

SOUTH BATTERY PARK CITY RESILIENCY **COMMUNITY ENGAGEMENT MEETING**

March 12, 2019

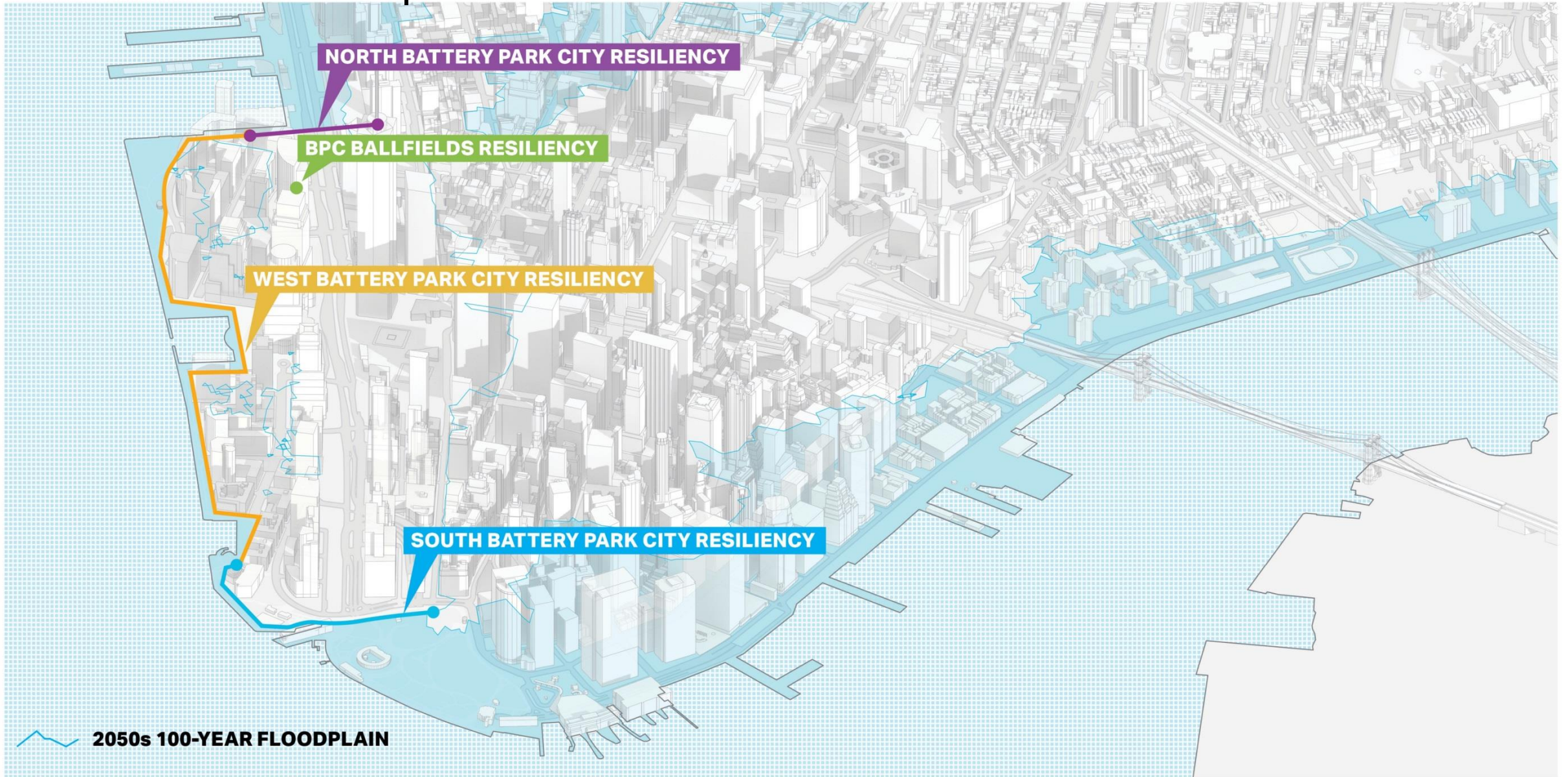
AGENDA

1. **Project Update**
2. **Balance of Decisions**
3. **Inventory + Analysis**
4. **Engineering + Feasibility**
5. **Alignment Location Alternatives**
6. **Implications to Project Area + Potential Flood Risk Measures**
7. **Next Steps**
8. **Q&A**

