

BQE Atlantic to Sands Project Update



Commissioner Polly Trottenberg, New York City Department of Transportation
November 1, 2016



THE PROJECT TEAM

Robert Collyer, P.E.

Deputy Commissioner for Bridges

Tanvi Pandya, P.E.

Senior Program Manager

Keith Bray

Brooklyn Borough Commissioner

Joannene Kidder

Executive Director of Community Affairs

For questions and concerns:

Email: BQEAtlanticoSands@dot.nyc.gov

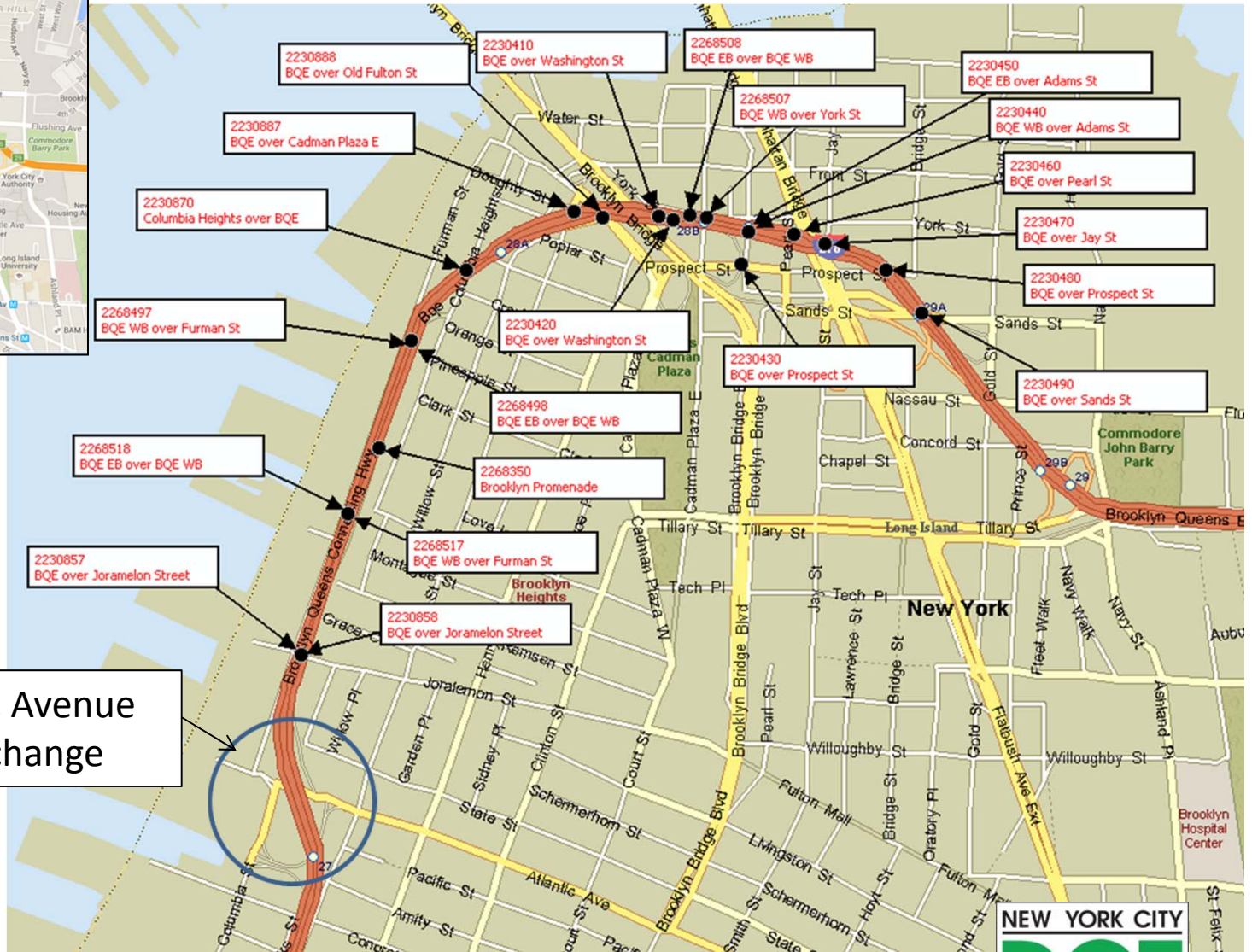
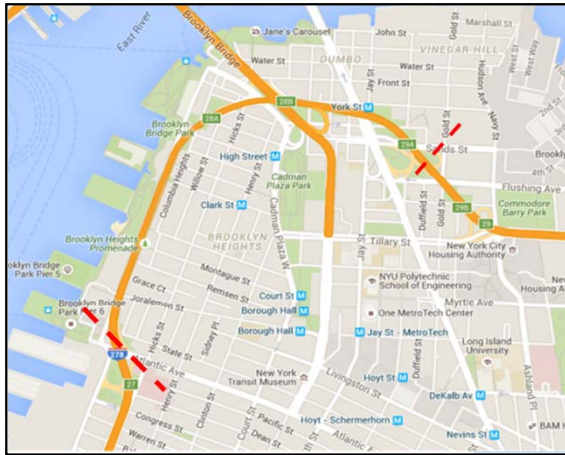
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AGENDA

1. NYS Highway System – Built vs. Unbuilt
2. Recent Pavement Repairs
3. In-Depth Inspection Findings
 - Concrete Arches
 - Multigirder Structures
 - Cantilever Structures
4. Ongoing Traffic Study
5. Upcoming Steps

THE 21 BRIDGES

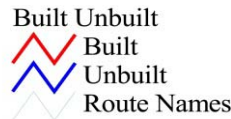


NYS HIGHWAY SYSTEM

The street limits shown on the map and the table are for reference only. This is not an official document.

REGION 11

BUILT/UNBUILT SYSTEM

Built Unbuilt


Built

Arterials and highway systems meeting current standards and included in NYS system.

Un-Built

Existing or proposed main routes that have not been upgraded to current standards or included in NYS system.

