorized for Extra Work.

68. 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 facility operations, other Authority contractors, pedestrians and vehicular traffic all of 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.

69. 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.

70. 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.

71. CONTRACT DRAWINGS

The Contract Drawings which accompany and form a part of these Specifications bear the general title "The Port Authority of NY & NJ - Newark Liberty International Airport - Replacement of Vehicle Exhaust System at Automotive Shop in Building 11 - Contract EWR-924.300" and are separately numbered and entitled as follows:

G001	TITLE SHEET	General
G002	LOCATION PLAN AND INDEX OF DRAWINGS	General
G003	GENERAL NOTES	General
M001	LEGEND, NOTES, AND ABBREVIATIONS	Mechanical
M002	REMOVAL PART PLAN	Mechanical
M003	INSTALLATION PART PLAN	Mechanical
M004	SCHEDULES AND SECTIONS	Mechanical
M005	CONTROL AND OPERATIONAL REQUIREMENTS AND AIR FLOW DIAGRAM	Mechanical
M006	DETAILS	Mechanical

A001	ABBREVIATIONS, LEGEND, DRAWING CONVENTIONS, NOTES, FIRST FLOOR PLAN, REMOVAL PART PLAN AND PARTIAL ELEVATION	Architectural
A002	ELEVATIONS, SECTION AND DETAILS	Architectural
E001	LEGEND, ABBREVIATIONS, AND GENERAL NOTES	Electrical
E002	PART PLAN - REMOVALS	Electrical
E003	EQUIPMENT LOCATIONS AND POWER PART PLAN	Electrical
S001	ROOF FRAMING PLAN, ABBREVIATIONS, LEGEND AND NOTES	Structural
S002	SECTIONS	Structural

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 six (6) copies of the Specifications and Contract Drawings without charge.

72. 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 Authority uses Oracle Primavera Contract Management (formerly known as 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. In general, submissions shall specifically reference Contract Drawing numbers or Specification section numbers for which the item pertains. 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 Section, 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.

73. 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.

74. 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".

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.

In addition, various paragraphs of these Specifications may contain references 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 Proposals upon the present Contract.

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.

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 Section, 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.

75. 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.

76. 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.

77. 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.

78. 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.

79. 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 Form of Contract clause entitled "Compensation For Extra Work".

80. 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.

81. 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 not shown on the Contract Drawings or mentioned in the Specifications, 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.

82. 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.

83. 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 Section. 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 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 requirements in this Section 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 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 Section. 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 Section. 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 Section. 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 Section 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 Section; 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 requirements of this Section, 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.

84. 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.

85. 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.

The Contractor shall verify that employees performing Work under this Contract in the United States are legally present in the United States and authorized to work by means of the federally required I-9 program.

86. 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.

87. 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.

88. 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.

89. 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.

90. 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.

91. 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.

92. 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.

93. REQUIREMENTS FOR CRANES AND DERRICKS

During the performance of Work at the construction site, the use by the Contractor or his subcontractors of power-operated equipment that can hoist, lower and horizontally move a suspended load as specified in Federal Register Part II, Department of Labor, Occupational Safety and Health Administration, 29 CFR Part 1926 Cranes and Derricks in Construction; Final Rule (OSHA), shall be subject to the approval of the Engineer in accordance with this Section.

A. General Requirements:

- 1.) Cranes shall be operated by certified and licensed crane operators. A certified and licensed crane operator shall receive and maintain the following:
 - a. Certificate from the National Commission for the Certification of Crane Operators (NCCCO), or other crane operator certification program found by the New Jersey Department of Labor Crane Operators License Advisory Board to offer an equivalent testing and certification program.
 - b. Crane license issued by the Office of Safety Compliance, certified in one of the following:
 - (i) "Lattice boom truck crane" or "LBT" shall mean a crane consisting of a superstructure mounted on an automotive truck as a base and a means of travel.
 - (ii) "Lattice boom crawler crane" or "LBC" shall mean a crane consisting of a superstructure mounted on a base with crawler treads as a means of travel.
 - (iii) "Small telescoping boom crane" or "TSS" shall mean a crane with extendable and retractable boom mounted on an automotive truck as a base and a means of travel and with a manufacturer's load rating of less than 17.5 tons.
 - (iv) "Large telescoping boom crane" or "TLL" shall mean a crane with extendable and retractable boom mounted on an automotive truck as a base and a means of travel and with a manufacturer's load rating of 17.5 tons or more.
 - c. Medical certificate that meets the requirements of the American Society of Mechanical Engineers Safety Standard B30.5-2007.
- 2.) Determinations will be made in writing by the Engineer on whether cranes and other such equipment meeting OSHA 1926.1400 Scope section (c) entitled "*Exclusions*" shall be exempt from the requirements herein. Such determinations shall in no way relieve the Contractor from conformance with all applicable requirements of this Section and governing codes.

- B. For each crane, submit the following to the Engineer prior to delivery of the crane to the construction site:

- 1.) Equipment Owner Identification and Equipment User Identification.
- 2.) Drawings clearly indicating location of each crane or derrick, all pertinent features of the site, and supporting platforms and structures.
- 3.) Name of competent person as outlined in Federal Register Part II, Department of Labor, Occupational Safety and Health Administration, 29 CFR Part 1926 Cranes and Derricks in Construction: Final Rule (OSHA).
- 4.) Monthly and annual crane inspection reports. Attached to such records of inspection shall be a written designation naming the competent person identified in B. 3.) above, signed by the owner or lessee of the crane.
- 5.) High wind (50 MPH and over) emergency plan.
- 6.) Name of qualified person as defined in Federal Register Part II, Department of Labor, Occupational Safety and Health Administration, 29 CFR Part 1926 Cranes and Derricks in Construction; Final Rule (OSHA). Any OSHA requirement requesting certification by a Professional Engineer shall be fulfilled by a Professional Engineer licensed to practice in the State of New Jersey.

Upon the review and acceptance in writing by the Engineer of all of the above submissions, the Contractor will be permitted to deliver, place and/or assemble the crane at the construction site. Coordinate all such deliveries, placements and/or assemblies with the Engineer.

C. Requirements for cranes upon delivery to the construction site:

- 1.) Submit a valid certificate of competence to operate a crane and classifications for the operator to the Engineer.
- 2.) Submit rigger's qualifications to the Engineer.

D. Requirements for inspection and operation of cranes at the construction site:

- 1.) Crane ropes shall be inspected on a daily and monthly basis and copies of the monthly inspection reports shall be stored in the crane cab.
- 2.) Should the monthly or yearly inspection expire while the crane or derrick is located at the construction site, the Contractor shall ensure that the owner of the crane or derrick performs the monthly and /or annual inspection. Submit proof of the inspection to the Engineer.
- 3.) Pre-lift meetings shall be held in accordance with Federal Register Part II, Department of Labor, Occupational Safety and Health Administration, 29 CFR Part 1926 Cranes and Derricks in Construction; Final Rule (OSHA). Submit pre-lift meeting minutes to the Engineer.

E. 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.

F. If any governing agency issues a letter of deficiency to the Authority or stop work order to the Contractor while the crane or derrick is located at the construction site, the Contractor shall cooperate fully with the governing agency to ensure that all acceptable corrective actions will be taken immediately. Keep the Engineer advised during the performance of all remedial Work.

- G. Cranes or derricks performing an emergency use pursuant to an order or direction issued by the Engineer shall be exempt from the submission requirements herein except for the requirements specified in B. 4.) and C. 1.) above.

94. 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 not available at the construction site. Provide temporary heat 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. Temporary heating units 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 shall be approved by the Engineer. Use of gasoline burning space heaters, open flame, or salamander type heating units is prohibited. The Contractor shall pay costs of installation, maintenance, operation, removal and for fuel consumed.

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.

95. TEMPORARY SANITARY FACILITIES

The Authority will permit use of existing toilet facilities at the construction site at the location(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.

96. PROGRESS SCHEDULE

- A. Within fifteen calendar days after acceptance of the Contractor's Proposal, the Contractor shall prepare and submit a progress schedule for the approval of the Engineer. The progress schedule shall show the dates for the commencement and completion of the items of work of the Contract and all Contract Milestones. The Contractor shall revise and resubmit the progress schedule until approved by the Engineer.
- B. After the approval of such progress schedule, at least once a month or more frequently as directed by the Engineer, the Contractor shall update the progress schedule showing for each such item of work of the Contract the actual start dates, physical percent complete, expected completion dates (for activities in progress), a brief narrative explaining how the planned completion will be achieved, and the actual completion dates. No logic or duration changes shall be made therein without the written approval of the Engineer.

- C. Approval of any progress schedule shall not relieve the Contractor of his obligation to complete the work by the time(s) required in the Contract and in accordance with all other Contract provisions, even though the schedule approved may be inconsistent with such completion.
- D. 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 anytime it is likely that the Work may not be completed by the time(s) required in the 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 required to ensure the completion of the various operations within the time(s) allotted therefore in the approved schedule or by the Contract completion time(s).
- E. In addition to the Authority's other rights, 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".

97. ANALYSIS OF BID

Within fifteen calendar days after 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 form.

98. AIRPORT OPERATIONS AND CONDITIONS

A. General:

- 1.) Place "Water" identification signs on all water vehicles or water tanks, which are to be used for the transportation or storage of water during the course of the Work at the airport.
- 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.) Do not place temporary structures or store materials or equipment required in the performance of the Work within any of the buildings on the airport without specific prior approval of the Engineer.
- 4.) Do not store petroleum or combustible products, or any other flammable materials, within any buildings or in any part of the airport except as designated by the Engineer.
- 5.) Do not burn or bury debris of any type on Authority property, or wash waste materials down sewers or into waterways.
- 6.) Maintain haul routes in a satisfactory condition, and repair damage to such routes, resulting from the Contractor's operations. Unless otherwise approved by the Engineer, clean haul routes each work period and remove earth or other materials, which fall or are otherwise placed on such routes during the performance of Work.

- 7.) Do not park vehicles on any grass or unauthorized area. Free parking of vehicles in any of the airport parking lots will not be permitted.
- 8.) Protect against damaging existing lights, pavement, curbs and other fixed items that are to remain. Such items, which are damaged, either directly or indirectly, by the Contractor during the performance of the Contract, whether negligently or not, shall be restored to the condition that existed prior to such damage.
- 9.) 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.
- 10.) 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 U.S. Occupational Health and Safety Administration (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.
- 11.) Remove on an on-going basis, and before the end of each work period, all paving materials left in the grass shoulder areas, in manholes, catch basins or handholes as a result of the cleaning of the Contractor's equipment.
- 12.) Food or food related debris shall not to be left on or disposed of on the construction site.
- 13.) Equipment, vehicles and materials, not being utilized in the current work period shall be removed and stored in the area designated by the Engineer for such purpose, or if there is no such area designated then such items shall be removed from the airport.

B. Construction Site Conditions Outside Airport Operations Areas:

- 1.) During the time the Contractor is performing the Work, it may at times be necessary because of emergency or abnormal traffic conditions to suspend the Contractor's operations, or to postpone the time at which traffic lanes, parking or other areas become available for performance of Work. Should the Contractor be specifically directed to suspend operations in traffic lanes, parking or other areas, and remove personnel, and obstructing plant, equipment and materials from such lanes or areas, or should such lanes or areas not be available by the times specified, and if solely because of such suspension of operations or late availability of traffic lanes, parking, or other areas 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.) Limit the maximum height of construction equipment to 25-feet unless otherwise shown on the Contract Drawings or expressly approved by the Engineer, obstruction light in accordance with the paragraph herein entitled "Obstruction Marking and Lighting" and obstruction mark and light that portion of equipment which exceeds 25-feet in height in accordance with FAA Advisory Circular 70/7460-1K Current Revision.
- 3.) Perform such duties as the Engineer may direct and as may be necessary in the opinion of the Engineer for the rerouting of traffic in the performance of the Work.
- 4.) Restrict smoking to areas designated by the Engineer for this purpose.

C. Obstruction Marking and Lighting:

- 1.) Material, temporary construction and facilities for obstruction marking and lighting constitute temporary facilities that are and shall remain the property of the Contractor unless otherwise shown on the Contract Drawings or specifically directed by the Engineer to be turned over to the Authority.
- 2.) Provide new materials, or undamaged previously used materials in serviceable condition conforming to the requirements specified herein.
- 3.) In Air Operations Areas or airport areas where obstructions occur within navigable airspace provide obstruction lights, Model UF-60-7-75A-PE-BI as manufactured by Julian A. McDermott Corp., Ridgewood, N.Y., or approved equal.
 - a. Unless otherwise shown on the Contract Drawings, mount an obstruction light on the highest point of construction equipment or obstruction.
 - b. Ensure that obstruction lights are maintained in proper operating condition throughout Work of this Contract, and operate at night seven (7) days a week and during IFR weather conditions.
 - (i) "Night" means the time between the end of evening civil twilight, and the beginning of morning civil twilight, as published in the American Air Almanac, converted to local time.

D. Subsurface Structures:

- 1.) Attention is called to the fact that some of the manholes, chambers or other subsurface structures, in which Work is to be performed under this Contract, contain energized high and low voltage cables, and that various insects, snakes, spiders and rodents may be present.
- 2.) Apply to the Engineer in writing at least 24-hours in advance of the time of: a. entry into existing manholes, handholes, or other subsurface structure or, b. interruption or disruption of utility services. Perform interruptions of electrical services, and entry into subsurface structures in accordance with the provisions of the Section hereof entitled "PERMIT AND REQUIREMENTS FOR ELECTRICAL DISTRIBUTION WORK". Service shall not be cut off on existing installations until all operations have been completed except for connections or reconnections to power source of wiring to be installed under this Contract. Notice to the Engineer shall specifically state which utilities will be affected and the time and the duration of such interruption. Keep all such interruptions to a minimum. No interruption of utility services shall be made without approval of the Engineer whose decision in all cases shall be final.
- 3.) Test each subsurface structure for combustible, toxic or otherwise harmful, gases or vapors in accordance with NFPA No. 328 "Recommended Practice for the Control of Flammable and Combustible Liquids and Gases in Manholes, Sewers and Similar Underground Structures" before permitting personnel to enter. If such gases or vapors are detected, ventilate the subsurface structure until the gases have dissipated to an acceptable level as determined by the OSHA Air Quality regulations prior to entry.
- 4.) Manholes and other subsurface structures in which Work is to be performed under this Contract may contain water. Remove water encountered in such locations and keep the floors of such locations free of standing water at all times workers are in such locations.

- 5.) Verify the exact locations of underground utilities and subsurface structures in the field, and assume all risks of whatever nature, if any, as to the locations of such utilities and structures.
- E. 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.

99. PERMIT AND REQUIREMENTS FOR ELECTRICAL DISTRIBUTION WORK

- A. Notify the Engineer at least 24 hours prior to the commencement of operations at the construction site which in any way may affect existing electrical circuits or require entry into any electrical manhole at the airport, and obtain from the Engineer, Authority Form PA 2497A entitled, "Electrical Work Permit". Execute such form in triplicate each morning prior to commencement of Work on existing electrical circuits or entry into manholes. The Authority will issue this form to the Contractor without payment of a fee.
- B. Allow sufficient time for loads to be transferred to other circuits from the circuits upon which Work is to be performed and for lock out of circuits which are within existing load centers. Comply with other requirements contained on the back of the "Electrical Work Permit" insofar as they are applicable to the Work to be performed under this Contract. In any event, reconnect and place back in operation electrical circuits activating parking field, roadway, runway operations, apron and taxiway lights prior to the close of operations on each day, and in any event before sunset of each day. Overtime operations or premium time required to be paid by the Contractor for or in connection with this numbered Section shall be borne by the Contractor without separate or additional compensation therefor.

100. AIRPORT CONSTRUCTION SAFETY REQUIREMENTS

- A. General Safety Requirements:
 - 1.) The Contractor shall adhere to all safety precautions described in the current edition of the U. S. Department, Federal Aviation Administration Advisory Circular AC 150/5370-2, current edition, Operational Safety on Airports During Construction. The Contractor is to strictly conduct all activities as not to violate safety standards contained in said Advisory Circular.
 - 2.) Throughout the construction period, the following safety and operational practices shall be followed:
 - a. Operational safety shall be a standing agenda item during work progress meetings throughout the duration of the Contract.
 - b. The Contractor shall perform onsite inspections of the construction site throughout the duration of the Contract, with immediate remedy of any safety deficiencies.
 - c. The Contractor, employees of the Contractor, subcontractors, materialmen or any other support workers over whom the Contractor has control, who are required to enter the Aircraft Operations Area will be required to wear a reflective safety vest, day or night.

- d. Construction that is within the safety area of an active runway, taxiway, or apron must be performed when the runway, taxiway, or apron is closed or use-restricted and initiated only with prior permission from the Engineer.
- e. The Engineer may order the Contractor to suspend operations and move personnel, equipment, and materials to a safe location at any time he deems it necessary.

B. Maintenance of Construction Site:

- 1.) Inspect all construction and storage areas as often as necessary to be aware of conditions.
- 2.) Promptly take all actions necessary to prevent or remedy any unsafe or potentially unsafe conditions as soon as they are discovered.
- 3.) Provide continuous clean-up operations including a mechanical sweeper for all haul operations or other related traffic to and from the construction site.
- 4.) The Contractor, at the direction of the Engineer, may be required to provide and maintain an emergency response route through the work area, for Airport Emergency Vehicles. Construction vehicles accessing this road will give way to emergency vehicles at all times. Parking or staging of any construction equipment or stockpiling of materials blocking the road or access to the road will not be permitted.

C. Barricades

- 1.) Use barricades to indicate construction locations in non-movement areas, which no part of an aircraft may enter. Barricades may be of different shapes and made from various materials, including railroad ties, sawhorses, jersey barriers, or barrels and shall be marked with diagonal, alternating orange and white stripes. During reduced visibility or night hours, supplement the barricades with red lights, flashing or steady burning, meeting the luminance requirements of the State Highway Department.
 - a. "Non-movement areas" are areas within the AOA not controlled by the Air Traffic Control Tower or Ground Control. These areas are typically aircraft ramp and parking areas as well as vehicular service roads.
- 2.) Indicate construction locations in movement areas in which aircraft may enter with orange traffic cones, red lights (either flashing or steady burning), and collapsible barricades marked with diagonal, alternating orange and white stripes. All barricades, temporary markers, and other objects left in the safety area associated with the open runway, taxiway, and taxi lanes must be as low as possible to the ground, of low mass and easily collapsible upon contact with an aircraft or any of its components. The barricade shall be properly weighted or attached to the surface to prevent displacement by prop wash, jet blast, wing vortex or other surface wind currents. If affixed to the surface, they must be frangible at grade level or as low as possible, not to exceed 3-inches in height. Barricades shall be Neubert Aero Corp., Model NAC-PC2410 or Model NAC-PC9642, Multi-Barrier Safety Barricade Corp., Model AR-10X96, YODOCK APC or an approved equal.
- 3.) Barricades shall be spaced no greater than 10 feet apart.

D. Limitations on Construction

- 1.) The Contractor shall obtain Authority permits for open-flame welding or torch cutting operations and electrical power shut-downs prior to start of the Work.

- 2.) All site storage of supplies and equipment requires approval by the Engineer. All site storage must be in containers and must have company name and 24 hour contact telephone number clearly displayed.

E. Radio Communications

- 1.) The Contractor is not required to have two-way radio communications with the Engineer.
- 2.) The Contractor is prohibited from having any communications, including two-way radio, with the Airport Air Traffic Control Tower.

101. HOURS OF WORK AND CONSTRUCTION STAGING

A. Hours of Work

Subject to all requirements stated elsewhere herein, the Work shall be performed in accordance with the following restricted hours of Work and in accordance with Division 1 clause "Available Property".

- 1.) Perform Work only between the hours of 7am to 3:30pm Monday to Friday.
- 2.) The Contractor shall submit to the Engineer, at least one week in advance, his scheduled hours of Work for each week.
- 3.) 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.

B. Construction Staging

Refer to Contract Drawing No. G002 for construction staging.

DIVISION 2

SECTION 02073

CUTTING, PATCHING AND REMOVAL

PART 1. GENERAL

1.01 SUMMARY

This Section specifies requirements for cutting, patching and removal of existing construction.

1.02 QUALITY ASSURANCE

A. Cutting, patching and removal shall be performed by workers skilled in the specific trades involved.

B. Site Conditions

1. Except for portions shown to be relocated or retained by the Authority, remove and transport off Authority property all portions of the existing construction shown on the Contract Drawings to be removed in accordance with Division 1 clause entitled "Recycling of Construction Debris Material".
2. All construction debris shall become the Contractor's property.
3. Prior to start of Work, make an inspection accompanied by the Engineer to determine physical condition of adjacent construction that is to remain.

1.03 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MATERIALS

All materials required for patching shall be new. Patching materials shall match in every respect adjacent portions of the existing construction unless otherwise shown on the Contract Drawings.

PART 3. EXECUTION

3.01 PROTECTION

- A. Protect existing adjacent surfaces to remain and finished surfaces at all times and repair or replace, if damaged, at no cost to the Authority and to the satisfaction of the Engineer.
- B. Protect all existing and new construction including utilities, finishes and equipment from water, damage, weakening or other disturbance.

3.02 CUTTING, PATCHING AND REMOVAL

- A. Perform all cutting, patching and removal as shown on the Contract Drawings. Work shall be performed in accordance with the approved methods using approved materials.

- B. Do not cut or remove more than is necessary to accommodate the new construction or alteration.
- C. Maintain the integrity of all construction at all times.
- D. Do not allow removed materials and debris to accumulate at the construction site; remove them at the end of each work period or daily. All areas adjacent to, and leading to and from the site shall be kept free of removed materials and debris.
- E. Do not burn, bury, or dispose of in storm drains, wetlands or waterways on Authority property debris of any type.
- F. Dispose of debris resulting from removal operations in accordance with all local laws and regulations that would apply if the Authority were a private corporation.

END OF SECTION

SECTION 02073

CUTTING, PATCHING AND REMOVAL

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts and Samples" of Division 1 - GENERAL PROVISIONS:

Product Data

02073D01 Submit to the Chief of Materials Engineering, Materials Engineering Unit, Port Authority Technical Center, 241 Erie Street, Jersey City, New Jersey, 07310-1397, for approval, all product data sheets for the materials to be used for patching.

Construction and Installation Procedures

02073G01 Submit to the Engineer plans, methods, equipment and procedures as applicable for cutting, patching and removal.

END OF APPENDIX "A"

DIVISION 2**SECTION 02094****WORKER AND ENVIRONMENTAL PROTECTION FOR LEAD-CONTAINING 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) Technology Guide 6 and associated Containment Class Tables A, W, P, and C..
 2. 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 of 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 York Code of Rules and Regulations (NYCRR)
1. Title 6, Chapter III, 364-373 Hazardous Waste Management Regulations
- C. 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
 3. NJAC, Title 7, Chapter 18 - Regulations Governing the Certification of Laboratories and Environmental Measurements
- D. The Society for Protective Coatings (SSPC)

1. SSCP Guide 6 - Guide for Containing Surface Preparation Debris Generated During Paint Removal Operations-
2. SSCP Guide 7 - Guide for Disposal of Lead-Contaminated Surface Preparation Debris

1.03 REGULATORY REQUIREMENTS

- A. 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 York State Department of Environmental Conservation (NYSDEC);
 4. New York State Department of Health (NYSDOH); and
 5. New York State Department of Labor (NYSDOL).
 6. New Jersey Department of Environmental Protection (NJDEP);
 7. New Jersey Department of Health and Senior Services (NJDHSS);
 8. New Jersey Department of Labor (NJDOL);
- B. 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.

1.04 QUALIFICATIONS AND EXPERIENCE

- A. 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. NJDEP specific certifications must include NELAC or N.J.A.C. 7:18 (as amended November 22, 2006) Regulations Governing the Certification of Laboratories and Environmental Measurements.
 2. Verify that the laboratory conducting the worker blood analyses is approved by OSHA, and NYSDOH, as applicable.
 3. Verify the certifications of the Occupational Physician.
- B. 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.
 3. Has proof of 29 CFR 1910.120 (initial or refresher) HAZWOP Supervisor training within the last 12 months.
 4. Has proof of training under RCRA, per 40 CFR 265.16
 5. For Work in New York, has proof of completion of Society for Protective Coatings (SSPC) Competent Person for Deleading of Industrial Structures (SSPC C-3) course or equivalent. Certification must be maintained throughout the duration of the Contract.

6. 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.

C. Workers. Confirm that:

1. All workers have proof of completion of 29 CFR 1926.62 Lead in Construction training.

1.05 SUBMITTALS

See Appendix "A" for submittal requirements

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 4 Authority 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 -** Furnish 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. Furnish 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 to drums containing PPE. If testing dictates that these materials are non-RCRA hazardous, re-label drums as non-hazardous and provide testing records supporting this determination to the Engineer.
- 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. Apply hazardous waste labels to drums containing dust and debris. If testing dictates that these materials are non-RCRA hazardous, re-label drums as non-hazardous and provide testing records supporting this determination to the Engineer.
- 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 York or 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 siting 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 corrective actions as directed by the Engineer when air monitoring results exceed the established 8-hour period concentrations.
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 shall 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 locations designated by the Engineer. Inventory and transport hazardous waste to the designated 90-day central accumulation storage area at the end of each working day, at a minimum.
6. Obtain hazardous waste generation reports and pay for fees/taxes imposed by the States.

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, and 6 NYCRR 364.
 - 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, 40 CFR 268, and 6 NYCRR 372, 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
1. 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 3**SECTION 03602****GROUTING (NON-METALLIC)****PART 1. GENERAL****1.01 SUMMARY**

This Section specifies requirements for non-metallic, non-shrink, cement-based grouting.

1.02 REFERENCES

The following is a listing of the publications referenced in this Section:

American Society for Testing and Materials (ASTM)

- ASTM C 109 Test Method for Compressive Strength of Hydraulic Cement Mortars
- ASTM C 191 Test Method for Time of Setting of Hydraulic Cement by Vicat Needle
- ASTM C 827 Test Method for Early Volume Change of Cementitious Mixtures

1.03 JOB CONDITIONS

Do not mix or place grout when the ambient temperature is below 40 degrees F or conditions indicate that the ambient temperature will fall below 40 degrees F within 72 hours, unless the areas to be grouted are enclosed and heated in an approved manner or otherwise approved by the Engineer.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver grout in the manufacturer's sealed original bags or 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 as necessary to protect it from water and moisture.
- C. Deliver, protect and handle all tools and equipment in a manner to prevent damage that may make them defective for the purpose for which they are intended.

1.05 SUBMITTALS

See Appendix "A" for Submittal Requirements.

PART 2. PRODUCTS**2.01 MATERIALS**

- A. Grout shall be one of the following:
 - 1. "Masterflow 713" - manufactured by Master Builders
 - 2. "Five Star Grout" - manufactured By U.S. Grout Corporation
 - 3. "Euco N-S Grout" - manufactured by Euclid Chemical Co.

- B. Grout shall be premeasured and prepacked by the manufacturer, requiring only addition of potable water for mixing.

PART 3. EXECUTION

3.01 PREPARATION

Areas to be grouted as shown on the Contract Drawings shall be cleaned of all foreign materials, to the satisfaction of the Engineer.

3.02 MIXING AND PLACING

- A. Use only the crew trained by the manufacturer's representative.
- B. Mix and place the grout in accordance with manufacturer's methods approved by the Engineer.
- C. Placement shall be continuous to avoid cold joints and voids. Grout shall be rodded or spaded to prevent the formation of air pockets.

3.03 FIELD TESTS

- A. The Engineer may take and test samples of the grout being placed in accordance with ASTM C 109, C 191 and C 827.
- B. In the event that tests of the grout placed reveal any failure to meet requirements of this Section, the Engineer will require removal and replacement of all portions of grout from the batch from which the sample was taken and the discontinuance of grouting until the Contractor has demonstrated to the satisfaction of the Engineer that the causes for failure have been corrected.

END OF SECTION

SECTION 03602
GROUTING (NON-METALLIC)

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts and Samples" of Division 1 - GENERAL PROVISIONS:

Samples

03602C01 Submit to the Manager, Materials Engineering Division, Port Authority Technical Center, 241 Erie Street, Jersey City, NJ 07310-1397, a sample of the grout material for approval.

Construction and Installation Procedures

03602G01 Submit manufacturer's instructions and methods for handling, storage, mixing and placing of the grout, for approval.

END OF APPENDIX "A"

DIVISION 7**SECTION 07925****SEALANTS - SHORT FORM****PART 1. GENERAL****1.01 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 719 Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cycle Movement

ASTM C 920 Elastomeric Joint Sealants

ASTM C 962 Guide for Use of Elastomeric Joint Sealants

ASTM D 412 Test Methods for Rubber Properties in Tension

ASTM D 1056 Flexible Cellular Materials - Sponge or Expanded Rubber

1.02 DESIGN AND PERFORMANCE REQUIREMENTS

- A. For sealants ES-1 through ES-4, provide elastomeric joint sealants that have been produced and installed to establish and to maintain watertight and airtight continuous seals without causing staining or deterioration of joint substrates.
- B. For sealant ES-5 provide joint sealants that have been produced and installed to establish and maintain airtight continuous seals that are water-resistant and cause no staining or deterioration of joint substrates.
- C. Submit manufacturer's certification that sealants comply with requirements of 2.02 A herein.
- D. When directed by the Engineer, perform preconstruction field adhesion test of each sealant as per AAMA CW-13. Perform such test(s) in the presence of the Engineer and a qualified technical representative of the sealant manufacturer.
 - 1. Sealants not evidencing adhesive failure from testing, in absence of other indications of non-compliance with the above requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.
 - 2. Submit test report results.

