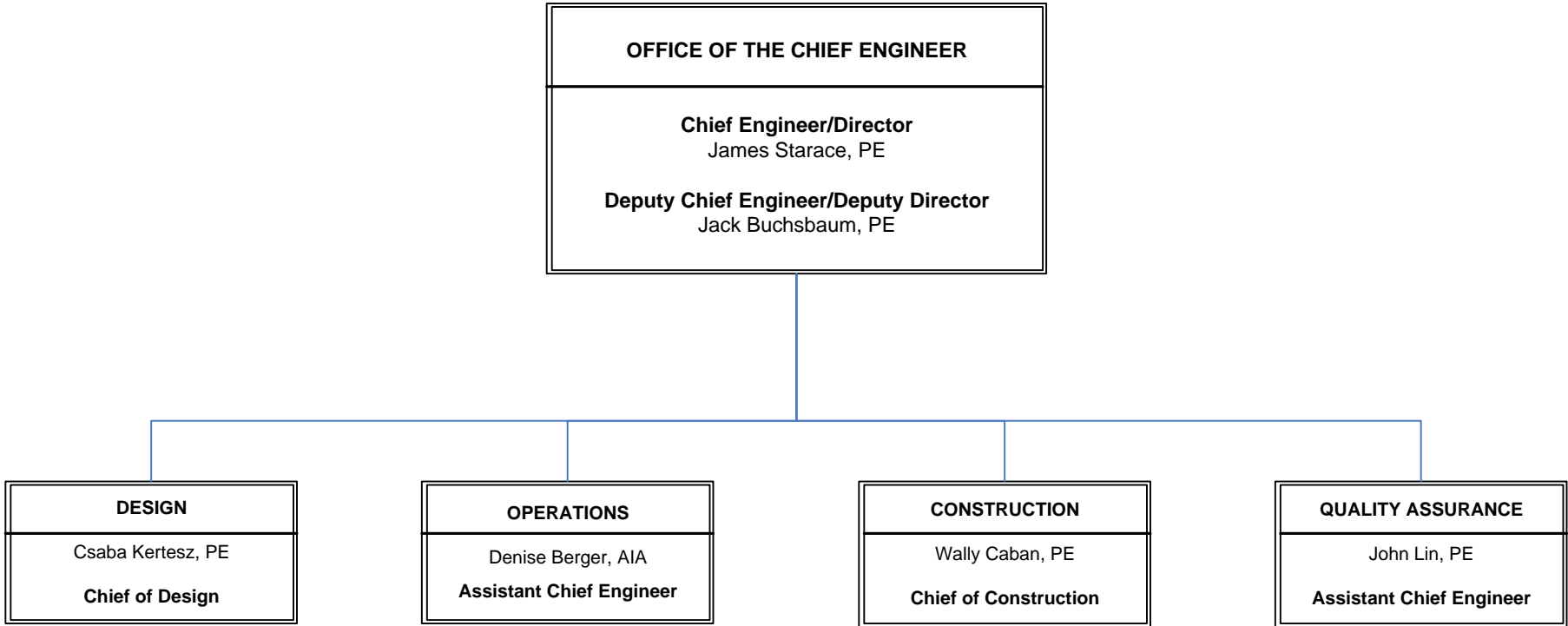


***The Port Authority of NY & NJ
Capital Plan 2014-2023
Overview and Status***

Society of American Military Engineers

James Starace, P.E.
Chief Engineer
March 9, 2016

Engineering Department Organization



Port Authority Facility Map



Aviation

- John F. Kennedy International Airport
- LaGuardia Airport
- Newark Liberty International Airport
- Stewart International Airport
- Teterboro Airport
- Atlantic City International Airport

Bridges

- Bayonne Bridge
- George Washington Bridge
- Goethals Bridge
- Outerbridge Crossing

Terminals

- Port Authority Bus Terminal
- George Washington Bridge Bus Terminal
- Journal Square Transportation Center

Tunnels

- Holland Tunnel
- Lincoln Tunnel

Port Commerce

- Port Jersey-Port Authority Marine Terminal
- Brooklyn-Port Authority Marine Terminal
- Elizabeth-Port Authority Marine Terminal
- Howland Hook Marine Terminal
- Port Newark

