Corridor Vision
Safety, Equity and Resiliency

Shaping a Vision
BQE Central Workshop #2

December 15, 2022
Interpretation is Available

Select the globe icon at the bottom of your screen for translation services.

Choose the screen bottom的地球图标获取翻译服务。

Seleccione el icono con el globo terráqueo en la parte inferior de su pantalla para servicios de traducción.
Agenda

1. Process Update
2. What Did We Hear from the Community?
3. Design Concept Considerations (5 mins)
4. Design Concepts (15 mins)
5. Q&A (20 mins)
6. Breakout Rooms (35 mins)
Process Update
**Project Timeline**

**BQE Central: Previous Events**

- **2022**: Intensive Monitoring
- **2023**: Span 4/34 Project
- **2024**: Urgent Repairs As Needed
- **2025**: Visioning
- **2026**: Approvals + Ongoing Engagement
- **2027**: Design-Build Procurement
- **2028**: Design and Construction + Ongoing Engagement
- **2029**
- **2030**
- **2031**
- **2032**

**Process Update**

**BQE Central Workshop 1**

**Thursday, October 13, 2022**

For Discussion Purposes Only – Subject to Change and Refinement
Project Timeline
BQE Central: Upcoming Events

- **2022**: Intensive Monitoring
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**BQE Central Workshop 1**
Thursday, October 13, 2022

**BQE Central Workshop 2**
Feedback on Initial Concepts
- **In-Person**
  - Tuesday, December 13, 2022
  - 6:30 PM to 8:30 PM
  - New York City College of Technology
  - 285 Jay Street, Brooklyn, NY 11201
- **Virtual**
  - Thursday, December 15, 2022
  - 6:30 PM to 8:30 PM

**BQE Central Workshop 3**
Further Refine Concepts
- **Virtual**
  - Tuesday, February 28, 2023
  - 6:30 PM to 8:30 PM
  - Details coming soon
- **In-Person**
  - Thursday, March 2, 2023
  - 6:30 PM to 8:30 PM
  - Details coming soon
Project Timeline
BQE Central: Upcoming Events

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<tr>
<th>Year</th>
<th>2022</th>
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WE ARE HERE
BEGIN EIS PROCESS & APPLY FOR GRANTS

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Initiate Environmental Review Process
& Apply for Grants
Spring 2023

There will be additinal community feedback throughout environmental review.
BQE Vision
Overview

For Discussion Purposes Only – Subject to Change and Refinement
Community engagement will guide Mayor Adams’ & DOT’s decisions about the future of the full Brooklyn BQE Corridor.
Who's Involved?

Community Visioning Council
... Guides the Engagement Process
Representatives from elected official offices, industry, small business organizations, civic and tenant associations, environmental justice and transportation advocates

Community Partners
... Help Lead Grassroots Engagement
Engagement resources for community based organizations, with meaningful community ties, demonstrated experience in mobilizing their constituencies, and specialty in multilingual capacity

Topical Working Groups
... Facilitate Focussed Discussions
Subject Matter Experts facilitate discussion around critical issues such as traffic, transportation, and logistics; open space, connectivity, and public realm; environmental justice, accessibility, and equity; and land use and economic development

Local, State, & Federal Agencies

For Discussion Purposes Only – Subject to Change and Refinement
What Did We Hear from the Community?
What Did We Hear?

What have we heard?

For Discussion Purposes Only – Subject to Change and Refinement
Throughout this process, we have heard...

Use this opportunity for a **visionary, forward-thinking project** for generations to come.

**Reconnect our communities and open space** in an accessible & resilient way.

**Reduce pollution, noise, and traffic and negative health impacts.**

**Reduce or obscure the physical presence of the BQE**, by covering the highway by capping, burying, tunneling, or removing the BQE and create new opportunities for open space

**Respect the historic** nature of the Promenade.

**Be very transparent** about the pros & cons of recommended design options.
At a high level, key takeaways included:

- Improve existing and facilitate new connections & access points to BBP, Brooklyn Bridge Park.
- Investment and improvement in nearby parks and open space are critical. Equity, sustainability, and resiliency must be central to planning.
- Reduce reliance on trucks. Shift freight activity to other methods. Explore solutions like making the BQE truck-only, tolling, and other demand management tools.
- Do not infringe on private property. Minimize impacts on local residences.
- Reducing conflicts and improve pedestrian & cyclist access to Brooklyn Bridge Park. Improve mobility & reduce vehicular reliance.
- Focus on noise mitigation during construction and permanently. Address vibrations from the BQE on residential buildings.

Community Feedback
Design Concept Considerations
Overview

Considerations

Explore

Review

Avoid

Tunnels & Open Space Connections
Effects on Public Property
Brooklyn Bridge Park Connections
Effects on Private Property
Promenade Configuration & View Shed
Fully or Partially Replace Retaining Wall

Roadway Width & Configuration
MTA Facilities
DEP Interceptor Sewer
Brooklyn Bridge Surface Connections
Manhattan Bridge to BQE
Atlantic Ave Interchange

For Discussion Purposes Only – Subject to Change and Refinement
Tunnels & Open Space Connections
(Definitions per National Fire Prevention Association)

Category X: < 300ft
Gateway Arch Park
St Louis, MO

Category A: 300 - 800 ft
The Presidio
San Francisco, CA

Category B/C/D: > 800 ft
Big Dig
Boston, MA
(Category X: < 300’)

* Through design and engineering studies, and with consideration for critical infrastructure, private property, fiscal responsibility, and life/safety requirements, we determined coverings of 300’ to be achievable and coverings of 300-800’ may be feasible but in need of additional analysis.
**Tunnels & Open Space Connections**

*(Category A: 300’ - 800’)*

*Through design and engineering studies, and with consideration for critical infrastructure, private property, fiscal responsibility, and life/safety requirements, we determined coverings of 300’ to be achievable and coverings of 300-800’ may be feasible but in need of additional analysis.*
MTA Facilities

Considerations

For Discussion Purposes Only – Subject to Change and Refinement
Considerations

Roadway Width and Configuration

• All of the concepts that we are showing use a roughly 40’ roadway cross section, which is the narrowest width for 2 lanes plus shoulder configuration. The shoulder could potentially also function as HOV or high-capacity transit lane at certain peak hours.