1.03 ENVIRONMENTAL REQUIREMENTS

Do not proceed with the Work of this Section under the following conditions:

- A. When ambient and substrate temperature conditions are outside the limits permitted by sealant manufacturer(s).

- B. When joint substrates are wet due to rain, frost, condensation, or other causes.
- C. Where joint widths are less than or greater than that allowed by sealant manufacturer(s) for application(s) shown on the Contract Drawings.
- D. When contaminants capable of interfering with sealant adhesion are present on joint substrates(s).

1.04 QUALITY ASSURANCE

- A. Obtain joint sealer materials from a single manufacturer for each different product required.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to construction site in 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.

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 of the following manufacturers, or approved equal:

- A. Where sealant designated as ES-1 (One-part non-acid curing silicone) is shown on Contract Drawings:
 1. "Dow Corning 795", Dow Corning Corp., Midland, MI
 2. Silpruf, General Electric Co., Silicone Products Div., Waterford, NY
 3. "Spectrum 2", Tremco Inc., Beechwood, OH
- B. Where sealant designated as ES-2 (One-part mildew-resistant silicone) is shown on Contract Drawings:
 1. "Dow Corning 786", Dow Corning Corp.
 2. "Sanitary 1700", General Electric Co.
 3. "Proglaze", Tremco Inc.
- C. Where sealant designated as ES-3 (One-part or two-part nonsag urethane) is shown on the Contract Drawings:
 1. "Vulkem 921 or 922", Mameco International, Inc., Cleveland, OH.
 2. "Dynatrol I or II", Pecora Corporation, Harleysville, PA.
 3. "Sikaflex 15LM or Sikaflex 2c NS", Sika Corporation, Lyndhurst, NJ.
- D. Where sealant designated as ES-4 (Pourable urethane) is shown on the Contract Drawings:
 1. "Vulkem 45" or "245", Mameco International, Inc.
 2. "Urexpam NR201" or "NR-200", Pecora Corporation.
 3. Sonolastic SL1 or SL2, Sonneborn Bldg. Products Div., Shakopee, MN.

- E. Where sealant designated ES-5 (Interior locations) is shown on the Contract Drawings:
1. AC-20 FTR Acoustical and Insulation Sealant, Pecora Corp.; Harleysville, PA.
 2. SHEETROCK Acoustical Sealant, United States Gypsum Co.; Chicago, IL.
 3. Acrylic Latex 834.; Tremco, Inc.; Beachwood, OH.

2.02 MATERIALS

- A. Sealants (except designation ES-5) shall conform to the following requirements of ASTM C 920:

1. Type: S, except Type M for sealant designation ES-3.
2. Grade: NS, except Grade P for sealant designation ES-4.
3. Class: 25
4. Use: T, NT, M, G, A or O as applicable to joint substrate shown on the Contract Drawings.
5. Color shall be

As shown on the Contract Drawings, or if not shown, as selected by the Engineer from manufacturer's standard colors.

- B. Joint Sealant Backing

Provide sealant backings of material and type which are nonstaining; are compatible with joint substrates, sealants, primers and other joint fillers; and are approved by sealant manufacturer for application(s) shown on the Contract Drawings.

1. Provide either flexible, open cell polyurethane foam or non-gassing, closed-cell polyethylene foam subject to approval of sealant manufacturer.
2. Elastomeric tubing joint-fillers, where shown on the Contract Drawings shall be neoprene, butyl or EPDM tubing complying with ASTM D 1056, non-absorbent to water and gas, capable of remaining resilient at temperatures down to -26 degrees F. Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth and otherwise contribute to optimum sealant performance.

2.03 ACCESSORIES

- A. 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. Provide self-adhesive tape where applicable.

- B. Primer

Provide type recommended by joint sealer manufacturer where required for adhesion of sealant to joint substrates shown on the Contract Drawings.

- C. Cleaners for Nonporous Surfaces

Provide non-staining, chemical cleaner of type acceptable to manufacturer of sealant and sealant backing materials that are not harmful to substrates and adjacent nonporous materials.

D. Masking Tape

Provide non-staining, non-absorbent type compatible with joint sealants and to surfaces adjacent to joints.

E. Vent Tubes (Weep Holes)

Provide heat-bendable acrylic 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

The entity performing sealant installation shall inspect joints to receive joint sealers for compliance with requirements for joint configuration, installation tolerances and other conditions affecting joint sealer performance. Do not allow joint sealant Work to proceed unless unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Surface Cleaning of Joints

Clean out joints immediately before installing joint sealers to comply with recommendations of joint sealer manufacturer(s) for applications shown on the Contract Drawings.

B. Joint Priming

Prime joint substrates as recommended by the joint sealer manufacturer. Confine primers to areas of joint sealer 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 sealer manufacturers' printed installation instructions and recommendations of ASTM C 962 for use of joint sealants as applicable to materials, applications and conditions shown on the Contract Drawings.

B. Sealant Backings: Install to comply with the following requirements:

1. Install joint-fillers of type shown on the Contract Drawings, or if not shown, in accordance with 3.03 A of this Section, 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 to allow optimum sealant movement capability.

2. Install bond breaker tape between sealants and 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 of this Section for joint fillers.

C. Sealants

Install 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 widths which allow optimum sealant movement capability.

D. Tooling

Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of concave configuration, unless otherwise shown on the Contract Drawings.

- E. Clean off excess sealants or sealant smears adjacent to joints as Work progresses by methods and with cleaning materials approved by manufacturers of joint sealers and of products in which joints occurred.

END OF SECTION

SECTION 07925
SEALANTS - SHORTFORM
APPENDIX "A"
SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts and Samples" of Division 1 - GENERAL PROVISIONS:

Samples

07925C01 Submit two separate bead sample strips of manufacturer's standard colors showing full range of colors available, for each product exposed to view.

Product Data

07925D01 Manufacturer's product data for each joint sealant product, joint sealant backing and accessory required - including primers and including instructions for joint preparation and joint sealer application.

07925D02 Prior to start of Work of this Section, submit one copy of U.S. Department of Labor Material Safety Data Sheets (MSDS) for hazardous or toxic chemicals, if any proposed for use during Work of this Section.

Certificates

07925E01 Certificates from joint sealant manufacturer(s) attesting that their products comply with the requirements specified in this Section and are suitable for the use shown on the Contract Drawings.

07925E02 Submit specified manufacturer's certifications that products meet the requirements of 2.02 A.

Manufacturer Test Reports

07925F01 Compatibility and adhesion test reports from sealant manufacturer(s) indicating that materials forming joint substrates and joint 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 recommendations for primers and substrate preparation needed to obtain adhesion.

Inspection Reports

07925O01 Preconstruction field adhesion test report results, when required by 1.02 D of this Section.

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:

Samples

- 09910C01 On a 12 inch x 12 inch hard board or metal panels, two samples of each paint and coating material, with texture to simulate actual conditions if requested 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.
- 09910C02 Identify each sample as to manufacturer, color name and number, location and application.
- 09910C03 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
- 09910C04 On actual wood surfaces, two 4 inch x 8 inch samples of each natural and stained wood material. Identify each sample as to manufacturer and location application

Product Data

- 09910D01 Manufacturer's technical data sheets including the following information for each coating:
- DFT maximum
 - Zinc content (zinc primers only)
 - Slip coefficient (zinc primers only)
 - Substrates
 - Surface preparation
 - Profile
 - Storage temperature
 - Primers
 - Topcoats
 - Application equipment, including touchup
 - 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

09910D02 **Submit to the Engineer one copy of U.S. Department of Labor Material Safety Sheets (MSDS) for hazardous chemicals utilized during the Work of this Section.**

Qualifications

09910K01 **Provide the company name and qualifications or experience.**

09910K02 **Submit Instructor"s qualification and training records for blasters and painters as required by 1.04 C 1. b if requested by the engineer.**

Quality Assurance-Quality Control

09910L01 **Submit a copy of the quality control program, as required by 1.04 C.2 of this Section, if requested by the Engineer.**

Inspection Reports

09910O01 **Submit copy of daily log reports, as required by 3.03 B.2 of this Section if requested by the Engineer.**

END OF APPENDIX "A"

SECTION 09910

PAINTING

APPENDIX "B"

PAINT SCHEDULE

A. Exterior

<u>Surface</u>	<u>System Designation</u>	<u>Primer</u>	<u>Manufacturer's Product</u>	<u>2nd Coat</u>	<u>Manufacturer's Product</u>	<u>Top Coat</u>	<u>Manufacturer's Product</u>
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

<u>Surface</u>	<u>System Designation</u>	<u>Primer</u>	<u>Manufacturer's Product</u>	<u>2nd Coat</u>	<u>Manufacturer's Product</u>	<u>Top Coat</u>	<u>Manufacturer's Product</u>
Concrete Masonry Gloss	CM-1G	Water Based Block Filler	Carboline Sanitile 100	Acrylic Gloss	Carboline Carbocrylic 3359 DTM	Acrylic Gloss	Carboline Carbocrylic 3359 DTM
			SW Heavy Duty Block Filler B42W46		SW DTM Acrylic B66-100 Series		SW DTM Acrylic B66-100 Series
			PPG Speedhide 6-15		PPG Pitt-Tech Plus 90-1310		PPG Pitt-Tech Plus 90-1310
Concrete Masonry Semi-Gloss	CM-1S	Water Based Block Filler	Carboline Sanitile 100	Acrylic Semi-Gloss	Carboline Sanitile 155	Acrylic Semi-Gloss	Carboline Sanitile 155
			PPG Speedhide 6-15		PPG Pitt-Tech Plus 90-1210		PPG Pitt-Tech Plus 90-1210
			SW Heavy Duty Block Filler B42W46		SW DTM Acrylic B66-200 Series		SW DTM Acrylic B66-200 Series
Cement Plaster Walls & Soffits Gloss	P-1G	Water Based Primer Sealer	Carboline Carbocrylic 120	Alkyd Gloss	Carboline Carbocoat 30R	Alkyd Gloss	Carboline Carbocoat 30R
			PPG Perma-Crete 4-603		PPG 95-5000 Series		PPG 95-5000 Series
			SW Loxon Acrylic Primer A24W8300		SW Industrial Enamel HS B54Z-400 Series		SW Industrial Enamel HS B54Z-400 Series
Steel Gloss	S-1G*	Organic Zinc Rich	Carboline Carbozinc 859	Epoxy	Carboline Carboguard 888	Aliphatic Polyurethane Gloss	Carboline Carbothane 134 HG
			PPG PMC Amercoat 68 HS		PPG PMC Amercoat 399		PPG PMC Amercoat 450 H
			SW Zinc Clad III HS		SW Macropoxy 646		SW Acrolon 218 B65-600

*Paint system S-1G must be on the current New England Protective Coatings (NEPCOAT) Qualified Product List.

<u>Surface</u>	<u>System Designation</u>	<u>Primer</u>	<u>Manufacturer's Product</u>	<u>2nd Coat</u>	<u>Manufacturer's Product</u>	<u>Top Coat</u>	<u>Manufacturer's Product</u>
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
Steel Semi-Gloss	S-3S	Aluminum Epoxy Mastic	Carboline Carbomastic 15	Epoxy	Carboline Carboguard 890	Aliphatic Polyurethane Semi-Gloss	Carboline Carbothane 133 LH
			PPG PMC Amerlock 2 AL		PPG PMC Amercoat 385		PPG PMC Amercoat 450 HSG
			SW Epoxy Mastic Aluminum II		SW Macropoxy 646		SW Acrolon 218 HS

<u>Surface</u>	<u>System Designation</u>	<u>Primer</u>	<u>Manufacturer's Product</u>	<u>2nd Coat</u>	<u>Manufacturer's Product</u>	<u>Top Coat</u>	<u>Manufacturer's Product</u>
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
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

Surface	System Designation	Primer	Manufacturer's Product	2nd Coat	Manufacturer's Product	Top Coat	Manufacturer's Product
Plywood Semi-Gloss	PW-1S	Acrylic Wood Primer	Carboline Carbocrylic 120	Acrylic Semi- Gloss	Carboline Carbocrylic 3359	Acrylic Semi-Gloss	Carboline Carbocrylic 3359
			SW A-100 Latex B42W42		SW Metalatex B42 Series		SW Metalatex B42 Series
			PPG Speedhide 6-609		PPG Speedhide 6-900		PPG Speedhide 6-900
Concrete, Brick & Granite Clear Gloss Anti- Graffiti	AG-1	Primer Sealer	Carboline Carboguard 1340		N/A	Aliphatic Urethane	Carboline Carbothane 130
			Visual Pollution Tech. Crystal Clear				Visual Pollution Tech. Crystal Clear
Concrete, Brick & Granite Clear Flat Anti- Graffiti	AG-2	Primer Sealer	Degussa Tagguard		N/A	Various	Degussa Tagguard
			Sivento Protectosil				Sivento Protectosil
			Tristar Proteus Masonry Sealer				Tristar Proteus 940
Steel & Concrete Saltwater Immersion	CT-1	Coal Tar Epoxy (C-200A)	Carboline Bitumastic 300M		N/A	Coal Tar Epoxy (C-200A)	Carboline Bitumastic 300M
			International Intertuf 702				International Intertuf 702
			Sherwin-Williams Targuard				Sherwin-Williams Targuard
Steel, Jet Fuel Splash & Spill	S-4	Organic Zinc Rich	Carboline Carbozinc 859	Epoxy	Carboline Carboguard 890	Polyester Polyurethane	Carboline Carbothane 133 LH
			Tnemec 90-97 Tneme- Zinc				Tnemec Epoxoline II Series N69

<u>Surface</u>	<u>System Designation</u>	<u>Primer</u>	<u>Manufacturer's Product</u>	<u>2nd Coat</u>	<u>Manufacturer's Product</u>	<u>Top Coat</u>	<u>Manufacturer's Product</u>
			SW Zinc Clad III HS		SW Macropoxy 646		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 II HS Sherwin-Williams Zinc Clad II		N/A		N/A
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

<u>Surface</u>	<u>System Designation</u>	<u>Primer</u>	<u>Manufacturer's Product</u>	<u>2nd Coat</u>	<u>Manufacturer's Product</u>	<u>Top Coat</u>	<u>Manufacturer's Product</u>
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 Corafon ADS
Steel, Rapid Deployment	S-10	Zinc Rich	PPG PMC 68 HS Sherwin-Williams Corothane I - Galvapak		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 Corafon ADS
B. Interior							
Steel, water tank	S-11	Epoxy	PPG PMC Amerlock 2 Carboline Carboguard 891 SW Duraplate 235 NSF	Epoxy	PPG PMC Amerlock 2 Carboline Carboguard 891 SW Duraplate 235 NSF	Epoxy	PPG PMC Amerlock 2 Carboline Carboguard 891 SW Duraplate 235 NSF

<u>Surface</u>	<u>System Designation</u>	<u>Primer</u>	<u>Manufacturer's Product</u>	<u>2nd Coat</u>	<u>Manufacturer's Product</u>	<u>Top Coat</u>	<u>Manufacturer's Product</u>
Steel, jet fuel tank	S-12	Epoxy Amine	PPG PMC Amercoat 395 FD Carboline Plasite 9060 SW Shelcote II		N/A	Epoxy Amine	PPG PMC Amercoat 395 FD Carboline Plasite 9060 SW Shelcote II
Concrete Flat	C-2F	Water Based Sealer	PPG Speedhide 6-2 ProMar B28W8200 Carboline 120	Acrylic	PPG Speedhide 6-70 SW ProMar B30W200 Carboline 3130	Acrylic Flat	PPG Speedhide 6-70 SW ProMar B30W200 Carboline 3130
Concrete Semi-Gloss	C-2S	Water Based Sealer	Carboline Carbocrylic 120 SW ProMar B28W8200 PPG Speedhide 6-2	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 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

<u>Surface</u>	<u>System Designation</u>	<u>Primer</u>	<u>Manufacturer's Product</u>	<u>2nd Coat</u>	<u>Manufacturer's Product</u>	<u>Top Coat</u>	<u>Manufacturer's Product</u>
Concrete Masonry Semi-Gloss	CM-2S	Block Filler	Carboline Sanitile 100	Acrylic	Carboline Carbocrylic 3359	Acrylic Semi-Gloss	Carboline Carbocrylic 3359
			SW PrepRite B25W25		SW ProMar B31W200		SW ProMar B31W200
			PPG Speedhide 6-7		PPG Speedhide 6-500		PPG Speedhide 6-500
Concrete Masonry Heavy-Duty Gloss	CM-3	Epoxy Block Filler	Carboline Carboguard 954HB	Epoxy	Carboline Carboguard 890	Epoxy Gloss	Carboline Carboguard 890
			SW Kem Cati-Coat HS B42W400		SW HP Epoxy B67-200		SW HP Epoxy B67-200
Cement & Gypsum Plaster Walls & Soffits Flat	P-1F	Acrylic Sealer	SW PrepRite B28W300	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
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

<u>Surface</u>	<u>System Designation</u>	<u>Primer</u>	<u>Manufacturer's Product</u>	<u>2nd Coat</u>	<u>Manufacturer's Product</u>	<u>Top Coat</u>	<u>Manufacturer's Product</u>
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
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

<u>Surface</u>	<u>System Designation</u>	<u>Primer</u>	<u>Manufacturer's Product</u>	<u>2nd Coat</u>	<u>Manufacturer's Product</u>	<u>Top Coat</u>	<u>Manufacturer's Product</u>
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	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
Galvanized & Aluminum Semi-Gloss	N-4S	Primer	PPG Pitt-Tech Plus 90-912	N/A	N/A	Acrylic Semi-Gloss	PPG Pitt-Tech Plus 90-1210
			SW Pro-Cryl B66-310 Series				SW Sher-Cryl B66-350
			Carboline Carbocrylic 120				Carboline 3359
Galvanized & Aluminum Heavy Duty Semi-Gloss	N-5S	Epoxy	Carboline Carboguard 888	N/A	N/A	Aliphatic Polyurethane Semi-Gloss	Carboline Carbothane 133 LH
			SW Macropoxy 646				SW Acrolon 218 HS B65-650
			PPG PMC Amercoat 385				PPG Amercoat 450 HSG

<u>Surface</u>	<u>System Designation</u>	<u>Primer</u>	<u>Manufacturer's Product</u>	<u>2nd Coat</u>	<u>Manufacturer's Product</u>	<u>Top Coat</u>	<u>Manufacturer's Product</u>
Plywood Flat	PW-2F	Acrylic	Carboline Carbocrylic 120	Acrylic	Carboline 3130	Acrylic	Carboline 3130
			SW PrepRite ProBlock B51W20		SW ProMar B30W200		SW ProMar B30W200
			PPG SealGrip 17-921		PPG Speedhide 6-70		PPG Speedhide 6-70
Plywood Semi-Gloss	PW-2S	Acrylic	Carboline Carbocrylic 120	Acrylic	Carboline Carbocrylic 3359	Acrylic	Carboline Carbocrylic 3359
			SW Preprite ProBlock B51W20		SW ProMar B31W200		SW ProMar B31W200
			PPG SealGrip 17-921		PPG Speedhide 6-500		PPG Speedhide 6-500
Concrete Floor Clear Finish	CF-2	Epoxy	PPG MegaSeal HSPC 99-12700		N/A	Epoxy	PPG MegaSeal SL 99-12600
			SW ArmorSeal 33		SW 650 SL/RC		
			Carboline Carboguard 1340		Carboline Sanitile 925		
Concrete Floor Color Finish Heavy- Duty Gloss	CF-3	Epoxy	Carboline Semstone 110	Epoxy	Carboline Sanitile 945 SL	Epoxy	Carboline Sanitile 945 SL
			SW ArmorSeal 33		SW ArmorSeal 650 SL/RC		SW ArmorSeal 650 SL/RC
			PPG MegaSeal HSPC 99-12710		PPG MegaSeal SL		PPG MegaSeal SL
Concrete Color Finish Anti-Graffiti	AG-3	Epoxy	Carboline Rustbond Penetrating Sealer		N/A	Polyester Urethane	Carboline Carbothane 133 LH
			SW Macropoxy 920				SW Polylon HP

<u>Surface</u>	<u>System Designation</u>	<u>Primer</u>	<u>Manufacturer's Product</u>	<u>2nd Coat</u>	<u>Manufacturer's Product</u>	<u>Top Coat</u>	<u>Manufacturer's Product</u>
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

C. Overcoat Systems

Steel	S-16	Alkyd Spot Primer	Carboline Carbocoat 8215C SW Kromik Metal Primer PPG Multiprime 97-680		N/A	Silicone Alkyd	Carboline 30 R SW Steel Master 9500 B56-300 Series PPG Sil-Shield 95-5000
Steel	S-17	MC Urethane Spot Primer	Wasser MC-Prepbond Xymax MonoLock PP SW Corothane I Mio-Aluminum	MC Urethane	Wasser MC-Prepbond Xymax MonoLock PP SW Corothane I Ironox B	MC Urethane	Wasser MC-Luster Xymax Bridge Finish SW Corothane I HS
Galvanized & Aluminum Semi-Gloss	N-6S	Epoxy Spot Primer	Carboline 888 Epoxy SW Macropoxy 646 PPG PMC Amercoat 385	Tie Coat	Carboline Rustbond SW Macropoxy 920 Pre-Prime PPG PMC Amerlock Sealer	Urethane	Carboline 133LH SW Acrolon 218 HS PPG PMC 450 HSG

<u>Surface</u>	<u>System Designation</u>	<u>Primer</u>	<u>Manufacturer's Product</u>	<u>2nd Coat</u>	<u>Manufacturer's Product</u>	<u>Top Coat</u>	<u>Manufacturer's Product</u>
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
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

<u>Surface</u>	<u>System Designation</u>	<u>Primer</u>	<u>Manufacturer's Product</u>	<u>2nd Coat</u>	<u>Manufacturer's Product</u>	<u>Top Coat</u>	<u>Manufacturer's Product</u>
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

<u>Surface</u>	<u>System Designation</u>	<u>Primer</u>	<u>Manufacturer's Product</u>	<u>2nd Coat</u>	<u>Manufacturer's Product</u>	<u>Top Coat</u>	<u>Manufacturer's Product</u>
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	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

<u>Surface</u>	<u>System Designation</u>	<u>Primer</u>	<u>Manufacturer's Product</u>	<u>2nd Coat</u>	<u>Manufacturer's Product</u>	<u>Top Coat</u>	<u>Manufacturer's Product</u>
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"

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 manufacturer'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

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts and Samples" of Division 1 - GENERAL PROVISIONS:

Shop Drawings

- 10210A01 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.
- 10210A02 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.

Samples

- 10210C01 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.

Product Data

- 10210D01 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.
- 10210D02 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.

Manufacturer Test Reports

- 10210F01 Product test reports evidencing compliance of units with performance requirements.

Qualifications

- 10210K01 Professional Engineer: Demonstrate capabilities and experience. Include list of completed projects with project names, addressees, names of architects and owners.
- 10210K02 Welder: Evidence of current AWS certification.

END OF APPENDIX "A"

DIVISION 15

SECTION 15860

CENTRIFUGAL FANS

PART 1. GENERAL

1.01 SUMMARY

- A. This Section specifies requirements for centrifugal fans.
- B. Types of centrifugal fans specified in this Section are:
 - 1. Centrifugal Fans and Utility Sets
 - 2. Tubular (inline) Fans
 - 3. Roof Ventilators
 - 4. Wall Ventilators

1.02 DESIGN AND PERFORMANCE REQUIREMENTS

- A. Design and performance of components and methods specified herein shall comply with all applicable Federal, State and Local laws, ordinances, regulations and codes, and the latest industry standards including, but not limited to the entities listed below.

Air Movement and Control Association (AMCA)
American National Standards Institute (ANSI)
American Society for Testing and Materials (ASTM)
American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)
Anti-Friction Bearing Manufacturers Association (AFBMA)
National Electrical Manufacturers Association (NEMA)
Occupational Safety and Health Administration (OSHA)
Steel Structures Painting Council (SSPC)
Underwriters Laboratories Inc. (UL)

In addition, specific provisions cited herein shall govern for the associated specific application.

- B. Design and performance requirements of centrifugal fans shall be as specified in the Centrifugal Fan Schedules, (hereinafter in this Section "Schedules") shown on the Contract Drawings.

1.03 QUALITY ASSURANCE

- A. Centrifugal fans, of types and sizes required, shall have been satisfactorily used for purposes similar to those intended herein for not less than three years.
- B. Entities performing the work of this Section shall have experience on at least two projects involving complexities similar to those required under this Contract.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver fans with factory-installed wooden skids and lifting lugs; pack components in factory-fabricated protective containers.

- B. Handle fans carefully to avoid damage to components, enclosures, and finish.
- C. Store fans in clean, dry spaces and protect them from weather.
- D. Comply with manufacturer's rigging instructions for unloading fans, and moving fans to final location for installation.

1.05 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MANUFACTURERS

Subject to compliance with requirements of this Section, provide fans of one of the following manufacturers, or approved equal:

A. Centrifugal Fans/Utility Sets

Buffalo Forge Co.
 New York Blower Co.
 Trane Co.
 Cook (Loren) Co.

B. Tubular (Inline) Fans

Cook (Loren) Co.
 Greenheck Fan Corp.
 Penn Ventilator Co., Inc.

C. Roof Ventilators

Penn Ventilator Co., Inc.
 Greenheck Fan Corp.
 Cook (Loren) Co.

D. Wall Ventilators

Carnes Co., Inc.
 Cook (Loren) Co.
 Greenheck Fan Corp.

2.02 MATERIALS

Materials for fans shall be as specified below.

A. Centrifugal Fans/Utility Sets

Wheel: Steel or aluminum
 Shaft: Forged steel
 Housing: Galvanized or coated steel

B. Tubular (Inline) Centrifugal Fans

Wheel: Aluminum or steel
 Shaft: Forged steel
 Housing: Aluminum, galvanized or coated steel

C. Roof and Wall Ventilators

Wheel:	Aluminum
Shaft:	Forged steel
Housing:	Aluminum

2.03 CONSTRUCTION FEATURES

A. Centrifugal Fans/Utility Sets

1. Fans shall be of sizes, arrangements and capacities specified in the Schedules and as shown on the Contract Drawings.
2. Fans shall consist of housing, wheel, shaft, bearings, motor, and support structure.
3. Provide curved scroll housings, with lockseam construction for fan sizes 36 inches and smaller, and spot welded construction for fan sizes 40 inches and larger. Provide horizontally split housings, bolted together for fan sizes 66 inches and larger. Provide spun inlet cones and duct connections.
4. Provide the types of wheels specified in the Schedules shown on the Contract Drawings. Weld blades to wheel rim and hub plate; key wheel to shafts. Wheel diameter and outlet areas shall be in accordance with AMCA Standard 99 for non-overloading fans.
5. Provide solid, accurately turned, ground and polished shafts.
6. For fan sizes 22 inches and smaller, provide grease-lubricated, precision anti-friction ball or roller, self-aligning, pillow block type bearings to provide minimum L-10 life rating of 60,000 hours in accordance with AFBMA Std. 9 for ball bearings or AFBMA Std. 11 for roller bearings. For fan sizes 24 inches and larger, provide grease-lubricated, tapered double spherical roller, pillow block type bearings to provide minimum L-10 life rating of 120,000 hours in accordance with AFBMA Std. 11. Extend grease lines from bearings to outside of inlet duct flange, and terminate with grease fittings.
7. If "Belt Drive" fans are specified in the Schedules shown on the Contract Drawings, provide multiple matched V-belt drive for motors less than 50hp, and fixed pitch sheave for 50hp motor and larger. V-belt drives to be rated minimum 1.4 times rated motor horsepower. Provide adjustable pitch sheave on motor shaft, selected for midpoint at design conditions.
8. Provide access door in scroll housing, with latch-type handles, flush mounted for uninsulated housings, and raised-mounted to the thickness of insulation for insulated housings.
9. Provide 3/4-inch threaded coupling drain connection with plug at lowest point of the housing.
10. Provide removable flanged screens at inlets or outlets where no connecting ductwork is shown on the Contract Drawings.
11. Provide ventilated belt guards with tachometer opening for fan speed measurements, in accordance with OSHA requirements.
12. If specified in the Schedules shown on the Contract Drawings, provide fans with variable inlet vanes integral with the inlet bells of the fan. Connect vane rods to control ring by crank arms; provide vane rods supported at both ends by non-rusting nylon bearings. For double-inlet fans, both sets of vanes shall be operated by a lever on the fan scroll with connecting shaft between inlets. Vane linkage shall be suitable for either manual or automatic operation.