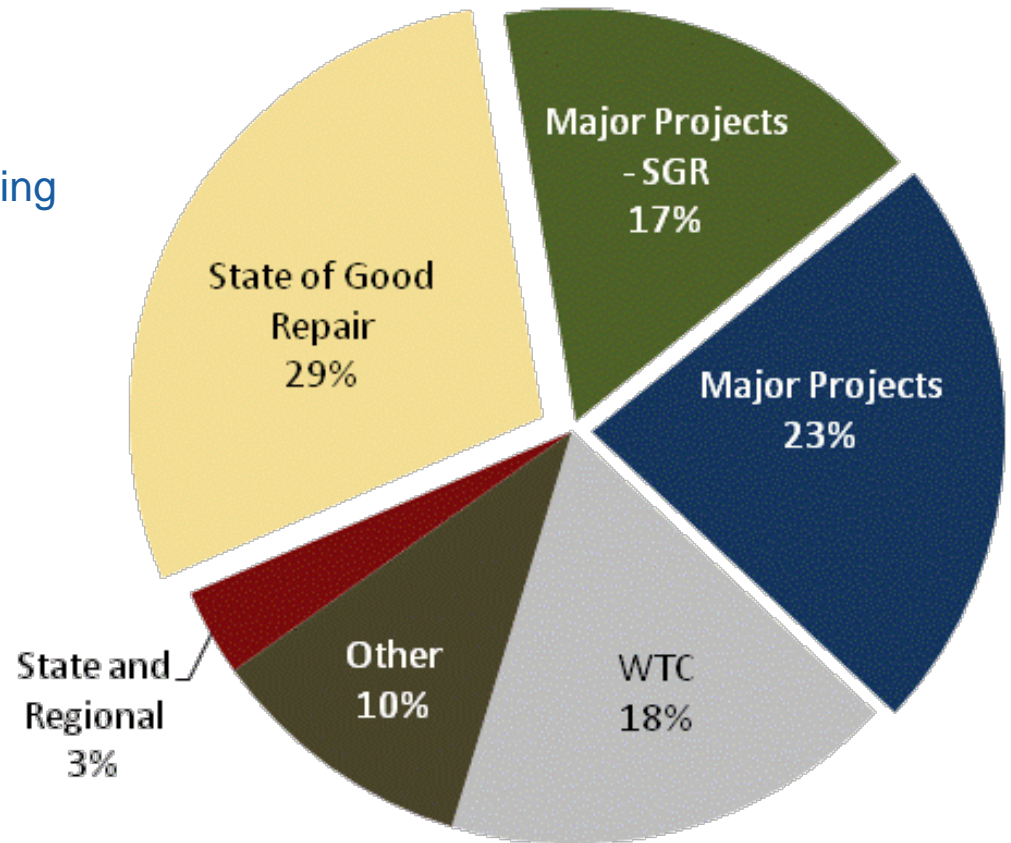
Port Authority Trans-Hudson

- PATH Rail Transit System

WTC

Capital Plan

- \$27.6 Billion in spending 2014 – 2023
- Project prioritized
 - State of Good Repair (SGR)
 - System Enhancing/Revenue Producing
 - Mandatory
 - Security
- State of Good Repair - \$12.6B
- Plan regularly reprioritized
- Focus on building and maintaining transportation infrastructure
- Enhance deliverability/continuous monitoring



Managing the Capital Plan

Capital Plan:

- Periodic Re-prioritization
- Age of assets require SGR investment
- Gates process
 - Gate 1: Planning
 - Gate 2: Project authorization/design
 - Gate 3: Contract Authorization
- Oversight
 - Monitoring
 - Transparency
 - Management of delivery



Initiatives

- Expand Value Engineering/Peer Reviews/Industry Outreaches
- Enhance Life Cycle Cost Evaluations
- Establish “Small/Routine Project” Program (< \$5M)
 - Select one design firm to do multiple disciplines
- Evaluate alternate contracting strategies
 - Considered for projects to utilize industry expertise or speed of delivery
- Performance Based Standards
 - Utilized when and where appropriate
- Focus on budget and schedule performance metrics
- Asset Management and greater use of BIM



Contracting Strategies

Contracting strategies

- Majority of contracts are Design/Bid/Build
- Public Private Partnerships (LGA and Goethals Bridge)
- CM/GC (Security, PATH Harrison, LGA early action work)
- Work order contracts
- Design/Build Contracts
 - Speed of delivery
 - Specialized technology
- Current Design/ Build contracts include:
 - Perimeter Intrusion Detection System
 - LGA Runway Deck Extension
 - SWF Crime Lab
 - LGA East Garage
 - Toll System Replacement

Aviation

Approximately \$8 Billion will be invested in the region's airports

- \$3.3 Billion for new terminals at LaGuardia and Newark Liberty International airports
- \$4.7 Billion in core spending, including 104 state of good repair projects

State of Good Repair

- Runway and Taxiway Reconstruction
- Electrical Infrastructure
- Electrical/Mechanical Upgrades

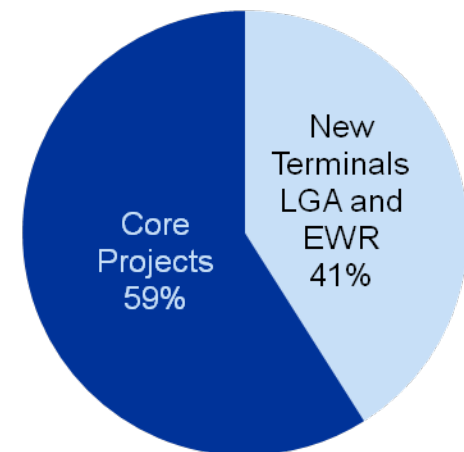


LaGuardia Airport



Newark Liberty International Airport

Aviation Capital Budget (8.0 billion)



LGA Redevelopment Program

- First phase of envisioned redevelopment of LGA into single unified terminal
- One Million Sq. Ft. Terminal
 - Public Private Partnership for Terminal
- East End Substation (complete 2Q '16)
- Parking
 - East End Garage (complete)
 - West End Garage
- Roadway Network
- Utilities Relocation



Planned Construction
2013 - 2021

EWR Terminal A Redevelopment Program

- One Million Sq. Ft.
 - Terminal
 - Parking
 - Roadways and Utilities
- Planning
 - Utilities
 - Bridges/Roadways