• At this time, we expect that the analysis typically required by Federal Highway Administration (FHWA) and New York State Department of Transportation (NYSDOT) will result in 3 lanes of traffic, and we wanted to ensure that the concepts that we develop and share for feedback are of adequate width to accommodate what we believe will be the result of findings by the state and federal government after environmental review. The concepts we are presenting are flexible and provide a flavor of what is possible.

• We also need to consider how limiting the roadway at this location could have upstream or downstream negative impacts on other communities for which we have empirical data. We have extensive data that shows since the narrowing to two lanes, truck traffic and congestion has risen in the neighborhoods along the BQE corridor, many of which are environmental justice communities that already suffer from generations of poor air quality, pollution, and excessive freight.

*Shoulder width will be determined during the design process based on constraints and safety.

*Text discussed at in-person and virtual meetings.
Overall Considerations

- Tunnels & Open Space Connections
- Roadway Width & Configuration
- Effects on Public Property
- MTA Facilities
- Brooklyn Bridge Park Connections
- DEP Interceptor Sewer
- Effects on Private Property
- Brooklyn Bridge Surface Connections
- Promenade Configuration & View Shed
- Manhattan Bridge to BQE
- Fully or Partially Replace Retaining Wall
- Atlantic Ave Interchange

For Discussion Purposes Only – Subject to Change and Refinement
Design Concepts
Our Process

1. Digested What We Heard
2. Evaluated a Variety of Options Against Our Considerations
3. Developed Focused Concepts
4. Reviewed and Tested Concepts with the Engineering Team & Revised in a Feedback Loop
5. Evaluated Each Option According to Our Considerations. Focussed on Equity & Ensuring Fiscal Responsibility
BQE Central Sub-areas

1. DUMBO & MANHATTAN BRIDGE PARKS
2. BROOKLYN BRIDGE & ANCHORAGE PLAZA
3. BROOKLYN BRIDGE & ADJACENT PARKS
4. TRIPLE CANTILEVER & FURMAN STREET
5. ATLANTIC AVE INTERCHANGE & VAN VOORHEES PARK

Design Concepts

For Discussion Purposes Only – Subject to Change and Refinement
Atlantic Ave Interchange & Van Voorhees Park
Atlantic Ave Interchange & Van Voorhees Park
What We’ve Heard

Design Concepts

SAFETY INFRASTRUCTURE FOR PEDESTRIANS AND CYCLISTS SHOULD BE ADDED ALONG ATLANTIC AVENUE

VAN VOORHEES PARK SHOULD BE JOINED TO CREATE A LARGER PUBLIC GREEN SPACE

THE INTERCHANGE CROSSING NEEDS IMPROVEMENT TO BE PEDESTRIAN FRIENDLY

RAMP INTERSECTIONS ARE DIFFICULT TO CROSS

For Discussion Purposes Only – Subject to Change and Refinement
Atlantic Ave Interchange & Van Voorhees Park

Design Concepts

- Vehicular Circulation
- Existing Cyclist Circulation
- Removed Vehicular Circulation
- Proposed Cyclist Connection
- Proposed Pedestrian Connections
Atlantic Ave Interchange & Van Voorhees Park
Concept 1
Atlantic Ave Interchange & Van Voorhees Park
Concept 2

Design Concepts

UPGRADED PLAYGROUND - 40,000 SF

UPGRADED SPRAY SHOWERS

ACTIVE COURTS

ENHANCED AREA 55,000 SF

NOISE BUFFER

MOST OF EXISTING TREE CANOPY MAINTAINED

For Discussion Purposes Only – Subject to Change and Refinement
Atlantic Ave Interchange & Van Voorhees Park
Concept 3
Design Concepts

Triple Cantilever & Furman Street
Design Concepts

Roadway Typologies - Potential Sections

- Triple Cantilever
- Stacked Above Street-Level
- Stacked At Street-Level
- Flat Above Street-Level
- Flat At Street-Level
- Flat Below Street-Level
Existing Conditions

1. COLUMBIA HEIGHTS
2. CLARK STREET FAN PLANT
3. TRIPLE CANTILEVER
4. JORALEMON
5. ATLANTIC AVENUE

For Discussion Purposes Only – Subject to Change and Refinement
Section Matrix - Triple Cantilever

Existing

Partial Replacement

Full Replacement

Flat Below Street-Level  Flat At Street-Level  Flat Above Street-Level  Stacked At Street-Level  Stacked Above Street-Level
Design Concepts

Triple Cantilever Concepts

Existing Condition

Roadway Structure

Potential Open Spaces

The Stoop

The Terraces

The Lookout
Design Concepts

**Triple Cantilever Concepts**

Design Studies (Ongoing)

