Resiliency: Continuous Flood Barrier
Potential Connections with Big U

CONCEPT DESIGN: 3 ALIGNMENTS

EDGE
LEVERAGES WATERFRONT
~95% PROJECT AREA PROTECTED

UPLAND
LEVERAGES PUBLIC RIGHT OF WAY
~75% PROJECT AREA PROTECTED

HYBRID
LEVERAGES EXISTING OPEN SPACE
~85% PROJECT AREA PROTECTED
Battery Park City Authority: Wagner Park

Flood Barrier Coordination w/ Lower Manhattan Coastal Resiliency

Customs House

State Street

The Battery

Hudson River Greenway

The Ritz Carlton

Pier 1

Wagner Park

Museum of Jewish Heritage

Battery Place
Lower Manhattan Overview: Site Analysis

High Points
• Rector Park (~15 ft)
• Charging Bull (~18 ft)

Low Points
• Battery Park Underpass (~ -10 ft)
• Hugh L Carey Tunnel (~ -10 ft)
• West St / Route 9A Acts as channel (~4 – 8 ft)
Proposed Barrier Alignment

BFE 16.5’EL

Extends to high point at Charging Bull

Length = ~1,100 FT

Tie in @ highpoint 16.5’EL creating standalone BPCA resilient project
Wagner Park Operable Flood Protection Barrier Subsurface Study
BATTERY PARK CITY AUTHORITY: WAGNER PARK


2. ELEVATIONS SHOWN REFER TO BOROUGH PRESIDENT OF MANHATTAN DATUM, WHICH IS 2.75 FEET ABOVE MEAN SEA LEVEL AT SANDY HOOK, NEW JERSEY (NGVD).

3. AS DRILLED BORINGS, DUTCH CONE, AND TEST PITS TP-3 THROUGH TP-5 WERE PERFORMED IN JULY AND AUGUST, 1981. H. GREENSPAN ASSOCIATES' LOCATIONS AND ELEVATIONS OF TP-1 THROUGH TP-4 ARE APPROXIMATE.

4. BORINGS AND DUTCH CONE PENETRATION TESTS WERE PERFORMED IN JULY AND AUGUST, 1981, UNDER THE CONTINUOUS INSPECTION OF MRCE.

5. TEST PITS WERE PERFORMED IN MAY AND JULY 1991. TEST PITS WERE PERFORMED FOR HORTICULTURAL TESTING AND WERE INSPECTED BY CHARLES STRAUSS. TEST PITS WITH DENSITY TESTING WERE INSPECTED BY MRCE.

**PLAN LEGEND**

- 1-1/2" DIAMETER DRY SAMPLE BORING
- 1-1/2" DIAMETER UNDISTURBED SAMPLE BORING
- DUTCH CONE TEST
- TEST PIT WITH DENSITY TESTING
- TEST PIT INSPECTED BY CHARLES STRAUSS - HORTICULTURAL CONSULTANT

BATTERY PARK CITY AUTHORITY
NEW YORK, NEW YORK

SOUTH PARK AT BATTERY PARK CITY
NEW YORK

KSE MRCE ARUP PERKINS EASTMAN

Battery Park City Authority: Wagner Park
Foundation base assembly with toe and heel
Foundation base assembly with straight and batter piles
Foundation base assembly, with batter piles and rock anchors
Pavilion Remedial Action Assessment
Existing Building – Factors underlying recommendation to replace

• Floor below target protection elevation

• Building envelop not resilient (design elements, materials, openings, etc.), and would not accommodate built-in resiliency measures

• Flood barrier would need to built around the building, rather than becoming part of it.

• Due to harshness of marine environment, extensive repairs and/or upgrades, over and above typical maintenance, are currently required and will continue to be required on a frequent basis

• Upfront repair/remediation cost, plus code-required upgrades, plus atypical maintenance costs over a 20-year horizon, would be expected to run between $11 million and $15 million

• Cost of repair/remediation approaches the cost of comparable new construction
Even with necessary repairs and code-required upgrades:

- New flood barrier would be required to be built around the structure.
- BPCA parks maintenance/storage space would be inadequate for current/projected needs.
- No flexible space would be available for BPCA auxiliary needs such as security outpost or site office,
- Food and beverage space would still be undersized and inadequate for current or enhanced restaurant operations.
- Underground cistern beneath structure for storage of storm water would not be accommodated.
Efflorescence at west elevation façade, northern structure
Delaminating brick masonry façade at southern structure stairway
Typical detail of stainless steel/brick masonry arch w/ expansion joint
Example of brick paver settlement resulting in wide cracks at sloped walkway, west side
Design Exhibits
• **Use the property to provide resiliency protection for upland areas.**

• Improve the park, for use by BPC residents.