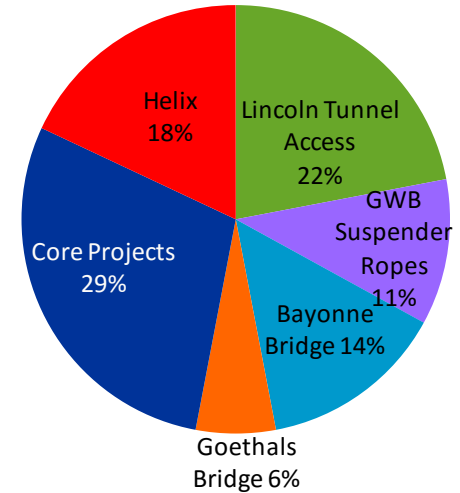


Tunnels, Bridges and Terminals

\$7.9 Billion in spending includes

- Replacement of Goethals Bridge
- Bayonne Bridge “Raise the Roadway”
- Replacement of the Lincoln Tunnel Helix
- George Washington Bridge construction program
- PA Bus Terminal -Quality of commute program
- 90 State of Good Repair projects

TB&T Capital Budget (8.0 billion)



Goethals Bridge

A new 900 foot cable stayed bridge and approach viaducts



Bayonne Bridge

Main span raised for next generation ships

Goethals Bridge Modernization Project



Goethals Bridge Replacement

Schedule

- Start of Permanent Construction Began May 2014
- Service Commencement of south structure expected End of 2016
- Construction Substantial Completion expected Early 2018
- Project Completion expected Late 2018

Project Recap

- Twin structures – dedicated eastbound and westbound
- Abutment to abutment length: 7312 feet (each structure)
- 3 – 12 foot wide lanes in each direction
- 5 foot inner shoulder
- 12 foot outer shoulder
- 10 foot wide Shared-Use-Path on the westbound structure
- Future mass transit corridor provided by connecting cable stayed structures



Goethals Bridge Replacement Update



Bayonne Bridge - Raise the Roadway



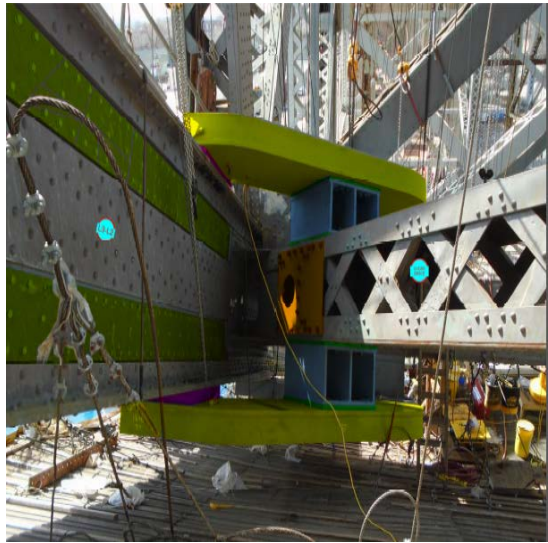
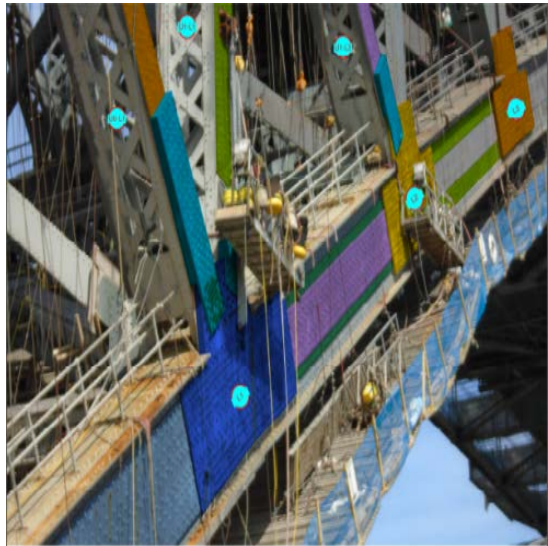
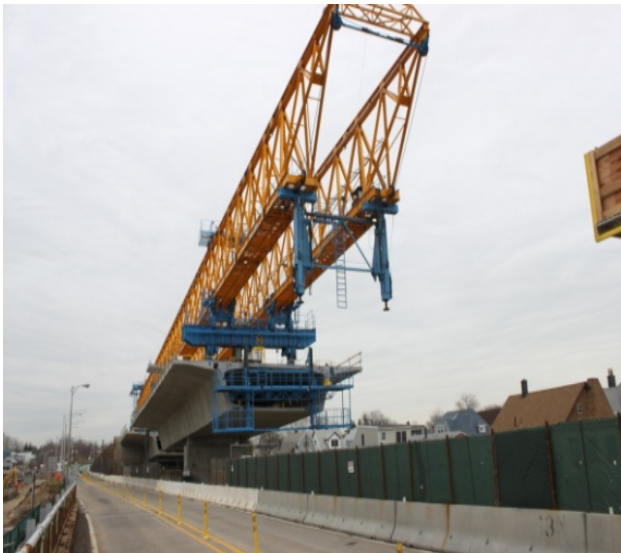
Existing



New Roadway

- Raise and modernize roadway
- Allow for new larger ships following Panama Canal Expansion
- Assures economic vitality of Port
- Unprecedented accelerated project schedule with negligible “float”
- Most timely solution – minimized community/navigational impacts

