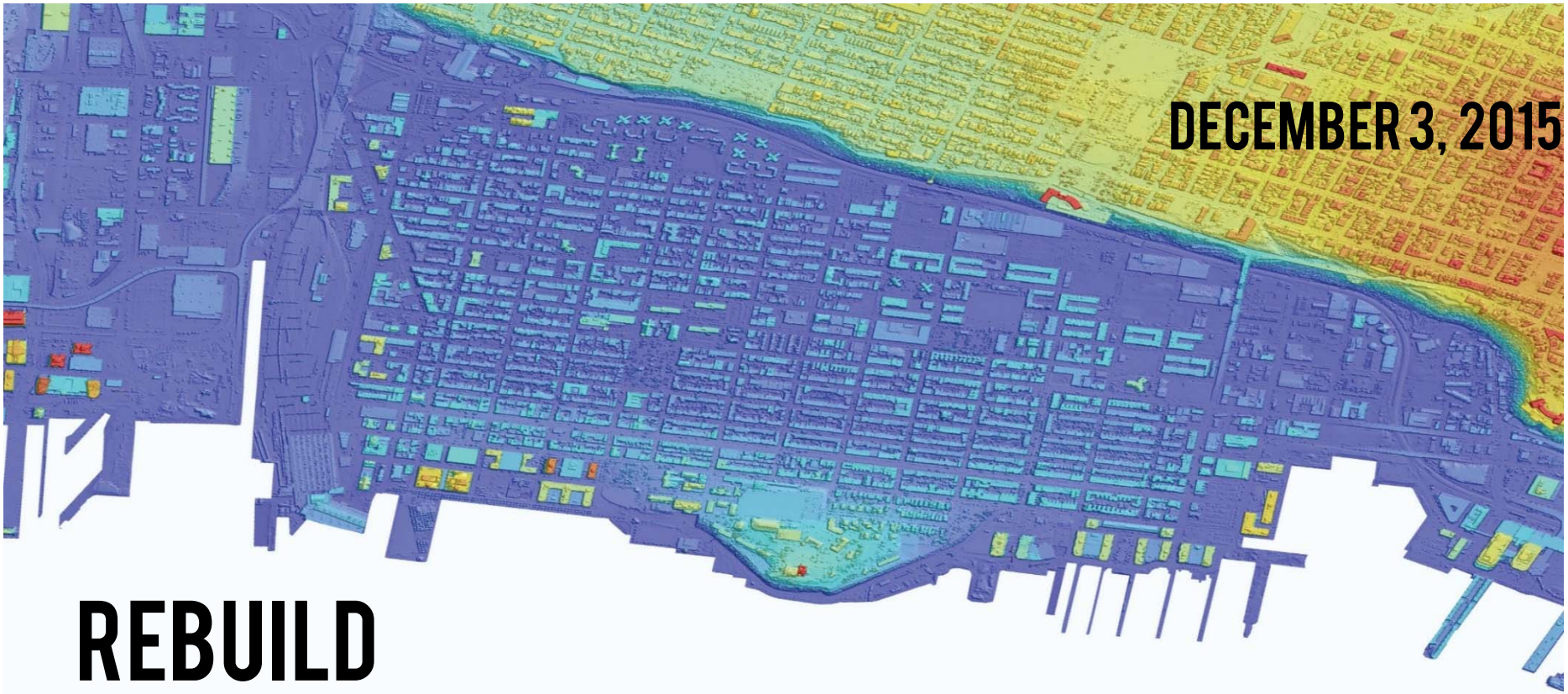


DECEMBER 3, 2015

REBUILD BY DESIGN

▪ RESIST ▪ DELAY ▪ STORE ▪ DISCHARGE ▪

HUDSON RIVER

Hoboken Weehawken Jersey City | New Jersey

DRAFT FIVE PROJECT CONCEPTS FOR CAG REVIEW

DISCLAIMER

The attached drawings represent five (5) Draft Concepts (A-E) prepared by Dewberry Engineers, Inc. These 5 draft concepts, dated 12/3/15, are currently under review by the Project Citizen Advisory Group (CAG) and other stakeholders in accordance with the Final Citizen Outreach Plan. It is noted that the information that what was presented during the 12/3/15 CAG meeting had the following errors and have been updated:

- Coastal Storm Surge has been revised to "Fair" for Concept D.
- The BCR for Concepts E1 and E2 have been revised to "Fair"

These 5 Concepts are not to be considered FINAL.