• Improve maintenance and support facilities.

• Extend the Esplanade thru to Pier A and the Battery.

• Provide better opportunity for food and beverage.
New Park Pavilion Design Principles: Resiliency

- More resilient barrier to protect upland areas
- More resilient facility

Continuous Flood Barrier

Battery Park City Resiliency

Lower Manhattan Coastal Resiliency

Battery Park

The Ritz Carlton

Pier A Plaza

Pier A

Museum of Jewish Heritage

Battery Place
## Program: Existing and Proposed

<table>
<thead>
<tr>
<th>Program</th>
<th>Existing Usable Area</th>
<th>Proposed Usable Area</th>
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</thead>
<tbody>
<tr>
<td>Restaurant</td>
<td>3,450 sf</td>
<td>5,000 sf (Ground floor)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1,200 sf (Second floor)</td>
</tr>
<tr>
<td>Maintenance/Auxiliary</td>
<td>2,100 sf (partial ht space)</td>
<td>1,100 sf (full ht space)</td>
</tr>
<tr>
<td>Restrooms</td>
<td>1,310 sf</td>
<td>900 sf</td>
</tr>
<tr>
<td>Community Room</td>
<td>1,310 sf</td>
<td>1,200 sf</td>
</tr>
<tr>
<td>Roof Deck</td>
<td>3,126 sf</td>
<td>3,200 sf (public)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1,400 sf (restaurant)</td>
</tr>
<tr>
<td>Steps and landings</td>
<td>3,968 sf</td>
<td></td>
</tr>
<tr>
<td>Service Yard (Uncovered)</td>
<td>960 sf</td>
<td>3,000 sf</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>14,914 sf</strong></td>
<td><strong>17,000 sf</strong></td>
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**Footprint of existing Pavilion**

**Footprint of Proposed Pavilion**
Proposed Program

Second Floor

- Multi-purpose
- Roof Deck

Ground Floor

- Restrooms
- Maintenance
- Yard (Open to Sky)
- Restaurant

- Community Room: 1,200 sf
- Public Roof deck: 3,200 sf
- Restaurant: 1,200 sf
- Restaurant Roof deck: 1,400 sf
- Restroom: 900 sf
- Maintenance: 1,100 sf
- Restaurant: 5,000 sf
- Yard: 3,000 sf
Existing Public Restrooms Fixture Count:

Existing

15 fixtures total
Gross Area: 1,310 gross sf

Proposed

15 fixtures total:
Recommended Gross Area: 900 to 1,000 gross sf
Battery Park City Authority: Wagner Park

Longitudinal Section

SECTION C

First Floor

Second Floor

100 Year Flood
EL +17.0'
EL +29.0'
EL +15.5'

EL +24'
EL +9'

Ground FLR +9'
2ND FLR +29'
Roof Top +40'

KSE MRCE ARUP Perkins Eastman
Use of Parkland Comparison

**EXISTING**

- Ornamental Gardens: 8,800 sf
- Lawn: 34,400 sf
- Hardscape: 30,200 sf

**PROPOSED**

- Ornamental Gardens: 11,600 sf (+2,800 sf)
- Lawn: 39,500 sf (+5,100 sf)
- Hardscape: 24,900 sf (-5,300 sf)
- Wetlands and Woodlands: 11,500 sf (+11,500 sf)
New Park Pavilion Design Principles

- The same footprint
- Maintain existing view corridors
Battery Park City Authority: Wagner Park

New North Garden
New Yard
New South Garden
Wetlands

Views
Columns as Civic Design

Battery Park City Authority: Wagner Park

KSE MRCE ARUP Perkins Eastman
Columns as Civic Design
Battery Park City Authority: Wagner Park

View looking South
View looking North along Overlook

- Statue of Liberty
- Wetlands North
- North Garden
Battery Park City Authority: Wagner Park

View looking North from Battery Place
Battery Park City Authority: Wagner Park
- Expanded Grand Lawn
- Continuous overlook for broader public enjoyment of the harbor views
- Improved and expanded ornamental gardens
- Seasonal outdoor stage
- Art Gardens
- Boat/Dock