

# COASTAL ZONE MANAGEMENT: MANHATTAN

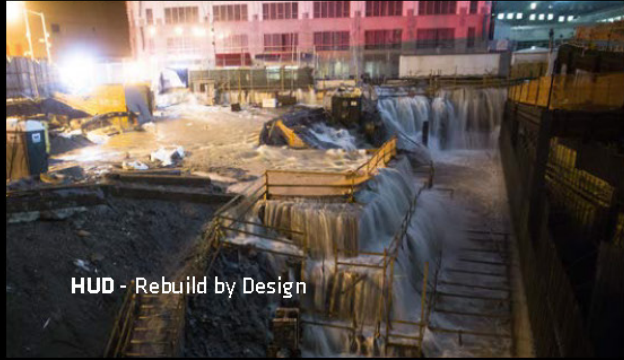
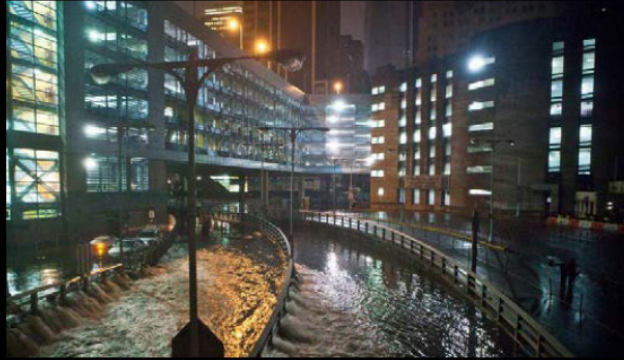
Matthijs Bouw

founding principal One Architecture & Urbanism  
Professor of Practice, Director of Urban Resilience Program, Weitzman School of Design

**one architecture**  
new york city amsterdam





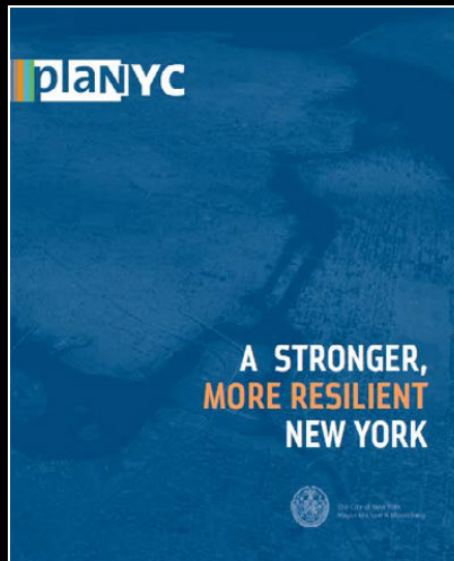


HUD - Rebuild by Design



BIG TEAM

# 2013 - PLANYC SPECIAL INITIATIVE FOR REBUILDING AND RESILIENCY



**SOUTHERN MANHATTAN | Initiative Summary**

**Climate Resiliency**

- Review an integration of flood protection systems in Lower Manhattan, including the Lower East Side
- Review an integration of flood protection systems in the Hudson River
- Conduct an information plan and strategy for an integrated flood protection system for Lower Manhattan
- Conduct a study for a study project near the Hudson River waterfront along Lower Manhattan's western edge and study coastal protection opportunities

**Cultural Information**

- Review an integration of flood protection systems in the Hudson River
- Conduct an information plan and strategy for an integrated flood protection system for Lower Manhattan
- Conduct a study for a study project near the Hudson River waterfront along Lower Manhattan's western edge and study coastal protection opportunities

**Community & Economic Recovery**

- Review an integration of flood protection systems in the Hudson River
- Conduct an information plan and strategy for an integrated flood protection system for Lower Manhattan
- Conduct a study for a study project near the Hudson River waterfront along Lower Manhattan's western edge and study coastal protection opportunities