B. Tubular (Inline) Fans

1. Fans shall be of sizes, arrangements and capacities specified in the Schedules and as shown on the Contract Drawings.
2. Fans shall consist of housing, wheel, shaft, bearings, straightening vanes, and motor support.
3. Provide housings with continuous-weld construction, braced to prevent vibration or pulsation.
4. Provide backward-inclined or airfoil blades, of welded wheel construction. Fan wheel diameter and outlet areas shall be in accordance with AMCA Standard 99 for non-overloading fans.
5. Provide solid, accurately turned, ground and polished shafts.
6. Provide grease-lubricated, precision anti-friction ball or roller, self-aligning, pillow block type bearings to provide minimum L-10 life rating of 40,000 hours in accordance with AFBMA Std. 9 for ball bearings or AFBMA Std. 11 for roller bearings. Extend grease lines from bearings to outside of inlet duct flange, and terminate with grease fittings.
7. If "Belt Drive" fans are specified in the Schedules shown on the Contract Drawings, provide multiple matched V-belt drive for motors less than 50 hp, and fixed pitch sheave for 50 hp and larger. V-belt drives to be rated minimum 1.4 times rated motor horsepower. Provide adjustable pitch sheave on motor shaft, selected for midpoint at design conditions.
8. Provide access door in housing, located over wheel in accessible position, with latch-type handles, flush mounted for uninsulated housing, and raised-mounted to the thickness of insulation for insulated housings.
9. Provide 3/4-inch threaded coupling drain connection with plug at lowest point of housing.
10. Provide heavy mesh, removable screens on fan inlets and outlets where no connecting ductwork is shown on the Contract Drawings.
11. Provide belt guards with tachometer opening for fan speed measurements, in accordance with OSHA requirements.
12. For "Belt Drive" fans, provide inner tube construction to isolate bearings and drive from air stream; provide removable cover for access to bearing and drive.
13. If specified in the Schedules shown on the Contract Drawings, provide variable inlet vanes in fan inlet with a linkage suitable for either manual or automatic operation.
14. If outdoor location is specified in the Schedules shown on the Contract Drawings, provide protective weather hood with ventilation slots over motor and drive compartment.
15. If ceiling-hung fans are specified in the Schedules shown on the Contract Drawings, provide structural angles welded to housing to accommodate load hangers for ceiling-hung fans.

C. Roof and Wall Ventilators

1. Ventilators shall be of sizes, arrangements and capacities as specified in the Schedules and as shown on the Contract Drawings.
2. Ventilators shall consist of housing, wheel, shaft, bearings, drive assembly, curb base, and accessories.
3. Wheels shall be backward inclined, non-overloading, centrifugal.

4. Provide solid, accurately turned, ground and polished shafts.
5. Provide grease-lubricated, precision anti-friction self-aligning ball bearings, to provide minimum L-10 life rating of 40,000 hours, in accordance with AFBMA Standard 9.
6. If "belt drive" ventilators are specified in the Schedules shown on the Contract Drawings, provide multiple matched V-belt drive with minimum 1.4 times rated motor horsepower. Provide adjustable pitch sheave on motor shaft, selected for midpoint at design conditions.
7. Provide removable 1/2-inch mesh aluminum bird screen at fan discharge.
8. Provide prefabricated curbs for roof ventilators, unless otherwise shown on Contract Drawings.
9. Furnish wall ventilators with pre-punched plates for attachment to wall.
10. Furnish ventilators with gravity dampers and factory-wired disconnect switches, unless otherwise shown on Contract Drawings.

D. Vibration Isolation

Provide vibration isolation in accordance with requirements specified in the Section entitled "VIBRATION ISOLATION AND CONTROL". Consult with the supplier of vibration isolation devices concerning the selection of the types required.

E. Motors

Provide motors in accordance with requirements specified in the Section entitled "MOTORS AND MOTOR CONTROLLERS". Select the motor characteristics, the motor mounting, and all accessories necessary to satisfy the requirements of the fan motor drive unit in all operating modes.

F. Explosion-Proof Construction

Where fans are specified on Contract Drawings to be of explosion-proof construction, they shall be provided with non-sparking wheel and bearings, and shall have explosion-proof motor. Belt-driven fans shall be provided with antistatic belts. Explosion-proof construction fans shall be AMCA Design "A" with all parts in contact with the air stream of non-ferrous construction.

2.04 SHOP PAINTING

- A. Fans and steel fabrication shall be factory coated with one coat of zinc chromate primer and one coat of machine enamel on both the exterior and interior surfaces.
- B. For roof mounted fans, all steel components shall be coated with thermally fused epoxy.

2.05 SHOP TESTS

- A. Balance fan wheels statically and dynamically prior to final operating tests with motor and drive in place.
- B. Test, rate and certify fans in accordance with AMCA Standard 210 at an AMCA approved laboratory; fans shall bear AMCA seals. In lieu of shop performance tests, unless otherwise specified in the Schedules shown on the Contract Drawings, certified performance characteristic curves of prototype fans of similar units may be submitted for approval.

- C. Sound rate fans in accordance with AMCA Standard 300; fans shall bear AMCA seals. Sound rating shall be based upon actual fan tests or upon prototype tests of similar units.
- D. If specified in the Schedules shown on the Contract Drawings, the factory tests shall be witnessed by the Engineer. The Contractor shall notify the Engineer 14 days in advance of the scheduling of said factory tests.

PART 3. EXECUTION

3.01 INSTALLATION

- A. Install fans in accordance with manufacturer's installation procedures and recognized industry practices.
- B. Coordinate all trades to ensure that the installation of fans is not in conflict with the work performed by other trades.
- C. For split construction fans, the installation shall be inspected by the manufacturer after field assembly who shall certify that the fans have been properly installed and are ready for proper operation.
- D. Verify that electrical wiring installation is in accordance with manufacturer's submittal and in accordance with installation requirements of Division 16. Ensure that rotation is in direction indicated and intended for proper performance.

3.02 FIELD TESTS

- A. Provide a qualified technical representative of the manufacturer to advise on field tests.
- B. Start up, test, and adjust fans in presence of manufacturer's authorized representative.

END OF SECTION

SECTION 15860
CENTRIFUGAL FANS

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts and Samples" of Division 1 - GENERAL PROVISIONS:

Shop Drawings

- 15860A01
- a. Details of fan construction components, dimensions of selected models, materials, gauges, finishes, weights, load distribution, required clearances and locations and sizes of field connections
 - b. Fan schedules.
 - c. Certified performance operating curves for pressure-volume relation for each fan.
 - d. Certified sound power levels at rated capacity at each octave band.
 - e. Catalog cuts of fans, specialties, accessories and other items specified in this Section.
 - f. Specialties and accessories.
 - g. Electrical wiring diagrams for power supply, interlock and controls.
 - h. Motor and electrical operating data.
 - i. Belt drive construction and rating.
 - j. Installation procedures.
 - k. Shop test results.

Construction and Installation Procedures

- 15860G01 Field test procedures.

Manuals, Warrantees/Guarantees

- 15860I01 Operation and maintenance manuals providing comprehensive detailed information for the specific approved equipment; including approved shop drawing and catalog cuts, troubleshooting, maintenance requirements, spare part lists, sequence of operations, test results, electrical/control devices and electrical/control wiring diagram(s), bearings maintenance procedures, lubrication procedures and lubricant type.

Inspection Reports

- 15860O01 Field test results.

END OF APPENDIX "A"

DIVISION 15
SECTION 15890
METAL DUCTWORK AND ACCESSORIES

PART 1. GENERAL

1.01 SUMMARY

- A. This Section specifies requirements for metal ductwork (including flexible ducts) and accessories.
- B. Ductwork accessories specified in this Section are:
 - 1. Flexible Connectors
 - 2. Gravity (Backdraft) Dampers
 - 3. Manual volume Control Dampers
 - 4. Fire Dampers
 - 5. Ceiling (fire) Dampers
 - 6. Smoke Dampers.
 - 7. Combination Smoke/Fire Dampers
 - 8. Ductwork Access Doors

1.02 DESIGN AND PERFORMANCE REQUIREMENTS

Design and performance of components and methods specified herein shall comply with all applicable Federal, State and Local laws, ordinances, regulations and codes, as though the Authority were a private corporation, and the latest industry standards including, but not limited to those of the entities listed below.

New York City Building Code

New York City Board of Standards and Appeals (BSA)

New Jersey Uniform Construction Code

Air Movement and Control Association (AMCA)

American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE)

American Society for Testing and Materials (ASTM)

American Welding Society (AWS)

National Fire Protection Association (NFPA)

Sheet Metal and Air-Conditioning Contractors' National Association (SMACNA)

Steel Structures Painting Council (SSPC)

Underwriters Laboratories Inc. (UL)

In addition, specific provisions cited herein shall govern for the associated specific application.

1.03 QUALITY ASSURANCE

- A. Ductwork accessories, of types and sizes required, shall have been satisfactorily used for purposes similar to those intended herein for not less than three years.
- B. Ensure that entities performing the Work of this Section have experience on at least two projects involving complexities similar to those required under this Contract.

1.04 DELIVERY, STORAGE, AND HANDLING

Protect ductwork and accessories against damage during shipping, receiving, storing, and handling. Place guards over damageable parts. Mark each package for identification.

1.05 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MATERIALS

Materials for ductwork and accessories shall be as specified below. All materials furnished shall comply with NFPA 90A.

Galvanized Steel Ductwork	ASTM A 527 with zinc coating conforming to ASTM A 525, coating designation G 90
Stainless Steel Ductwork (Indicated on the Contract Dwgs.)	ASTM A 167, Type 304
Aluminum Ductwork (Indicated on the Contract Drawings)	ASTM B 209, Alloy 3003, Temper to suit material thickness and tensile strength
Boiler Breeching	Black steel ASTM A 366 or A 569
Kitchen Exhaust Ductwork	Black steel, ASTM A 366 or A 569 for concealed area Stainless steel, ASTM A 167, Type 304 for exposed area
Hangers and Supports(Including fasteners, anchors, rods, straps, trim and angles)	Matching materials of ductwork furnished
	<u>Flexible Duct</u>
Core	Spiral-wound steel spring with flameproof vinyl sheathing, complying with UL 181 or corrugated aluminum, complying with UL 181
Moisture Barrier	One-inch thick, continuous, flexible fiberglass sheath with vinyl vapor barrier jacket
	<u>Acoustical Duct Liner</u>
Liner	Insulation minimum density shall be 1.5 pounds per cubic foot. Insulation thickness, one inch.
Adhesives	ASTM C 916
Flexible Connectors	Double layer of 30-ounce per square yard, finished weight, fire retardant, glass cloth; double-coated with neoprene

Gravity (Backdraft) Dampers

Frame	Aluminum, ASTM B 221, Alloy 6063, Temper 5
Blade	Aluminum, ASTM B 221, Alloy 6063, Temper 5
Tie Bars & Brackets	Aluminum
Blade Edge Seals	Extruded vinyl
Pivot Pins	Nonferrous
Bearings	Oil impregnated bronze or nylon

Fire Dampers (To meet UL-555 requirements)

Frame	Galvanized steel
Closure Spring	Stainless steel
Blades	Galvanized steel
Perimeter Angle	Galvanized steel

Ceiling (Fire) Dampers (To meet UL-555 requirements)

Frame	Galvanized steel
Blade	Galvanized steel with non-asbestos refractory insulation

Smoke Dampers (To meet UL-555S requirements)

Frame	Galvanized steel
Blades	Galvanized steel
Bearings	Stainless steel sleeve, pressed into frame
Axles	Plated steel
Blade Seals	Silicone rubber

Combination Smoke/Fire Dampers (To meet UL-555 and UL- 555S requirements)

Frame	Galvanized steel
Blades	Galvanized steel
Bearings	Stainless steel sleeve, pressed into frame
Axles	plated steel
Blade Seals	Silicone rubber

Access Doors

Frame	Same material as ductwork
Gasket	Neoprene rubber
Double Wall Casing Core Insulation	Fiberglass or rock wool, 2.5 lb. per cubic foot minimum density

2.02 FABRICATION

A. Ductwork, Casings and Plenums

1. Unless otherwise shown on the Contract Drawings or specified herein, gauges, reinforcement, and fabrication of all ductwork, casings and plenums, including hangers and supports, shall be in accordance with SMACNA "HVAC Duct Construction Standards - Metal and Flexible".
2. Ductwork sizes shall conform to the dimensions shown on the Contract Drawings.

3. All ductwork sizes shown on the Contract Drawings are clear inside dimensions. Where internal acoustical lining is required, sheet metal duct sizes shall be correspondingly increased to accommodate the liner thickness so that net cross-sectional flow areas will not be reduced.
4. Furnish all ductwork, elbows, vanes, transition pieces, branch takeoffs, and manual volume dampers as shown on the Contract Drawings.
5. Unless otherwise indicated on the Contract Drawings, limit angular tapers to 30 degrees for diverging concentric transition and 60 degrees for converging concentric transition. Unless otherwise shown on the Contract Drawings, limit eccentricity angles for eccentric transitions and offsets to those recommended by SMACNA "HVAC Duct Construction - Metal and Flexible".
6. Radius elbows shall have a center line radius equal to 1-1/2 times duct width. Provide turning vanes in elbows whose centerline radius is less than 150 percent of duct width or where indicated on the Contract Drawings. Fabricate turning vanes of single thickness of similar material as duct. Square elbows shall have double thickness turning vanes.
7. Do not use friction clamps for hangers and supports. Provide all supplementary steel required for installation of ductwork hangers and supports. All structural welding for hangers and supports shall be in accordance with AWS D 1.1.
8. Flexible duct shall be of length not exceeding limitations in NFPA 90A and local codes, and shall have no intermediate seams. Provide moisture barrier where the flexible duct is located in unconditioned space other than within return air plenums.
9. Install acoustical duct liner for the distance shown on the Contract Drawings. Noise reduction coefficient for one-inch thick lining shall be not less than 0.70 based on ASTM C 423 test method. Installing two layers of liner to meet a minimum liner thickness will not be acceptable. Liner shall be fastened with adhesive and welded pin type mechanical fasteners.
10. Provide sleeves and flanges at ductwork penetrations of inside walls, except where fire dampers are installed. Extend ductwork insulation and vapor barrier through the ductwork sleeve. Sleeves shall be two inches larger than the ductwork plus its insulation. Provide counterflashing for all penetrations through exterior walls or roof.
11. Provide airtight penetrations where shown on the Contract Drawings.
12. Provide double wall casing, with two-inch thick insulated core, where shown on the Contract Drawings.
13. Air inlets and outlets shall be connected to the ductwork with collars so that neither the air inlet/outlet nor its damper will extend into the duct.
14. Instrument Test Ports

Cast iron or cast aluminum to suit duct material, including screw cap and gasket and a flat mounting gasket. Size to allow insertion of pitot tube and other testing instruments, and provided in length to suit duct insulation thickness.

B. Kitchen Exhaust Ductwork

Provide kitchen exhaust ductwork in accordance with SMACNA "HVAC Duct Construction Standards - Metal and Flexible", and NFPA 96. All welding of kitchen exhaust ductwork shall be in accordance with AWS D 9.1.

C. Boiler Breeching

1. Unless otherwise shown on the Contract Drawings, gauges, reinforcements, and fabrication of boiler breeching shall be in accordance with SMACNA "HVAC Duct Construction Standards - Metal and Flexible".
2. All breeching shall have continuous weld joints and seams. All welding shall be in accordance with AWS D 9.1.
3. Maintain the required minimum distance from combustible materials as required by applicable codes.
4. Blind flanged cleanout shall be installed as shown on the Contract Drawings. Doors shall be double panel, insulated with two-inch calcium silicate and shall be gasketed.
5. Provide test holes and access doors in breeching as required for testing and cleaning. Test holes shall be sealed with plugs.

2.03 ACCESSORIES

A. Flexible Connectors

1. Provide flexible connectors at inlet and discharge of all fans and locations shown on the Contract Drawings.
2. Flexible connectors shall be in accordance with NFPA 90A or 96, as applicable.

B. Backdraft Dampers

1. Backdraft dampers shall be parallel blades, counterbalanced, heavy-duty type capable of withstanding maximum spot velocities of up to 3500 fpm.
2. Counterbalance setting shall be adjustable so that the damper can be operated in the range of 0.25 to 0.75-inch water gauge differential pressure, unless otherwise shown on the Contract Drawings.

C. Manual Volume Control Dampers

1. Unless otherwise indicated on the Contract Drawings, volume dampers shall be provided with the general configuration, materials and application limits indicated in SMACNA "HVAC Duct Construction Standards - Metal and Flexible".
2. Provide volume dampers in each branch takeoff where shown on Contract Drawings, and additionally where required for balancing the air flow in the systems.
3. Dampers installed in ducts up to 12 inches high shall be single blade type.
4. Dampers installed in ducts over 12 inches high shall be opposed multiple-blade type.
5. Dampers shall be stable under operating conditions. Stiffen damper blades by forming or by other method if required for the duty.
6. Provide single blade dampers with a locking device to hold dampers in a fixed position without vibration, pulsation, rattling or similar reaction to system pressure variations.
7. Close damper component penetration of duct as is consistent with the sealing classification applicable for the pressure class of the duct. End bearings or other seals shall be provided on 3-inch w.g. static pressure class.
8. The installation of damper in lined duct shall not damage liner or cause liner erosion.
9. Provide damper quadrants. They shall be fitted with sheet metal stools where installed in insulated ductworks, so that device is flush with outer insulation surface.

D. Fire Dampers

1. Provide fire dampers in accordance with UL 555.

2. Fire dampers shall bear a UL label and shall be approved by New York City Board of Standards and Appeals for projects located in New York City.
3. Fire resistance ratings of fire dampers shall comply with NFPA 90A and the New York City Building Code Reference Standard RS 13 for projects located in New York City.
4. Fire dampers shall be curtain-type with damper curtain located outside of air stream unless otherwise indicated on the Contract Drawings.
5. Fire dampers placed in vertical position shall be gravity-operated. Fire dampers placed in horizontal position shall be provided with all necessary springs and latches.
6. Provide fire dampers with fusible links rated at 165 degrees F, unless otherwise shown on the Contract Drawings.
7. Expansion clearance requirements between the sleeve and protected openings shall be as shown on approved manufacturer's drawings.
8. Provide access doors in the ductwork to permit inspecting, testing and resetting the damper.
9. Install fire dampers in duct extension sleeves with perimeter (mounting) angles and breakaway joints in accordance with NFPA 90A, SMACNA "Fire Damper and Heat Stop Guide" and the requirements below.
10. Extension sleeves shall not extend more than six inches beyond the fire wall or partition, or floor on each side where it connects to ductwork.
11. Secure sleeves by perimeter angles on four sides of the sleeve on both sides of opening.
12. Breakaway joints shall be Engineer approved S-slip type.

E. Ceiling (Fire) Dampers

1. Construct and test ceiling dampers in accordance with UL 555.
2. Ceiling dampers shall bear a UL label and shall be approved by New York City Board of Standards and Appeals for projects located within New York City.
3. Fire resistance ratings of ceiling dampers shall comply with NFPA 90A and UL 555, and with New York City Building Code, RS13 for projects located within New York City.
4. Provide ceiling dampers with fusible links rated at 165 degrees F, unless otherwise shown on the Contract Drawings.
5. Ceiling dampers shall be suitable for installation inside ductwork and surface mounting of diffusers or grilles. Hanger straps for mounting ceiling dampers, if utilized, shall be of minimum gauge and size, consistent with UL.
6. Provide volume adjustment features in the fusible link to permit adjustment of damper blades to balance airflow through the damper.

F. Smoke/Fire and Smoke Dampers and Actuators

1. Dampers and actuators designated on the Contract Drawings as "S/F" shall comply with the following:

- a. Dampers shall be electrically operated combination fire and smoke dampers. They shall conform to UL Standards 555 as fire dampers and 555S as leakage rated smoke dampers for use in a smoke purge system; and when closed shall have the same fire resistance rating as the fire rated partition in which they are installed, or as required by code. Unless indicated otherwise on the Contract Drawings, leakage shall conform to Class II with maximum leakage of 10 CFM/Square Feet at 1-inch w.g. differential pressure.
 - b. Dampers shall be controlled from smoke detector(s) installed remotely in ducts as indicated on the Contract Drawings and shall be provided with heat sensors that shall close and lock the respective dampers in the event of a fire.
 - c. Each damper shall be provided with position indicator switches to enable remote status monitoring of its open/closed position.
 - d. S/F damper actuators and heat sensors shall remain operational regardless of the operational status of the associated HVAC system.
2. Dampers and actuators designated on the Contract Drawings as "S/D" are smoke dampers. They shall comply in all respects to S/F damper description above, including position indicating switches, except they shall not be provided with a heat sensor or fusible link assemblies.
 3. S/F and smoke dampers shall comply with NFPA 90A, in addition to Local Code requirements.
 4. Each S/F and smoke damper shall bear UL label.
 5. S/F and smoke dampers shall be suitable for the mounting position indicated on the Contract Drawings.
- G. Ductwork Access Doors
1. Install hinged access doors in ductwork where shown on the Contract Drawings.
 2. Where hinged access doors cannot be provided with a clear 180-degree swing, removable access doors shall be used.
 3. Provide gasketed, insulated double-panel access doors in insulated ducts. For kitchen exhaust ductwork, the insulation shall be two-inch thick calcium silicate. Access doors in uninsulated ducts may be of single panel construction.
 4. Install access doors in ductwork with separate frames.
- H. Accessories Hardware
1. Splitter Damper Accessories
Zinc-plated damper blade bracket, 1/4-inch, zinc-plated operating rod, and a duct-mounted, ball-joint bracket with flat rubber gasket and square-head set screw.
 2. Flexible Duct Clamp
Stainless steel band with cadmium-plated hex screw to tighten band with a worm-gear action.
 3. Adhesives
High strength, quick setting, neoprene based, waterproof, and resistant to gasoline and grease.

2.04 SHOP PAINTING

- A. Prepare exterior surfaces of black steel ductwork, except edges prepared for field welding, in accordance with SSPC-SP 6. Apply one shop coat of primer.
- B. Do not paint finished surfaces, polished areas, galvanized steel, stainless steel, and aluminum materials.

2.05 SHOP TESTS

- A. For gravity dampers, furnish a certificate of compliance with AMCA Standard 500.

PART 3. EXECUTION

3.01 INSTALLATION

- A. Install ductwork and accessories in accordance with SMACNA "HVAC Duct Construction Standards - Metal and Flexible" and ductwork accessory manufacturers' installation recommendations.
- B. Contract Drawings show general intent for routing the ductwork. All indicated locations are approximate, and in that respect, the duct routing as shown on the Contract Drawings shall be deemed schematic. It shall be Contractor's responsibility to coordinate with all trades to ensure that no conflict exists in installation of ductwork and no ceilings, equipment or other materials are supported from ductwork or the ductwork hanger and support system.
- C. Coordinate as necessary, to ensure that access doors or indicator buttons have been provided in hung ceilings for proper operation and maintenance of the installation.
- D. Provide adequate space around ducts to assure proper support and to allow the installation of insulation if specified.
- E. Route ductwork to minimize unnecessary directional changes and abrupt transitions. Use fabricated fittings for all changes in directions, changes in size and shape, and connections.
- F. Where duct size does not conform to nearest standard accessory size (e.g. volume control damper), transform duct to match the next larger accessory size.
- G. Maintain the interior of ductwork free of dirt and debris. Close off temporarily all openings in the ducts during construction of the building. Clean thoroughly all ducts before installing any filters or operating fans. Never operate fans unless filters are installed. After tests, but before acceptance, wash all cleanable filters and replace all renewable media.
- H. Provide for thermal expansion of kitchen hood exhaust ductwork through 2,000°F temperature range. Install this ductwork without dips or traps that may collect residues. Provide an access opening at each change in direction, and at 50-foot intervals, and locate on side of duct 1-1/2 inches minimum from bottom of duct.
- I. Support horizontal ducts per SMACNA and within 2 feet of each elbow, and within 4 feet of each branch intersection.
- J. Support vertical ducts per SMACNA and at maximum intervals of 16 feet, and at each floor.
- K. Connect equipment to ductwork with flexible connectors.

3.02 FIELD TESTS

- A. Perform a leakage test of the ductwork in accordance with SMACNA "HVAC Air Duct Leakage Test Manual".
- B. The Contract Drawings indicate the pressure classes of ductwork; they also indicate which pressure classes are to be leak tested. Contractor shall, at the beginning of the work, construct, erect and leak test a sample, to be selected at random by Engineer, of the duct construction to be used at each pressure class scheduled for testing.
- C. The leakage amount shall not exceed the following allowable amount for the pressure class.

<u>Duct Construction Class</u>	<u>Leakage Class</u>
10" w.g.	3
6" w.g.	6
4" w.g.	6
3" w.g.	12

Note: See Section 4 of the SMACNA leakage test manual for normal classification.

- D. Leakage test procedures shall follow the outlines and classifications in the SMACNA HVAC Duct Leakage Test manual.
- E. If specimen fails to meet allotted leakage level, the contractor shall modify it to bring it into compliance, and shall retest it. Modifying and re-testing shall be repeated until acceptable leakage is demonstrated.
- F. Tests and necessary repair shall be completed prior to concealment of ducts.

END OF SECTION

SECTION 15890

METAL DUCTWORK AND ACCESSORIES

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts and Samples" of Division 1 - GENERAL PROVISIONS:

Shop Drawings

- 15890A01 Shop and coordination drawings shall be double-line and shall be at a minimum of 3/8"-1'-0" scale.
- a. Ductwork layout and installation drawings including, at a minimum, the following:
 1. Plans, elevations and sections.
 2. Hangers, support locations and details. Indicate methods of attachment to building structure.
 3. Duct elevations and dimensions from main duct runs to a reference point.
 4. Penetrations through fire-rated and other partitions.
 5. Locations for duct accessories, including dampers, turning vanes and access doors.
 - b. Ductwork coordination drawings showing plan views, sections, and ductwork elevations, drawn to scale, on which all items are shown and coordinated with Work of other Sections.

Product Data

- 15890D01 Ductwork construction standards including, at a minimum, the following:
- a. Longitudinal and transverse joining methods and details.
 - b. Standard details indicating all aspects of assembly, fittings and accessories.
 - c. Reinforcement and spacing.
- 15890D02
- a. Product performance data including, at a minimum, materials, components, dimensions of individual components, finishes, weights, loadings, required clearances, methods of field assembly, profiles and location and size of each field connection for all items furnished under this Contract, including the following at a minimum:
 1. Acoustical duct liners.
 2. Flexible duct.
 3. Ductwork access doors, including locations and sizes.
 4. Duct turning vanes.
 5. Accessories hardware.
 - b. Catalog cuts for all types of furnished accessories.
 - c. Shop test results.
- 15890D03 Product performance data including but not limited to materials, components, dimensions of individual components, finishes, weights, loadings, required clearances, methods of field assembly, profiles, and location and size of each field connection for the following items:
1. Dampers (manual volume, gravity backdraft, fire, ceiling fire, smoke, combination smoke/fire).

Manufacturer Test Reports

15890F01 Certified test data on airflow performance including pressure losses, self-noise power levels and dynamic insertion losses, as applicable for the various components and accessories.

Construction and Installation Procedures

15890G01 Field test procedures.

Inspection Reports

15890O01 Field test results.

END OF APPENDIX "A"

DIVISION 15**SECTION 15895****VEHICLE DIESEL EXHAUST SYSTEM AND APPURTENANCES****PART 1. GENERAL****1.01 SUMMARY**

This section specifies requirements for a vehicle exhaust system and appurtenances.

1.02 DESIGN AND PERFORMANCE REQUIREMENTS

- A. Design and performance of components and methods specified herein shall comply, as if the Authority were a private corporation, with all applicable Federal, State and Local laws, ordinances, regulations and codes, and the latest industry standards including, but not limited to the entities listed below:

American National Standards Institute (ANSI)

Air Movement and Control Association (AMCA) No. 300 & 301

ACGIH Industrial Ventilation, A Manual of Recommended Practices.

American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)

American Society of Mechanical Engineers (ASME)

American Conference of Governmental Industrial Hygienists (ACGIH)

American Society for Testing and Materials (ASTM)

Institute of Electrical and Electronic Engineers (IEEE)

National Fire Protection Association (NFPA)

National Electrical Code (NEC)

Underwriters Laboratories Inc. (UL)

- B. In addition, specific provisions cited herein shall govern for the associated specific application.
- C. Design and performance requirements of the exhaust fans and hose reels shall be as specified in the Equipment Schedules shown on the Contract Drawings.

1.03 QUALITY ASSURANCE

- A. The manufacturers that provide the equipment shall be ISO 9001 compliant, UL listed; AMCA (Air Movement and Control Association) certified and have a minimum of five years of manufacturing/product development, supply and distribution experience.
- B. The Contractor shall have experience on at least five projects involving complexities similar to those required under this Contract.
- C. The contractor must be a factory authorized and trained to install and service the equipment provided.

