



# Battery Park City Ballfields & Community Center Resilience Project

BPCA-CB1  
Joint Public  
Meeting  
March 21, 2019



NEW YORK  
STATE OF  
OPPORTUNITY

Battery Park  
City Authority





# Agenda

- Site Plan
- Existing Conditions Findings
- Structural Considerations
- Alignment Alternatives
- Flood Protection Options
- Material Palettes
- Construction Considerations
- Agency Coordination
- Next Steps





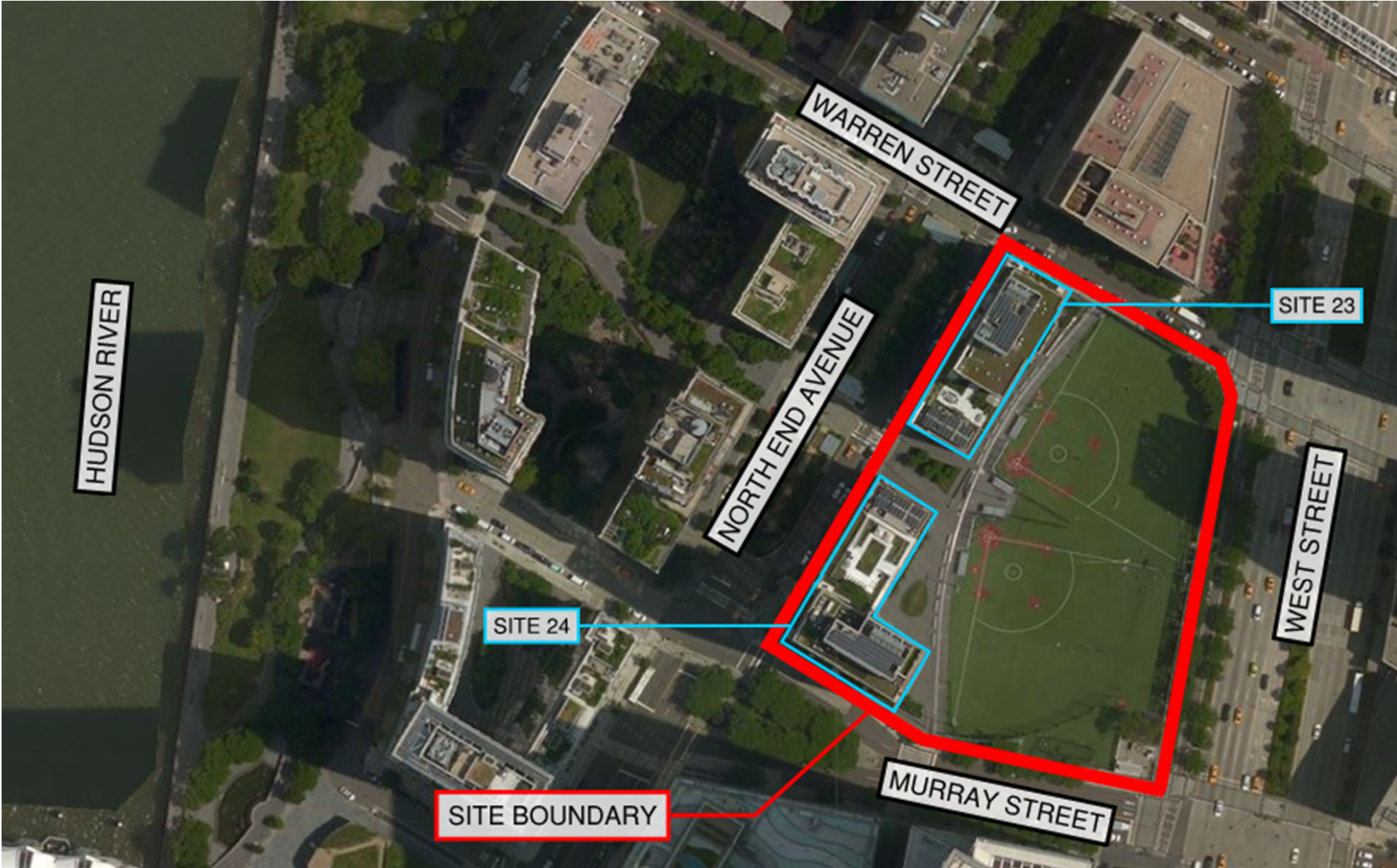
# Guiding Objectives

- Maximize flood risk protection
- Seamless and aesthetic integration of protection measure within urban landscape
- Minimize adverse impacts to ballfields and community center
- Constructability
- Assessment of operations and maintenance
- A cost-beneficial solution





