

Port Jersey North Shoreline Restoration



Moving The Region: Recover, Protect, Rebuild
SuperStorm Sandy 2nd Anniversary

October 22, 2014

THE PORT AUTHORITY OF NY & NJ

Sandy's Port District-Wide Impact



- ✈️ Aviation Damages**
- Airfield/Runway Lighting
 - Pumping Stations
 - Perimeter Fencing
 - Aeronautical Signs
 - EMAS Beds
 - Perimeter Intrusion Detection Systems
 - Electrical Infrastructure
 - Drainage Outfalls

- 🚆 PATH Damages**
- Electrical Infrastructure
 - Power Systems
 - Communication Systems
 - Signal & Switch systems
 - Tunnel Interlocking
 - 6 Stations
 - 57 Revenue Railcars
 - 6 Substations
 - 17% of system flooded

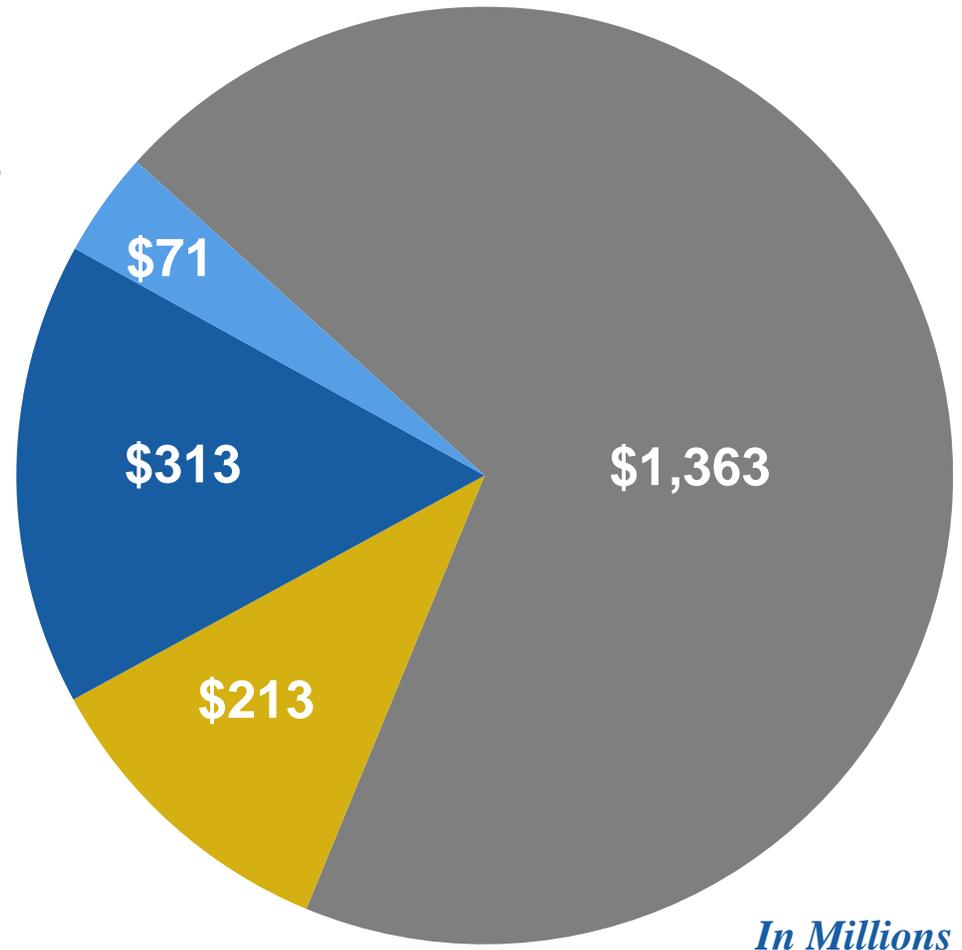
- 🚢 Port Commerce Damages**
- Cranes and Stackers
 - Port Office Buildings
 - Electrical Substations
 - Drainage Outfalls
 - Shoreline Erosion
 - Perimeter Fencing
 - Electrical Infrastructure
 - Ship Mooring Cells
 - NYNJ Rail Carfloats
 - Greenville Yard Lift Bridge

- 🏢 WTC Damages**
- Electrical & Mechanical
 - 1 WTC
 - Transportation Hub
 - Vehicular Security Center
 - Below-grade retail spaces
 - 9/11 Memorial
 - HVAC Equipment
 - Wiring & Fire Alarm Panels
 - Construction Equipment