The next steps are to use the project established Screening Criteria to evaluate the 5 concepts to select three (3) concepts as Build Alternatives. These 3 Build Alternatives will be further analyzed through the feasibility study and Environmental Impact Statement.

CONCEPT A

Lowest impact alignments which still provide substantial flood risk reduction benefits to most residents.

- North Waterfront takes Boathouse into account.
- North Hoboken on-street protection provided along Garden Street until elevation tie-in.
- Hoboken Terminal does not receive flood risk reduction benefits.
- South Waterfront constructed independent of Longslip Canal.
- Permanent movable gates proposed to address flood risk reduction along the underpass.

Legend:

- Gate - Sliding
- Gate - Swinging
- Deployable Flood Wall
- Landscape
- Berm
- Revetment
- Raised Path
- Seawall
- Flood Wall
- T Wall
- Ramp
- Municipal Boundaries
- Study Area
- Ferry Lines
- Preliminary FEMA 100 year Flood Plain

MIN DFE : Approx. Min. FEMA Certification

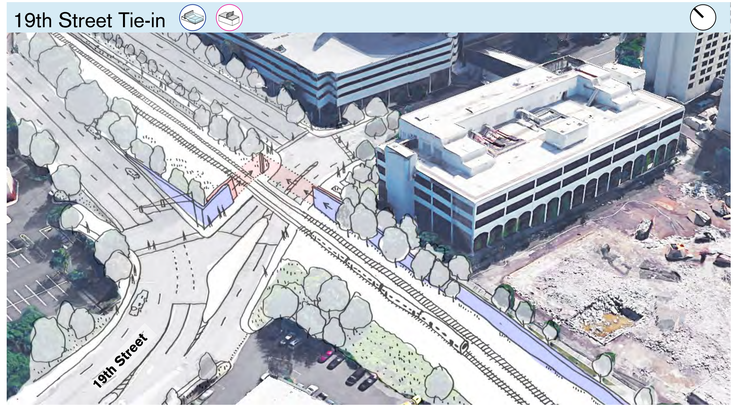
MAX DFE : Approx. 500 Year + 2075 NOAA SLR

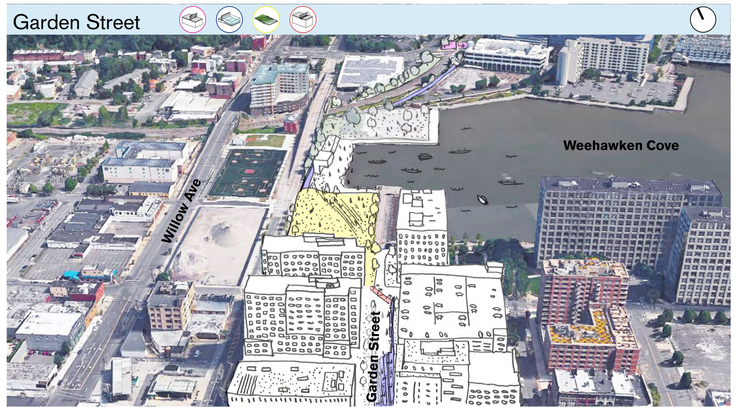
*All DFE's are Approximate and Subject to Change

