



composite rendering by Studio for Civil Architecture based on original rendering by M. Van Valkenburgh Assocs.

Brooklyn-Queens Expressway CONNECTOR at Brooklyn Bridge Park

BROOKLYN BRIDGE CONNECTOR



Site Plan

Composite aerial view of Brooklyn waterfront showing the proposed Brooklyn Bridge Connector (blue), the adjacent Brooklyn Heights Promenade, and the Brooklyn Bridge Park waterfront development, currently in first phase construction.

composite image by
Studio for Civil Architecture
Park site plan by
M. Van Valkenburgh Assocs.

BROOKLYN BRIDGE CONNECTOR

Project Mission

The Brooklyn Bridge Connector is conceived as a work of civic art whose purpose is to enhance the urban realm.

Problem to be Solved

The section of the heavily trafficked Brooklyn-Queens Expressway (BQE) that runs below the Brooklyn Heights Promenade generates substantial traffic noise (fig.1; audio clip at www.brooklynbridgeconnector.net). Until recently this condition has had limited negative impact on the surrounding area, since the adjacent waterfront has been largely industrial in use, while the canopy of the upper roadway forming the Promenade platform provides a modicum of sound attenuation to visitors above.

With the current development of the waterfront Brooklyn Bridge Park from north of Pier 1 to Pier 6, however, the issue of a continuous traffic roar measured as high as 85 decibels has become more pressing. Visitors to the proposed green space and recreational facilities underneath the roadway could be subject to unrelenting noise if the roadway is left open to the waterfront. Since one purpose of an urban park is to provide relief from the more physically grating aspects of city life, such an unmitigated condition would appear to threaten the essential viability of the venture.

Current Solution

Park officials retained noted landscape architect Michael Van Valkenburgh Associates in 2004 to design the new waterfront. His solu-

tion to the problem of BQE traffic noise is to erect a physical barrier between the elevated roadway and the landscaped areas below. A rendering of the proposed scheme suggests that part of the lower portion of the barrier is intended to function as bleacher seats, which would cleverly turn a necessity into a commodity (fig. 2). To reduce the apparent height of the barrier Van Valkenburgh plans to slope the terrain from the waterfront towards the BQE rather sharply, as indicated in other perspective renderings (fig. 3).

Nevertheless, such a solution - even one as elegantly resolved as Mr. Van Valkenburgh's - poses new problems. For instance, to effectively mitigate laterally transmitted sound a barrier must be higher than its source. This requirement puts the top of the proposed structure somewhere between thirty and fifty feet above street level, or the equivalent of up to five stories. Even after sloping the grade at a steep angle the remaining portion of the barrier will tower over residents in the park. It will simultaneously throw most of Furman Street (the grade level roadway under the BQE) into perpetual shadow while turning the space around that street into a cavernous and forbidding tunnel. One might also ask whether sloping the grade so sharply represents the optimal use of precious land area in a park with as little as 100 feet of depth in places. Perhaps most problematic of all, the overall height of the barrier and its tree canopy appear to cut off if not eliminate the view of the waterfront ground plane for persons standing on the Promenade - a fatal flaw in the design if so realized.



1 existing



2 current scheme looking north (M. Van Valkenburgh Assoc.)



3 current scheme looking southeast (M. Van Valkenburgh Assoc.)

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An Alternative Proposal

Rather than seek a solution to the noise problem generated by the BQE in the design of the park, why not seek a solution to the problem in the design of the BQE (fig. 4)?

The current earthwork is budgeted at \$7 million, but will probably cost much more. Our proposal eliminates this space-consuming, over-scaled and not inexpensive site feature by enclosing the BQE below the Promenade in a lightweight, attractive casing designed to absorb sound from within (fig. 5). Its curved profile would preserve uninterrupted landmarked views from the Promenade to the waterfront and city beyond.

Engineered as a modular system, much of the Brooklyn Bridge Connector could be economically fabricated off-site and then attached to the existing BQE structure. Its base would extend no farther than the curb of the existing sidewalk, thereby maintaining outdoor pedestrian access along the park edge and freeing up precious parkland for more varied uses.

