

## Narrative Summary of Constraints and Opportunities

Provided to the panel by NYC DOT

### What Makes the Project So Complicated?

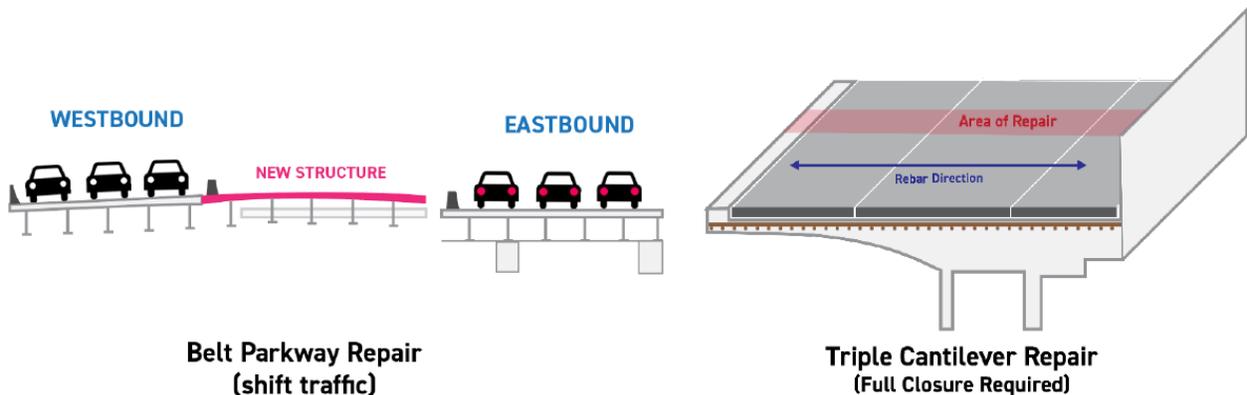
Fixing the BQE is exceptionally complicated due to its unusual design and the constrained site in which it operates. This corridor is sandwiched between Brooklyn Bridge Park, the Promenade and Brooklyn Heights, the Manhattan and Brooklyn Bridges, bustling DUMBO and Vinegar Hill, and an extraordinary volume of infrastructure below – four subway lines, an eight-foot DEP interceptor sewer, and many other utility lines. Creating sufficient space to stage the construction (e.g. to fit equipment like cranes and store materials) is a key challenge that any concept must address. Specifically, any construction concept needs to account for the complexities of working with a cantilever structure, building on or around Furman Street, the surrounding open spaces, and other infrastructure running above and below the BQE.

This part of the BQE corridor is also comprised of multiple structures that require different methods of rehabilitation or replacement. Although the triple cantilever is the most well-known portion of this project, the double cantilever and the bridges at Joralemon, Old Fulton, and Columbia Heights all require repair.

### Cantilever Considerations

A traditional bridge structure is usually rehabilitated lane-by-lane. Construction crews shut down a portion of the bridge, repair those areas, and then shift traffic to the rehabilitated section. This type of construction staging is not possible on the triple cantilever due to the unique nature of the BQE. Unlike a traditional bridge, which has multiple supports (girders) along the travel lanes below the roadway deck surface, the BQE is a single reinforced concrete structure with three cantilevers that support the promenade, Queens-bound traffic, and Staten Island-bound traffic. It also serves as a retaining wall for Brooklyn Heights.

Rebuilding cantilevers is difficult because each level of the cantilever is a deck anchored at only one end, and the system of roadways and retaining wall need to work together to remain stable. In order to maintain the structural integrity of the whole system, repairs must happen perpendicularly to the flow of traffic. Only small sections of the roadway can be removed at any time, and that the gap in the roadway will cross all lanes of traffic of the deck. For this type of work to occur without any kind of temporary bypass structure means extensive overnight and weekend closures, as well as a patchwork of steel plates covering the deck during the day.

