REBUILDBYDESIGN

MEADOWLANDS

CITIZEN ADVISORY GROUP (CAG) MEETING #6

ALTERNATIVE 1: STRUCTURAL FLOOD REDUCTION CONCEPT DEVELOPMENT

- Welcome & Opening Remarks
- Project Status Update and Schedule
- Alternative 1: Structural Flood Reduction Concept Development
  - Flood Conditions
  - Flood Reduction Alignment Options
  - Developing the “Kit of Parts"

- Developed working draft Concept Screening Criteria
- Completed and published to Project Website:
  - Meeting Minutes from CAG Meeting #5
  - November 2016 Newsletter
- Developing Alignment Options

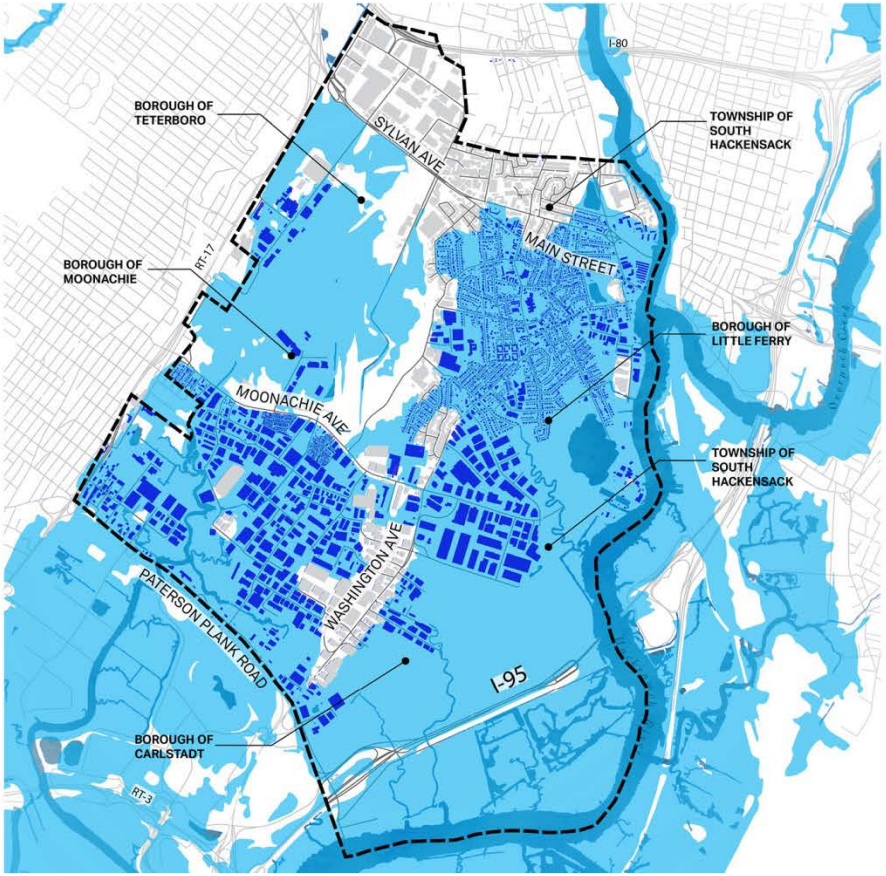
ALTERNATIVE 1:

STRUCTURAL FLOOD REDUCTION

CHRIS BENOSKY, AECOM

- ***NEARLY ALL THE PROJECT AREA IS WITHIN THE 100-YEAR FLOODPLAIN.***

Location Key



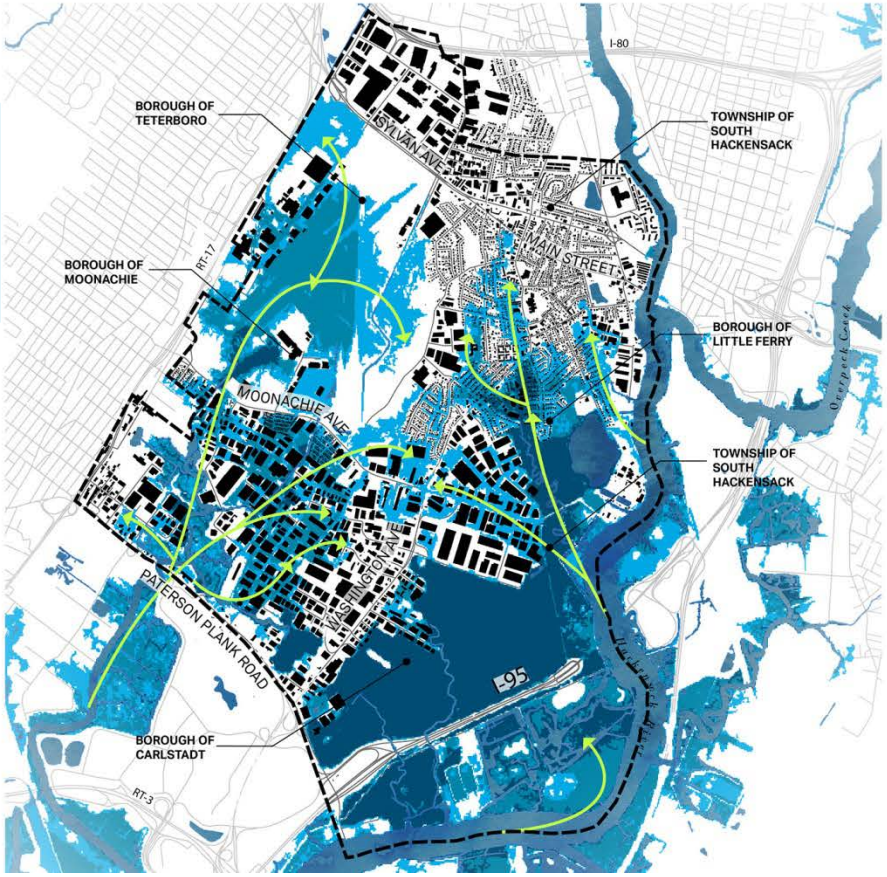
Legend

- ····· Municipality
- 100-YearFloodplain
- Properties Within 100-Year Floodplain
- Properties Not Within 100-Year Floodplain

SEA LEVEL RISE BY 2050

- ***SEA LEVEL IS ESTIMATED TO RISE BETWEEN 0.5 – 1.1 FEET***

Location Key



Legend

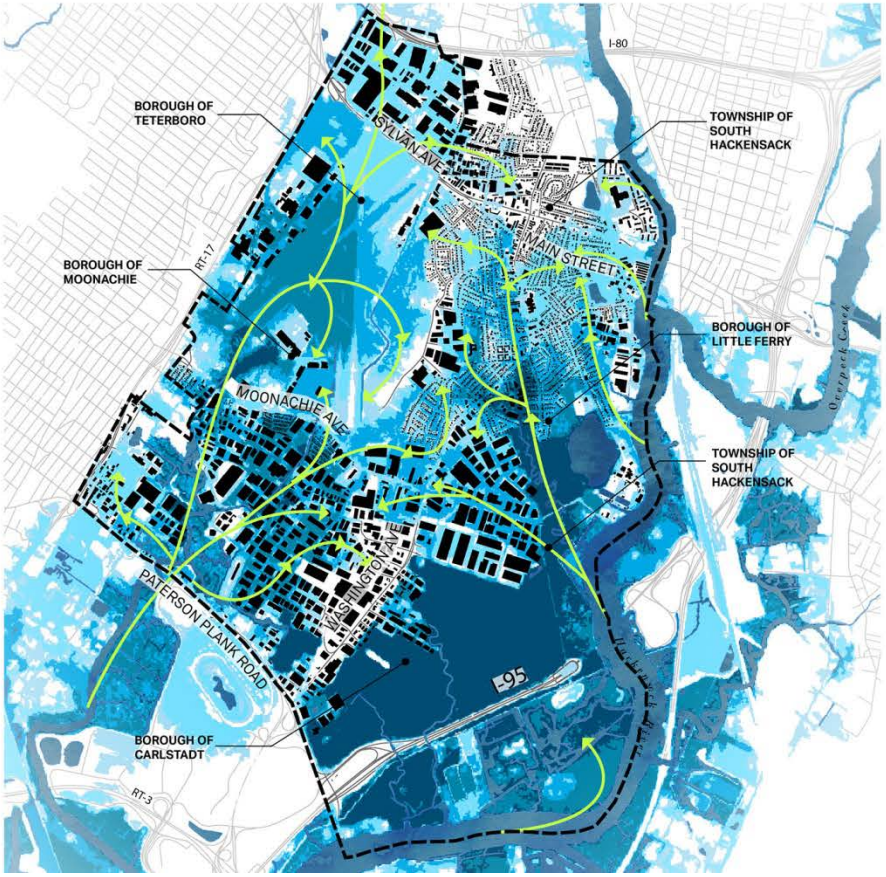
- Municipality
- Direction of Water
- Water
- 0' Sea Level Rise
- 1' Sea Level Rise
- 2' Sea Level Rise
- 3' Sea Level Rise
- 4' Sea Level Rise
- 5' Sea Level Rise
- 6' Sea Level Rise

Data Sources: NOAA Int-High, NOAA Int-Low/USACE Intermediate (Modified NRC Curve II, Sea Level Rise (SLR) Inundation Data, NOAA Coastal Services Center (2015)

SEA LEVEL RISE BY 2075

- ***SEA LEVEL IS ESTIMATED TO RISE BETWEEN 1.2 – 2.4 FEET***

Location Key

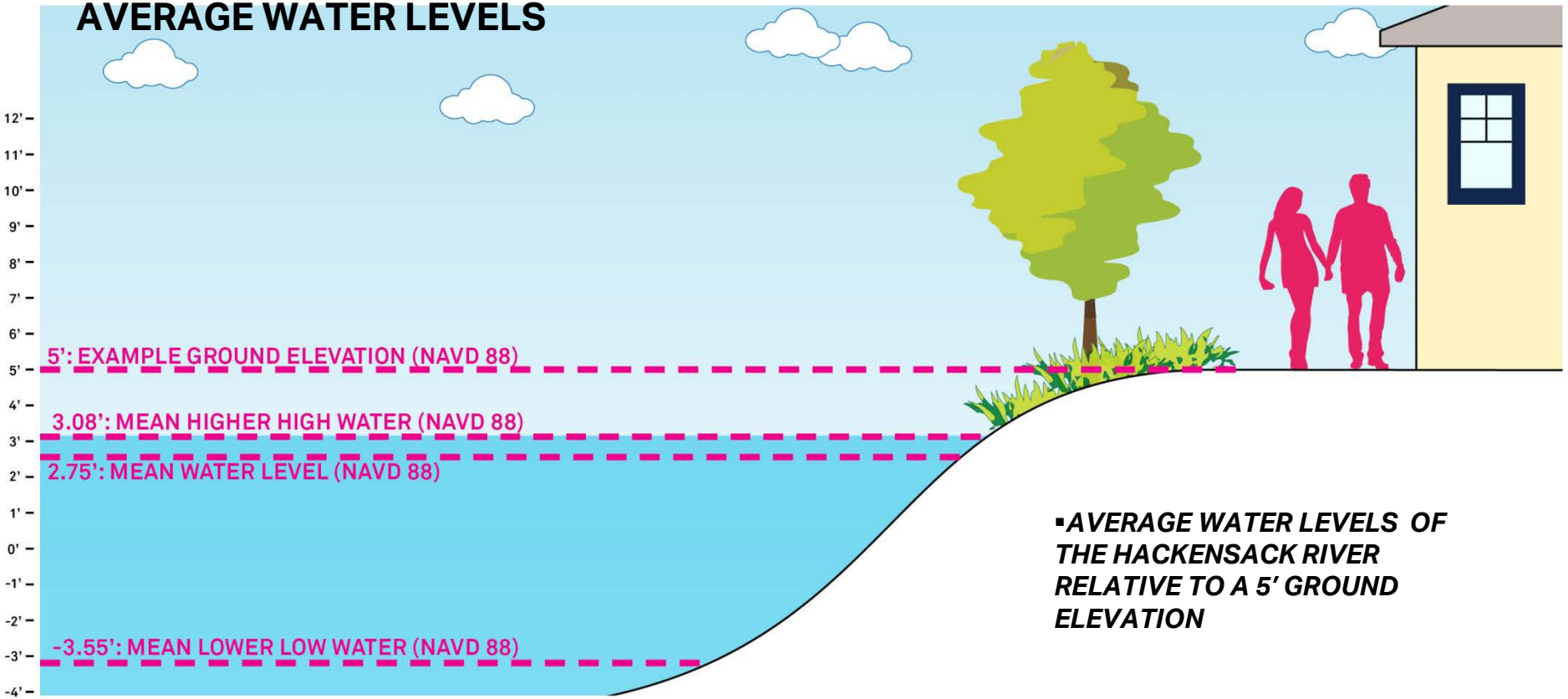


Legend

- Municipality
- Direction of Water
- Water
- 0' Sea Level Rise
- 1' Sea Level Rise
- 2' Sea Level Rise
- 3' Sea Level Rise
- 4' Sea Level Rise
- 5' Sea Level Rise
- 6' Sea Level Rise

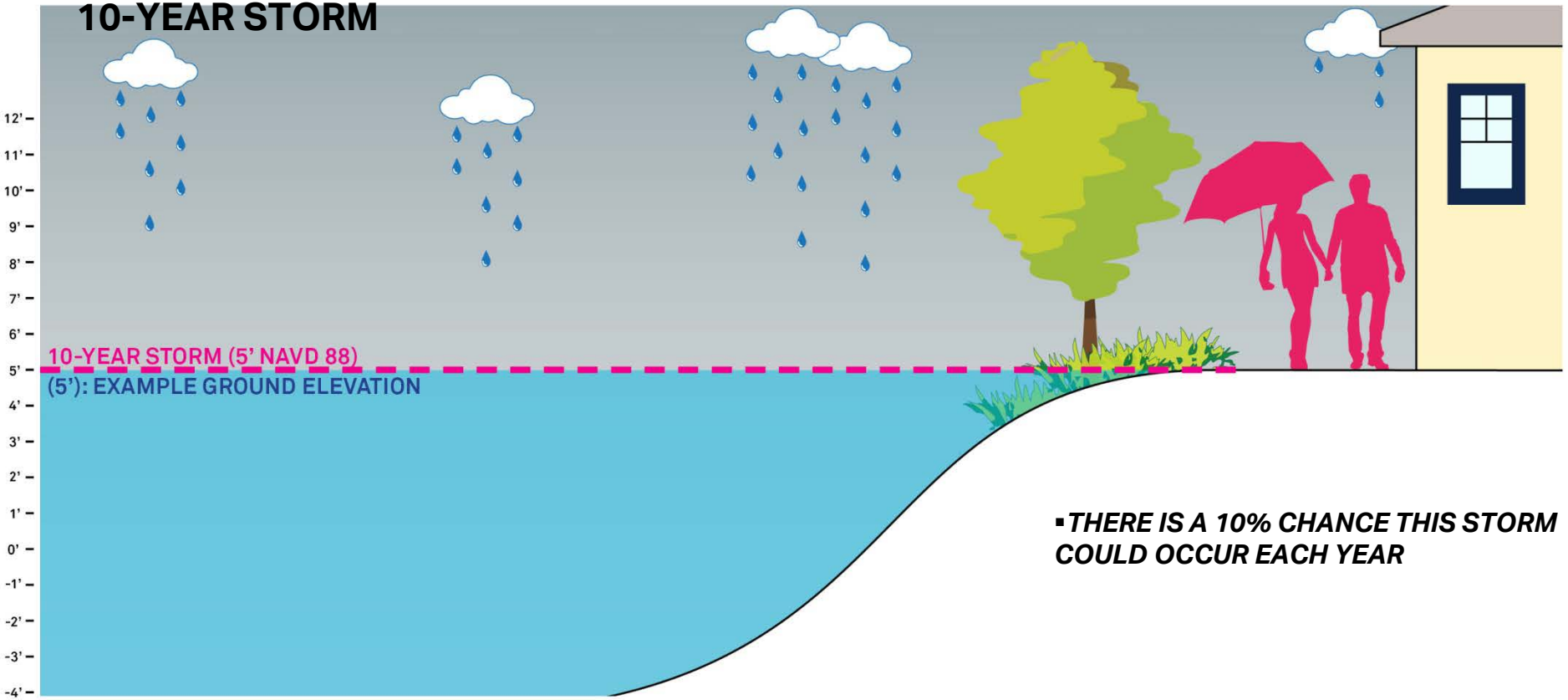
Data Sources: NOAA Int-High, NOAA Int-Low/USACE Intermediate (Modified NRC Curve II, Sea Level Rise (SLR) Inundation Data, NOAA Coastal Services Center (2015)

AVERAGE WATER LEVELS



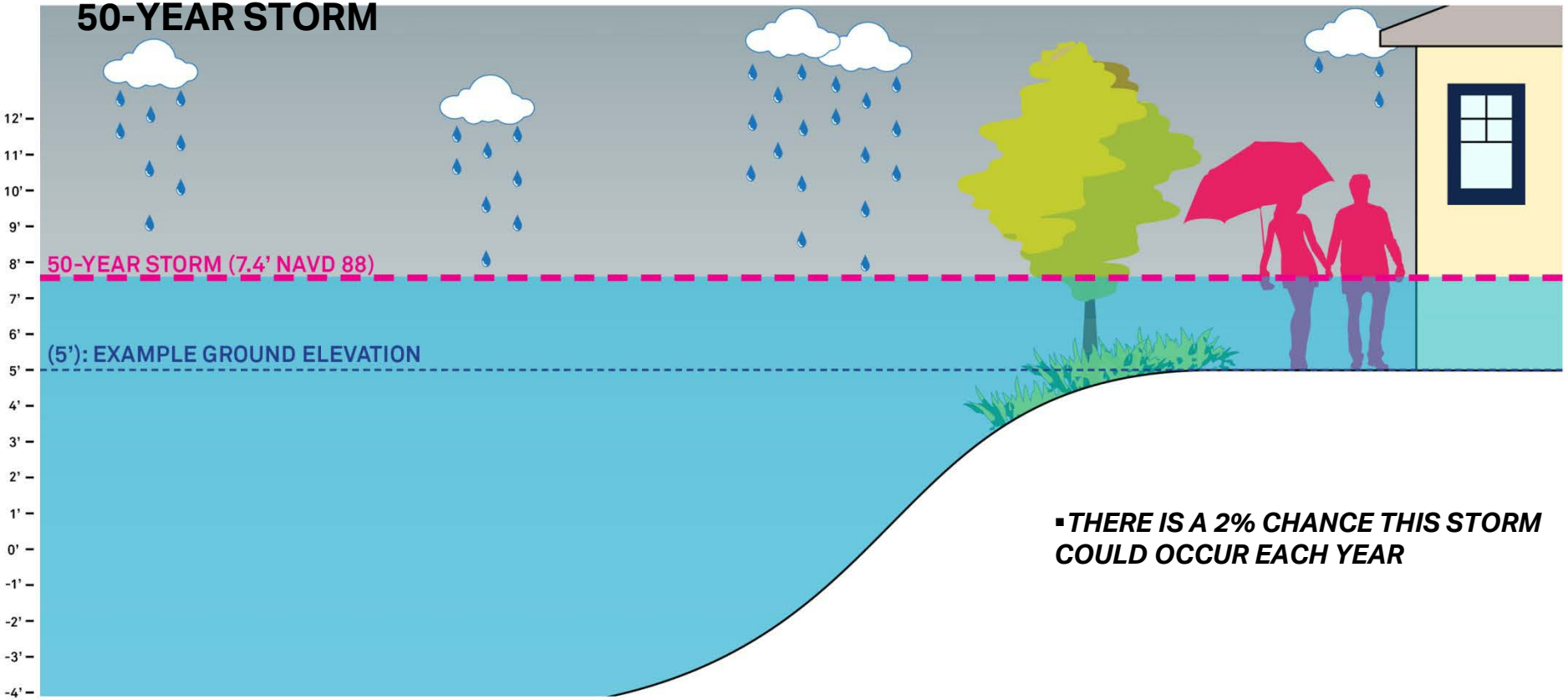
▪*AVERAGE WATER LEVELS OF THE HACKENSACK RIVER RELATIVE TO A 5' GROUND ELEVATION*