Bayonne Bridge Construction Status



George Washington Bridge Construction Program



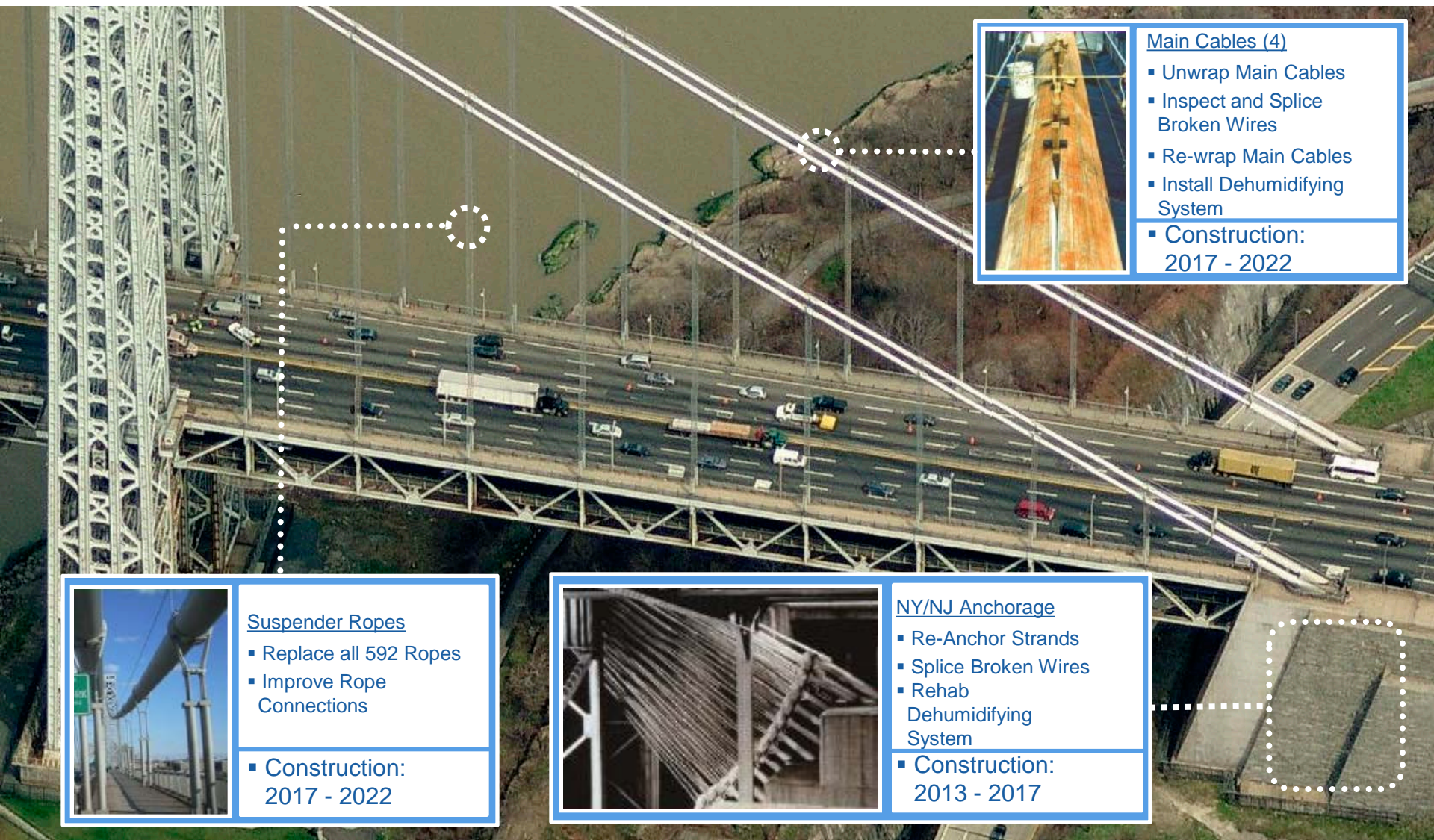
GWB – Construction Program 2015 -2023

- **GWB opened in 1931**
- **100M vehicles travel on the bridge yearly**
- **23 projects**
- **Strategies to minimize impacts**
 - **Constructability**
 - **Combining contracts**
 - **Contract milestones**

GWB – Major Projects (Preliminary Forecast)

Contract Name	Estimated Duration
LL Eastbound Main Span & Approach Roads Pavement Rehab	2015-2017
Palisades Interstate Parkway (PIP) Southbound Helix Replacement	2016-2019
Replacement of UL Spans over Hudson Terrace & NJ Anchorage	2016-2019
Trans-Manhattan Expressway Median Barrier Repl.	2017-2019
Upper Level Eastbound Main Span Pavement Rehabilitation	2017-2019
Rehabilitation of Center Ave. and Lemoine Ave. Bridges	2017-2021
Suspender Ropes Repl. & Rehab. of Main Cables	2017-2024
Rehabilitation of Ramp 178/179, Bus Ramps & Bus Turnaround	2017-2024
Rehabilitation of Lower Level Steel, Removal of Lead Paint & traveler painting	2018-2023
Rehabilitation of TME Overpasses (Phase I)	2018-2023
Upper Level Structural Steel Rehabilitation (Phase II)	