**Initiatives Not on Map**

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**Climate Resiliency**

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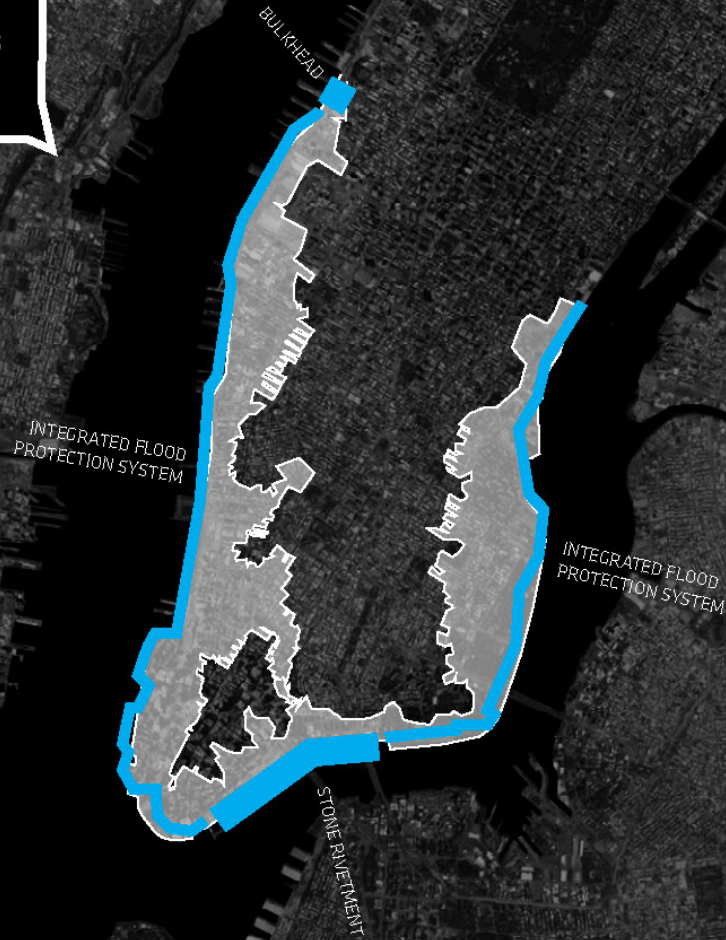
**Cultural Information**

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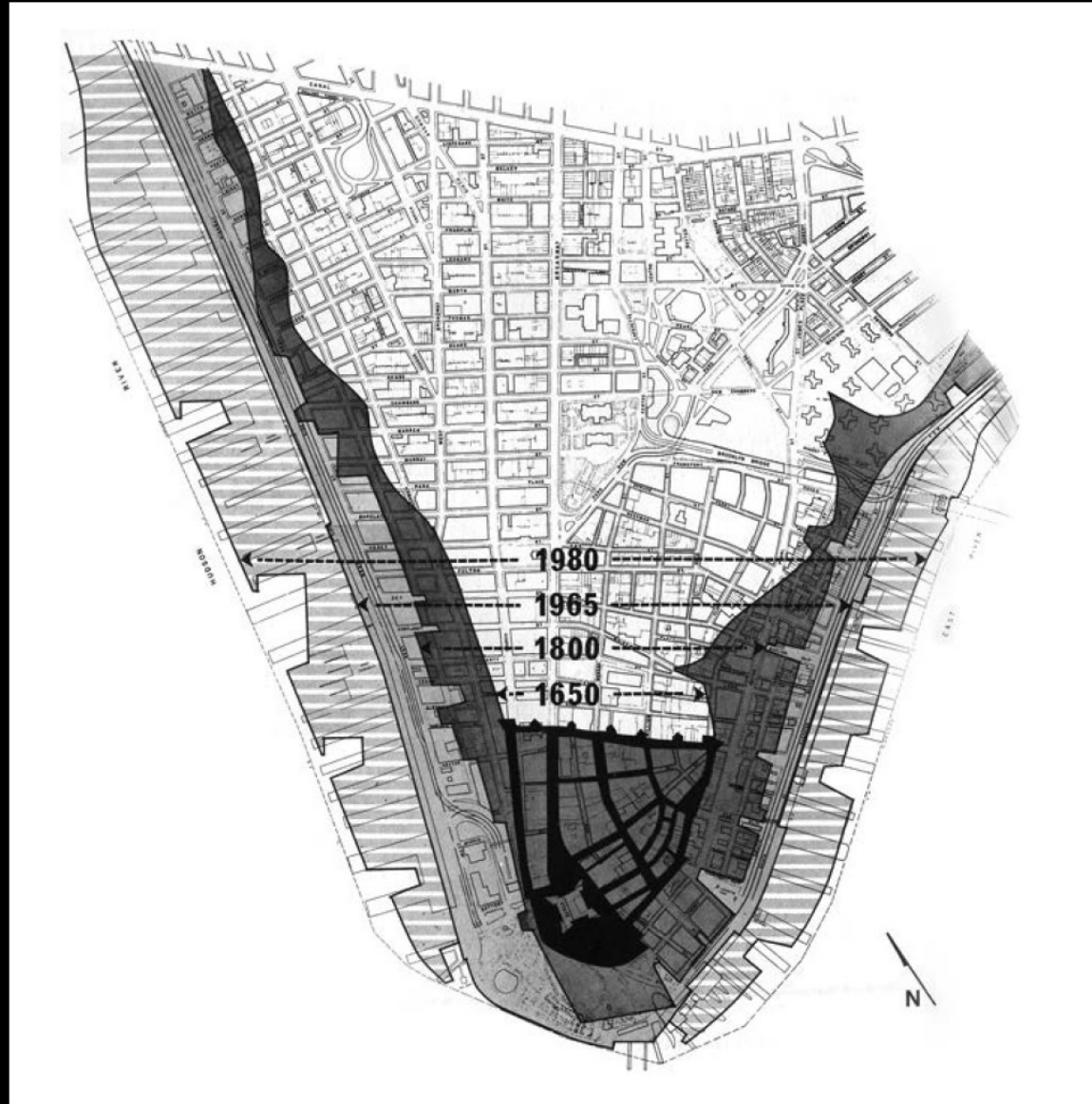
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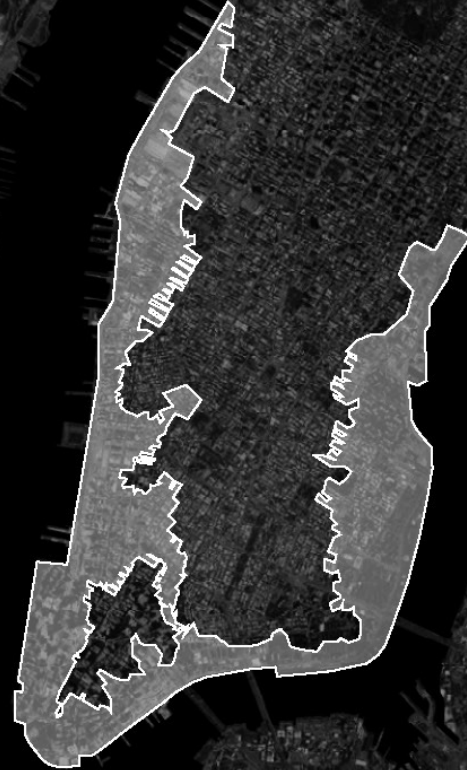
SIRR REPORT RECOMMENDS  
MANHATTAN, 8 CONTINUOUS  
MILES OF INTEGRATED  
COASTAL PROTECTION!