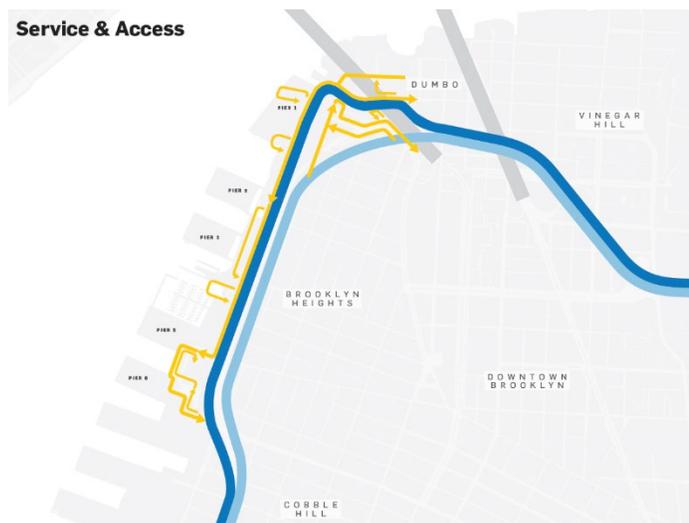


*Comparison of Tradition Bridge Repair vs Cantilever Repair*

### Furman Street

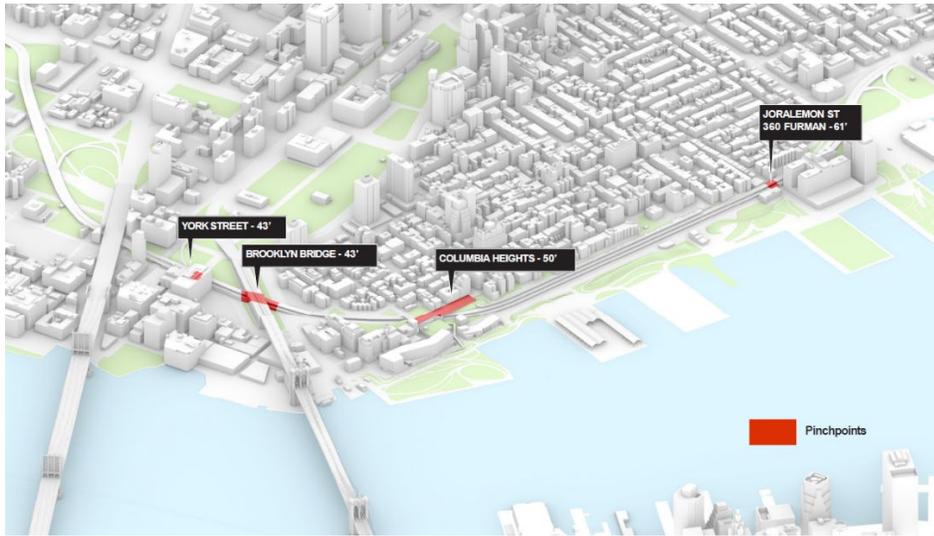
Furman Street is located under and adjacent to the BQE and serves as an access street for Brooklyn Bridge Park and nearby buildings. Different potential rehabilitation concepts explored alter Furman Street by decking over it, reducing it to one lane, or otherwise modifying its existing condition.

Additionally, the distance between the BQE and One Brooklyn Bridge Park, also known as 360 Furman—a 435-unit residential and commercial building on Furman Street at Joralemon Street—is a concern. The historic properties in Brooklyn Heights that are supported by the BQE retaining wall must also be protected.



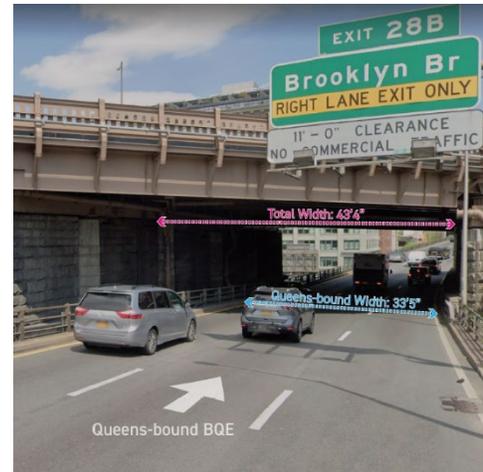
### Pinch Points

Although much of this project is focused on the numerous complications in the triple cantilever portion of the BQE, there are a number of pinch points north of the triple cantilever that make construction difficult. The BQE passes under Columbia Heights, the Brooklyn Bridge, and the Manhattan Bridge, creating substantial constraints in construction and configuration of the roadway.



In the case of Columbia Heights, the roadway is itself a bridge structure over the BQE. A portion of Harry Chapin Playground is also on top of the bridge. This portion of the BQE, including the Columbia Heights Bridge, must be completely replaced. Unlike along the triple cantilever portion of the BQE, there is no additional right-of-way to utilize during the construction process. This pinch point will require full weekend closures and regular nighttime closures to rebuild.