GWB - Rehabilitation of Suspension Systems



- Main Cables (4)**
- Unwrap Main Cables
 - Inspect and Splice Broken Wires
 - Re-wrap Main Cables
 - Install Dehumidifying System
 - Construction: 2017 - 2022



- Suspenders Ropes**
- Replace all 592 Ropes
 - Improve Rope Connections
 - Construction: 2017 - 2022



- NY/NJ Anchorage**
- Re-Anchor Strands
 - Splice Broken Wires
 - Rehab Dehumidifying System
 - Construction: 2013 - 2017

Program Risks and Mitigation Strategies

Risks	Mitigation Strategy
Projects Coordination	<ul style="list-style-type: none">• Develop a integrated master program schedule• Continuous coordination with on-going and future projects progress• Adjust project contract awards and/or construction start dates to align with finite work access
Outside Stakeholder Coordination	<ul style="list-style-type: none">• Engage and communicate as an Early action
Staging and Sequencing Impacts	<ul style="list-style-type: none">• Stipulate specific construction staging and/or sequencing milestones that is non-negotiable• CM/Peer review of specified staging/sequencing
Bidding Environment	<ul style="list-style-type: none">• Monitor construction market trends and provide appropriate contingency
Contract Administration	<ul style="list-style-type: none">• Expedite and monitor shop drawing process• Incentives and penalties
Unforeseen Construction Delays	<ul style="list-style-type: none">• Develop realistic schedules with appropriate contingencies
Weather Delays	<ul style="list-style-type: none">• Provide schedule contingency for weather

LT Helix Replacement Program

- Existing Helix is approaching end of useful life
- Helix was constructed 1937 and widened 1957
 - 6 lanes consisting of 10 bridge spans and on-grade segments
 - 3,200 ft. long with a 270 degree curve
- Critical to regional transportation network:
 - Over 120,000 vehicles a day
 - Carries exclusive bus lane (XBL)
 - 1,800 buses / 63,000 passengers daily
- Replacement Program Goals:
 - Evaluation of 6-8 replacement alternatives
 - Early action community outreach
 - Communication with technical advisory committee and elected officials
 - Include upgrades where possible



View of Existing Helix
Planned Construction 2020-2025

Port Authority Bus Terminal (PABT)

Midtown Bus Master Plan

- Tool to inform decision-making for capital investment at the PABT
- Design competition

Quality of Commute Program

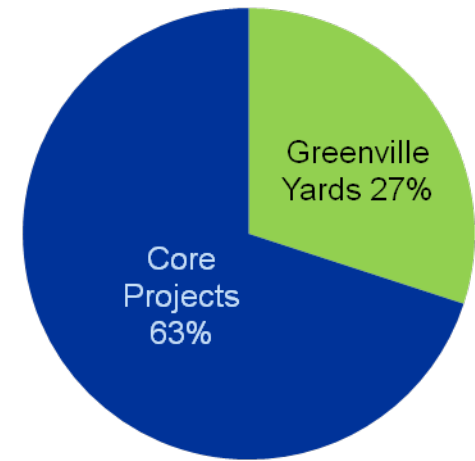
- Near-term improvements for existing facility before Master Plan implementation
- Geared to the traveling public
- Security upgrades



Port Commerce

- \$1.5 Billion in spending includes
 - \$438 Million to upgrade Cross Harbor Car Float facility and new on-dock rail facility at Global Container Terminal
 - 51 core projects including \$690 million in State of Good Repair projects
- Berth Rehabilitation
- Roadway Improvements
- Intermodal Rail Programs
 - Greenville Yards
 - Port Newark Container Terminal

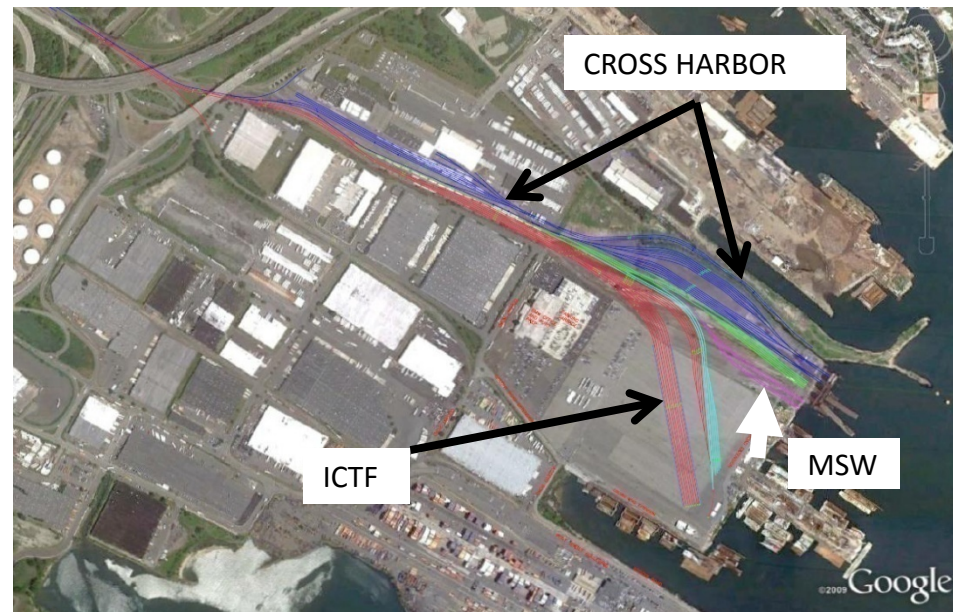
Port Commerce Capital Budget (\$1.6 billion)