# Site Plan

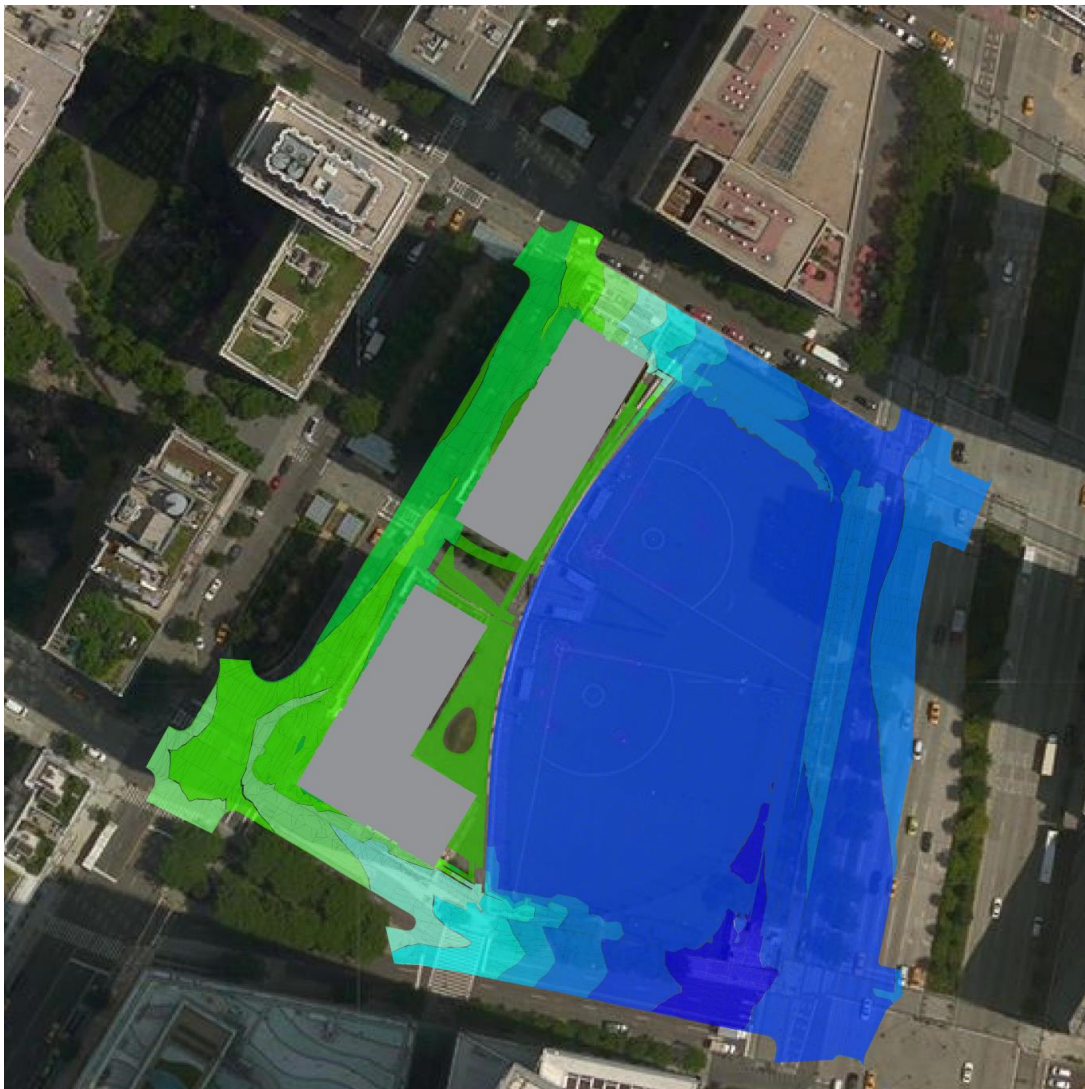


SCALE: NTS





# Existing Condition Findings – Topography



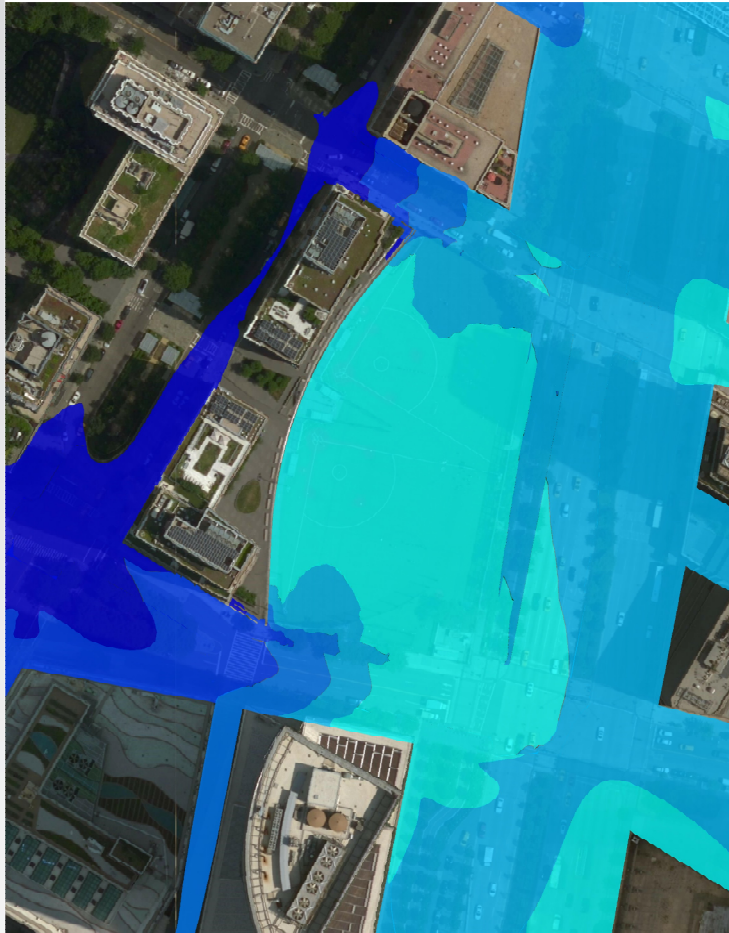
Elevation Legend	
Color	Elevation Range
Dark Blue	≤7 FT
Blue	7 - 9 FT
Light Blue	9 - 11 FT
Cyan	11 - 12 FT
Light Cyan	12 - 13 FT
Light Green	13 - 14 FT
Green	14 - 15 FT
Bright Green	15 - 16 FT
Dark Green	16 - 17 FT
Very Dark Green	>17 FT

SCALE: NTS

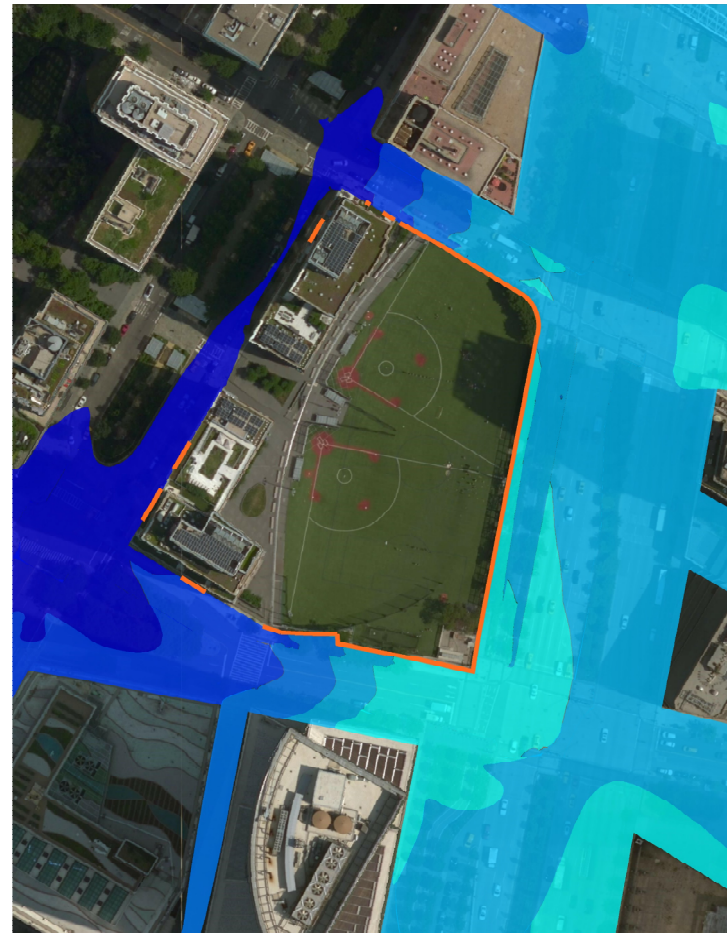




# Hydrological Report (DFE = 16.50')



**EXISTING CONDITION**



**PROPOSED CONDITION**

Legend	
Color	Storm Surge Height
Dark Blue	0 - 2 FT
Medium Blue	2 - 4 FT
Light Blue	4 - 6 FT
Cyan	6 - 8 FT
Bright Cyan	8 - 12 FT

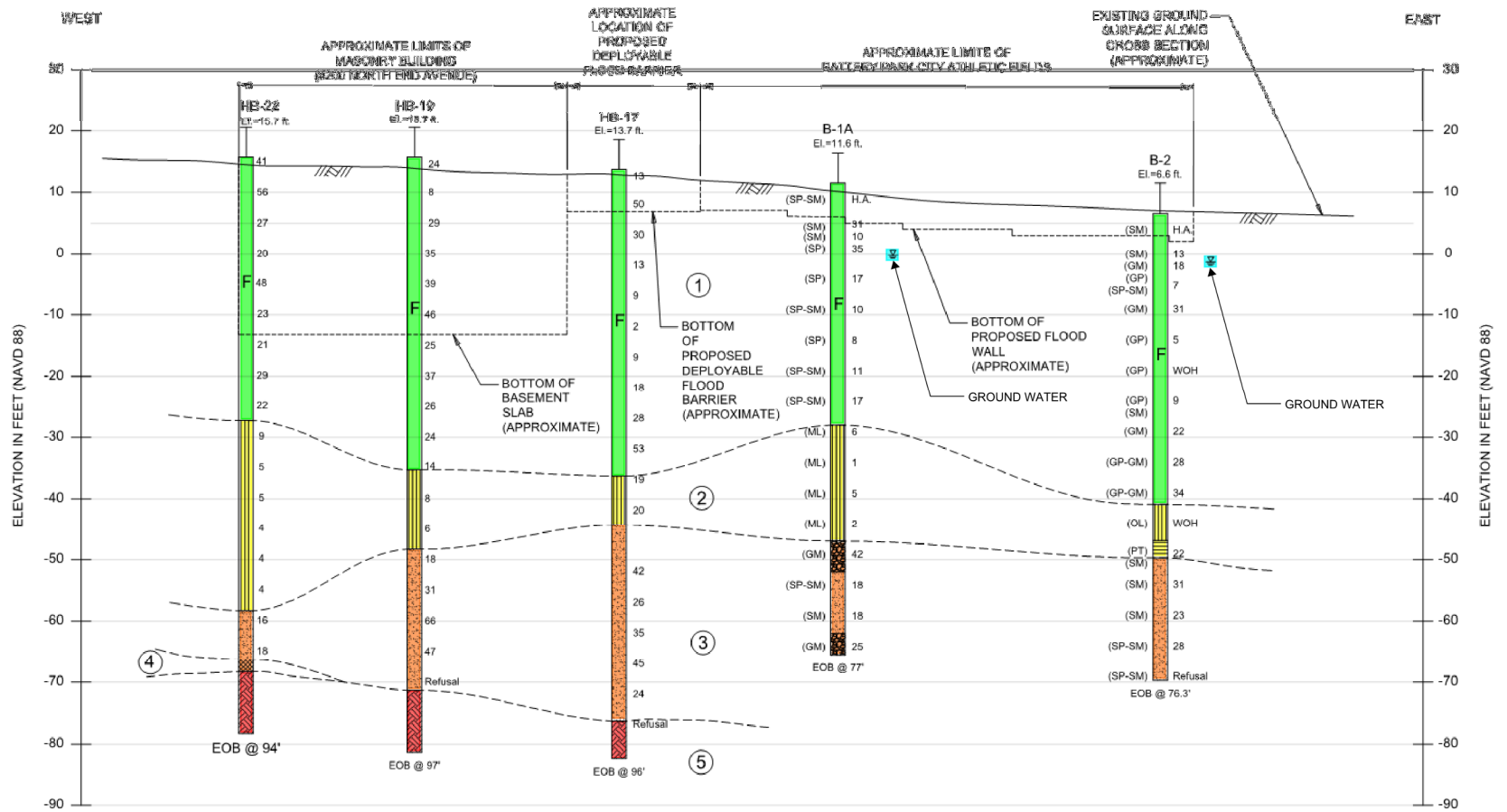
794,000 CF of storm water displaced over the watershed

=

0.068" increase in storm surge to neighboring properties

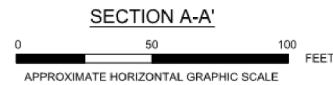
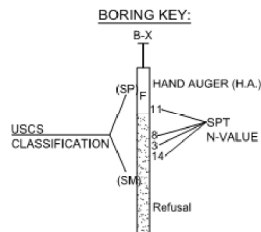


# Existing Condition Findings - Geotechnical



- LEGEND:**
- F FILL
  - SILT / CLAY (ORGANIC)
  - PEAT
  - GLACIAL SAND
  - GRAVEL
  - DECOMPOSED SCHIST
  - SCHIST BEDROCK
  - ESTIMATED GROUNDWATER