- **The Stoop**
- **The Terraces**
- **The Lookout**
**Triple Cantilever Concepts**

- **The Terraces**
- **The Lookout**
- **The Stoop**
Design Concepts

The Terraces | Partial Replacement

For Discussion Purposes Only – Subject to Change and Refinement
The Terraces | Partial Replacement

Stacked Above Street > Flat at Street > Stacked Above Street
The Terraces - Elevation
Continuous Stack Above Street-Level

For Discussion Purposes Only – Subject to Change and Refinement
The Terraces - Elevation
Stacked to Stacked at Street-Level to Stacked Above Street-Level
Through design and engineering studies, we determined coverings of 300’ to be achievable and coverings of 300’-800’ may be feasible but in need of additional analysis. Concepts presented are for illustrative purposes only.
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The Terraces - Existing Conditions
Partial Replacement At Street-Level
The Terraces - Roadway Structure
Partial Replacement Above Street-Level
The Terraces - Roadway Structure
Partial Replacement At Street-Level
The Terraces - Potential Open Space
Partial Replacement Above Street-Level
The Terraces - Potential Open Space
Partial Replacement At Street-Level
Design Concepts

The Terraces - Design Studies
Partial Replacement At Street-Level
The Terraces - Design Studies
Partial Replacement Above Street-Level
The Terraces - Design Studies
Partial Replacement Above Street-Level
The Terraces - Design Studies
Partial Replacement Above Street-Level
The Terraces | Partial Replacement

For Discussion Purposes Only – Subject to Change and Refinement
The Lookout | Full Replacement

Stacked Above Street > Stacked Above Street > Stacked Above Street
The Lookout - Elevation
Continuous Stacked Above Street-Level

Design Concepts

For Discussion Purposes Only – Subject to Change and Refinement
The Lookout | Full Replacement
The Lookout - Existing Conditions
Full Replacement
The Lookout - Roadway Structure
Full Replacement
The Lookout - Potential Open Space

Full Replacement
The Lookout - Design Studies
Full Replacement
The Lookout - Design Studies
Full Replacement
The Lookout - Design Studies
Full Replacement
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The Lookout - Design Studies
Full Replacement

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Design Concepts

Avoid

For Discussion Purposes Only – Subject to Change and Refinement
The Stoop | Partial Replacement

Stacked Above Street > Flat Above Street > Stacked Above Street
The Stoop - Elevation
Stacked to Flat Above Street-Level to Above Street-Level

Design Concepts

1. COLUMBIA HEIGHTS
   - Stacked

2. CLARK STREET FAN PLANT
   - Flat Above Street-Level

3. TRIPLE CANTILEVER
   - Above Street-Level

4. JORALEMON ST

5. ATLANTIC AVE

For Discussion Purposes Only – Subject to Change and Refinement
Study

Note:

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The Stoop - Existing Condition
Partial Replacement
The Stoop - Roadway Structure
Partial Replacement
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The Stoop - Design Studies
Partial Replacement
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Design Concepts

Triple Cantilever Concepts

The Stoop

The Terraces

The Lookout

Design Studies (Ongoing)

TERRACES

ACCESS

HIGHWAY SCREENING

For Discussion Purposes Only – Subject to Change and Refinement
Columbia Heights
Existing Conditions

- HILLSIDE DOG PARK
- HARRY CHAPIN PLAYGROUND WILL BE REBUILT
- NON-ADA RAMP TO SQUIBB PARK
- CONSTRUCTION IN PROXIMITY TO 73-75 COLUMBIA HEIGHTS
- SQUIBB BRIDGE
- BROOKLYN HEIGHTS PROMENADE

For Discussion Purposes Only – Subject to Change and Refinement
Columbia Heights
Concept 1

Design Concepts

For Discussion Purposes Only – Subject to Change and Refinement
Columbia Heights
Concept 2

- Terrace Connection
- Sidewalk Enhancements
- Painted Basketball Courts
- Stair and Ramp Connection
- Stair Access and Seating Overlook
- New Program for Squibb Park?
- Sidewalk Enhancements
- Promenade Connection to Squibb Park via Landscaped Bridge

For Discussion Purposes Only – Subject to Change and Refinement
Columbia Heights
Concept 3

Design Concepts

NEWPLAZA
WATER PLAY
PROMENADE CONNECTION

NEW COMMUNITY PLAZA
ENHANCED PLAYGROUND
RAMP AND STAIR ACCESS
NEW PROGRAM FOR SQUIBB PARK?
PROMENADE TERRACE CONNECTION TO SQUIBB PARK

For Discussion Purposes Only – Subject to Change and Refinement
Design Concepts

Old Fulton, Brooklyn Bridge & Anchorage Plaza

For Discussion Purposes Only – Subject to Change and Refinement
Old Fulton, Brooklyn Bridge & Anchorage Plaza
What We’ve Heard
Old Fulton, Brooklyn Bridge & Anchorage Plaza
Concept 1
Old Fulton, Brooklyn Bridge & Anchorage Plaza
Concept 2
Old Fulton, Brooklyn Bridge & Anchorage Plaza
Concept 3

Design Concepts

For Discussion Purposes Only – Subject to Change and Refinement
Potential Areas for Porosity Below BQE
Design Concepts

Porosity Spectrum

Less

More
Dumbo and Manhattan Bridge Park
What We’ve Heard

- Currently underutilized parks could be joined to create larger green space
- Challenging pedestrian passage
- Lack of wayfinding
- Better pedestrian and bike infrastructure could be added