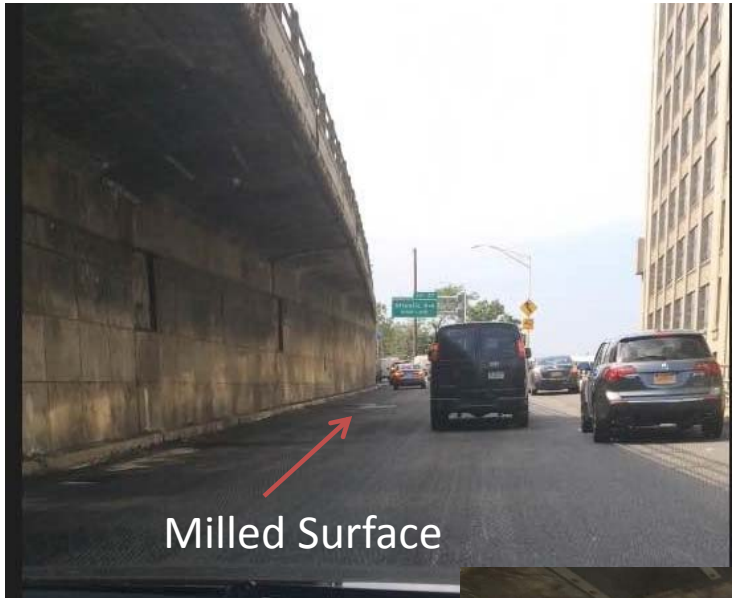


NYS Highway Law Section 349 Established List of Routes to be included in the system (passed in the 1940s)



RECENT PAVEMENT REPAIRS

Sections of the BQE roadway were repaired and repaved during the overnight hours



Queensbound:
July 19 - July 23

Staten Island bound:
July 24 - July 31



IN DEPTH INSPECTION

Inspection Goals

- Identify issues needing immediate intervention
- Determine strength and useful life of BQE bridges

Inspection Findings

- No immediate concerns, including the triple cantilever discovered after 5 months of in-depth inspection.
- Structure is nearing end of service life, major rehabilitation or replacement planning must begin or major disruption for repairs can be expected in 10-12 years



IN DEPTH INSPECTION

Inspection Process

- Hands-on inspections
- Testing of concrete cores and few rebars
- Load Carrying Capacity Analysis



Access opening



Concrete coring

INSPECTION - CONCRETE CORES

Test for following items

- Freeze Thaw Durability: Indication of concrete structure's durability
- Chloride Content : Higher chloride content increases rate of corrosion
- Compressive Strength: Indication of capacity of structure



NON DESTRUCTIVE TESTING

Non-Destructive Testing*: Various measurements which provide indication of corrosion rates cracks and moisture penetration



Pavers were removed for testing on the Promenade then replaced once completed



Ground Penetrating Radar to locate rebars



Linear Polarization Resistance to obtain corrosion rates

*Focused in Triple Cantilever Area

BRIDGE TYPES

Findings broken into **three** types of Bridges within the project

- Concrete Arches
- Multigirder Structures
- Cantilever Structures



Concrete Arch



Multigirder

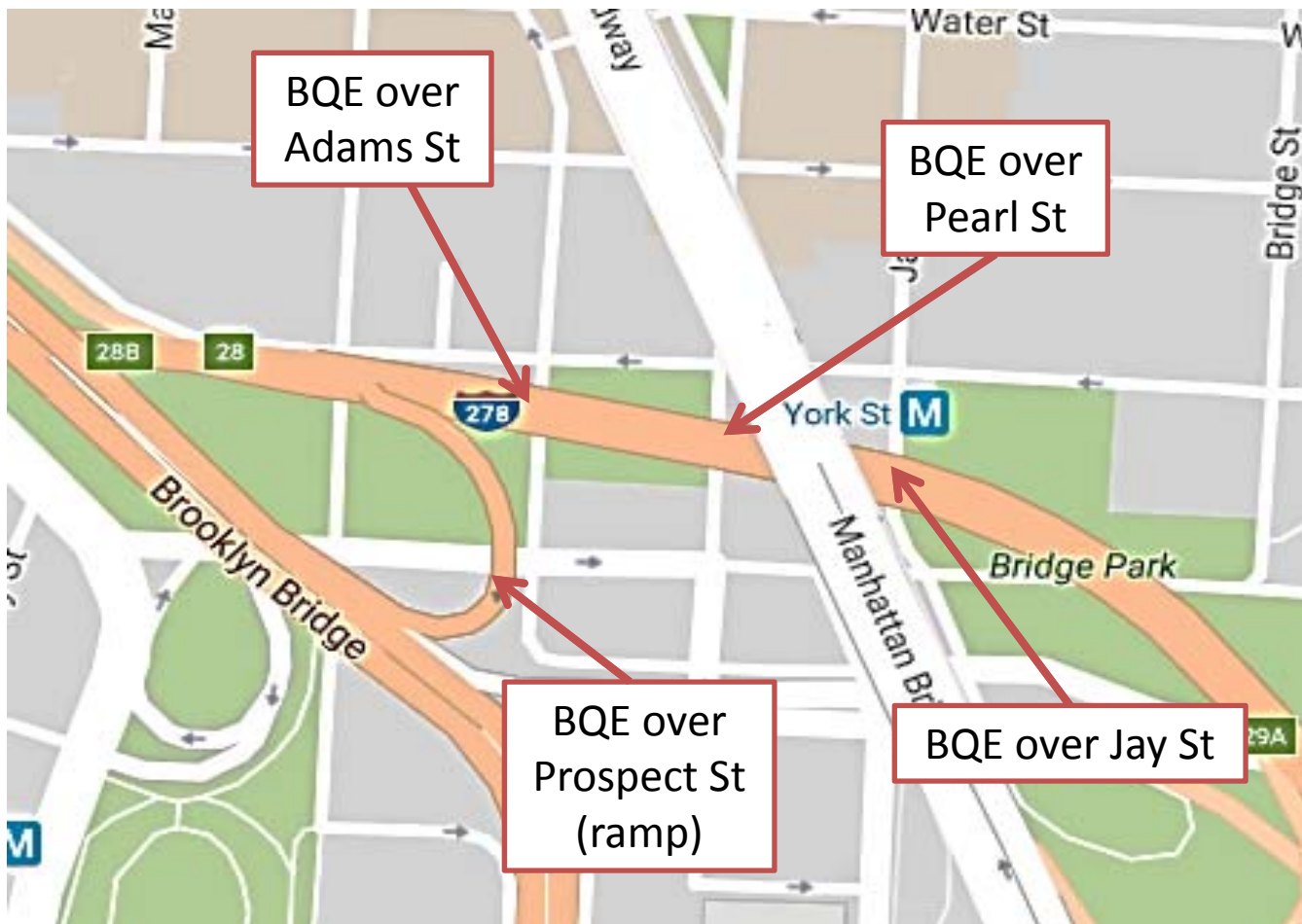


Cantilever

CONCRETE ARCHES

CONCRETE ARCH LOCATIONS

Concrete arches are all located at the north end of the project



INSPECTION FINDINGS ARCHES



Top of Deck

- Cracked Barriers
- Uneven Pavement

Under deck

- Exposed Reinforcement
- Corroded Steel Mesh
- Leakage



CONCRETE ARCHES – SUMMARY

Analysis findings:

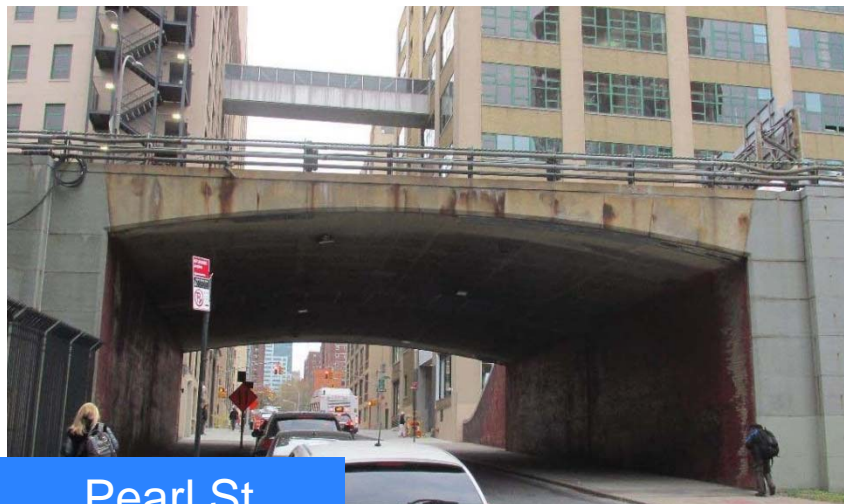
Adequate Load Carrying Capacity

Durability Results:

- High Chloride content
- Low freeze- thaw performance
- Good strength



Prospect St
Ramp



Pearl St



Jay St

MULTIGIRDER STRUCTURES

MULTIGIRDER STRUCTURES

Locations of Multigirder structures



INSPECTION FINDINGS – TOP OF DECK



- Spalled/ uneven pavement
- Leakage through joints



Plates at
Columbia Hts
bridge



INSPECTION FINDINGS – UNDERDECK



Wire Mesh Corrosion from Leakage



Temporary Supports

INSPECTION FINDINGS – RETAINING WALLS & SUBSTRUCTURE



- Deterioration at bearings
- Granite anchor corrosion



MULTIGIRDERS – SUMMARY

Analysis findings:

Adequate Load Carrying Capacity

Durability Results:

- High Chloride content except at Sands St
- Low freeze- thaw performance except Sands St
- Good strength except at Columbia Hts