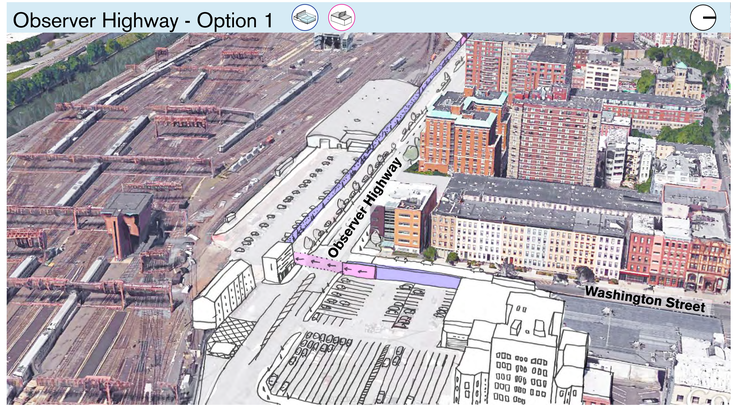
N

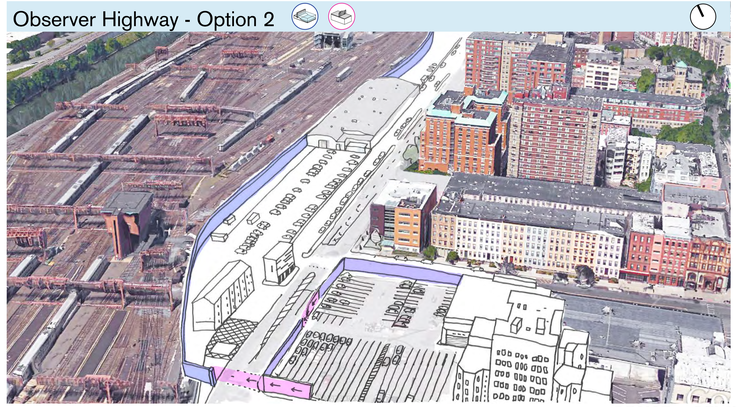
0' 400' 800' 1,600'

State of New Jersey Department of Environmental Protection









Alignment Options	Option 1	Option 2
Flood Risk Reduction		
Coastal Storm Surge	●	●
Potential to Adapt to Higher Coastal Flood Event [≥ 500yr and Sea Level Rise]	●	●
Rainfall	●	●
Built Environment		
View Corridors	●	●
Waterfront Access	●	●
Potential Community Benefits	●	●
Connectivity/ Circulation	●	●
Environmental Justice Populations	●	●
Construction/ Maintenance & Operation		
Constructability	●	●
Construction Duration	●	●
Maintenance and Operation for Overall System	●	●
Environmental Impacts		
Hazardous Waste	32	28
Wetlands	Yes	Yes
Essential Fish Habitat	No	No
Threatened and Endangered Species	No	No
Army Corp. Permits	No	No
Historic Properties	Yes	Yes
Archaeological Resources	●	●
Benefit/Cost Analysis		
Benefits	High	High
Costs	Lowest	Lower
Benefit/Cost Ratio	●	●

CONCEPT B

Moderate impact alignments which give Weehawken and the North Waterfront substantial flood risk reduction benefits.

- Weehawken tie-in at Lincoln Tunnel.
- Permanent built structures on North Waterfront provide flood risk reduction benefits.
- Hoboken Terminal does not receive flood risk reduction benefits.
- South Waterfront constructed independent of Longslip Canal.
- Permanent movable gates proposed to address flood risk reduction along the underpass.

Legend:

- Gate - Sliding
- Gate - Swinging
- Deployable Flood Wall
- Landscape
- Berm
- Revetment
- Raised Path
- Seawall
- Flood Wall
- T Wall
- Ramp
- Municipal Boundaries
- Study Area
- Ferry Lines
- Preliminary FEMA 100 year Flood Plain

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N

0' 400' 800' 1,600'

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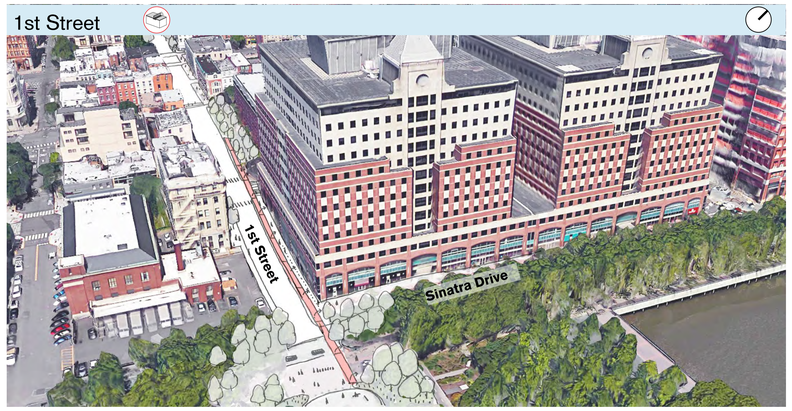