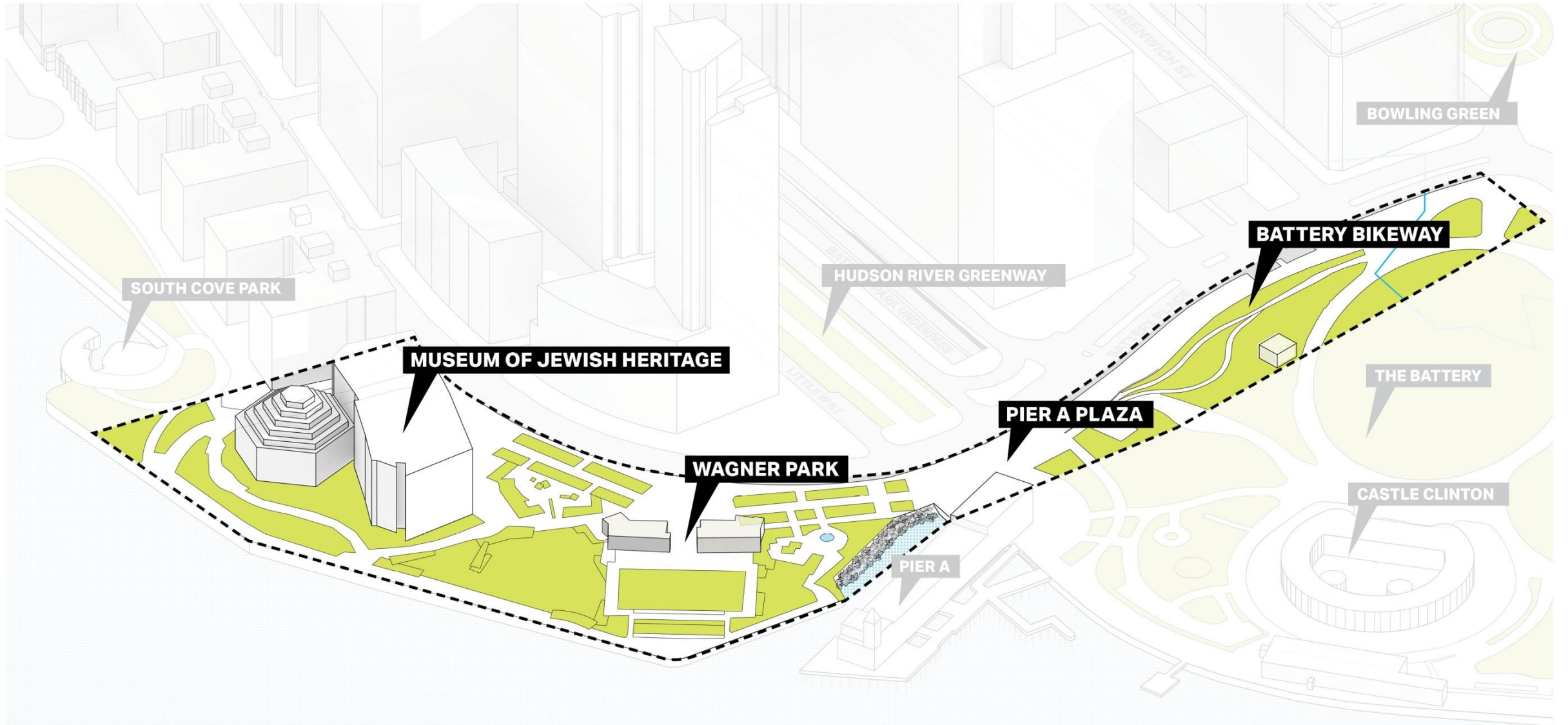


PROJECT UPDATE

RESILIENCY MEASURES | BATTERY PARK CITY

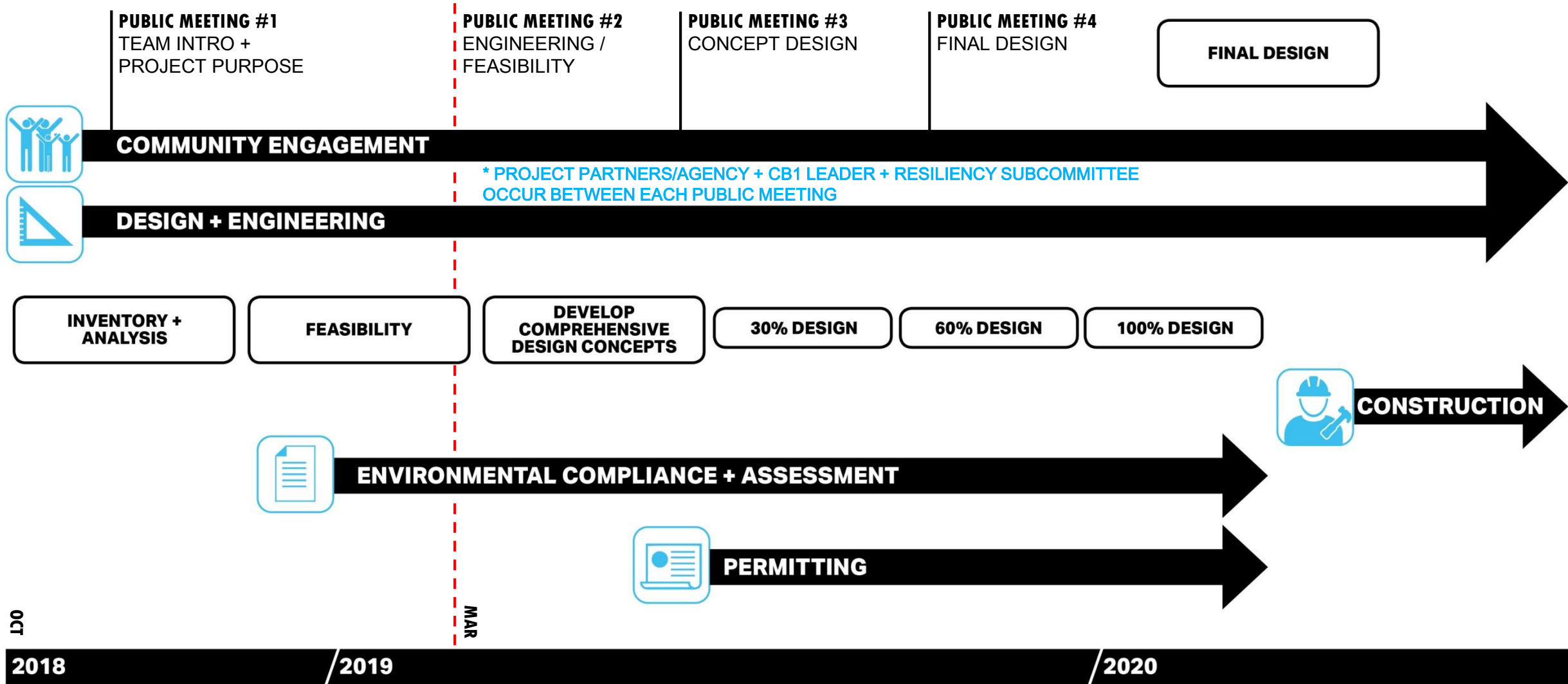


PROJECT AREA



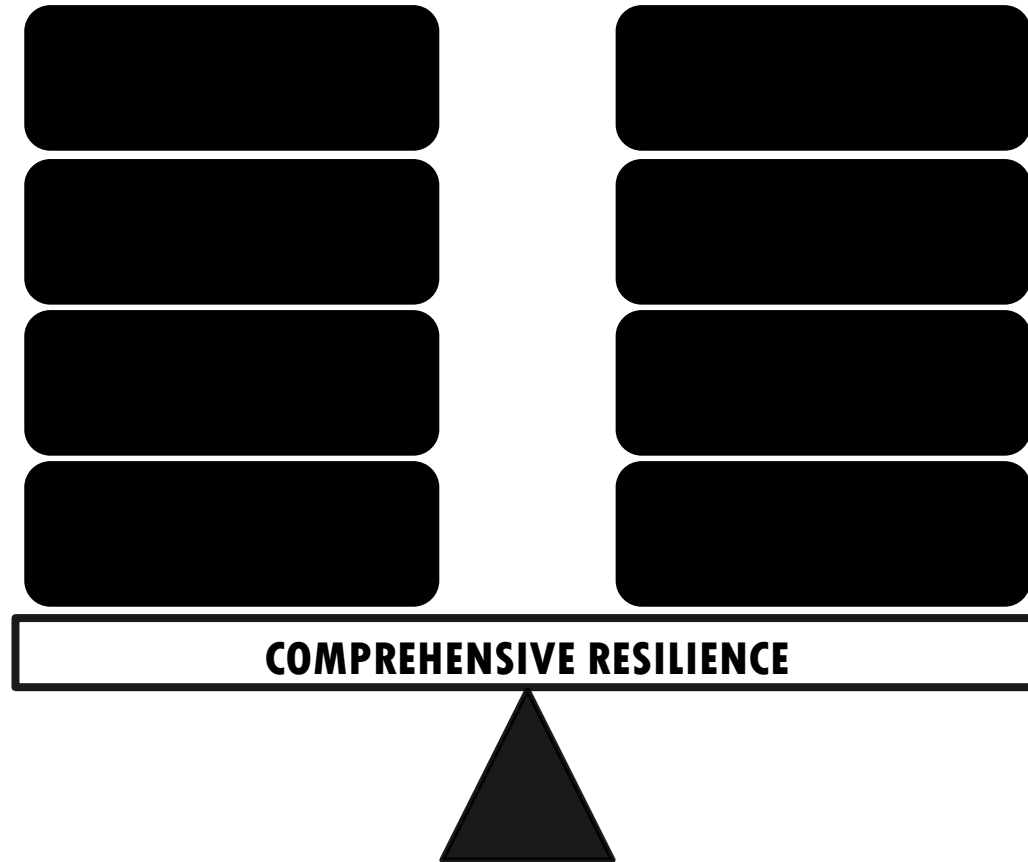
 2050s 100-YEAR FLOODPLAIN

PROJECT SCHEDULE



BALANCE OF DECISIONS

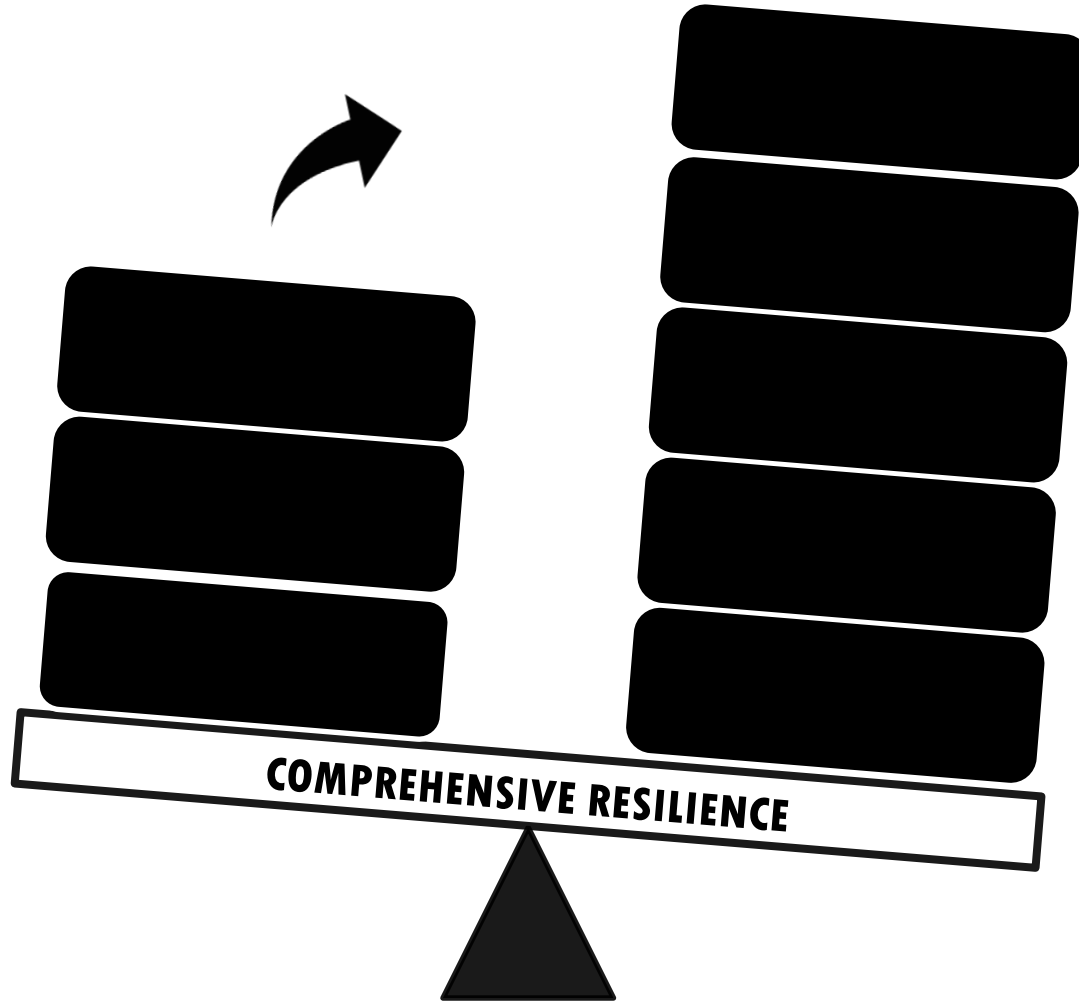
INTEGRATED PROJECT DECISIONS | EQUILIBRIUM



PROJECT CONSIDERATIONS

- **AESTHETICS**
- **COST \$\$\$**
- **DESIGN FLOOD ELEVATION**
- **DESIGN LEGACY**
- **FLOOD RISK MEASURES**
- **INTEGRATION OF DESIGN & LANDSCAPE**
- **LAWN/PARK SPACE**
- **LIFE CYCLE OF OPERATIONS & MAINTENANCE**
- **MAXIMIZE PROTECTED AREA**
- **BUILDING & NO BUILDING OPTIONS**
- **PROGRAMMING OF SITE & USES**

INTEGRATED PROJECT DECISIONS | UNBALANCED



PROJECT CONSIDERATIONS

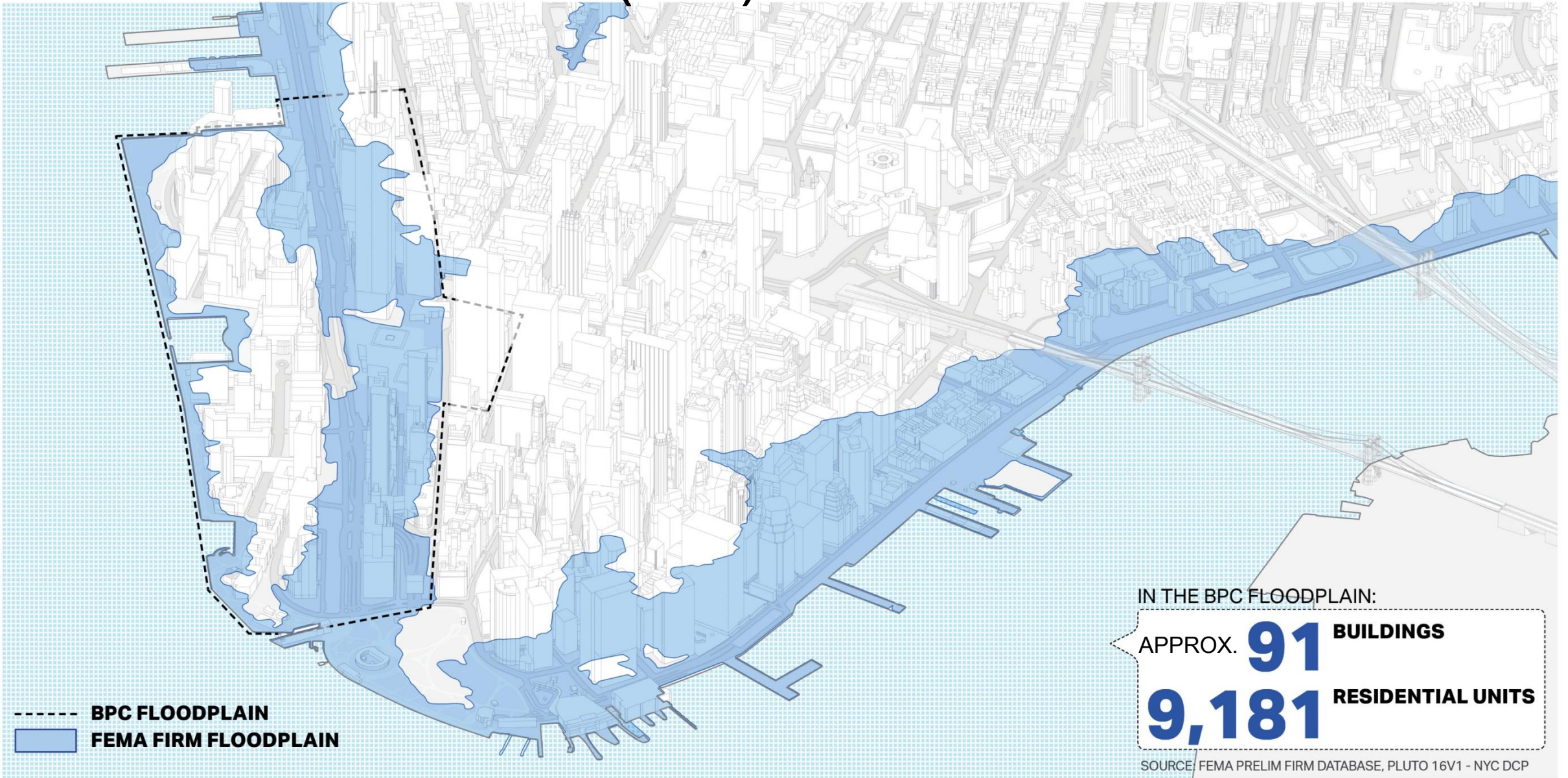
- AESTHETICS
- COST \$\$\$
- DESIGN FLOOD ELEVATION
- DESIGN LEGACY
- FLOOD RISK MEASURES
- INTEGRATION OF DESIGN & LANDSCAPE
- LAWN/PARK SPACE
- LIFE CYCLE OF OPERATIONS & MAINTENANCE
- MAXIMIZE PROTECTED AREA
- BUILDING & NO BUILDING OPTIONS
- PROGRAMMING OF SITE & USES

INVENTORY + ANALYSIS

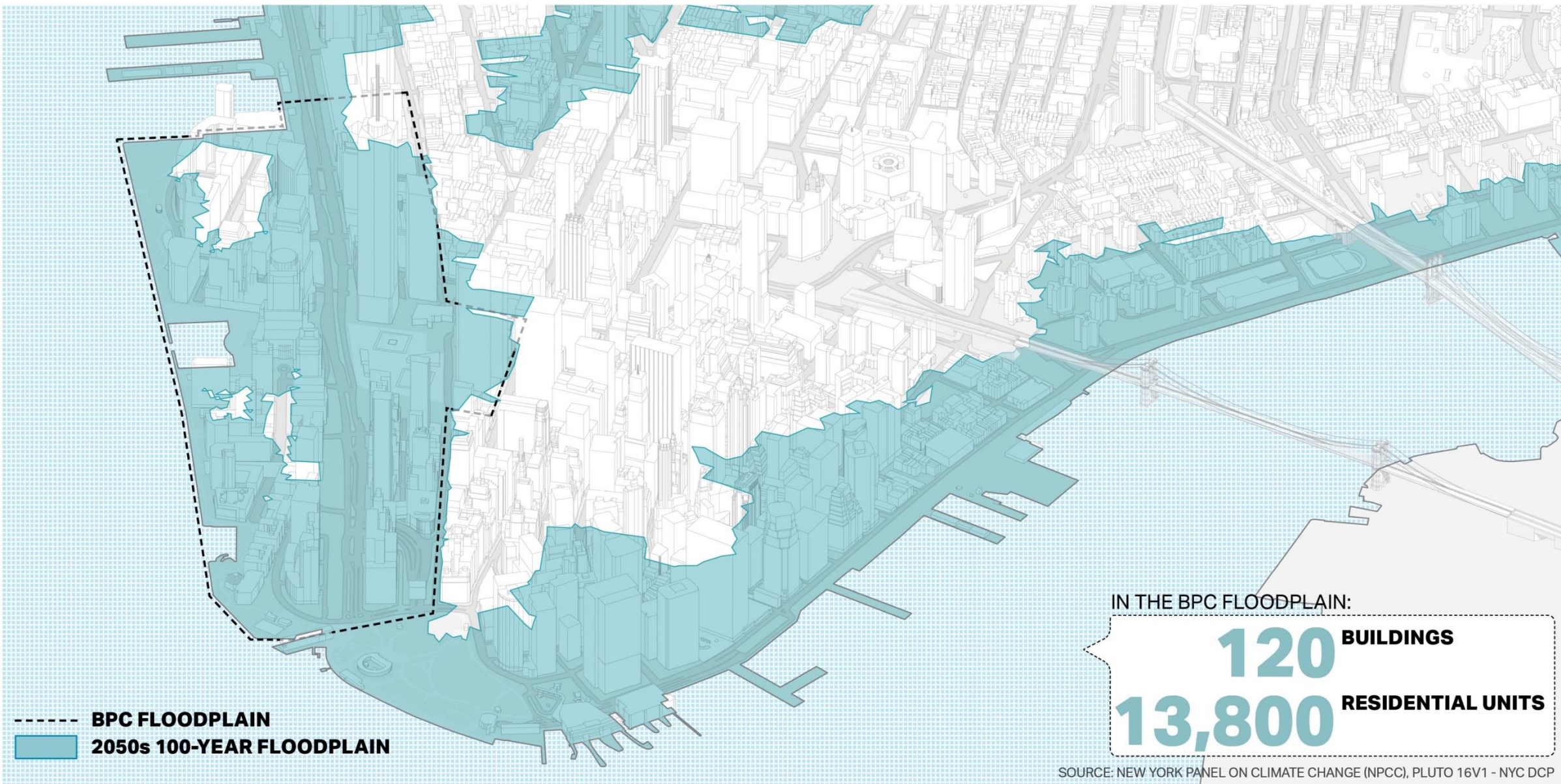
PROJECT BASIS OF ANALYSIS

- Community Input
- Existing Drawings
- Subsurface Conditions
- Coastal Model of Site
- Project Partner & Agency Coordination
- Perkins Eastman: Wagner Park Site Assessment
- KSE Assessment: Battery Park City Authority
Architectural/Engineering Building Inspection
- BPCA & BMCC Park User Study

FEMA FLOOD INSURANCE RISK MAP (FIRM)



2050s 100-YEAR STORM



PRECEDENT STORMS | RAINFALL



The Battery

Credit: Michael Appleton, The New York Times



The Battery

Credit: Mario Tama/Getty Images North America



North Cove Marina

Credit: Chip Somodevilla/Getty Images North America

HURRICANE IRENE
(2011)

HURRICANE HARVEY
(2017)