Sands St



Columbia Heights



Prospect St



CANTILEVER STRUCTURES

CANTILEVER STRUCTURES

Locations of Cantilever structures



CANTILEVERS



Triple Cantilever

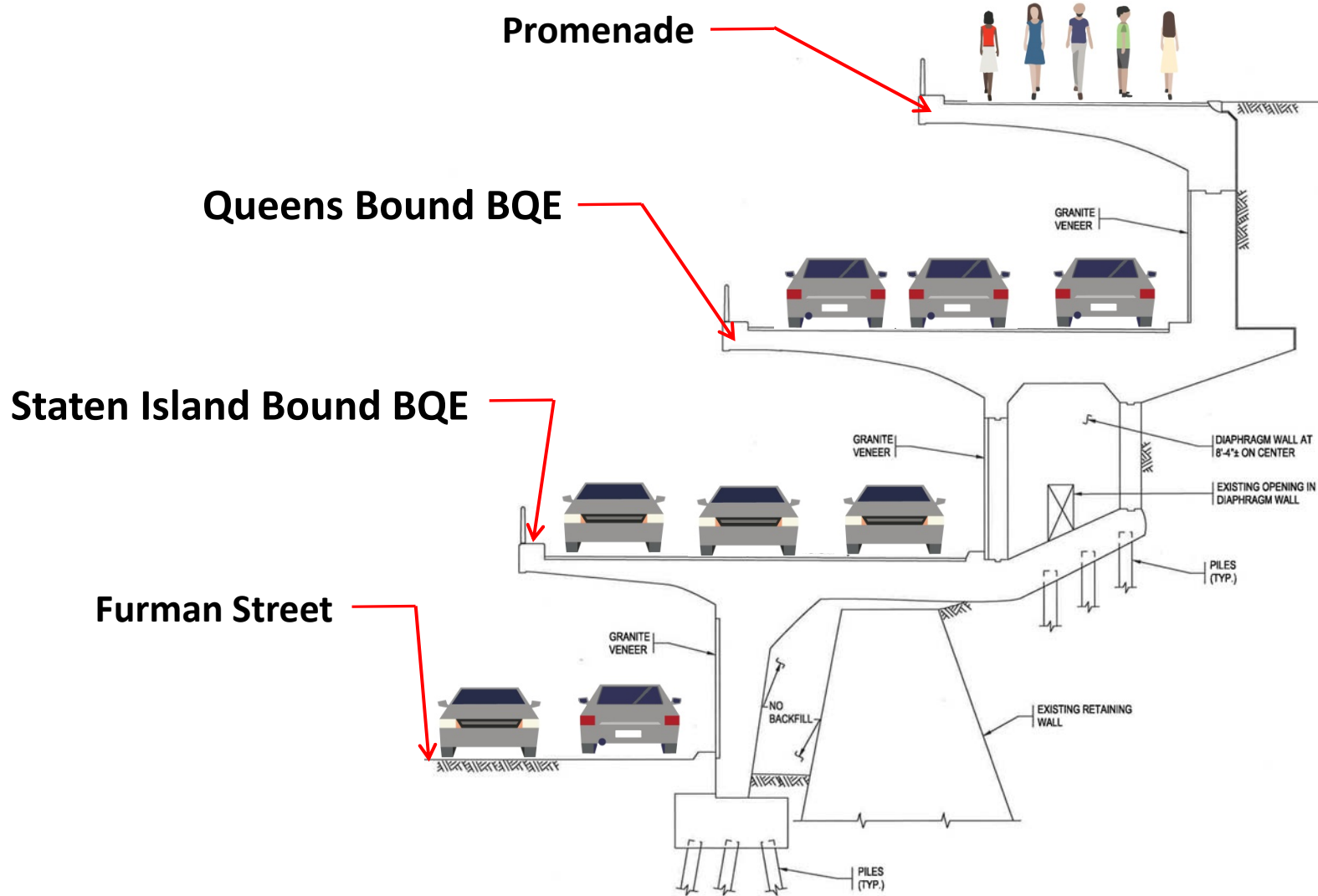


Joramelon St

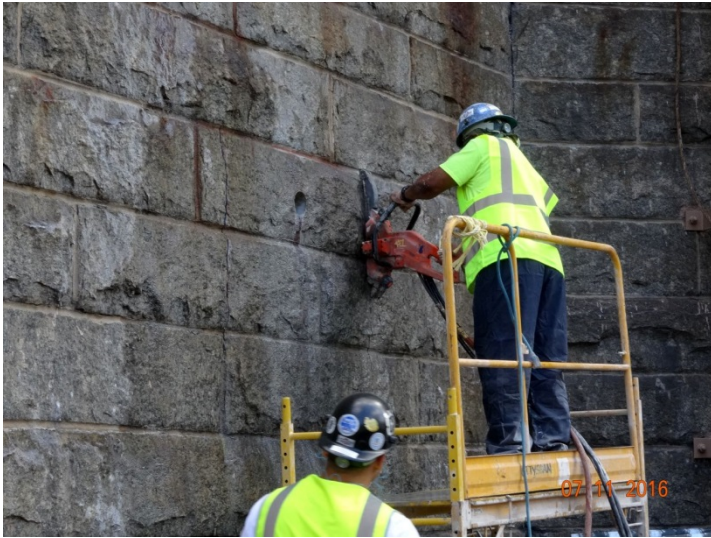


York St

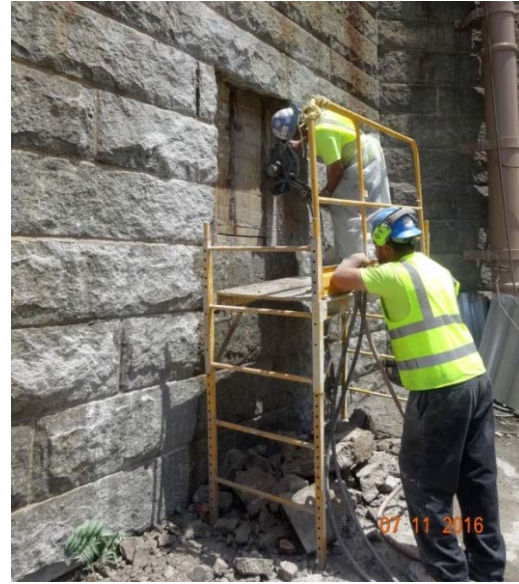
TRIPLE CANTILEVER



ACCESS INTO CANTILEVER - EXTERIOR



Removing Granite



Removing concrete for access



Access