10-YEAR STORM



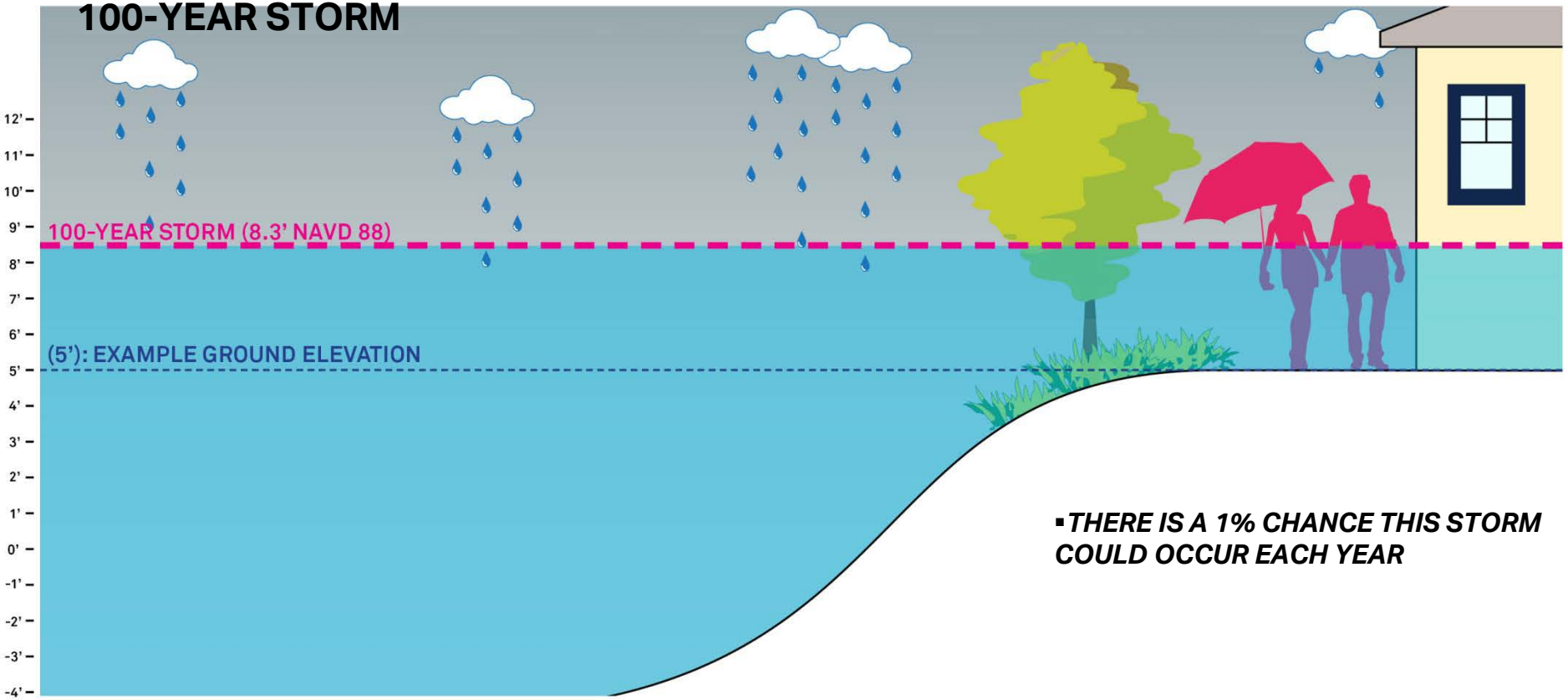
- ***THERE IS A 10% CHANCE THIS STORM COULD OCCUR EACH YEAR***

50-YEAR STORM



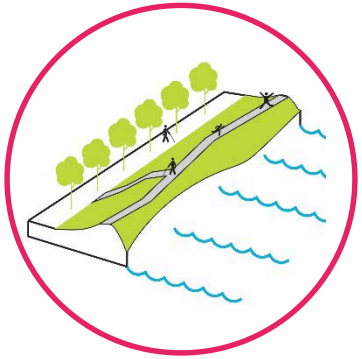
- ***THERE IS A 2% CHANCE THIS STORM COULD OCCUR EACH YEAR***

100-YEAR STORM



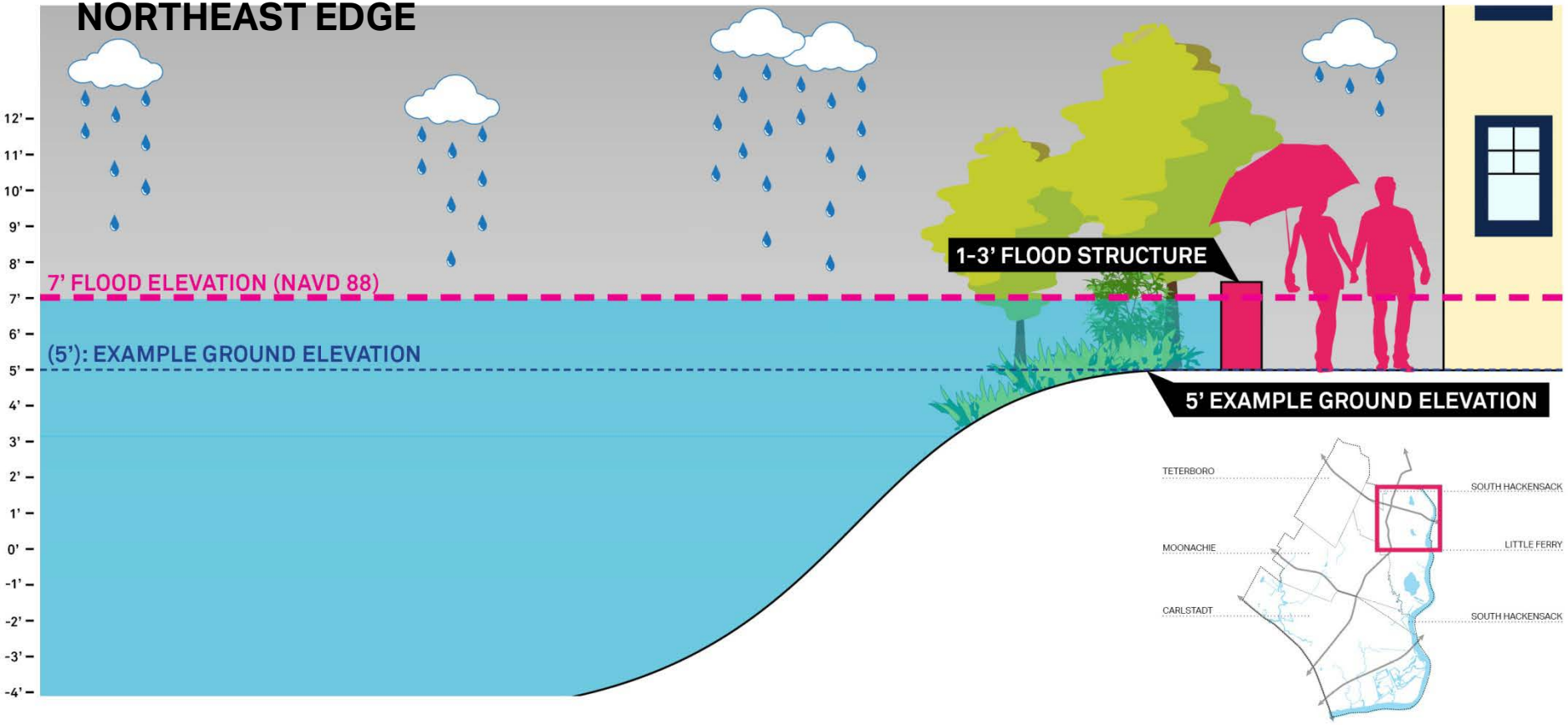
- *THERE IS A 1% CHANCE THIS STORM COULD OCCUR EACH YEAR*

STARTING AT A 7′ ELEVATION

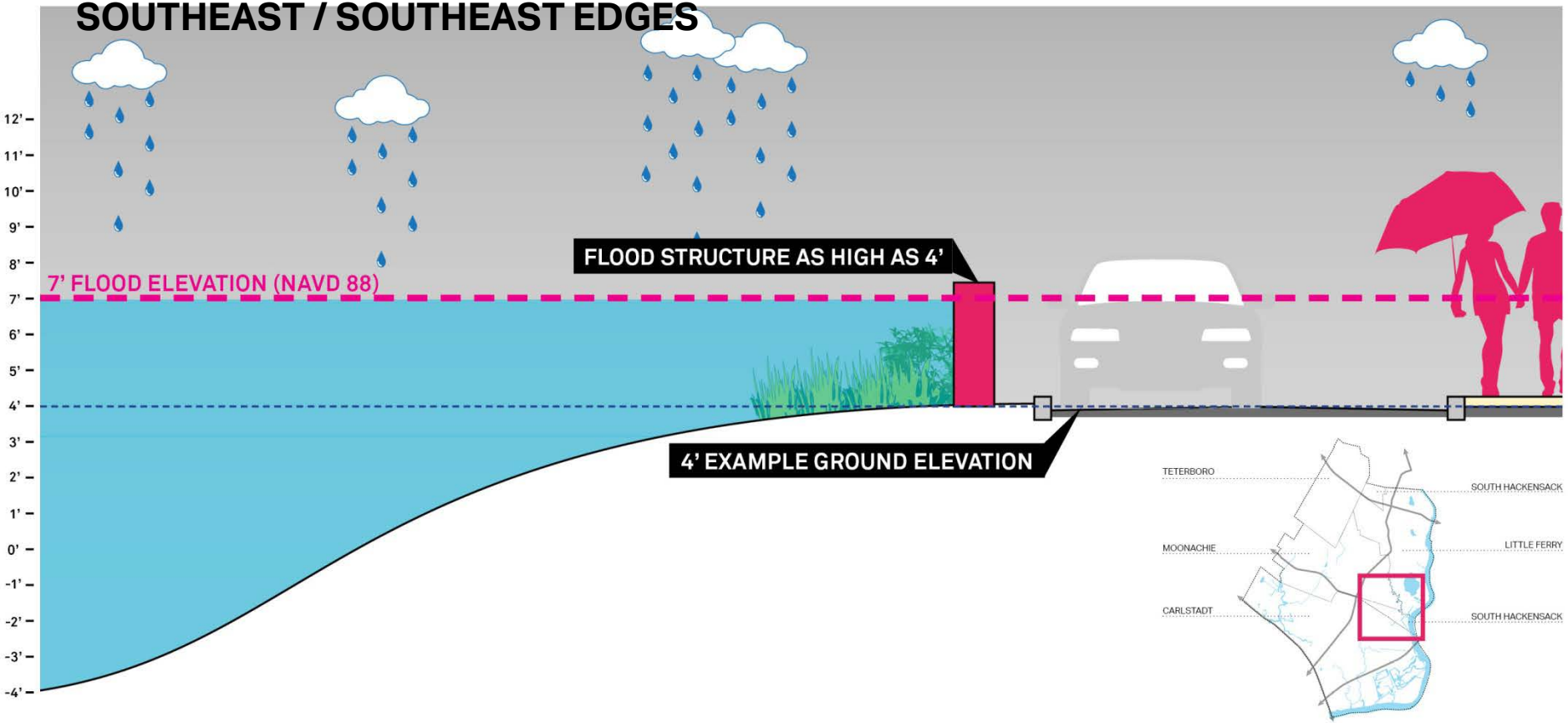


- 7′ NAVD88 is approximately 8′ NGVD29
- Using the 7′ elevation as a study baseline
- 7' elevation maintains existing level of protection with Sea Level Rise through 2050
- Other elevation heights are being considered and will be included as costs and feasibility inputs are identified
- Currently investigating tie-in options and footprint locations

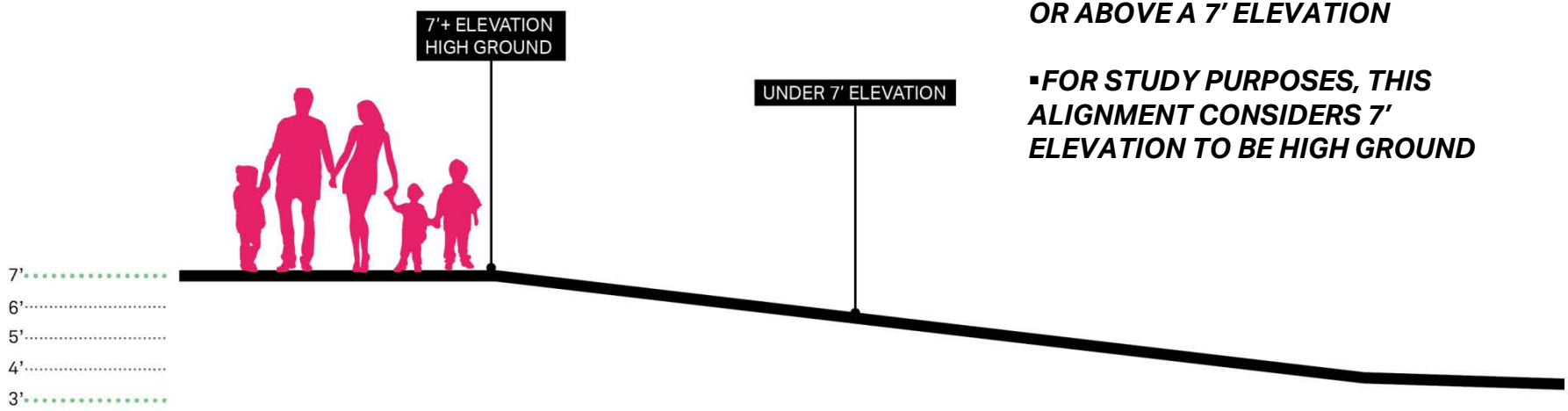
NORTHEAST EDGE



SOUTHEAST / SOUTHEAST EDGES



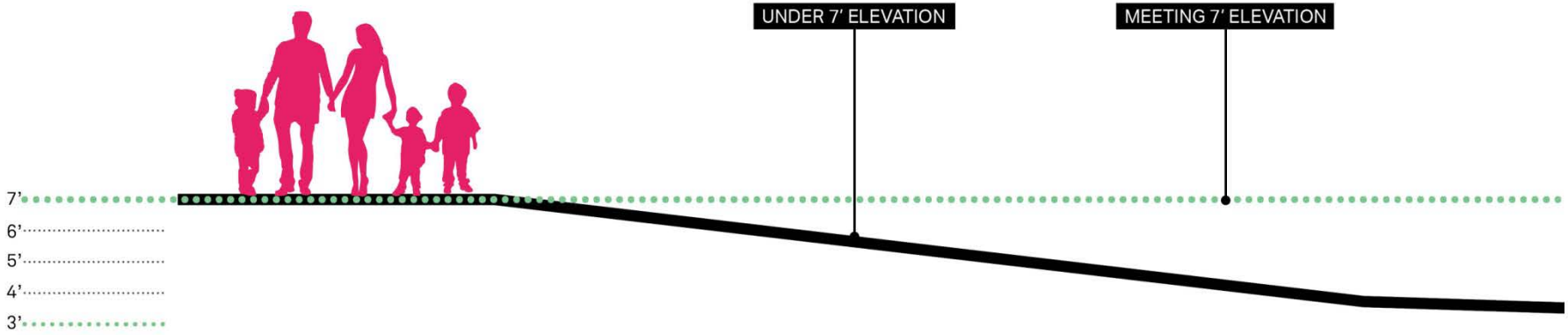
7’ ELEVATION - FILLING IN THE GAPS



- ***EXISTING GROUND CONDITIONS IN THE PROJECT AREA MAY BE AT OR ABOVE A 7’ ELEVATION***
- ***FOR STUDY PURPOSES, THIS ALIGNMENT CONSIDERS 7’ ELEVATION TO BE HIGH GROUND***