**FEMA FLOOD ZONE**







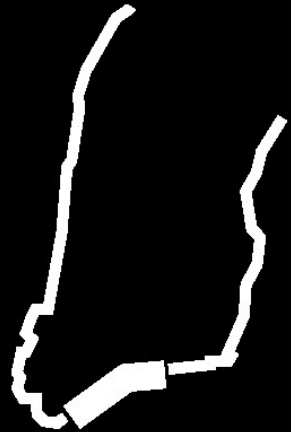
the sooner you park your car,  
the sooner you can stop thinking



PROGRAM



INFRASTRUCTURE

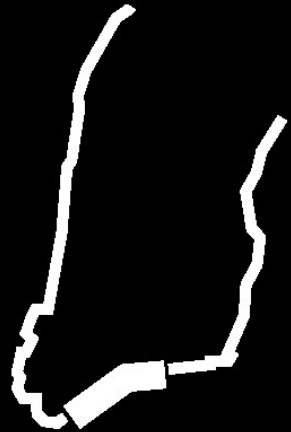


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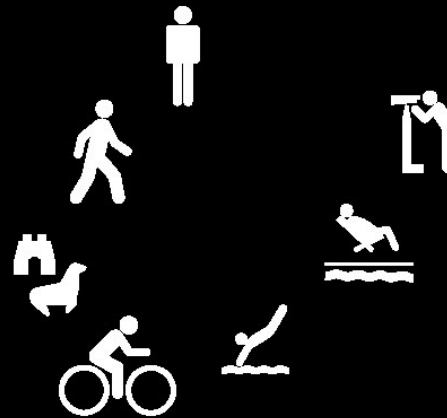