ACCESS INTO CANTILEVER: INTERIOR



Underdeck looking upwards

Underdeck

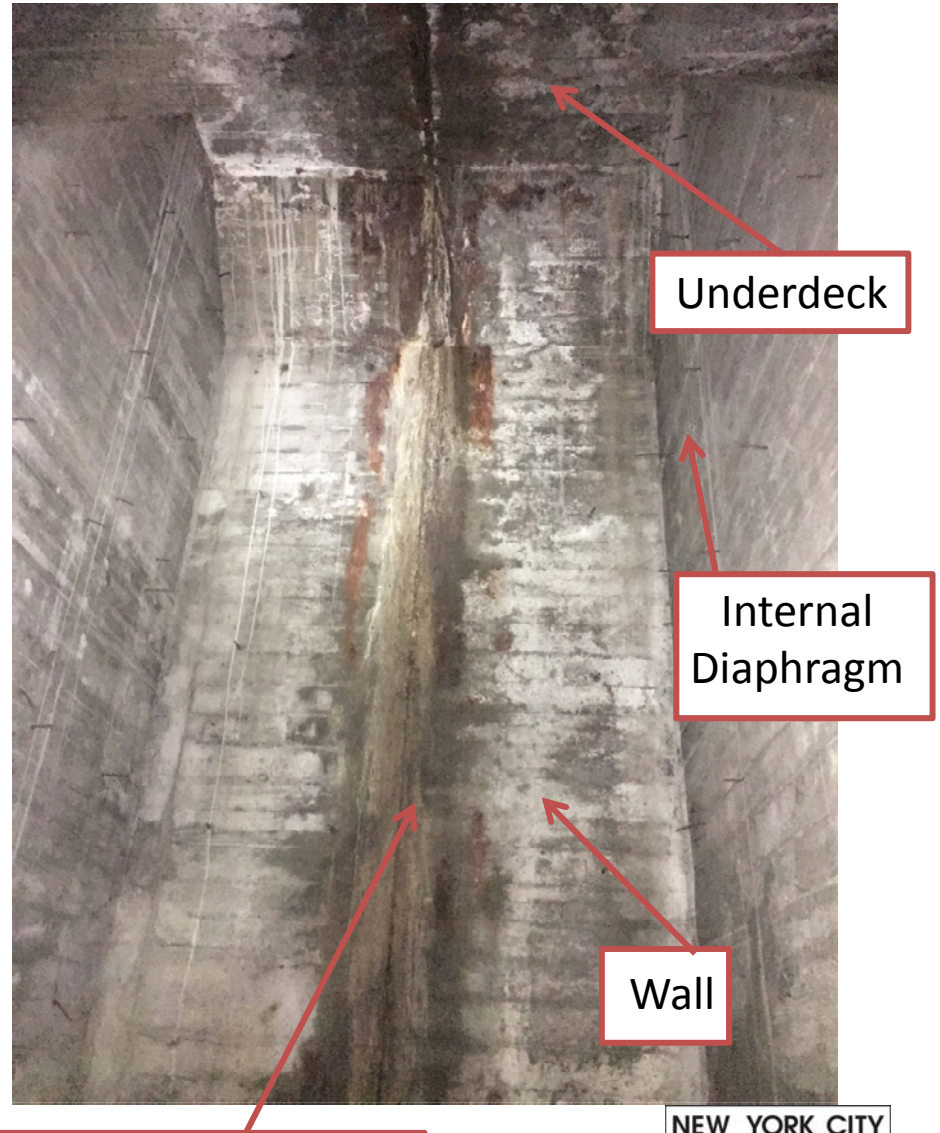
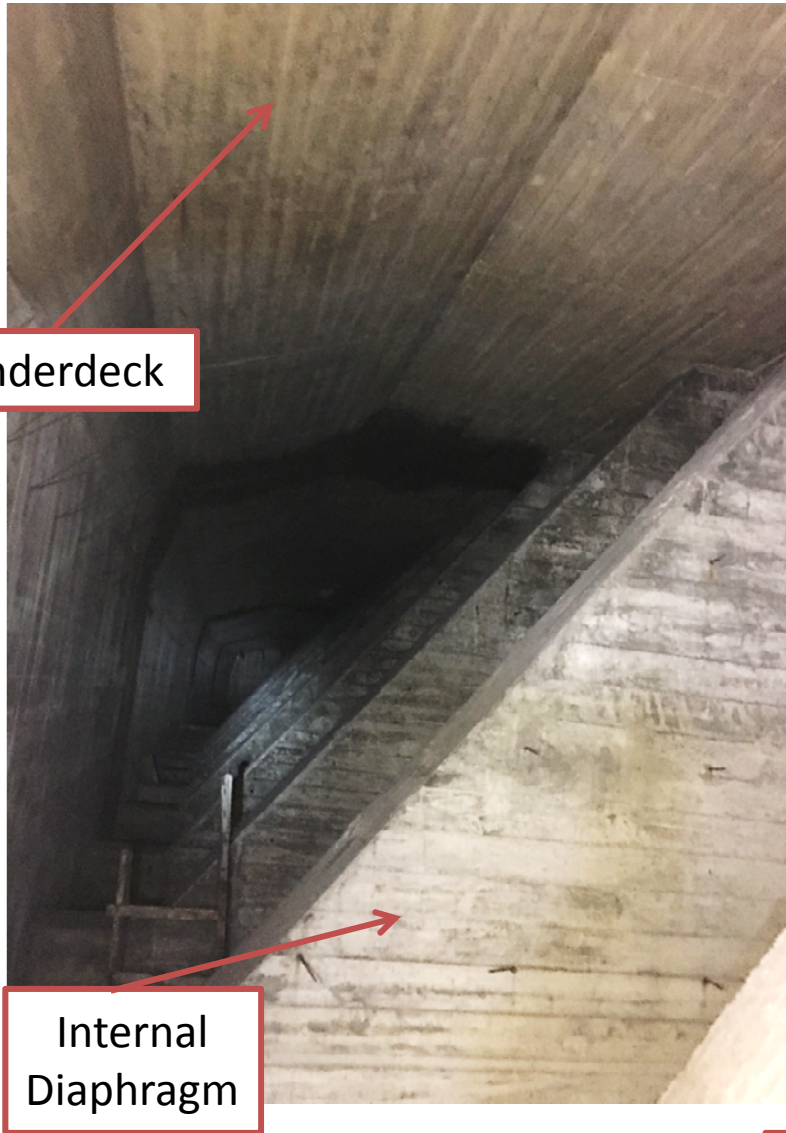


Formwork left in place



Transverse Access being created

ACCESS INTO CANTILEVER: INTERIOR



Typical Joint with Leakage

CANTILEVER— SUMMARY

Analysis findings:

Adequate Load Carrying Capacity

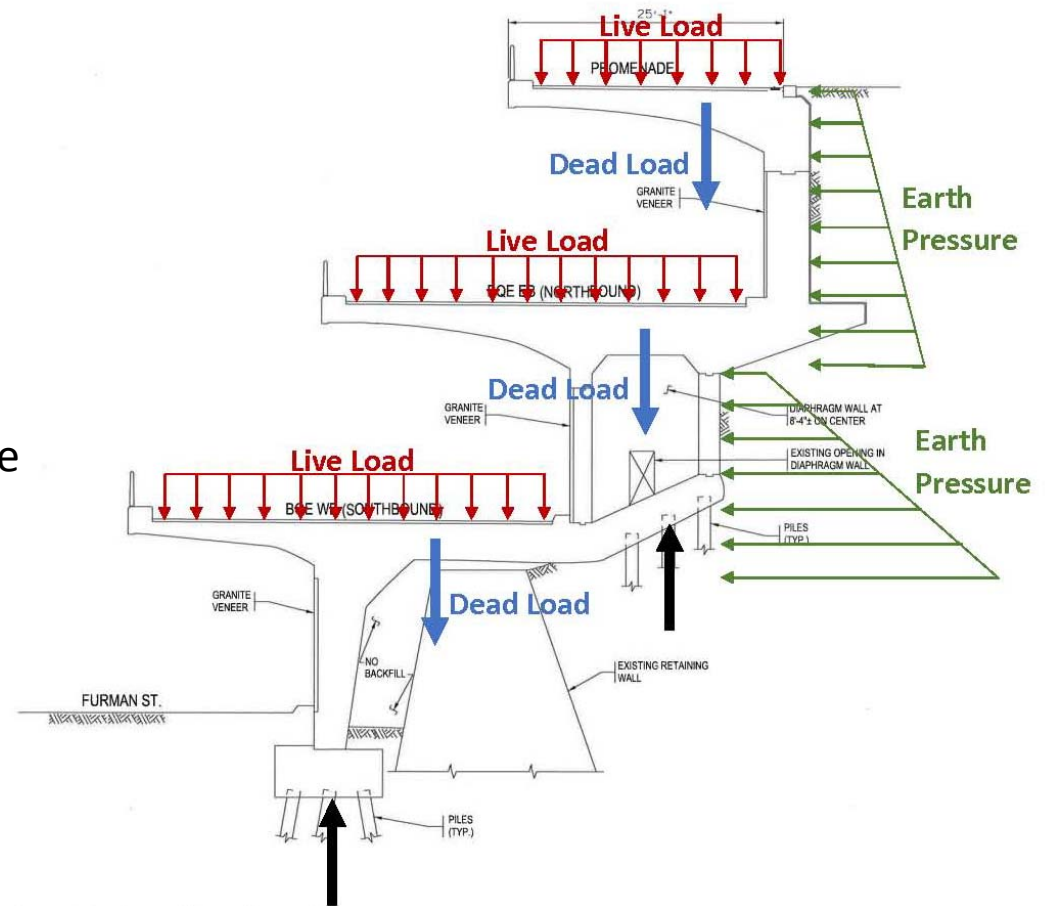
Leaking joints

Durability Results:

- High Chloride content
- Low freeze-thaw performance
- Cores indicate good strength

Live Load : Moving Loads

Dead Load: Permanent Loads



Triple Cantilever Global Force Diagram

INSPECTION SUMMARY

Inspection Findings

- No immediate safety issues
- Durability concern due to high chloride penetration and poor freeze thaw results
- Prevalent joint leakage
- Columbia Heights deck need monitoring
- Loss of façade exposes structure to the elements

Bottom line

- Condition slightly better than anticipated - concrete is good
- Rehabilitation/replacement project must begin now to ensure long-term safety and avoid service disruptions in the 10-12 yrs
- Inspection findings will provide design team with critical information

WHERE WE ARE NOW



- Consultant selection
- Inter-agency coordination with transportation partners
- Traffic data collection and modeling

TRAFFIC STUDY

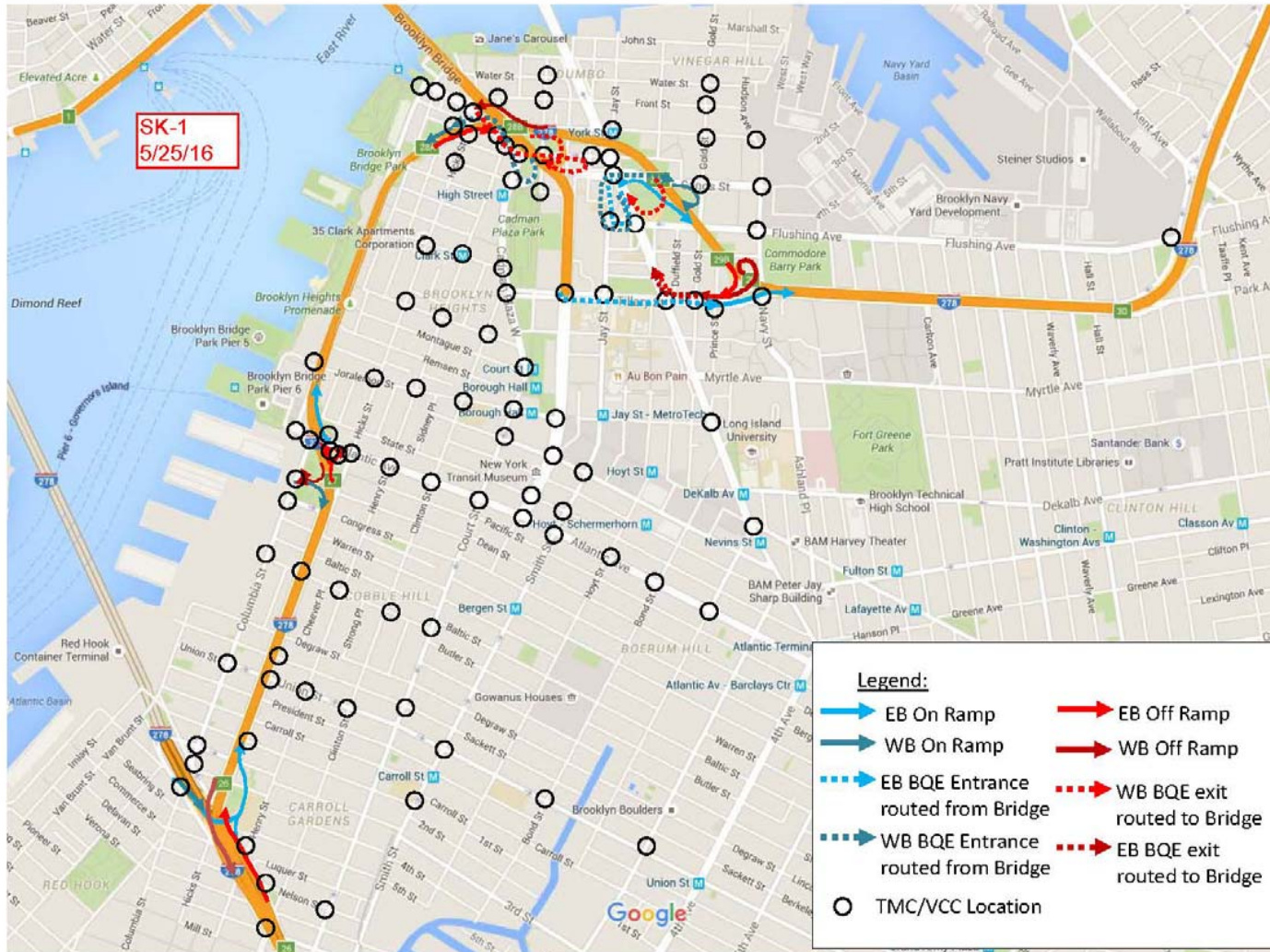
Project Area

- Detailed Data Collection of traffic patterns, lanes, signals etc.
- Provide baseline information for Design Team
- Thorough understanding of local traffic pattern
- Data collection on-going

Model Development

- Create model to reflect regional traffic pattern
- Combine data from above with other regional information
- Model will assist in decision making for construction staging and permanent configuration