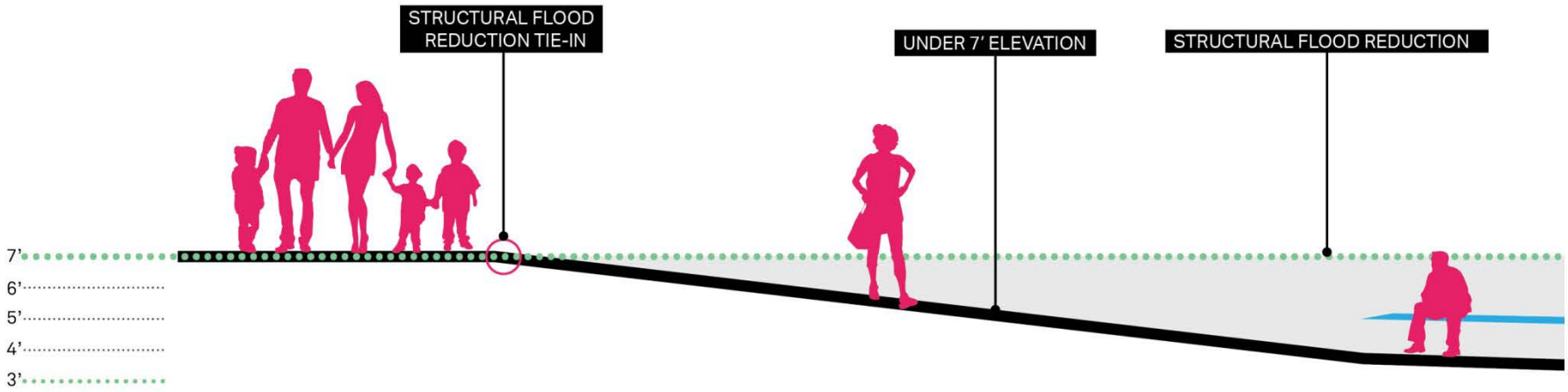
7’ ELEVATION - FILLING IN THE GAPS

- ***A FLOOD REDUCTION STRATEGY WILL BE PROPOSED IN AREAS WHERE GROUND ELEVATION IS BELOW 7’***



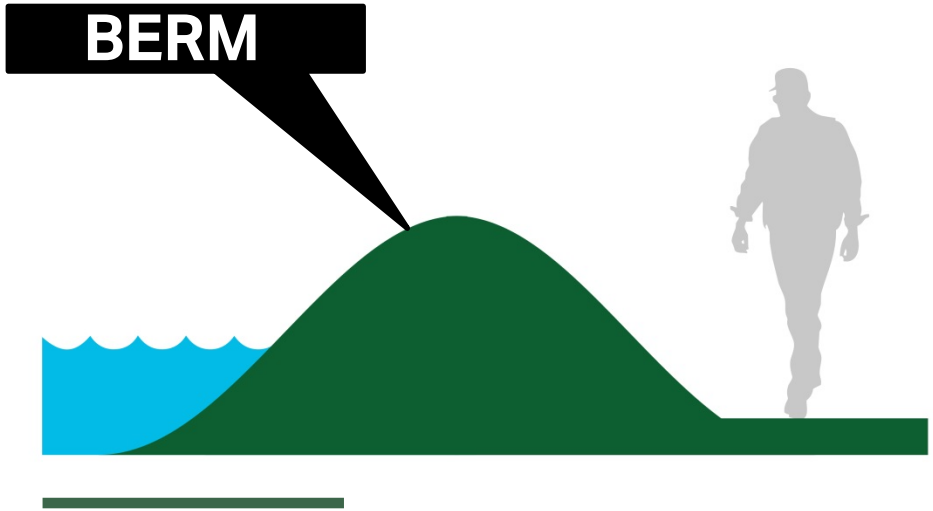
HOW TIE-INS WORK

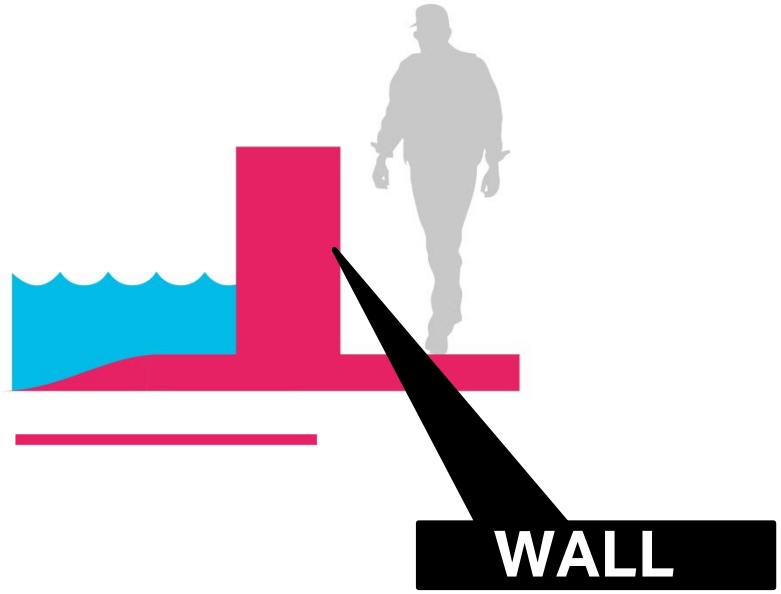
- ***STRUCTURAL FLOOD REDUCTION CONNECTS EXISTING HIGH GROUND (7' ELEVATION)***

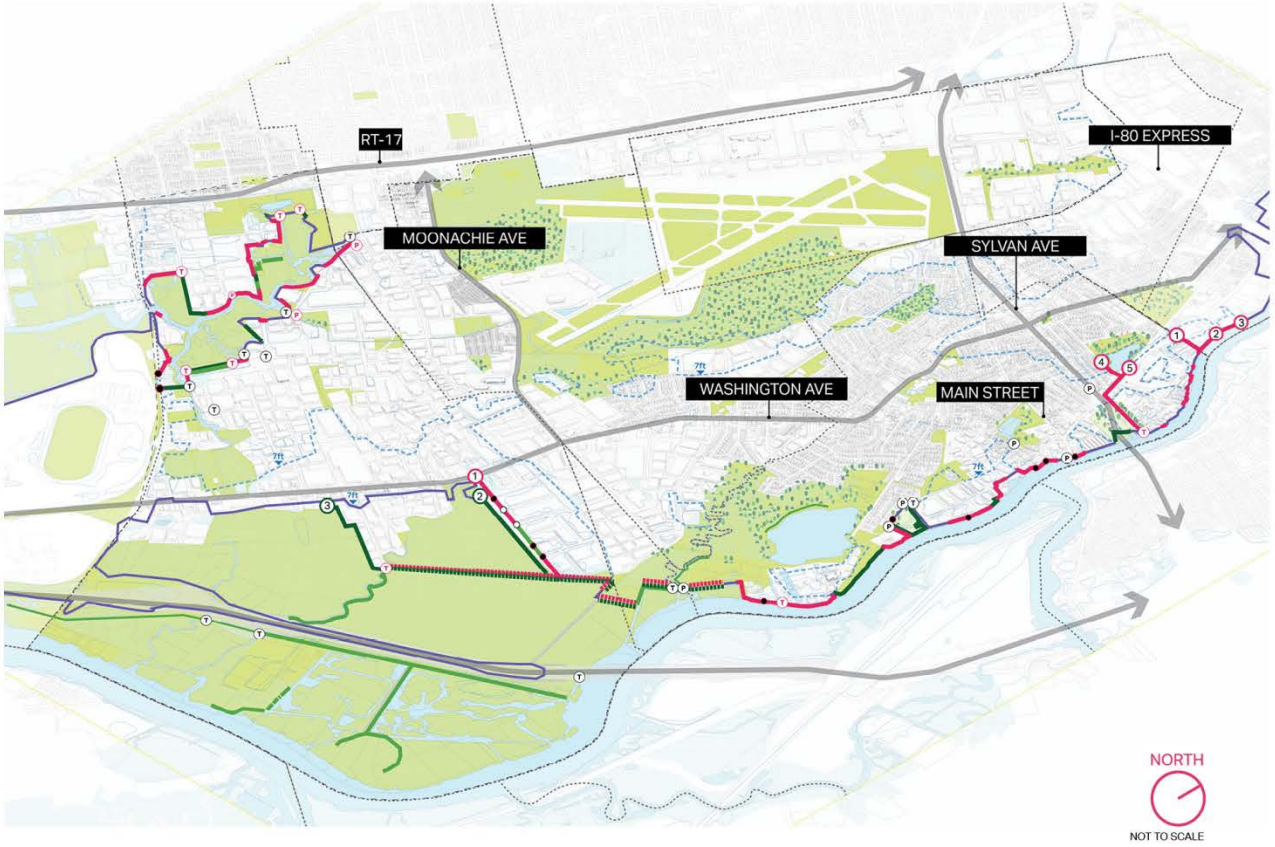


HARD & SOFT EDGES

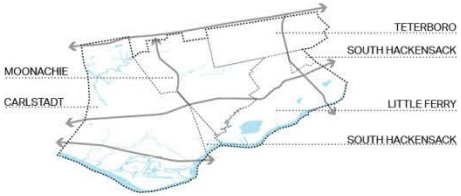
- *THE COLORS ON THE FOLLOWING ALIGNMENT MAPS REPRESENT POTENTIAL LOCATION OF WALLS AND BERMS*







- ***OVERVIEW OF ALL ALIGNMENT OPTIONS AT 7' ELEVATION***
- ***SCREENING OF OPTIONS IS ONGOING***
- ***INTERACTIVE MAPS AVAILABLE POST-MEETING***

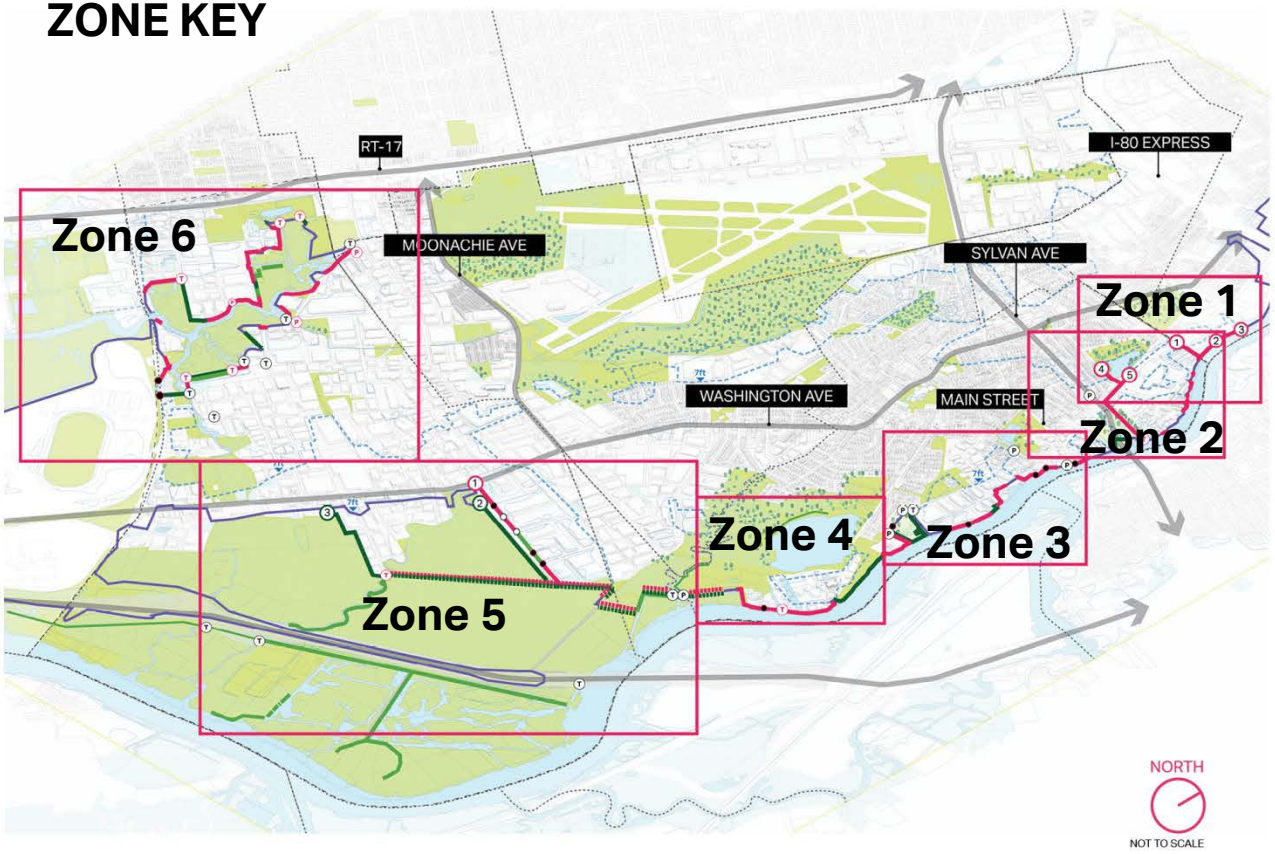


PRELIMINARY

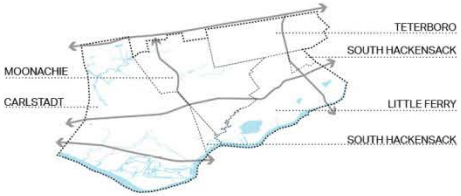
FLOOD REDUCTION ALIGNMENT OPTIONS

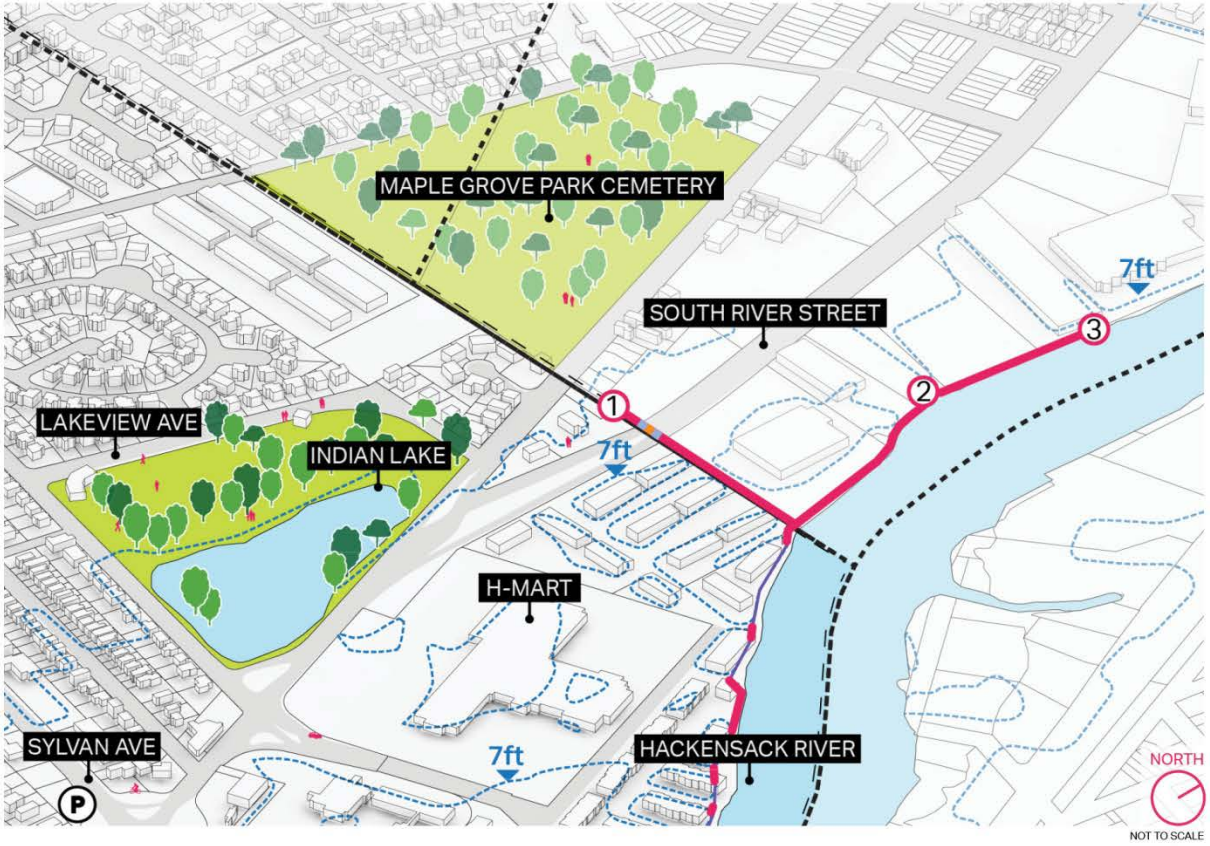
GARRETT AVERY, AECOM

ZONE KEY

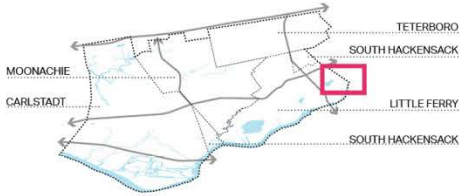


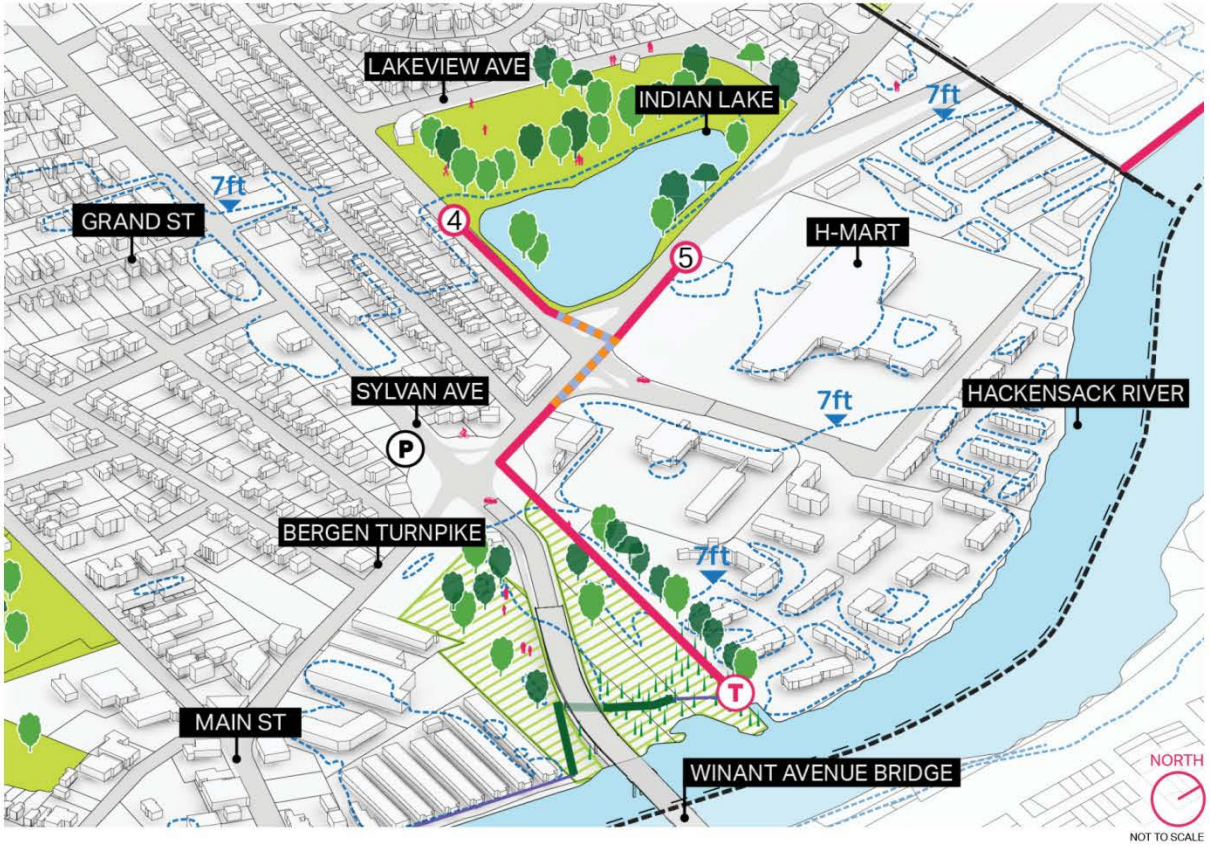
- *SIX AREAS WITH SEVERAL OPTIONS*
- *MIX OF WALLS AND BERMS PROVIDE FLOOD PROTECTION*
- *NEW TIDAL GATES AND PUMP STATIONS*