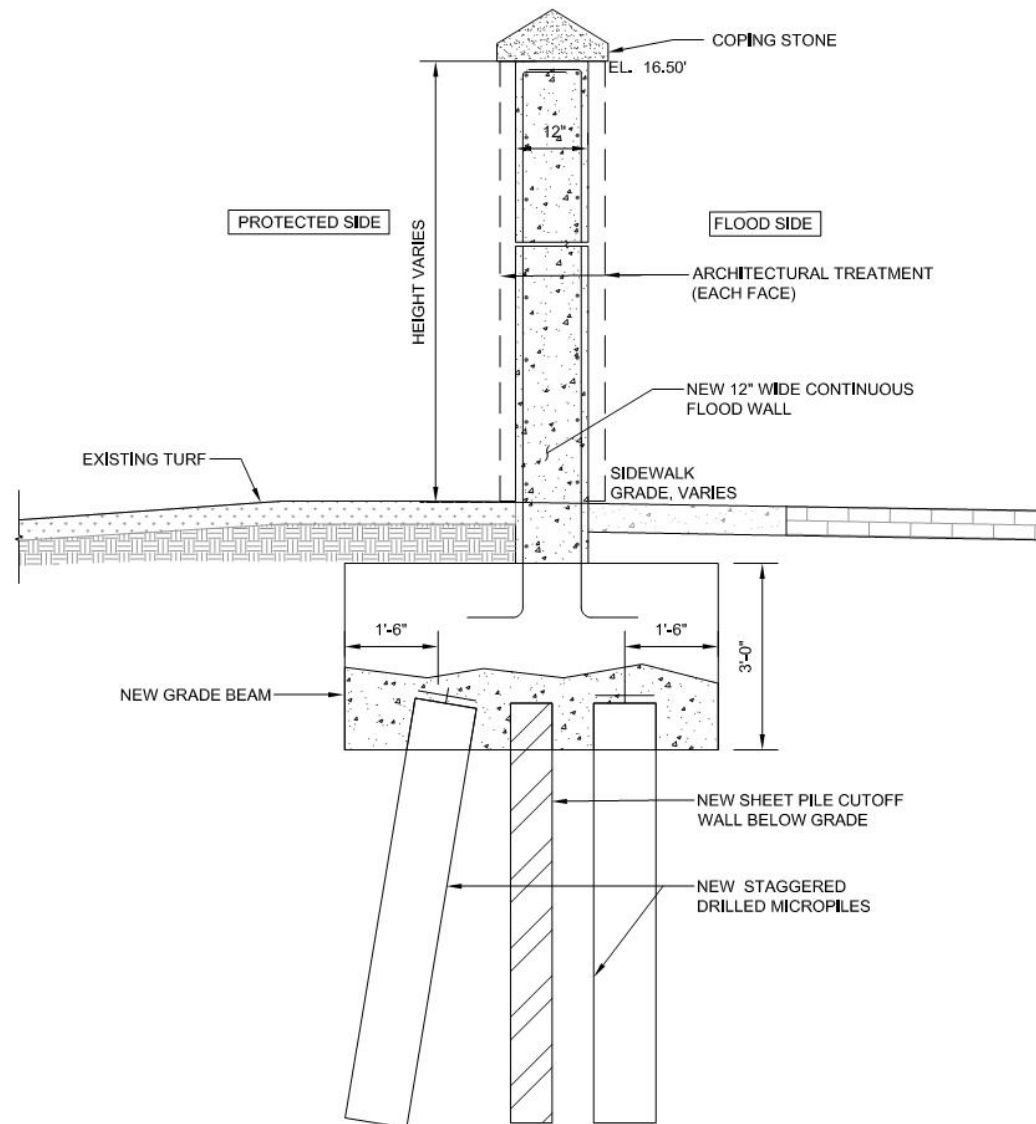
- STRATIGRAPHY:**
- ① GRANULAR FILL
  - ② MARINE DEPOSITS
  - ③ GLACIAL SANDS
  - ④ DECOMPOSED SCHIST
  - ⑤ SCHIST BEDROCK



**Section at Murray Street**



# Floodwall Structural Section - Concept



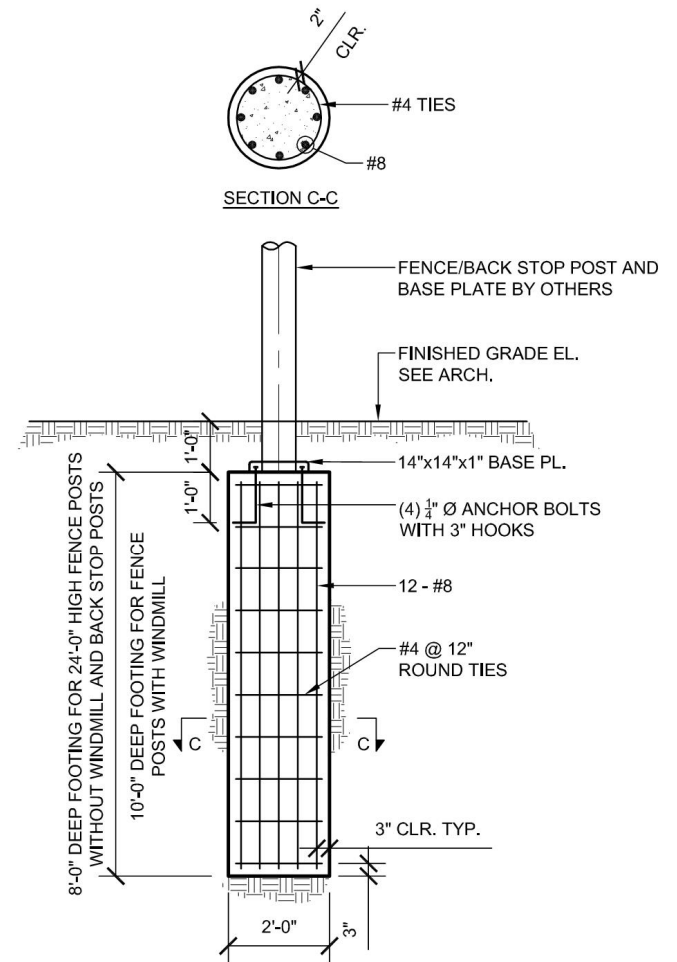


# Floodwall Alignment Summary

- Inline with Existing Fence
- Interior to Fence (within BPCA ballfields property)
- Exterior to Fence (within NYCDOT/NYS DOT property)
- Hybrid (combination of interior and exterior alignments)



# Alignment Alternatives – Inline with Existing Fence



5  
F.01 FOOTING DETAIL FOR 24'-0" HIGH FENCE POST, POST W/ WINDMILL AND BACK STOP POSTS  
SCALE: NTS

# Alignment Alternatives – Interior



SCALE: NTS





# Alignment Alternatives -Interior (Murray Street)

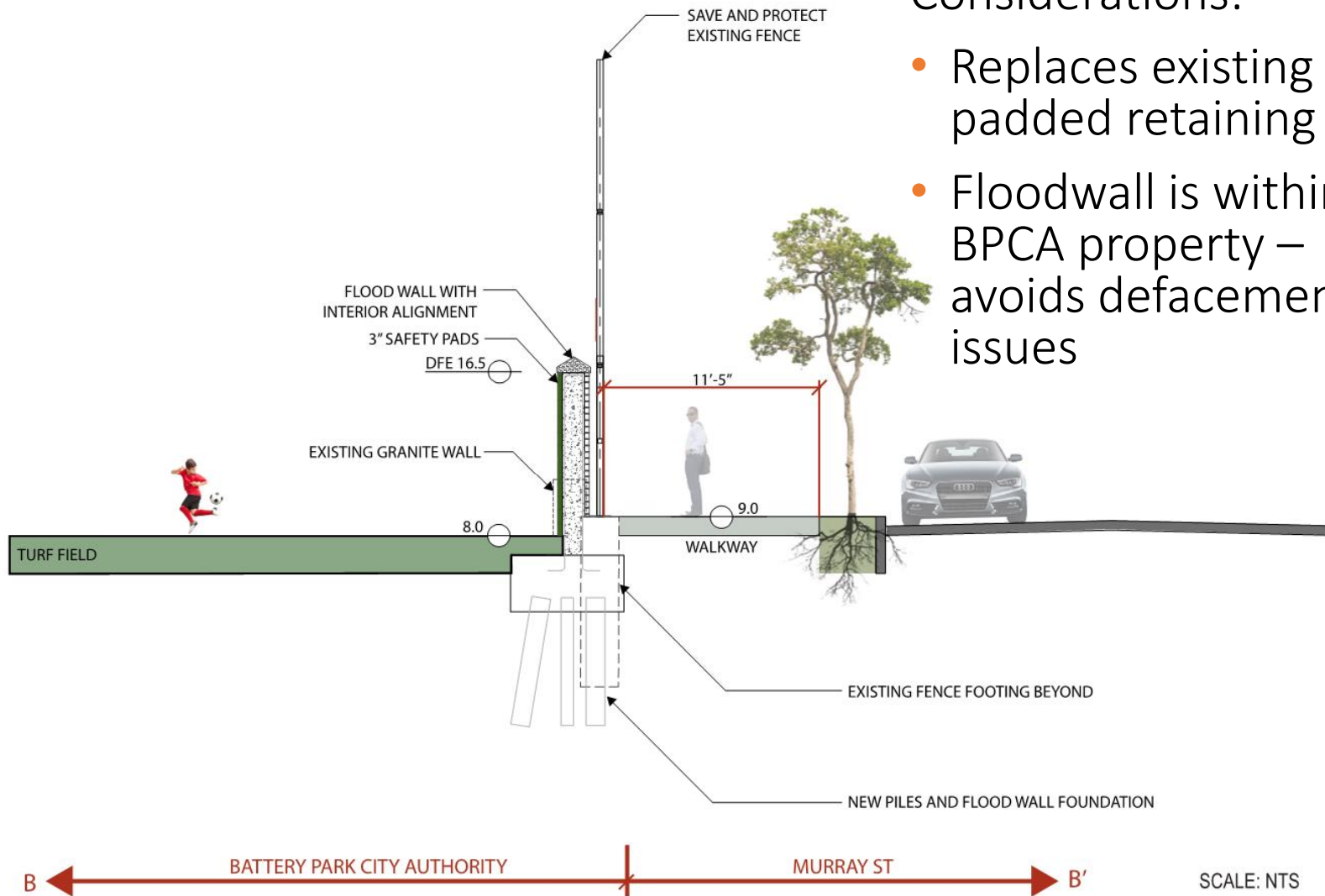


(looking east)