Houston, TX

Credit: US Army photo by 1st Lt. Zachary West



Houston, TX

Credit: Shutterhock/Reuters/Business Insider



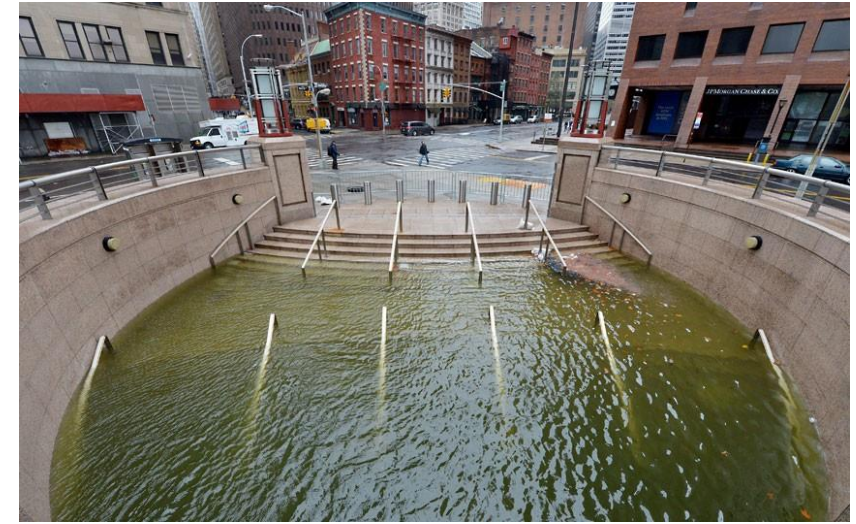
PRECEDENT STORMS | COASTAL SURGE



Battery Park City
Credit: Slate



The Battery
Credit: AP Photo/Craig Ruttle



One New York Plaza
Credit: Slate



HURRICANE SANDY
(2012)

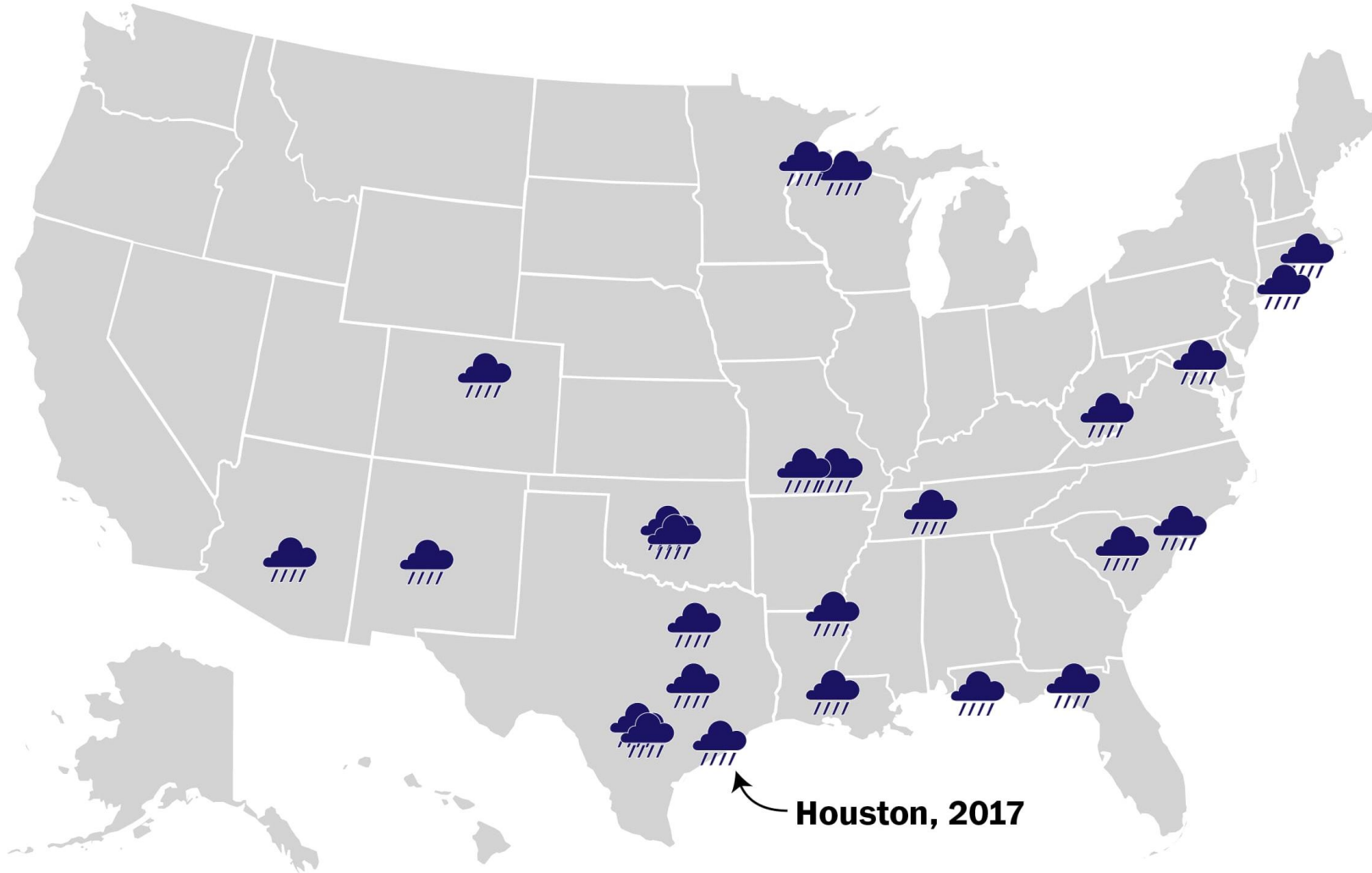


South Ferry Station
Credit: MTA



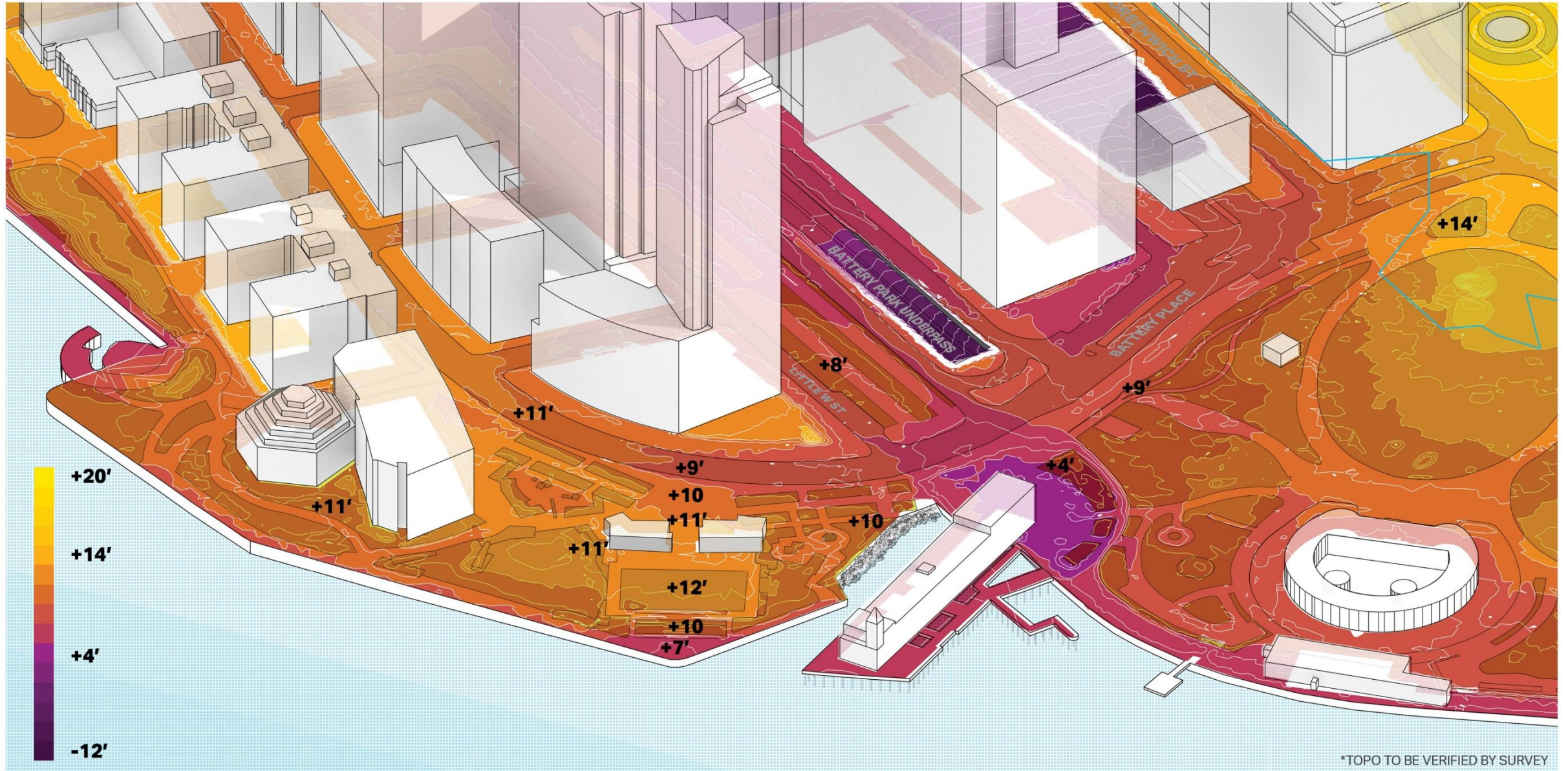
Battery Park Underpass
Credit: Downtown Express file photo by Jay Fine

PRECEDENT STORMS | STORM FREQUENCY DATA



FROM 2010-2017 THERE HAVE BEEN (26) 500-YEAR EVENT STORMS

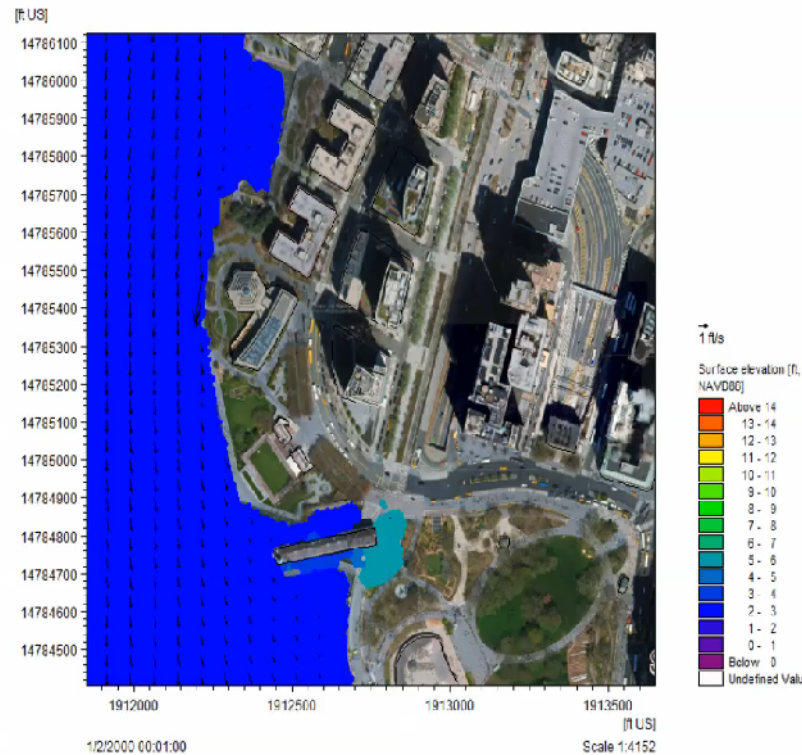
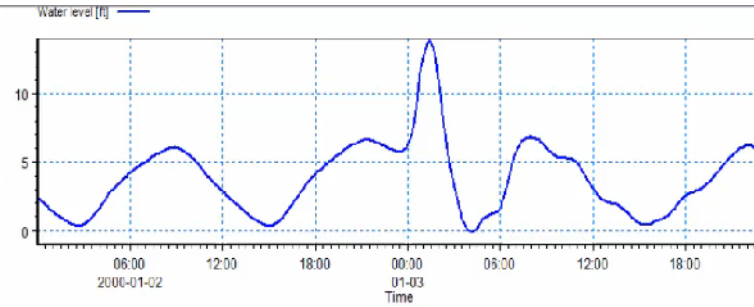
EXISTING TOPOGRAPHY



*TOPO TO BE VERIFIED BY SURVEY

EXISTING CONDITIONS COASTAL MODELING

- 2050 100-Year Storm Event w/ Sea Level Rise (30")
- Flood inundation shown over current physical conditions
- Depicts 1-2 tide cycles with storm surge added to the 2nd
- Precipitation storm event not included, but will be included



If video does not play please click here: <https://youtu.be/NfO1myBa0IE>

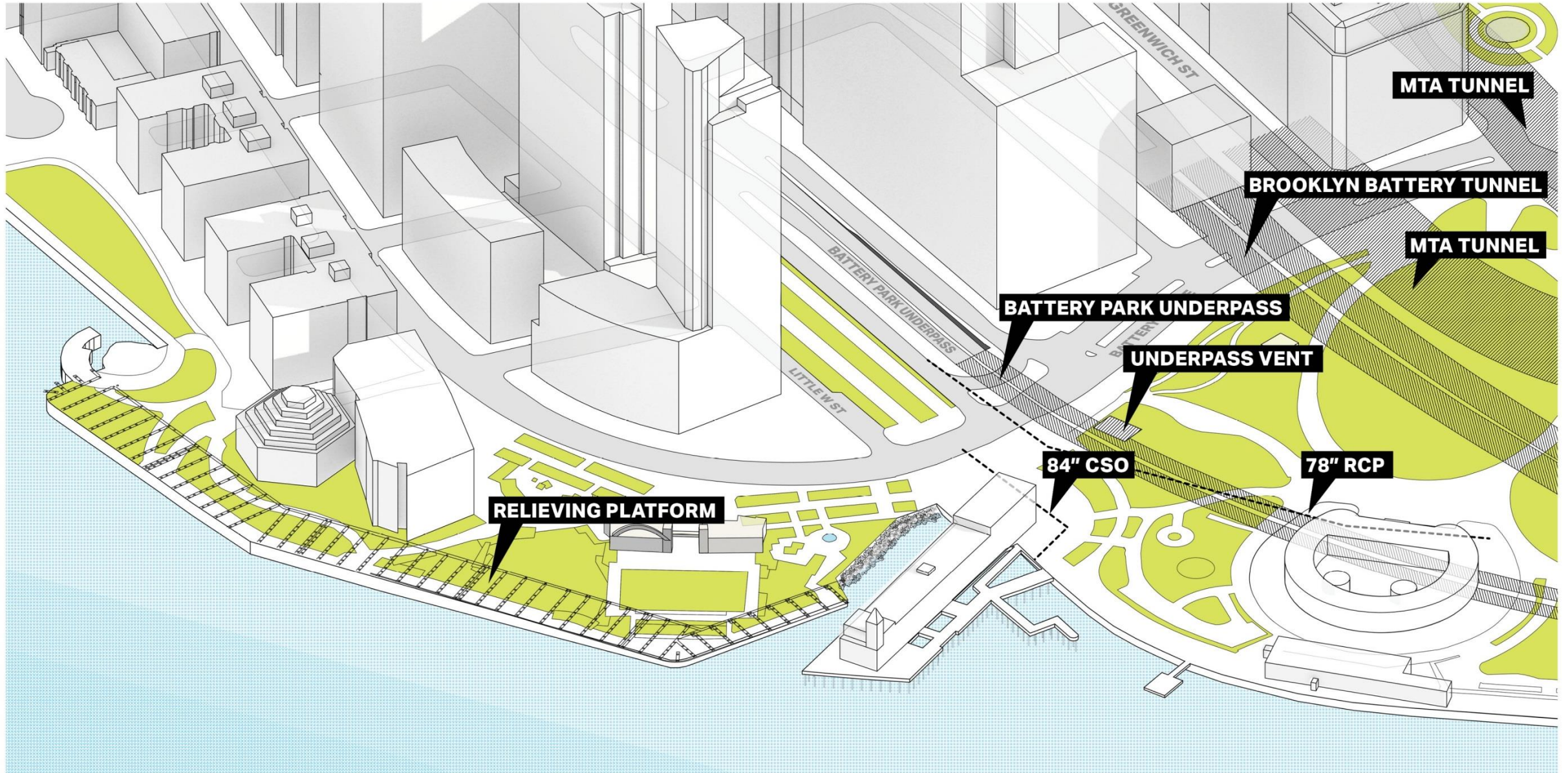
* Coastal Modeling animations in this presentation are preliminary. Models need to be refined with aspects such as surveyed information for the project area. This animation showcases only a range of approximate coastal surge elevations on the existing conditions.