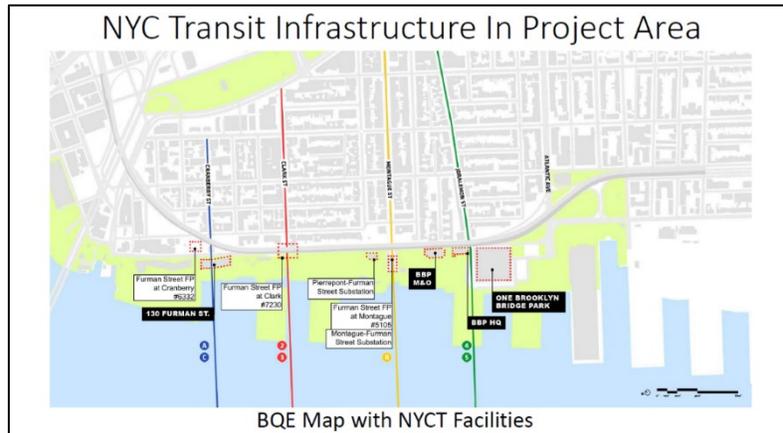
The points where the BQE crosses under the Brooklyn and Manhattan Bridges are also pinch points for this project. In both cases, there are height and width constraints that limit construction options. Numerous weekend closures and night work will be necessary at both locations if a bypass is unacceptable to the community.



### Other Corridor Infrastructure

Existing infrastructure is another major complication for the BQE project. Most subway lines travelling from Brooklyn to Manhattan pass through downtown Brooklyn and cross under the BQE. Within the triple cantilever section of the project, there are four New York City Transit (NYCT) tunnels running underneath the BQE:

- 4 and 5 trains at Joralemon Street;
- R trains at Montague Street;
- 2 and 3 trains at Clark Street; and
- A and C trains at Cranberry Street.



The F train also passes underneath the BQE slightly east of the triple cantilever section, but still within the project area. These tunnels have vents and other infrastructure such as substations within the project areas that add complexity to the project. Any modifications to these facilities represent a substantial undertaking from an engineering, cost, and subway operations perspective. For example, reconstructing the Clark Street vent building would cost hundreds of millions of dollars.

As planning for the BQE project progresses, it will also be important to study the proposed Brooklyn-Queens Connector (BQX) streetcar project. Although not immediately within the right-of-way of the BQE corridor, the two projects cross at Atlantic Avenue and Sands Street. The BQX may require changes to the lane configuration of the local streets, including where ramps connect to the BQE. The city will need to address these conflicting needs in the planning process to find a solution that works for both projects.



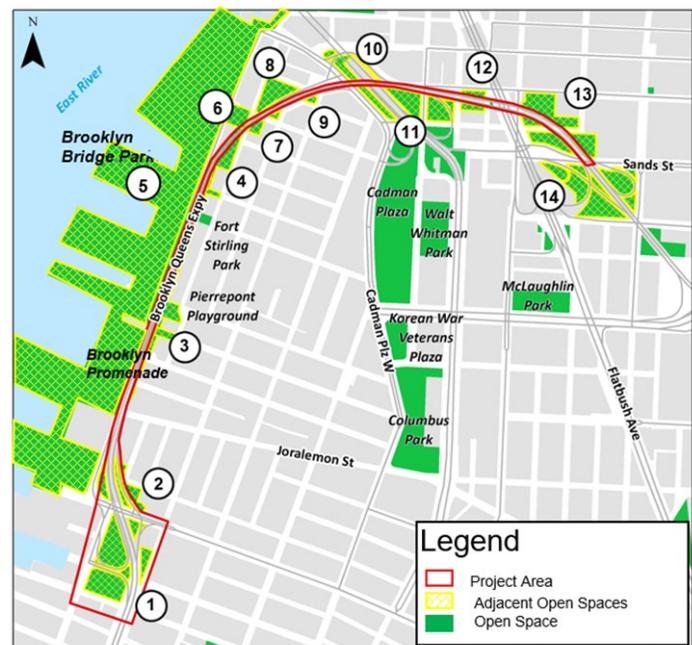
In addition to transit infrastructure, the New York City Department of Environmental Protection (NYC DEP) has infrastructure near or within the BQE right-of-way, most notably a 8-foot diameter sewer interceptor installed in the late 1980s. The interceptor runs underneath Furman Street, carrying approximately 50 million gallons of sewage per day from the surrounding neighborhoods to a treatment facility in Red Hook. Although the main access points for cleaning the interceptor are not located along the existing project right-of-way, NYC DEP needs access to the interceptor in case of emergency repairs.