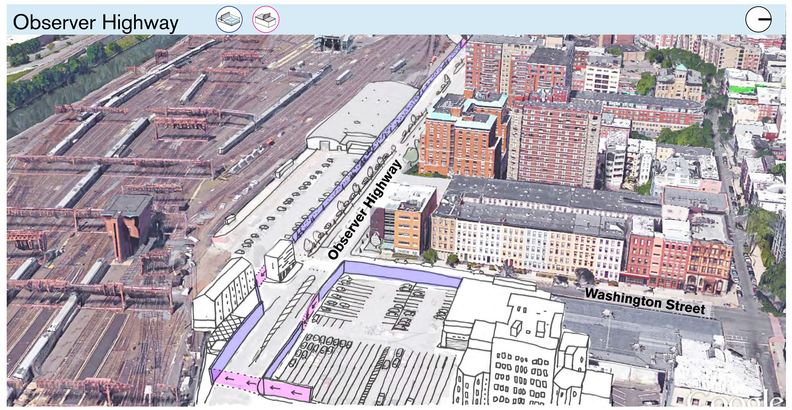

Flood Risk Reduction	
Coastal Storm Surge	
Potential to Adapt to Higher Coastal Flood Event [≥ 500yr and Sea Level Rise]	
Rainfall	
Built Environment	
View Corridors	
Waterfront Access	
Potential Community Benefits	
Connectivity/ Circulation	
Environmental Justice Populations	
Construction/ Maintenance & Operation	
Constructability	
Construction Duration	
Maintenance and Operation for Overall System	
Environmental Impacts	
Hazardous Waste	31
Wetlands	Yes
Essential Fish Habitat	Yes
Threatened and Endangered Species	Yes
Army Corp. Permits	Yes
Historic Properties	Yes
Archaeological Resources	
Benefit/Cost Analysis	
Benefits	Higher
Costs	Higher
Benefit/Cost Ratio	

CONCEPT C

Maximum impact alignments which offer flood risk reduction benefits to Weehawken, N/S Waterfront, and Hoboken Terminal.

- An in-water revetment is planned in Weehawken Cove, and to the North a Lincoln Tunnel tie-in.
- Permanent built structures on North Waterfront provide flood risk reduction benefits.
- Programmed Bulkheads offer added community benefits, while providing flood risk reduction benefits to those on the water.
- South Waterfront constructed assuming the proposed construction of the Longslip Canal project.
- Hoboken Terminal does receive flood risk reduction benefits; resist portion is planned in-water in front of the Terminal.
- Permanent movable gates proposed to address flood risk reduction along the underpass.

Legend:

- Gate - Sliding
- Gate - Swinging
- Deployable Flood Wall
- Landscape
- Berm
- Revetment
- Raised Path
- Seawall
- Flood Wall
- T Wall
- Ramp
- Municipal Boundaries
- Study Area
- Ferry Lines
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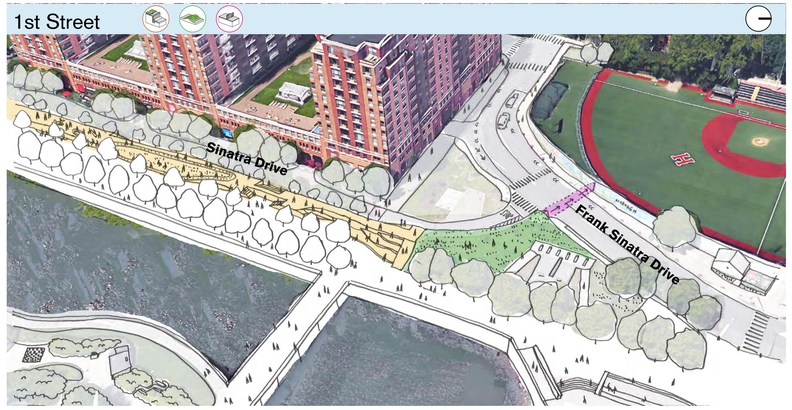