Design Concepts

Vehicular Circulation
Existing Cyclist Circulation
Design Concepts

Manhattan Bridge Parks
Concept 1

For Discussion Purposes Only – Subject to Change and Refinement
Manhattan Bridge Parks

Concept 2

Design Concepts

For Discussion Purposes Only – Subject to Change and Refinement
Manhattan Bridge Parks
Concept 2 - Vehicular Bridge

- Vehicular Circulation
- Existing Cyclist Circulation
- Proposed Cyclist Connection
- Proposed Pedestrian Connections
- Proposed Vehicular Bridge
- Proposed Pedestrian Priority
- Removed Vehicular Circulation

NEW CYCLIST CONNECTIONS TO MANHATTAN BRIDGE
DIRECT CONNECTION RELIEVES TRUCK TRAFFIC FROM LOCAL STREET
CREATE BETTER CONNECTION BETWEEN PARKS
Manhattan Bridge Parks
Concept 3

Design Concepts

EDUCATIONAL PROGRAMMING

INTERACTIVE ECOLOGICAL PROGRAMMING

UNDERPASS PROGRAMMING

NYCHA FARRAGUT HOUSES

EXISTING TRINITY PARK

FOREST BUFFER

BIKE RAMP

GATEWAY PLAZA

INTERACTIVE ECOLOGICAL PROGRAM

GATHERING SPACE

ACTIVE PROGRAM

COLUMNS UNDER ROADWAY IMPROVE CONNECTIONS

FLEX PLAZA

PEDESTRIAN ENHANCEMENTS

STREET WITH STORMWATER COLLECTION

Bicycle Pathway
Pedestrian Pathway

For Discussion Purposes Only – Subject to Change and Refinement
Q&A
Breakout Rooms
Breakout Groups Agenda

Explore design concepts by sub-area in greater detail

Provide input on each concept, including strengths, weaknesses, and additional ideas or opportunities

Discuss your priorities and questions for BQE Central overall
Workshop Community Agreements

Be on camera and audio if possible

Mute when you are not speaking

Share the air-time – make room for everyone to participate

Respect the diverse viewpoints and experiences in the group

Switch groups as much as you wish (15 min. recommended)
Breakout Group Areas

1. DUMBO & MANHATTAN BRIDGE PARKS
2. BROOKLYN BRIDGE & ANCHORAGE PLAZA
3. COLUMBIA HEIGHTS & ADJACENT PARKS
4. BROOKLYN TRIPLE CANTILEVER, PROMENADE & FURMAN STREET
5. ATLANTIC AVE INTERCHANGE & VAN VOORHEES PARK
Breakout Rooms Share-Out
Closing
Thank you!

To provide additional feedback on BQE Central, please visit https://bqevision.com/survey

Upcoming BQE Central Workshops

BQE Central Workshop 3 (virtual)
Tuesday, February 28, 2023
6:30 PM to 8:30 PM

BQE Central Workshop 3 (in-person)
Thursday, March 2, 2023
6:30 PM to 8:30 PM
Appendix
Impacts of Two-lane Conversion
Effect of Two-lane Conversion of Triple Cantilever

- After the two-lane conversion, comparative 2021 and 2022 DOT data show significantly decreased traffic speeds in all surrounding neighborhoods – some up to 30-50% – including in neighborhoods not adjacent to BQE Central.

- Bus speeds on local routes, including the B61, B63, and B57 declined by 5-10% compared to 2019.
Effect of Two-lane Conversion of Triple Cantilever

- We’ve witnessed and heard repeatedly from impacted communities that traffic has increased notably on local streets that were not designed to safely manage this volume of vehicles, especially trucks.
- This is not safe or sustainable for our neighborhoods, and while we pursue policy options to incentivize reduced car and truck travel, we need to keep trucks off our local roads.

Network Speeds: May 2022 vs. 2021
Additional Considerations
Effects on Public Property

Moved slide to Appendix to reduce presentation length

For Discussion Purposes Only – Subject to Change and Refinement
Brooklyn Bridge Park

Moved slide to Appendix to reduce presentation length

Considerations
Effects on Private Property

Moved slide to Appendix to reduce presentation length, graphic incorrectly identifies some properties as effected.

130 Pearl St
73 Columbia Heights
160 Columbia Heights *
130 Furman St.
360 Furman St.
20-28 Joralemon St *
1 Grace Court

* Disclaimer: these properties are connected with the BQE structure and are special cases for DOT.
Considerations

Joralemon & Furman St

Graphic is inaccurate, incomplete and confusing, slide eliminated

For Discussion Purposes Only – Subject to Change and Refinement
Promenade Configuration & View Shed

Moved slide to Appendix to reduce presentation length

For Discussion Purposes Only – Subject to Change and Refinement
Considerations

Fully or Partially Replace Retaining Wall

Moved slide to Appendix to reduce presentation length

For Discussion Purposes Only – Subject to Change and Refinement
Considerations

MTA Facilities at Clark St

Moved slide to Appendix to reduce presentation length. Graphics are inaccurate and incomplete.
Considerations

DEP Interceptor Sewer

Moved slide to Appendix to reduce presentation length

For Discussion Purposes Only – Subject to Change and Refinement
Brooklyn Bridge & Anchorage Plaza Surface Connections

Considerations

Moved slide to Appendix to reduce presentation length

For Discussion Purposes Only – Subject to Change and Refinement
Considerations

Moved slide to Appendix to reduce presentation length

Manhattan Bridge to BQE Connection

For Discussion Purposes Only – Subject to Change and Refinement
Considerations

Atlantic Ave Interchange

Moved slide to Appendix to reduce presentation length
BQPark Studies
**Existing Conditions**

**Bi-Level Above Grade**
1. Columbia Heights

**Triple Cantilever**
2. Clark Street

**Triple Cantilever**
3. Triple Cantilever

**Bi-Level Above Grade**
4. Joralemon

**Single Level Above Grade**
5. Atlantic Ave

Moved slide to Appendix to reduce presentation length
Moved slide to Appendix to reduce presentation length, leave more time to discuss feasible concepts. Roadway geometry in this configuration not feasible.