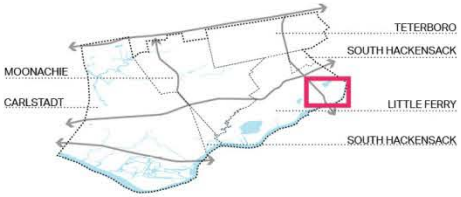


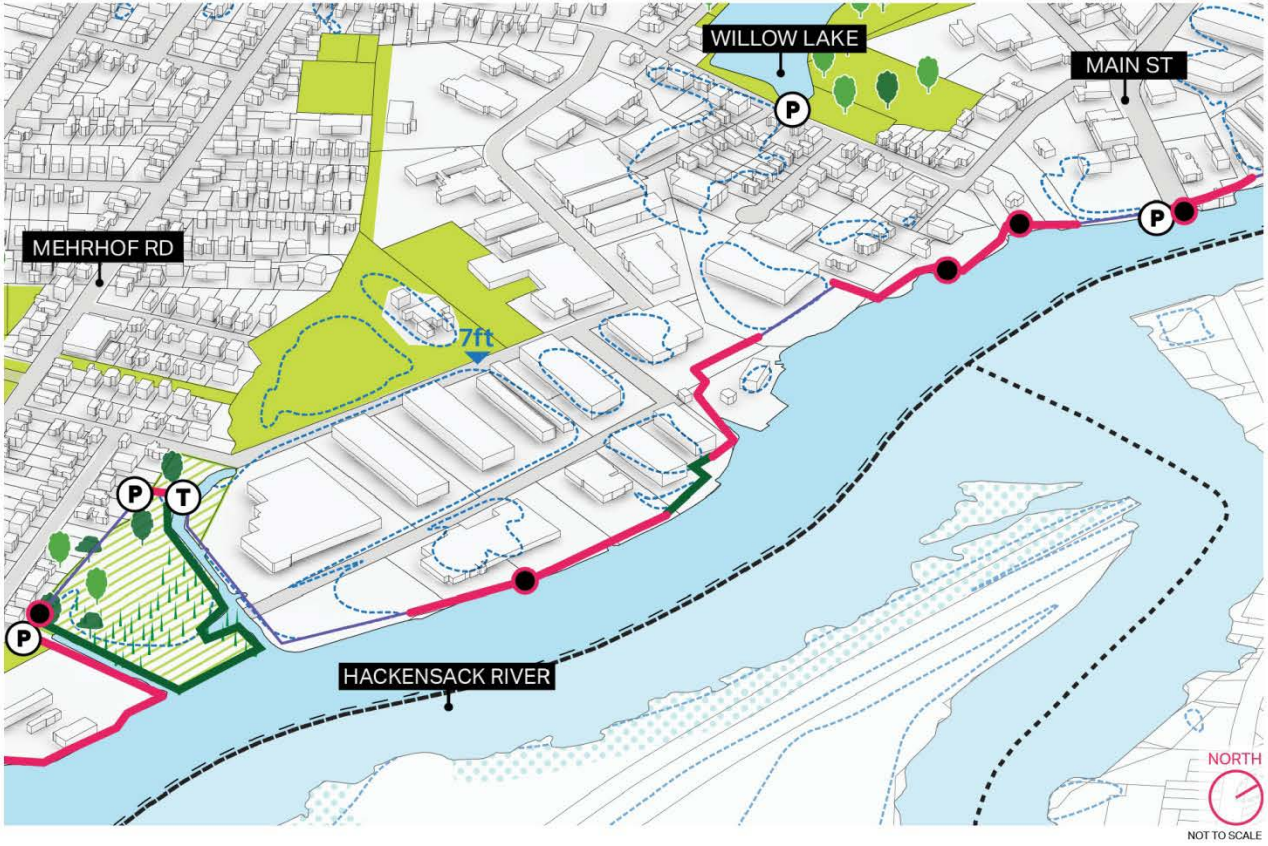
- ***OPTION 1: TIE-IN WEST OF BERGEN TNPK. ROAD REGRADING OR A DEPLOYABLE WOULD BE REQUIRED.***
- ***OPTION 2: TIE-IN NORTH OF PROJECT AREA. NO ROAD CROSSINGS OR REGRADING NEEDED.***
- ***OPTION 3: TIE INTO HACKENSACK RIVERWALK NORTH OF PROJECT AREA. NO ROAD-CROSSING REQUIRED.***



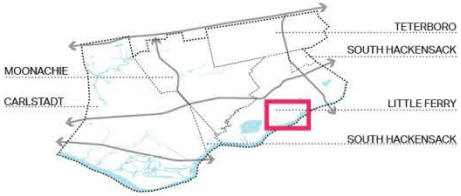


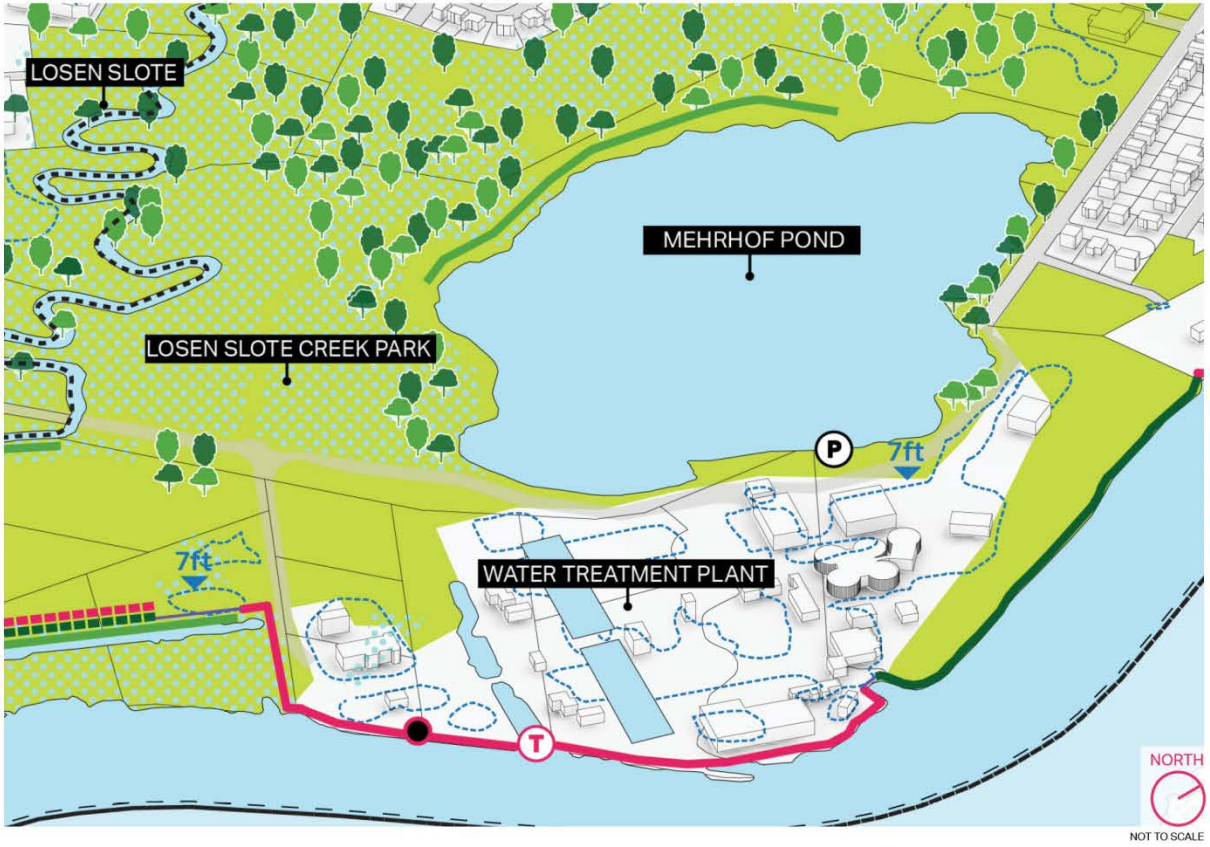
- ***OPTION 4: INTERIOR ALIGNMENT, TIE-IN AT 7' CONTOUR AT INDIAN LAKE. WOULD REQUIRE ROAD REGRADING AND DEPLOYABLES.***
- ***OPTION 5: INTERIOR ALIGNMENT, TIE -IN AT 7' CONTOUR ON THE EAST SIDE OF BERGEN TNPK. WOULD REQUIRE ROAD REGRADING AND DEPLOYABLES.***



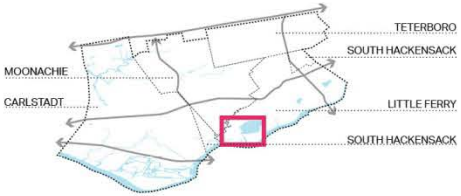


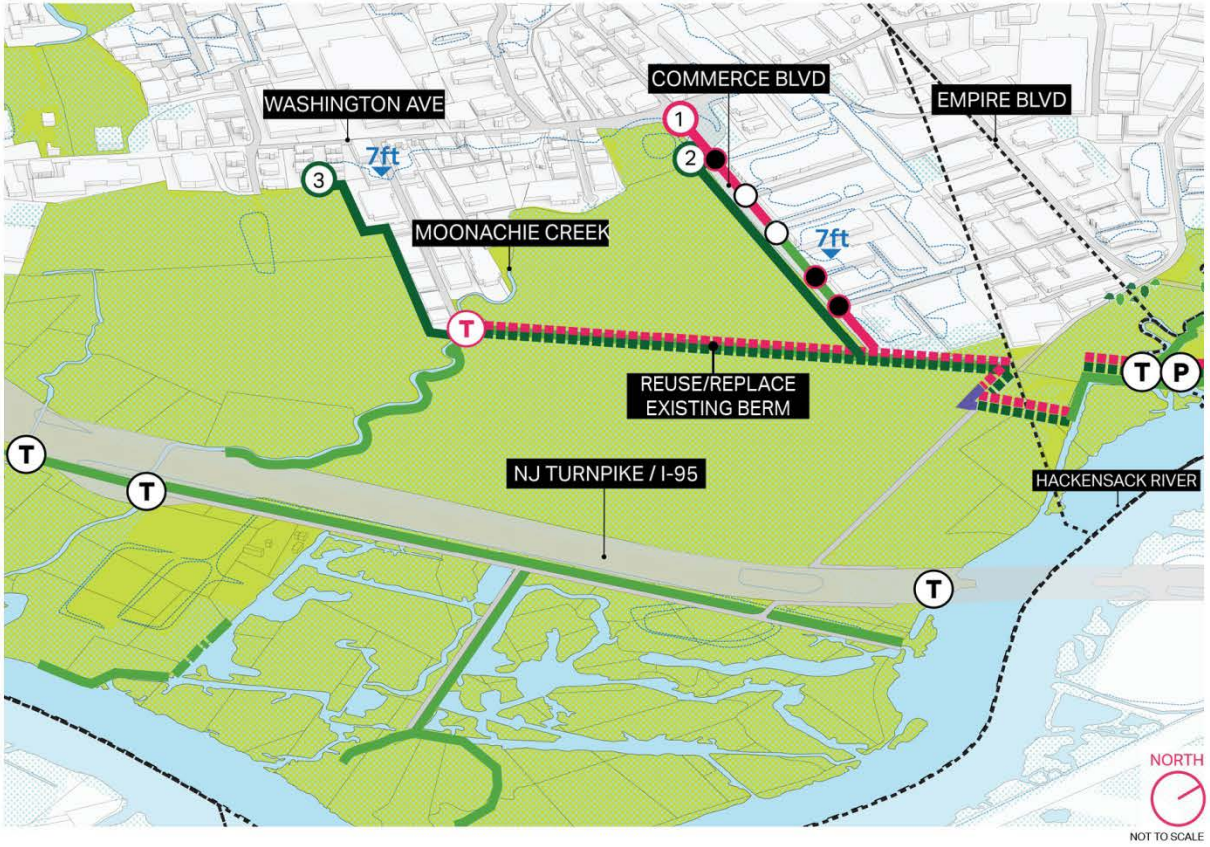
- ***ELEVATION 7' ALIGNMENT CONTINUES ALONG THE EDGE.***
- ***TYING INTO TO HIGHGROUND AND USING BERMS WHERE POSSIBLE.***
- ***EXISTING RIVER ACCESS PRESERVED BY CLOSURE GATES.***



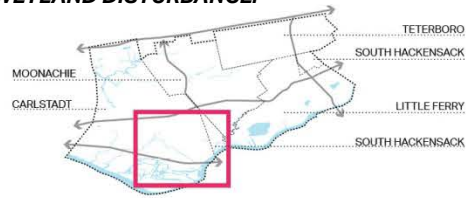


- ***ELEVATION 7' ALIGNMENT COMPOSED OF FLOODWALL OR BERM AS SPACE ALLOWS.***
- ***SURGE GATE TO PROTECT EXISTING TREATMENT PLANT OUTFALLS.***
- ***REINFORCEMENT OR REPLACEMENT OF EXISTING BERMS BEING STUDIED. FLOODWALL AND BERM BEING CONSIDERED TO LIMIT POTENTIAL WETLAND DISTURBANCE.***

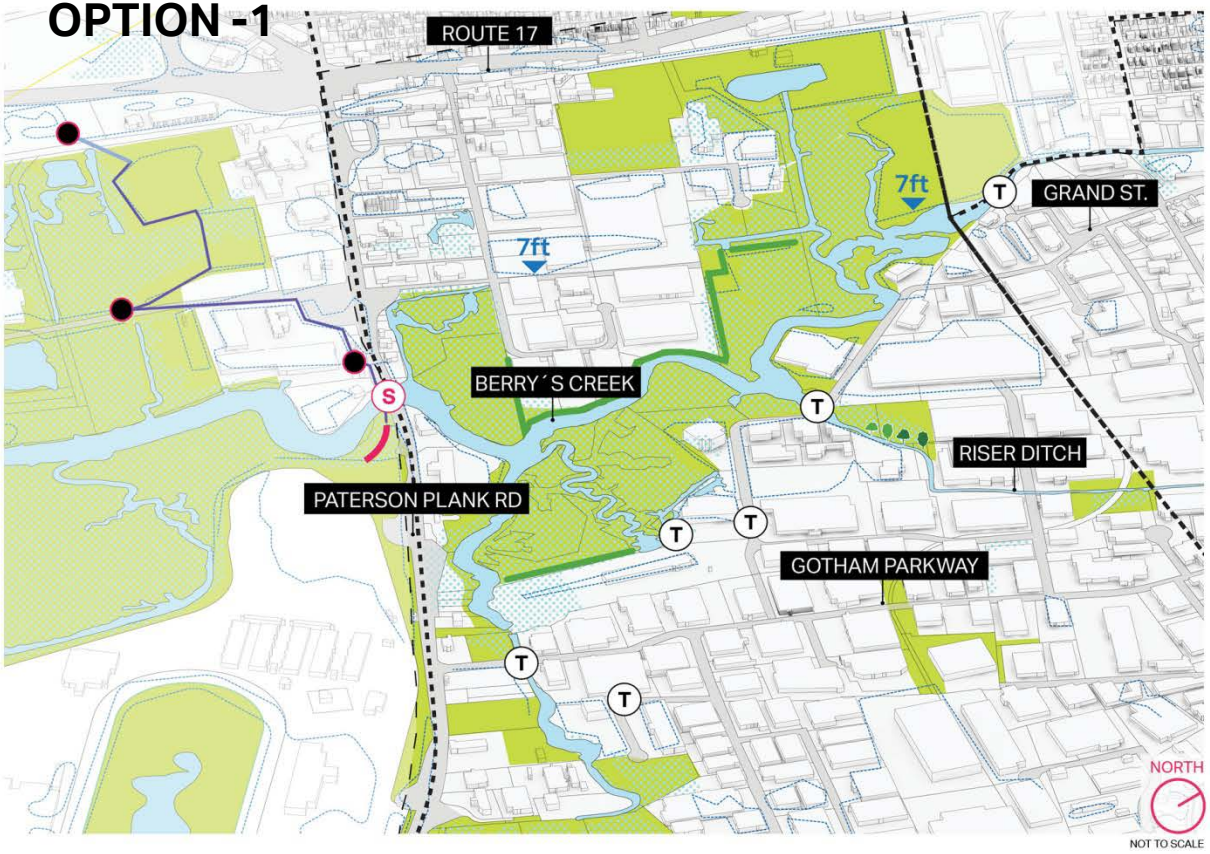




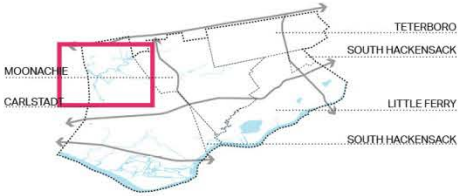
- ***OPTION 1: TIE-OFF ON NORTH SIDE OF COMMERCE BLVD. WOULD REQUIRE ROAD REGRADING AND CLOSURE GATES (CROSSES ACCESS POINTS).***
- ***OPTION 2: TIE-OFF ON SOUTH SIDE OF COMMERCE BLVD. COULD BE A BERM OR A WALL. NO REGRADING OR STREET CROSSINGS.***
- ***OPTION 3: TIE-OFF TO 7' CONTOUR. FOLLOWS PATH OF EXISTING BERM TO LIMIT POTENTIAL WETLAND DISTURBANCE.***



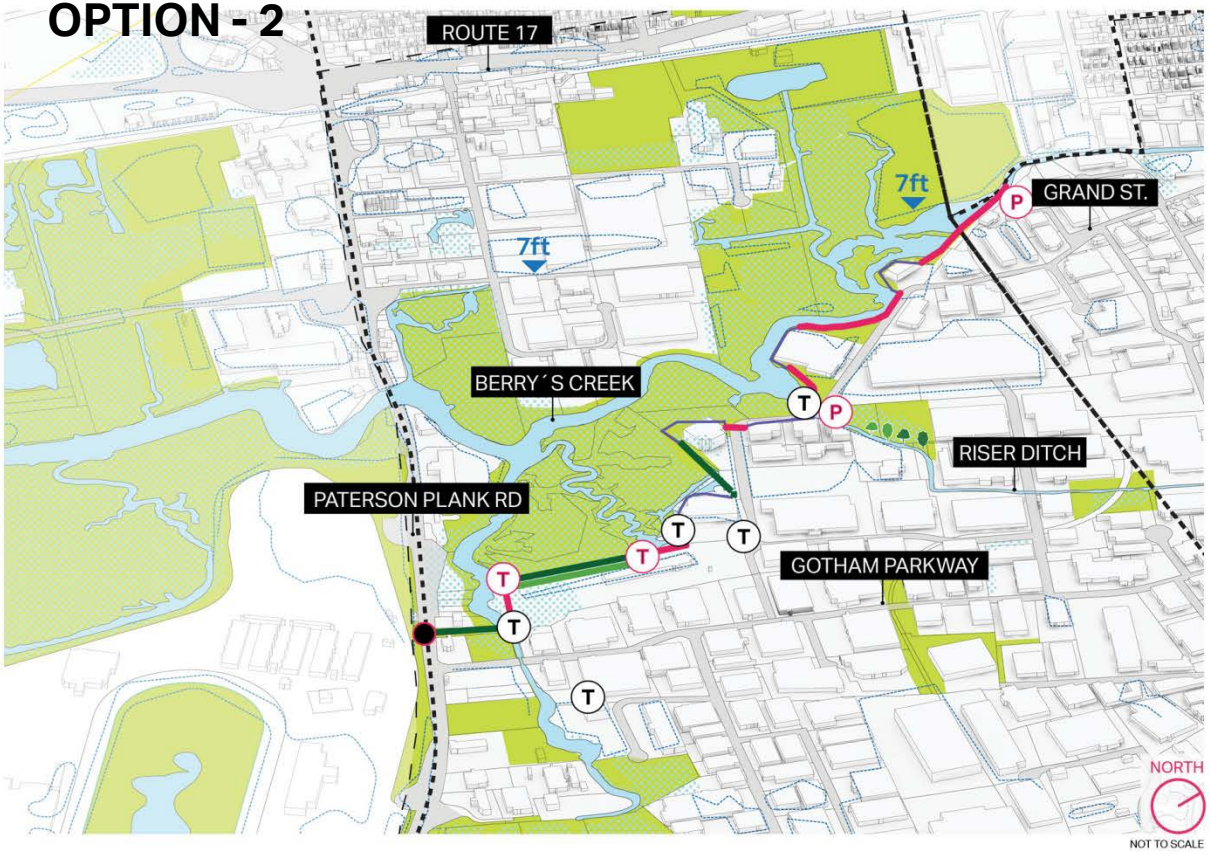
OPTION -1



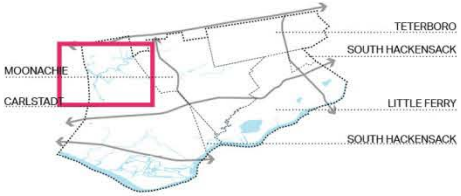
- ***SURGE BARRIER AT PATERSON PLANK ROAD (SOUTH OF THE BRIDGE) WOULD PROTECT OVER 50% OF THE PROJECT AREA.***
- ***(3) CLOSURE GATES, REGRADING, AND MINOR WALL TO TIE-OFF .***
- ***NEW PUMP STATION TO CONTROL WATER LEVEL IN BERRY'S CREEK DUE TO RAINFALL.***