- 2050 100-Year Storm Event w/ Sea Level Rise (30")
- Flood inundation shown over current physical conditions
- Depicts 1-2 tide cycles with storm surge added to the 2nd
- Precipitation storm event not included, but will be included

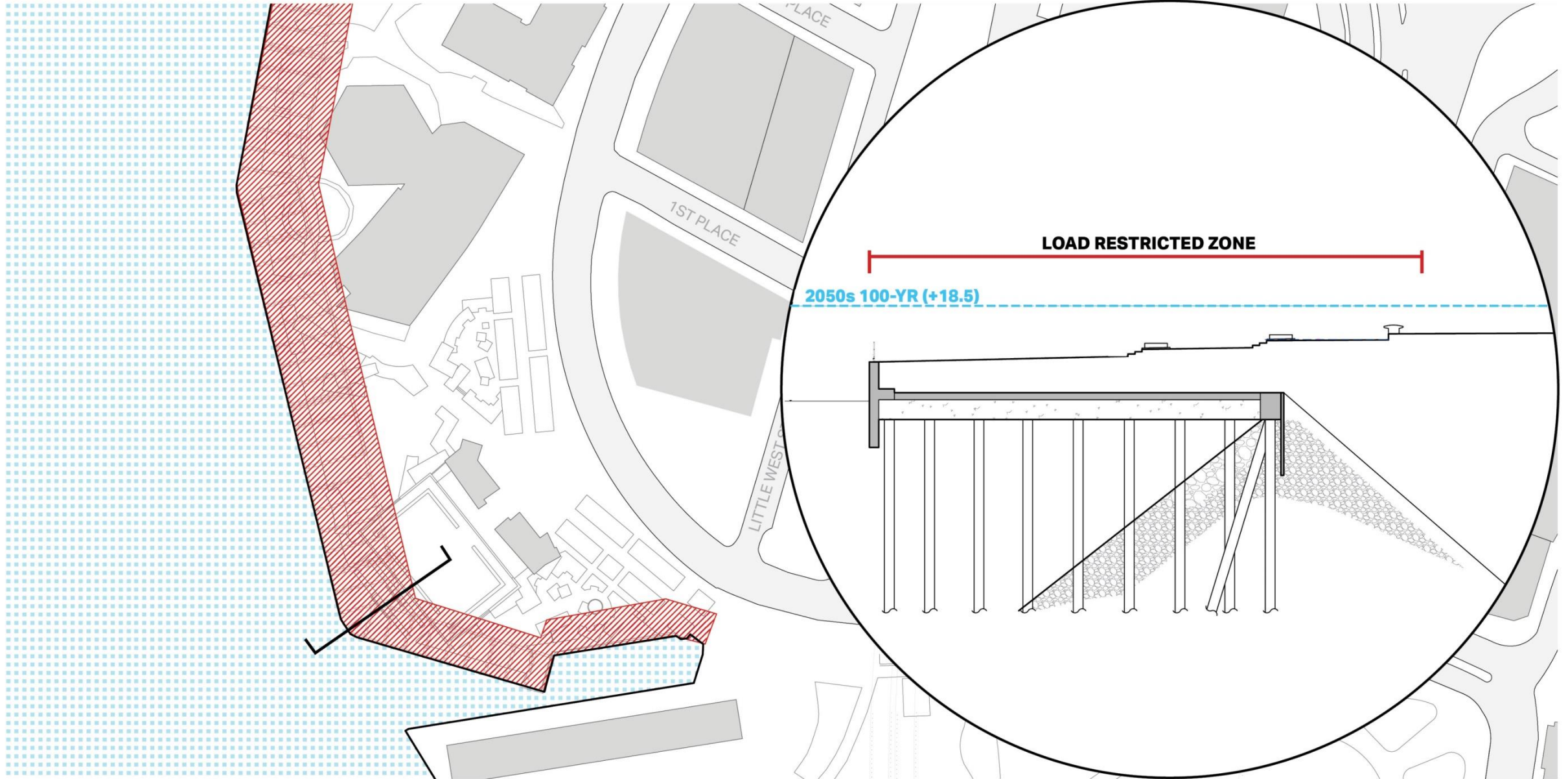


ENGINEERING + FEASIBILITY

SUBSURFACE

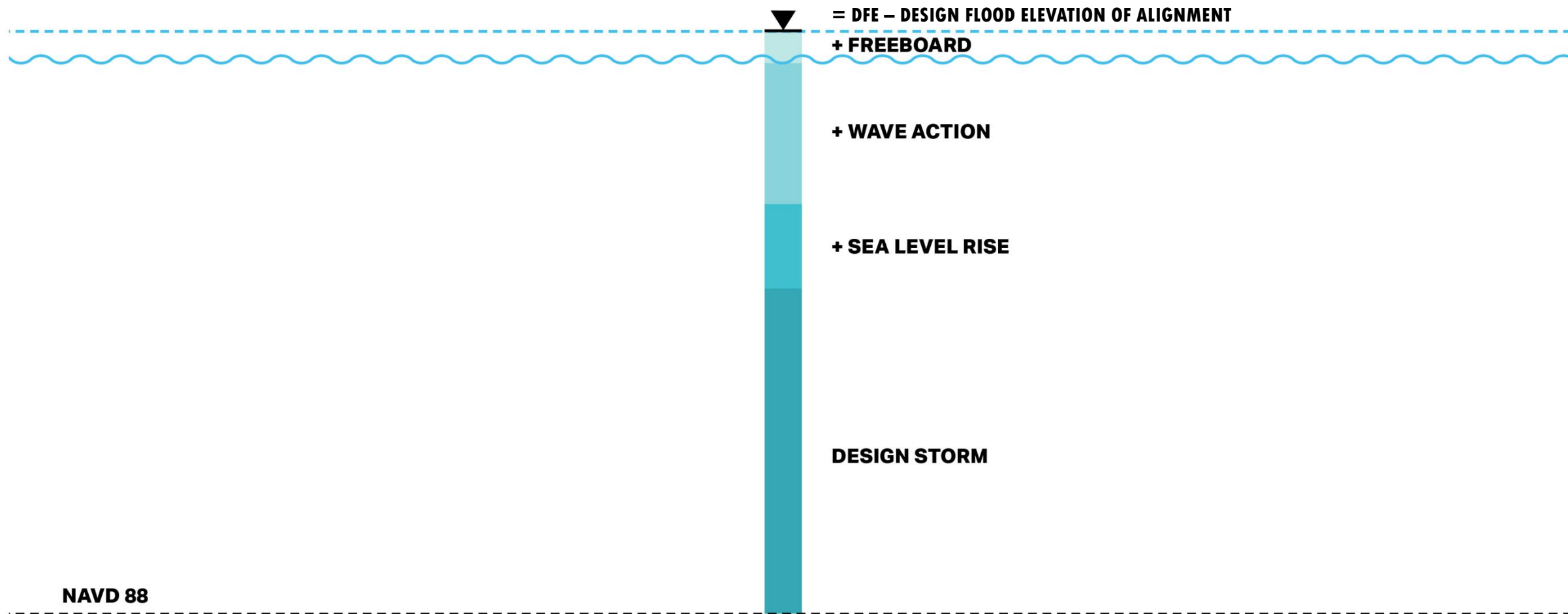


WAGNER PARK LOAD RESTRICTED ZONE

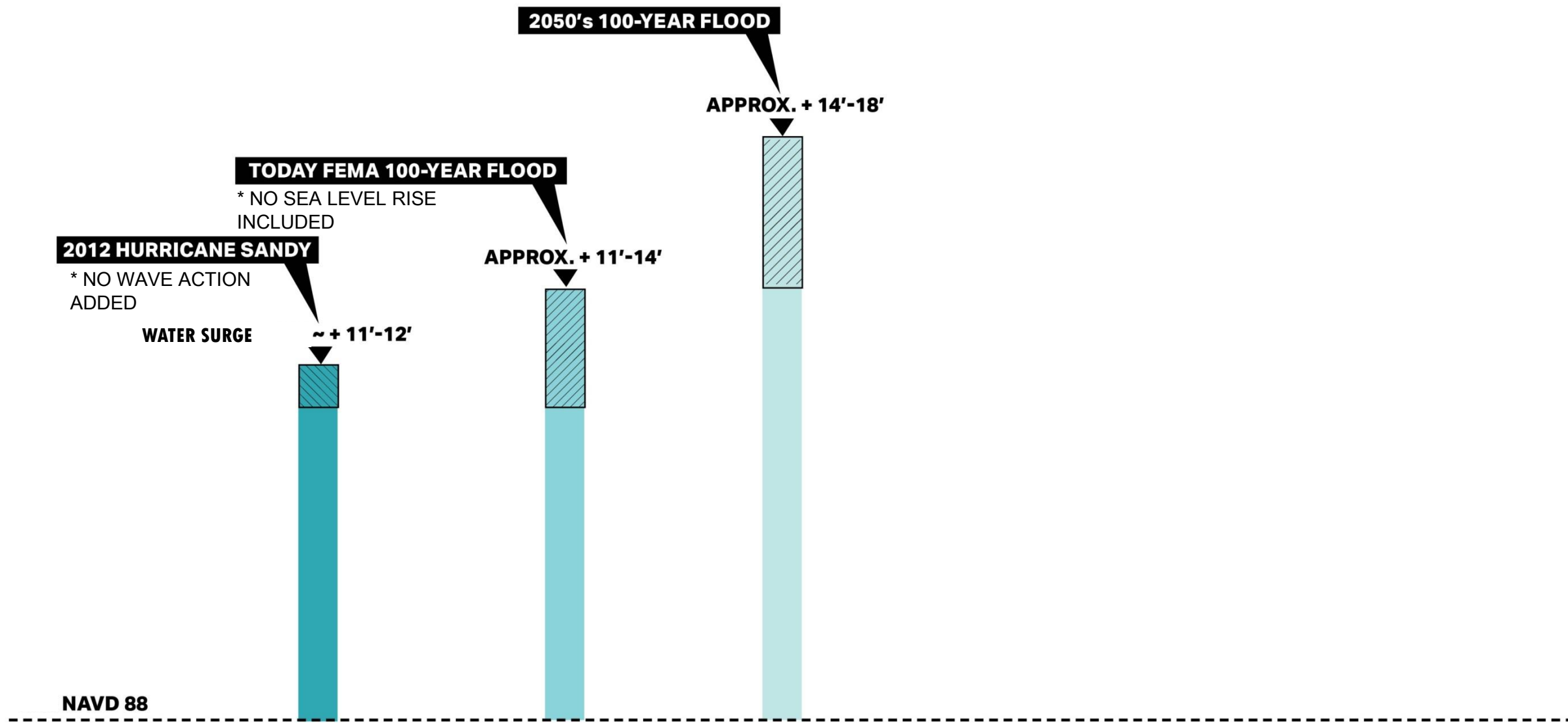


DESIGN FLOOD ELEVATION (DFE)

DESIGN STORM : 2050s 100 YEAR FLOOD



DESIGN FLOOD ELEVATION (DFE) COMPARISON



2012 HURRICANE SANDY

* NO WAVE ACTION
ADDED

WATER SURGE

~ + 11'-12'

TODAY FEMA 100-YEAR FLOOD

* NO SEA LEVEL RISE
INCLUDED

APPROX. + 11'-14'