- D. All products for the Vehicle Exhaust Extraction System, except for variable frequency drives (VFD), fans, controls and sensors, shall be of the same manufacturer. No prototypes products by other manufacturers will be allowed.
- E. VFD and all associated appurtenances shall be UL listed: entire enclosed drive assembly shall be UL508C listed.
- F. The VFD manufacturer shall be certified and shall meet quality program requirements of ISO-9001.
- G. VFD shall be designed, constructed, and tested in accordance with applicable provisions of NEMA, NEC, and IEEE. Test VFD, with all enclosed devices mounted and wired, under full load conditions to ensure maximum product reliability.
- H. VFD and associated accessories, of types and sizes required, shall have been satisfactorily used for purposes similar to those intended herein for not less than three years.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver exhaust system components with factory-installed skids and lifting lugs; pack components in factory-fabricated protective containers.
- B. Handle all system components carefully to avoid damage to components, enclosures, and finish.
- C. VFD and accessories shall be shop-wrapped and packaged against shock, dirt and weather in factory-fabricated protective container prior to shipping to the construction site.
- D. Store all system components in clean, dry spaces and protect them from weather.
- E. Comply with manufacturer's installation instructions and moving system components to final location for installation.
- F. Handle VFD and accessories carefully to avoid damage to components, enclosures, and finish
- G. Provide and deliver the following spare parts for the exhaust system:
 - 1. Two (2) 30 feet 5" flexible hoses
 - 2. Two (2) 25 feet 5" flexible hoses
 - 3. Four (4) rubber exhaust nozzles

1.05 SUBMITTALS

- A. Refer to Appendix A for submittal requirements.

1.06 COORDINATION

- A. Coordinate layout and installation with other existing systems, including light fixtures, HVAC equipment, electrical conduit and piping.
- B. Coordinate location and requirements of service utility connections.

PART 2. PRODUCTS

2.01 MANUFACTURERS

- A. Subject to compliance with requirements of this Section, provide complete systems, with complete factory-fabricated vehicle exhaust system components from one of the following manufacturers:
 - 1. Plymovent
115 Melrich Road
Cranbury, NJ 08512

2. Nederman
102 Transit Avenue
Thomasville, NC 27360
(336)-821-0800
3. Air Cleaning Specialist, Inc.
826 Horan Drive
Fenton, MO 63026

2.02 VEHICLE EXHAUST

The exhaust system(s) shall be delivered and installed as an Automatic Control Hose Reel type vehicle exhaust.

- A. Electrical Protection: To protect the apparatus electrical system from any possible damage, the system shall not incorporate any design that requires the apparatus to be utilized as an electrical ground.
- B. Controller shall be UL listed/approved and manufactured in accordance with Underwriters Laboratories standard UL-508 enclosed industrial control panels as a complete electrical system.
- C. START/STOP switch shall be a corrosion resistant wash down enclosure switch. This device shall meet UL Type 4X rating. Indicator light/start button shall be mounted on the interior walls and be identified by engraved ledger plate.
- D. Labeling shall be provided and secured permanently to the exterior of the VFD, indicating the manufacturer, its address and telephone number user instructions and any warnings or cautions required by Underwriter Laboratories.
- E. Electrical Wiring Schematic shall be provided with each VFD supplied. Wiring schematic shall show internal circuitry as well as all primary and secondary connections to the controller.

2.03 SPRING OPERATED HOSE REEL

- A. All component construction shall be electro zinc plated steel.
- B. Provide four angle clips, one at each corner for mounting reel to walls or building steel.
- C. Spring cassette shall be a sealed enclosure to prevent the coiled spring from coming out of the enclosure if the spring needs to be exchanged.
- D. Spring cassette shall be bolted outside of the reel assembly (not in-between the hose reel side bracket and rotating drum) for ease of accessibility and replacement. Assembly shall be such that the spring cassette can be easily removed and replaced without having to uninstall or disassemble the hose reel.
- E. Spring shall be a one-inch wide heavy duty coil spring with a total lifting capacity of 42 pounds.
- F. Provide two adjustable side support tie bars that connect both side plates together and act as the hose stop bar (field adjust location of bar to match hose diameter used).
- G. Provide two steel hose guides bolted to the rotating drum of hose reel to secure the hose in place. Plastic tubing type hose guides are unacceptable.
- H. Access slot in hose reel drum shall be covered with a sheet metal cover made from the same thickness steel as the drum is. Cover any exposed edges of drum access slot with a heavy molded trim channel that covers the entire edge.

- I. Provide, as part of the hose reel assembly, a rubber hose stop collar. This collar shall be installed around the hose and adjusted to control the amount of hose that hangs down off the reel when the hose is recoiled.
- J. Provide a latch and lock feature on each hose reel. This feature shall allow the operator to pull the hose down to a preferred position, remain stationary at the desired length, and recoiled by pulling out a little more hose.
- K. Hose reel must be designed to allow for future conversion from a spring recoil type reel to a motor activated reel via removal of the spring cassette and addition of the motor drive without complete disassembly of the reel.
- L. Hose reel shall have a mechanical damper that will open and close as the hose reel rotates allowing the induction or restriction of air flow.

2.04 VEHICLE EXHAUST HOSE

Provide Plymovent Type EF exhaust hose, or approved equal. The hose shall be rated for a continuous operating temperature of 570°F and intermittent temperatures of 660°F.

- A. The exhaust hose shall be constructed of a single ply, high temperature resistance neoprene-coated polyester fabric with high temperature resistant film lamination that is mechanically joined together with an external galvanized metal helix.
- B. The external helix shall be covered with a heat resistant plastic covering. The covering shall provide protection to both the hose and operator by protecting the hose from abrasion and acting as a heat protector for the operator. The protective wear band shall be yellow in color to provide additional visibility for the hose.
- C. The hose shall have a smooth inner bore to lessen pressure loss.
- D. The hose fabric shall not contain any asbestos or glass fibers.

2.05 RUBBER VEHICLE EXHAUST NOZZLE

Provide Plymovent rubber exhaust nozzles model REG-125, or approved equal, for connection to vehicle exhaust pipes. The nozzles shall be designed for heavy duty truck and car exhaust systems. The oval design shall allow the nozzle to be attached to both round and dual exhaust pipe systems. The rubber material of the nozzle shall be rated for a minimum of 430°F. Each nozzle shall include the following:

- A. High temperature, molded oval rubber sleeve to fit over the tailpipe(s).
- B. CO port for vehicle emissions testing with a plug.
- C. Vise grip latch to attach nozzle to the vehicle tailpipe. The vise grip shall have an adjusting screw to allow for different thickness tailpipes.
- D. The rubber portion of the nozzle shall be permanently attached to a steel tube. The steel sleeve shall attach to the hose via a stainless steel hose clamp.
- E. The nozzle shall have an oval opening of 8.3" x 4.6" which will open up to a 6.3" diameter.

2.06 FANS

- A. Subject to compliance with requirements of this Section, furnish and install fans of one of the following manufacturers, or approved equal:
 - 1. American Fan
 - 2. Greenheck
 - 3. Twin City

- B. The fan shall be constructed with 12 gauge sides and 12 gauge scroll, 1/4" motor base, 1-3/16" diameter shaft & bearings with a minimum L10 life of 70,000 hours and equipped with slip inlet, flanged outlet-punched, bolted access door, OSHA belt & shaft guard, Teflon shaft seal, constant pitch v-belt drive, spark resistant construction, TEFC and 230-460V/3P/60Hz premium efficiency motor.

2.07 VARIABLE FREQUENCY DRIVE (VFD)

- A. Subject to compliance with requirements of this Section, furnish and install VFD's of one of the following manufacturers, or approved equal:
 - 1. Allen Bradley
 - 2. Siemens
 - 3. Danfoss
- B. The VFD shall be Danfoss model FC322, or approved equal. The VFD shall be capable of varying the RPM of the exhaust fans as stipulated in the "Control and Operation Requirements" shown on the Contract Drawings
- C. All VFD operating and control parameters shall be viewed and adjusted via the operator interface keypad. All electrical values, configuration parameters, I/O assignments, application and activity function access, faults, local control, adjustment storage, self-test and diagnostics shall be in English
- D. The VFD shall have an integrated controller that shall monitor the pressure in the ductwork and vary the fan speed through changes to the electrical frequency sent to the fan motor by the frequency inverter. The frequency inverter shall read the duct pressure through a pressure transmitter, which is mounted on the exhaust duct at the fan inlet. This pressure transmitter shall send a 4-20 milliamp signal to the frequency inverter, which through internal programming shall change the frequency as necessary and modulate the fan speed.
- E. The operator interface keypad shall be a backlit screen displaying six lines of display, graphical or numerical display information, user-selectable engineering units, and multiple languages.
- F. As a minimum, the following points shall be controlled and/or accessible: VFD Start/Stop, speed reference, fault diagnostics, motor power in HP, motor power in kW, motor kW-hr, motor current, motor voltage, hours run, feedback signal No. 1, feedback signal No. 2, DC link voltage, thermal load on motor, thermal load on VFD, and heatsink temperature.
- G. Two programmable analog inputs shall be provided and shall accept a direct-or-reverse acting signal. Analog reference inputs accepted shall include one voltage (0 to 10 V dc, 2 to 10 V dc) input and one current (0 to 20 mA, 4 to 20 mA) input.
- H. One programmable 0 to 20 mA analog outputs shall be provided for indication of VFD status. These outputs shall be programmable for output speed, frequency, current, and power. They shall also be programmable to provide a selected 24 V dc status indication.
- I. Two programmable digital inputs shall be provided for interfacing with the systems control and safety interlock circuitry.
- J. The VFD shall have temperature controlled easily removable cooling fans for quiet operation and minimized losses and shall store in memory the last six faults and related operational data.
- K. VFD and Bypass shall be installed in the single NEMA 4X rated enclosure.

- L. The VFD shall include NEMA rated isolation and three contactor bypass complete with motor starter, thermal overload protection, circuit breaker, front panel disconnect interlocked with the door, control power transformer, motor flux decay timer, and a three position DRIVE RUN/ OFF/ BYPASS selector switch. In DRIVE RUN the motor shall be operated at an adjustable speed from the VFD. In the OFF position the motor and VFD shall be disconnected. In the BYPASS position the motor shall be operated at full speed from the AC power line and power shall be completely (all three phases) disconnected from the VFD bus.
- M. Hand/OFF/Auto selector switch with Start and Stop push buttons shall be provided to start and stop the VFD and determine the speed reference.
- N. Alternate control techniques other than pulse width modulated (PWM) will not be acceptable as an approved equal.
- O. Furnish and install a surge suppressor to protect the Type 3R package from transient surges coming through the power line cables, i.e. lightning strikes.
- P. Furnish and install custom engraved nameplates, 1/2 inch high white lettering on a black background
- Q. The VFD shall be capable of receiving an analog input to run at the preset speed and of receiving a digital input to energize/de-energize the VFD.
- R. Clearances: No side clearances shall be required for cooling any units.
- S. Design and Rating: Match load type such as fans; and direct type of connection used between motor and load.
- T. Provide matching pressure transmitters by ACI model A/LP-10-20 with 0-10" WG range, or approved equal.

2.08 DUCTWORK

- A. Materials for ductwork and accessories for the vehicle exhaust system shall be SMACNA class II product conveying and must meet or exceed criteria for construction and performance as outlined in Round Industrial Duct Construction Standards, SMACNA.
- B. Materials of construction, unless otherwise specified for all duct and fittings, shall be in minimum G-60 galvanized sheet metal in accordance with ASTM-A525 and A527.
- C. All duct subject to positive or negative pressure shall be of round spiral pipe construction, with the range of available sizes not to exceed 10 inches in diameter.
- D. Duct gauge shall depend on diameter and a minimum operating pressure of 8 inches water gauge. Acceptable gauge and reinforcement requirements shall be in accordance to the following. Inner duct diameter 4" - 8" dia./ 22 gauge standard spiral pipe and 9" - 10" dia./20 gauge standard spiral pipe.
- E. Duct shall be provided in 10' continuous lengths wherever possible. Except when interrupted by fittings, round spiral duct section shall not be less than 10 feet long.
- F. All exhaust fittings shall be round and have a wall thickness 2 gauges (one even gauge number) heavier than the lightest allowable gauge of the downstream section of duct to which they are connected. Branch entrances shall be factory fabricated fittings or factory fabricated duct /tap assemblies. Fittings shall be constructed so that air streams converge at angles of 45°.
- G. Standard seam joints shall be continuous welded on all fittings. All welded joints shall be coated with a protective paint, inside and out to prevent damage to galvanized surface.

- H. Turning elbows shall be die stamped and used for all diameters and pressures. They shall be fabricated of 20 gauge galvanized steel and constructed as two piece with continuous welded seam construction.
- I. All joint connections which are not continuous welded shall be supplied with a transition coupling from the downstream end only. Couplings shall have a two inch minimum insertion length and shall be 2 gauge numbers (one even gauge number) heavier than the duct to which they are connected. This along with a 600 high temperature silicon seal will constitute the primary mechanical seal.
- J. Acoustical sound control shall be provided on all exhaust systems when exhaust fan exceeds 63 db without attenuation.

PART 3. PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install a complete vehicle exhaust system in accordance with manufacturer's installation procedures and recognized industry practices.
- B. Installation shall be in compliance with the approved shop drawings and the manufacturer's instructions and recommendations. Coordinate the VFD with the motor served and provide service clearance in accordance with NEC.
- C. Arrange for a factory certified technical representative of the VFD manufacturer to supervise and inspect the installation and to advise on field adjustment, testing and start-up of the VFD for a minimum of one 8-hour day
- D. Contractor shall ensure that motor rotation is in direction indicated and intended for proper performance. Adjust sheaves for belt driven fans to deliver the required CFM.
- E. The electrical wiring installation shall be in accordance with manufacturer's approved submittals and in accordance with installation requirements of Division 16.

3.02 FIELD TESTS

- A. Field tests and inspections shall be performed under the direction of a factory-authorized service representative.
- B. Start up, test, and adjust the complete vehicle exhaust system in presence of manufacturer's authorized representative.
- C. Perform all additional work and make all repairs to achieve compliance with specified performance. Repeat applicable tests as required to achieve specified performance.
- D. Should the test reveal any defects or other evidence of unsatisfactory materials or workmanship, make necessary repairs and repeat the test until the installation is proven satisfactory.
- E. Submit a written report field test report to the Engineer for approval.

3.03 IDENTIFICATION

- A. Provide each exhaust fan and VDF with identification label to include, as a minimum, manufacturer, model number, capacity and power requirements.

3.04 CLEANING AND PROTECTION

- A. Prior to the issuance of Certificate of Final Completion by the Engineer, perform a thorough final cleaning of the areas, items, elements or structures to be certified including accessible spaces normally concealed from view. Final cleaning shall remove all dust, dirt, debris, markings, residues, stains, and any and all non-permanent materials and equipment whatsoever, leaving the location completely clean, spotless and in a new condition.**

3.05 TRAINING

- A. Upon the completion of the installation, arrange for the services of a qualified technical representative of the Vehicle Exhaust System and VFD manufacturer to instruct the Authority's maintenance personnel in the proper operation and troubleshooting of the system. The training shall include one 8-hour lesson for minimum of 8 people. The lessons shall be provided at the completion of the installation and the materials shall include, but not be limited to, the fundamentals of the VFD, hardware, software, the demonstration of the VFD and fan operation, settings and adjustments, programming the system speed, testing procedures, and troubleshooting. Location and schedule of training shall be coordinated with the Engineer. The training shall include course outline and operating manual and shall be videotaped. An operating training video is to be provided to the Authority as a permanent training aid.**

END OF SECTION

SECTION 15895

VEHICLE DIESEL EXHAUST SYSTEM AND APPURTENANCES

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts and Samples" of Division 1 - GENERAL PROVISIONS:

Shop Drawings

- 15895A01 Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts, and Samples" of Division 1 – GENERAL PROVISIONS:
1. Field installation layout drawings having a scale of not less than 1/8" = 1'-0" per 1:100m detailing the location of all Exhaust System(s) components including duct sizes and lengths, control panel(s), sensors, VFD's, hose reels , start/stop switches, visual alarms, etc.
- 15895A02 Electrical layout drawings shall show the location of all devices and include point-to-point conduit runs and a description of the method(s) used for equipment
- 15895A03 Wiring diagram shall include power supply requirements and field wiring termination points.
- 15895A04 Provide outline drawings showing dimensions, operating weight, required clearance, arrangement of components, and mounting details.

Catalog Cuts

- 15895B01 Provide manufacturer's material specification, performance data, and rated capacities.

Product Data

- 15895D02 Provide complete datasheets for all exhaust system components.

Manufacturer Test Reports

- 15895F01 Performance report showing VFD, fan, motor and component performance details. Performance report shall detail unit casing performance and include materials, gauges, and finishes.

Manuals, Warrantees/Guarantees

- 15895I01 Prior to final acceptance, the contractor shall provide complete operation and maintenance instruction manuals, four copies for each system, to the Authority. All aspects of system operation and maintenance shall be detailed, including ductwork, wiring diagrams of all circuits, a written description of the system design, sequence of operation and drawing(s) illustrating the control logic and equipment used in the system. Checklists and procedures for emergency situations, troubleshooting techniques, maintenance operations and procedures shall be included in the manual.

Record Documents

15895M01 Upon completion of each system, the contractor shall provide four copies of system "as-built" drawings to the Authority. The drawings shall show actual installation details including all equipment locations (i.e.: control panel(s), switches, alarms, manuals and aborts, etc.) as well as ductwork and conduit routing details. Show all room or facilities modifications, including door and/or damper installations completed. One copy of reproducible engineering drawings shall be provided reflecting all actual installation details.

END OF APPENDIX "A"

DIVISION 15

SECTION 15939

MOTORS AND MOTOR CONTROLLERS

PART 1. GENERAL

1.01 SUMMARY

- A. This Section specifies requirements for electric motors of up to 200 horsepower.
- B. This Section specifies requirements for furnishing motor controllers and associated accessories needed.
- C. The following related work is specified in the Division 16 Section entitled "MOTOR POWER AND CONTROL WIRING", and is not part of that required under this Section:
 - 1. Installation of motor controllers and associated accessories (1.01 B above)
 - 2. Field wiring between electrical components.

1.02 DESIGN AND PERFORMANCE REQUIREMENTS

- A. Design and performance of components and methods specified herein shall comply with all applicable Federal, State and Local laws, ordinances, regulations and codes and the latest industry standards including, but not limited to the entities listed below.
 - New York City Building Code
 - New York State Energy Conservation Construction Code
 - New Jersey Uniform Construction Code
 - American National Standards Institute (ANSI)
 - Institute of Electrical and Electronic Engineers (IEEE)
 - National Electrical Manufacturers Association (NEMA)
 - National Fire Protection Association (NFPA)
 - Underwriters Laboratories, Inc. (UL)In addition, specific provisions cited herein shall govern for the associated specific application.
- B. All motors shall be "Premium Efficiency" type, as described in NEMA MG-12.54-2. Test shall be performed in accordance with IEEE 112, Method B. Additionally, provide standard efficiency design motors for equipment that run infrequently, if specifically indicated on the contract Drawings.

1.03 QUALITY ASSURANCE

- A. Motors, motor controllers and associated accessories, of types and sizes required, shall have been satisfactorily used for purposes similar to those intended herein for not less than three years.
- B. Entities performing work shall have experience on at least two projects involving complexities similar to those required under this Contract.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Delivery motors (if not delivered with motor-driven equipment) with factory-installed wooden skids and lifting lugs; pack motor controllers and accessories in factory-fabricated protective containers.
- B. Handle motors, motor controllers, and accessories carefully to avoid damage to components, enclosures and finish.
- C. Store motors, motor controllers, and accessories in clean, dry spaces and protect them from weather.
- D. Comply with manufacturer's rigging instructions for unloading motors, and moving motors to final location for installation.

1.05 SUBMITTALS

For Submittal Requirements, see Appendix A.

PART 2. PRODUCTS

2.01 MANUFACTURERS

Subject to compliance with requirements of this Section, provide motors and motor controllers of one of the following manufacturers, or approved equal, unless otherwise specified in other Sections:

- A. Motors
 - 1. General Electric Co.
 - 2. Westinghouse Electric Corp.
 - 3. Siemens-Allis Inc.
 - 4. Reliance Electric Co.
- B. Motor Controllers
 - 1. Westinghouse Electric Corp.
 - 2. Square D Co.
 - 3. Allen-Bradley Co.
 - 4. Cutler-Hammer Inc.
 - 5. General Electric Co.
 - 6. ABB Industrial Systems, Inc.

2.02 CONSTRUCTION FEATURES

- A. Motors
 - 1. Motor characteristics shall be as specified below unless otherwise specified in other Sections or shown on the Contract Drawings.
 - 2. All motors, with the exception of severe duty motors as defined below, shall be designed to operate continuously at 40 degrees C ambient temperature with a service factor of 1.15, unless otherwise specified in other Sections. Severe duty motors shall have a service factor of 1.0 at 65 degrees C ambient. In rating the motors, no portion of a motor's service factor above 1.0 shall be used for the continuous operation of the motor.

3. Polyphase motors shall be NEMA MG 1 Design B torque, unless the load justifies another NEMA Design starting characteristic. Motors shall have a motor input with "Locked Rotor KVA Code Letter" specified in Tables I, II or III, as applicable. Fractional horsepower motors below 3/4 horsepower shall meet NEMA requirements for minimum torque and maximum current.
4. Motors 1/2 horsepower and larger shall be 460-volt, three-phase, 60 Hertz, squirrel cage induction type. Motors below 1/2 horsepower shall be 120-volt, single-phase, 60 Hertz, capacitor-start, induction-run or split-phase type.
5. Use open drip-proof type motors for general indoor applications. The motors shall have minimum Class "B" insulation.
6. Use totally enclosed, fan-cooled type motors for special indoor applications such as inside return air plenums, for inline direct-driven fans and when floor-mounted near hose down areas or for other applications as shown on the Contract Drawings. The motors shall have minimum Class "B" insulation.
7. Use totally enclosed, fan-cooled type motors for all outdoor applications. Motor shall be severe duty, with minimum Class "F" insulation.
8. Bearings for integral horsepower motors shall be antifriction, open type with grease fittings and shall have a minimum rated life of 125,000 hours for direct coupled motors and 25,000 hours (50,000 hours for severe duty motors) for belt or chain driven loads. Bearings for fractional horsepower motors shall be permanently sealed ball type, suitable for continuous duty.
9. Horsepower and frame relationship shall conform to NEMA MG 1 for T-frame motors.
10. The no-load sound pressure level, for high efficiency motors, based on the A-weighted scale at 3 feet when measured in accordance with IEEE 85, shall not exceed 85 dBA.
11. Provide solderless lugs of proper sizes at the ends of motor leads.
12. Where shown on the Contract Drawings, provide motors with space heaters, rated 115-volt, single-phase, sized to maintain motor internal temperature above the dew point when motor is at rest. Space heater leads shall be terminated in a box separate from the main leads.
13. All motors shall be labeled by the manufacturer with NEMA minimum efficiency marking standard in accordance with NEMA standard MG-1-12.53b.
14. Where a solid state motor starter is called for, provide verification that the submitted motor is suitable for operation with a solid state motor starter. All motor manufacturer's special enhancement requirements to solid state motor starters shall be incorporated into the solid state starter by the starter's manufacturer.
15. All motors shall have minimum power factors, at 100% full load, as follows:
 - a. Single-Phase Induction Motors; Squirrel-Cage Rotor
 - 1/20 to 1 hp, power factor .68
 - Above 1 to 10 hp, power factor .82
 - b. Polyphase Induction Motors; Squirrel-Cage Rotor
 - 1 to 10 hp, power factor .85
 - Above 10 to 50 hp, power factor .89
 - c. Polyphase Induction Motors; Phase-Wound Rotors
 - 5 to 20 hp, power factor .86

Above 20 to 100 hp, power factor .87

B. Motor Controllers

1. Motor controllers and controls shall be as specified below unless otherwise specified in other Sections or shown on the Contract Drawings.
2. All motor controllers shall be combination controllers suitable for wall mounting.
3. All controllers shall comply with the following:
 - a. Controllers for motors 1/2 horsepower and larger shall be combination, magnetic, full voltage across-the-line starting, with circuit breaker, designed for operation on 460-volt or 208-volt, 3-phase, 60 Hertz service. Single speed controllers shall be provided with three overload relays, one in each phase.
 - (1) When thermal overload devices are provided they shall be ambient temperature compensated. The coil interrupting overload contacts shall be on the phase side of the coil.
 - (2) Provide two additional spare auxiliary contacts in each controller.
 - (3) Two-speed starters shall have six overload relays, one in each phase for the two speeds.
 - b. Controllers for motors less than 1/2 horsepower shall be of the toggle, switch, manual type with integral overload protection and pilot light in the cover, and shall be designed for 120-volt, single-phase, 60 Hertz service. Where interlocks or automatic controls are required, provide magnetic across-the-line combination starters.
 - c. All magnetic controllers subject to manual start shall have momentary contact start-stop pushbuttons, pilot light and reset button built into cover. All magnetic controllers requiring electrical interlocks or automatic control shall have "Hand-Off-Automatic" switch, pilot light, stop and reset buttons built into the cover, unless subject to cycling control, in which case the pilot light shall be omitted.
 - (1) Hand position on "Hand-Off-Automatic" switches shall permit local starting of the motor by shunting all automatic controls. "Hand" position shall not bypass safety controls.
 - (2) Combination controllers shall be capable of being locked in the open position. All controllers shall have manual reset on the overload relay.
 - d. Where required to prevent simultaneous starting of motors, provide interlocked controllers with time delay devices.
 - e. All individually mounted motor controllers, installed indoors, shall be furnished in a NEMA Type 1 general purpose enclosure. All individually mounted motor controllers, installed indoors in an industrial environment, shall be furnished in a NEMA ICS 6, Type 12 enclosure.
 - f. Controllers mounted outdoors shall be furnished in NEMA ICS6 Type 4X watertight enclosures.
 - g. The minimum controller size, for three-phase motors, shall be NEMA ICS 2, Size 1.

- h. In addition to NFPA 70 (NEC) requirements for safety disconnect switches, where controllers are not directly adjacent to the motors they control, or where a safety disconnect switch is not specified to be furnished with motor-driven equipment, a heavy-duty, unfused disconnect switch, arranged for being padlocked in the open position, and also capable of interrupting the motor locked rotor current, shall be furnished for installation within sight of the motor.
- i. All controllers for 460-volt or 208-volt service shall have 460/120 volt or 208/120 volt, respectively fused transformers built-in in each controller housing to serve all control circuits within the controller. Each controller subject to electrical interlock and/or automatic control shall have the necessary auxiliary contacts to perform the required operations. One set of terminals shall be provided for each control circuit.
- j. Where interposing relays are required, they shall be furnished in separate enclosures adjacent to the controllers.
- k. Where controllers are interlocked, a separate disconnect switch shall be mounted adjacent to the lead controller in order to disconnect all control voltages to the controllers.
- l. All parts subject to wear or arcing, shall be renewable.
- m. All electrical control devices shall be heavy-duty oil tight construction.
- n. All motor controllers, disconnect devices and other control devices shall be labeled as to use and function, utilizing engraved plastic nameplates with white letters on black background. Inscriptions shall be as shown on the Contract Drawings.

C. Electro-Mechanical Devices

Electro-mechanical devices required for interlocking or sequencing or safety control of motors such as pneumatic solenoids, float switches, high and low limit switches, and aquastats, are furnished and installed under other Sections of the Specifications.

D. Factory Wired Equipment

- 1. Equipment with Factory Wired Motors (FWM) shall have all starting and control equipment furnished and installed with motors, and completely wired unless otherwise specified in other Sections or shown on the Contract Drawings.
- 2. Factory Wired Control Panels (FWCP) shown on the Contract Drawings shall include combination controllers with disconnect switches.
- 3. Provide all motor control panels, including the hinged door, fabricated of minimum 12-gauge sheet steel, properly finished to prevent corrosion. As a minimum, the cabinets shall be thoroughly cleaned, primed with zinc phosphate and finished with two coats of baked enamel or an equivalent finish coat, or as otherwise specified on the Contract Drawings. Control devices shall be mounted on the door, completely wired and neatly cabled back to terminal strips. A four-inch minimum wiring gutter on all four sides of the panel shall be provided.
- 4. Where two or more controllers in a single enclosure are grouped for duplex or triplex operation, each controller shall have a control transformer with secondary pullout fuses. Each controller fused disconnect switch shall be capable of de-energizing its associated control transformer and controller circuit.

5. Devices shall have individual nameplates plus a nameplate for a group indicating the motor or motors controlled. Panels shall be degreased and painted with zinc chromate primer and factory-finished grey enamel finish coat.

2.03 SHOP TESTS

Minimum efficiency values of furnished motors shall be confirmed by testing in accordance with IEEE-112, Method B, to be in conformance with NEMA MG-1 tables of efficiencies applicable to premium efficiency motors, or to standard efficiency motors as is applicable.

PART 3. EXECUTION

3.01 INSTALLATION

- A. Provide non-adjustable base for motors directly connected to driven equipment and adjustable sliding base for motors connected to driven equipment via belt or chain.
- B. Provide slotted mounting holes in base for fractional horsepower motors.
- C. Install independently mounted motor control devices in accordance with manufacturer's written instructions, and in compliance with applicable requirements of NEC, UL and NEMA standards.
- D. Locate motor controllers as indicated, and within sight of respective controlled motors.
- E. Remove paint splatters and other spots, dirt and debris. Touch up scratches and mars of finish to match original finish. Clean devices internally using methods and materials as recommended by manufacturer.