OPTION - 2

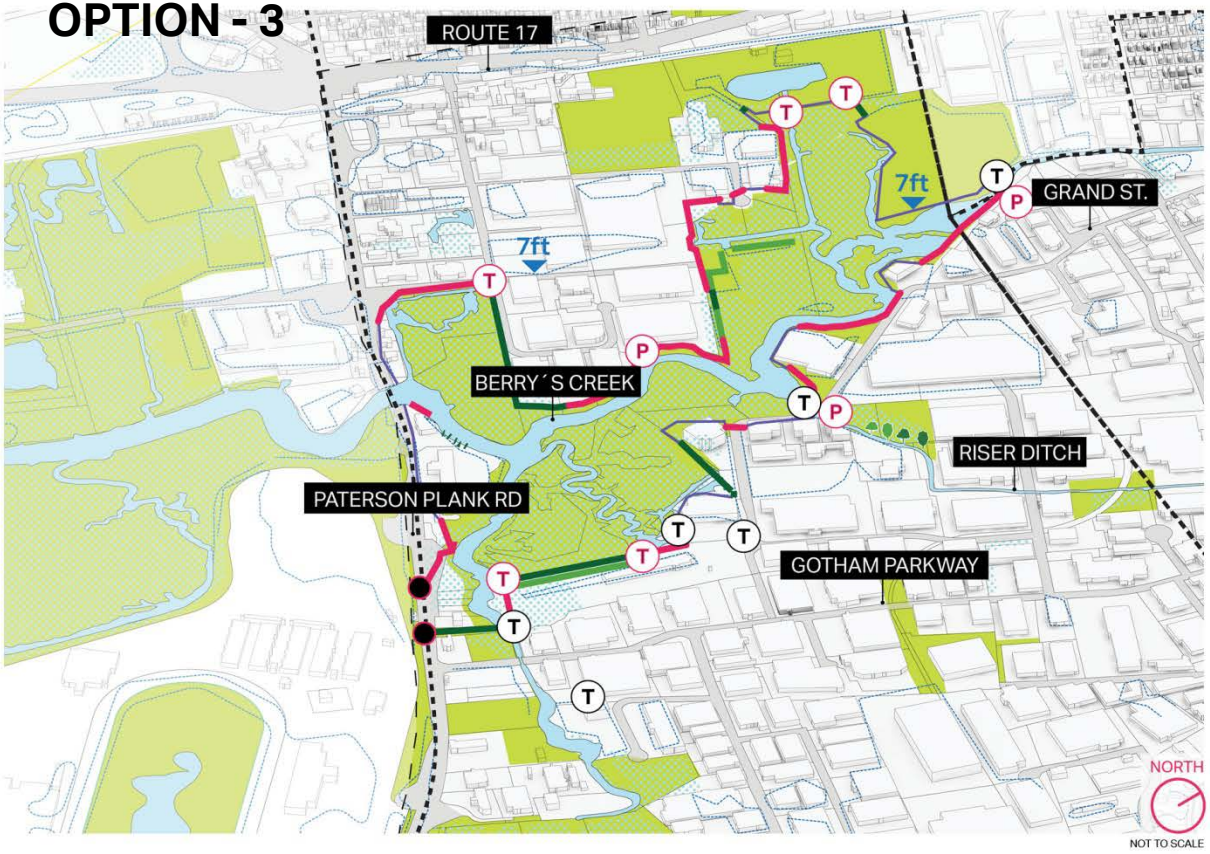


- ***INTERIOR ALIGNMENT ALONG THE EAST BANK OF BERRY'S CREEK.***
- ***CONNECTS EXISTING TIDE GATES AND SURROUNDING POINTS AT 7' GROUND ELEVATION.***
- ***WOULD REQUIRE ADDITIONAL TIDE GATES AND NEW PUMP STATION.***

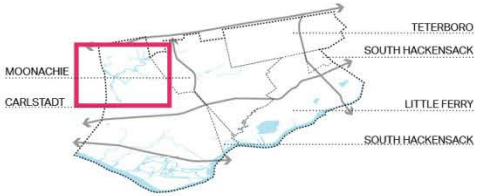


ALIGNMENT OPTION – ZONE 6

OPTION - 3



- ***INTERIOR CONNECTIONS TYING OFF TO 7' CONTOURS.***



DESIGN ELEMENTS

APPLYING THE “KIT OF PARTS”

SUSAN BEMIS, AECOM

BASIC FLOOD WALL

SHEET PILE

BERM + WALL

VINE PLANTING

BENCH

BERM + PATH

PLANTER

CANOPY

CANTILEVERED WALKWAY

ART

AMPHITHEATER

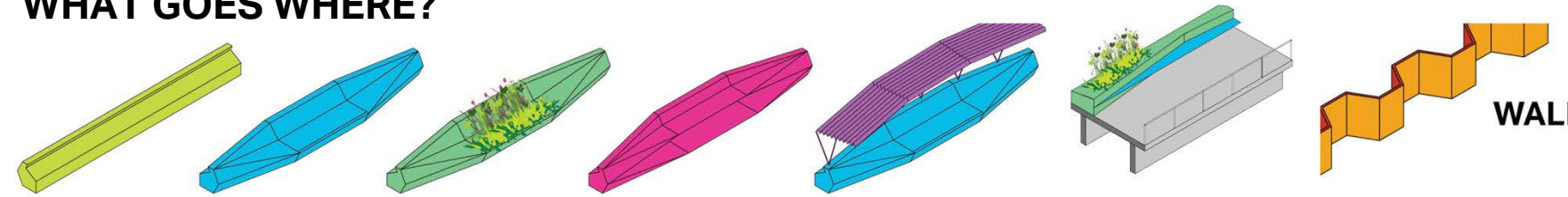
FLIP DEPLOYABLE

PANEL DEPLOYABLE

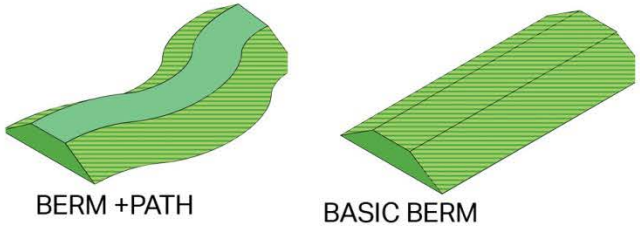
INFLATABLE DEPLOYABLE

MODULARIZING THE "KIT OF PARTS"

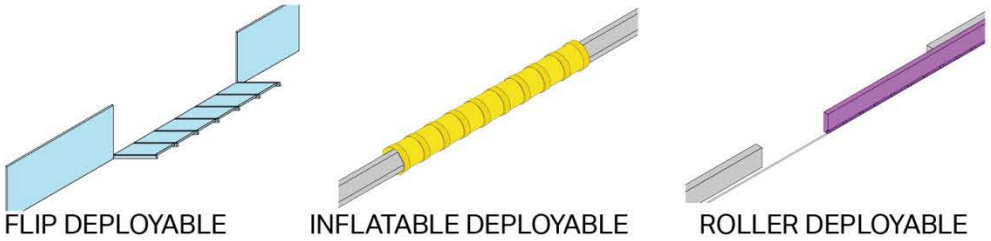
WHAT GOES WHERE?



WALLS



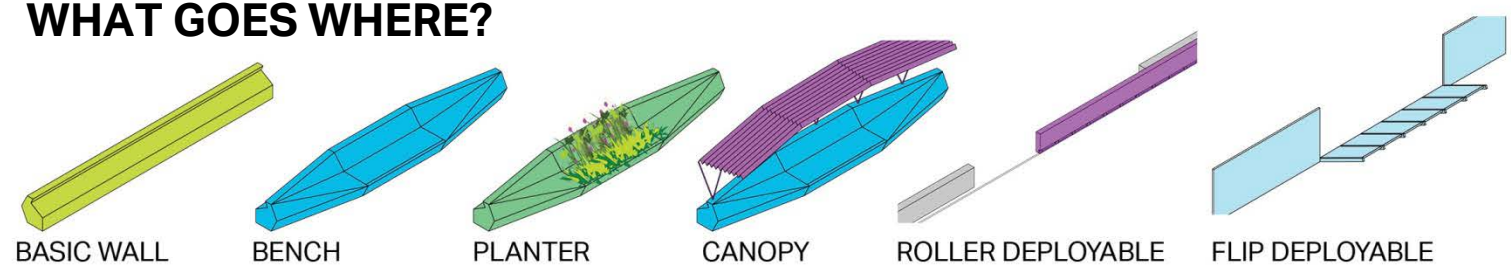
BERMS



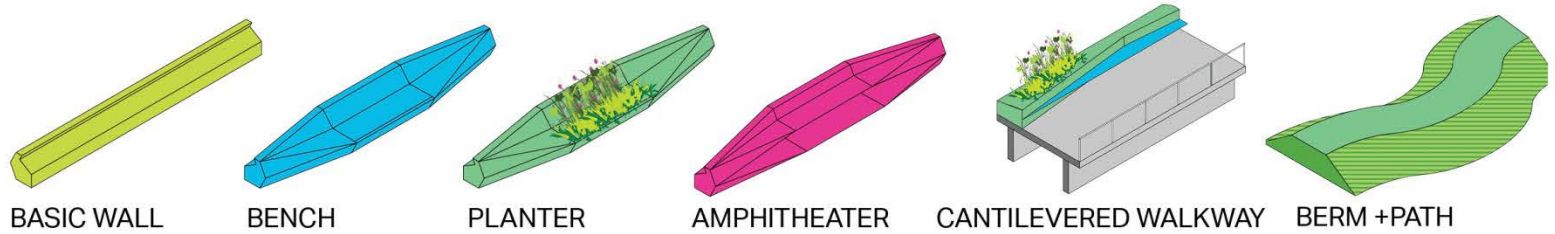
DEPLOYABLES

MODULARIZING THE "KIT OF PARTS"

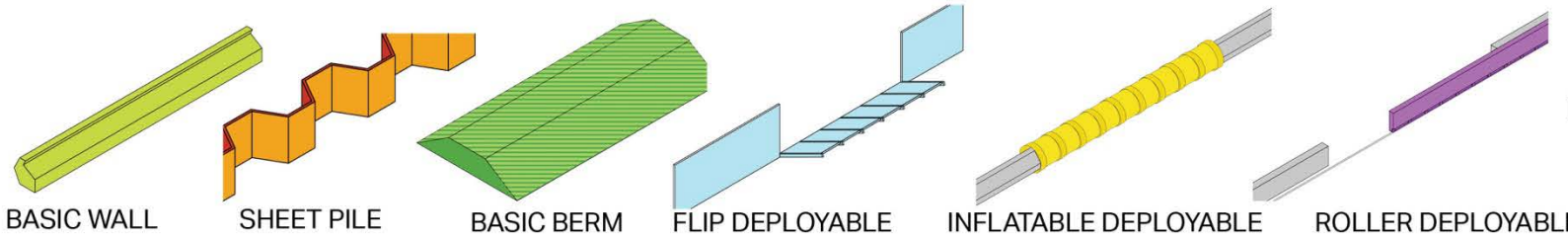
WHAT GOES WHERE?



