REBUILD BY DESIGN

▪ RESIST ▪ DELAY ▪ STORE ▪ DISCHARGE

HUDSON RIVER

Draft Five Project Concepts for CAG Review

December 3, 2015
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

(12/03) DRAFT IDEAS FOR DISCUSSION PURPOSES ONLY

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 Plane

MIN DFE : Approx. Min. FEMA Certification
MAX DFE : Approx. 500 Year = 2075
NOAA SLR : "All DFE’s are Approximate and Subject to Change"

Legend:
- Built Environment
- Open Space
- Public Benefits
- Community
- Economic
- Constructability

Legend:
- Benefit/Cost
- Archaeological
- Historic
- Endangered
- Residential
- Commercial
- Park
- Raft
- Trail
- Building
- School
- Existing
- New
- Proposed
- Other

Legend:
- RESIST - DELAY - STORE - DISCHARGE

Garden Street
Observer Highway - Option 1
Observer Highway - Option 2
Hoboken Terminal
Frank Sinatra Drive North
11th Street
12th Street
13th Street
14th Street
15th Street
Hudson-Bergen Light Rail
Sinatra Drive North
19th Street Tie-in
Hudson River Waterfront Walkway
Pier A Park
Weehawken Cove
Longslip Canal
Church Street
1st Street
3rd Street
4th Street
5th Street
6th Street
7th Street
8th Street
9th Street
Weehawken Stadium
Harrison Street
Hudson River
Washington Street
Clinton Street
Observer Highway - Option 1
Observer Highway - Option 2
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

MIN DFE: Approx. Min. FEMA Certification
MAX DFE: Approx. 500 Year + 2075 NOAA SLR

*All DFE's are Approximate and Subject to Change

Benefit/Cost Analysis
Impacts
Construction/Built Environment
Resources
Army Corp.
Species
Habitat
Hazardous and Operation Connectivity/Waterfront
To Adapt to

REVIEWED:

Department of Environmental Protection 31
(12/03) DRAFT IDEAS FOR DISCUSSION PURPOSES ONLY

**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 & Lincoln Tunnel Tie-in.
- Permanent bulk 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 Longship 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 underside.

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

**Urban**

**Environmental**

- Resist
- Delay
- Store
- Discharge

*Note: DFE’s are Approximate and Subject to Change*
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 bulkheads on North Waterfront provide flood risk reduction benefits.
- Programmed bulkheads offer additional 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

MIN DFE: Approx. Min. FEMA Certification
MAX DFE: Approx. 500 Year + 2075 NOAA SLR

*All DFE’s are Approximate and Subject to Change

Yes

RESIST - DELAY - STORE - DISCHARGE
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
- 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

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<th>Option</th>
<th>Hudson Street</th>
<th>Shipyard Lane</th>
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<td>Resistance</td>
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<td>Yes</td>
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<td>Historic</td>
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<td>Essential Fish Habitat</td>
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<td>Resists Delay Store Discharge</td>
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Option 1 - Hudson Street

Option 2 - Shipyard Lane