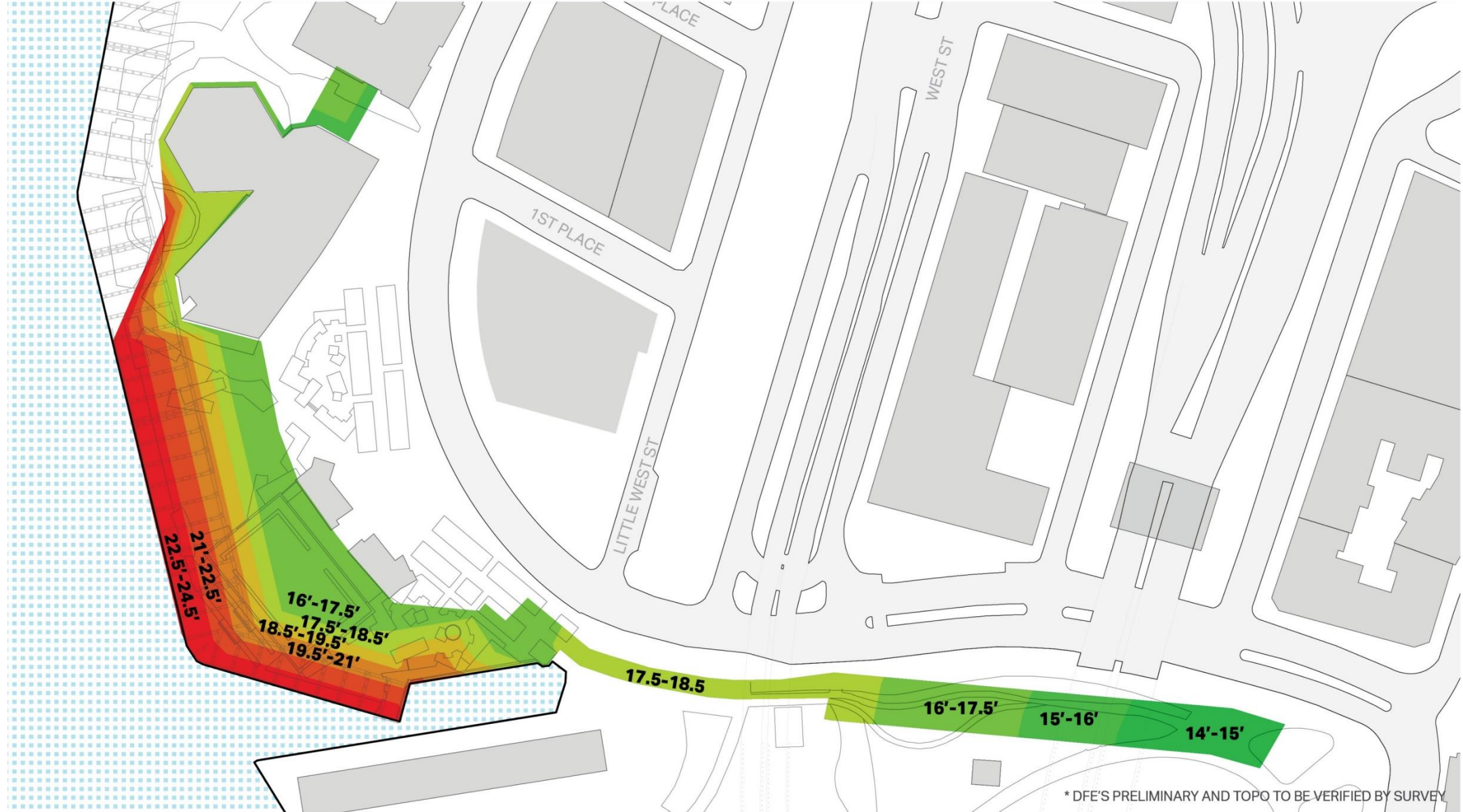
2050's 100-YEAR FLOOD

APPROX. + 14'-18'