TRAFFIC STUDY – PROJECT AREA

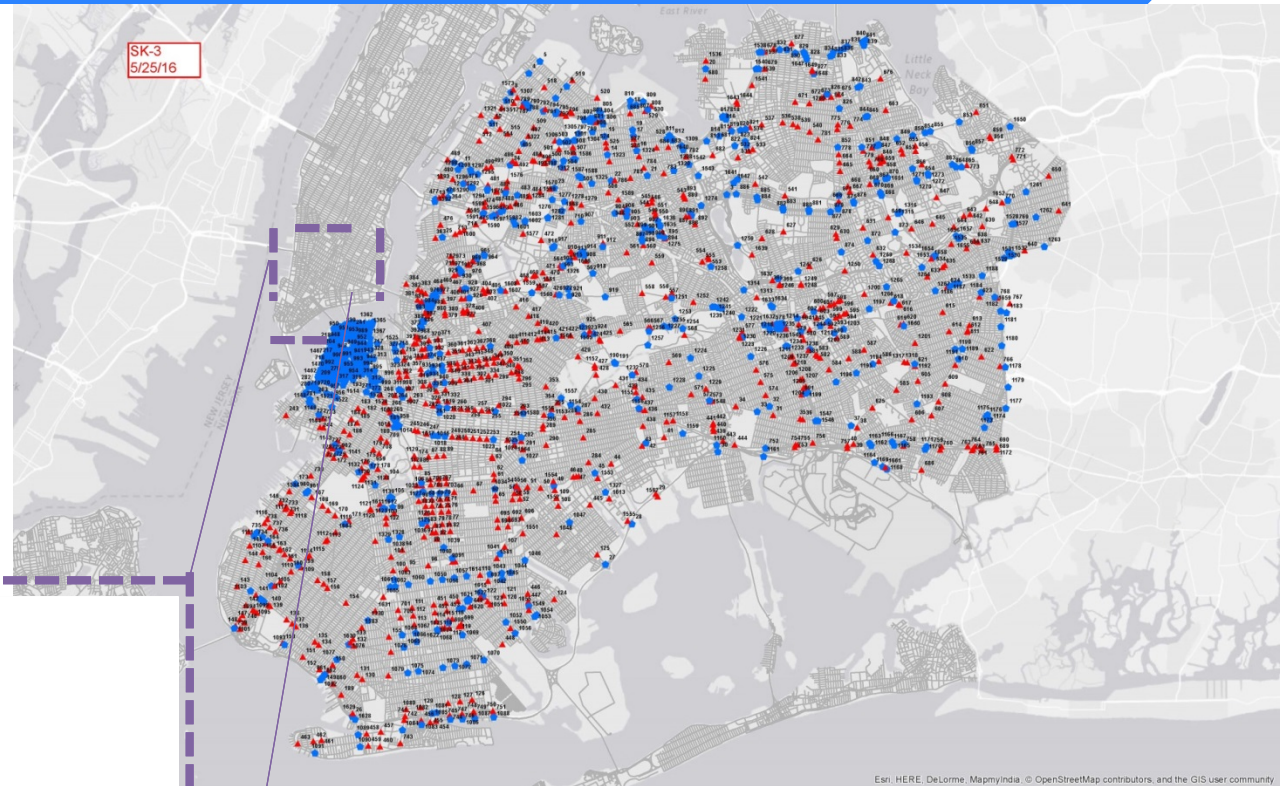


Detailed traffic data in project vicinity.

TRAFFIC STUDY - BROADER MODEL DEVELOPMENT

Compilation of data for regional model.

Similar to Manhattan (previously completed)