END OF SECTION

SECTION 15939

MOTORS AND MOTOR CONTROLLERS

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts and Samples" of Division 1 - GENERAL PROVISIONS:

Product Data

- 15939D01 Motors and Motor Controllers: Submissions shall be clearly identified with the pertinent motor numbers and the proper control equipment to be wired into the control circuits.
- a. Motor schedules with full nameplate data including, at a minimum, horsepower, voltage, FLA, LRA, speed (rpm), efficiency, phase, frequency and type of insulation.
 - b. Motor controller schedules.
 - c. Product data for motors, motor controllers and all other products specified in this Section. Include dimensions of selected models, required clearances, ratings, operating data and data on features and components.
 - d. Catalog cuts, including product performance data.
 - e. Power and control wiring diagrams showing connections to power panels, feeders and equipment. Differentiate between manufacturer-installed and field-installed portions of wiring.
 - f. Coordination curves of overcurrent protection equipment and interrupting capacities of equipment.
 - g. Listing of proposed inscriptions for labeling all motor controllers, disconnect devices and other control devices.
 - h. Installation procedures.
 - i. Maintenance data.
 - j. Shop test results.

END OF APPENDIX "A"

DIVISION 15**SECTION 15940****VIBRATION ISOLATION AND CONTROL****PART 1. GENERAL****1.01 SUMMARY**

This Section specifies requirements for vibration isolation and control, applicable to piping, ductwork and equipment.

1.02 DESIGN AND PERFORMANCE REQUIREMENTS

Design and performance of components and methods specified herein shall comply with all applicable Federal, State, and Local laws, ordinances, regulations and codes, and the latest industry standards including, but not limited to the entities listed below.

Air-Conditioning and Refrigeration Institute (ARI)
American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)
American Society of Plumbing Engineers (ASPE)
American Society of Mechanical Engineers (ASME)
American Society for Testing and Materials (ASTM)

In addition, specific provisions cited herein shall govern for the associated specific application.

1.03 QUALITY ASSURANCE

- A. Vibration isolation and control devices, of types and sizes required, shall have been satisfactorily used for purposes similar to those intended herein for not less than three years.
- B. Entities performing the Work of this Section shall have experience on at least two projects involving complexities similar to those required under this Contract.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver isolators in manufacturer's original, unopened, protective packaging. Packaging and packed devices shall be both labeled and tagged to properly identify device and its proper location for installation on the construction site.
- B. Store devices in original packaging in clean, dry spaces and protect them from weather.
- C. Inspect all isolators for damage before moving them from storage to a location for installation on the construction site.

1.05 SUBMITTALS

See Appendix "A" for submittal requirements.

PART 2. PRODUCTS

2.01 MANUFACTURERS

Subject to compliance with requirements of this Section, provide vibration isolation systems of one of the following manufacturers, or approved equal:

Mason Industries Inc.
Vibration Mountings and Controls/Korfund Dynamics
Vibration Eliminator Co., Inc.
Amber-Booth Co.

All isolation systems, including mountings and hangers, shall be designed and furnished by the same manufacturer, except for equipment furnished with internal isolation.

2.02 MATERIALS

All concrete used in inertia bases shall be Class B (3000 to 4000 psi strength specified in applicable Section of Division 03), steel reinforced for load and temperature stresses.

2.03 CONSTRUCTION FEATURES

A. General

1. Piping and Ductwork Isolation Types

Unless otherwise shown on the Contract Drawings, selection of isolation types for piping and ductwork shall be as specified in 3.02 C and D.

2. Equipment Isolation Systems

- a. Unless otherwise shown on the Contract Drawings, select vibration isolation systems for all mechanical equipment having vibration/motion, including but not limited to the following equipment
 - Refrigeration machines
 - Reciprocating compressors and engines
 - Air-cooled condensers or condensing units
 - Boilers and steam generating units
 - Pumps
 - Cooling towers
 - Fans, air handling equipment and unit heaters
 - Packaged air-conditioning equipment
 - Packaged roof top air-conditioning units (if not provided with internal isolation)
 - Packaged emergency generators
- b. Systems selected shall be of the proper types and design such that they are compatible with the building structural framing spans and floor construction and provide the isolation and deflection required.
- c. Systems selected shall comply with ASHRAE 1984 Systems Volume, Chapter 32, and shall be in accordance with recommendations of equipment manufacturers, in conjunction with the vibration isolator manufacturer.

B. Isolation Mountings

1. Elastomer isolators shall have a stiffness range of 30 to 70 durometers. All metal surfaces shall be covered with the elastomer material to avoid corrosion. Mountings shall be Mason type ND, or approved equal.

2. Spring isolators shall be provided with an elastomer acoustical barrier designed with a horizontal stiffness of at least 75 percent of the vertical stiffness and a 50 percent travel capability beyond rated load. All isolators shall have leveling bolts for rigid bolting to the equipment. Mountings shall be Mason type SLF, or approved equal.
3. Restrained spring isolators shall be the same as the spring isolators specified above, except a housing shall be provided that includes vertical limit stops to prevent spring extension when weight is removed. Mountings shall be Mason type SLR, or approved equal.

C. Isolation Hangers

1. Isolation hangers (regular) shall have elastomer elements, springs or a combination of springs and elastomer elements. Hangers shall be designed for a minimum of 30 degrees angular hanger rod misalignment and a 50 percent travel capability beyond rated load. Means shall be provided to prevent direct contact of hanger rod with housing and short-circuiting the spring vibration dampening effect. Hangers shall be Mason type 30N, or approved equal.
2. Position (precompressed) isolation hangers shall be the same as the regular isolation hangers specified above, except that the hangers shall be precompressed to the rated deflection so as to keep the piping at a fixed elevation during installation. The hangers shall be provided with a release mechanism to free the spring after the installation is complete and the hanger is subjected to its full load. Hangers shall be Mason type PC30N, or approved equal.
3. Ductwork isolation hangers shall have springs in elastomer cups and provisions to attach the hanger housings to the flat iron duct straps. Provide a steel washer inside the cup to properly distribute the load on the elastomer and prevent its extrusion. Hangers shall be designed for a minimum of 30 degrees angular hanger rod misalignment and a 50 percent travel capability beyond rated load. Hangers shall be Mason type W30, or approved equal.

D. Flexible Pipe Connectors

1. Flexible synthetic elastomer connectors shall be manufactured of multiple plies of nylon tire cord fabric and synthetic elastomers, both molded and cured in hydraulic "rubber" presses. No steel wire or rings shall be used as pressure reinforcement. Connectors up to and including 2-inch diameter shall be hose type, with threaded ends and 12 inches in length. Connectors 2 1/2 inches and larger shall be arched or spherical type in standard lengths and shall be manufactured with floating steel flanges recessed to lock the connector's raised face elastomer flanges. Connectors shall be rated minimum 150 psi at 220 degrees F. Connectors shall be properly pre-extended and restrained as recommended by the manufacturer to prevent additional elongation under pressure. Connectors shall be Mason type MFNEC, MFTFU or MFTNC (as applicable), or approved equal.
2. Where temperature of the fluid exceeds 220 degrees F, flexible stainless steel hoses shall be used. Flexible hoses shall be stainless steel braid with carbon steel fittings. Sizes 2 1/2 inches and larger shall be flanged. Sizes 2 inches and smaller shall have male nipples. Lengths shall be as follows:

<u>Flanged</u>		<u>Male Nipples</u>
2 1/2 x 13	8 x 22	
3 x 14	10 x 26	1/2 x 9, 1 1/2 x 13
4 x 15	12 x 28	3/4 x 10 2 x 14

	14 x 30	1 x 11
6 x 20	16 x 32	1 1/4 x 12

Flexible stainless steel hoses shall be Mason type BSS, or approved equal.

E. Equipment Bases

1. Structural Steel Bases and Rails

- a. Provide structural steel members welded to height saving brackets for spring isolator attachments to cradle machines having legs or bases that do not require a complete supplementary base. Members shall be sufficiently rigid to prevent strain in the equipment. Inverted saddles shall be Mason type ICS, or approved equal.
- b. Where the equipment requires a complete supplementary base, provide a fabricated structural steel base. Structural steel bases shall be rectangular in shape for all equipment other than centrifugal refrigeration machines and pump bases that may be "T" or "L" shaped. Pump bases for split case pumps shall include supports for suction and discharge base "ells". All perimeter members shall be beams with a minimum depth equal to 1/10th of the longest dimension of the base. Beam depth shall not exceed 14 inches provided that deflection and misalignment are kept within acceptable limits. Height saving brackets shall be employed in all spring isolator mounting locations to provide a base clearance of one inch. Bases shall be Mason type WF, or approved equal.

2. Concrete Inertia Bases

Provide concrete inertia bases formed with rectangular structural channel concrete forms. Bases for split case pumps shall be large enough to provide support for suction and discharge base "ells". The base depth shall not exceed 12 inches unless specifically recommended by the base manufacturer for mass or rigidity. In general, base depths shall be a minimum of 1/12th of longest dimension of the base, but not less than 6 inches. Forms shall include minimum concrete reinforcement consisting of half-inch bars or angles welded in place on 6-inch centers running both ways in a layer 1-1/2 inches above the bottom, or additional steel as required by the structural conditions. Forms shall be furnished with drilled members with sleeves welded below the holes to receive equipment anchor bolts where the anchor bolts fall in concrete locations. Height saving brackets shall be employed in all spring mounting locations to maintain a one-inch clearance below the base. Bases shall be Mason type K, or approved equal.

3. Curb Type Isolation Bases for Rooftop Equipment

For rooftop equipment, not furnished with internal vibration isolators, provide curb type vibration isolation aluminum bases that fit over the roof curb and under the vibration isolated equipment. The extruded aluminum top member shall overlap the bottom member to provide water runoff independent of the seal. The aluminum members shall house cadmium-plated springs having a one-inch minimum deflection with 50 percent additional travel to "solid". Spring diameters shall be no less than 0.8 of the spring height at rated load. Wind resistance shall be provided by means of resilient snubbers in the corners with a minimum clearance of 1/4 inch, so as not to interfere with the isolation action except in high winds. The weather seal shall consist of continuous, closed cell, sponge materials both above and below the base and a waterproof, flexible, duct like, synthetic elastomer connection joining the outside perimeter of the aluminum members. Foam or other contact seals are unacceptable at the spring cavity closure. Caulking shall be kept to a minimum. Curb type isolation bases shall be Mason type CMAB, or approved equal.

2.04 SHOP PAINTING

- A. Corrosion resistance coatings shall be factory-applied to all vibration control devices and isolators. No field applications will be permitted. Shop prime coats, compatible with architectural treatment field paintings, shall be applied after the applications of corrosion resistance coatings are completed.
- B. Where exposed to outdoors, steel parts shall be hot-dipped galvanized and springs shall be cadmium plated.

PART 3. EXECUTION

3.01 PREPARATION

- A. Coordinate all trades in the use of approved detailed shop drawing templates for all equipment foundations and supports. Verify that all bolts, anchors, supports and appurtenances, required for proper installation of the equipment and isolators, are in place and that the necessary concrete and steel are in place.
- B. Do not proceed with installation of isolation devices and their supports and anchors until required permanent building structural steel and concrete are in place. Correct inadequacies including proper placement of inserts, anchors and other building structural attachments.

3.02 INSTALLATION

- A. General
 - 1. Install all vibration isolation systems in accordance with manufacturer's installation procedures and ASHRAE recommendations.
 - 2. Perform all concrete Work required for installation of vibration isolation systems.
 - 3. Erect all floor-mounted equipment and pipe supports on 4-inch high concrete pads extending 4 inches beyond the completed floor area of the equipment. Mount vibration-attenuating devices on 4-inch high concrete pads unless otherwise shown on the Contract Drawings.
 - 4. Install isolation systems so as not to physically interfere with operation of mechanical equipment or access for maintenance.

5. Provide inspection services by vibration isolation systems manufacturer's representative for final installation. Provide written report that installation is in accordance with this Section and manufacturer's recommendations.
- B. Equipment Isolation**
1. Set accessory and isolator steel bases for required clearance between concrete pads and equipment base.
 2. Utilize suitable hold-downs and limit-stop devices to maintain equipment isolators at correct static deflection while connecting piping and ductwork. After pipe, conduit, and duct hangers are installed and adjusted, equipment shall be permitted to float free. Limit-stops shall be out of contact during start-up and operation of equipment.
- C. Piping Isolation**
1. **Suspended Piping**
 - a. Install isolation hangers for all piping in equipment rooms and for 50 feet from a connection to equipment, where the 50-foot length extends beyond the equipment room.
 - b. A minimum of the three closest hangers to an equipment connection shall provide the same deflection as the equipment isolation devices, with a maximum of 2-inch deflection.
 - c. The closest two hangers to an equipment connection shall be position (or precompressed) isolation hangers, adjusted to prevent load transfer to the equipment flanges when the pipe system is filled or drained.
 - d. The remaining isolation hangers shall be regular isolation hangers with a 0.75-inch deflection for piping up to 8 inches in size. Position isolation type hangers shall be used for piping 8 inches in size and larger.
 2. **Floor Supported Piping**
 - a. Isolate floor-supported piping from the building structure by floor mounting spring isolators.
 - b. The two supports closest to an equipment connection shall consist of restrained spring isolators with a blocking feature that prevents load transfer to equipment flanges as the piping is filled or drained.
 - c. Provide a slide plate of Teflon or graphite where large thermal movement will result.
 3. **Flexible Pipe Connectors**
 - a. Provide all piping connections to rotating and reciprocating equipment with flexible pipe connectors.
 - b. Install connectors on the equipment side of the shut-off valves.
 - c. Install connectors in accordance with the weight distribution of the equipment to provide a stable mounting decoupled system.
 - d. Install each connector so that the equipment support base remains level during deflection.
 - e. Incorporate end thrust restraint into the design of all connectors or add end thrust restraint to piping systems, externally.

D. Ductwork Isolation

All discharge ductwork for a distance of 50 feet from the connected equipment shall be isolated from the building structure by ductwork isolation hangers. Floor supported ductwork shall be isolated from the building structure by floor-mounting restrained spring isolators.

3.03 FIELD TESTS

- A. After installation, the Engineer may perform tests of vibration isolation systems to check deflections.**
- B. Make adjustments, replacements and alterations as necessary to reduce transmitted amplitude to no more than plus or minus 10 percent of the originating equipment vibration amplitudes, over the full range of operating speeds and loads.**

END OF SECTION

SECTION 15940

VIBRATION ISOLATION AND CONTROL

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts and Samples" of Division 1 - GENERAL PROVISIONS:

Shop Drawings

- 15940A01
- a. Assembly-type shop drawings for each type of isolator indicating dimensions of selected models, required clearances and methods of assembly and field installation of all components.
 - b. Detailed shop drawings and templates for all equipment foundations and supports indicating all required bolts, anchors, supports and appurtenances required for proper installation of the isolators at the equipment, and the required concrete and steel work.
 - c. Shop drawings showing isolator locations, load on each isolator, deflection, inertia slab dimensions of selected models, details of supports and required field installation instructions.
 - d. Schedules showing manufacturer's figure number, size, location, and any specific features for each vibration isolation device.
 - e. Catalog cuts, including product performance data, of all furnished vibration isolation devices.
 - f. Installation procedures for each type of isolation device.
 - g. Maintenance data for each type of isolation device.

Inspection Reports

- 15940O01 Certified installation inspection report by isolation systems manufacturer.

END OF APPENDIX "A"

DIVISION 15

SECTION 15992

**TESTING, ADJUSTING, AND BALANCING
OF AIR AND HYDRONIC SYSTEMS**

PART 1. GENERAL

1.01 SUMMARY

- A. This Section specifies requirements for testing, adjusting and balancing of all air and hydronic fluid distribution systems, including the equipment and devices associated with each system.
- B. The Work includes setting speed and flow, adjusting equipment and devices installed for systems, recording data, conducting tests, preparing and submitting reports, and recommending modifications to the mechanical installations specified in other Sections of the Specifications.
- C. The following related work is specified in other Sections of the Specifications, and is not part of the Work of this Section:
 - 1. Installation and start-up of equipment and devices to be tested, adjusted, and balanced.
 - 2. Pressure testing of piping and ductwork systems.
 - 3. Testing of boilers and pressure vessels.
 - 4. Specifications for materials and installation of adjusting and balancing devices. If devices must be added to achieve proper balancing, refer to the respective system sections for materials and installation requirements.
 - 5. Piping and ductwork system leakage tests.
 - 6. Electrical hook-up and wiring of equipment and devices to be tested, adjusted, and balanced.

1.02 PERFORMANCE REQUIREMENTS

- A. Procedures, measurements, instruments and test reports for testing, adjusting and balancing work shall comply with all applicable Federal, State and Local laws, ordinances, regulations and codes, and the latest industry standards including, but not limited to the entities listed below.
 - American Society of Heating, Refrigerating and Air- Conditioning Engineers (ASHRAE)
 - Sheet Metal and Air Conditioning Contractors National Association (SMACNA)
 - National Environmental Balancing Bureau (NEBB)
 - Associated Air Balance Council (AABC)In addition, specific provisions cited herein shall govern for the associated specific application.
- B. The air delivery or intake of each diffuser, grille and register shall be as designed or within five percent of the air flow rates shown on the Contract Drawings.

- C. The fan air flow rate and static pressure rise across the fan shall be within 10 percent above the design value at design speed.

1.03 JOB CONDITIONS

- A. The Contractor shall have the testing and balancing specialist review his work with the respective manufacturers of the equipment and devices involved, and shall coordinate and schedule all Work.
- B. The Contractor shall furnish and install balancing dampers, pressure taps, gauges, valves, and other components as required for a properly balanced system, whether or not specified herein or shown on the Contract Drawings, all at no additional cost to the Authority. Adjustment or replacement of parts recommended by the testing and balancing specialist shall be made in strict accordance with the respective equipment manufacturer's recommendations.
- C. The Contractor shall have the control manufacturer's representative set the adjustment of the automatically operated dampers and control valves to operate as required.

1.04 QUALITY ASSURANCE

- A. Entities performing the work of this Section shall have had experience similar to that required for this Project for not less than three years.
- B. Entities performing the Work of this Section shall be certified by NEBB or AABC and shall have experience on at least two projects involving complexities similar to those required under this Contract.

1.05 SUBMITTALS

Refer to Appendix A.

PART 2. PRODUCTS

2.01 PATCHING MATERIALS

Unless otherwise shown on the Contract Drawings, use same products as originally installed for patching holes in insulation, ductwork and housings which have been cut or drilled for test purposes, including access for test instruments, attaching jigs, and similar purposes.

PART 3. EXECUTION

3.01 EXAMINATION

- A. Obtain design drawings and specifications (or as-built drawings and specifications, if such exist), and become thoroughly acquainted with design intent.
- B. Obtain copies of approved shop drawings of all air handling and hydronic equipment, air outlets (supply, return and exhaust), manual valves, automatic valves and the temperature control diagrams, including intended sequence of operation.
- C. Examine installed work and conditions under which testing is to be done to ensure that work has been completed, cleaned, and is operable. Do not proceed with testing, adjusting and balancing until unsatisfactory conditions have been corrected in a manner approved by the testing and balancing specialist.

- D. Examine the air systems to see that they are free from obstructions. Determine that all dampers and registers are open, moving equipment is lubricated, clean filters are installed, and automatic controls are functioning; and perform other inspection and maintenance activities necessary for proper operation of the systems.
- E. Examine the hydronic systems to see that they are free from abnormal obstructions, and that all piping, valves and equipment have been properly made fully operational. Determine that all equipment and control systems are performing correctly by functional testing.

3.02 TESTING, BALANCING, AND ADJUSTING

- A. Cut insulation, ductwork and piping for installation of test probes to the minimum extent necessary to allow adequate performance of test procedure.
- B. Testing and balancing specialist shall perform tests and compile test data for all air systems and hydronic systems.
- C. Data shall include a schematic diagram locating the air inlets, outlets, fans, equipment, dampers and regulating devices for air systems, and a schematic diagram for location of balancing valves, flow indicators, equipment, and devices for hydronic systems.
- D. All instruments used shall be provided by the entity performing the work of this section, and shall be accurately calibrated and maintained in good working order.
- E. Air Systems

The testing, adjusting and balancing of air systems shall be in accordance with the detailed procedures outlined in the referenced standards; and shall include but not be limited to the following:

1. Test, record and adjust fan rpm to design requirements.
2. Test and record motor full load amperes.
3. Make pitot tube traverse of main supply ducts and obtain design flow rate at fans.
4. Test and record system static pressure, velocity pressure and total pressure.
5. Test and adjust system for design supply, transfer and return air flow rate.
6. Test and adjust system for minimum and maximum design flow rates of outside air.
7. Test and record return air temperatures.
8. Test and record entering mixed air temperatures.
9. Test and record coil and fan leaving air temperatures.
10. Adjust all main supply, return, relief, and exhaust air ducts to proper design flow rate.
11. Adjust all zones to proper design flow rate for supply, return, transfer, relief and exhaust air.
12. Test and adjust each diffuser, grille and register.
13. Each grille, diffuser and register shall be identified as to location and area on the schematic diagram.
14. Size, type and manufacturer of diffusers, grilles and registers and all tested equipment shall be identified and listed in the final report. Manufacturer's data on all equipment shall be used to make required calculations for testing, adjusting and balancing. Readings and tests of diffusers, grilles and registers shall include design required velocity and test resultant velocity, required flow rate and test resultant flow rate after adjustments.

15. All diffusers, grilles and registers shall be adjusted to minimize drafts in all areas.
16. Dampers shall be permanently marked after air balance is complete so that they can be restored to their correct position, if disturbed later.
17. Openings in ductwork for pitot tube insertion shall be sealed with snap-in plugs after air balance is complete.

F. Hydronic Systems

The testing, adjusting and balancing of hydronic systems shall be in accordance with the detailed procedures outlined in the referenced standards; and shall include but not be limited to the following:

1. Preliminary procedure prior to balancing:
 - a. Examine water in systems and determine if water has been treated and cleaned.
 - b. Check expansion tank to determine that it is not air bound and the system is completely full of water.
 - c. Purge all air vents at high points of water systems, check automatic air vents and determine if they are operating properly.
 - d. Coordinate with control manufacturer for required cooling and heating temperature controls and corresponding, automatic valve operation settings.
 - e. Open all normally open valves to full open position. Set automatic valves to full coil flow.
 - f. Complete air balance shall have been accomplished before final water balance begins.
 - g. Check water pumps for pump rotation and for proper flow rate delivery against manufacturer's pump curves.
 - h. Set all balancing valves for required flow delivery at mains and branch mains to cooling and heating elements.
 - i. Upon completion of flow readings and adjustments of balancing valves, mark all settings and record data, so that they can be restored to their correct "balanced" position, if disturbed later.
2. Final balancing shall include the following:
 - a. After required cooling and heating temperature controls and automatic valve operation settings are made, recheck pump flow requirements and readjust system as required.
 - b. Record pressure drop through coil at set flow rate of coil for full cooling and on full heating. Set pressure drop across bypass valve to match coil pressure drop.
 - c. Record and check the following items at each cooling and heating element:
 - (1) Inlet water temperatures and static pressure at connections.
 - (2) Leaving water temperatures and the pressure drop of each coil.
 - (3) Flow rate through coil with control valve stroked manually wide open.
 - d. Record operating suction and discharge pressures of each pump and final total dynamic head and rated amperage versus actual amperage of pump motors.
 - e. Record entering and leaving water temperatures and flow through all equipment and devices.
 - f. Check and record all flow rates at all locations in the piping system with flow meters.

- G. Upon completion of air and hydronic systems testing, patch insulation, ductwork and housings, using materials identical to those removed (refer to Section 2.01).
- H. Final testing, adjusting and balancing shall be performed during summer season for air conditioning systems and during winter season for heating systems, including operation when outside conditions are within 5 degrees F wet bulb temperature of maximum summer design condition, and within 10 degrees F dry bulb temperature of minimum winter design condition.
- I. Retest, adjust, and balance systems subsequent to system modifications. Resubmit test results.

END OF SECTION

DIVISION 15

SECTION 15992

**TESTING, ADJUSTING, AND BALANCING
OF AIR AND HYDRONIC SYSTEMS**

APPENDIX "A"

SUBMITTALS

Submit the following in accordance with the requirements of "Shop Drawings, Catalog Cuts and Samples" of Division 1 - GENERAL PROVISIONS:

Qualifications

- 15992K01 a. Certification that the testing, adjusting and balancing entity meets the requirements of 1.04 and all other specified requirements.
b. Prior to performing the work, submit sample blank forms of the test reports that will be used, indicating all data and parameters to be included.

Inspection Reports

- 15992O01 **Draft Reports:** Submit certified test reports, signed by the authorized representative of the testing and balancing specialist. The reports shall be certified proof that the systems have been tested, adjusted and balanced in accordance with 1.02 A (NEBB or AABC); are an accurate representation of how the systems have been installed; are a true representation of how the systems are operating at completion of the testing, adjusting and balancing procedures; and are an accurate record of all final quantities measured, to establish normal operating values of the systems.
Upon completion of testing, adjusting and balancing procedures, prepare draft reports on the approved forms. Draft report may be handwritten, but must be complete, factual, accurate and legible. Organize and format draft reports as described herein below. Submit two complete sets of draft reports. Only one complete set of draft reports will be returned.

Report Format: Report forms shall be the standard forms as specified in 1.02 A for each respective item and system to be tested, adjusted and balanced. Include schematic system diagrams. Enclose the report contents in a 3-ring binder. Divide the contents into the below listed divisions, separating them by divider tabs with titles descriptive of the contents:

- (1) General Information and Summary.
- (2) Air Systems.
- (3) Hydronic Systems.

- 15992O02 **Final Reports:** Submit certified test reports, signed by the authorized representative of the testing and balancing specialist. The reports shall be certified proof that the systems have been tested, adjusted and balanced in accordance with the selected reference standards (NEBB or AABC); are an accurate representation of how the systems have been installed; are a true representation of how the systems are operating at completion of the testing, adjusting and balancing procedures; and are an accurate record of all final quantities measured, to establish normal operating values of the systems.
Upon verification and approval of draft reports, prepare final reports, typewritten,

organized and formatted as described herein below. Submit two complete sets of final reports.

Report Format: Report forms shall be the standard forms as specified in 1.02 A for each respective item and system to be tested, adjusted and balanced. Include schematic system diagrams. Enclose the report contents in a 3-ring binder. Divide the contents into the below listed divisions, separating them by divider tabs with titles descriptive of the contents:

- a. General Information and Summary.
- b. Air Systems.
- c. Hydronic Systems.

Report Contents: Provide the following minimum information, forms and data:

a. **General Information and Summary:** the inside cover sheet shall identify the testing, adjusting and balancing Agency, Contractor, Owner, Engineer and Project. Include addresses, contact names and telephone numbers. Include a certification sheet containing the seal and name, address, telephone number and signature of the Agency's responsible certified Test and Balance Engineer. Include in this division a listing of the instrumentation used for the procedures, along with the proof of calibrations.

b. The remainder of the reports shall contain the appropriate forms containing, as a minimum, the information indicated on the standard report forms prepared by AABC and NEBB, for each item of equipment and system. Prepare a schematic diagram for each item of equipment and system, to accompany each respective report form.

Calibration Reports: Submit proof that all required instrumentation has been calibrated to tolerances specified in 1.02 A within a period not exceeding six months prior to conducting the test procedures.

END OF APPENDIX "A"

General Decision Number: NJ140031 03/14/2014 NJ31

Superseded General Decision Number: NJ20130031

State: New Jersey

Construction Type: Building

County: Essex County in New Jersey.

BUILDING CONSTRUCTION PROJECTS (does not include single family homes or apartments up to and including 4 stories).

Modification Number	Publication Date
0	01/03/2014
1	02/07/2014
2	03/14/2014

ASBE0032-008 09/19/2013

	Rates	Fringes
ASBESTOS WORKER/HEAT & FROST INSULATOR (Includes the application of all insulating materials, protective coverings, coatings and finishings to all types of mechanical systems; also, the application of firestopping material to openings and penetrations in walls, floors, ceilings and curtain walls; also, all lead abatement).....	\$ 45.00	31.69

BRNJ0002-014 05/01/2013

	Rates	Fringes
BRICKLAYER (Including Caulking, Cleaning and Pointing).....	\$ 38.25	27.39

Work on high stacks: 22% per hour additional.

BRNJ0002-016 05/01/2013

	Rates	Fringes
MASON - STONE.....	\$ 38.25	27.39

Work on high stacks: 22% per hour additional.

BRNJ0004-001 05/01/2013

	Rates	Fringes
CEMENT MASON.....	\$ 38.25	27.39

 BRNJ0007-022 07/01/2013

	Rates	Fringes
Tile finisher.....	\$ 40.29	26.42
Tile setter.....	\$ 51.05	29.56

Tile finisher:
 Work grouting all epoxy: \$10.00 additional per day.

 CARP0006-009 11/01/2012

	Rates	Fringes
CARPENTER (Scaffold Builder).....	\$ 41.49	56%

The first sixty feet at the regular rate, 10% per hour additional for each additional fifty feet thereafter.

 CARP0006-010 11/01/2012

	Rates	Fringes
CARPENTER Including Acoustical Ceiling Installation, Drywall Hanging, Formwork, Batt and Blown Insulation....	\$ 41.49	56%

 CARP0029-008 11/01/2012

	Rates	Fringes
Soft floor layer.....	\$ 41.49	56%

 CARP0715-007 11/01/2012

	Rates	Fringes
Millwright.....	\$ 42.28	56%

Work of erection and dismantling of elevators and towers, such as concrete conveyors and temporary material elevators, scaffolding or other structures to be used as scaffolding inside or outside of buildings: the first sixty feet at the regular rate, 10% per hour additional for each additional fifty feet thereafter.