COMMERCIAL



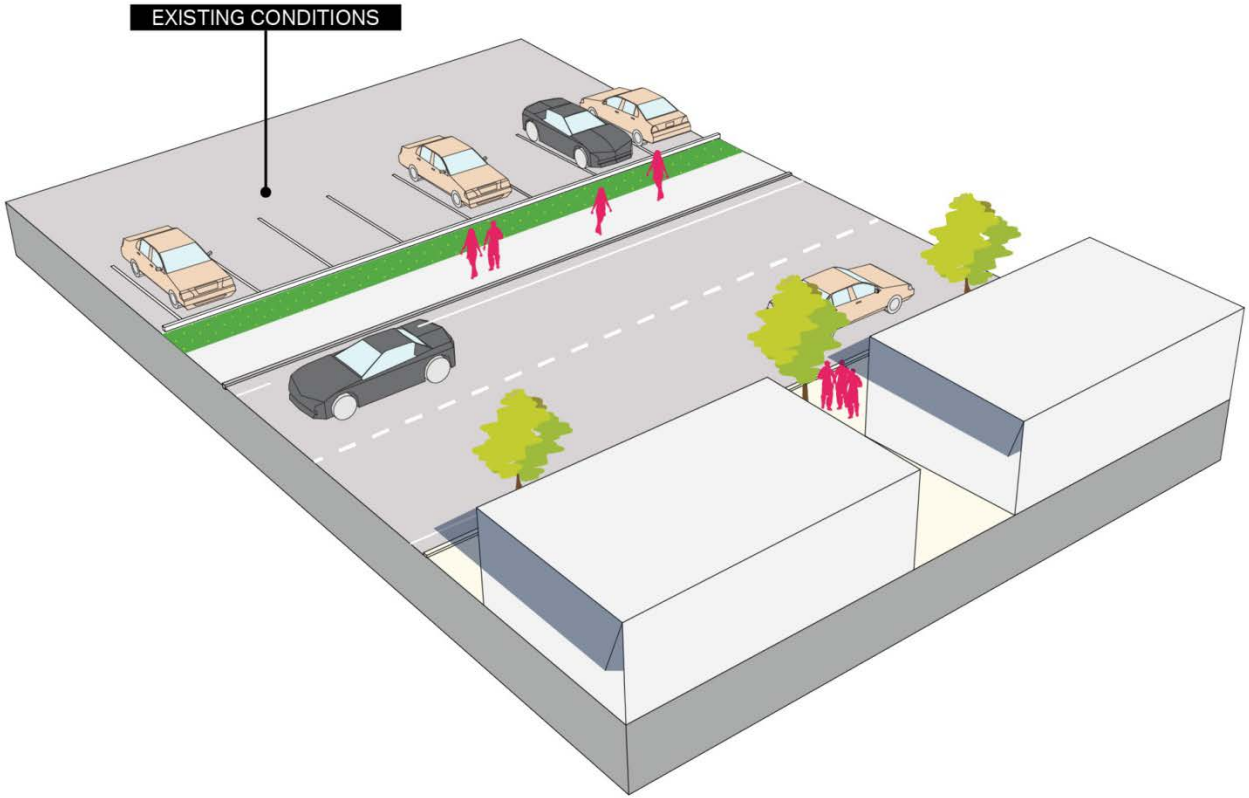
RESIDENTIAL

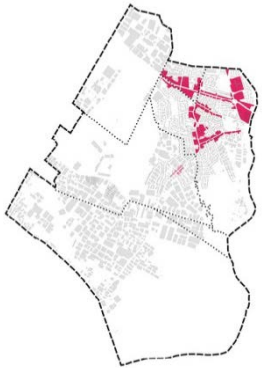


INDUSTRIAL

EXISTING CONDITIONS

- ***BUILDING THE LINE OF PROTECTION***
- ***RESPONDING TO THE EXISTING COMMERCIAL ENVIRONMENT***



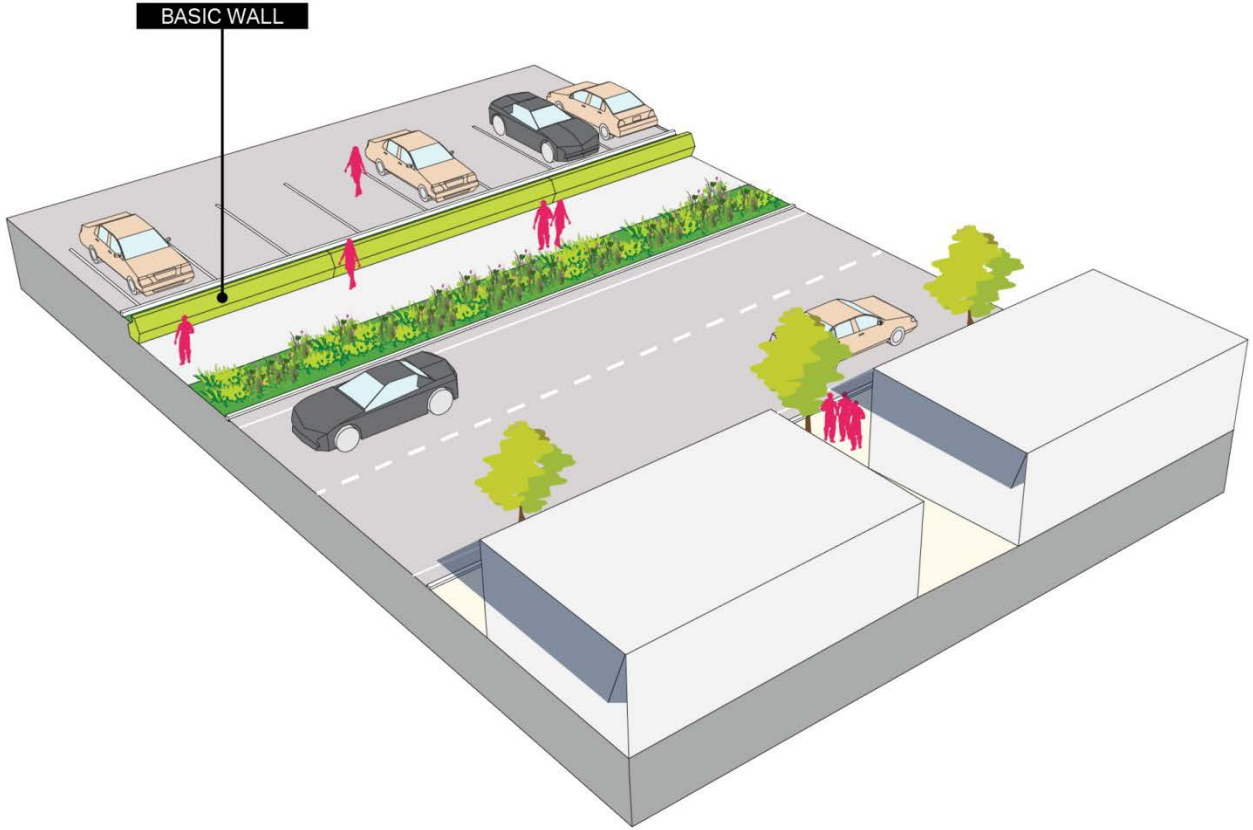


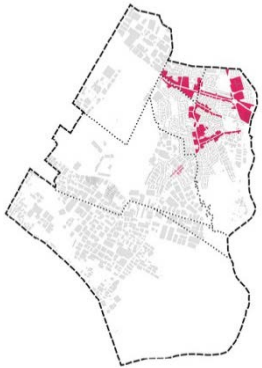
COMMERCIAL ZONE

COMMERCIAL ZONE

BUILDING THE PROTECTION

- ***STARTING WITH THE BASIC WALL***
- ***BUILDING THE SYSTEM WHERE APPROPRIATE***

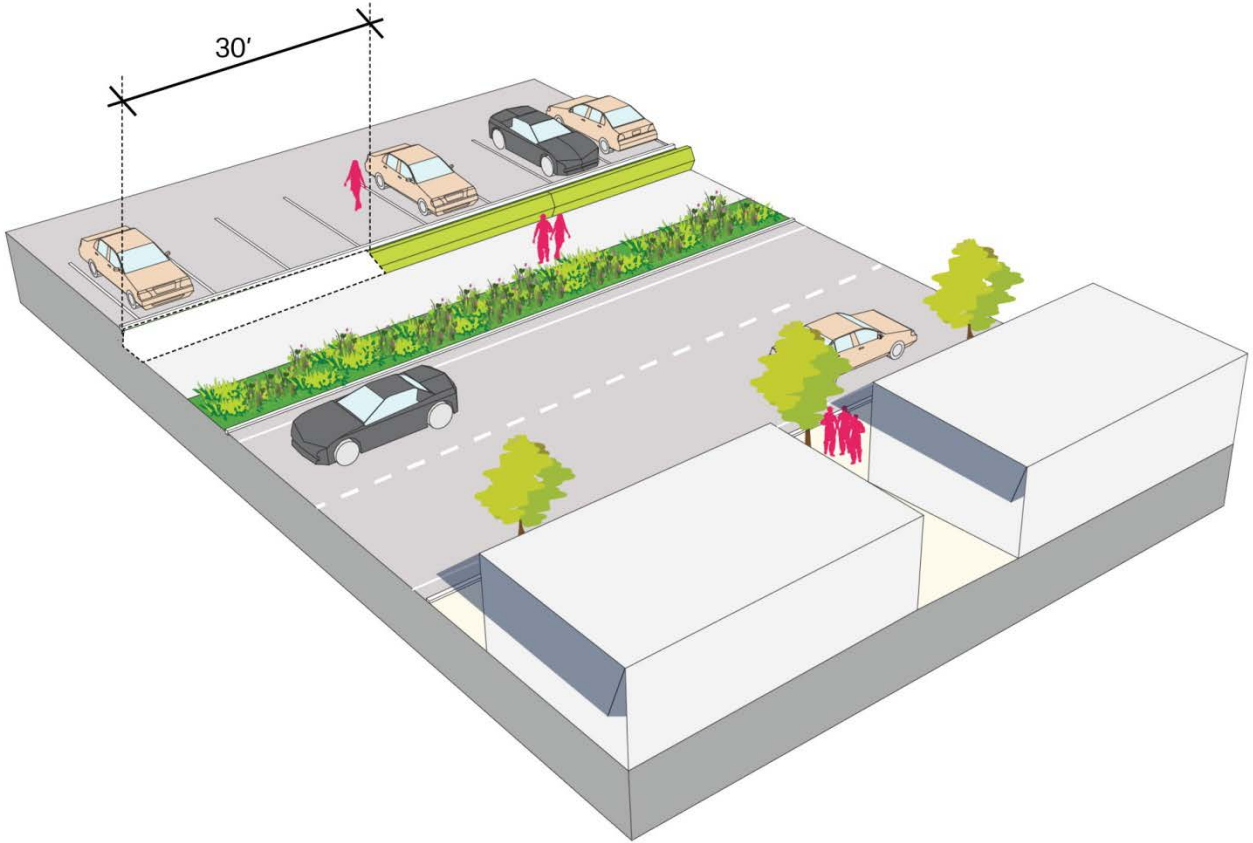


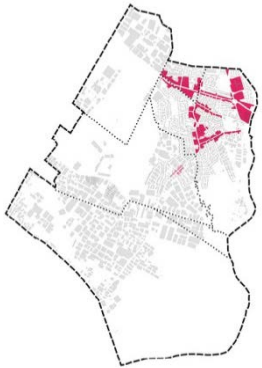


COMMERCIAL ZONE

BUILDING THE PROTECTION

- ***MODULAR SYSTEM WORKS IN 30' UNITS***
- ***SYSTEM REDUCES COST AND TIME OF CONSTRUCTION***

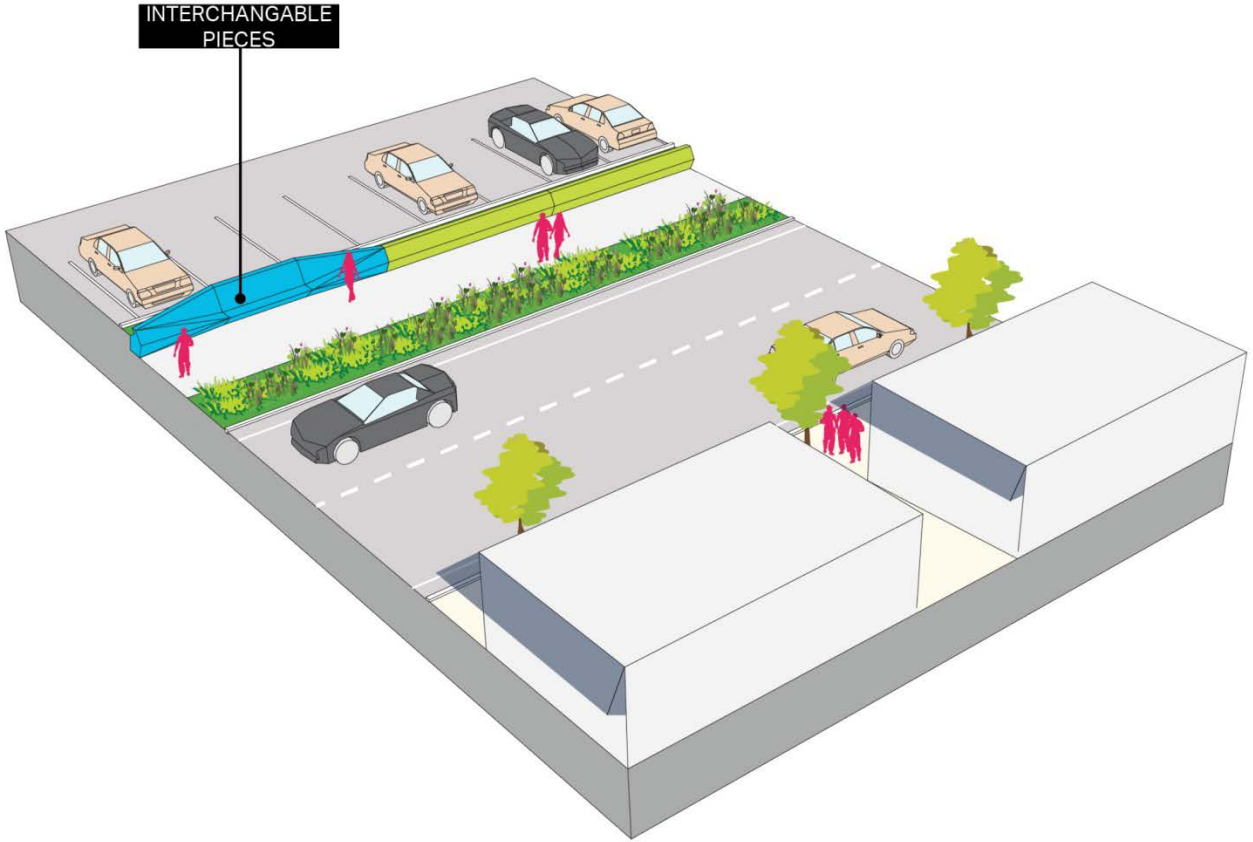


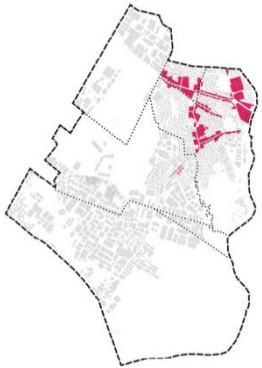


COMMERCIAL ZONE

BUILDING THE PROTECTION

- ***UNITS ARE INTERCHANGEABLE***

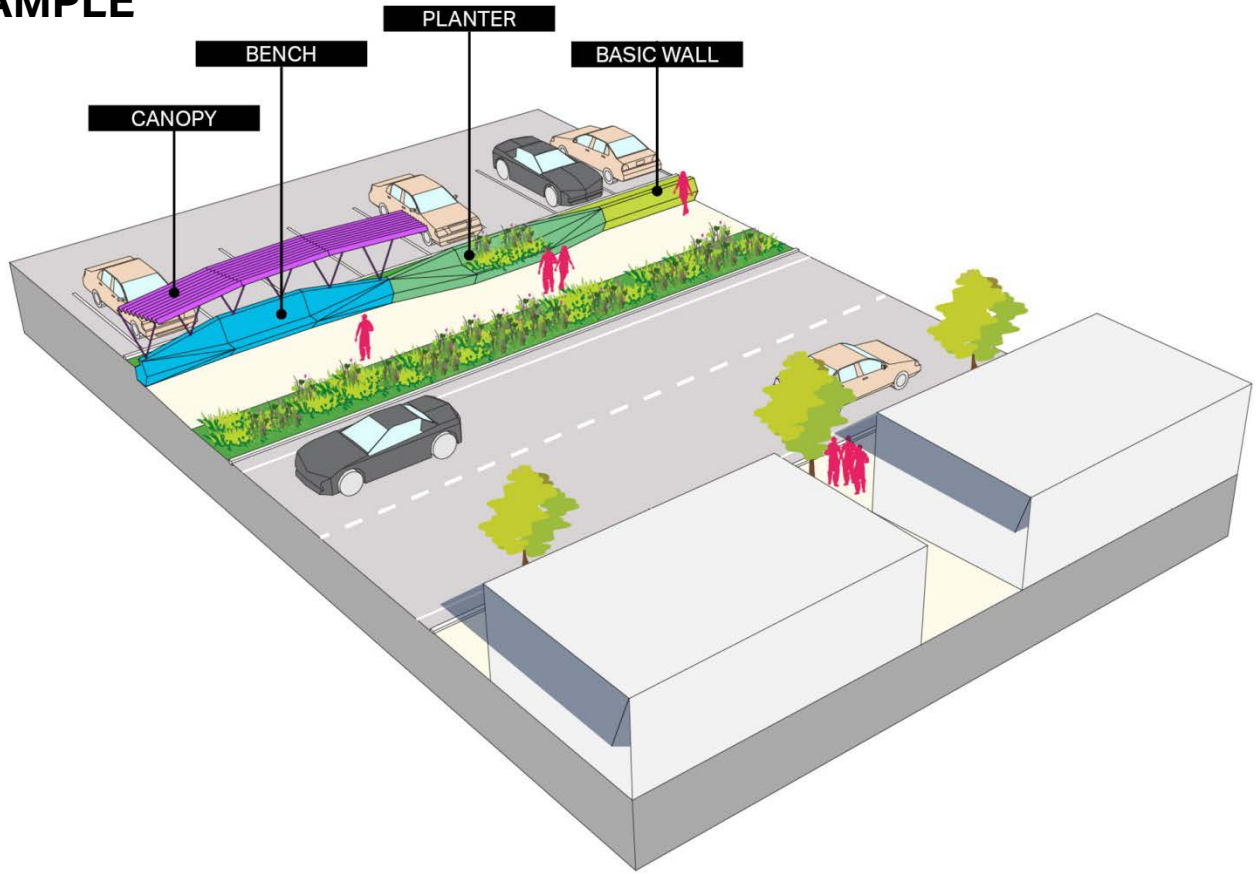


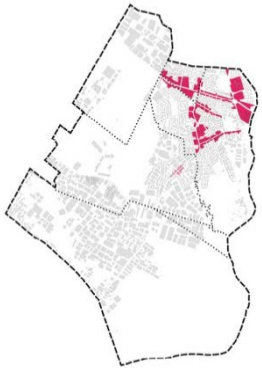


COMMERCIAL ZONE

MODULAR SYSTEM EXAMPLE

- ***FLOOD PROTECTION + STREET AND PUBLIC BENEFITS***
- ***INTERIOR CONDITION***



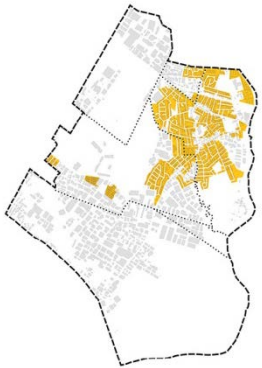


COMMERCIAL ZONE

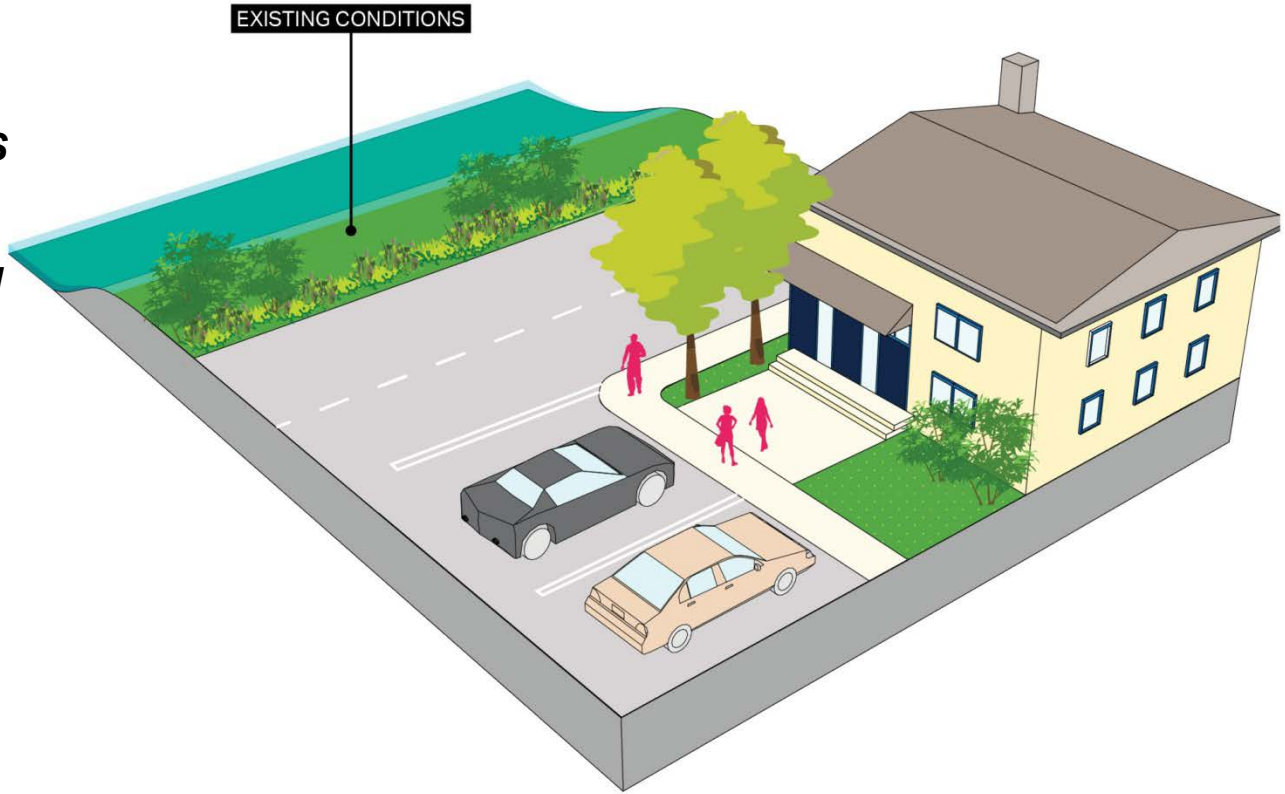
RESIDENTIAL ZONE

EXISTING CONDITIONS

- ***RESPONDING TO THE RESIDENTIAL CONTEXT***
- ***PROVIDE ACCESS AND VIEWS TO THE HACKENSACK RIVER***
- ***POTENTIAL FOR RECREATION AND NEIGHBORHOOD CONNECTIONS***