Greenville Yard Program

Five components

- New Intermodal Container Transfer Facility
- Track and site work
- New Transfer Bridge
- Replace car floats
- Fender System Modifications

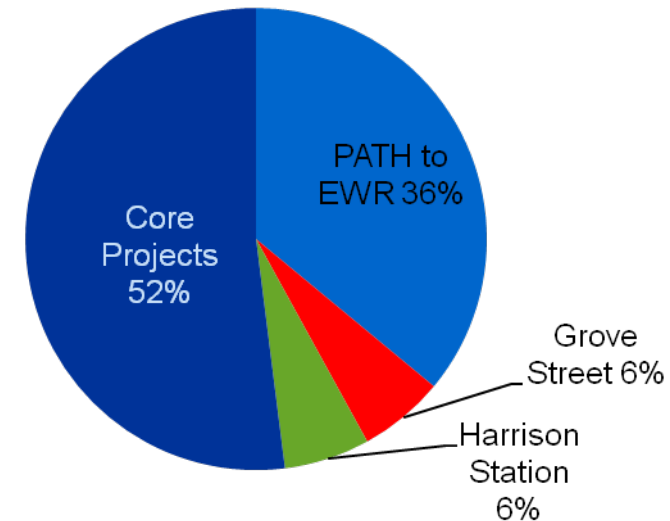


(Estimated) Construction
Duration
2013 - 2018

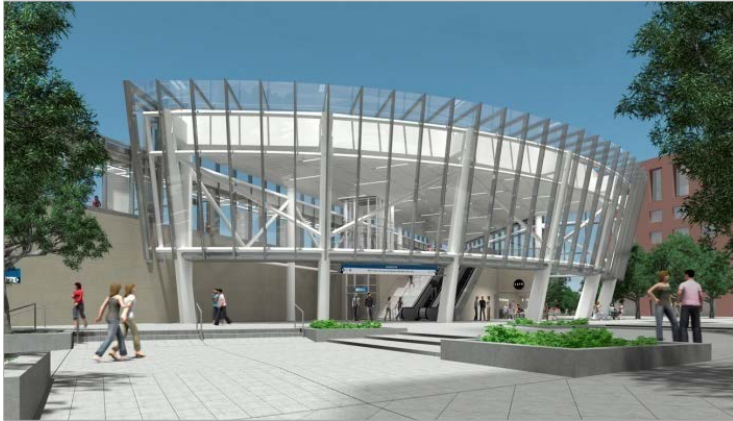
PATH

- \$3.3 Billion in spending includes
 - Almost \$1.7 Billion in core projects including a new signal system, electrical substations, and tunnel improvements
 - \$1.2 Billion project to extend PATH to Newark Liberty Airport
 - More than \$400 Million for Harrison and Grove Street stations

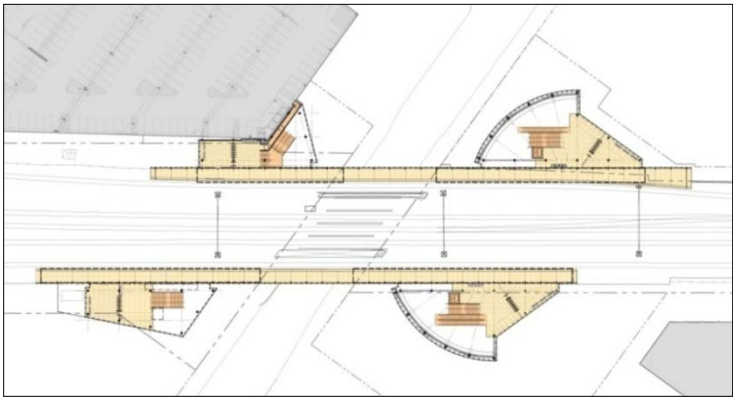
PATH Capital Budget (\$3.3 billion)



PATH – Harrison Station Replacement



- Accommodates 10-car train service
- Central to transit oriented development
- Construction Duration: 2013 -2018
- CM/GC Delivery Method
- Two new and two rehabilitated headhouses



PATH – Harrison Construction Pictures



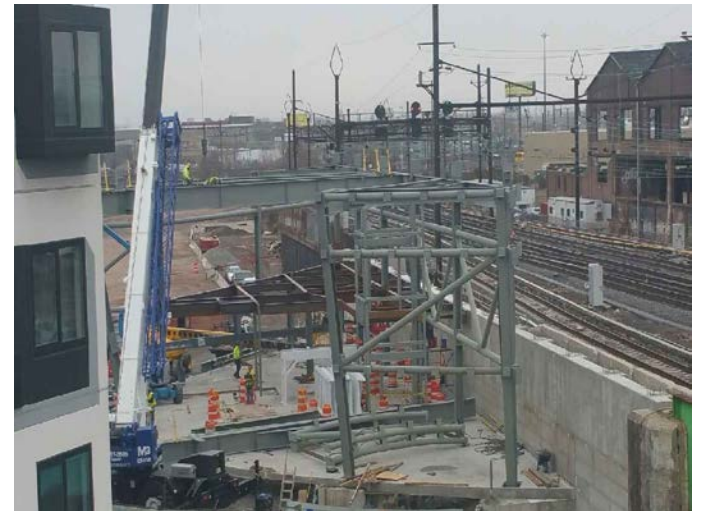
Westbound platform, installation gabion baskets, extension to east abutment wall