# Alignment Alternatives -Interior (Murray Street)

## Considerations:

- Replaces existing padded retaining wall
- Floodwall is within BPCA property – avoids defacement issues



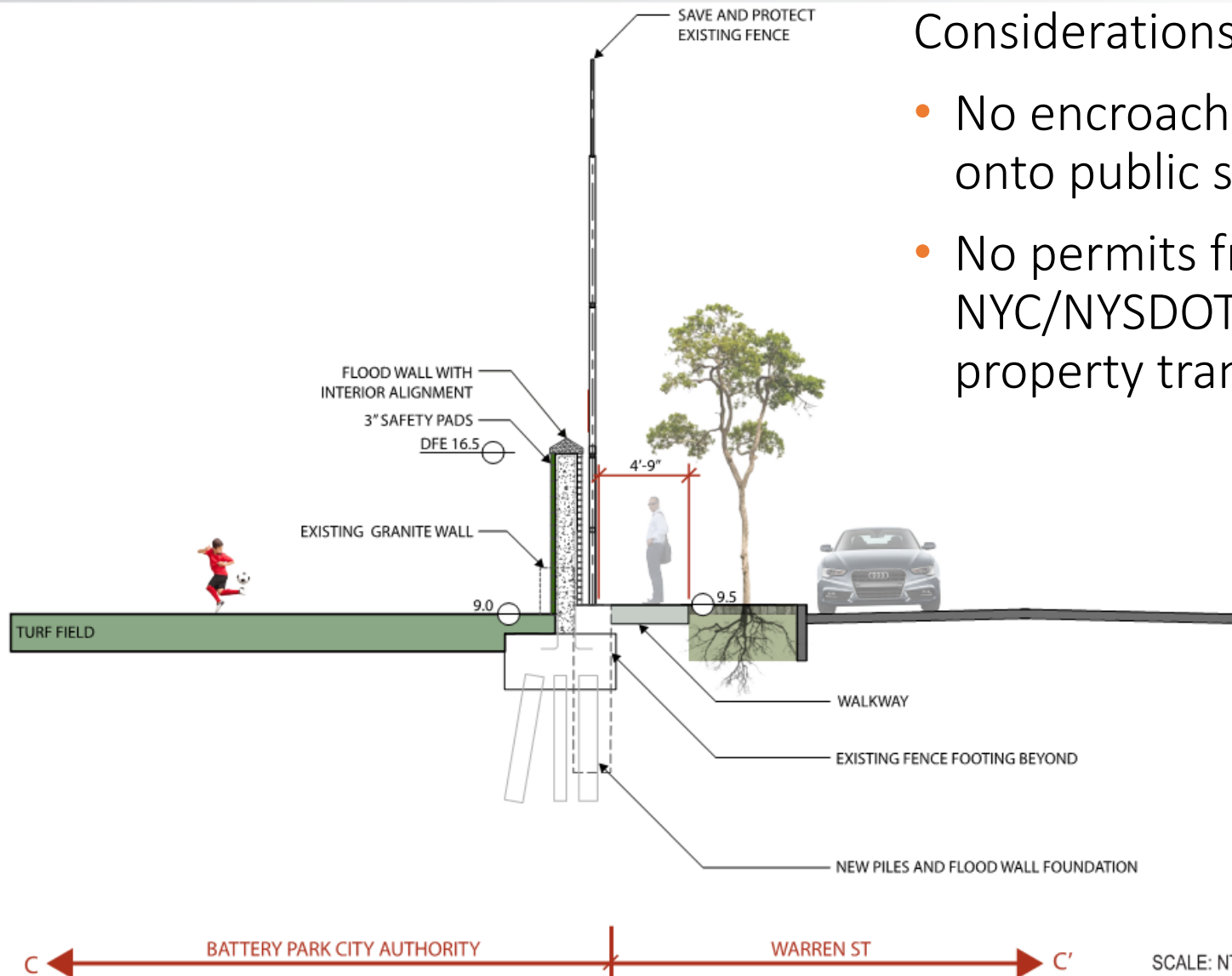


# Alignment Alternatives -Interior (Warren Street)



Looking Northeast along Warren St.

# Alignment Alternatives -Interior (Warren Street)



## Considerations:

- No encroachment onto public sidewalks
- No permits from NYC/NYS DOT or property transfer

SCALE: NTS



# Alignment Alternatives -Interior (West Street)

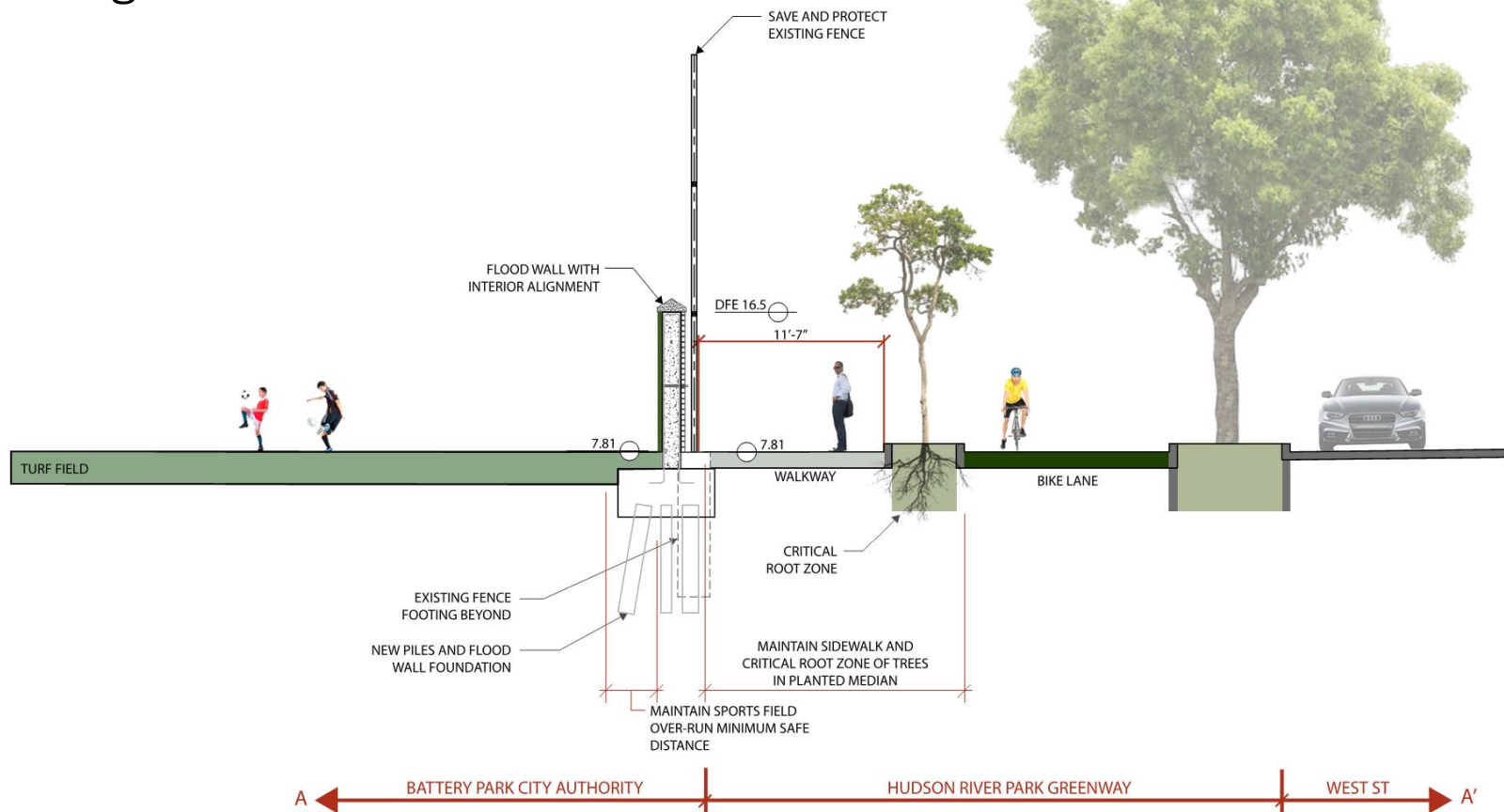


(looking south)