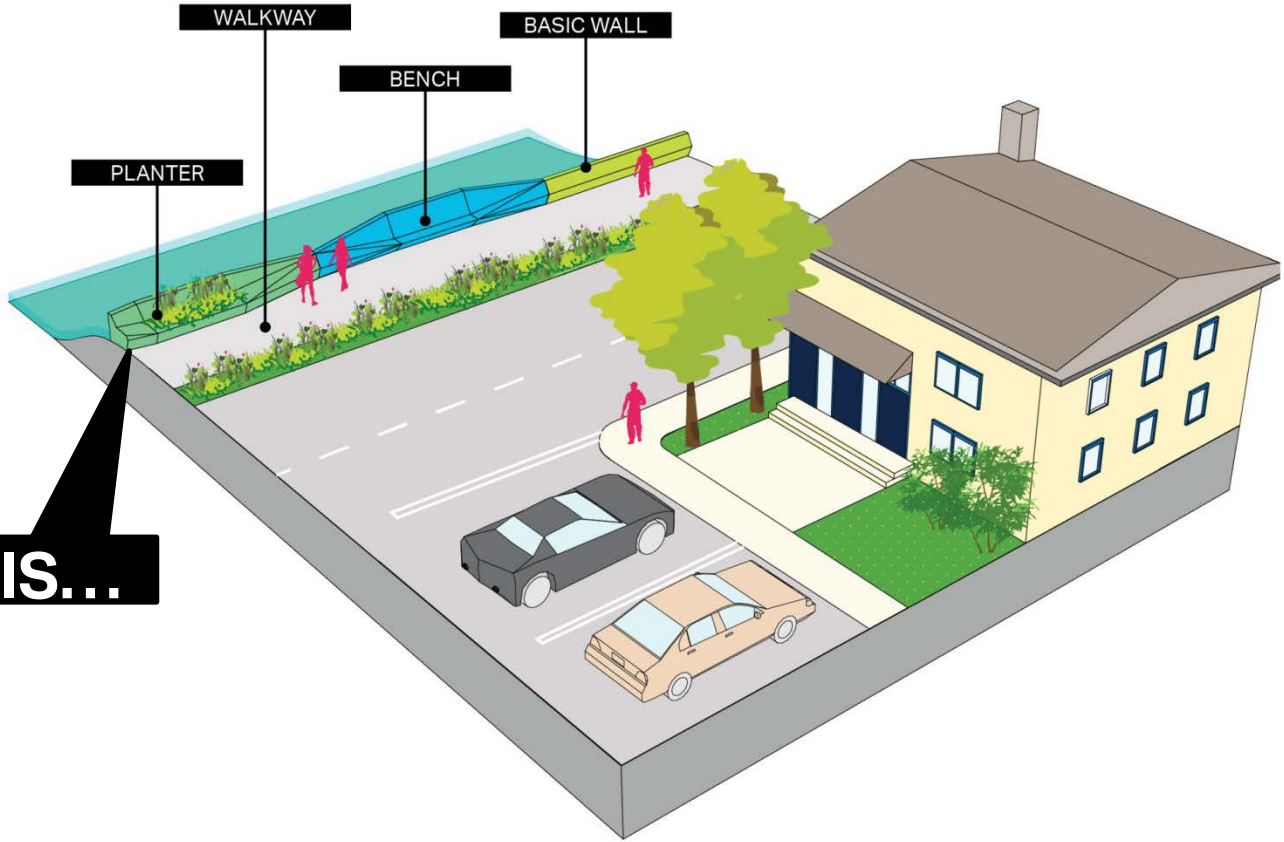
RESIDENTIAL ZONE

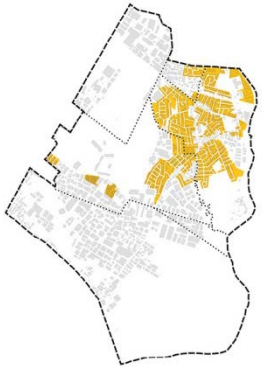


RESIDENTIAL ZONE

MODULAR SYSTEM EXAMPLE

- ***THE MODULAR SYSTEM PROVIDES PLACES TO SIT AND ENGAGE WITH THE HACKENSACK RIVER***



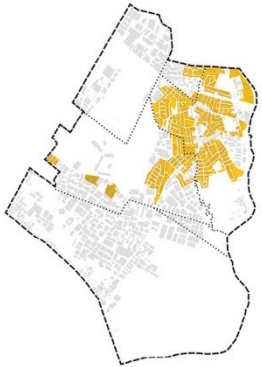


RESIDENTIAL ZONE

RESIDENTIAL ZONE

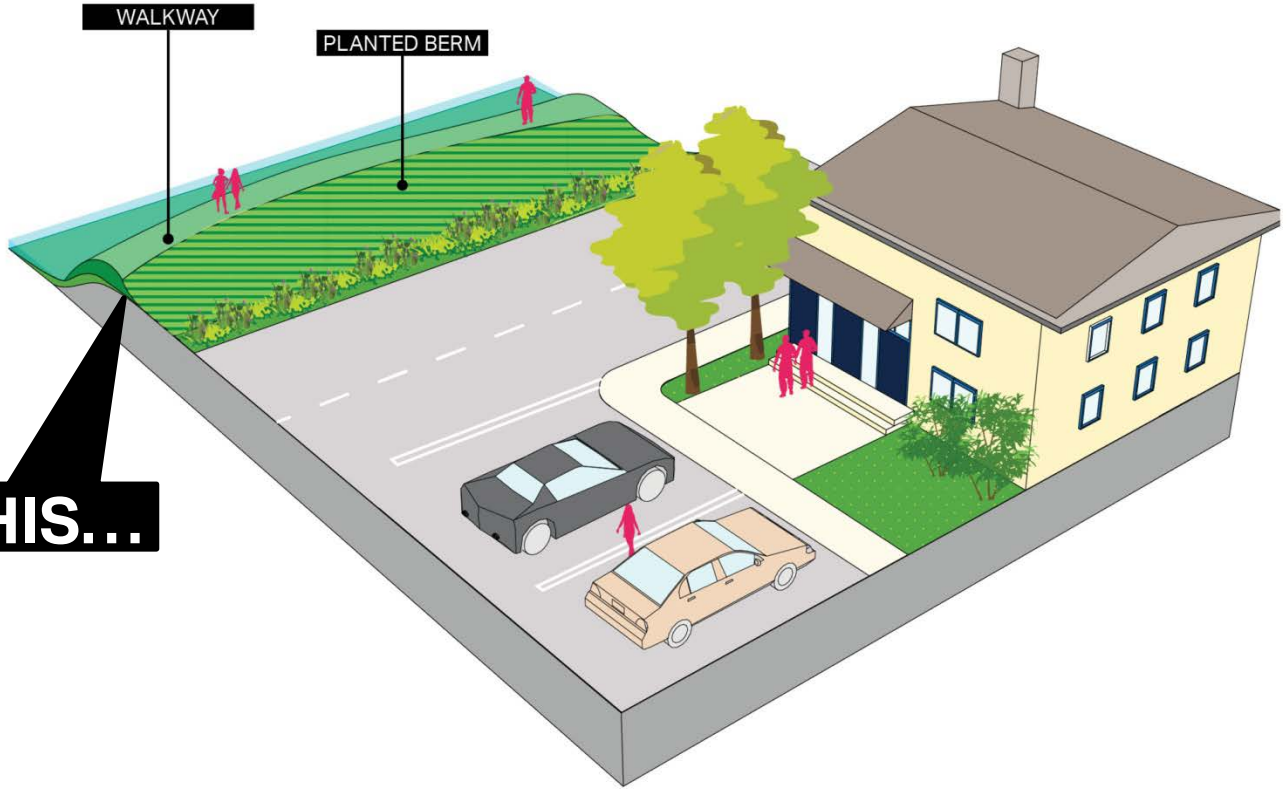
BERM + WALKWAY EXAMPLE

- ***IN AREAS THAT ALLOW FOR A GREATER FOOTPRINT, A SOFT BERM COULD BE INCORPORATED***



RESIDENTIAL ZONE

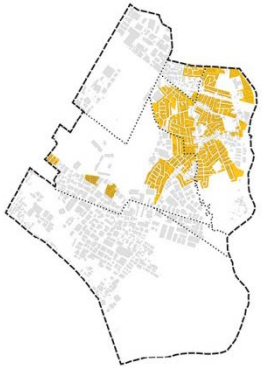
OR THIS…



CANTILEVERED WALKWAY EXAMPLE

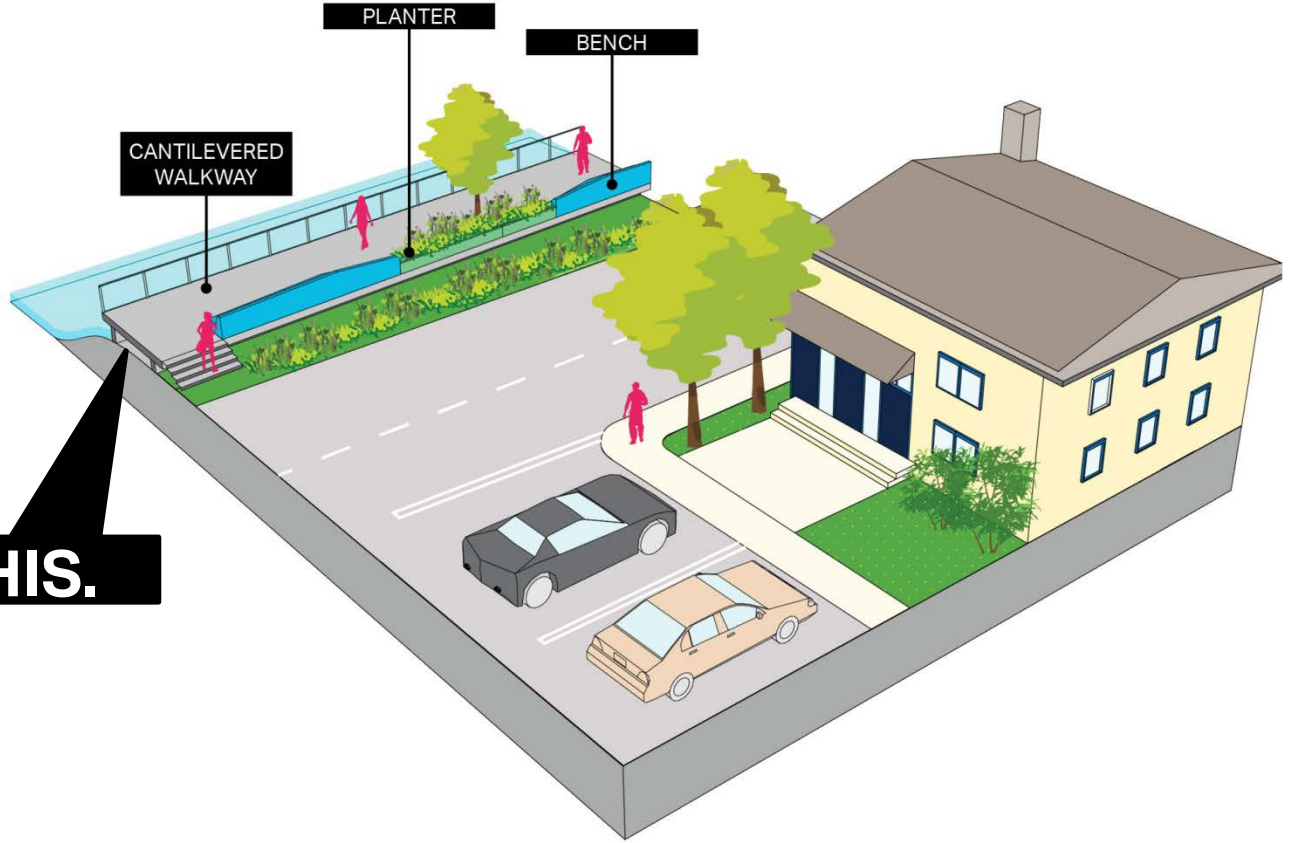
- ***CANTILEVERED WALKWAY IS STILL BEING CONSIDERED WHERE POSSIBLE***

- ***PROVIDES RECREATION AND WATER ACCESS***



RESIDENTIAL ZONE

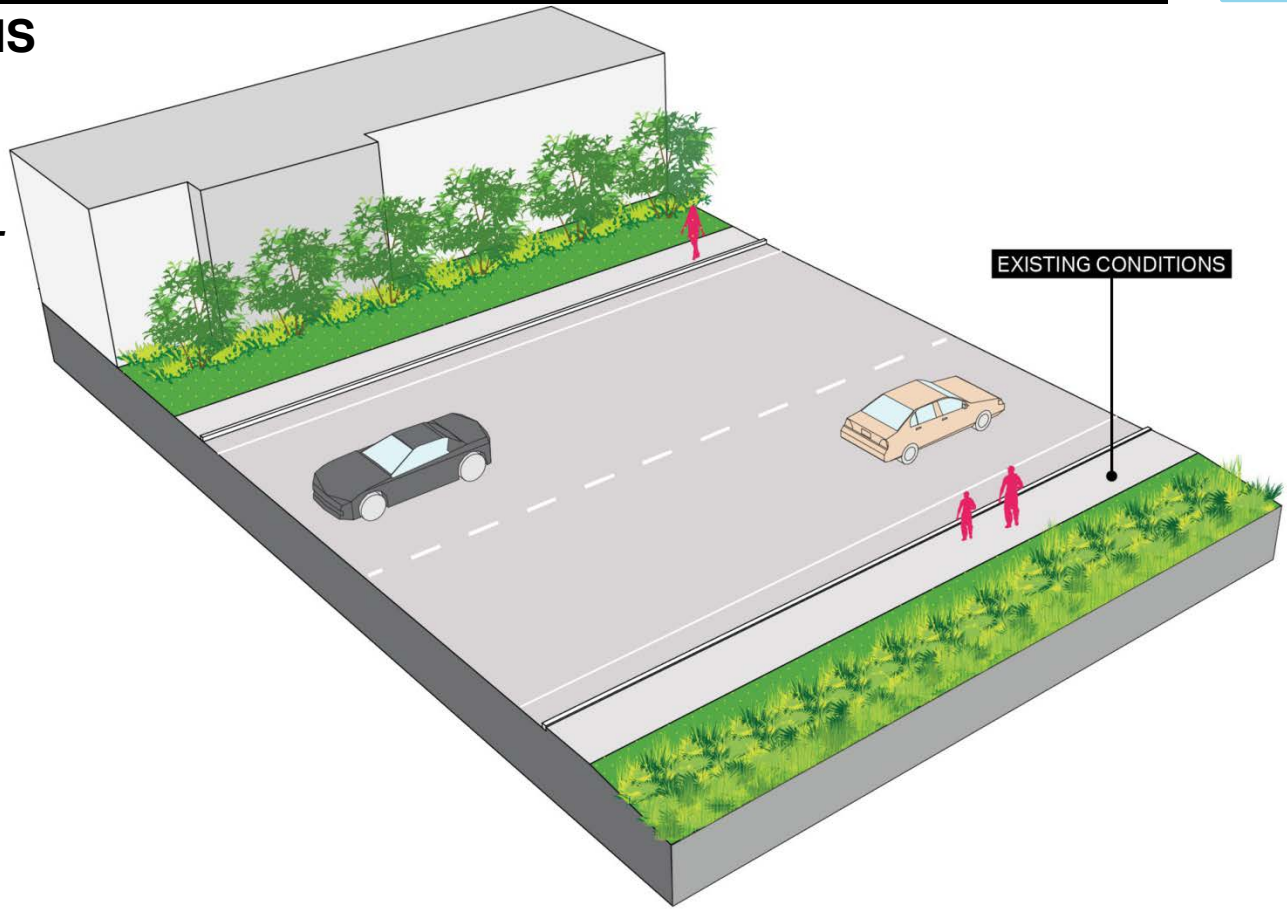
OR THIS.