NAVD 88

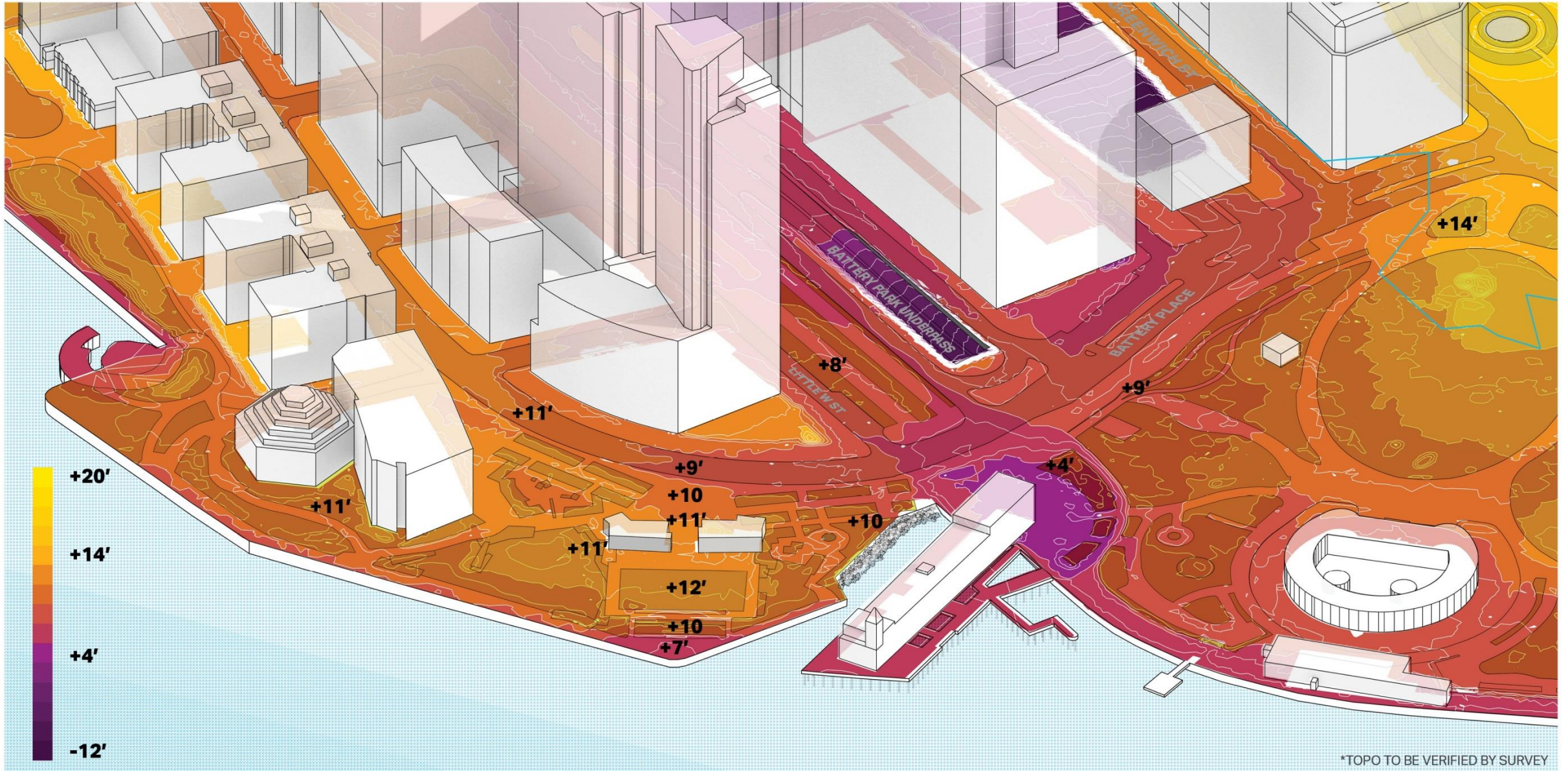
* 2050 DFE TO BE VERIFIED WITH TOPO

DESIGN FLOOD ELEVATION



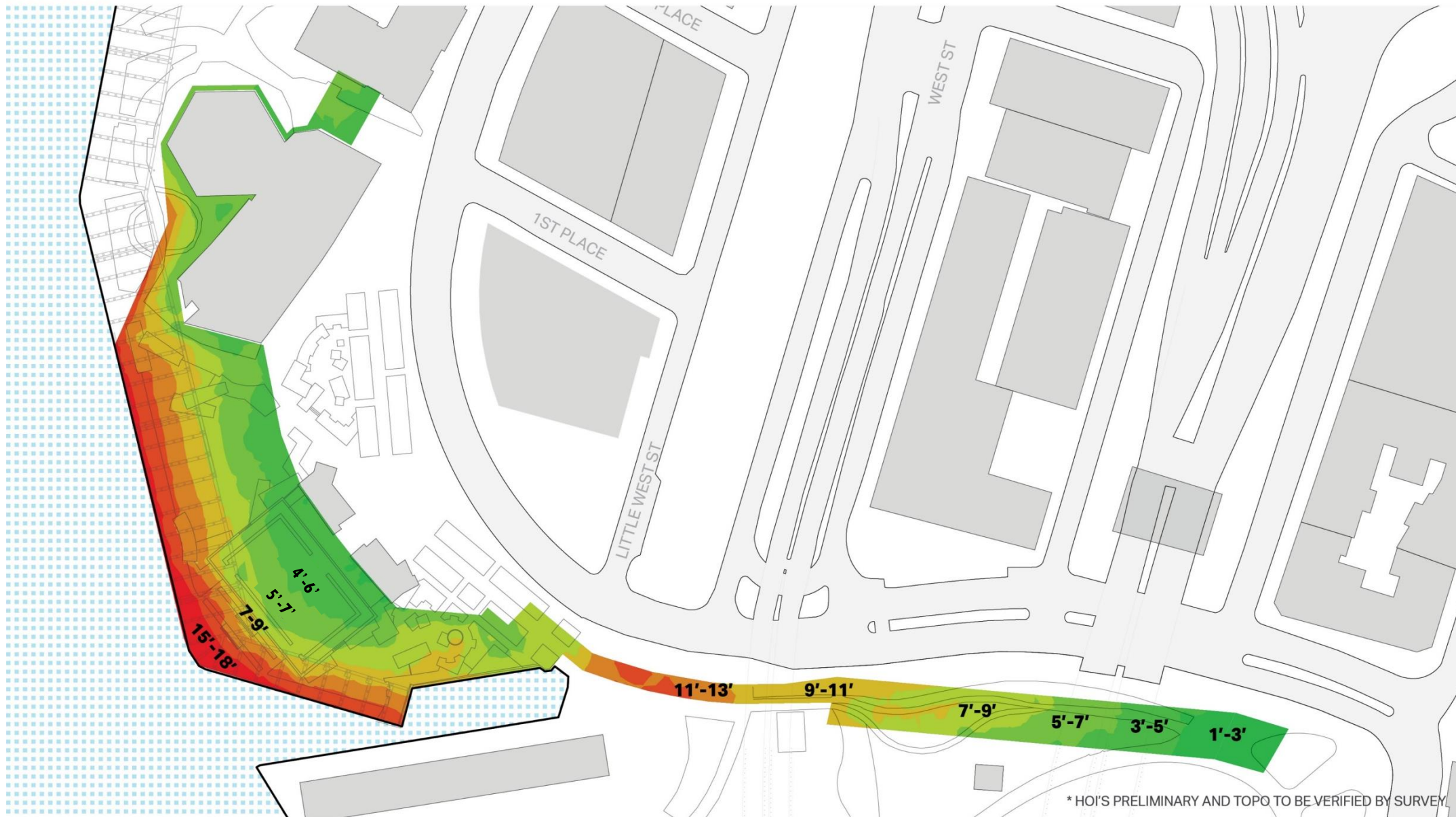
* DFE'S PRELIMINARY AND TOPO TO BE VERIFIED BY SURVEY

EXISTING TOPOGRAPHY



*TOPO TO BE VERIFIED BY SURVEY

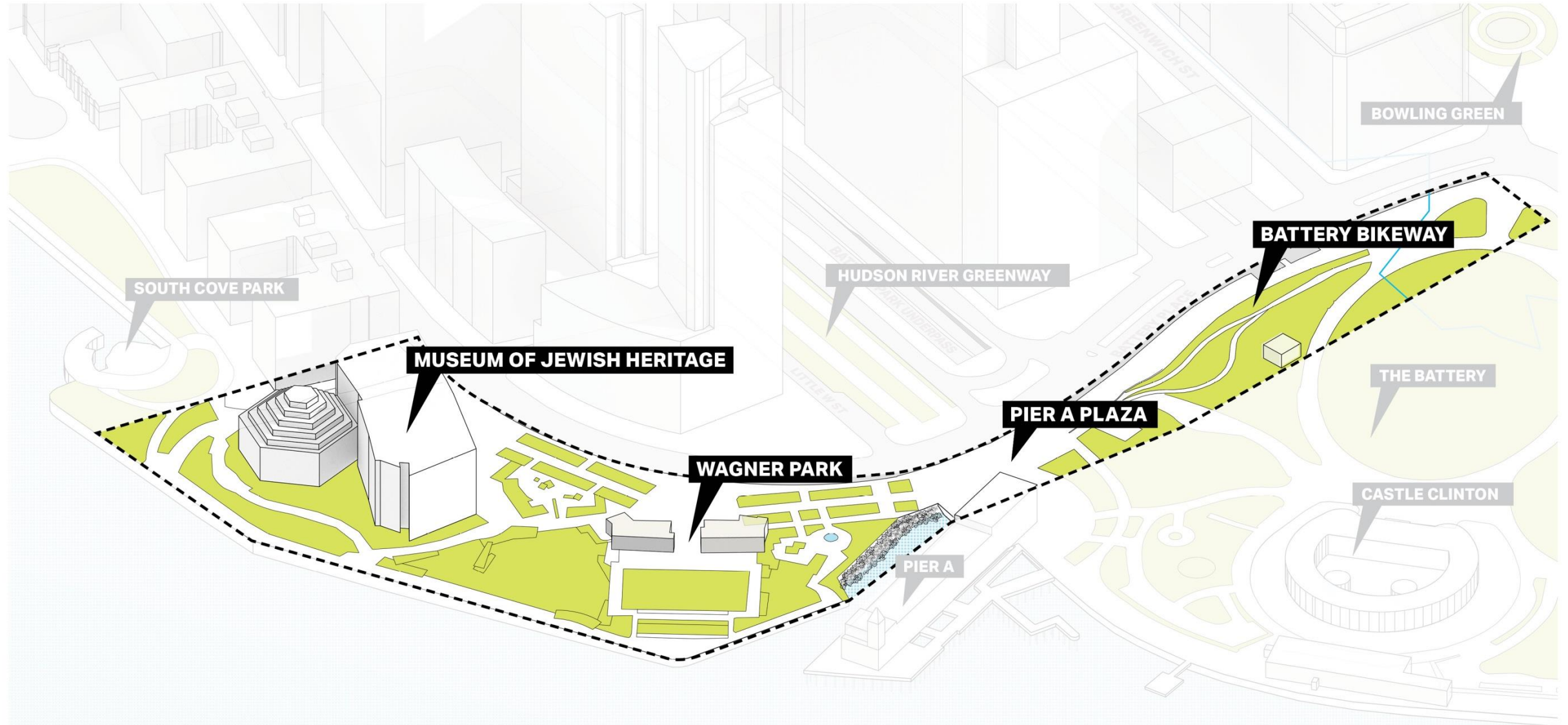
HEIGHT OF INTERVENTION



* HOI'S PRELIMINARY AND TOPO TO BE VERIFIED BY SURVEY

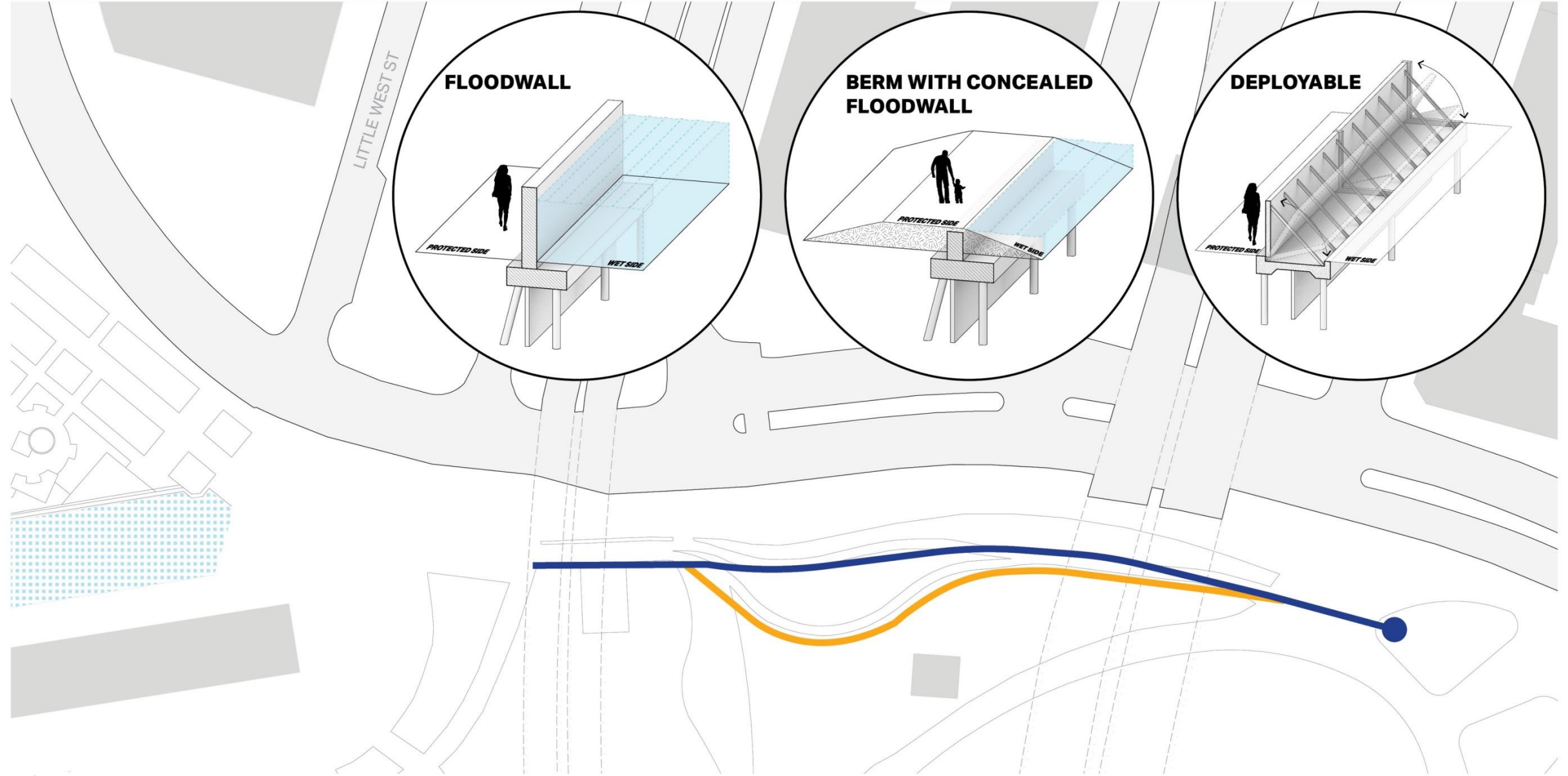
ALIGNMENT LOCATION ALTERNATIVES

PROJECT AREA

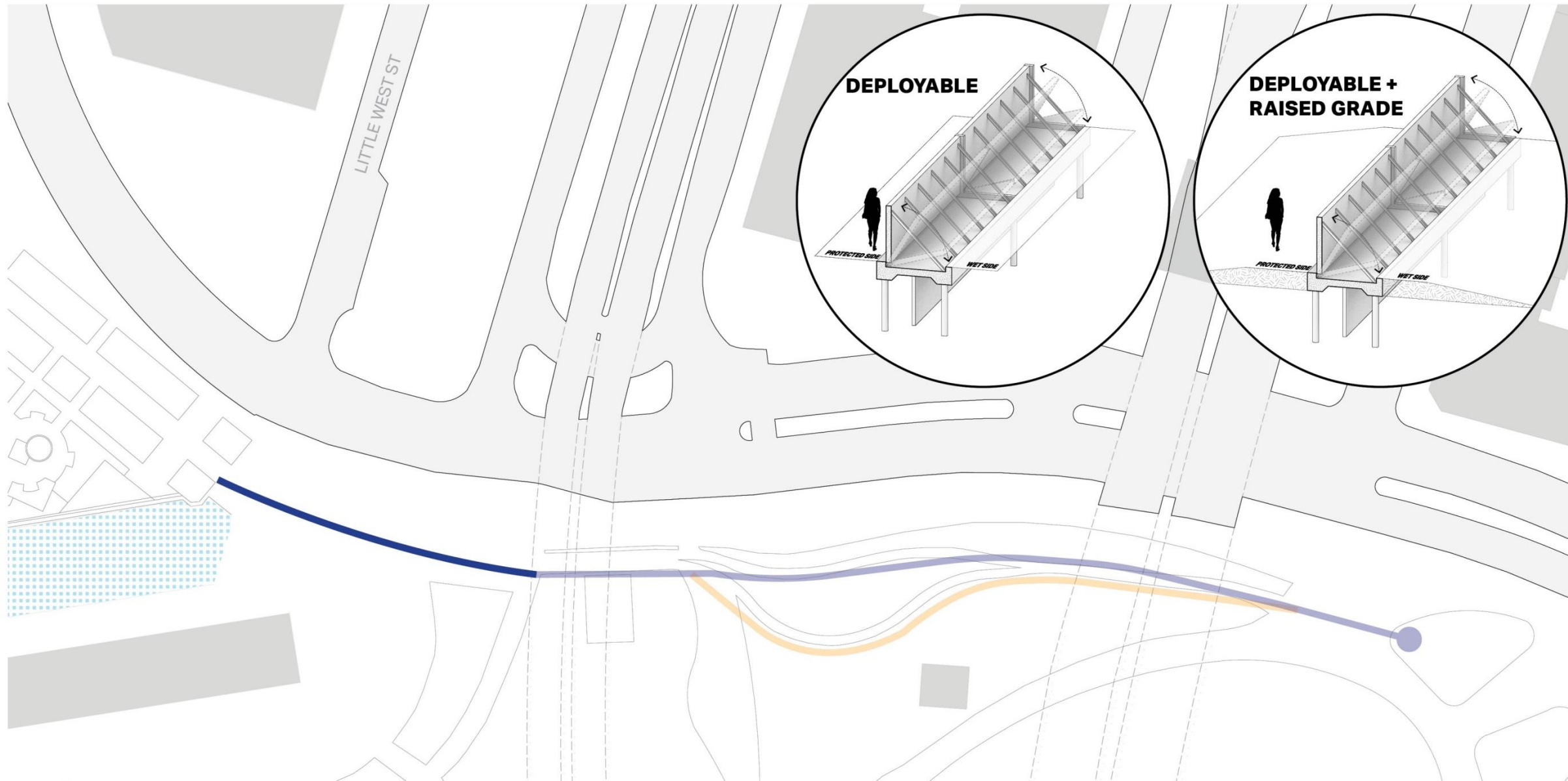


 2050s 100-YEAR FLOODPLAIN