Contextualism guides the design. Slender interior steel arches at once recall the graceful structural web of the nearby Brooklyn Bridge while providing the framework for a translucent and acoustically isolating shell encasing the stacked roadways. An outer shell composed of photovoltaic cells would convert daylight into power for interior lighting. At night the soft, continuous glow of the roadway will make it an instant landmark among its surroundings, and a beacon for a revitalized Brooklyn Bridge waterfront (fig. 6).

Project Coordination

The timing of this proposal is propitious. Long overdue repairs to the half-mile long cantilevered section of the BQE, built in 1954 and incorporated in the Federal interstate highway system as Interstate 278 in 1958, are scheduled for 2018. The scope of work includes expanding lanes, raising truck clearances and shoring up the aging span. Planning and execution of the Brooklyn Bridge Connector could well be fitted within this period. By replacing the current earth and wall scheme for the Connector, the extent of site work required for building out the Park could be significantly reduced, thereby lowering costs and further ameliorating schedule. Finally, New York City could set the standard for satisfying President Obama's clarion calls for green jobs and judicious investments in public infrastructure.

Links to Further Information (click on URL)

History of BQE

http://www.nycgovparks.org/sub_your_park/historical_signs/hs_historical_sign.php?id=11721

Brooklyn Bridge Park

<http://www.brooklynbridgeparknyc.org/>

<http://www.brooklynbridgepark.org/>

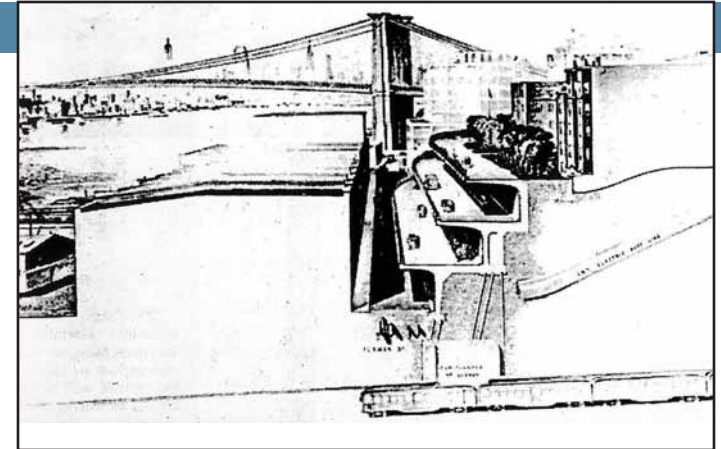
<http://www.empire.state.ny.us/BBPDC/>

<http://www.mvvainc.com/index.php#/PROJECTS/7/89/>

Issues

<http://cobblehillassociation.blogspot.com> (Click on 'November 2008 / Brooklyn Bridge Park: Send a letter soon')

http://www.brooklynpaper.com/stories/31/42/31_42_sp_furman.html



4 section of BQE



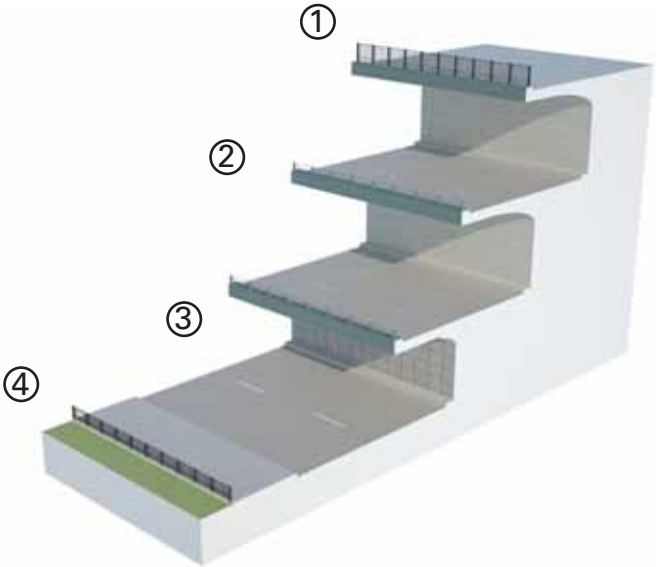
5 proposed Connector looking north (composite image)



6 aerial view of proposed waterfront (BBP Development Corp.)