Temporary Platforms Installed

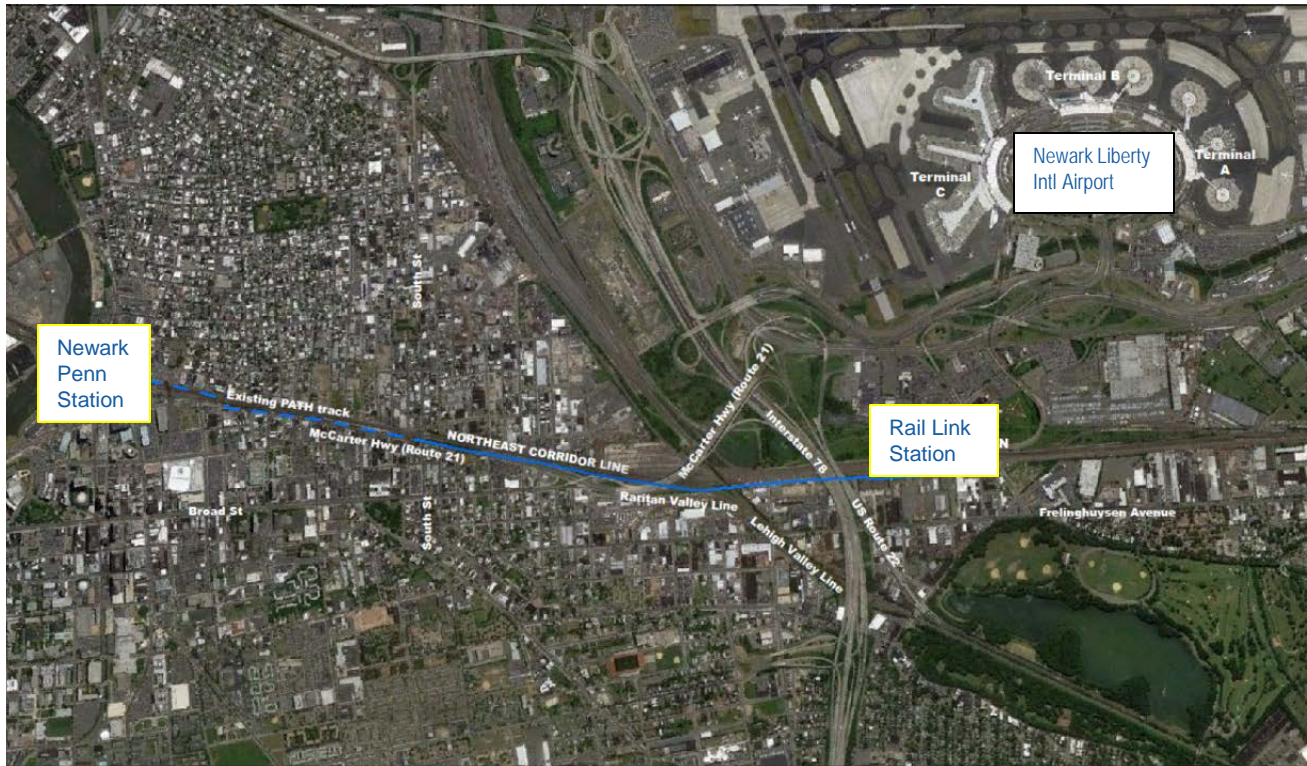


Existing Westbound platform, construction new Northeast Head House



Northeast Head House from Garage

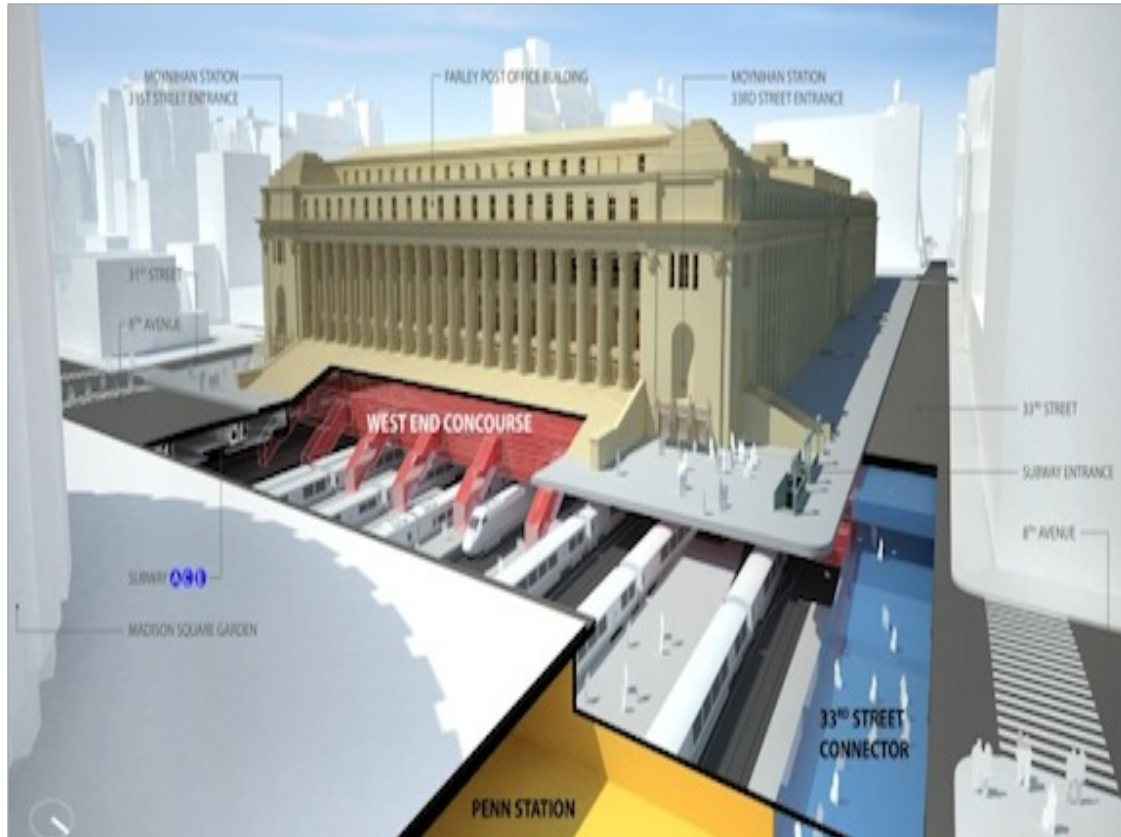
PATH to Newark Liberty International Airport