# Alignment Alternatives -Interior (West Street)

## Considerations:

- Encroaches onto eastern edge of ballfields





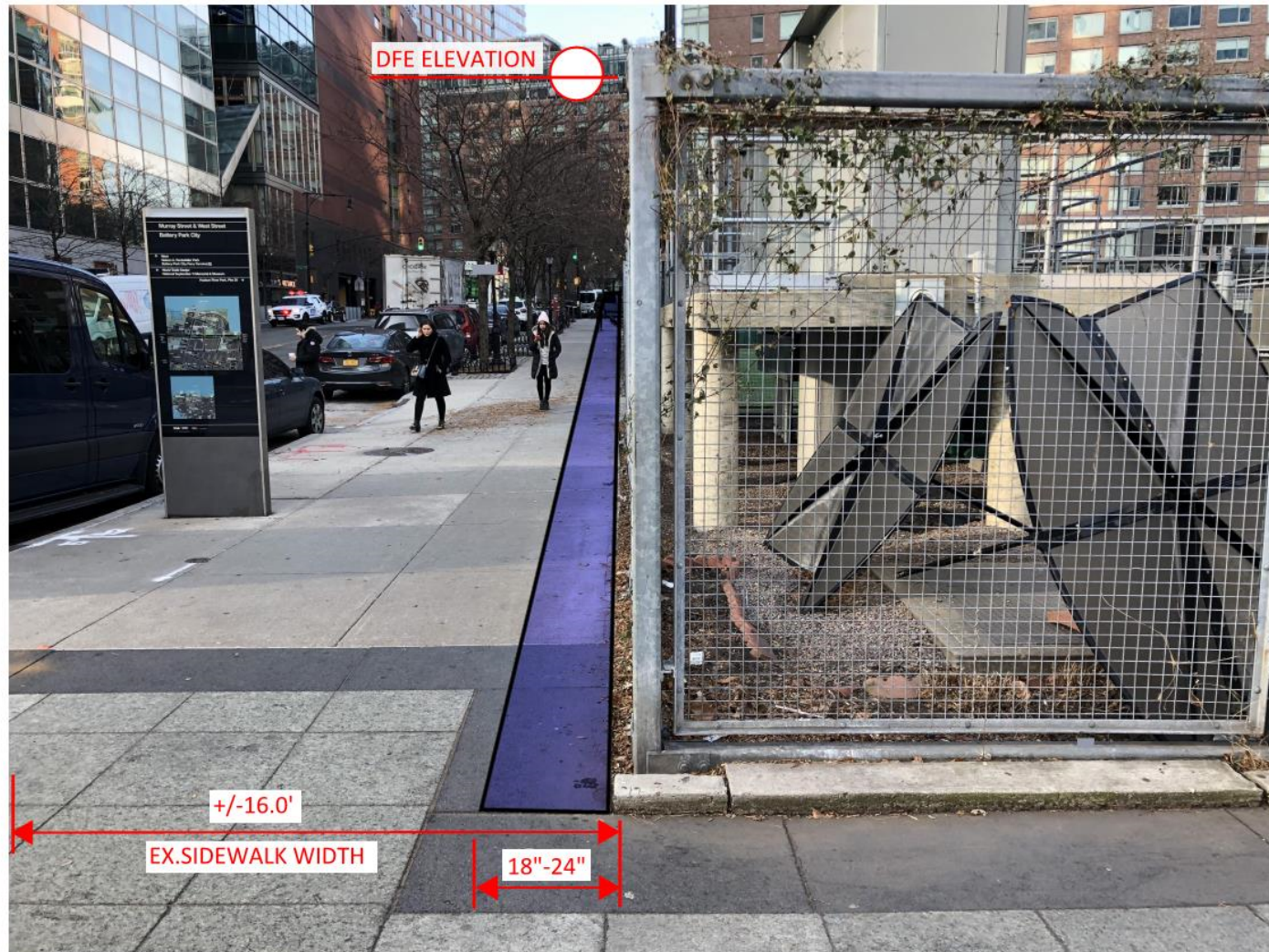
# Alignment Alternatives – Exterior



SCALE: NTS



# Alignment Alternatives – Exterior (Murray Street)



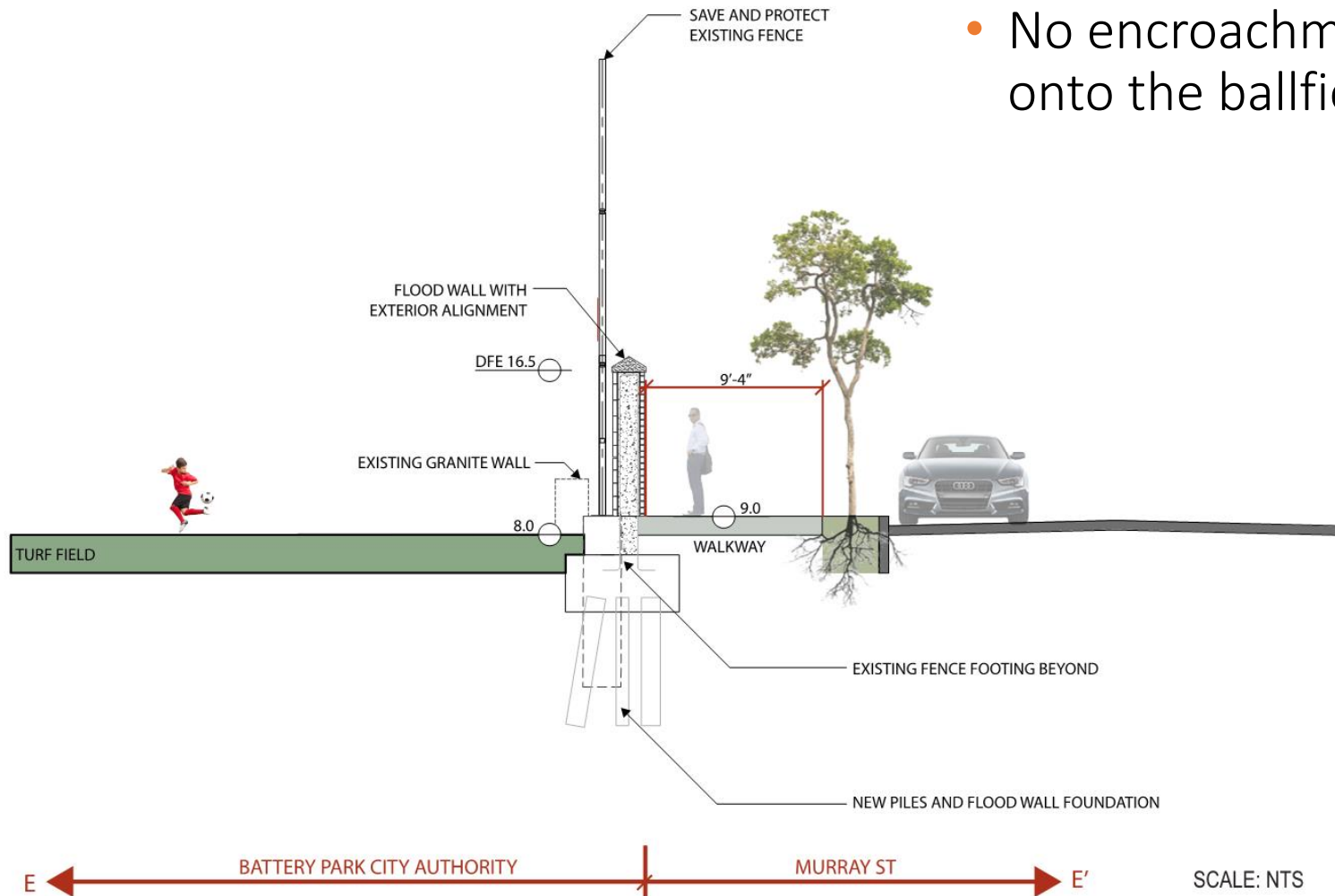
(looking west)



# Alignment Alternatives – Exterior (Murray Street)

## Considerations:

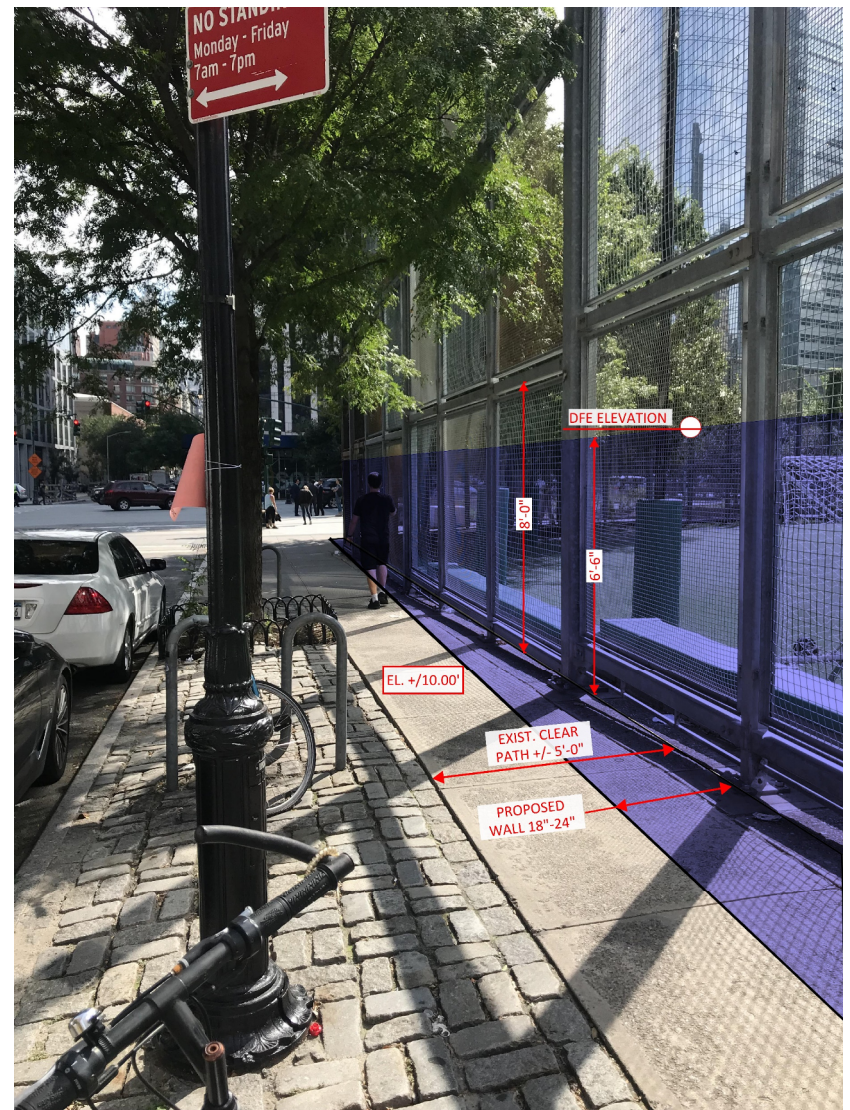
- No encroachment onto the ballfields



# Alignment Alternatives – Exterior (Warren Street)



(looking east)