Note: BQP options were studied extensively, but deemed infeasible due to conflicts with MTA infrastructure, DEP infrastructure, private property, and existing building foundations.
BQP - Elevation
Stacked to Flat at Street-Level to Flat Below Street-Level

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Roadway geometry in this configuration not feasible.

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Avoid

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BQP - Potential Open Space
Full Replacement

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BQP - Design Studies
Full Replacement

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BQP - Design Studies
Full Replacement

Avoid

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BQP - Existing Condition
Avoid

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BQP - Potential Open Space
Partial Replacement

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BQP - Potential Open Space
Partial Replacement

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BQP - Design Studies
Partial Replacement

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Design Concepts

The Smile | Full Replacement

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The Smile - Existing Condition
Full Replacement
Note: In addition to the BQP, another concept, “The Smile,” was considered. This concept would avoid infrastructure conflicts at Joralemon St. and 360 Furman by maintaining a stacked configuration at the pinch points. However, this concept was deemed infeasible due to the transition lengths required to reach an at-grade configuration. Studies indicated that the resulting highway would come 9-10’ above Furman St. at their lowest point and would have no flat sections of single-level roadway. The driving experience would be substandard and have potential safety impacts in this configuration.

Moved slide to Appendix to reduce length, leave more time to discuss feasible concepts.

Roadway geometry in this configuration not feasible
The Smile - Potential Open Space
Full Replacement

Note: In addition to the BQP, another concept, “The Smile,” was considered. This concept would avoid infrastructure conflicts at Joralemon St. and 360 Furman by maintaining a stacked configuration at the pinch points. However, this concept was deemed infeasible due to the transition lengths required to reach an at-grade configuration. Studies indicated that the resulting highway would come 9-10' above Furman St. at their lowest point and would have no flat sections of single-level roadway. The driving experience would be substandard and have potential safety impacts in this configuration.

Moved slide to Appendix to reduce length, leave more time to discuss feasible concepts.
Roadway geometry in this configuration not feasible
Additions
Sectional Studies
Sectional Studies

Section Matrix - Joralemon St.

Moved slide to Appendix to reduce presentation length, leave more time to discuss feasible concepts. Several of these roadway configurations not feasible or have conflicts.
Moved slide to Appendix to reduce presentation length, leave more time to discuss feasible concepts. Several of these roadway configurations not feasible or have conflicts.

<table>
<thead>
<tr>
<th>Sectional Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Section Matrix - Columbia Heights</strong></td>
</tr>
<tr>
<td><strong>Existing</strong></td>
</tr>
<tr>
<td><strong>Partial Replacement</strong></td>
</tr>
<tr>
<td><strong>Replacement</strong></td>
</tr>
<tr>
<td><strong>Cut &amp; Cover</strong></td>
</tr>
<tr>
<td><strong>Single Level At-Grade</strong></td>
</tr>
<tr>
<td><strong>Single Level Above Grade</strong></td>
</tr>
<tr>
<td><strong>Bi-Level At-Grade</strong></td>
</tr>
<tr>
<td><strong>Bi-Level Above Grade</strong></td>
</tr>
</tbody>
</table>
Sectional Studies

Section Matrix - Triple Cantilever

Alternate slide was developed for greater clarity, slide eliminated from presentation.

Existing

Partial Replacement

Replacement

Cut & Cover  Single Level At-Grade  Single Level Above Grade  Bi-Level At-Grade  Bi-Level Above Grade

For Discussion Purposes Only – Subject to Change and Refinement
Moved slide to Appendix to reduce presentation length, leave more time to discuss feasible concepts. Several of these roadway configurations not feasible or have conflicts.
Joralemon Street
Pinch Point
Cut & Cover Studies
Note: Extensive studies of the Joralemon Street pinch point were conducted during the design process. These studies considered the potential for a cut-and-cover alternative from Joralemon Street to Atlantic Avenue. In all of these options, the roadway encounters significant infrastructure challenges, including DEP and MTA facilities, as well as conflicts with existing buildings and private property. Roadways were studied in both a two-lane and a three-lane configuration and in a full and partial replacement scenario, accounting for structural depth, safety features, sightlines, and the provision of on-off ramps, where existing.
Note: Extensive studies of the Joralemon Street pinch point were conducted during the design process. These studies considered the potential for a cut-and-cover alternative from Joralemon Street to Atlantic Avenue. In all of these options, the roadway encounters significant infrastructure challenges, including DEP and MTA facilities, as well as conflicts with existing buildings and private property. Roadways were studied in both a two-lane and a three-lane configuration and in a full and partial replacement scenario, accounting for structural depth, safety features, sightlines, and the provision of on-off ramps, where existing.