 ELEC0164-006 06/03/2013

	Rates	Fringes
ELECTRICIAN (Apartments over 4 units.).....	\$ 48.99	62%
ELECTRICIAN (Including Low Voltage Wiring)		

Cable splicer.....\$ 48.99 62%
 Electrician.....\$ 48.99 62%

Work on line voltage of 440 or 480 volts: 10% per hour additional.

Work from trusses, scaffolds, frames, ladders and poles, 40 ft. or more above the ground or floor (does not include work from a manlift): 20% per hour additional.

Work on radio towers, transmission towers and smokestacks: 21% per hour additional.

 ELEVO001-003 03/17/2013

	Rates	Fringes
Elevator mechanic		
Work on the addition, replacement, refurbishing or relocation of control, drive, generating equipment, hoistway or pit equipment, including work involving a structural rise in the elevator shafts in an existing building and other elevator work in the machine room, hoistway or pit; Also, changes in design and appearance of basic escalator equipment...	\$ 45.14	27.455
All other work.....	\$ 57.01	27.605

PAID HOLIDAYS:

New Year's Day, President's Day, Good Friday, Memorial Day, Fourth of July, Labor Day, Columbus Day, Veteran's Day, Thanksgiving Day, the Friday after Thanksgiving Day, and Christmas Day.

PAID VACATION:

A worker who has worked less than 5 years: 4% of his or her hourly rate for all hours worked.

A worker who has worked 5 to 10 years: 6% of his or her hourly rate for all hours worked.

A worker who has worked 15 or more years: 8% of his or her hourly rate for all hours worked.

 ENGI0825-020 07/01/2013

	Rates	Fringes
Power equipment operators:		

GROUP 1.....	\$ 43.07	28.50
GROUP 2.....	\$ 41.48	28.50
GROUP 3.....	\$ 39.57	28.50
GROUP 4.....	\$ 37.94	28.50
GROUP 5.....	\$ 36.23	28.50

Hazardous waste removal work:

Work on a state or federally designated hazardous waste site, where the worker is in direct contact with hazardous material, and when personal protective equipment is required for respiratory, skin and eye protection: 20% per hour additional.

PAID HOLIDAYS:

New Year's Day, Washington's Birthday observed, Memorial Day, Independence Day, Labor Day, Presidential Election Day, Veteran's Day, Thanksgiving Day and Christmas Day; provided 1) that the worker works three of the preceding five work days before the holiday; or, the work day before the holiday and the work day after the holiday; and, 2) that the worker works the work day before and the work day after the holiday.

DEFINITION OF GROUPS:

GROUP 1:

Backhoe, Including Backhoe Track; Boom; Concrete Paving Machine; Crane (all types, including overhead and straddle traveling type); Drill (down-the-hole drill, rotary drill, self-propelled hydraulic drill, self-powered drill); Elevating Grader; Excavator; Front End Loader (5 cu. yd. and over); Piledriver (length of boom, including length of leads, shall determine premium rate applicable); Trencher

GROUP 2:

Backhoe Loader Combo; Concrete Pumper; Grader/Blade (Finish); Hoist; Hydraulic Crane, 10 Tons and under; Front End Loader (2 cu. yd. but less than 5 cu. yd.); Scraper; Side Boom

GROUP 3:

Asphalt Spreader; Bulldozer; Compressor (2 or 3) (in Battery) (within 100 ft.); Forklift; Front End Loader (1 cu. yd. and over but less than 2 cu. yd.); Lull; Mechanic; Paver, Asphalt; Roller, Blacktop; Tractor;

GROUP 4:

Bobcat/Skid Loader; Compressor (Single); Farm Tractor; Front End Loader (under 1 cu. yd.); Hydroseeder; Roller, Grade; Pump, Hydraulic

GROUP 5:

Oiler

IRON0011-012 08/01/2012

Rates

Fringes

Ironworkers:

Reinforcing.....	\$ 40.74	39.40
Structural, Ornamental.....	\$ 43.54	39.40

* LABO0008-001 05/01/2011

	Rates	Fringes
Asbestos Removal Laborer.....	\$ 28.37	21.62

The removal, abatement, enclosure and decontamination of personal protective equipment, chemical protective clothing and machinery relating to asbestos and/or toxic and hazardous waste or materials which shall include but not necessarily be limited to: the erection, moving, servicing and dismantling of all enclosures, scaffolding and barricades; the operation of all tools and equipment normally used in the removal or abatement of asbestos and toxic or hazardous waste or materials; the labeling, bagging, cartoning, crating, or other packaging of materials for disposal; the clean-up of the worksite; and all other work incidental to the removal, abatement, encapsulation, enclosure, and decontamination of asbestos and toxic or hazardous waste or materials; and, in addition, all work tasks involved in the maintenance and operation of energy resource recovery plants (co-generation plants)

LABO0222-006 07/01/2012

	Rates	Fringes
LABORER		
MASON TENDER:		
Brick/Cement/Concrete.....	\$ 29.85	23.07

LABO0222-009 07/01/2012

	Rates	Fringes
Laborers:		
Asphalt Shoveler, Asphalt Spreader, Common or General Laborer, Landscape Laborer, Pipelayer, Power Tool Operator and Screedman.....		
	\$ 29.35	23.07

PAIN0711-018 05/01/2013

	Rates	Fringes
DRYWALL FINISHER/TAPER.....	\$ 38.00	20.10

PAIN0711-019 11/01/2012

	Rates	Fringes
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PAINTER (Brush & Roller).....\$ 36.62 19.54
 PAINTER (Spray).....\$ 40.28 19.98

 PAIN0711-021 05/01/2013

	Rates	Fringes
Glazier.....	\$ 40.94	20.38

Work welding or using a cutting torch:
 \$1.00 per hour additional.

Work on a swing stage scaffold; on a pipe scaffold providing the working height of the platform is 30 ft. or above; and on motorized lifts provided that the height of the lift platform is above the second floor or above thirty feet: \$1.00 per hour additional.

 PLAS0029-003 05/01/2012

	Rates	Fringes
PLASTERER.....	\$ 40.30	22.05

 PLUM0024-014 05/01/2013

	Rates	Fringes
PLUMBER (Excluding HVAC Pipe Installation).....	\$ 48.36	29.74

 PLUM0475-014 05/01/2013

	Rates	Fringes
PIPEFITTER (Including HVAC Pipe Installation).....	\$ 50.17	23.04

 ROOF0004-011 06/01/2011

	Rates	Fringes
ROOFER (Shingles, Shake and Tile).....	\$ 34.07	18.77

 SFNJ0696-006 01/01/2014

	Rates	Fringes
SPRINKLER FITTER (Fire Sprinklers).....	\$ 55.38	22.77

 SHEE0025-005 09/18/2012

	Rates	Fringes
SHEET METAL WORKER (Including HVAC Duct Installation).....	\$ 44.11	32.36

TEAM0408-002 11/01/2012

	Rates	Fringes
TRUCK DRIVER		
Dump Truck.....	\$ 33.95	18.73+a
Off the Road Truck.....	\$ 33.80	18.73+a

a. Employer contributes \$1304.35 per month per worker for health and welfare.

Hazardous waste removal work, where the worker is in direct contact with hazardous material, and when personal protective equipment is required for respiratory, skin and eye protection: \$3.00 per hour additional.

Hazardous waste removal work, where the worker is working in a hazardous waste site, in a zone requiring Level A personal protection for any of the workers: \$3.00 per hour additional.

Hazardous waste removal work, where the worker is not working in a zone requiring Level A, B or C personal protection: \$1.00 per hour additional.

PAID HOLIDAYS:

New Year's Day, President's Day, Decoration Day, Independence Day, Labor Day, Presidential Election Day, Veteran's Day, Thanksgiving Day and Christmas Day; provided that the worker has been assigned to work, or, "shapes", one day of the calendar week during which the holiday occurs.

SUNJ2004-007 01/02/2009

	Rates	Fringes
ROOFER, Excludes Shake & Shingle, and Tile Roofs.....	\$ 30.21	15.25

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

=====
Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification

and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is union or non-union.

Union Identifiers

An identifier enclosed in dotted lines beginning with characters other than "SU" denotes that the union classification and rate have found to be prevailing for that classification. Example: PLUM0198-005 07/01/2011. The first four letters, PLUM, indicate the international union and the four-digit number, 0198, that follows indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2011, following these characters is the effective date of the most current negotiated rate/collective bargaining agreement which would be July 1, 2011 in the above example.

Union prevailing wage rates will be updated to reflect any changes in the collective bargaining agreements governing the rates.

0000/9999: weighted union wage rates will be published annually each January.

Non-Union Identifiers

Classifications listed under an "SU" identifier were derived from survey data by computing average rates and are not union rates; however, the data used in computing these rates may include both union and non-union data. Example: SULA2004-007 5/13/2010. SU indicates the rates are not union majority rates, LA indicates the State of Louisiana; 2004 is the year of the survey; and 007 is an internal number used in producing the wage determination. A 1993 or later date, 5/13/2010, indicates the classifications and rates under that identifier were issued as a General Wage Determination on that date.

Survey wage rates will remain in effect and will not change until a new survey is conducted.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter

* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

=====
END OF GENERAL DECISION

ELECTRICIAN

Cable splicer.....	\$ 48.99	62%
Electrician.....	\$ 48.99	62%

Work on line voltage of 440 or 480 volts: 10% per hour additional.

Work from trusses, scaffolds, frames, ladders and poles, 40 ft. or more above the ground or floor (does not include work from a manlift): 20% per hour additional.

Work on radio towers, transmission towers and smokestacks: 21% per hour additional.

 ENGI0825-021 07/01/2013

	Rates	Fringes
Power equipment operators:		
GROUP 1.....	\$ 43.07	28.50
GROUP 2.....	\$ 41.48	28.50
GROUP 3.....	\$ 39.57	28.50
GROUP 4.....	\$ 37.94	28.50
GROUP 5.....	\$ 36.23	28.50

Hazardous waste removal work:

Work on a state or federally designated hazardous waste site, where the worker is in direct contact with hazardous material, and when personal protective equipment is required for respiratory, skin and eye protection: 20% per hour additional.

PAID HOLIDAYS:

New Year's Day, Washington's Birthday observed, Memorial Day, Independence Day, Labor Day, Presidential Election Day, Veteran's Day, Thanksgiving Day and Christmas Day; provided 1) that the worker works three of the preceding five work days before the holiday; or, the work day before the holiday and the work day after the holiday; and, 2) that the worker works the work day before and the work day after the holiday.

DEFINITION OF GROUPS:

GROUP 1:

Backhoe, including Backhoe Track; Boom; Concrete Paving Machine; Crane (all types, including overhead and straddle traveling type); Drill (down-the-hole drill, rotary drill, self-propelled hydraulic drill, self-powered drill); Elevating Grader; Excavator; Front End Loader (5 cu. yd. and over); Piledriver (length of boom, including length of leads, shall determine premium rate applicable)

GROUP 2:

Backhoe Loader Combo; Concrete Pumper; Grader/Blade (Finish); Hoist; Hydraulic Crane, 10 Tons and under; Front End Loader (2 cu. yd. but less than 5 cu. yd.); Scraper; Side

Boom

GROUP 3:

Asphalt Spreader; Bulldozer; Compressor(2 or 3) (in Battery) (within 100 ft.); Crusher; Forklift; Front End Loader (1 cu. yd. and over but less than 2 cu. yd.); Lull; Mechanic; Paver, Asphalt; Roller, Blacktop; Tractor;

GROUP 4:

Broom; Compressor (Single); Farm Tractor; Front End Loader (under 1 cu. yd.); Roller, Grade; Pump

GROUP 5:

Oiler

IRON0011-012 08/01/2012

	Rates	Fringes
Ironworkers:		
Reinforcing.....	\$ 40.74	39.40
Structural, Ornamental.....	\$ 43.54	39.40

LAB00172-009 09/01/2012

	Rates	Fringes
Laborers:		
Common or General Laborer;		
Landscape Laborer, Power		
Tool Operator.....	\$ 33.20	22.40
Pipelayer.....	\$ 33.90	22.40

Hazardous waste removal work:

Work on a state or federally designated hazardous waste site, where the worker is required to wear Level A, B or C personal protection: \$3.00 per hour additional.

Work on a state or federally designated hazardous waste site, where the worker is not required to wear Level A, B, or C personal protection: \$1.00 per hour additional.

PAID HOLIDAYS:

New Year's Day, President's Day, Memorial Day, Independence Day, Labor Day, Presidential Election Day, Veteran's Day, Thanksgiving Day and Christmas Day; provided that the worker works three days for the same employer within a period of ten working days consisting of five working days before and five working days after the day upon which the holiday falls or is observed.

LAB00222-013 07/01/2012

	Rates	Fringes
LABORER		
MASON TENDER:		

PAID HOLIDAYS:

New Year's Day, President's Day, Decoration Day, Independence Day, Labor Day, Presidential Election Day, Veteran's Day, Thanksgiving Day and Christmas Day; provided that the worker has been assigned to work, or, "shapes", one day of the calendar week during which the holiday occurs.

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

=====

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is union or non-union.

Union Identifiers

An identifier enclosed in dotted lines beginning with characters other than "SU" denotes that the union classification and rate have found to be prevailing for that classification. Example: PLUM0198-005 07/01/2011. The first four letters, PLUM, indicate the international union and the four-digit number, 0198, that follows indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2011, following these characters is the effective date of the most current negotiated rate/collective bargaining agreement which would be July 1, 2011 in the above example.

Union prevailing wage rates will be updated to reflect any changes in the collective bargaining agreements governing the rates.

0000/9999: weighted union wage rates will be published annually each January.

Non-Union Identifiers

Classifications listed under an "SU" identifier were derived from survey data by computing average rates and are not union rates; however, the data used in computing these rates may include both union and non-union data. Example: SULA2004-007 5/13/2010. SU indicates the rates are not union majority rates, LA indicates the State of Louisiana; 2004 is the year of the survey; and 007 is an internal number used in producing the wage determination. A 1993 or later date, 5/13/2010, indicates the classifications and rates under that identifier were issued as a General Wage Determination on that date.

Survey wage rates will remain in effect and will not change until a new survey is conducted.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage

payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

=====
END OF GENERAL DECISION

* BRNJ0002-006 05/01/2013

HUNTERDON COUNTY (south and east of a line drawn from Clover Hill, through Reaville, through Flemington, through High Bridge, through Califon, through Fairmont, to Pottersville); MIDDLESEX COUNTY (does not include the Borough of Dunellen; Township of Edison (Town of Oak Tree); Township of Piscataway (Town of New Market); Borough of South Plainfield); SOMERSET COUNTY (south of a line drawn from the point where the Lamington River leaves the boundary line between Hunterdon and Somerset Counties; then, continuing along the Lamington River to where it becomes the North Branch of the Raritan River; then, continuing along the North Branch of the Raritan River to where it becomes Chambers Brook; then, continuing along Chambers Brook until it becomes the boundary line between the Townships of Bernards and Bridgewater; then, continuing along the boundary line between the Townships of Bernards and Bridgewater, until that boundary line intersects with Route 78; then, continuing along Route 78 until Route 78 intersects with Route 525; then, continuing along Route 525 until Route 525 intersects with the boundary line between the Townships of Bridgewater and Warren; then, continuing along the boundary line between the Townships of Bridgewater and Warren until that boundary line intersects with Route 22; then, continuing along Route 22 until Route 22 intersects with Sebrings Mills Rd. (also known as King George Rd.); then, continuing south along Sebrings Mills Rd. until it goes over Green Brook, which is the Middlesex County line):

	Rates	Fringes
Bricklayer.....	\$ 38.25	27.39

Work 100 degrees F. and over:
to be paid at the rate of double time.

Work on high stacks:
22% per hour additional.

* BRNJ0002-008 05/01/2013

BERGEN, ESSEX AND HUDSON COUNTIES; HUNTERDON COUNTY (north and west of a line drawn from Clover Hill, through Reaville, through Flemington, through High Bridge, through Califon, through Fairmont, to Pottersville); MIDDLESEX COUNTY (Borough of Dunellen; Township of Edison (Town of Oak Tree only); Township of Piscataway (Town of New Market only); Borough of South Plainfield); MORRIS AND PASSAIC COUNTIES; SOMERSET COUNTY (north of a line drawn from the point where the Lamington River leaves the boundary line between Hunterdon and Somerset Counties; then, continuing along the Lamington River to where it becomes the North Branch of the Raritan River; then, continuing along the North Branch of the Raritan River to where it becomes Chambers Brook; then, continuing along Chambers Brook until it becomes the boundary line between the Townships of Bernards and Bridgewater; then, continuing along the boundary line between the Townships of Bernards and Bridgewater, until that boundary line intersects with Route 78;

then, continuing along Route 78 until Route 78 intersects with Route 525; then, continuing along Route 525 until Route 525 intersects with the boundary line between the Townships of Bridgewater and Warren; then, continuing along the boundary line between the Townships of Bridgewater and Warren until that boundary line intersects with Route 22; then, continuing along Route 22 until Route 22 intersects with Sebrings Mills Rd. (also known as King George Rd.); then, continuing south on Sebrings Mills Rd. until it goes over Green Brook, which is the Middlesex County line); SUSSEX, UNION AND WARREN COUNTIES:

	Rates	Fringes
CEMENT MASON.....	\$ 38.25	27.39

Cement mason:
Epoxy, acid and latex work: \$.50 per hour additional.

* BRNJ0002-009 05/01/2013

HUNTERDON COUNTY (south and east of a line drawn from Clover Hill, through Reaville, through Flemington, through High Bridge, through Califon, through Fairmont, to Pottersville); MIDDLESEX COUNTY (does not include the Borough of Dunellen; Township of Edison (Town of Oak Tree); Township of Piscataway (Town of New Market); Borough of South Plainfield); SOMERSET COUNTY (south of a line drawn from the point where the Lamington River leaves the boundary line between Hunterdon and Somerset Counties; then, continuing along the Lamington River to where it becomes the North Branch of the Raritan River; then, continuing along the North Branch of the Raritan River to where it becomes Chambers Brook; then, continuing along Chambers Brook until it becomes the boundary line between the Townships of Bernards and Bridgewater; then, continuing along the boundary line between the Townships of Bernards and Bridgewater, until that boundary line intersects with Route 78; then, continuing along Route 78 until Route 78 intersects with Route 525; then, continuing along Route 525 until Route 525 intersects with the boundary line between the Townships of Bridgewater and Warren; then, continuing along the boundary line between the Townships of Bridgewater and Warren until that boundary line intersects with Route 22; then, continuing along Route 22 until Route 22 intersects with Sebrings Mills Rd. (also known as King George Rd.); then, continuing south along Sebrings Mills Rd. until it goes over Green Brook, which is the Middlesex County line):

	Rates	Fringes
CEMENT MASON.....	\$ 38.25	27.39

Cement mason:
Epoxy, acid and latex work: \$.50 per hour additional.

CARP0006-008 11/01/2012

	Rates	Fringes
CARPENTER.....	\$ 41.49	56%

CARP1456-002 05/01/2008		

	Rates	Fringes
Piledriver		
Concrete form work.....	\$ 37.00	27.02
All other work.....	\$ 37.00	32.90

Work on land pile driving, while handling and working with creosote and creosote-impregnated products: \$.25 per hour additional.

Work on hazardous/toxic/contaminated waste removal, on a hazardous/toxic/contaminated waste site, where the worker comes into contact with hazardous/toxic/contaminated waste material, and when A, B or C personal protective equipment is required and used for respiratory, skin or eye protection: 20% per hour additional.

ELEC0102-001 06/03/2013

HUNTERDON COUNTY (Townships of Alexandria and Bethlehem; Boroughs of Bloomsbury and Califon; Town of Clinton; Township of Clinton; Township of Delaware (west of a line following County Route 523 from the Delaware River north to the Raritan Township line); Township of East Amwell (east of State Hwy. 31); Township of Franklin; Boroughs of Frenchtown, Glen Gardner, Hampton and High Bridge; Townships of Holland and Kingwood; Borough of Lebanon; Township of Lebanon; Borough of Milford; Township of Raritan (east of State Hwy. 31 and north of County Route 523); Townships of Readington, Tewksbury and Union); MORRIS AND PASSAIC COUNTIES; SOMERSET COUNTY (does not include the Township of Franklin east of a line following Cedar Grove Lane from the Raritan River, in a southwesterly direction, to the Millstone Branch of the Pennsylvania Railroad; then, west along the railroad to the Delaware and Raritan Canal; then, south along the canal to the Middlesex County line; does not include the Township of Montgomery west and south of a line following U.S. Hwy. 206 (formerly State Hwy. 31) north from the Mercer County line to Harlingen Rd.; then, west along Harlingen Rd. and the Dutchtown-Zion road to the Hillsborough township line); SUSSEX, UNION AND WARREN COUNTIES:

	Rates	Fringes
Line construction:		
High-tension pipe-type cable installation:		
Cable splicer.....	\$ 55.34	55%
Ground person.....	\$ 30.19	55%
Groundman.....	\$ 30.19	55%
Line technician; equipment operator; x-ray		

technician; equipment		
repair person; equipment		
service person; hole-		
digging equipment		
operator; truck with		
winch or pole and steel		
hand; truck without winch..	\$ 50.31	55%
Line technician-welder.....	\$ 52.83	55%
All other work:		
Cable splicer.....	\$ 55.34	55%
Groundman.....	\$ 30.19	55%
Line technician;		
equipment operator.....	\$ 50.31	55%
Line technician-welder.....	\$ 52.83	55%

Work with, or the removal of, asbestos materials: 112% times the journeyman rate.

 ELECO102-002 06/03/2013

HUNTERDON COUNTY (Townships of Alexandria and Bethlehem; Boroughs of Bloomsbury and Califon; Town of Clinton; Township of Clinton; Township of Delaware (west of a line following County Route 523 from the Delaware River north to the Raritan Township line); Township of East Amwell (east of State Hwy. 31); Township of Franklin; Boroughs of Frenchtown, Glen Gardner, Hampton and High Bridge; Townships of Holland and Kingwood; Borough of Lebanon; Township of Lebanon; Borough of Milford; Township of Raritan (east of State Hwy. 31 and north of County Route 523); Townships of Readington, Tewksbury and Union); MORRIS AND PASSAIC COUNTIES; SOMERSET COUNTY (does not include the Township of Franklin east of a line following Cedar Grove Lane from the Raritan River, in a southwesterly direction, to the Millstone Branch of the Pennsylvania Railroad; then, west along the railroad to the Delaware and Raritan Canal; then, south along the canal to the Middlesex County line; does not include the Township of Montgomery west and south of a line following U.S. Hwy. 206 (formerly State Hwy. 31) north from the Mercer County line to Harlingen Rd.; then, west along Harlingen Rd. and the Dutchtown-Zion road to the Hillsborough township line); SUSSEX, UNION AND WARREN COUNTIES:

	Rates	Fringes
Electricians:		
All other work:		
Cable Splicer.....	\$ 55.17	55.5%
Electrician.....	\$ 50.15	55.5%

Work forty ft. or more above the ground or protective rigging (does not apply to pole work, or to use of a manlift or high reach-type lift): 10% per hour additional.

Work with, or the removal of, asbestos materials: 112% times the journeyman rate.

ELEC0164-002 06/03/2013

BERGEN, ESSEX AND HUDSON COUNTIES:

	Rates	Fringes
Electricians:		
Electrician.....	\$ 48.99	62%
All other work:		
Cable splicer.....	\$ 48.99	62%

Work on line voltage of 440 or 480 volts: 10% per hour additional.

Work from trusses, scaffolds, frames, ladders and poles, 40 ft. or more above the ground or floor (does not include work from a manlift): 20% per hour additional.

Work on radio towers, transmission towers and smokestacks: 21% per hour additional.

ELEC0164-010 06/02/2008

BERGEN, ESSEX AND HUDSON COUNTIES:

	Rates	Fringes
Line construction:		
Cable splicer.....	\$ 54.00	54%
Groundman (includes empty conduit installations on roadways).....	\$ 30.75	54%
Layout Man.....	\$ 50.03	54%
Lineman; lineman-welder; x-ray technician; equipment repairman; equipment serviceman.....	\$ 45.90	54%

Work on live wires of 440 or 480 volts: 10% per hour additional.

Work on radio towers, transmission towers and smokestacks: 21% per hour additional.

ELEC0269-010 10/01/2012

HUNTERDON COUNTY (Township of Delaware (east of a line following County Route 523 from the Delaware River north to the Raritan Township line); Township of East Amwell (west of State Hwy. 31); Borough of Flemington; City of Lambertville; Township of Raritan (west of State Hwy. 31 and south of County Route 523); Borough of Stockton; Township of West Amwell); SOMERSET COUNTY (Township of Montgomery (west and south of a line following U.S. Hwy. 206 (formerly State Hwy. 31) north from the Mercer County line to Harlingen Rd.; then, west along Harlingen Rd. and the Dutchtown-Zion road to the Hillsborough township line):

	Rates	Fringes
Electrician.....	\$ 47.34	61.48% + .25

ELECO269-013 10/01/2012

HUNTERDON COUNTY (Township of Delaware (east of a line following County Route 523 from the Delaware River north to the Raritan Township line); Township of East Amwell (west of State Hwy. 31); Borough of Flemington; City of Lambertville; Township of Raritan (west of State Hwy. 31 and south of County Route 523); Borough of Stockton; Township of West Amwell); SOMERSET COUNTY (Township of Montgomery (west and south of a line following U.S. Hwy. 206 (formerly State Hwy. 31) north from the Mercer County line to Harlingen Rd.; then, west along Harlingen Rd. and the Dutchtown-Zion road to the Hillsborough township line)):

	Rates	Fringes
Line construction:		
Continuous pipe-type underground oil-filled transmission conduit installations:		
Ground person; truck with winch operator.....	\$ 37.87	57.93%
Line technician; cable splicer; heavy equipment operator.....	\$ 47.34	57.93%
All other work:		
Ground person; truck with winch operator.....	\$ 37.87	57.93%
Line technician; cable splicer; heavy equipment operator.....	\$ 47.34	57.93%

ELECO456-001 06/03/2013

MIDDLESEX COUNTY; SOMERSET COUNTY (Township of Franklin (east of a line following Cedar Grove Lane from the Raritan River, in a southwesterly direction, to the Millstone Branch of the Pennsylvania Railroad; then, west along the railroad to the Delaware and Raritan Canal; then, south along the canal to the Middlesex County line)):

	Rates	Fringes
Electricians:		
Cable splicer.....	\$ 50.48	66%
Electrician.....	\$ 46.33	67.25%

Work on line voltage of 440 volts and over: 10% per hour additional.

Work from trusses, scaffolds and ladders 40 ft. or more from the ground or floor; or under air pressure; or over

conveyors or moving equipment or machinery: 10% per hour additional.

 ELEC0456-002 06/03/2013

MIDDLESEX COUNTY; SOMERSET COUNTY (Township of Franklin (east of a line following Cedar Grove Lane from the Raritan River, in a southwesterly direction, to the Millstone Branch of the Pennsylvania Railroad; then, west along the railroad to the Delaware and Raritan Canal; then, south along the canal to the Middlesex County line)):

	Rates	Fringes
Line construction:		
Continuous pipe-type underground oil-filled transmission conduit installations:		
Cable splicer.....	\$ 50.48	66%
Crane Operator.....	\$ 50.48	66%
Groundman (when installing conduit on public roadways).....	\$ 26.80	66%
Groundman; winch operator..	\$ 43.88	66%
Line technician; x-ray technician; equipment repair person; equipment serviceperson; electrical installation worker; hole-digging equipment operator; truck operator with winch or pole; truck operator without winch.....	\$ 44.67	66%
All other work:		
Cable splicer.....	\$ 50.48	66%
Crane Operator.....	\$ 50.48	66%
Groundman (when installing conduit on public roadways).....	\$ 26.80	66%
Groundman43.98; winch operator.....	\$ 43.88	66%
Line technician.....	\$ 46.33	67.25%

 ENGI0825-004 07/01/2013

	Rates	Fringes
Power equipment operators:		
Steel erection:		
GROUP 1.....	\$ 47.09	28.50
GROUP 2.....	\$ 45.43	28.50
GROUP 3.....	\$ 46.70	28.50
GROUP 4.....	\$ 42.64	28.50
GROUP 5.....	\$ 39.98	28.50
GROUP 6.....	\$ 38.45	28.50
GROUP 7.....	\$ 36.69	28.50

Hazardous waste removal work:

Work on a state or federally designated hazardous waste site, where the worker is in direct contact with hazardous material, and when personal protective equipment is required for respiratory, skin and eye protection: 20% per hour additional.

PAID HOLIDAYS:

New Year's Day, Washington's Birthday observed, Memorial Day, Independence Day, Labor Day, Presidential Election Day, Veteran's Day, Thanksgiving Day and Christmas Day; provided 1) that the worker works three of the preceding five work days before the holiday; or, the work day before the holiday and the work day after the holiday; and, 2) that the worker works the work day before and the work day after the holiday.