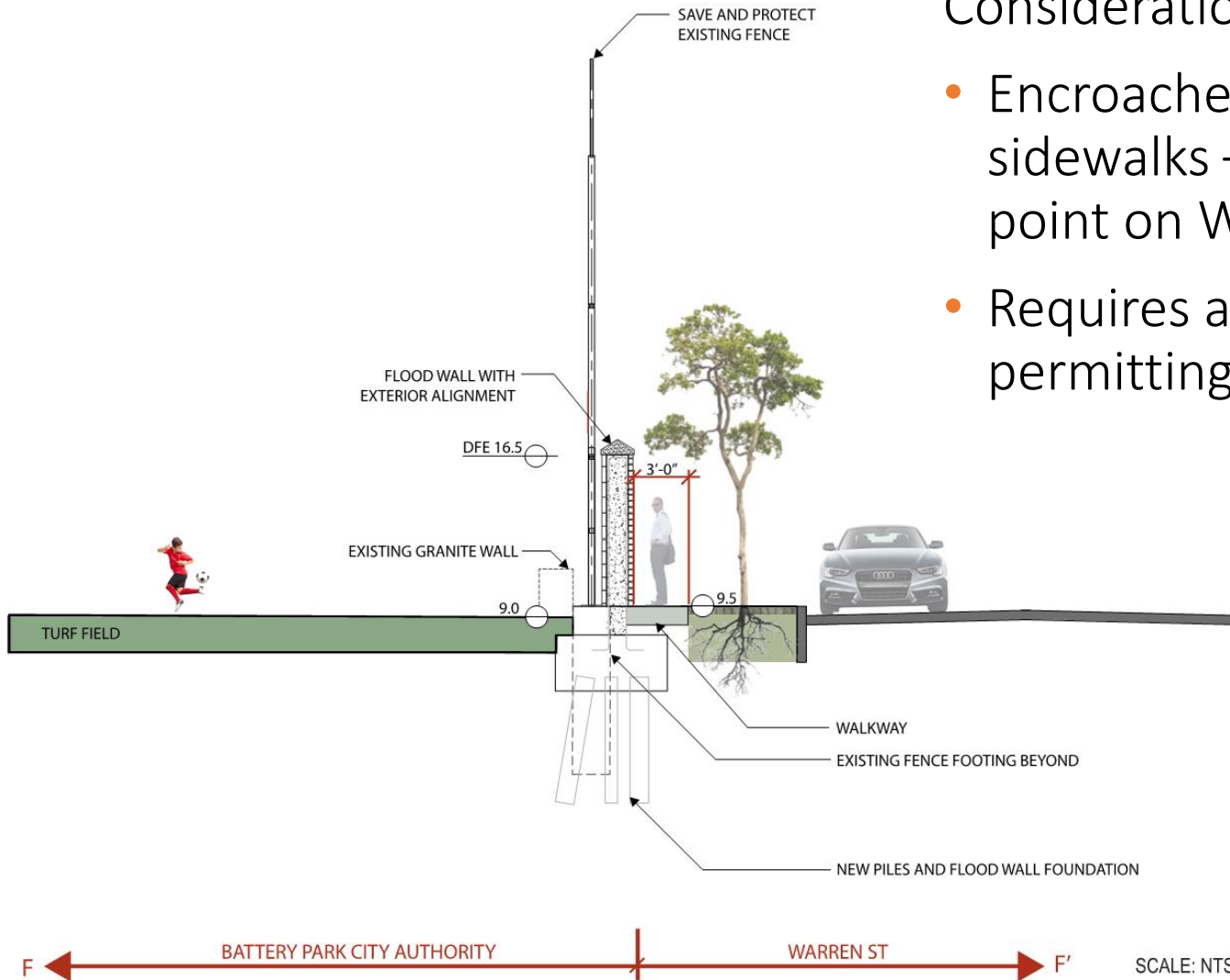
(looking east)



# Alignment Alternatives – Exterior (Warren Street)

## Considerations:

- Encroaches onto public sidewalks – creates pinch point on Warren
- Requires approval and permitting from NYCDOT



# Alignment Alternatives – Exterior (West Street)



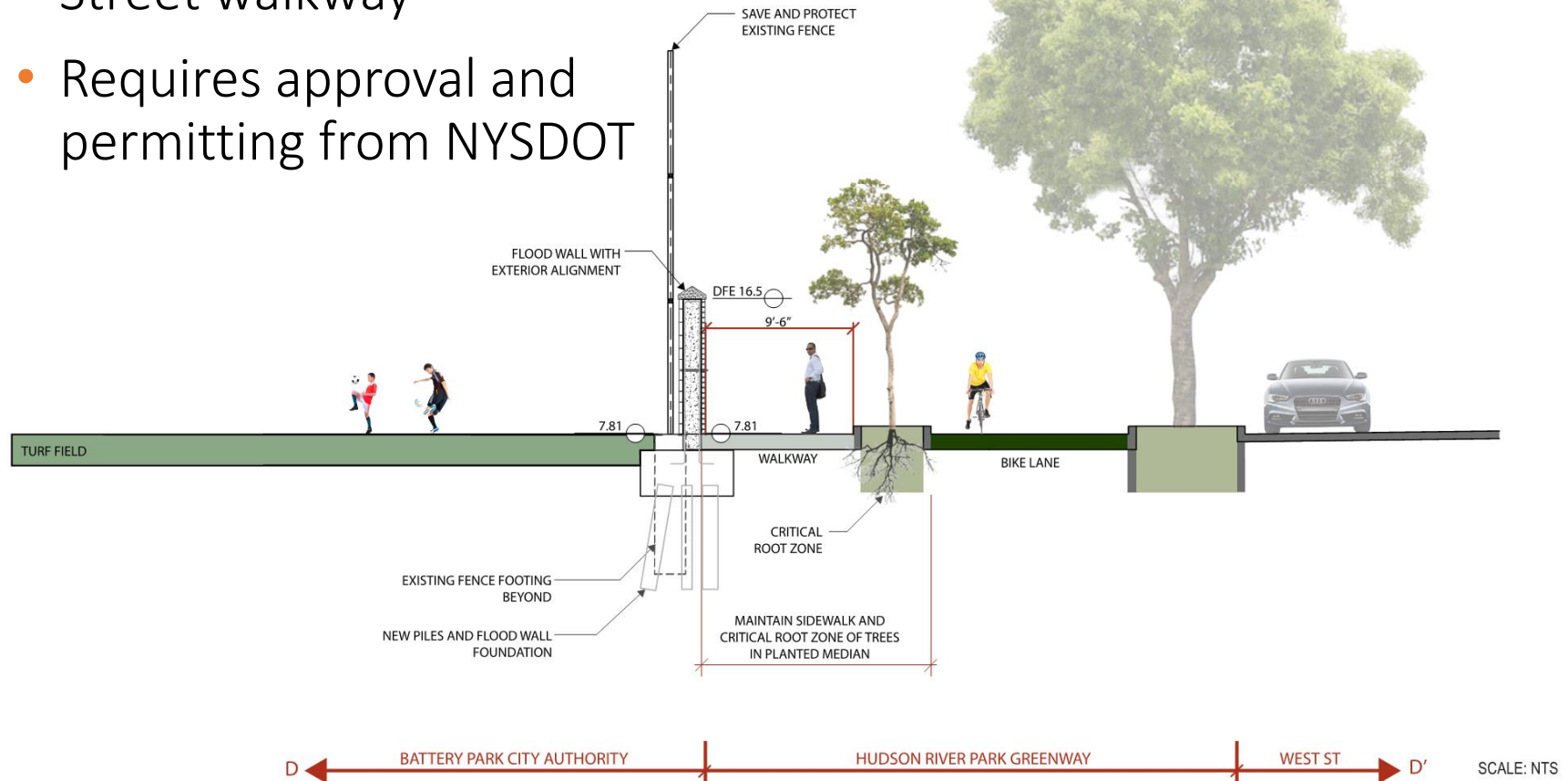
(looking north)