Moved slide to Appendix to reduce presentation length, leave more time to discuss feasible concepts. These roadway configurations are not feasible and have conflicts.
Note: Extensive studies of the Joralemon Street pinch point were conducted during the design process. These studies considered the potential for a cut-and-cover alternative from Joralemon Street to Atlantic Avenue. In all of these options, the roadway encounters significant infrastructure challenges, including DEP and MTA facilities, as well as conflicts with existing buildings and private property. Roadways were studied in both a two-lane and a three-lane configuration and in a full and partial replacement scenario, accounting for structural depth, safety features, sightlines, and the provision of on-off ramps, where existing.
Moved slide to Appendix to reduce presentation length, leave more time to discuss feasible concepts. Roadway geometry and dimensions do not match highway civil requirements.

Note: Above cut-and-cover configuration deemed infeasible due to conflicts with private property, existing buildings, and below-grade challenges.
Note: Above cut-and-cover configuration deemed infeasible due to conflicts with existing building foundations and below-grade challenges.

Moved slide to Appendix to reduce presentation length, leave more time to discuss feasible concepts. Roadway geometry and dimensions do not match highway civil requirements.
Note: Above cut-and-cover configuration deemed infeasible due to inadequate merging configuration, conflicts with existing building foundations, and below-grade challenges.

Moved slide to Appendix to reduce presentation length, leave more time to discuss feasible concepts. These roadway configurations not feasible to meet safety standards and have conflicts.
Note: Above cut-and-cover configuration deemed infeasible due to conflicts with existing buildings, private property, and below-grade challenges.

Moved slide to Appendix to reduce presentation length, leave more time to discuss feasible concepts. These roadway dimensions and have conflicts re: highway/civil safety standards.

Design Concepts

Joralemon Plan - BQP Full Replacement
6 Lane + Ramps

For Discussion Purposes Only – Subject to Change and Refinement
Moved slide to Appendix to reduce presentation length, leave more time to discuss feasible concepts.
Note: Above cut-and-cover configuration deemed infeasible due to conflicts with private property, and below-grade challenges.

Moved slide to Appendix to reduce presentation length, leave more time to discuss feasible concepts. These roadway configurations have no basis in analysis or design.
Note: Above cut-and-cover configuration deemed infeasible due to conflicts with private property, and below-grade challenges.

Moved slide to Appendix to reduce presentation length, leave more time to discuss feasible concepts. These roadway configurations have no basis in analysis or design.
Design Concepts

**Joralemon Section - 4 Lane**

Moved slide to Appendix to reduce presentation length, leave more time to discuss feasible concepts. These roadway configurations have no basis in analysis or design.

Note: Above cut-and-cover configuration deemed infeasible due to inadequate merging configuration, and below-grade challenges.
Above cut-and-cover configuration deemed infeasible due to conflicts with existing buildings, private property, and below-grade challenges.

Moved slide to Appendix to reduce presentation length, leave more time to discuss feasible concepts. These roadway configurations have no basis in analysis or design.
Moved slide to Appendix to reduce presentation length, leave more time to discuss feasible concepts. The roadway configuration and structural dimensions are inaccurate and do not represent actual analysis or design.
Triple Cantilever
Roadway Studies
Design Concepts

The Terraces | Partial Replacement

Moved Appendix to reduce presentation length
Moved slide to Appendix to reduce presentation length, roadway alignment appears inaccurate, general concept covered in other slides.
The Stoop | Partial Replacement

Moved slide to Appendix to reduce presentation length, roadway alignment appears inaccurate, general concept covered in other slides.
Single Level Above Grade Replacement

Moved slide to Appendix reduce presentation length, roadway alignment appears inaccurate, general concept covered in other slides.
Note: BQP options were studied extensively, but deemed infeasible due to conflicts with MTA infrastructure, DEP infrastructure, private property, and existing building foundations.

Moved slide to Appendix to reduce presentation length, roadway alignment determined to be infeasible.
Avoid

Note: In addition to the BQP, another option, “The Smile,” was considered. This option would avoid infrastructure conflicts at Joralemon St. and 360 Furman by maintaining a stacked configuration at the pinch points. This option was deemed infeasible due to the transition lengths required to reach an at-grade configuration. Studies indicated that the resulting highway would come 9-10’ above Furman St. at their lowest point and would have no flat sections of single-level roadway. The driving experience would be substandard and have potential safety impacts in this configuration.
Single Level At Grade Partial Replacement

Moved slide to Appendix to reduce presentation length, roadway alignment determined to be infeasible
Preliminary Risk Register Matrix (November 2022)
### Risk Register