DEFINITION OF GROUPS:

GROUP 1:

Cranes (all cranes, land or floating with boom including jib, 140 ft. and over, above ground); derricks (all derricks, land, floating or Chicago boom type with boom including jib, 140 ft. and over, above ground)

GROUP 2:

Cranes (all cranes, land or floating with boom including jib, less than 140 ft. above ground); derricks (all derricks, land, floating or Chicago boom type with boom including jib, less than 140 ft. above ground)

GROUP 3:

Helicopter pilot

GROUP 4:

"A" frame; cherry picker (10 ton and under); hoist (all types of hoist, including steam, gas, diesel, electric, air, hydraulic, single and double drum, concrete, brick shaft caisson, or any other similar type of hoisting machine, portable or stationary, except Chicago boom type); jack (screw, air, hydraulic power-operated unit or console type (not hand jack or pile load test type); side boom; straddle carrier

GROUP 5:

Aerial platform used as a hoist; compressor, two or three in battery; directional boring machine; elevator or house car; concrete cleaning/decontamination machine operator, decontamination and remediation work only; conveyor and tugger hoist; firefighter; forklift; generator, two or three in battery; heavy equipment robotic operator/technician, decontamination and remediation work only; maintenance, utility person; master environmental maintenance technician, decontamination and remediation work only; rod bending machine (power); ultra high-pressure waterjet cutting tool system operator/maintenance technician, decontamination and remediation work only; vacuum blasting machine operator/maintenance technician,

decontamination and remediation work only; welding machine (gas or electric, two or three in battery, including diesel); captain, power boat; tug master, power boat; oiler, with either one compressor or one welding machine

GROUP 6:

Compressor, single; off-road back dump; welding machine (single, gas, diesel and electric converters of any type); welding system, multiple (rectifier, transformer type); generator, single

GROUP 7:

Oiler; deckhand

 ENGI0825-009 07/01/2013

	Rates	Fringes
Power equipment operators:		
GROUP 1.....	\$ 43.07	28.50
GROUP 2.....	\$ 41.48	28.50
GROUP 3.....	\$ 39.57	28.50
GROUP 4.....	\$ 37.94	28.50
GROUP 5.....	\$ 36.23	28.50
GROUP 6.....	\$ 43.84	27.25

Hazardous waste removal work:

Work on a state or federally designated hazardous waste site, where the worker is in direct contact with hazardous material, and when personal protective equipment is required for respiratory, skin and eye protection: 20% per hour additional.

PAID HOLIDAYS:

New Year's Day, Washington's Birthday observed, Memorial Day, Independence Day, Labor Day, Presidential Election Day, Veteran's Day, Thanksgiving Day and Christmas Day; provided 1) that the worker works three of the preceding five work days before the holiday; or, the work day before the holiday and the work day after the holiday; and, 2) that the worker works the work day before and the work day after the holiday.

DEFINITION OF GROUPS:

GROUP 1:

Autograde - combination subgrader; base metal spreader and base trimmer (CMI and similar types); autograde placer - trimmer spreader combination (CMI and similar types); autograde slipform paver (CMI and similar types); backhoe; central power plant (all types); concrete paving machine; crane (all types, including overhead and straddle traveling type); crane, gantry; derrick (land, floating or Chicago boom type); drillmaster, quarrymaster (down-the-hole drill, rotary drill, self-propelled hydraulic drill, self-powered drill); dragline; elevating grader; front end loader (5 cu. yd. and over); gradall; grader, raygo; locomotive (large);

mucking machine; pavement and concrete breaker (superhammer and hoe ram); pile driver (length of boom, including length of leads, shall determine premium rate applicable); roadway surface grinder; scooper (loader and shovel); shovel; tree chopper with boom; trench machine (cable plow)

GROUP 2:

"A" frame/backhoe combination; boom attachment on loader (rate based on size of bucket, not applicable to pipehook); boring and drilling machine; brush chopper, shredder and tree shredder; carryall; concrete pump; concrete pumping system, pumpcrete and similar type; conveyor, 125 ft. and over; drill doctor, including dust collecting and maintenance work); front end loader (2 cu. yd. but less than 5 cu. yd.); grader (finish); groove cutting machine (ride-on type); heater planer; hoist (all types of hoist, shall also include steam, gas, diesel, electric, air, hydraulic, single and double drum, concrete, brick shaft caisson, snorkel roof, and/or any other similar type hoisting machine, portable or stationary, except Chicago boom type) (if hoist is "outside material tower hoist", long boom rate is to be applied); hydraulic crane, 10 tons and under; hydro-axe; hydro-blaster; jack (screw, air, hydraulic power-operated unit or console type (not hand jack or pile load test type); log skidder; pan; pavers (all) (concrete); plate and frame filter press; pumpcrete machine; squeezecrete; concrete pump (regardless of size); scraper; side boom; straddle carrier, Ross and similar type; whip hammer; winch truck (hoisting)

GROUP 3:

Asphalt curbing machine; asphalt plant engineer; asphalt spreader; autograde tube finishing and texturing machine (CMI and similar types); autograde curecrete machine (CMI and similar types); autograde curb trimmer and sidewalk, shoulder, slipform (CMI and similar types); bar bending machine (power); batcher; batching plant and crusher on site; belt conveyor system; boom-type skimmer machine; bridge deck finisher; bulldozers (all); car dumper (railroad); compressor and blower-type unit (used independently or mounted on dual-purpose truck, on jobsite or in conjunction with jobsite, in loading and unloading of concrete, cement, fly ash, instantcrete, or similar type materials); compressor (2 or 3) (in battery) (within 100 ft.); concrete cleaning/decontamination machine operator, when used for decontamination and remediation; concrete finishing machine; concrete saw and cutter (ride-on type); concrete spreader, hetzel, rexomatic and similar type; concrete vibrator; conveyor, under 125 ft.; crushing machine; directional boring machine; ditching machine, small (Ditchwitch, Vermeer or similar type); dope pot (mechanical with or without pump); dumpster; elevator; firefighter; forklift (Economobile, Lull and similar type of equipment); front end loader (1 cu. yd. and over but less than 2 cu. yd.); generator (2 or 3) (in battery) (within 100 ft.); giraffe grinder; grader and motor patrol; gunite machine (does not include nozzle); hammer, vibratory (in conjunction with generator); heavy equipment robotic operator/technician, when used for decontamination and remediation; hoist (roof, tugger, aerial platform hoist and

house cars); hopper; hopper door (power-operated); ladder (motorized); laddervator; locomotive, dinky type; maintenance, utility person; master environmental maintenance technician, when used for decontamination and remediation; mechanic; mixer (except paving mixer); pavement breaker, small, self-propelled ride-on type (also maintains compressor on hydraulic unit); pavement breaker, truck-mounted; pipe bending machine (power); pitch pump; plaster pump, regardless of size; posthole digger (post pounder and auger); rod bending machine (power); roller, blacktop; scale, power; seaman pulverizing mixer; shoulder widener; silo; skimmer machine (boom type); steel cutting machine, servicing and maintaining; tractor; captain, power boat; tug master, power boat; ultra high-pressure waterjet cutting tool system operator/maintenance technician, when used for decontamination and remediation; vacuum blasting machine operator/maintenance technician, when used for decontamination and remediation; vibrating plant (used in conjunction with unloading); welder and repair mechanic

GROUP 4:

Broom and sweeper; chipper; compressor (single); concrete spreader (small type); conveyor loader (does not include elevating grader); engine, large diesel (1620 H.P.) and staging pump; farm tractor; fertilizing equipment (operation and maintenance of); fine grade machine (small type); form line grader (small type); front end loader (under 1 cu. yd.); generator (single); grease, gas, fuel and oil supply truck; heater (Nelson or other type including propane, natural gas or flow-type unit); lights (portable generating light plant); mixer, concrete, small; mulching equipment (operation and maintenance of); off-road back dump; pump (4-in. suction and over, including submersible pump); pump (diesel engine and hydraulic) (immaterial of power); road finishing machine (small type); roller, grade, fill or stone base; seeding equipment (operation and maintenance of); sprinkler and water pump truck; steam jenny and boiler; stone spreader; tamping machine, vibrating ride-on; temporary heating plant (Nelson or other type, including propane, natural gas or flow-type unit); welding machine (gas, diesel, and/or electric converter of any type) (single, or two or three in a battery) (within 100 ft.); welding system, multiple (rectifier, transformer type); wellpoint system

GROUP 5:

Oiler; tire repair and maintenance

GROUP 6:

Helicopter pilot; helicopter engineer

IRON0011-002 08/01/2012

BERGEN, ESSEX, HUDSON AND HUNTERDON COUNTIES; MIDDLESEX COUNTY (north half); MORRIS AND PASSAIC COUNTIES; SOMERSET COUNTY (north half); SUSSEX AND UNION COUNTIES:

Rates

Fringes

Ironworkers:

Reinforcing.....	\$ 40.74	39.40
Structural.....	\$ 43.54	39.40

IRON0036-003 07/01/2012

WARREN COUNTY

	Rates	Fringes
Ironworkers:.....	\$ 34.05	24.00

IRON0068-004 07/01/2013

MIDDLESEX COUNTY (south half); SOMERSET COUNTY (south half):

	Rates	Fringes
Ironworker.....	\$ 42.40	20.03

Hazardous waste removal work, on a state or federally designated hazardous waste site, where the worker is required to wear Level A, B or C personal protection: \$3.00 per hour additional.

LABO0172-005 09/01/2012

	Rates	Fringes
Laborers:		
GROUP 1.....	\$ 33.20	22.40
GROUP 2.....	\$ 33.90	22.40
GROUP 3.....	\$ 34.15	22.40
GROUP 4.....	\$ 37.70	22.40

Hazardous waste removal work:

Work on a state or federally designated hazardous waste site, where the worker is required to wear Level A, B or C personal protection: \$3.00 per hour additional.

Work on a state or federally designated hazardous waste site, where the worker is not required to wear Level A, B, or C personal protection: \$1.00 per hour additional.

PAID HOLIDAYS:

New Year's Day, President's Day, Memorial Day, Independence Day, Labor Day, Presidential Election Day, Veteran's Day, Thanksgiving Day and Christmas Day; provided that the worker works three days for the same employer within a period of ten working days consisting of five working days before and five working days after the day upon which the holiday falls or is observed.

DEFINITION OF GROUPS:

GROUP 1:

Basic laborer; landscape laborer; railroad track laborer; utility meter installer; traffic director/flag person; salamander tender; pit person; dump person; asphalt laborer (only in Bergen, Essex, Hudson and Hunterdon Counties; Middlesex County (north of the Raritan River); Morris, Passaic, Somerset, Sussex, Union and Warren Counties); slurry seal laborer (only in Bergen, Essex, Hudson and Hunterdon Counties; Middlesex County (north of the Raritan River); Morris, Passaic, Somerset, Sussex, Union and Warren Counties); raker and tamper on cold patch work; wrapper and coater of pipe; waterproofing laborer; timber person; powder carrier; magazine tender; signal person; power buggy operator; tree cutter; and the operation of such other basic power tools used to perform work usually done manually by laborers

GROUP 2:

Pipelayer; laser person; conduit and duct line layer; jackhammer; chipping hammer; pavement breaker; concrete cutter; asphalt cutter; sheet hammer operator; sandblasting, acetylene cutting and burning; wagon drill operator; directional drill operator; hydraulic drill operator; drill master; core driller; traffic control coordinator; asphalt raker/lute person (only in Bergen, Essex, Hudson and Hunterdon Counties; Middlesex County (north of the Raritan River); Morris, Passaic, Somerset, Sussex, Union and Warren Counties); walk-behind saw cutter

GROUP 3:

Finisher; rammer; setter of brick or stone pavers; hardscaping; gunite nozzle person; stonecutter; form setter; manhole; catch basin and inlet builder; asphalt screedperson (only in Bergen, Essex, Hudson and Hunterdon Counties; Middlesex County (north of the Raritan River); Morris, Passaic, Somerset, Sussex, Union and Warren Counties)

GROUP 4:

Blaster

LAB00172-006 03/01/2011

MIDDLESEX COUNTY (south of the Raritan River):

	Rates	Fringes
Laborers:		
ASPHALT WORK:		
GROUP 1.....	\$ 33.00	21.55
GROUP 2.....	\$ 32.60	21.55
GROUP 3.....	\$ 32.85	21.55
GROUP 4.....	\$ 32.70	21.55
GROUP 5.....	\$ 32.90	21.55

PAID HOLIDAYS:

New Year's Day, President's Day, Memorial Day, Independence Day, Labor Day, Presidential Election Day, Veteran's Day, Thanksgiving Day and Christmas Day; provided that the worker works three days for the same employer within a

period of ten working days, consisting of five working days before and five working days after the day upon which the holiday falls or is observed.

DEFINITION OF GROUPS:

GROUP 1:

Head raker

GROUP 2:

Painter, shoveler, roller person, kettle person, smother person, tamper

GROUP 3:

Raker, screed person, lute person

GROUP 4:

Milling contröller

GROUP 5:

Traffic control coordinator

PAIN0711-009 05/01/2013

	Rates	Fringes
Painters:		
Work on bridges (all bridges that span major waterways, railroad bridges, bridges over canyons, overpasses).....	\$ 50.68	21.80

PAIN0711-014 05/01/2011

	Rates	Fringes
Painters:		
All other work:		
Brush and roller.....	\$ 35.99	16.86
Spray.....	\$ 38.91	17.19

PLAS0029-001 05/01/2012

BERGEN, ESSEX, HUDSON, MORRIS, PASSAIC, SUSSEX, UNION AND WARREN COUNTIES:

	Rates	Fringes
CEMENT MASON.....	\$ 40.30	22.05
Cement masons:		
Work on suspended staging, not supported from the ground:		
\$.50 per hour additional.		

PLAS0592-030 05/01/2013

HUNTERDON, MIDDLESEX, SOMERSET AND UNION COUNTIES:

	Rates	Fringes
Cement mason.....	\$ 38.37	29.11

TEAM0408-001 11/01/2012		

ESSEX, MORRIS, SUSSEX AND UNION COUNTIES:

	Rates	Fringes
Truck drivers:		
Group 1.....	\$ 34.05	18.73+a
Group 2.....	\$ 33.95	18.73+a
Group 3.....	\$ 34.85	18.73+a
Group 4.....	\$ 34.80	18.73+a

a. Employer contributes \$1472.15 per month per worker for health and welfare.

Hazardous waste removal work, where the worker is in direct contact with hazardous material, and when personal protective equipment is required for respiratory, skin and eye protection: \$3.00 per hour additional.

Hazardous waste removal work, where the worker is working in a hazardous waste site, in a zone requiring Level A personal protection for any of the workers: \$3.00 per hour additional.

Hazardous waste removal work, where the worker is not working in a zone requiring Level A, B or C personal protection: \$1.00 per hour additional.

PAID HOLIDAYS:

New Year's Day, President's Day, Decoration Day, Independence Day, Labor Day, Presidential Election Day, Veteran's Day, Thanksgiving Day and Christmas Day; provided that the worker has been assigned to work, or, "shapes", one day of the calendar week during which the holiday occurs.

DEFINITION OF GROUPS:

GROUP 1:

Winch trailer driver

GROUP 2:

Drivers of all Euclid-type vehicles: Euclid, International Harvester, Wabco, Caterpillar, Koehring, tractor and wagon; dumpster; bottom, rear and side dump; carry-all and scraper (not self-loading, loading over the top); water sprinkler trailer; water pull and similar types of vehicle; driver of tractor and trailer-type vehicles: flat, float, I-beam, low bed, water sprinkler, bituminous, transit mix, road oil, fuel, bottom dump hopper, rear dump, office, shanty, epoxy, asphalt, agitator mixer, mulching, stringing, seeding, fertilizing, pole, spread bituminous distributor, water

pull (entire unit), tractor trailer, reel trailer and similar types of vehicle

GROUP 3:

Driver on straight three-axle materials: truck and float

GROUP 4:

Truck driver; driver of the following types of vehicles: dump, flat, float, pick-up, container hauler, fuel, water sprinkler, road oil, stringer bead, hot pass, bus, dumpcrete, transit mixer, agitator mixer, half track, winch truck, side-o-matic, dynamite, powder, x-ray, welding, skid, jeep, station wagon, A-frame, dual purpose truck, truck with mechanical tailgate, asphalt distributor, batch truck, seeding, mulching, fertilizing, air compressor truck (in transit); parts chaser; escort; scissor; hi-lift; telescope; concrete breaker; gin pole; stone, sand, asphalt distributor and spreader; nipper; fuel truck (driver of fuel truck including handling of hose and nozzle - entire unit); team driver; vacuum or vac-all truck (entire unit); skid truck (debris container - entire unit); concrete mobile truck (entire unit); beltcrete truck; pumpcrete truck; line truck; reel truck; wrecker or tow truck; utility truck; tack truck; lift truck; cardex person; drivers on the following types of vehicle: Broyhill coal tar epoxy truck, Littleford bituminous distributor, slurry seal truck or vehicle, thiokol track master pick-up (swamp cat pick-up), bucket loader, dump truck and any rubber-tired tractor used in pulling and towing farm wagons and trailers of any description; on-site repair shop

TEAM0469-001 05/01/2011

HUNTERDON, MIDDLESEX AND SOMERSET COUNTIES; UNION COUNTY (south of Wood Ave.); WARREN COUNTY:

	Rates	Fringes
Truck drivers:		
Group 1.....	\$ 34.85	24.385
Group 2.....	\$ 34.75	24.385
Group 3.....	\$ 34.65	24.385
Group 4.....	\$ 34.60	24.385

Hazardous waste removal work, where the worker is in direct contact with hazardous material, and when personal protective equipment is required for respiratory, skin and eye protection: \$3.00 per hour additional.

Hazardous waste removal work, where the worker is working in a hazardous waste site, in a zone requiring Level A personal protection for any of the workers: \$3.00 per hour additional.

Hazardous waste removal work, where the worker is not working in a zone requiring Level A, B or C personal protection: \$1.00 per hour additional.

PAID HOLIDAYS:

New Year's Day, President's Day, Decoration Day, Independence Day, Labor Day, Presidential Election Day, Veteran's Day, Thanksgiving Day and Christmas Day; provided that the worker has been assigned to work, or, "shapes", one day of the calendar week during which the holiday falls.

DEFINITION OF GROUPS:

GROUP 1:

Winch trailer driver

GROUP 2:

Drivers of all Euclid-type vehicles: Euclid, International Harvester, Wabco, Caterpillar, Koehring, tractor and wagon; dumpster; bottom, rear and side dump; carry-all and scraper (not self-loading, loading over the top); water sprinkler trailer; water pull and similar types of vehicle; driver of tractor and trailer-type vehicles: flat, float, I-beam, low bed, water sprinkler, bituminous, transit mix, road oil, fuel, bottom dump hopper, rear dump, office, shanty, epoxy, asphalt, agitator mixer, mulching, stringing, seeding, fertilizing, pole, spread bituminous distributor, water pull (entire unit), tractor trailer, reel trailer and similar types of vehicle

GROUP 3:

Driver on straight three-axle materials: truck and float

GROUP 4:

Truck driver; driver of the following types of vehicles: dump, flat, float, pick-up, container hauler, fuel, water sprinkler, road oil, stringer bead, hot pass, bus, dumpcrete, transit mixer, agitator mixer, half track, winch truck, side-o-matic, dynamite, powder, x-ray, welding, skid, jeep, station wagon, A-frame, dual purpose truck, truck with mechanical tailgate, asphalt distributor, batch truck, seeding, mulching, fertilizing, air compressor truck (in transit); parts chaser; escort; scissor; hi-lift; telescope; concrete breaker; gin pole; stone, sand, asphalt distributor and spreader; nipper; fuel truck (driver of fuel truck including handling of hose and nozzle - entire unit); team driver; vacuum or vac-all truck (entire unit); skid truck (debris container - entire unit); concrete mobile truck (entire unit); beltcrete truck; pumpcrete truck; line truck; reel truck; wrecker or tow truck; utility truck; tack truck; lift truck; cardex person; drivers on the following types of vehicle: Broyhill coal tar epoxy truck, Littleford bituminous distributor, slurry seal truck or vehicle, thiol track master pick-up (swamp cat pick-up), bucket loader, dump truck and any rubber-tired tractor used in pulling and towing farm wagons and trailers of any description; on-site repair shop

TEAM0560-001 11/01/2012

BERGEN, HUDSON AND PASSAIC COUNTIES:

	Rates	Fringes
Truck drivers:		
Group 1.....	\$ 32.10	28.78
Group 2.....	\$ 32.15	28.78
Group 3.....	\$ 32.25	28.78
Group 4.....	\$ 32.35	28.78

Hazardous waste removal work:

Work on a state or federally designated hazardous waste site, where the worker is in direct contact with hazardous material, and when personal protective equipment is required for respiratory, skin and eye protection: \$3.00 per hour additional.

Work on a state or federally designated hazardous waste site, in a zone requiring Level A personal protection for any workers other than the truck driver: \$3.00 per hour additional.

Work on a state or federally designated hazardous waste site, in a zone requiring Level B, C or D personal protection for any workers other than the truck driver: \$1.00 per hour additional.

PAID HOLIDAYS:

New Year's Day, President's Day, Decoration Day, Independence Day, Labor Day, Presidential Election Day, Veteran's Day, Thanksgiving Day and Christmas Day; provided that the employee has been assigned to work, or, "shapes", one day of the calendar week during which the holiday occurs.

DEFINITION OF GROUPS:

GROUP 1:

Driver of the following types of vehicle: dump; flat; float; pick-up; container hauler; fuel; water sprinkler; road oil; stringer bead; hot pass; bus; dumpcrete; transit mixer; agitator mixer; half track; winch truck; side-o-matic; dynamite; powder; x-ray; welding; skid; jeep; station wagon; stringer; A-frame; dual-purpose truck; truck with mechanical tailgate; asphalt distributor; batch truck; seeding; mulching; fertilizing; air compressor truck (in transit); parts chaser; escort; scissor; hi-lift; telescope; concrete breaker; gin pole; stone, sand, asphalt distributor and spreader; nipper; fuel truck (driver of fuel truck including handling of hose and nozzle - entire unit); team driver; vacuum or vac-all trucks (entire unit); skid truck (debris container - entire unit); concrete mobile truck (entire unit); beltcrete truck; pumpcrete truck; line truck; reel truck; wrecker; tow truck; utility truck; tack truck; cardex person; driver on the following types of vehicle: Broyhill coal tar epoxy truck, Littleford bituminous distributor, slurry seal truck or vehicle, thiokol track master pick-up (swamp cat pick-up); bucket

loader dump truck and any rubber-tired tractor used in pulling and towing farm wagons and trailers of any description; on-site repair shop

GROUP 2:

Driver of 3-axle materials truck and float

GROUP 3:

Driver of all Euclid-type vehicles: Euclid; International Harvester; Wabco; Caterpillar; Koehring, tractor and wagon; dumpster; dump; bottom, rear and side dump; carry-all and scraper (not self-loading, loading over the top); water sprinkler trailer; water pull and similar types of vehicle; driver of tractor and trailer-type vehicle: flat, float, I-beam, low bed, water sprinkler, bituminous, transit mix, road oil, fuel, bottom dump hopper, rear dump, office, shanty, epoxy, asphalt, agitator mixer, mulching, stringing, seeding, fertilizing, pole, spread bituminous distributor, water pull (entire unit), tractor trailer, reel trailer, and similar types of vehicle

GROUP 4:

Winch trailer driver

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is union or non-union.

Union Identifiers

An identifier enclosed in dotted lines beginning with characters other than "SU" denotes that the union classification and rate have found to be prevailing for that classification. Example: PLUM0198-005 07/01/2011. The first four letters, PLUM, indicate the international union and the four-digit number, 0198, that follows indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination.

The date, 07/01/2011, following these characters is the effective date of the most current negotiated rate/collective bargaining agreement which would be July 1, 2011 in the above example.

Union prevailing wage rates will be updated to reflect any changes in the collective bargaining agreements governing the rates.

0000/9999: weighted union wage rates will be published annually each January.

Non-Union Identifiers

Classifications listed under an "SU" identifier were derived from survey data by computing average rates and are not union rates; however, the data used in computing these rates may include both union and non-union data. Example: SULA2004-007 5/13/2010. SU indicates the rates are not union majority rates, LA indicates the State of Louisiana; 2004 is the year of the survey; and 007 is an internal number used in producing the wage determination. A 1993 or later date, 5/13/2010, indicates the classifications and rates under that identifier were issued as a General Wage Determination on that date.

Survey wage rates will remain in effect and will not change until a new survey is conducted.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.

Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

**NOTIFICATION
OF
MINORITY BUSINESS ENTERPRISES
AND
WOMEN'S BUSINESS ENTERPRISES
ON-LINE DIRECTORY
AND
FORMS**

The Port Authority has a long-standing practice of making its contract available to as many firms as possible and has taken affirmative steps to encourage Minority Business Enterprises (MBEs) and Women's Business Enterprises (WBEs) to seek business opportunities with it. The Port Authority's on-line Directory of Qualified MBE/WBEs lists the firms that are registered to assist Contractors in meeting and exceeding their Good Faith Goals.

The MBE/WBE Directory specifies the firms the Authority has determined to be (1) MBEs/WBEs and (2) experienced in performing work in the trades and contract dollar ranges indicated.

Contractors are provided with an interactive directory and the ability to view and print a current listing of M/WBE contractors. Information may be selected and sorted according to categories, state, dollar range, and type (MBE, WBE, DBE, and SBE).

To view the directory, type in www.panynj.gov/business-opportunities/mwsbe-search.cfm. For further information about MWBE Qualified Vendors, contact the Office of Business Diversity and Civil Rights at (212) 435-7802.

THE PORT AUTHORITY OF NY & NJ

Certification Application for the Minority and Women-owned Business Enterprise Program

General Instructions:

- DO NOT LEAVE ANY SPACES BLANK ON THE APPLICATION - if a question is not applicable to your business insert "N/A" in the space provided for your answer
- For questions, call the Certification Helpline at (212) 435-7808 or E-mail certhelp@panynj.gov.
- Once you have completed the application, please return it and all required documentation to:

**The Port Authority of NY & NJ
Office of Business Diversity and Civil Rights - Certification Unit
233 Park Avenue South, 4th floor
New York, NY 10003**

SECTION I: MAIN BUSINESS INFORMATION

1a. Business Name

Legal name of business applying to be certified	Federal EIN or SSN
---	--------------------

1b. D.B.A.

"Doing Business As"- Complete if entity does business under a name which is different from its legal name.

2a. Business Address (must represent a physical location; cannot be a Post Office Box)

Street Address		Suite / Apt / Room/ Unit/Floor	
City	State	Zip/Zip+4	County

2b. Business Mailing Address (complete only if different from the address given in Question 2a)

Street Address		Suite / Apt / Room/ Unit/Floor	
City	State	Zip/Zip+4	

3. Business Phone + Extension

4. Business Fax

5. Business E-mail Address

6. Business Website

7a. Business Owner/Title/Cell Phone

7b. Name/title of an authorized representative to contact during the application review process.

Mr./Miss/Mrs./Ms.	First Name	Last Name
Title	Phone /Ext.	E-Mail Address

8a. This business is applying for certification as ("X"all that apply):

- Minority-owned Business Enterprise (MBE)
- Women-owned Business Enterprise (WBE)
- Small Business Enterprise (Criteria listed on page 14)

9b. Is this a Veteran owned business? Yes _____ No _____

- Veteran Owned Business (VOB)
- Service Disabled Veteran Owned Business (SDVOB)

If "Yes", please provide a copy of the verification letter from the U.S. Department of Veteran Affairs, Center for Veterans Enterprise.

10. Are you currently bidding or negotiating a contract with the Port Authority or its tenants?

Yes _____ No _____

If "Yes", provide contract/purchase order number and contact information (name, phone number).

11. Has your business ever applied for certification as an M/W/SBE, or a DBE (whether SBA 8(a), Transportation, or other) with another governmental agency, department, or authority?

Yes _____ No _____

If "Yes", provide the following:

Name of Governmental Entity	Entity Contact	Program (MBE, WBE, SBE, DBE)	Status (Pending, Certified, Decertified, Denied, On Appeal)	Date (mm/yy)

12. How did you first hear about the Port Authority's certification programs?

(please choose only one)

- Letter/Call/E-mail
- Port Authority website
- Event

Event name or sponsor / date

- Other

Specify

SECTION II: BUSINESS STRUCTURE/OWNERSHIP

13a. Business Structure

- Sole Proprietorship
- Corporation (including S-Corp.)
- General Partnership
- Limited Partnership (LP)
- Limited Liability Partnership (LLP)
- Limited Liability Company (LLC)

13b. When did you establish your business under its current structure? _____ / _____ / _____

13c. Did your business exist under a different type of business structure prior to the date its current structure?

Yes _____ No _____

If "Yes", explain the history of your business structure and provide a copy of the original documentation.

13d. Has your Certificate of Incorporation, Business Certificate, or Certificate of Trade Name been amended?

Yes _____ No _____

If "Yes", identify each time your business document was amended, explain why and provide a copy of the amended document.

13e. Method of Business Origination or Acquisition (check all applicable).

- Started New Business
- Bought Existing Business
- Merger or Consolidation
- Other
- Secured franchise
- Secured Concession
- Inherited Business

Date of origination or acquisition (if later, provide date of acquisition by current owner).

_____ / _____ / _____

For the questions in this section which refer to ethnic identification of owners, shareholders, officers, board members, and managers, please use the following group codes to identify the ethnicity of each individual where required. (See page 10, "Definitions of Group Codes").