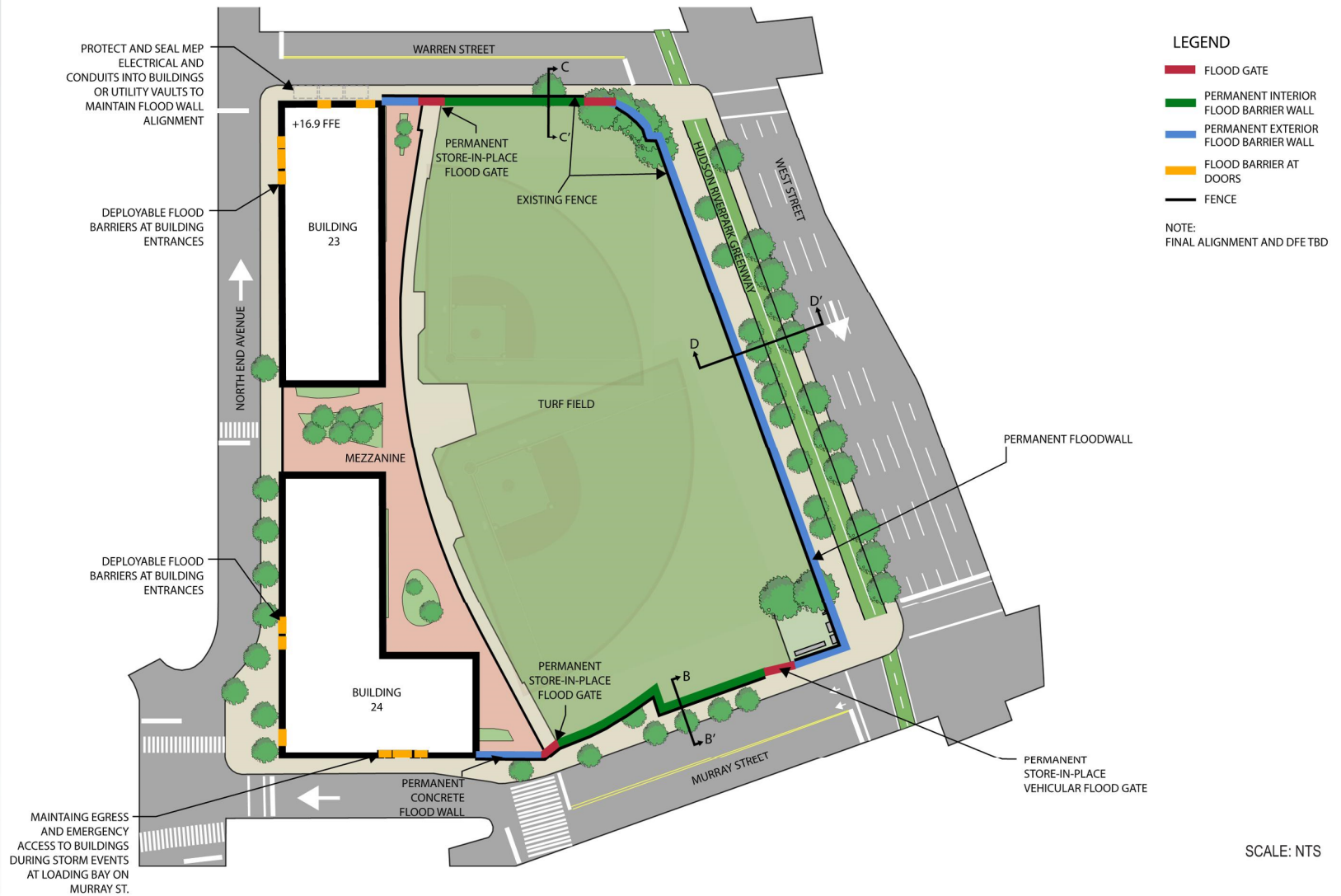
# Alignment Alternatives – Exterior (West Street)

## Considerations:

- Encroaches onto West Street walkway
- Requires approval and permitting from NYSDOT