Flood Risk Reduction	
Coastal Storm Surge	●
Potential to Adapt to Higher Coastal Flood Event [≥ 500yr and Sea Level Rise]	●
Rainfall	●
Built Environment	
View Corridors	●
Waterfront Access	●
Potential Community Benefits	●
Connectivity/ Circulation	●
Environmental Justice Populations	●
Construction/ Maintenance & Operation	
Constructability	●
Construction Duration	●
Maintenance and Operation for Overall System	●
Environmental Impacts	
Hazardous Waste	18
Wetlands	Yes
Essential Fish Habitat	Yes
Threatened and Endangered Species	Yes
Army Corp. Permits	Yes
Historic Properties	Yes
Archaeological Resources	●
Benefit/Cost Analysis	
Benefits	Highest
Costs	Highest
Benefit/Cost Ratio	●

▪ RESIST ▪ DELAY ▪ STORE ▪ DISCHARGE ▪

CONCEPT D

High impact alignments which offer flood risk reduction benefits to Weehawken, N/S Waterfront, and Hoboken Terminal.

- North Resist portion offers Lincoln Tunnel Tie-In.
- Permanent built structures on North Waterfront provide flood risk reduction benefits.
- Programmed Bulkheads offer added community benefits, while providing flood risk reduction benefits to those on the water.
- South Waterfront constructed assuming the proposed construction of the Longslip Canal project.
- Alignment goes through Hoboken Terminal, offering flood risk reduction benefits to essential electrical and utility assets (allows for continued operations in the case of an event).
- Permanent movable gates proposed to address flood risk reduction along the underpass.

Legend:

- Gate - Sliding
- Gate - Swinging
- Deployable Flood Wall
- Landscape
- Berm
- Revetment
- Raised Path
- Seawall
- Flood Wall
- T Wall
- Ramp
- Municipal Boundaries
- Study Area
- Ferry Lines
- Preliminary FEMA 100 year Flood Plain

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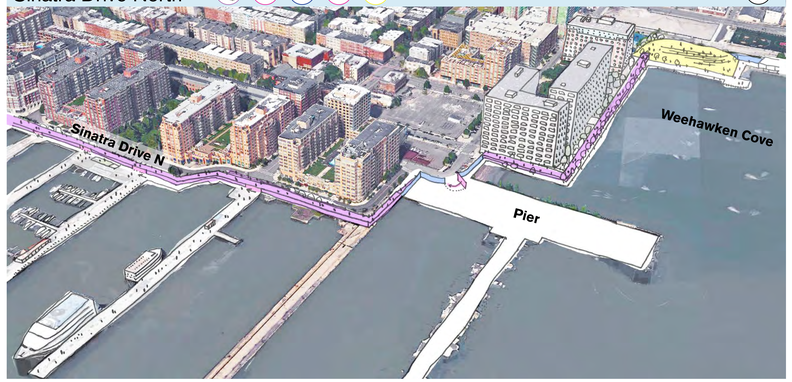
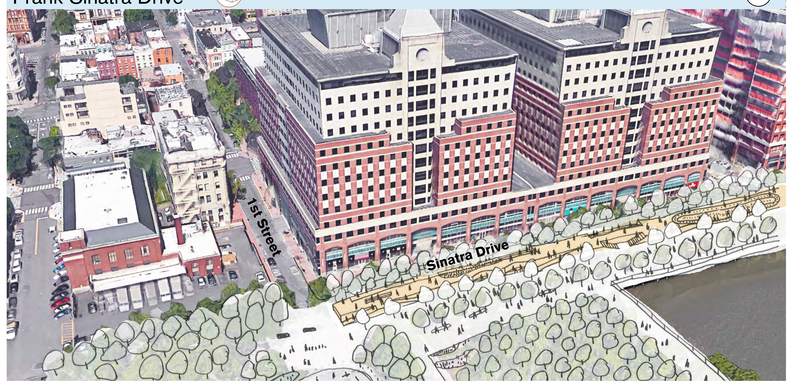
Weehawken Waterfront