- 🚇 Tunnel Damages**
- Electrical Infrastructure
 - Pumping Equipment
 - Monitoring Equipment
 - Vent Fans
 - Fire Suppression
 - Transformers
 - Boilers & Blower Ducts
 - Drainage Outfalls

Sources of Federal Sandy Funding

- FTA – Recovery Program Allocations
- FTA – Competitive Grants Program Awards
- FEMA Public Assistance Applications
- FEMA Hazard Mitigation Applications



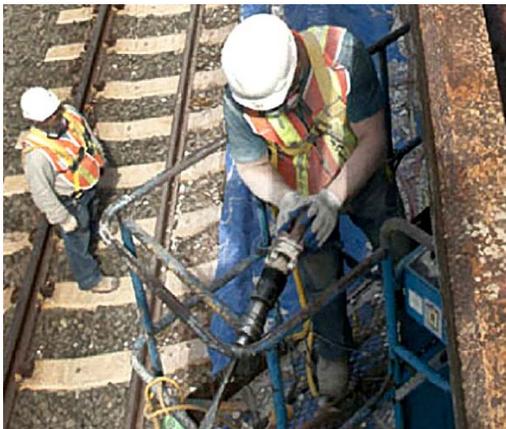
Moving the Region: Sandy Recovery

Port Authority's Rebuilding Effort

Recover

Protect

Rebuild
(Resiliency)



PATH: Emergency Repairs



PATH: Stop Logs



LGA: EMAS Repairs/Replacement

Recover: Aviation

Aircraft and Passenger Safety

Repairs of LaGuardia Airport Instrument Landing Piers



Immediate Damage



After Repair

Recover: Port Commerce

Ensuring Freight Movement:

Cross Harbor Temporary Lift Bridge



Immediate Damage



After Repair

Port Jersey Shoreline Restoration



Immediate Damage



After Repair

Recover: PATH

Recover: Hoboken PATH Station Fare Area



During the Storm



During Recovery

Recover: One World Trade Center – B4 Level

During Sandy



After Recovery & Repair



Protect: PATH

Protect: Hoboken PATH Station Elevator



During the Storm



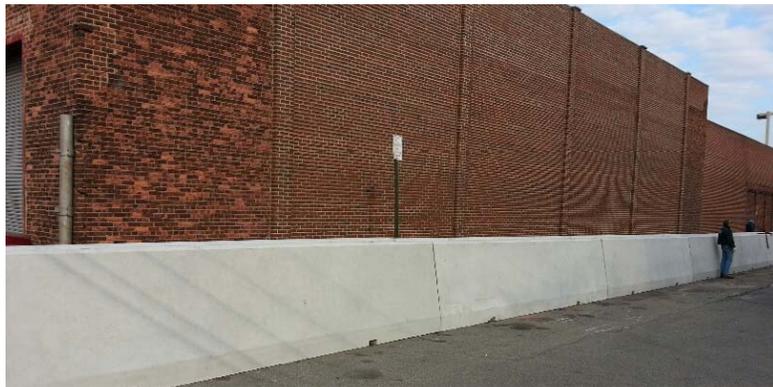
After Recovery

Protect: Tunnels, Bridges, & Terminals

Priority Protective Measures: Holland Tunnel



Sealed Manhole Covers



Pre-Cast Concrete Flood Barriers



Ventilation Building Stop Logs

Rebuild – Asset Resiliency & Design Criteria

- **Proactive effort underway for current/future projects**
- **Updated Design Guidelines**
 - Consider Federal, State & Local Resiliency Recommendations
 - Includes Climate Impacts
- **Flood Protection Design:**
 - Establish flood protection level above code based on asset life and potential sea level rise
 - Perform Benefit Cost Analysis and Flood Risk Assessment