**PRELIMINARY**

<table>
<thead>
<tr>
<th>ID</th>
<th>Category</th>
<th>Description</th>
<th>Budget</th>
<th>Project Limits</th>
<th>Grant Timeline</th>
<th>Condition Timeline</th>
<th>EIS Timeline</th>
<th>Litigation Risk</th>
<th>Direction to Consultants</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>DEP INTERCEPTOR</td>
<td>Shovel inhibitor</td>
<td>LOW</td>
<td>MODERATE</td>
<td>LOW</td>
<td>MODERATE</td>
<td>MODERATE</td>
<td>HIGH</td>
<td>HIGH</td>
</tr>
<tr>
<td>5</td>
<td>IMPACT ON PUBLIC PROPERTY</td>
<td>Connections to the park could impact ROW.</td>
<td>LOW</td>
<td>MODERATE</td>
<td>MODERATE</td>
<td>LOW</td>
<td>MODERATE</td>
<td>MODERATE</td>
<td>HIGH</td>
</tr>
<tr>
<td>6</td>
<td>IMPACT ON PRIVATE PROPERTY</td>
<td>Changes to elevations or access provide for greater flexibility in design concepts.</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
</tr>
<tr>
<td>7</td>
<td>BROOKLYN BRIDGE</td>
<td>Explore opportunities to improve at grade connections.</td>
<td>LOW</td>
<td>LOW</td>
<td>HIGH</td>
<td>LOW</td>
<td>HIGH</td>
<td>LOW</td>
<td>LOW</td>
</tr>
<tr>
<td>8</td>
<td>MANHATTAN BRIDGE</td>
<td>Manhattan Bridge to BQE direct connection</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
</tr>
<tr>
<td>9</td>
<td>ATLANTIC AVE. INTERCHANGE (as planned)</td>
<td>Direct connection from Promenade to BBP</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
</tr>
<tr>
<td>10</td>
<td>ATLANTIC AVE. INTERCHANGE (as planned)</td>
<td>Update interchange to address safety and operational changes</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
</tr>
<tr>
<td>11</td>
<td>2 Lane configuration</td>
<td>Structural width based on 2 lane configurations</td>
<td>MODERATE</td>
<td>HIGH</td>
<td>HIGH</td>
<td>MODERATE</td>
<td>MODERATE</td>
<td>HIGH</td>
<td>HIGH</td>
</tr>
<tr>
<td>12</td>
<td>Replacing or Maintaining Retaining Wall</td>
<td>Replacing wall allows more flexibility</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>HIGH</td>
</tr>
<tr>
<td>13</td>
<td>Covered Roadway Considerations</td>
<td>300’ of less covered sections</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
</tr>
<tr>
<td>14</td>
<td>Covered Roadway Considerations</td>
<td>Longer covered sections that would cause tunnel type conditions</td>
<td>HIGH</td>
<td>MODERATE</td>
<td>MODERATE</td>
<td>HIGH</td>
<td>MODERATE</td>
<td>HIGH</td>
<td>HIGH</td>
</tr>
<tr>
<td>15</td>
<td>Promenade Configuration &amp; Maintain the View Shaft</td>
<td>View shed is defined in current zoning, eliminate modification</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>HIGH</td>
</tr>
</tbody>
</table>

**Note:** During the design process, in October and November 2022, NYC DOT evaluated an overall “risk register” to determine which types of conflicts and considerations might have significant implications that would negatively impact the overall timeline of the project. Risks were determined as High, Medium, or Low. This process resulted in a set of general design guidelines provided to the design and engineering team.

Guidelines provided a framework for design and engineering. Nonetheless, roadway configurations that went beyond the risk register recommendations were studied extensively and explored by NYC DOT throughout the design process and will be appropriately reviewed during environmental approval process.
Constraints Study
Zoom-in
Moved slide to Appendix to reduce presentation length, leave more time to discuss feasible concepts. These roadway configurations have no basis in analysis or design.

For Discussion Purposes Only – Subject to Change and Refinement
Moved slide to Appendix to reduce presentation length, leave more time to discuss feasible concepts. These roadway configurations have no basis in analysis or design.
Moved slide to Appendix to reduce presentation length. Roadway geometry in this configuration not feasible.
The Smile | Full Replacement

Moved slide to Appendix to reduce presentation length. Roadway geometry in this configuration not feasible.
Moved slide to Appendix to reduce presentation length. Roadway geometry in this configuration not feasible.
For Discussion Purposes Only – Subject to Change and Refinement
Moved slide to Appendix to reduce presentation length. Roadway geometry in this configuration not feasible.
Interim Condition
Design Concepts

**Construction Process**

**Bypass or Diversion**

**Option 1: Continuous Traffic Diversions**

This option requires ongoing overnight closures and several weekend shutdowns. Wherever a temporary bypass is not used, overnight and weekend diversions will increase. Different areas of the triple cantilever can use different options.

**Option 2: Bypass**

This option requires building a temporary structure that reroutes traffic off the BQE to allow the BQE to be under construction. Any bypass would take around one year to build and be in service for two to three years, with less time for shorter segments.

Note: Construction phasing and staging alternatives were not studied during the concept development in preparation for NYC DOT’s December 2022 workshop. Construction phasing and staging, including potential trade-offs related to bypass structures or diversions, will be evaluated in greater depth and shared with the public in future workshops. Graphic below based on older studies, not directly relevant to current discussion.
Engineering Analysis
Single Level Cut and Cover to At-Grade to Bi-level Transition

Note: Engineering studies were conducted to determine potential feasibility of at-grade and cut-and-cover configurations of the BQE. At-grade and cut-and-cover options were deemed infeasible based on multiple conflicts and unsafe roadway curves.

Engineering analysis for review of certain concepts showing infeasibility

TO CLIMB 17° AT 5% GRADE = 340'
TO CLIMB 35° AT 5% GRADE = 700'

1700' TOTAL TO TRANSITION FROM SIDE TO SIDE AT GRADE TO FULLY STACKED

1000' TO HORIZONTALLY SHIFT 3 LANES SIDE BY SIDE TO STACKED

SIDE-BY-SIDE, 18.5' TUNNEL DEPTH
Note: Engineering studies were conducted to determine potential feasibility of at-grade and cut-and-cover configurations of the BQE. At-grade and cut-and-cover options were deemed infeasible based on multiple conflicts and unsafe roadway curves.
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SiBD ROADWAY MUST CLIMB AROUND 36' AT REACH EXISTING ELEVATION AT 1240 FURMAN AND ANOTHER 17' FOR EXISTING WALL HEIGHT. QB MUST CLIMB ANOTHER 18' TO CLEAR SIB ROADWAY (14.5' VERTICAL CLEARANCE AND 3.5' STRUCTURE DEPTH). SO QB MUST CLIMB A TOTAL OF 54'.