**RESILIENCY INFRASTRUCTURE**

**PEOPLE!**



+



RESILIENCY INFRASTRUCTURE

PROGRAM



# TWO ROUNDS OF PUBLIC WORKSHOPS


 AN INITIATIVE OF PRESIDENT OBAMA'S HURRICANE SANDY REBUILDING TASK FORCE AND HUD  
 ESTA ES UNA INICIATIVA DE RECUPERACIÓN TASK FORCE DEL PRESIDENTE OBAMA Y HUD  
 一个总统所倡议的 SANDY 飓风灾后重建任务  
 WWW.REBUILDDESIGN.ORG

## L.E.S. PUBLIC WORKSHOPS ON NEIGHBORHOOD FLOOD PROTECTION

### TALLERES PUBLICOS SOBRE LA PROTECCIÓN CONTRA INUNDACIONES EN COMUNIDADES

#### 下东区街坊防洪公开研讨会

<b>MONTHSIDE MEETING</b> 北镇会议 <b>MONDAY, FEB. 3<sup>RD</sup> 6 - 9PM</b> LUNES, 3 DE FEBRERO, 6 - 9PM 周一, 2月3日, 6 - 9PM <b>LOWER EASTSIDE GIRLS CLUB</b> 101 AVENUE D	<b>MONTHSIDE MEETING</b> 北镇会议 <b>MONDAY, FEB. 10<sup>TH</sup> 6 - 9PM</b> LUNES, 10 DE FEBRERO, 6 - 9PM 周一, 2月10日, 6 - 9PM <b>HAMILTON MADISON HOUSE</b> 50 MADISON STREET
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**FREE FOOD**  
 COMIDA GRATIS  
 免费食物

**FREE RAFFLES**  
 RAFFLES GRATIS  
 免费抽奖

**FREE CHILDCARE** (OVER AGE 5)  
 CUIDO DE NIÑOS GRATIS (MAYORES DE 5 AÑOS DE EDAD)  
 免费儿童看护 (5岁以上)

REBUILD BY DESIGN IS DEVELOPING FUNDABLE SOLUTIONS TO BETTER PROTECT RESIDENTS FROM FUTURE CLIMATE EVENTS.  
 RECONSTRUIR POR DISEÑO ES EL DESARROLLO DE SOLUCIONES QUE PUEDE SER FINANCIADA PARA PROTEGER MEJOR A LOS RESIDENTES DE FUTUROS EVENTOS CLIMÁTICOS.  
 重建设计正致力于可资助的解决方案用以更好的保护居民免受未来的气象灾害困扰。

QUESTIONS? CONTACT... ¿PREGUNTAS? PÓNGASE EN CONTACTO CON... 问题? 联系方式... LILIAN MEJIA @lilmejia@qoles.org 212-358-1231


 AN INITIATIVE OF PRESIDENT OBAMA'S HURRICANE SANDY REBUILDING TASK FORCE AND HUD  
 ESTA ES UNA INICIATIVA DE RECUPERACIÓN TASK FORCE DEL PRESIDENTE OBAMA Y HUD  
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## L.E.S. PUBLIC WORKSHOPS ON NEIGHBORHOOD FLOOD PROTECTION

### TALLERES PUBLICOS SOBRE LA PROTECCIÓN CONTRA INUNDACIONES EN L.E.S.

#### 下东区街坊防洪公开研讨会

	<b>MONDAY, MARCH 10<sup>TH</sup></b> LUNES, 10 DE MARZO 星期一, 3月10日 7 <sup>00</sup> AM - 7 <sup>20</sup> PM <b>RUTGERS COMMUNITY CTR</b> 200 MADISON ST
	<b>TUESDAY, MARCH 11<sup>TH</sup></b> MIÉRCOLES, 11 DE MARZO 星期二, 3月11日 6 - 8 <sup>PM</sup> <b>GIRLS CLUB</b> 101 AVENUE D @ 8 <sup>TH</sup> STREET NEED TRANSPORTATION? CONTACT JULIAN NECESITA TRANSPORTE? LLAMA A JULIAN 需要交通服务? 联系人: JULIAN JULIAN MORALES (212) 358-1231