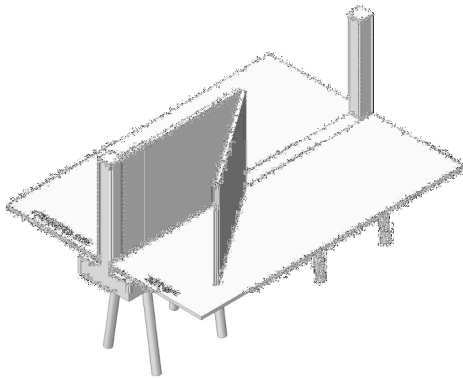


# Alignment Alternatives -Hybrid

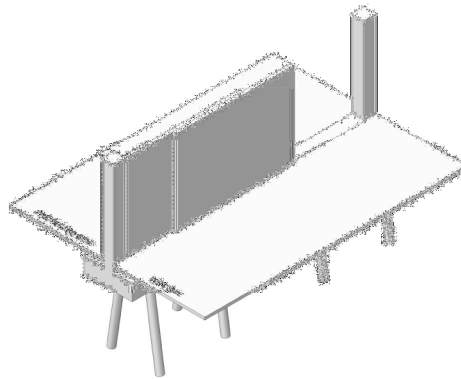




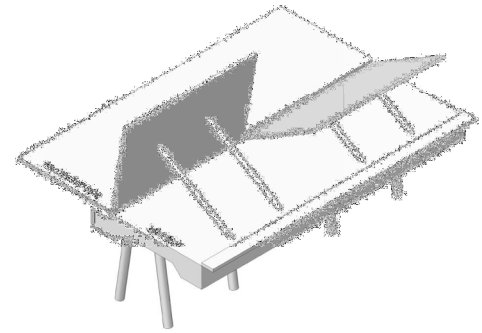
# Flood Protection Options



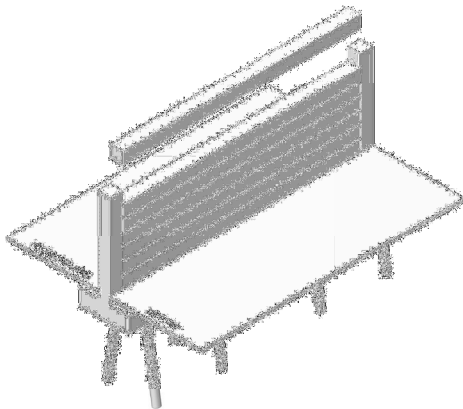
**SWING GATE**



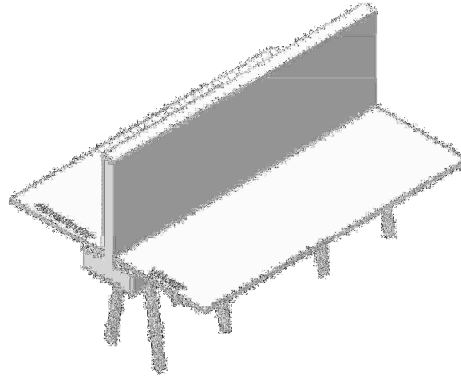
**HORIZONTAL SLIDING GATE**



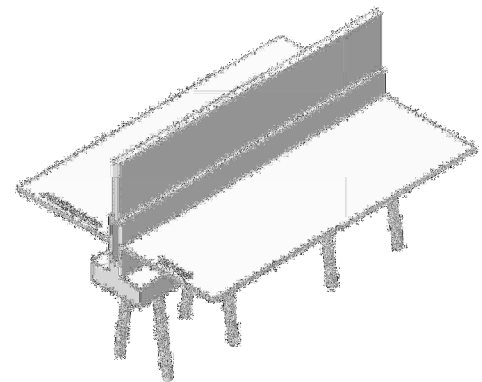
**BOTTOM HINGE GATE**



**REMOVABLE/STACKABLE GATE**



**PERMANENT FLOOD WALL**



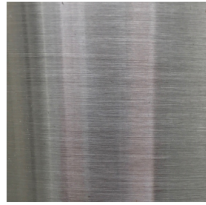
**POP-UP WALL**

# Material Palette – Floodwall

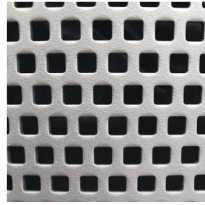
## METAL



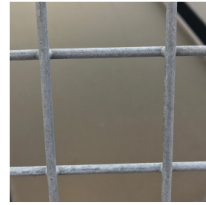
GALVANIZED STEEL



BRUSHED STAINLESS STEEL



PERFORATED STEEL



WELDED WIRE MESH



POWDER COATED STEEL

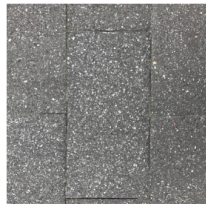


LASER CUT STEEL SIGNAGE

## STONE



STREETCAPE STONE PLANTERS



EXPOSED AGGREGATE STONE PAVERS



GRANITE PAVERS



GRANITE WALL SIDING

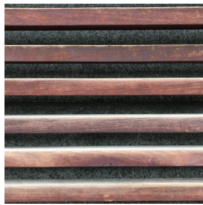


SPLIT FACE STONE VENEER



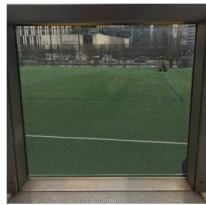
BRICK

## WOOD



HORIZONTAL WOOD SIDING

## GLASS

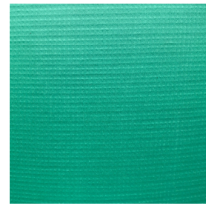


GLASS VIEWING



GLASS EXTERIOR WALLS

## FABRIC

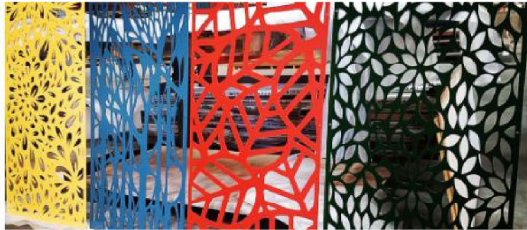


OVERRUN OUTFIELD PADDING



# Material Palette – Floodwall

## PERFORATED METAL

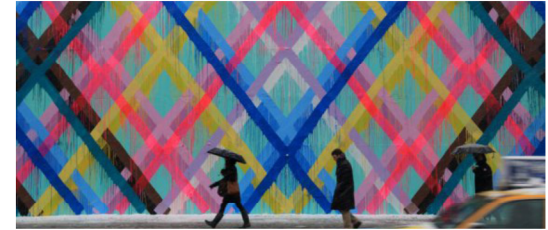


POWDER COATED STEEL SCREENS



STAINLESS STEEL SCREENS

## MURAL



PAINTED

## PRECAST CONCRETE



TEXTURED PRECAST CONCRETE PANELS

## BRICK



UNDULATING BRICK PATTERN

## GABION



GABION VENEER WITH GLASS PANELS

## PLANTING



IVY COVERED WALL

# Construction Considerations

- Minimize field downtime
- Efficient phasing procedure
- Pedestrian protection
- Safe ingress/egress to the fields and community center
- Regulation of noise levels
- Vibration monitoring
- Protection of elements to remain





# Agency Coordination - NYCDOT

- Revocable Consent requires petitioner to provide rationale for public hearing
- Preferable sidewalk width=15-feet



Warren Street (looking west)

# Agency Coordination - NYSDOT

- Concerns on narrowing walkway in one location
- Modification of existing drainage system



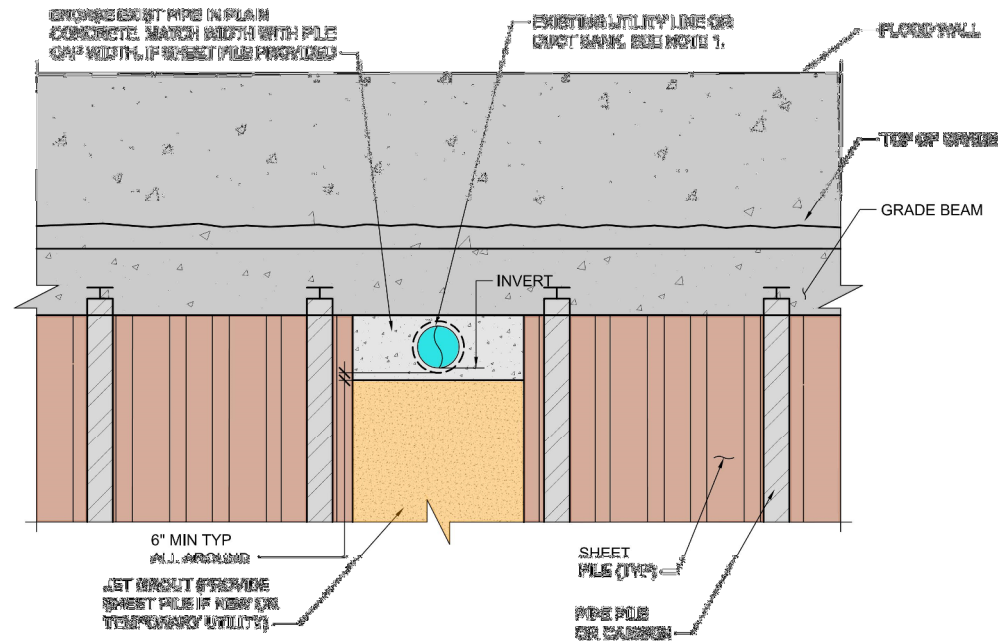
Westside Walkway (looking south)





# Agency Coordination - NYCDEP

- Follow previously approved spanning detail



## BUILD PILE CAP ABOVE UTILITY

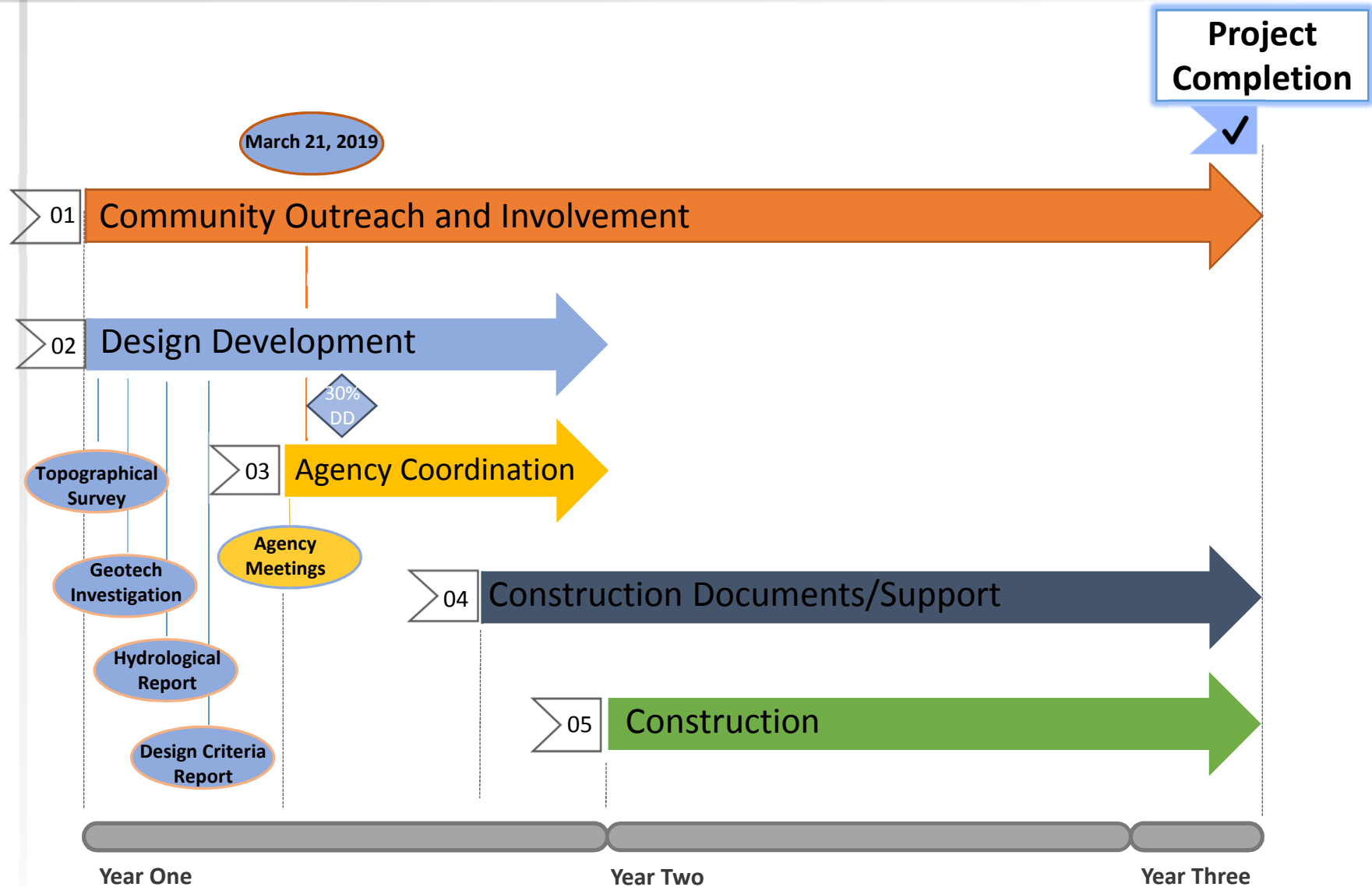
### NOTES:

1. PROVIDE STANDARD WEIGHT PIPE CURVE AT EACH NEW AND EXISTING PIPE UTILITY.
2. SHEET PILES AND PILES SHALL BE INSTALLED A MINIMUM OF 6" AWAY FROM EXISTING UTILITIES TO REMAIN IN PLACE.
3. MINIMUMS DIMENSIONS IS PREScribed AT ALL EXISTING UTILITIES, REFER TO SPECIFICATIONS FOR PROPOSED AND EXISTING UTILITIES.
4. FOR INSTALLATION OF JET BRACKET BELOW UTILITIES REFER TO SEPARATE DETAIL, CURVE APPROX TURNS SHALL BE PLACED A MINIMUM OF 12" AWAY FROM EXISTING UTILITY.
5. TYPICAL PILE CAP TO BE USED AT UTILITIES UNL.

## 1 TYPICAL UTILITY SPAN DETAIL

NOT TO SCALE

# Project Schedule





# Next Steps

- Coastal Model
- Design Flood Elevation Decision
- Alignment Decision
- Pre-Application Agency Meetings
- 30% Design Development
- Continued Community Input





# Questions and Comments



# Short-Term Protection



Metal deck fence protection at Coney Island Rail Yard



Metal deck fence protection featured in NYCT museum



# Short-Term Protection



Trapbag protection at Coney Island Rail Yard