Rebuild – Addressing Impacts of Salt Infiltration

PATH

- Washing of critical tunnel infrastructure

Agency-Wide Electrical Components

- Holland Tunnel
- Aviation Cables & Lighting
- Port Commerce Elec. Cables



Holland Tunnel Corroded Conductors



WTC Retail Parking – Salt Corroded Splice Box



Port Newark Salt Residue on Conduit



JFK Taxiway Lighting Damage



PATH Tunnels E&F



PATH Track Bed Corrosion



Holland Tunnel NJ Land Vent Building Corrosion



Holland Tunnel Salt Residue on wall tiles

Rebuild – PATH



1. WTC Stop Logs
2. PATH Signal Bungalow Elevation
3. PATH Signal Bungalow Concrete Wall
4. PATH Tunnel Desalination

Rebuild – Projects Recently Completed

Aviation



LaGuardia Airport
EMAS Replacement

Port Commerce



Port Jersey
Shoreline Restoration

Tunnels, Bridges
& Terminals

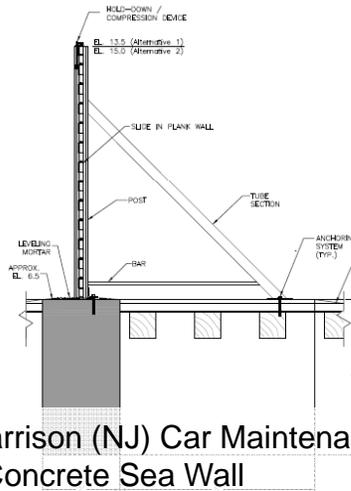


Holland Tunnel
Pump Room Repairs

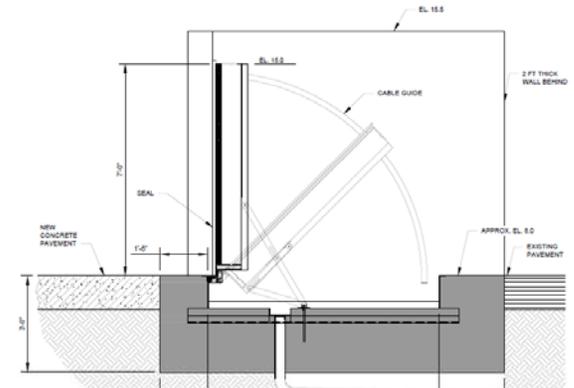
Rebuild – Transit Projects



PATH Station Head House Protections for Grove, Newport & Exchange Place Stations



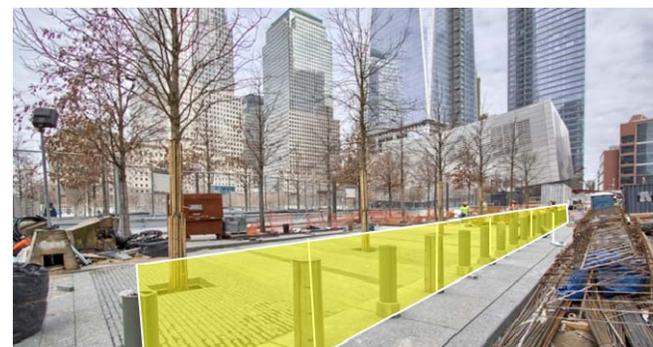
PATH Harrison (NJ) Car Maintenance Facility Concrete Sea Wall



PATH Harrison (NJ) Car Maintenance Facility Flood Barrier at Entrance



PATH – Acquire Hudson Prop at C/ Extension South St .Rail Yard in Newark



WTC Flood Mitigation & Resiliency Improvements

Design Renderings & Sketches are not final and are illustrative in nature

Rebuild – Aviation & Ports Projects

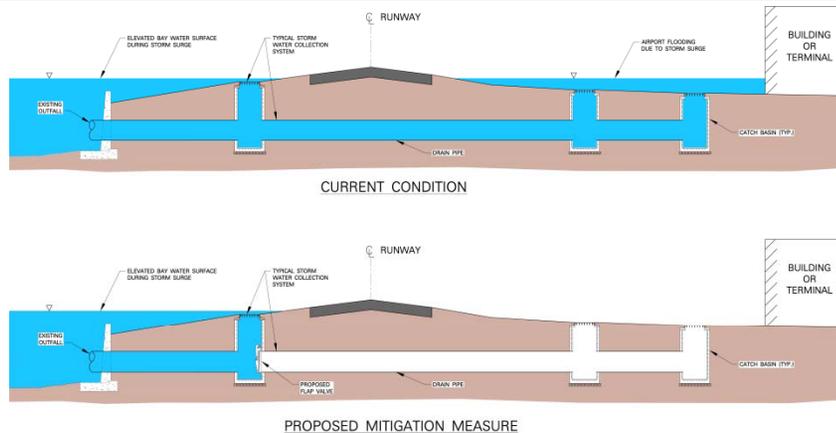
LGA Flood Control and Resiliency Improvements: West End Substation Protection

LGA Flood Control and Resiliency Improvements: West Field Lighting Vault



JFK Flood Control: Tide Gates and Drainage Check Valves

Howland Hook Container Terminal: Upgrade Pavement Subgrade



Reconstruction
of sub-grade &
replacement of
drainage system