- Public solicitation for the Program Manager per FTA requirements
- Environmental process and due diligence on property issues
- Dialogue with associated Agencies

Moynihan Station

Moynihan Station Development Corporation



- **Expand West End Concourse:** Doubling current width and length for four additional platforms
- Improve life safety and passenger egress
- Design and Construction oversight
- **Contract Value:** \$147 million
- **Construction Award:** June 2012 (Skanska Intl)
- **Forecasted Completion:** September 2016

World Trade Center Construction



One World Trade Center 2014



WTC Vehicle Security Center & Bus Parking Facility 2016



Memorial Plaza 2014



WTC Transportation Hub 2016

Resiliency Efforts Sandy Program – Rebuild

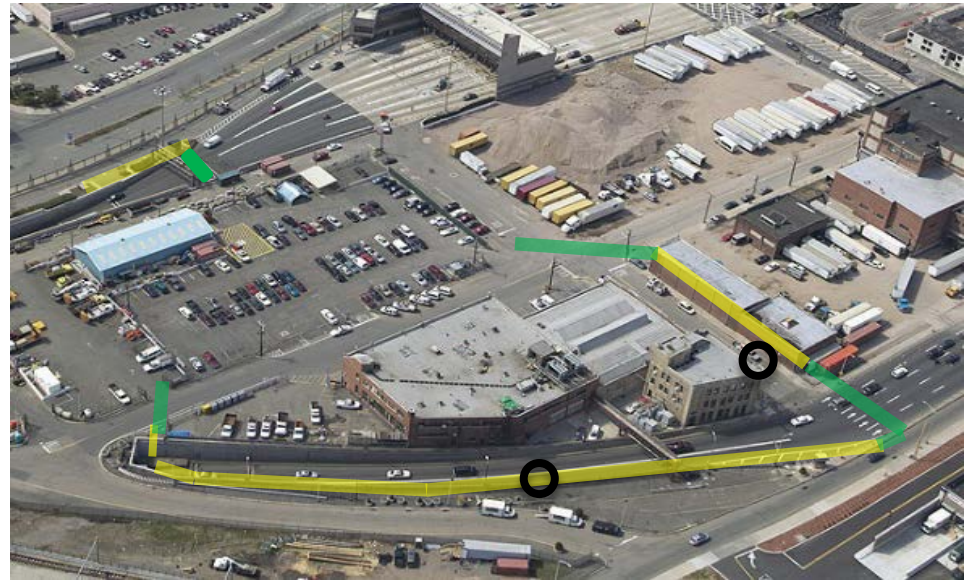


PATH Signal Bungalow
Raised Elevation



PATH Tunnel Desalination
(Latent Damage)

Measures in Place



Major Sandy Projects

- Partnership with Federal Government Rehabilitation and Resiliency Grant Programs (FEMA and FTA)
- PATH
 - Tunnel Rehabilitation, Station Entrance Protection, Maintenance Facility Protection, Substation Replacements
- TB&T
 - Holland Tunnel Repairs and Flood Protection of Portals and Vent Buildings
- Aviation
 - Airfield Lighting Circuit Replacement at JFK, LGA, EWR and TEB, Flood Protection and Resiliency

Resilient Design

- Implemented Climate Resilience Design Guidelines (2015)
 - Guidelines are applicable to all new capital projects
 - Address climate-related risks
 - Sea Level Rise, Temperature and Precipitation
 - Provide for a higher standard of protection for critical buildings and infrastructure
 - Emphasize flood protection:
 - Protection level exceeds code
 - Based on asset criticality and adjusted for sea level rise (based on asset design life)
 - Comparable to flood protection standards implemented by MTA, City of New York, and other regional agencies

Consultant Program

- Supplements permanent staff with outside resources
- Meets ongoing workload demands
- Provides for specific expertise on an as-needed basis



Thank You!