SIB ROADWAY NEEDS 1000' TO HORIZONTALLY SHIFT ALL 3 LANES FROM SIDE TO SIDE TO FULL OVERLAP WITH QB.

TO CLIMB 36' AT 5% GRADE = 720' TO CLIMB 54' AT 5% GRADE = 1080'.

For Discussion Purposes Only – Subject to Change and Refinement
Single Level Cut and Cover to Bi-level Transition

Note: Engineering studies were conducted to determine potential feasibility of at-grade and cut-and-cover configurations of the BQE. At-grade and cut-and-cover options were deemed infeasible based on multiple conflicts and unsafe roadway curves.
Single Level Viaduct to Stacked

Note: Additional engineering studies were conducted to determine potential feasibility of a single-level above grade structure (The Stoop).

Assume 80' side by side width (three 12' lanes in each direction, with 4' median wall width and 2' outer wall widths) 
(2'12')3 + (4') + (2'2') = 80'

Fully Stacked Bilevel

Existing available space = 75'
Minimum required side by side width = 82'
At least 106' with new interchange (additional one 12' acceleration lane in each direction)

25 Joralemon Street impacted by proposed BQE
Access impacted by relocation of Furman Street

SIB horizontal shift from side by side to overlap (1000' total for three lanes)

Note: For Discussion Purposes Only – Subject to Change and Refinement

PREPARED BY
ALTERED BY

TRIPLE CANTILEVER
DESIGN AT
TRIPLE CANTILEVER
NEW YORK, N.Y.

IN CHARGE
M.S.
DRFTER
V.K.

DESIGNER
S.S.
CHECKER
N.B.

LEGEND:

It is a violation of law for any person, unless they are acting under the direction of a licensed professional engineer, architect, landscape architect, or land surveyor, to alter an SDM in any way. If an item bearing the stamp of a licensed professional is altered, the altering engineer, architect, landscape architect, or land surveyor shall stamp the document and include the notation ALTERED BY followed by their signature, the date of such alteration, and a specific description of the alteration.

For Discussion Purposes Only – Subject to Change and Refinement

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Single Level Viaduct to Stacked

Note: Engineering studies were conducted to determine potential feasibility of a single-level above grade structure (The Stoop). These studies determined that a roughly 300’ portion of single-level roadway would be entirely flat at the location of the BBP Parking Lot.

For Discussion Purposes Only – Subject to Change and Refinement
Note: Additional engineering studies were conducted to determine potential feasibility of a single-level above grade structure (The Stoop).
Dumbo Cut and Cover From Fulton to Sand St

Note: A cut-and-cover scenario was explored north of the Brooklyn Bridge. This option was deemed infeasible due to conflicts with existing street connections and conflicts with existing MTA tubes.

Need Jeff Meyers’ traffic input on whether it’s feasible for local streets to handle the cutting of 5 streets. I assume Sands St and Old Fulton St will become a lot busier.
Dumbo Cut and Cover From Fulton to Sand St

Note: A cut-and-cover scenario was explored north of the Brooklyn Bridge. This option was deemed infeasible due to conflicts with existing street connections and conflicts with existing MTA tubes.
Dumbo Cut and Cover From Fulton to Nassau St

Note: A cut-and-cover scenario was explored north of the Brooklyn Bridge. This option was deemed infeasible due to conflicts with existing street connections and conflicts with existing MTA tubes.

Local Street Access Lost Due to BQE Transitioning To/From Cut and Cover (Pedestrian Access May Be Maintained Though Sets of Ramps and Stairs)

Need Jeff Meyers’ traffic’s input on whether it’s feasible for local streets to handle the cutting of 5 streets, I assume. Sands St and Old Fulton St will become a lot busier.
Dumbo Cut and Cover From Fulton to Nassau St

Note: A cut-and-cover scenario was explored north of the Brooklyn Bridge. This option was deemed infeasible due to conflicts with existing street connections and conflicts with existing MTA tubes.

NEED TO AVOID MANHATTAN BRIDGE FOUNDATIONS

FOR DISCUSSION PURPOSES ONLY – SUBJECT TO CHANGE AND REFINEMENT
Note: A cut-and-cover scenario was explored north of the Brooklyn Bridge. This option was deemed infeasible due to conflicts with existing street connections and conflicts with existing MTA tubes.
Landscape Bridge Studies
Note: Additional “Landscape Bridge” concept studies explored opportunities for more vertical open space transition directly from the Promenade to the berms in Brooklyn Bridge Park. Further studies of these options are being explored.
Transportation Network
Unverified data, to be discussed in the future

Transit Ridership Per Station

Legend
- Existing BQE
- Transit Ridership per Station
- Existing Pedestrian Connections
Bicycle Connections

Legend
- Existing BQE
- Existing Bike Lane
- Missed Bike Connections
- Citibike Station
- Existing Pedestrian Connections
Bus Routes
Traffic volumes reflect per hour vehicles for select on and off ramps from the BQE.

The Brooklyn Bridge off ramp at Cadman Plaza has approximately [DOT TO PROVIDE] vehicles exiting onto Cadman Plaza per hour.

DOT TO CONFIRM

Stale data to be discussed in the future with updated information

For Discussion Purposes Only – Subject to Change and Refinement