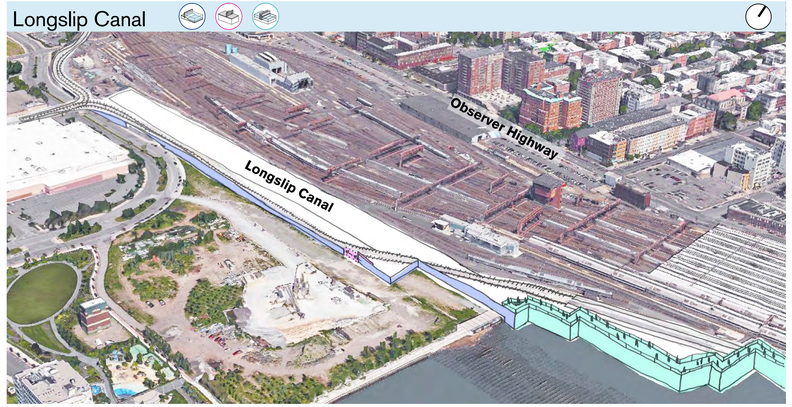
Sinatra Drive North



Frank Sinatra Drive



Longslip Canal



Flood Risk Reduction	
Coastal Storm Surge	Yellow
Potential to Adapt to Higher Coastal Flood Event [≥ 500yr and Sea Level Rise]	Green
Rainfall	Green
Built Environment	
View Corridors	Red
Waterfront Access	Red
Potential Community Benefits	Green
Connectivity/ Circulation	Yellow
Environmental Justice Populations	Green
Construction/ Maintenance & Operation	
Constructability	Red
Construction Duration	Red
Maintenance and Operation for Overall System	Red
Environmental Impacts	
Hazardous Waste	20
Wetlands	Yes
Essential Fish Habitat	Yes
Threatened and Endangered Species	Yes
Army Corp. Permits	Yes
Historic Properties	Yes
Archaeological Resources	Red
Benefit/Cost Analysis	
Benefits	Higher
Costs	Higher
Benefit/Cost Ratio	Red

CONCEPT E

Moderate impact alignments which offer partial flood risk reduction benefits to North waterfront and full benefits to South Waterfront.

- North Waterfront takes Boathouse into account.
- North Hoboken on-street protection provided along Hudson Blvd (Option 1) and Shipyard Lane (Option 2) until elevation tie-in.
- Some programmed bulkhead and other resist structures proposed along South Waterfront.
- Permanent movable gates proposed to address flood risk reduction along the underpass.

Legend:

- Gate - Sliding
- Gate - Swinging
- Deployable Flood Wall
- Landscape
- Berm
- Revetment
- Raised Path
- Seawall
- Flood Wall
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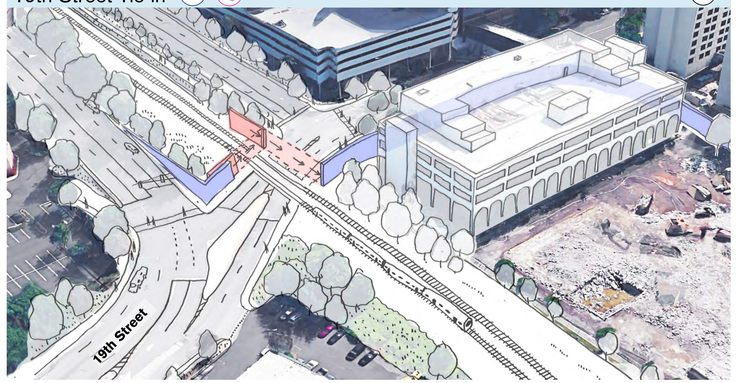
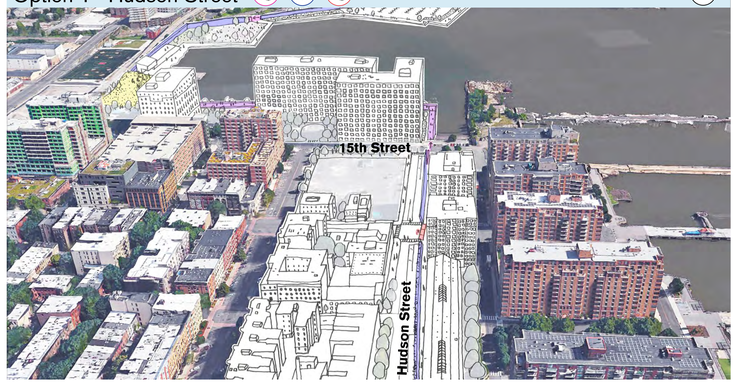
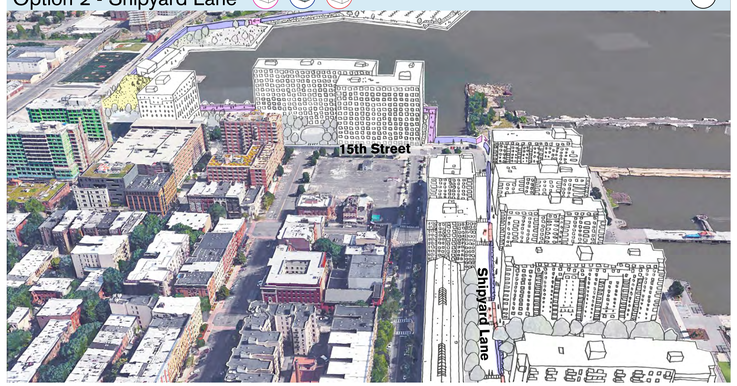
19th Street Tie-in



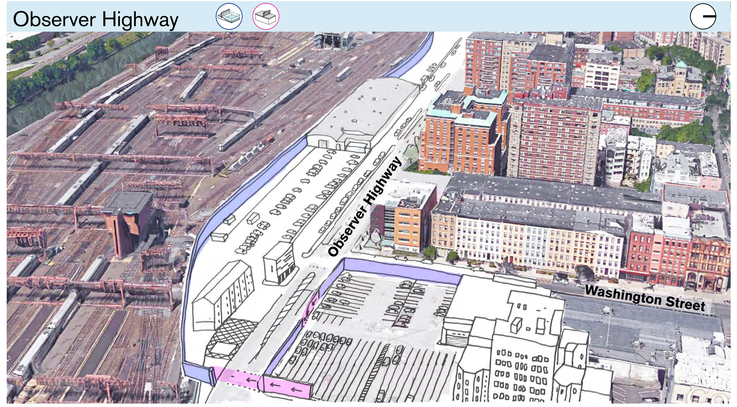
Option 1 - Hudson Street



Option 2 - Shipyard Lane



Observer Highway



Alignment Options	Option 1 Hudson Street	Option 2 Shipyard Lane
Flood Risk Reduction		
Coastal Storm Surge	●	●
Potential to Adapt to Higher Coastal Flood Event [≥ 500yr and Sea Level Rise]	●	●
Rainfall	●	●
Built Environment		
View Corridors	●	●
Waterfront Access	●	●
Potential Community Benefits	●	●
Connectivity/ Circulation	●	●
Environmental Justice Populations	●	●
Construction/ Maintenance & Operation		
Constructability	●	●
Construction Duration	●	●
Maintenance and Operation for Overall System	●	●
Environmental Impacts		
Hazardous Waste	30	30
Wetlands	Yes	Yes
Essential Fish Habitat	Yes	Yes
Threatened and Endangered Species	Yes	Yes
Army Corp. Permits	Yes	Yes
Historic Properties	Yes	Yes
Archaeological Resources	●	●
Benefit/Cost Analysis		
Benefits	High	High
Costs	High	High
Benefit/Cost Ratio	●	●