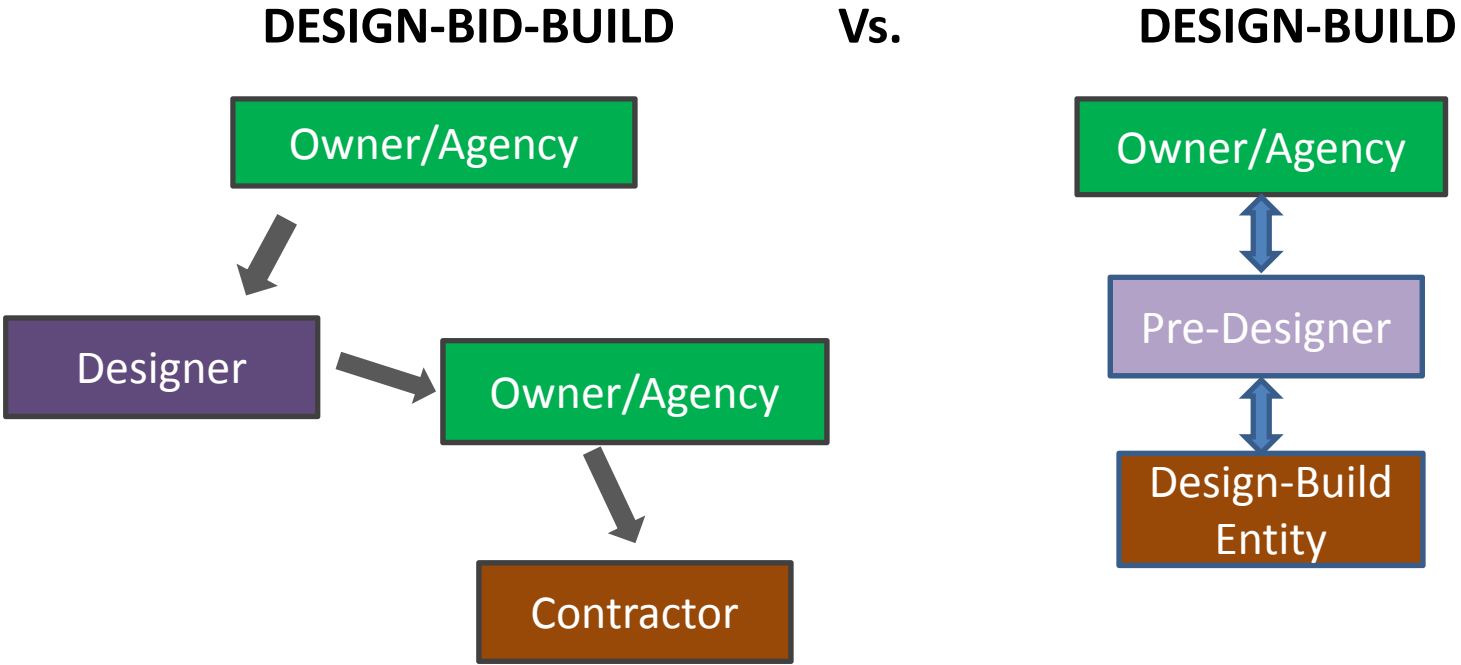


ANTICIPATED PROJECT DESIGN SCHEDULE

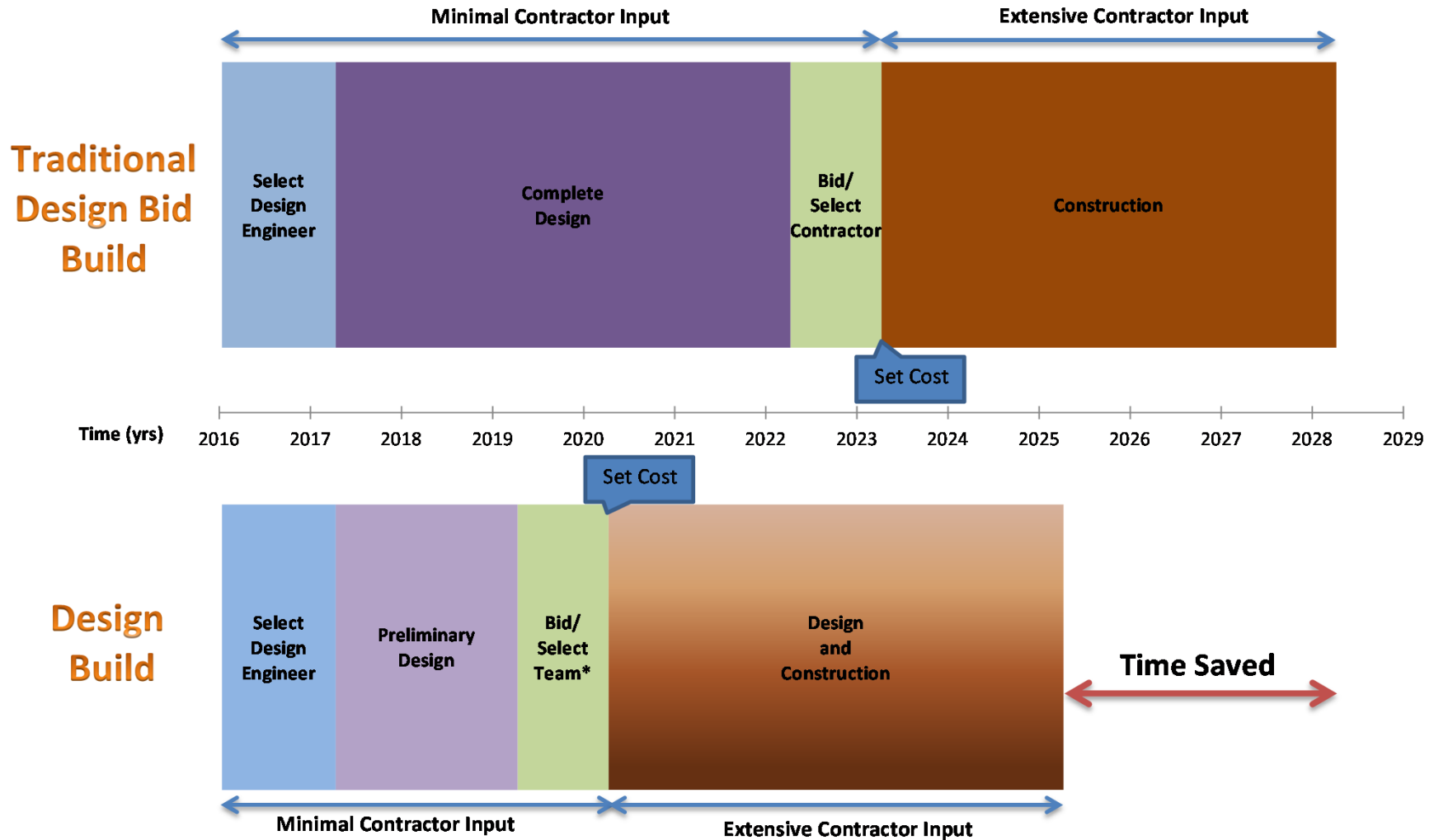
Design Proposals Review/Selection
Environmental Review/Design Start
Alternative Analysis/Draft EIS
Preliminary Design Completion

On-going
Early 2017
2018
2019

Decision Point – Design/Build or Design-Bid-Build



ANTICIPATED PROJECT SCHEDULE



*Team consists of Designer and Contractor



ELECTED SUPPORT

May 10, 2016

Commissioner Matthew J. Driscoll
New York State Department of Transportation
50 Wolf Road
Albany, NY 12232



Dear Commissioner Driscoll:

We write to ask that the State contribute 38% of the total estimated cost for the Brooklyn Queens Expressway (BQE) Bridge reconstruction project on Interstate 278 (I-278). This funding is necessary for the rehabilitation, reconstruction, and replacement of 1.5 miles of the BQE from Atlantic Avenue to Sands Street.

The BQE is a vital connection for the New York City metropolitan area, carrying more than 190,000 vehicles per day. The 1.5 miles between Atlantic Ave. and Sands St. is supported by 21 bridges and a 0.4 mile portion is comprised of a Triple Cantilever structure. According to NYCDOT, the total estimated cost of the project is \$1.7 billion. A 38% contribution would cover \$659 million of this cost. This contribution level would be consistent with what NYCDOT has said the State has traditionally funded for construction work on City-owned portions of the highway system in New York City, including the Belt Parkway over the Ocean Parkway project, and for protection of the FDR Drive against marine borers.

The City and State have already invested billions of dollars in other portions of the BQE, including the Kosciuszko Bridge. This section of the BQE, as described by NYSDOT, "is a critical link of I-278, which is the sole interstate facility in Brooklyn connecting the Robert Kennedy Memorial Bridge (previously named the Triborough Bridge), the Bronx and other points to the east, and the Gowanus Expressway, Staten Island, New Jersey and other points to the west." Comprehensive investment, including in this portion, is critical to ensuring the BQE can continue to serve New Yorkers as it has done for decades.

We believe the State should contribute to the cost for reconstruction of this portion of the BQE. Thank you for your attention to this matter. Please contact Senator Squadron's office at 718-875-1517 or squadron@nysenate.gov with any questions.

Sincerely,

Handwritten signature of Daniel Squadron in black ink.

Daniel Squadron
State Senator

Handwritten signature of Martin Malavé Dilan in black ink.

Martin Malavé Dilan
State Senator

Handwritten signature of Martin Golden in black ink.

Martin Golden
State Senator

Handwritten signature of Roxanne J. Persaud in black ink.

Roxanne J. Persaud
State Senator

Handwritten signature of Jesse Hamilton in black ink.

Jesse Hamilton
State Senator

Handwritten signature of Velmanette Montgomery in black ink.

Velmanette Montgomery
State Senator

Handwritten signature of Kevin Parker in black ink.

Kevin Parker
State Senator

Handwritten signature of Diane Savino in black ink.

Diane Savino
State Senator

Thank You!

For questions and concerns:

Email:

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BQE Triple Cantilever Project Update



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