### Open Spaces

There are numerous open spaces that are adjacent to the BQE and may need to be used for construction staging or storage during the project. Some permanent changes to enhance the space may require also require alienation. Any park closure of more than two years requires the approval of NYC City Council, the New York State Legislature, and the Governor.

1. Van Voorhees Park
2. Adam Yauch Park
3. Brooklyn Promenade
4. Fruit Tree Sitting Area
5. Brooklyn Bridge Park
6. Squibb Park
7. Harry Chapin Playground
8. Hillside Dog Park
9. Poplar St. Community Garden
10. Anchorage Plaza
11. Clumber Corner
12. Bar and Grill Park
13. Bridge Park
14. Trinity Park



### Neighborhood Issues and Opportunities

In the decades since the BQE’s construction, downtown Brooklyn has seen noteworthy expansion – commercially, residentially, and recreationally. Unfortunately, the BQE’s design has

created a regional structure that divides neighborhoods and often prevents pedestrian-friendly design and recreational accessibility. With the BQE project, the City has a rare opportunity to fix some of these issues.

### The Brooklyn Strand

In 2014, Mayor de Blasio’s administration and the Downtown Brooklyn Partnership advanced the Brooklyn Strand concept, intended to connect “Downtown Brooklyn to its waterfront through a reimagined series of disconnected parks, plazas, and greenways.” In the subsequent years, there has been piecemeal investments in portions of this plan, including investments in Cadman Plaza Park and funding through the Downtown Revitalization Initiative. Many of these connectors are within the BQE’s vicinity, and the Strand’s western terminus is Brooklyn Bridge Park.

### Brooklyn Bridge Park

The BQE directly abuts the 85-acre Brooklyn Bridge Park. The park has been exceedingly popular, with over five million annual visitors. The park is also home to a number of residential developments, a hotel, and commercial spaces, which provide the revenue for park upkeep and maintenance. As of 2018, the Park is largely built-out with a few outstanding plans. Of particular relevance to this project is the planned pool at Squibb Park, which is immediately adjacent to the Columbia Heights Bridge.

Though the park has some vehicular access points as well as ferry access, the vast majority of visitors are pedestrians. Access to the park is focused at Joralemon Street, Old Fulton Street, and Atlantic Avenue. There has long been interest in making Atlantic Avenue a more attractive corridor to enter the park, along with expanded connectivity from the central and northern portions of Brooklyn Heights, such as a Montague Street pedestrian bridge. Further, due to the number of people living, working, and visiting the park, ongoing emergency vehicular access is of critical importance.

### The Promenade

The Brooklyn Heights Promenade was built as part of the BQE construction project in the 1940s in response to community opposition to initial construction proposals. It is the top level of the triple-cantilever structure, and like the rest of the structure, requires repair. The Promenade has become an international landmark of New York City – visited by millions – and is renowned for its views of the lower Manhattan skyline, East River, Brooklyn Bridge, and Brooklyn waterfront. The substantial backlash against NYC DOT’s proposed elevated roadway concept highlighted the importance of the Promenade.

### Community Feedback

The panel as a whole conducted multiple sessions with community stakeholders, supplemented by elected official engagement and meetings between civic associations and the Chair directly. A number of specific concerns and thoughts were repeatedly articulated:

- **Preserving the Promenade:** As mentioned above, effects on the Promenade must be minimized, and a “Promenade highway” is unacceptable.

- **Minimizing construction disruptions:** Construction will disrupt local businesses, residents, and visitors; efforts should be made to minimize and mitigate those disruptions, both during planning and construction.
- **Preserving and improving parks:** Local parkland is a cornerstone of the community and must be preserved. Expanding access and improving park spaces should be goals of this project.
- **Traffic:** BQE traffic must not simply be diverted to local streets – demand management tools and other efforts should be part of the process.
- **Broad engagement:** It is important that viewpoints from north and south of the project area be considered, along with a recognition there are city-wide effects that must be considered.
- **Transparency:** Planning must engage community with stakeholder feedback and open communication lines throughout planning and construction.
- **Historic character:** Brooklyn Heights was the city’s first historic district, and is also home to a scenic view plane – planning must account for the neighborhood’s unique character.
- **Unification and planning for the future:** The project should seek to reconnect the neighborhoods split apart by the existing structure; planning should not be vehicle-focused, but instead look at current and future transportation goals, including improving transportation and connectivity.
- **Environmental effects and health:** Planning should seek to reduce any environmental and health issues associated with the BQE, both during construction and permanently.
- **Improving design:** The project should seek to rationalize on/off-ramps and the Atlantic Avenue Interchange. It should seek to minimize the vibrations felt by many local residents.