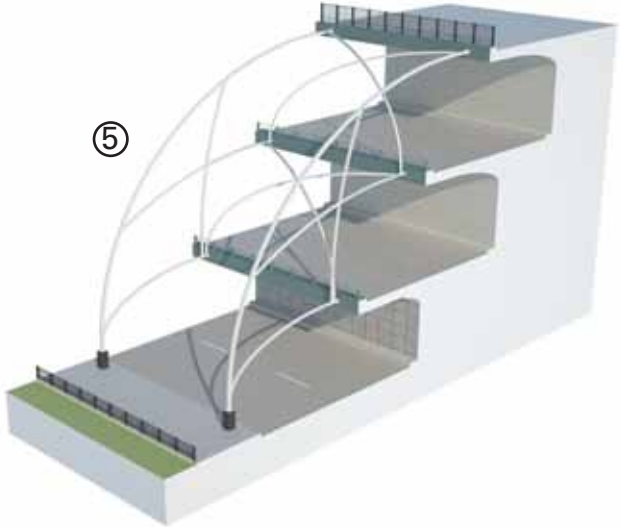
BROOKLYN BRIDGE CONNECTOR

ROADWAY

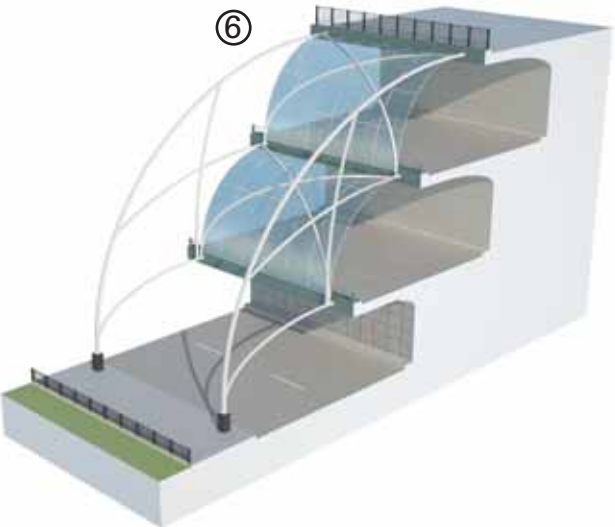


- ① Brooklyn Heights Promenade
- ② BOE
- ③ Furman Street
- ④ Edge of Brooklyn Bridge Park
- ⑤ Steel arches