01 Black	02c Spanish	04 Native American
02a Hispanic	03a Asian-Pacific	05 White (Non-Minority)
02b Portuguese	03b Asian-Indian	06 Other

14. Please provide the following information for all person(s) with ownership interest in the business (all proprietors, partners, and members OR, in the case of a corporation, all shareholders).

Name (First and Last)	Position In Company	% Owned	Date Ownership Established (mm/yy)	Gender (M/F)	Ethnicity (see group code table)	US Citizen or Permanent Resident Alien (Y/N)

QUESTION 15 APPLIES ONLY TO CORPORATIONS. IF YOUR BUSINESS IS NOT A CORPORATION, SKIP TO QUESTION 16.

15a.

If the business is a corporation, provide the following information for all shareholders identified in Question 14.

Name (First and Last)	Title	Number of Shares Owned	Unit Share Price Paid When Purchased

15b. Indicate the number of company shares in each of the following categories:

Common Authorized _____ Common Issued _____
 Preferred Authorized _____ Preferred Issued _____

15c. Name and position of current Officers and/or Board of Directors.

Name (First and Last)	Position	Position Effective Date (mm/yy)	Gender (M/F)	Ethnicity (see group code table)

ALL APPLICANTS SHOULD RESUME COMPLETING THE APPLICATION HERE

16. Please identify the capital contributions to the business by each person identified in Question 14, including cash, equipment, property, and expertise

Name (First and Last)	Type of Contribution	Total Dollar Value	Date of Contribution (mm/yy)

17. If your business is owned in whole or in part by another business, please identify the entity and the percentage of ownership interest. Include venture capitalists and other similar investors.

Business Name	Percentage Owned	Date Ownership Established (mm/yy)

SECTION III: BUSINESS MANAGEMENT

18. Identify individuals responsible for managerial operations (state if owner or non-owner). Refer to "Definitions of Group Codes", page10.

Name & Title	Gender (M/F)	Group Code	Owner (Y/N)
a) Financial Decisions			
b) Estimating			
c) Preparing Bids			
d) Negotiating Bonding			
e) Marketing & Sales			
f) Hiring & Firing			
g) Supervising Field Operations			
h) Purchasing Equipment/Supplies			
i) Managing & Signing Payroll			
j) Negotiating Contracts			
k) Signatures for Business Accounts			

19. Do any principals, officers, employees and/or owners of the business have an affiliation, i.e. business interest or employment with any other business?

Yes ___ No ___ (If "Yes", complete the following):

Name (First and Last)	Email Address	Name and Address of Affiliated Business	Nature of Business	Nature of Affiliation

20. Number of Employees (if necessary, average over the past year)

<u>Permanent</u>	<u>Temporary</u>	<u>Field</u>
Full-Time _____	Full-Time _____	Full-Time _____
Part-Time _____	Part-Time _____	Part-Time _____

SECTION IV: BUSINESS FINANCES

21. Does your business have a Line of Credit?

Yes ___ No ___ If "Yes", please provide:

Bank	Dollar Limit	Name of Guarantor(s)

22. Please list all major current lenders to the company

Name of Lender	Amount of Loan	Terms of Repayment

23. Identify bank(s) where business accounts are maintained

Bank Name	Address	Contact Name	Contact Title	Type of Account

24. Please provide gross receipts (sales) for each of the last three fiscal years. (If in business for less than three years, complete as applicable)

Current Year	_____	\$ _____
Last Year	_____	\$ _____
Previous Year	_____	\$ _____

SECTION V: BUSINESS OPERATIONS

25. Check the industry which best describes your PRIMARY line of business

- | | |
|---|--|
| <input type="checkbox"/> Construction-related | <input type="checkbox"/> Professional Service |
| <input type="checkbox"/> Consultants | <input type="checkbox"/> Consumer Service |
| <input type="checkbox"/> Technical Service | <input type="checkbox"/> Manufacturer/Supplier |
| <input type="checkbox"/> Other _____ | |

Describe principal products/commodities sold, specialties or services offered:

23. If a license, permit or certification (e.g. Master Electrical License, PE for engineers, CDL for truck drivers, etc.) is required to conduct your business, please identify the individual(s) holding the license, permit or certification and provide a copy.

Name of the Holder/Registrant	Type of License/ Permit/Certification	Issued by	Issue Date (mm/yy)	Exp. Date (mm/yy)

24. Is your business bonded? Yes _____ No _____

If "Yes", please provide:

Name of Agent/Broker	Surety Co.	Bonding Limit	
		Single \$	Aggregate \$

25. Is your business insured? Yes _____ No _____ If "Yes", please provide:

Carrier Name	\$ Amount of Liability Insurance
--------------	----------------------------------

26. Please list the major equipment or machinery your business owns.

Type	Depreciated \$ Value	Acquisition Date (mm/yy)	Owned or Leased

27. List rented, leased or owned warehouse, plant and office facilities; submit copy of lease, deed or mortgage

Facility Type	Owner or Name of Lessor and/or rental agent	Amt of yearly payment

28. Does your business share office space, personnel or equipment with any other entity?

Yes _____ No _____

If "Yes", please provide:

Business Name	Phone	Personnel (X)	Office Space ("X")	Yard Space (X)	Equipment ("X")	Machinery (X)

DEFINITIONS OF GROUP CODES

(To be used for questions 11 and 12b, page four; question 15, page six; supporting documents number two, Page 11)

Group Code	Group Name	Group Definition
01	Black	Persons having origins from any of the black African racial groups not of Hispanic origin
02a	Hispanic	All persons of Mexican, Puerto Rican, Cuban, Caribbean Islands, Central or South American culture or origin, regardless of race
02b	Portuguese	Persons whose culture or origin is rooted in Portugal
02c	Spanish	Persons whose culture or origin is rooted in Spain
03a	Asian-Pacific	Persons having origins in any of the original peoples of the Far East, Southeast Asian or the Pacific Islands
03b	Asian-Indian	Persons having origins in any of the original peoples of the Indian subcontinent
04	Native American	Persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification
05	Non-Minority	Persons whose culture or origin is other than those defined above
06	Other	Persons other than those defined above

"Minority Business Enterprise" or "MBE" means a business entity which is owned and controlled by one or more members of one or more minority groups. "Women-owned Business Enterprise" or "WBE" means a business entity which is owned and controlled by one or more women.

"Owned and controlled" means a business entity which is at least 51 percent owned by one or more members of minority groups or women, or in the case of a publicly held corporation, at least 51 percent of the stock of which is owned by members of one or more minority groups or women; and whose management and daily business operations are controlled by one or more such individuals who are citizens or permanent resident aliens.

SUPPORTING DOCUMENTATION CHECKLIST

REQUIRED FOR ALL APPLICANTS Attach copies of the following documents, as applicable. Indicate documents submitted by checking appropriate boxes. The minimum documentation required for certification is listed below, but is not limited to this list. A representative may request additional documents during the application review, if warranted.
COPIES ONLY – NO ORIGINALS

- 1. Résumés for all principals, partners, officers and/or key employees of the firm. Provide home address, telephone number, education, training, and employment with dates and specific duties with the company
- 2. Proof of ethnicity for each person with ownership interest (valid passport, ethnic birth certificate)*
- 3. Proof of U.S. Citizenship (valid U.S. passport, ethnic birth certificate, naturalization certificate)*
- 4. Proof of permanent resident alien status (valid permanent resident alien "green" card showing expiration date)*
- 5. Bank signature card, bank resolution or letter from bank identifying persons authorized to conduct transactions on each account
- 6. Lease agreement or proof of ownership (deed/mortgage) for business location(s)
- 7. Proof of any certification (including SBA 8(a)), decertification, or denial from another governmental agency, department, or authority
- 8. Copies of any licenses, permits and/or accreditations required for conducting business
- 9. Proof of sources of capitalization/investments (purchase receipts, any loan agreements)
- 10. Any employment agreements
- 11. All third party agreements including: equipment rental, purchase agreements, management service agreements, etc.
- 12. Vehicle registration(s) for any vehicle used for business purposes
- 13. Current financial statement (statement of cash flows, balance sheet, or profit and loss statement)
- 14. Most recent three years' business Federal, tax returns (all pages, all schedules); if in business less than three years prior two (2) years of personal tax returns (1040s) for each person with ownership interest, including all applicable W-2 forms and schedule.
- 15. Marketing data form.

Note:

*If you have one document that satisfies the requirements for numbers 2 – 4, submit only one copy.

REQUIRED FOR VETERAN OWNED BUSINESSES AND SDVOBS

- Provide a copy of the verification letter from the U.S. Department of Veteran Affairs, Center for Veterans Enterprise

REQUIRED FOR CONSTRUCTION/ARCHITECTURAL & ENGINEERING FIRMS

- Applicable licenses/permits

REQUIRED FOR CONSTRUCTION FIRMS

- Construction reference sheet (attached; references must be for jobs completed during the past three years)
<http://www.panynj.gov/business-opportunities/sd-become-certified.html>

REQUIRED FOR ARCHITECTURAL & ENGINEERING FIRMS

- Architectural & Engineering Specialty Form (attached – check applicable specialties)
<http://www.panynj.gov/business-opportunities/sd-become-certified.html>

Attach required documents and indicate documents submitted by checking appropriate boxes

REQUIRED FOR SOLE PROPRIETORSHIPS

- Copy of Business Trade Name or Certification Trade Name filed with County Clerk
(If doing business under an assumed name)

REQUIRED FOR PARTNERSHIPS AND LLPS

- 1. Business Certificate including any amendments
- 2. Partnership Agreement
- 3. Buy out rights

REQUIRED FOR LIMITED LIABILITY COMPANIES (Check appropriate boxes below)

- 1. Certificate of formation and/or organization, including date approved by State
- 2. Operating and/or managing agreements
- 3. Franchise and/or third-party agreement

REQUIRED FOR CORPORATIONS

- 1. Articles of incorporation, including date approved by State
- 2. Corporation By-Laws
- 3. Minutes of first corporate organizational meeting and amendments
- 4. Copies of all issued stock certificates front and back, as well as next un-issued certificate
- 5. Copy of stock ledger
- 6. If applicable, furnish copies of agreements relating to:
 - a. stock options
 - b. shareholder agreements
 - c. shareholder voting rights
 - d. restriction on the disposal of stock loan agreements
 - e. facts pertaining to the value of shares
 - f. buy-out rights
 - g. restrictions on the control of the corporation

SMALL BUSINESS ENTERPRISE PROGRAM

To be eligible businesses must:

- Have a principal place of business in either New York or New Jersey.
- Have operated that specific type of business for at least three (3) years.
- Not exceed the average annualized gross revenue limitations cited below for the last three (3) fiscal years.

Average Annualized Gross Revenue Limitation and other Port Authority Pre-requisites by Procurement Category.

- ❑ **Construction - \$14 million**
The Port Authority's Engineering Department must also qualify construction firms. This requires the submittal of acceptable references for completed contracts. A minimum of three acceptable references is required for each construction specialty area.
- ❑ **Commodity - \$7 million**
Commodity firms eligible to participate are provided a five percent (5%) price preference in designated contracts solicited by the Port Authority's Procurement Division.
- ❑ **Janitorial Maintenance - \$16.5 million**
- ❑ **Financial Services - \$7 million**

CODE OF ETHICS CERTIFICATION

In signing and submitting the annexed Certification Application, each applicant and each person signing on behalf of any applicant certifies that they have not made any offers or agreements or given or agreed to give anything of value or taken any other action with respect to any employee or former employee of The Port Authority of New York and New Jersey or any of its subsidiaries (hereinafter referred to as the "Authority") or any immediate family member of either which would constitute a breach of ethical standards under the Code of Ethics and Financial Disclosure dated as of July 18, 1994 (a copy of which is available upon request to the Office of Business & Job Opportunity), nor do they have any knowledge of any act on the part of such employee or former employee relating either directly or indirectly to the applicant which constitutes a breach of the ethical standards set forth in said code.

As used herein, "anything of value" shall include but not be limited to any (a) favors, such as meals, entertainment, transportation (other than that contemplated by an Authority contract), etc., which might tend to obligate the Authority employee to the Contractor and (b) gift, gratuity, money, goods, equipment, services, lodging, discounts not available to the general public, offers or promises of employment, loans or the cancellation thereof, preferential treatment or business opportunity. Such term shall not include compensation contemplated by any Authority contract.

The foregoing certification shall be deemed to have been made by the applicant as follows: If the applicant is a corporation, such certification shall be deemed to have been made not only with respect to the application itself, but also with respect to each director and officer, as well as, to the best of the certifier's knowledge and belief, each stockholder with an ownership interest in excess of 10%; if the applicant is a partnership, such certification shall be deemed to have been made not only with respect to the applicant itself, but also with respect to each partner. Moreover, the foregoing certification, if made by a corporate applicant, shall be deemed to have been authorized by the Board of Directors of the applicant, and such authorization shall be deemed to include the signing and submission of the bid and the inclusion therein of such certification as the act and deed of the corporation.

In any case where the applicant cannot make the foregoing certification, the applicant shall so state and shall furnish with the application, a signed statement that sets forth in detail the reasons thereof.

The foregoing certification or signed statement shall be deemed to have been made by the applicant with full knowledge that it would become part of the records of the Authority and that the Authority will rely on its truth and accuracy in granting certification.

Applicants are advised that knowingly providing a false certification or statement pursuant hereto may be the basis for prosecution for offering a false instrument for filing (see e.g., New York Penal Law, Section 175.30 et. Seq.). Applicants are also advised that the inability to make such certification will not, in and of itself disqualify an applicant, and that in each instance the Authority will evaluate the reasons therefore provided by the applicant.

ACKNOWLEDGEMENTS AND VERIFICATION

FIRST, this certification application form, the supporting documents, and any other information provided in support of the application is considered part of the application. Any false statements or misrepresentations in the application may result in the applicant's disqualification from certification as Minority and/or Woman-owned Business Enterprise (M/WBE) by The Port Authority of New York and New Jersey for him/herself and its subsidiaries, which are included in the term "Port Authority".

SECOND, the information contained herein is subject to the Port Authority's Freedom of Information policy amended in May 2008.

THIRD, the Port Authority may require further proof of eligibility for certification in addition to the information disclosed in this application and the applicant shall cooperate with the Port Authority in supplying the additional information. By completing this application, the applicant agrees to submit the additional proof required and acknowledges that the Port Authority may decide to deny the application if the additional proof is not submitted within 30 days after it is requested.

FOURTH, by filing this application, the applicant consents to examination of its books and records and interviews of its principals and employees by the Port Authority for the purpose of determining whether the applicant is, or continues to be, an eligible M/WBE. The applicant acknowledges that its certification may be denied if such examinations or interviews are refused or if the Port Authority determines, as a result of the examinations or interviews, that the applicant does not qualify for certification as a M/WBE.

FIFTH, by filing this application, the applicant consents to inquiries being directed by the Port Authority to the applicant's bonding companies, banking institutions, credit agencies, contractors, clients and other certifying agencies for the purpose of ascertaining the applicant's eligibility for certification. If the applicant fails to permit such inquiring to be made, such failure may be grounds for denying or revoking the applicant's certification.

SIXTH, the applicant agrees that it will advise the Port Authority of any change in the ownership or operational and managerial control of applicant's business after the certification application has been filed within 30 days of such change.

SEVENTH, certification is normally granted for a period of five (5) years. However, the Port Authority may require submission of a new application, additional information, examinations of the applicant's principals and employees at any time before the expiration of the five-year certification period. The applicant's failure to submit such material or to consent to such examinations and interviews will be grounds for revocation of certification.

EIGHTH, the filing of this application, its acceptance by the Port Authority, and any subsequent certification of the applicant by the Port Authority, is not intended to and does not create any procedural or substantive rights enforceable at law by the applicant against the Port Authority, its Commissioners, officers, agents or employees and any such certification is only intended to facilitate the identification of qualified and bona fide M/WBEs.

NINTH, the Code of Ethics certification attached hereto shall be considered part of this certification application and the applicant is advised to familiarize him/herself with the terms of the certification prior to submitting this application.

TENTH, in submitting this application the applicant and each person signing on behalf of the applicant certifies that, to the best of their knowledge and belief, the following statements are true and correct:

A) No individual who is current or former employee of the Port Authority or its subsidiaries (i.e., Port Authority Trans-Hudson Corporation (PATH), Newark Legal and Communications Center Urban Renewal Corporation) other than those individuals identified in the space immediately below (1) owns an interest in; or (2) has involvement in a relationship with the applicant firm (a) from or as a result of which the individual has received within the past year, or is entitled to receive in any future year, more than \$1,000 or its equivalent; or (b) which has a market value in excess of \$1,000. *(List here any such current or former Port Authority Employee (s))

B) No individual who is a current or former employee of the Port Authority or its subsidiaries other than those individuals identified in the space immediately below (1) holds a position in the applicant firm such as an officer, director, trustee, partner, employee, or a position of management; or (2) acts as a consultant, agent or representative of the firm in any capacity. *(List here any current or former Port Authority Employee (s))

*Included within the scope of this certification are the individuals identified by the applicant in response to questions 14, 15b and 18

Applicant _____ Date _____
Signature

VERIFICATION

STATE OF _____

COUNTY OF _____

(A) For Sole Proprietorships, Partnerships, and Limited Liability Partnerships

_____, being duly sworn, states that he or she is the owner of (or a Partner in) the entity making the foregoing application and that the statements and representations made in the application are true to his/her own knowledge.

Signature Date

(B) For Corporations and Limited Liability Companies

_____, being duly sworn, states that he/she is the
Name of Corporate Officer

Title of Corporate Officer of _____
Name of Corporation

the entity making the foregoing application, that he/she has read the application and knows its contents, that the statements and representations made in the application are true to his/her knowledge, and that the application is made at the direction of the Board of Directors of the Corporation.

Corporate Seal _____
Signature Date

Sworn to before me this _____ day of _____, 20____

Notary Public

Mail to: The Port Authority of New York and New Jersey
Office of Business Diversity and Civil Rights – Certification Unit
233 Park Avenue South, 4th Floor
New York, NY 10003

INFORMATION FOR DETERMINING JOINT VENTURE ELIGIBILITY

<i>Return your submittal to:</i>	<i>The Port Authority of New York and New Jersey Office of Business Diversity and Civil Rights 233 Park Avenue South, 4th Floor New York, NY 10003 Firms not currently certified should call (212) 435-7808 for information</i>
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*(Note: This form need not be completed if all joint venture firms are M/WBEs
The Joint Venture approval is valid through the duration of the Port Authority contract)*

1. NAME OF JOINT VENTURE: _____
2. ADDRESS OF JOINT VENTURE: _____

3. TELEPHONE NUMBER (S) OF JOINT VENTURE: _____

4. (A) IDENTIFY THE FIRMS WHICH COMPRISE THE JOINT VENTURE. (THE MINORITY OR WOMAN-OWNED BUSINESS ENTERPRISE PARTNER MUST COMPLETE A UNIFORM CERTIFICATION APPLICATION – SCHEDULE A):

(B) DESCRIBE THE ROLE OF THE M/WBE IN THE JOINT VENTURE:

5. NATURE OF THE JOINT VENTURE'S BUSINESS: _____

6. PROVIDE A COPY OF THE JOINT VENTURE AGREEMENT.

7. WHAT IS THE CLAIMED PERCENTAGE OF MBE OR WBE OWNERSHIP? _____

8. OWNERSHIP OF JOINT VENTURE: (THIS NEED NOT BE FILLED IN IF DESCRIBED IN THE JOINT VENTURE AGREEMENT)

(A) PROFIT AND LOSS SHARING: _____

(B) CAPITAL CONTRIBUTIONS, INCLUDING EQUIPMENT:

(C) OTHER APPLICABLE OWNERSHIP INTERESTS:

9. CONTROL OF AND PARTICIPATION IN THIS CONTRACT. IDENTIFY BY NAME, RACE, SEX AND "FIRM" THOSE INDIVIDUALS AND THEIR TITLES WHO ARE RESPONSIBLE FOR DAY-TO-DAY MANAGEMENT AND POLICY DECISION-MAKING, BUT NOT LIMITED TO, THOSE WITH PRIME RESPONSIBILITY FOR:

<u>NAME & TITLE</u>	<u>SEX</u>		<u>GROUP CODE*</u>	<u>FIRM</u>
FINANCIAL DECISIONS				
_____	<input type="checkbox"/> M	<input type="checkbox"/> F	_____	_____
_____	<input type="checkbox"/> M	<input type="checkbox"/> F	_____	_____
MANAGEMENT DECISIONS, SUCH AS:				
ESTIMATING				
_____	<input type="checkbox"/> M	<input type="checkbox"/> F	_____	_____
_____	<input type="checkbox"/> M	<input type="checkbox"/> F	_____	_____
MARKETING AND SALES				
_____	<input type="checkbox"/> M	<input type="checkbox"/> F	_____	_____
_____	<input type="checkbox"/> M	<input type="checkbox"/> F	_____	_____

HIRING AND FIRING OF MANAGEMENT PERSONNEL

_____ M F _____
_____ M F _____

PURCHASING OF MAJOR ITEMS OR SUPPLIES

_____ M F _____
_____ M F _____

SUPERVISION OF FIELD OPERATIONS

_____ M F _____
_____ M F _____

***GROUP CODE KEY**

01 - BLACK 02A - HISPANIC 03A - ASIAN-PACIFIC 04 - NATIVE AMERICAN
02B - PORTUGUESE 03B - ASIAN-INDIAN 05 - NON-MINORITY
02C - SPANISH 06 - OTHER

Affidavit

"The undersigned swear that the foregoing statements are correct and include all material information necessary to identify and explain the terms and operation of the joint venture and the intended participation by each joint venturer in the undertaking. Further, the undersigned agree to provide to the grantee current and complete information and any proposed changes to the joint venture arrangement. The undersigned also agree to permit authorized representatives of the grantee or the Federal-funding agency to audit and examine the books, records and files of the joint venture, or those of each joint venturer relevant to the joint venture. Any material misrepresentation will be grounds for terminating any contract which may be awarded and for initiating action under Federal or State laws concerning false statement."

NAME OF FIRM

NAME OF FIRM

SIGNATURE

SIGNATURE

NAME

NAME

TITLE

TITLE

DATE

DATE

State of _____

County of _____

On this ____ day of _____, 20 ____, before me appeared (name) _____ to me personally known, who, being duly sworn, did execute the foregoing affidavit, and did state that he or she was properly authorized by (name of firm) _____ to execute the affidavit and did so as his or her free act and deed.

Notary Public

State of _____

County of _____

On this ____ day of _____, 20 ____, before me appeared (name) _____ to me personally known, who being duly sworn, did execute the foregoing affidavit, and did state that he or she was properly authorized by (name of firm) _____ to execute the affidavit and did so as his or her free act and deed.

Notary Public

Schedule B

CONSTRUCTION M/WBE PARTICIPATION PLAN

PA 3749 / 05-11

Office of Business Diversity and Civil Rights

PAGE _____ OF _____

NOTE: The Contractor is required to submit to the Engineering Dept. a MODIFIED PLAN for any changes to the original plan: i.e.; subcontractor, dollar amount or work performed. If more than 1 page is used, complete totals on last page.

Contract Number: _____ **Contract Description:** _____

Contractor Name: _____

Mailing Address: _____ **Contract Amount:** _____

Telephone Number: _____ **Contract Goals:** MBE _____ WBE _____ DBE _____

Name, Address, Phone Number of PA Certified MBE/WBE/DBE subcontractor (including name of contact person)	Indicate MBE, WBE Or DBE	Description of Work, Services to be provided. Where applicable, specify, "supply" or "install" or both "supply" and "install."	Anticipated date work will start and finish	* Approximate \$ amount of M/W/DBE Subcontract	MBE/WBE/DBE % of Total Contract Amount
					TOTAL:

Signature of Contractor: _____

Print Name: _____

Title: _____ **Date:** _____

FOR OBDCR USE ONLY

Contract Goals: Approved Waived Rejected

Reviewed by: _____

OBDCR Business Development Representative

Print Name: _____ Date: _____

Distribution: Original – OBDCR; Copy 2 – Engineer of Construction; Copy 3 – Contractor; Copy 4 – Line Department

*Please Note: supplies, equipment and material men are only credited 60% towards the M/W/DBE goal. Please adjust calculations accordingly.

Schedule C

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INSTRUCTIONS

CONTRACTOR INSTRUCTIONS: Contractor is required to submit a MBE/WBE Participation Plan and/or best efforts documentation to the designee identified in the contract book within 7 days of contract award.

ENGINEER OF CONSTRUCTION INSTRUCTIONS: After a review of the submitted MBE/WBE Participation plan, forward to Office of Business and Job Opportunity via fax at (212) 435-7828 or PAD to 233PAS 4th Floor for review and approval. Approved/waived/rejected plan will be returned within 10 business days of receipt of this document. Engineer of Construction will advise vendor of the results of the MBE/WBE Participation Plan review.

ANALYSIS OF BID

THE PORT AUTHORITY OF NY & NJ

PROJECT Replacement of Vehicle Exhaust System at EWR
Automotive Shop in Building 11

BID DATE 4/9/14
 SHEET 1

THIS IS NOT PART OF THE CONTRACT

CONTRACTOR Air Purifiers Inc.

CONTRACT NO. EWR-924.300

Unit No.	Descriptions ⁽¹⁾	Quantity	Unit ⁽²⁾	Unit Price	Amount
1	General Conditions	1	LS	1,000	1,000
2	Structural Equipments for Mechanical Equipments	1	LS	2,000	2,000
3	Architectural Work	1	LS	1,000	1,000
4	HVAC		-		
5	Removals	1	LS	3,200	3,200
6	Exhaust Fans	1	LS	6,000	6,000
7	Hose Reel with 33' x 5" Dia. Hose and Nozzle	12	EA	1,606	19,272
8	Galvanized Ductwork	1	LB LS	6,700	6,700
9	Rigging	1	LS	728	728
10	Other Remaining Work (VFD drives, fume hood, controls, testing)	1	LS	4,500	4,500
11	Electrical Work (removals, conduits/wires, motor starter, etc.)	1	LS	9,800	9,800
12	Environmental Work (lead paint removal)	1	LS	4,000	4,000
	Total Lump Sum				59,000

1. Separate and list all items or operations of work included in your estimate in accordance with Specifications.
 When listing subcontracts, the prime contractor will have each subcontractor complete an analysis of bid form.
2. Unit of measure, i.e., SF, CY, Bbls, Pcs, Ea., etc.
3. Include all charges, such as moving on site, removal, rental, etc.
4. In case of conflict between information hereon (whether supplied by the Authority or the bidder) and the terms or prices contained or inserted in the Contract Booklet or Contract Drawings, said Booklet and Drawings shall control.

ANALYSIS OF BID

THE PORT AUTHORITY OF NY & NJ

PROJECT Replacement of Vehicle Exhaust System at EWR
Automotive Shop in Building 11

BID DATE _____

THIS IS NOT PART OF THE CONTRACT

SHEET _____

CONTRACTOR _____

CONTRACT NO. EWR-924.300

Unit No.	Descriptions ⁽¹⁾	Quantity	Unit ⁽²⁾	Unit Price	Amount
1	General Conditions		LS		
2	Structural Equipments for Mechanical Equipments		LS		
3	Architectural Work		LS		
4	HVAC:		-		
5	Removals		LS		
6	Exhaust Fans		LS		
7	Hose Reel with 33' x 5" Dia. Hose and Nozzle		EA		
8	Galvanized Ductwork		LB		
9	Rigging		LS		
10	Other Remaining Work (VFD drives, fume hood, controls, testing)		LS		
11	Electrical Work (removals, conduits/wires, motor starter, etc.)		LS		
12	Environmental Work (lead paint removal)		LS		
	Total Lump Sum				

1. Separate and list all items or operations of work included in your estimate in accordance with Specifications.
 When listing subcontracts, the prime contractor will have each subcontractor complete an analysis of bid form.
2. Unit of measure, i.e., SF, CY, Bbls, Pcs, Ea., etc.
3. Include all charges, such as moving on site, removal, rental, etc.
4. In case of conflict between information hereon (whether supplied by the Authority or the bidder) and the terms or prices contained or inserted in the Contract Booklet or Contract Drawings, said Booklet and Drawings shall control.

ANALYSIS OF BID

THE PORT AUTHORITY OF NY & NJ

PROJECT Replacement of Vehicle Exhaust System at EWR
Automotive Shop in Building 11

BID DATE _____

THIS IS NOT PART OF THE CONTRACT

SHEET _____

CONTRACTOR _____

CONTRACT NO. EWR-924.300

Unit No.	Descriptions ⁽¹⁾	Quantity	Unit ⁽²⁾	Unit Price	Amount
----------	-----------------------------	----------	---------------------	------------	--------

5. The Analysis of Bid is not part of the contract. No information hereon (whether supplied by the Authority or the bidder) and no information deduced from information hereon, including quantities of materials or work, shall be deemed to vary, alter or modify any provision of the Contract, including provisions therein as to compensation and performance. The unit prices contained hereon serve the sole purpose of informing Port Authority as to components of the bidder's price quoted in the Contract. The items of materials or work contained hereon shall not be deemed to be an exhaustive list of the items of materials or work required by the Contract Drawings and Specifications in their present form.