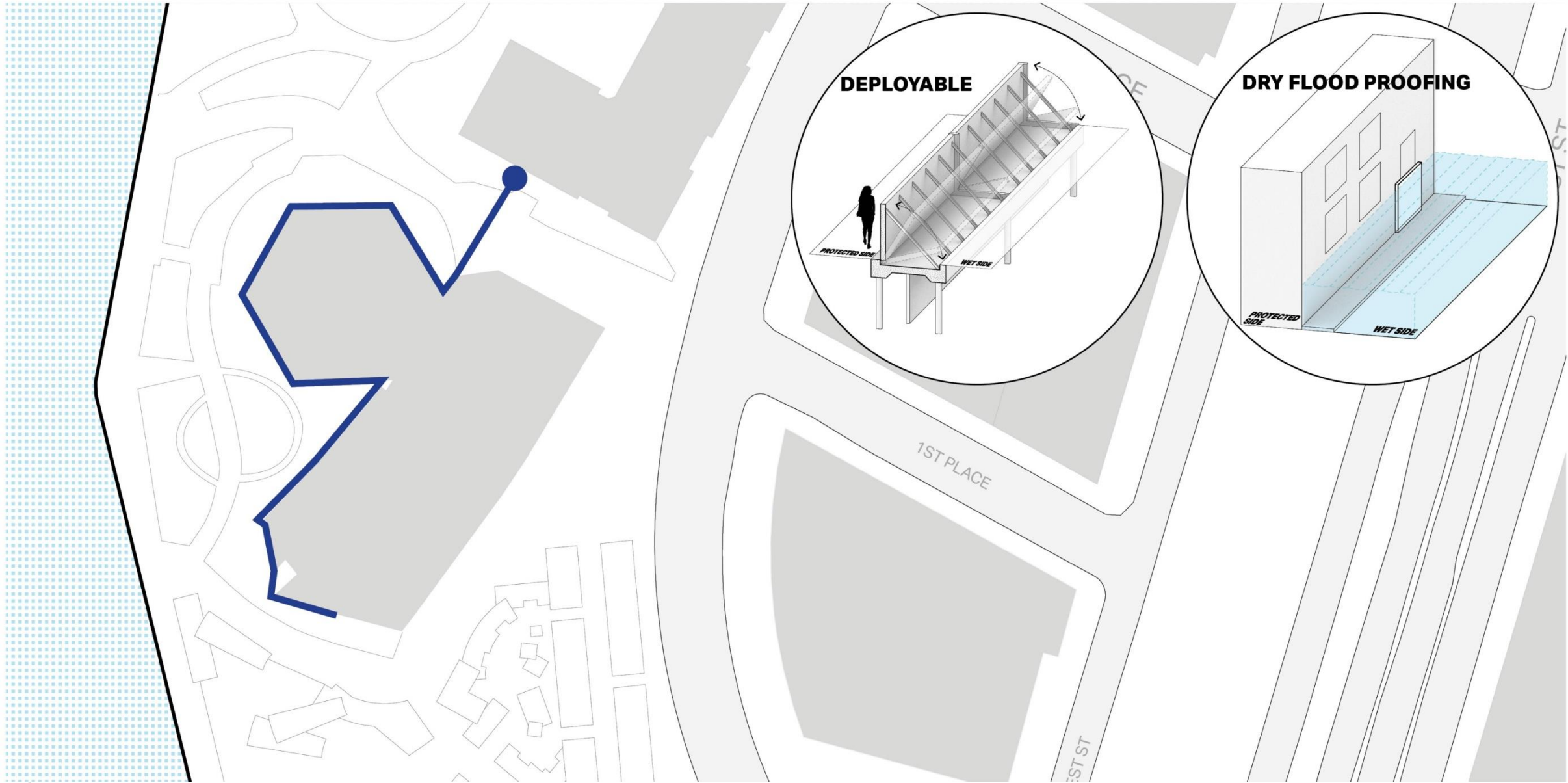
THE BATTERY SEGMENT



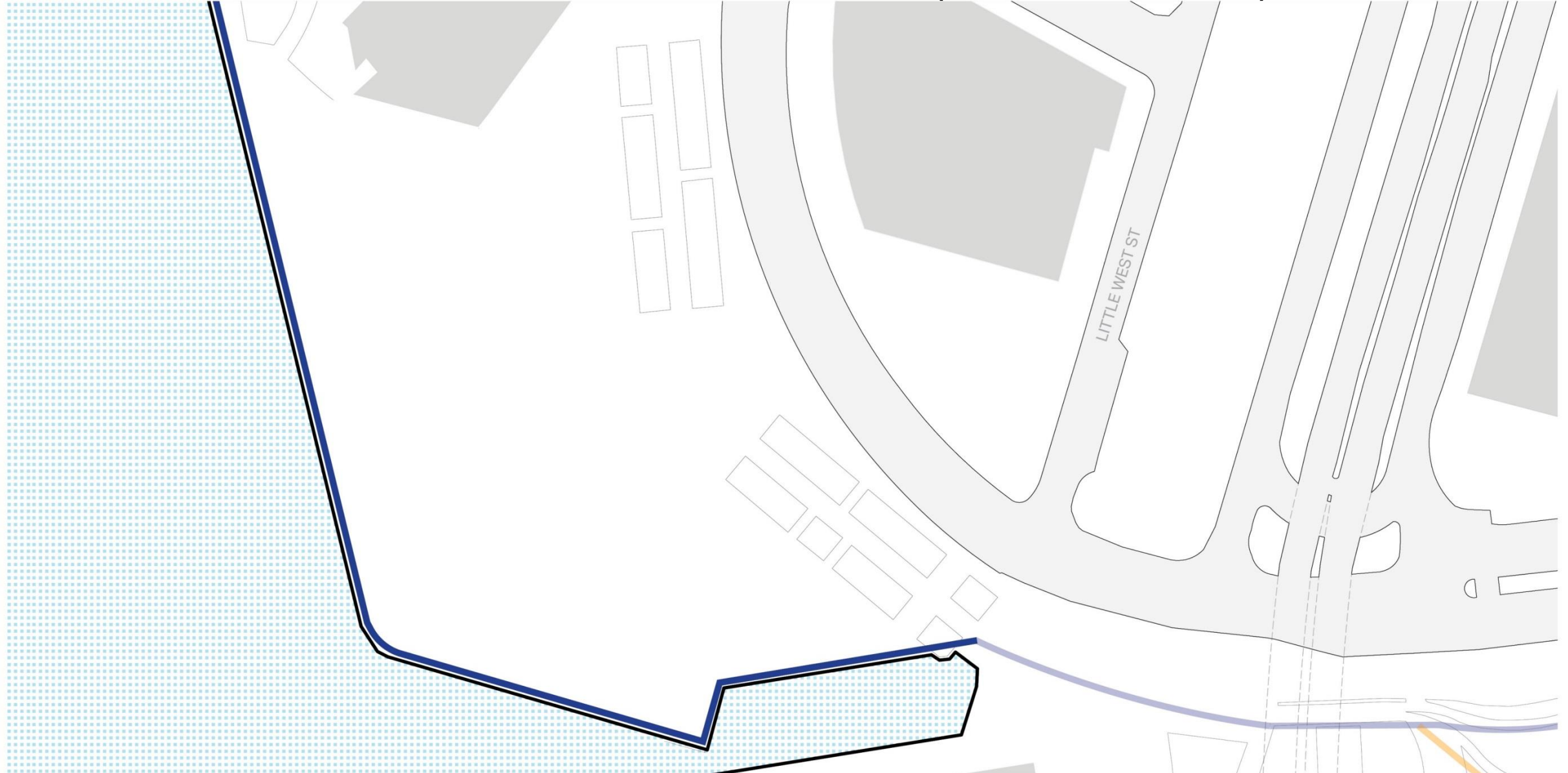
PIER A PLAZA SEGMENT



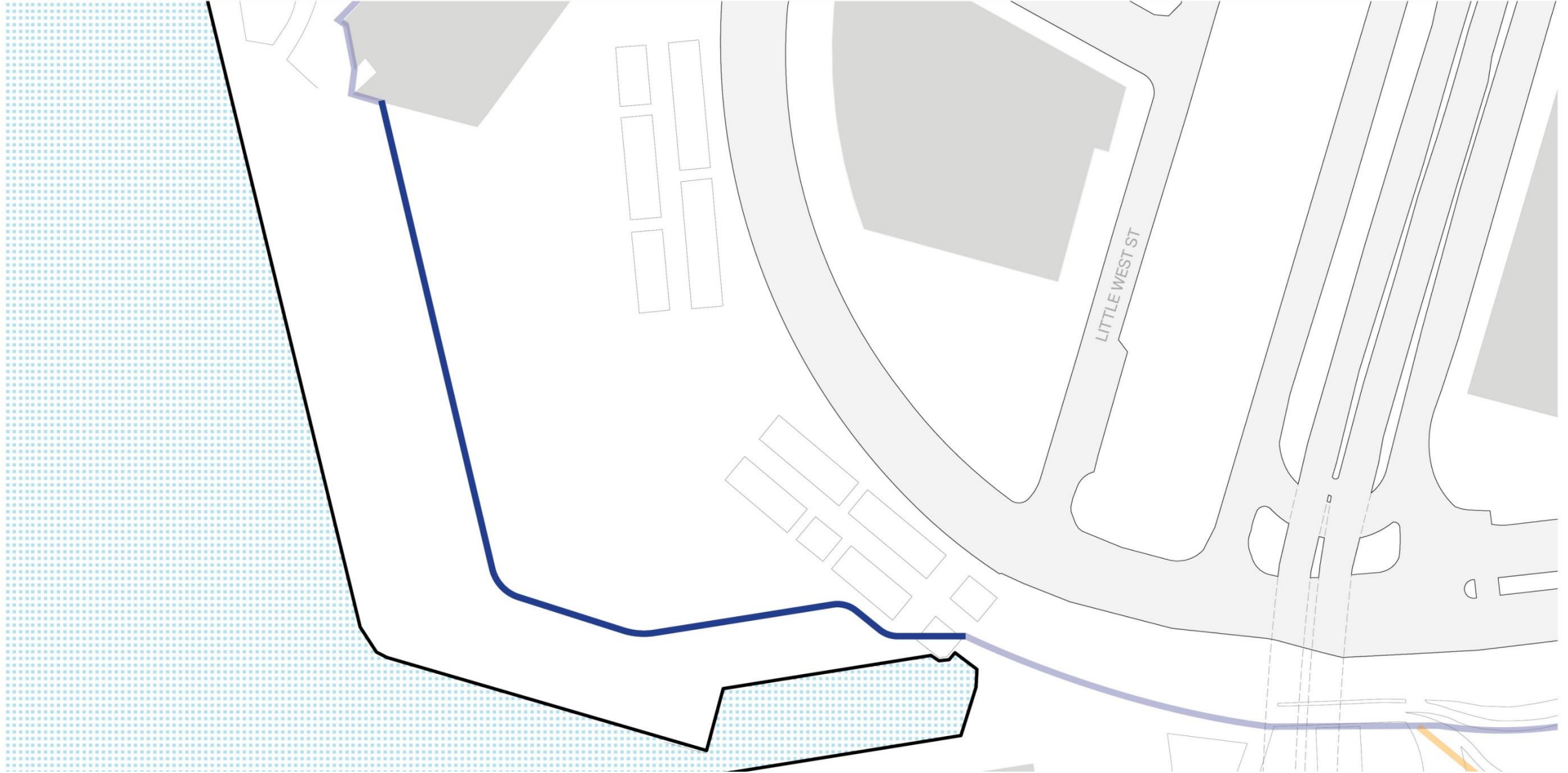
MUSEUM OF JEWISH HERITAGE SEGMENT



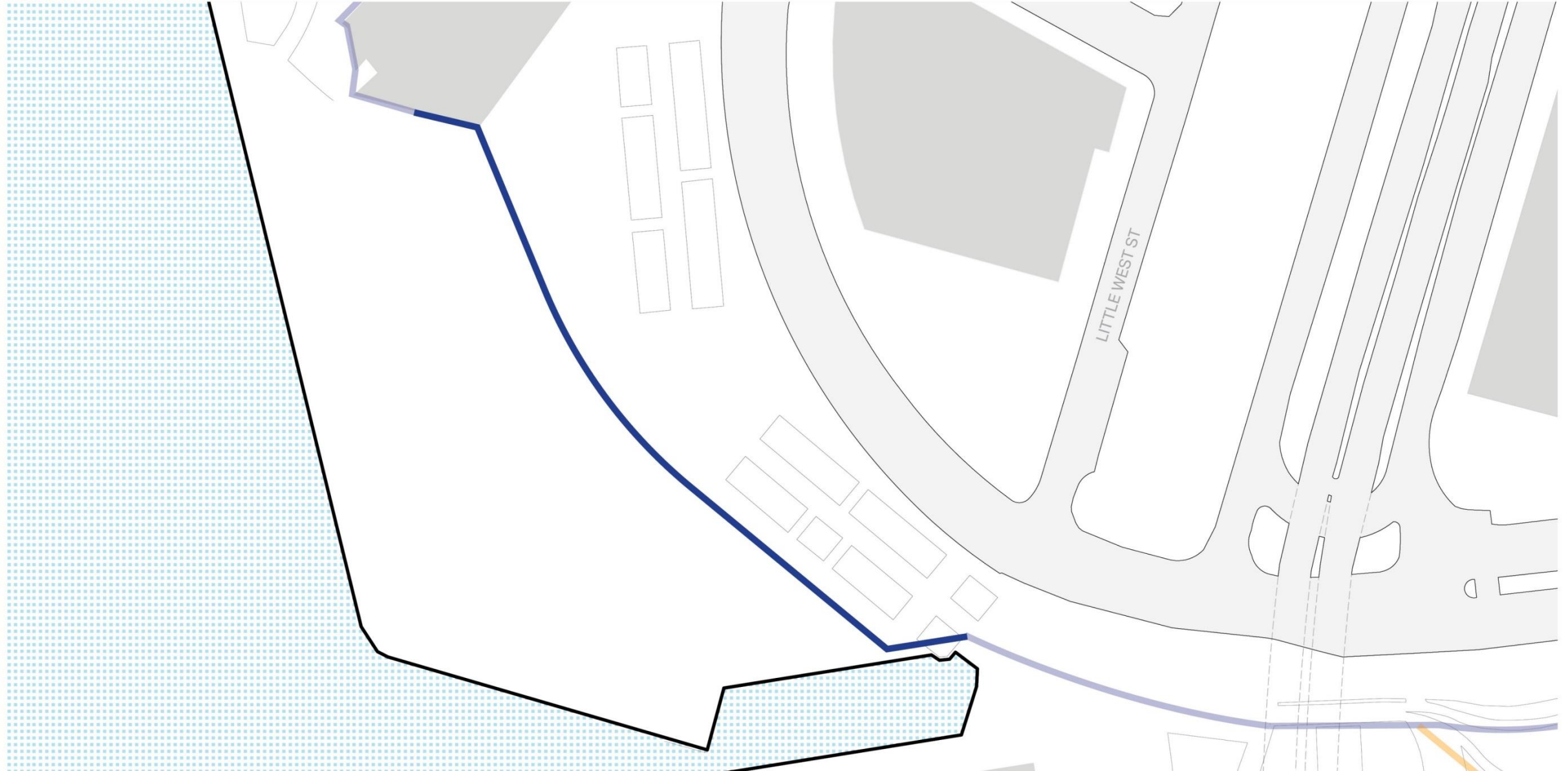
WAGNER PARK SEGMENT: ALIGNMENT ALTERNATIVE 1 (WATERFRONT EDGE)



WAGNER PARK SEGMENT: ALIGNMENT ALTERNATIVE 2 (RELIEVING PLATFORM)



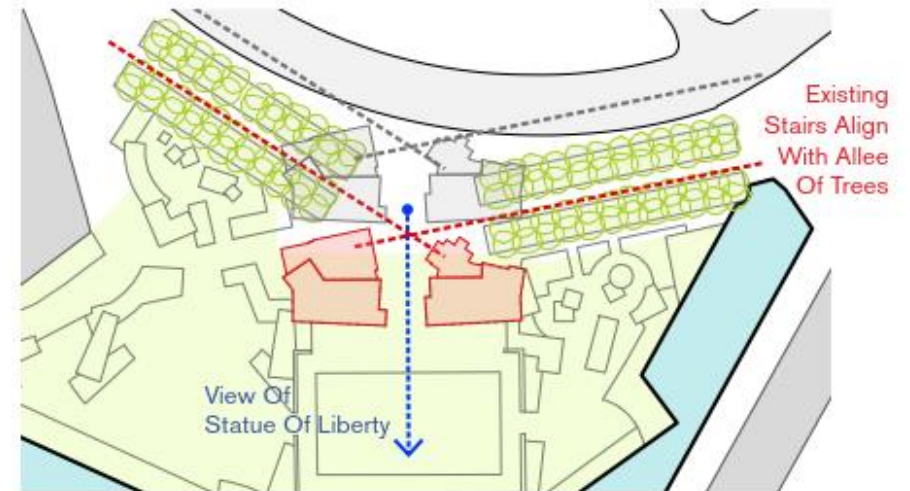
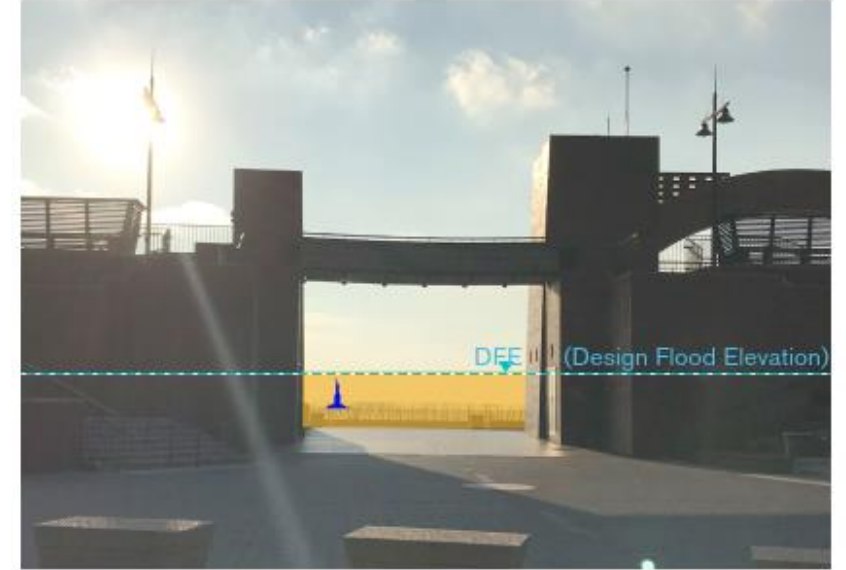
WAGNER PARK SEGMENT: ALIGNMENT ALTERNATIVE 3 (FURTHEST INTO SITE)