STRUCTURE

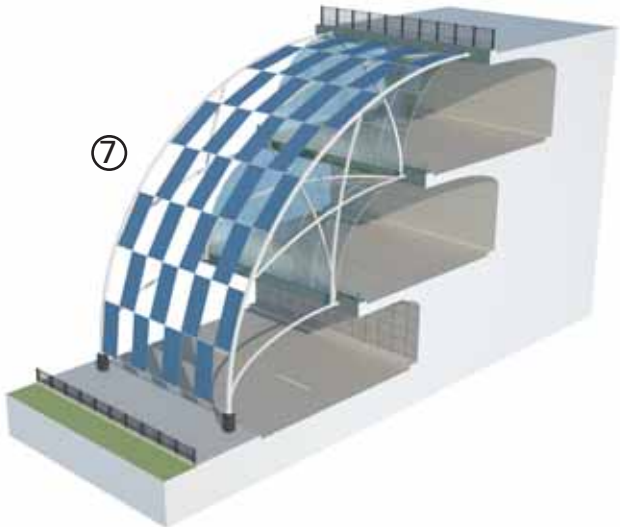


ACOUSTICAL BARRIER



- ⑥ Translucent sound barrier shells
- ⑦ Photovoltaic fabric canopy

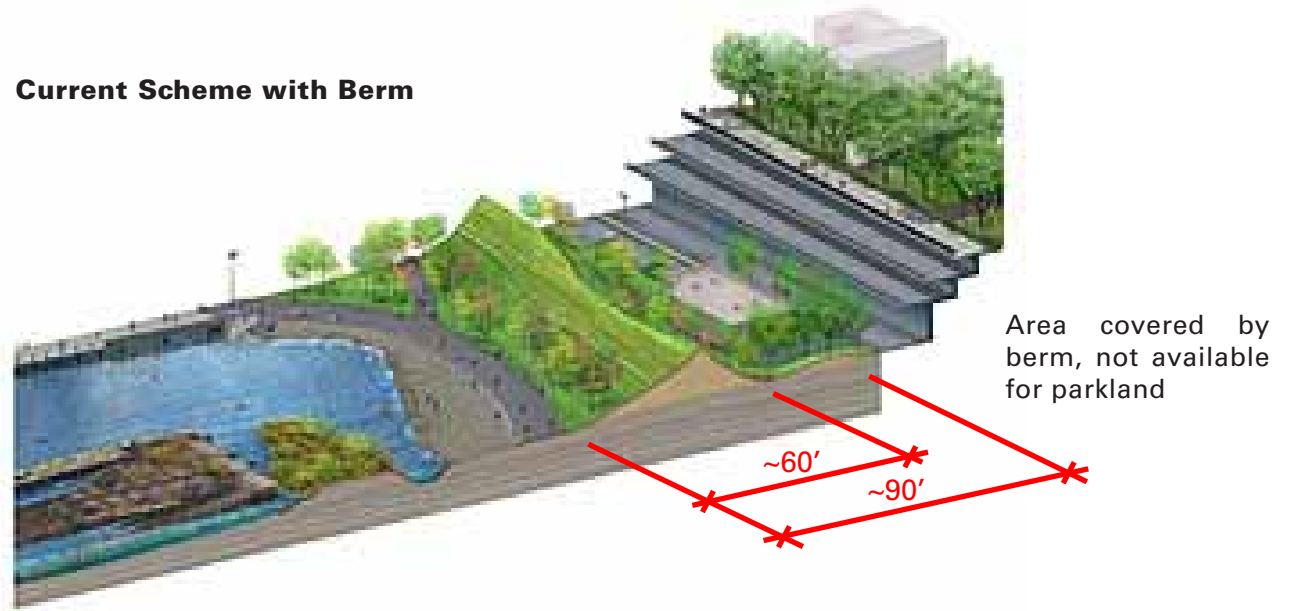
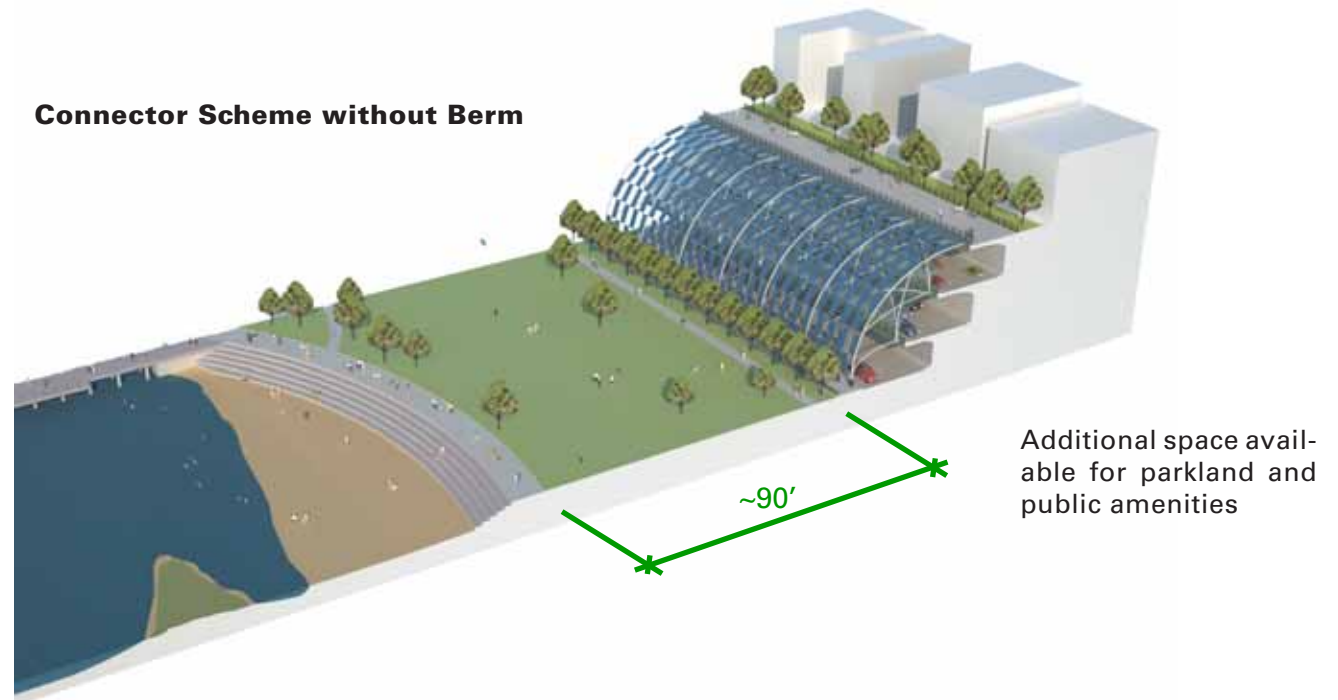
SOLAR CANOPY