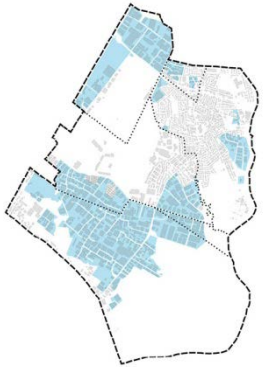


INDUSTRIAL ZONE

EXISTING CONDITIONS

- ***BLENDING INTO THE INDUSTRIAL ENVIRONMENT***
- ***COST EFFICIENCY***

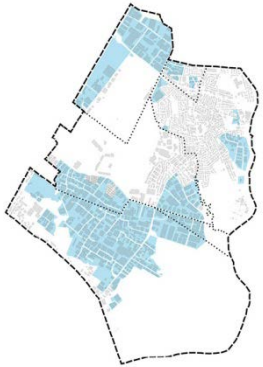




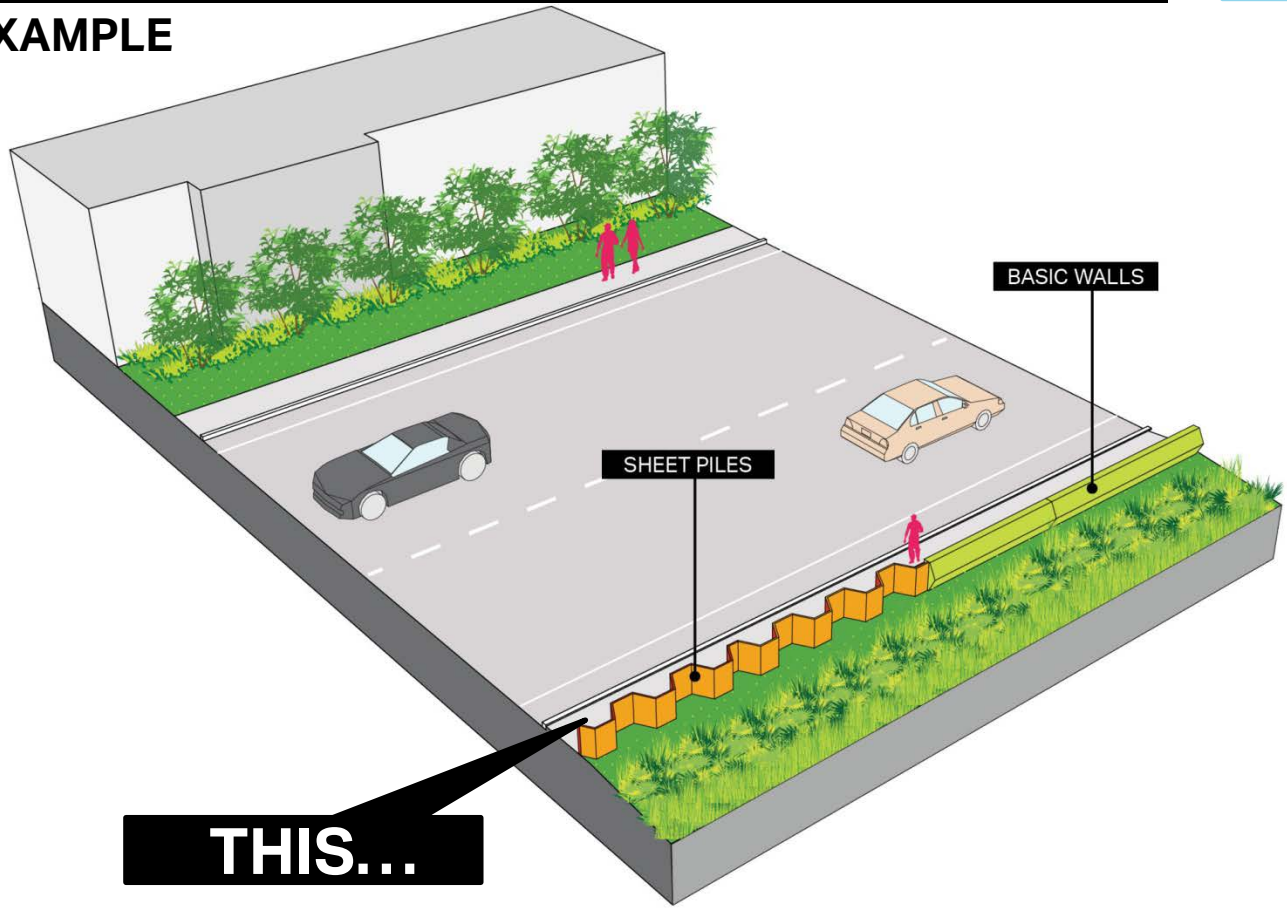
INDUSTRIAL ZONE

MODULAR SYSTEM EXAMPLE

- ***SHEET PILE AND BASIC WALLS FOR AREAS WITH SMALL FOOTPRINTS***

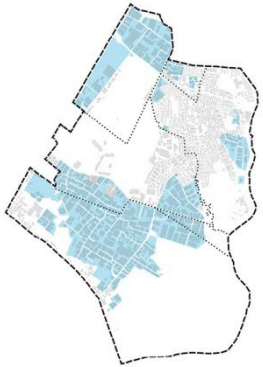


INDUSTRIAL ZONE

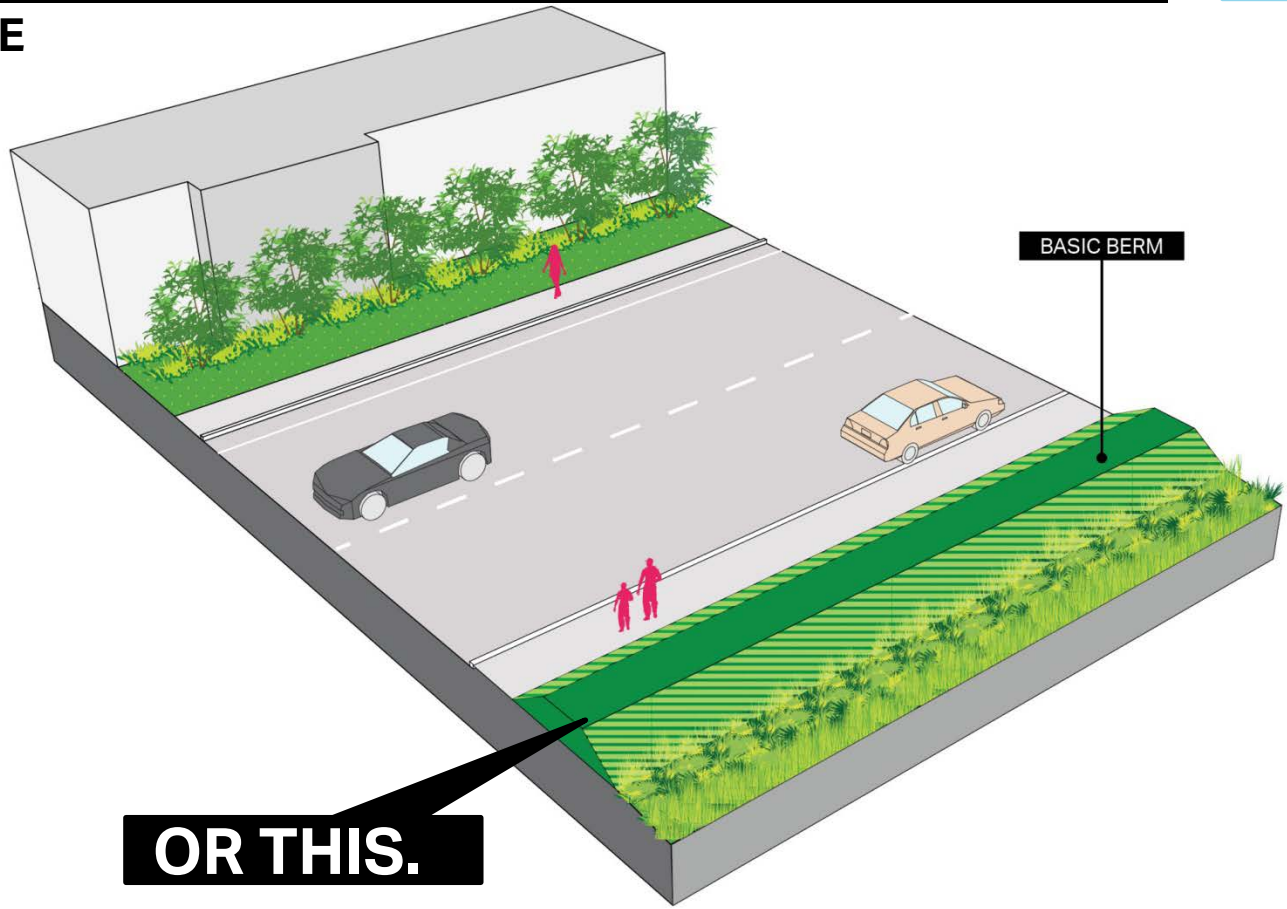


BASIC BERM EXAMPLE

- ***BASIC BERM WHEN LARGER FOOTPRINT CAN BE ACCOMMODATED***



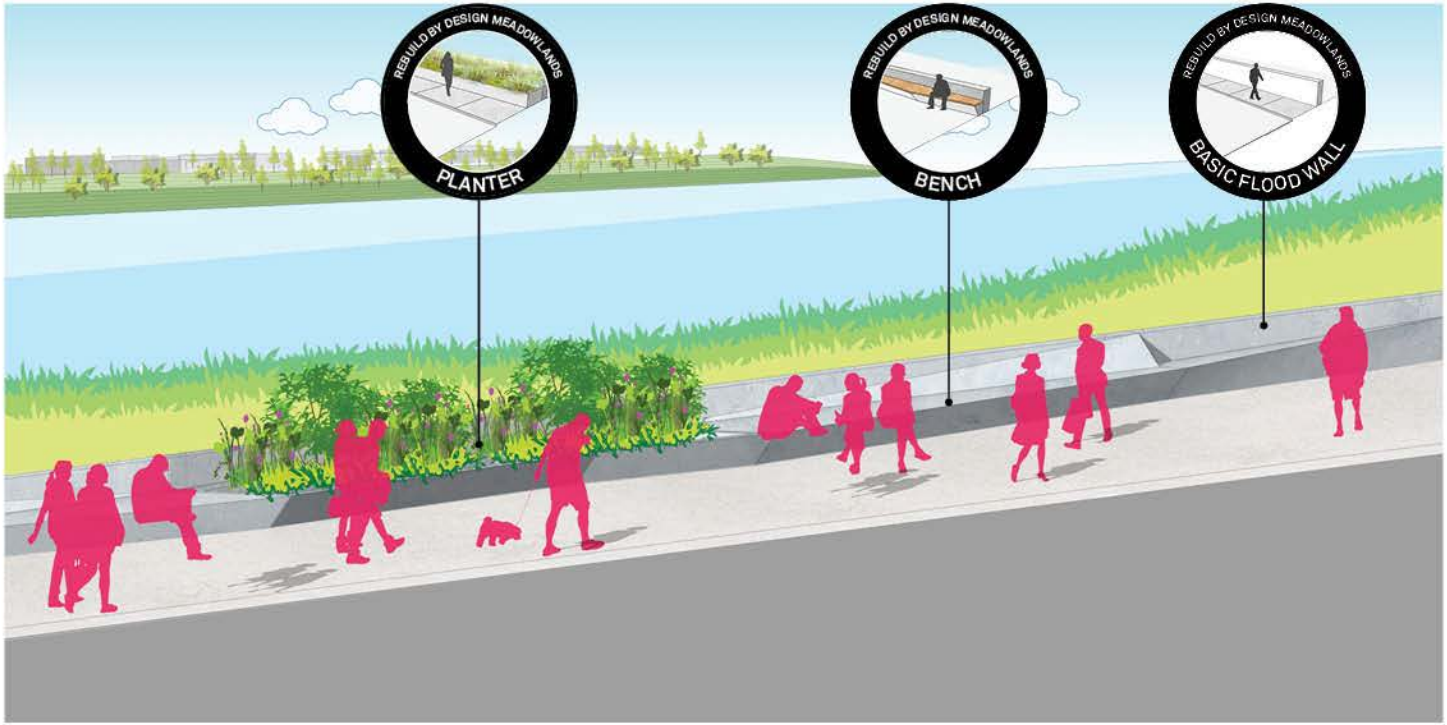
INDUSTRIAL ZONE



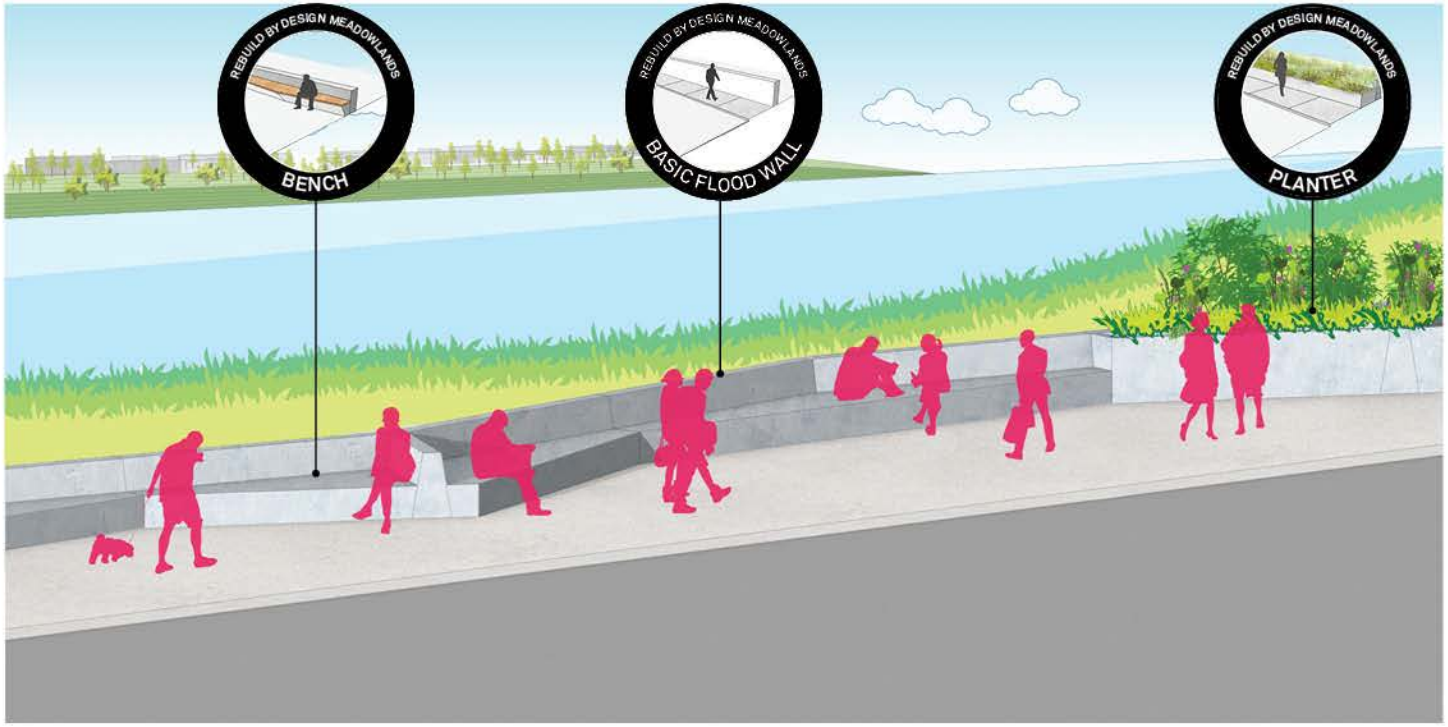
INVESTIGATION: 1

- *THE DESIGN TEAM IS CURRENTLY DEVELOPING THE MODULAR SYSTEM BASED ON FEEDBACK FROM CAG #4 WORKSHOP*

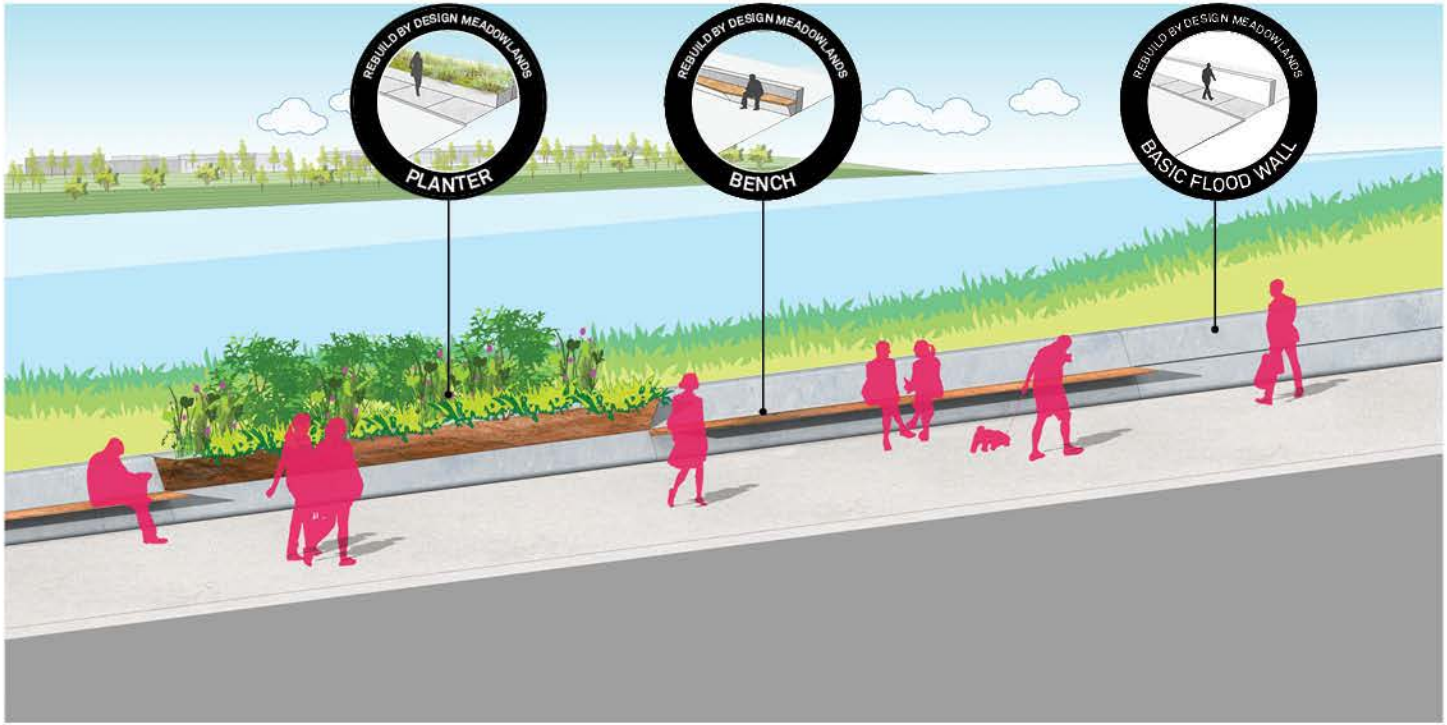
- *THE FOLLOWING IMAGES REFLECT CURRENT SYSTEM DESIGN STUDIES*



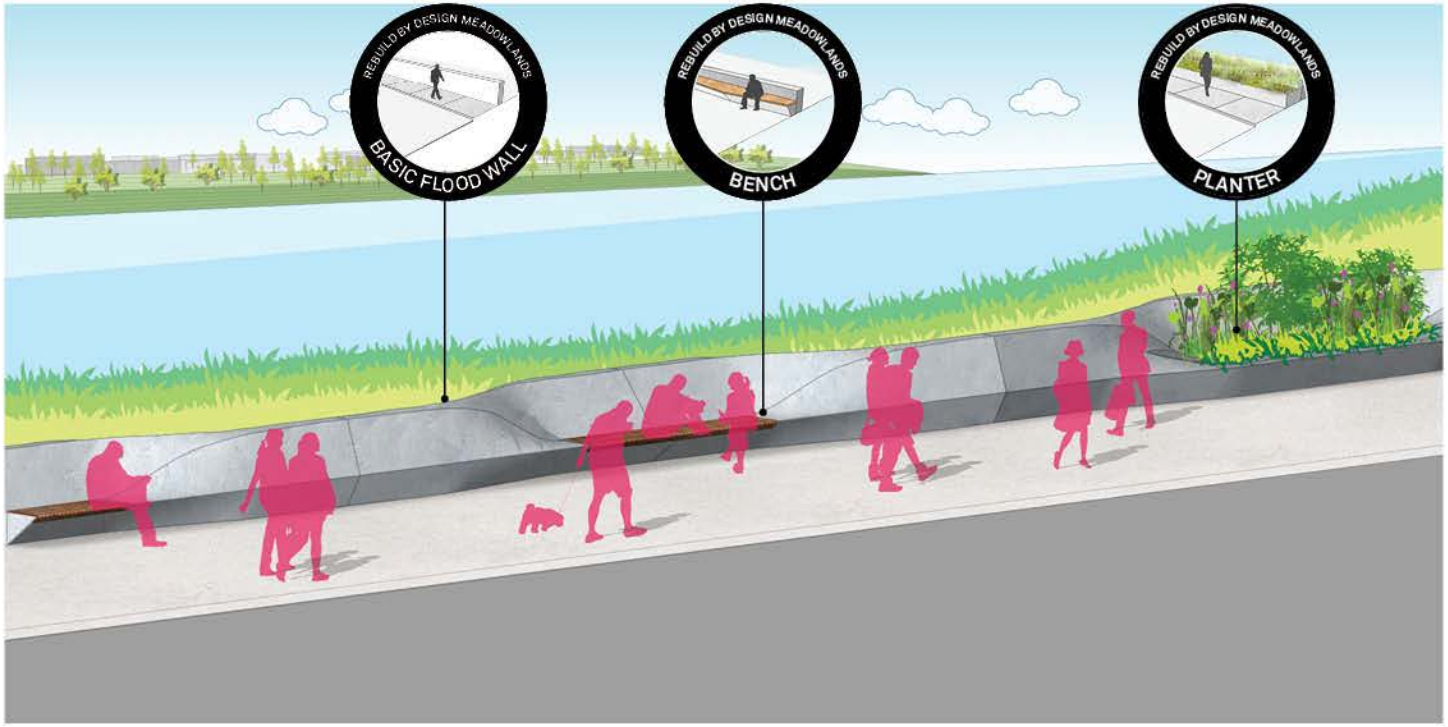
INVESTIGATION: 2



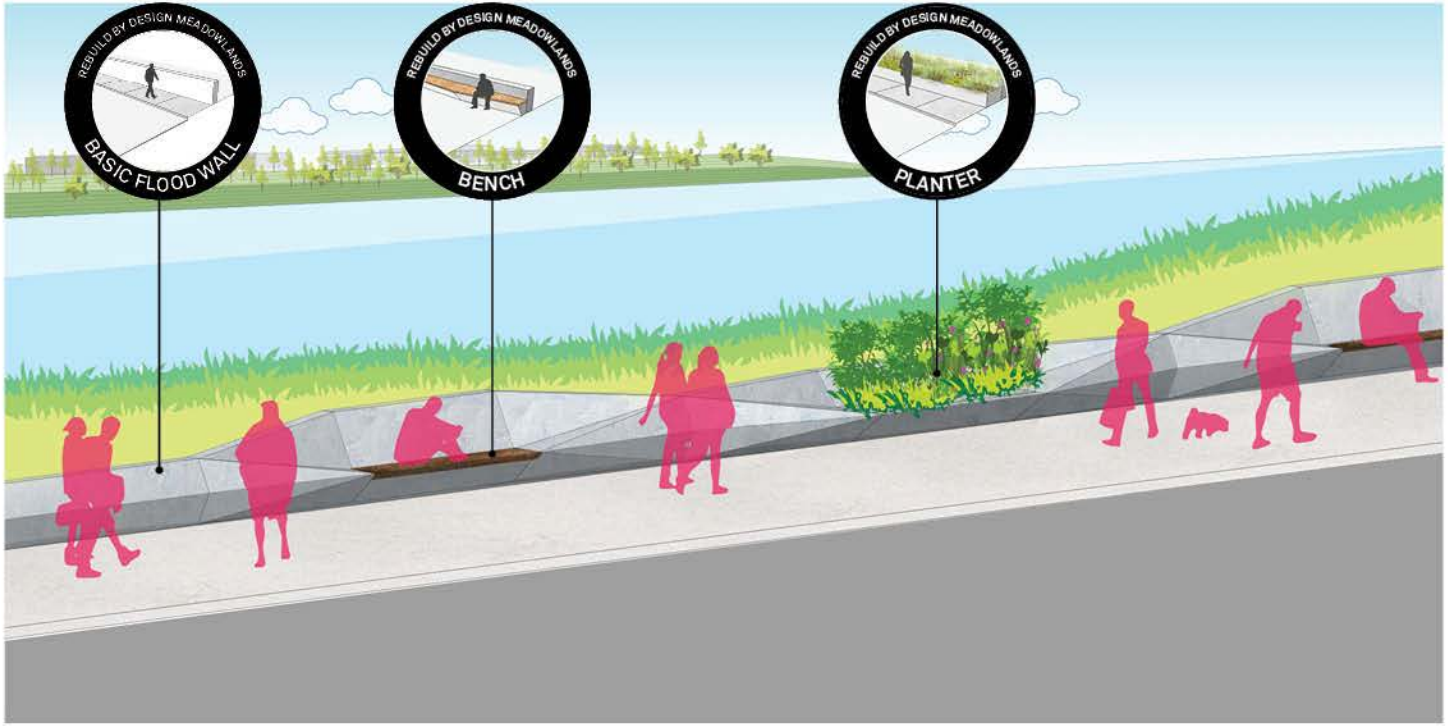
INVESTIGATION: 3



INVESTIGATION: 4



INVESTIGATION: 5



NEXT STEPS

CHRIS BENOSKY, AECOM

NJDEP / AECOM UPCOMING ACTIVITIES

- Prepare Meeting Summary for CAG #6
- Continue developing:
  - Concepts and Alternatives
- CAG #7 in January
  - Alternative 3 - Hybrid

CAG: CALL TO ACTION

- Submit comments & worksheet from CAG #6 meeting on **December 16, 2016**
- Share information from this Meeting with friends and neighbors
- Continue to build interest in the Project
- Ensure the public knows about upcoming information (to be posted on Project website)

Critical Information

January 31, 2017

CAG Meeting #7: Alternative 3 (Hybrid)

Project Website

www.rbd-meadowlands.nj.gov

Project Email

rbd-meadowlands@dep.nj.gov

Question & Answer

THANK YOU!