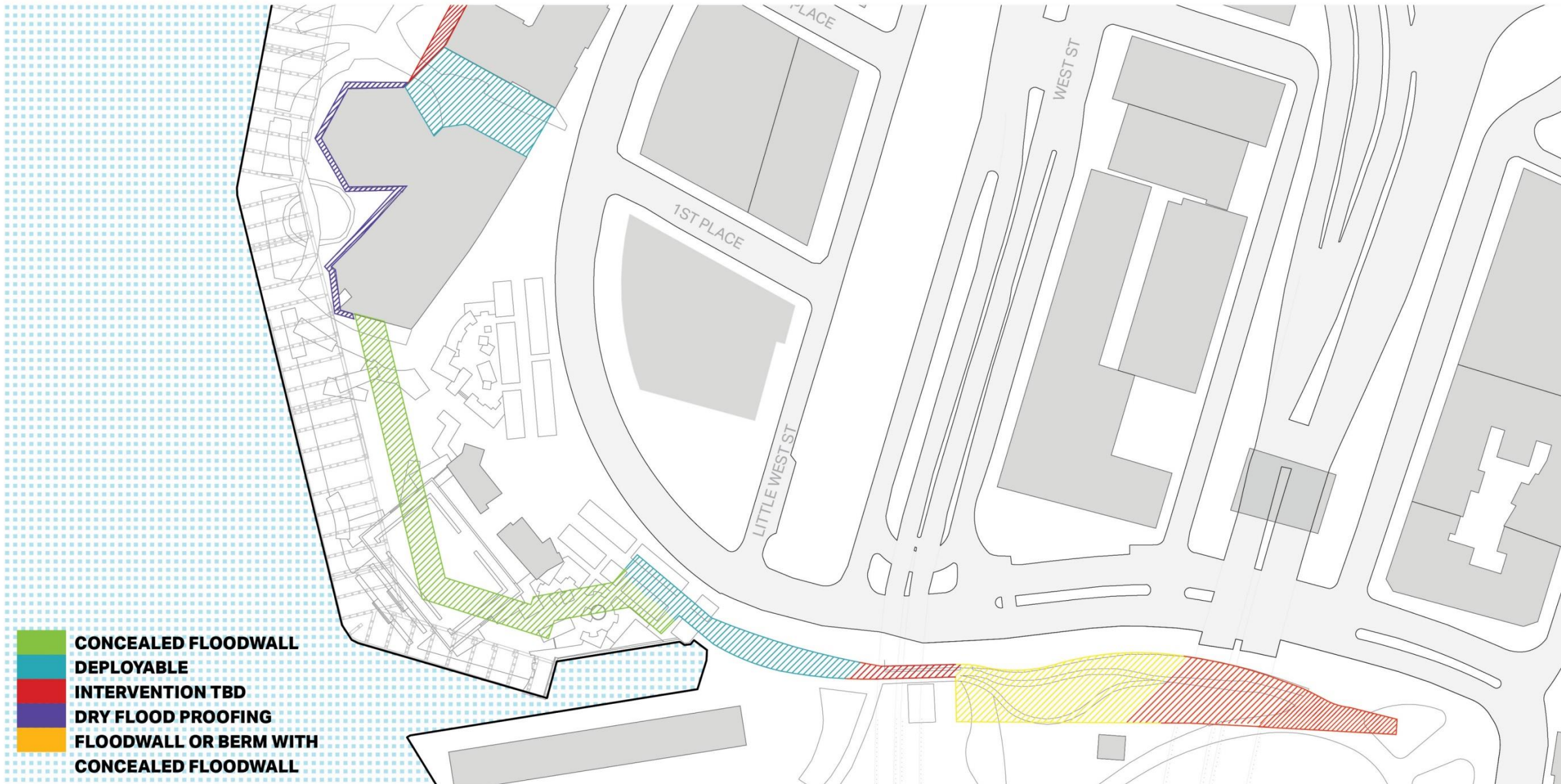
**IMPLICATIONS TO PROJECT AREA
+
POTENTIAL FLOOD RISK MEASURES**

BUILDING CONSIDERATIONS

	INITIAL COST	ONGOING MAINTENANCE COST	MAXIMIZE PROTECTED LAWN	BUILDING RELATIONSHIP TO LANDSCAPE	FRAMED VIEW TO STATUE OF LIBERTY
1. REPAIR EXISTING BUILDING IN EXISTING LOCATION	\$\$	\$\$\$	NO	BELOW DFE	BLOCKED BY FLOOD ALIGNMENT
2. REMEDIATE EXISTING BUILDING IN EXISTING LOCATION	\$\$\$	\$\$	NO	BELOW DFE	BLOCKED BY FLOOD ALIGNMENT
3. BUILD NEW BUILDING					
A REPLICATE EXISTING DESIGN AT HIGHER ELEVATION	\$\$\$	\$\$	NO	STAIRS NO LONGER CONNECT TO STREET LEVEL	YES
B REPLICATE EXISTING DESIGN CLOSER TO STREET	\$\$\$	\$\$	YES	STAIRS NO LONGER ALIGN WITH ALLEE OF TREES	BLOCKED BY FLOOD ALIGNMENT
C BUILD NEW DESIGN CLOSER TO STREET	\$\$\$	\$	YES	FULLY INTEGRATED	POSSIBLE
4. NO BUILDING	\$	-	YES	-	OPEN VIEW

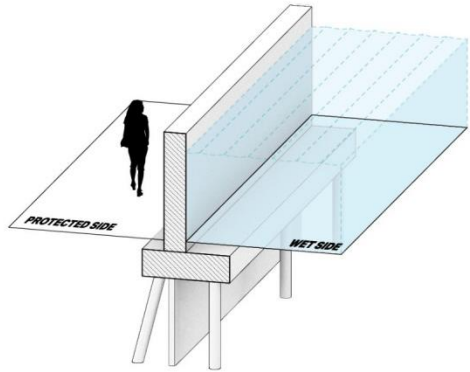


POTENTIAL ALIGNMENT FLOOD RISK MEASURES

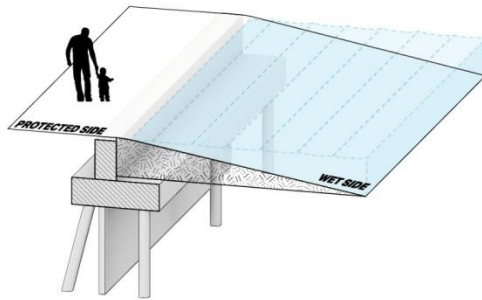


POTENTIAL ALIGNMENT FLOOD RISK MEASURES

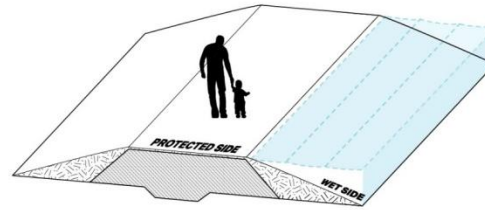
STATIC



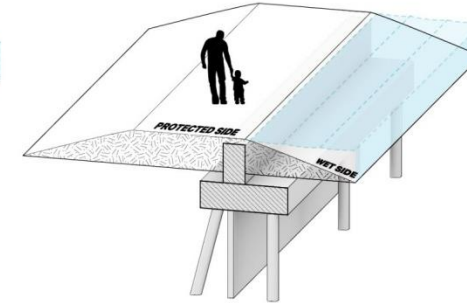
FLOOD WALL



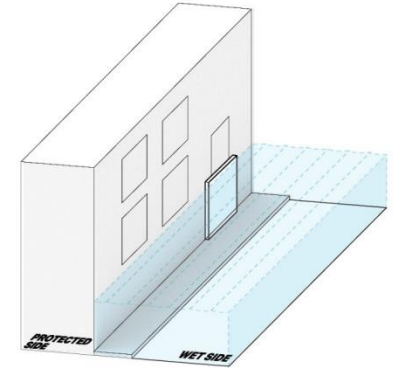
CONCEALED FLOODWALL



STRUCTURAL BERM

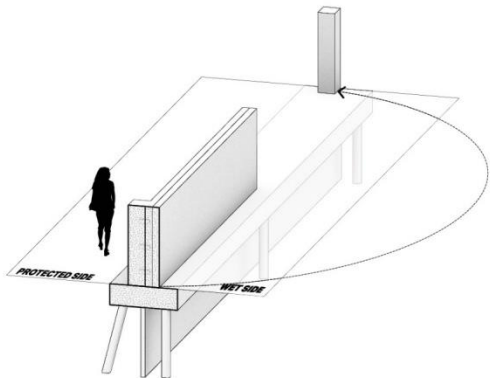


BERM WITH CONCEALED FLOODWALL

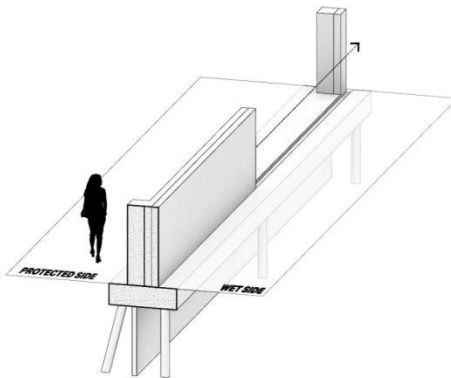


DRY-FLOOD PROOFING

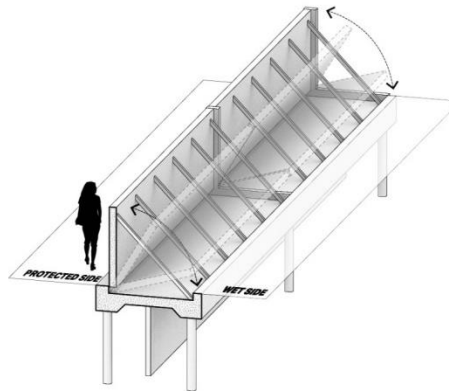
DEPLOYABLES



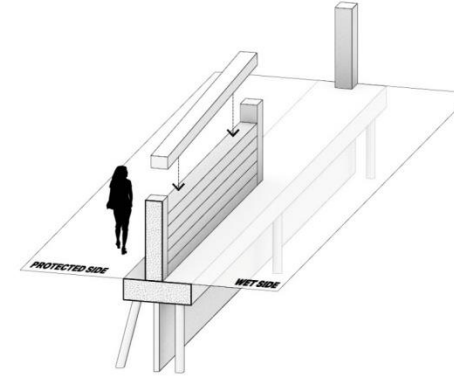
SWING GATE



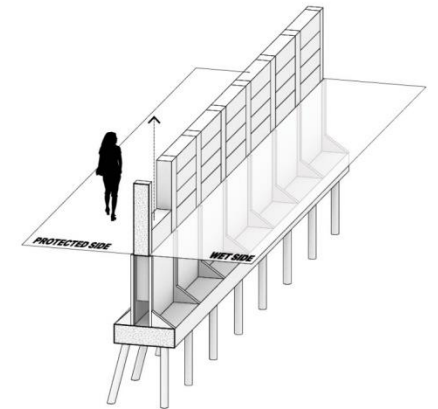
SLIDING GATE



FLIP UP GATE

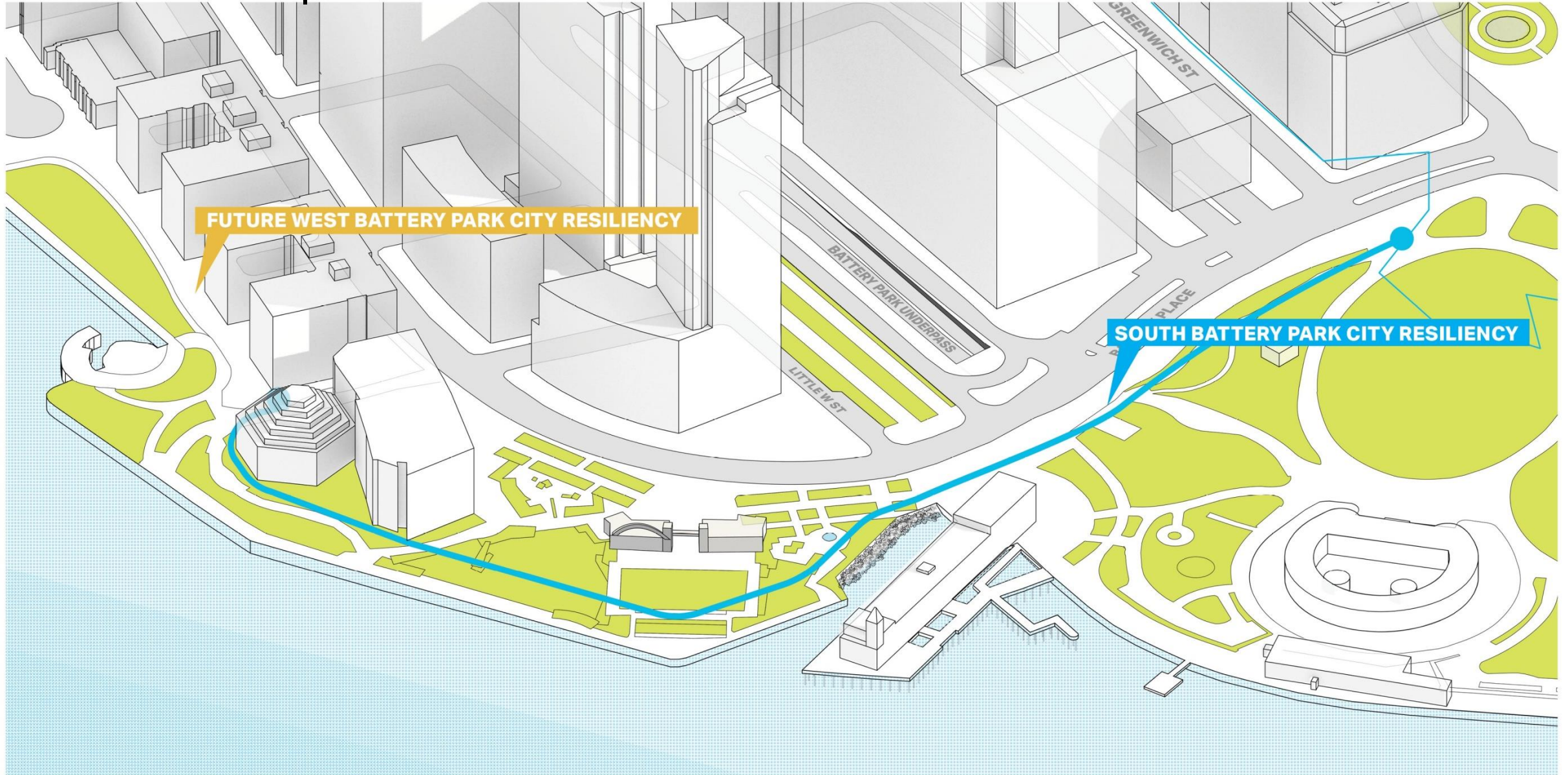


STOP LOGS



VERTICAL SLIDING GATE

2050s 100-YEAR | POTENTIAL ALIGNMENT



NEXT STEPS

NEXT STEPS

- **Surveyors in the Field**
- **Geotechnical Borings & Drilling in the Field**
- **Environmental Assessment & Initial Consultation**
- **Development of Design with Public Feedback – joint CB1 Battery Park City-Environmental Protection Committee Meeting, April 2019 (date TBD)**
- **Next Public Meeting #3 Community Engagement May-June 2019**

Q&A