BROOKLYN BRIDGE CONNECTOR

Capturing More Open Space

The construction of the Brooklyn Bridge Connector eliminates the need for the earthen berm proposed for Brooklyn Bridge Park, thus opening up significant amounts of parkland for a wider range of public amenities.

Current Scheme with Berm**Connector Scheme without Berm**

BROOKLYN BRIDGE CONNECTOR

Sound Attenuation

Traffic noise from the BQE at the Brooklyn Bridge Park measures approximately 85dB. It has been suggested that the proposed earthen berm would reduce noise levels to 70dB. However, the berm is intermittent, providing acoustical protection only at certain points along the park. In addition, any reduction is limited to the west side of the berm, leaving the area between the BQE and the berm, as well as the Brooklyn Heights Promenade, acoustically unprotected.

The Connector extends along the entire length of the BQE, providing more complete sound attenuation for much larger sections of the park at piers 2 through 5.

Rather than attempting to address traffic noise in the park, the Connector decreases noise at the source by encasing the roadways of the BQE in translucent acrylic shells.

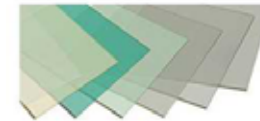
With a weight of 3-4 psf, it is possible for the shells to reduce noise in the park and on the promenade by at least 20 dB. Noise at the open ends of the Connector can also be greatly reduced through the installation of sound-absorbing boards on the walls of the existing concrete structure.

Material Options:

Sound Baffling Acoustical Shells:

PALGLAS

www.palram.com

**Features and Benefits**

- Over 90% Light Transmission
- Inherently UV Resistant
- Stronger Than Glass
- Lightweight
- Easily Formed or Fabricated
- Easy to Mount
- Good Chemical Resistance
- Good Thermal Insulation

Overview

PALGLAS is an extruded acrylic sheet manufactured by Palram Industries in Israel and the United Kingdom. PALGLAS is more transparent than glass. Its inherent UV resistance makes it ideal for outdoor applications. PALGLAS sheet can be formed, shaped, sawed and drilled.

Typical Applications

- High traffic acoustic barriers
- Lightweight high clarity glazing
- High gloss and transparent Fabricated items
- Light fixtures
- Three dimensional signage
- Commercial dispensers

Photovoltaic Skin:

POWERFILM

www.powerfilmsolar.com

Solar panels manufactured on a flexible, thin plastic substrate resulting in panels that are much thinner and more lightweight, flexible and durable than rigid crystalline panels. This technology allows for simple, robust, low cost building installations.





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composite image by Studio for Civil Architecture
from rendering by M. Van Valkenburgh Assocs.

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