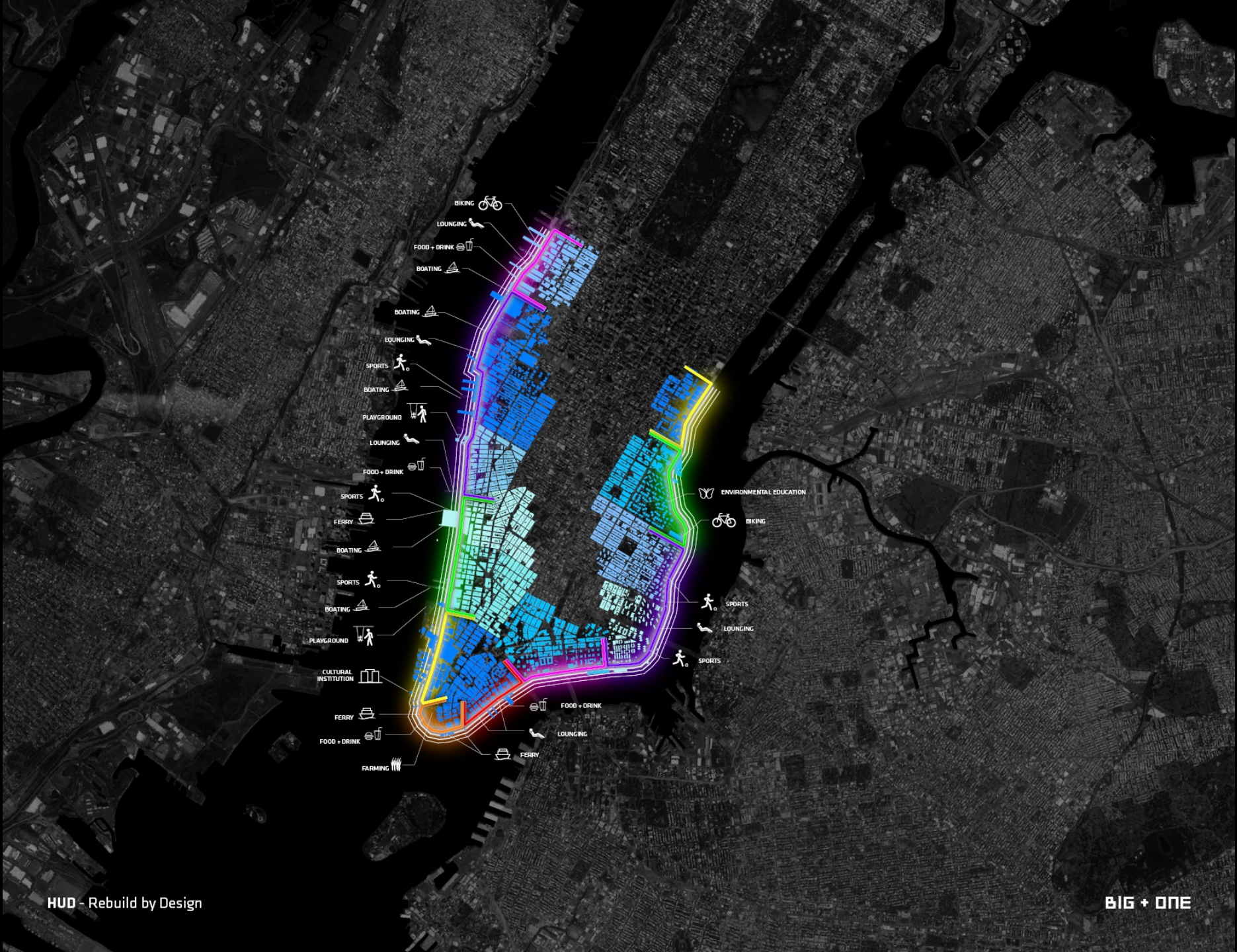
REBUILD BY DESIGN IS DEVELOPING STRATEGIES TO PROTECT FROM FLOODING ALONG THE EAST RIVER WATERFRONT.  
 PLEASE JOIN US TO LEARN AND GIVE FEEDBACK ON THIS INITIATIVE. WE WANT TO HEAR FROM YOU!  
 RECONSTRUIR POR DISEÑO ESTA EXPLORANDO ESTRATEGIAS PARA LA PROTECCIÓN DE INUNDACIONES ALREDEDOR DEL EAST RIVER WATERFRONT. POR FAVOR, ÚNASE A NOSOTROS PARA APRENDER Y DAR OPINIONES!  
 重建设计致力于寻找并开发东河沿岸的防洪策略。请加入我们更多地了解这些创新策略并请提出反馈建议, 我们会虚心接受。

**FREE FOOD**  
 COMIDA GRATIS  
 免费食物

**FREE RAFFLES**  
 RAFFLES GRATIS  
 免费抽奖

**FREE CHILDCARE** (OVER AGE 5)  
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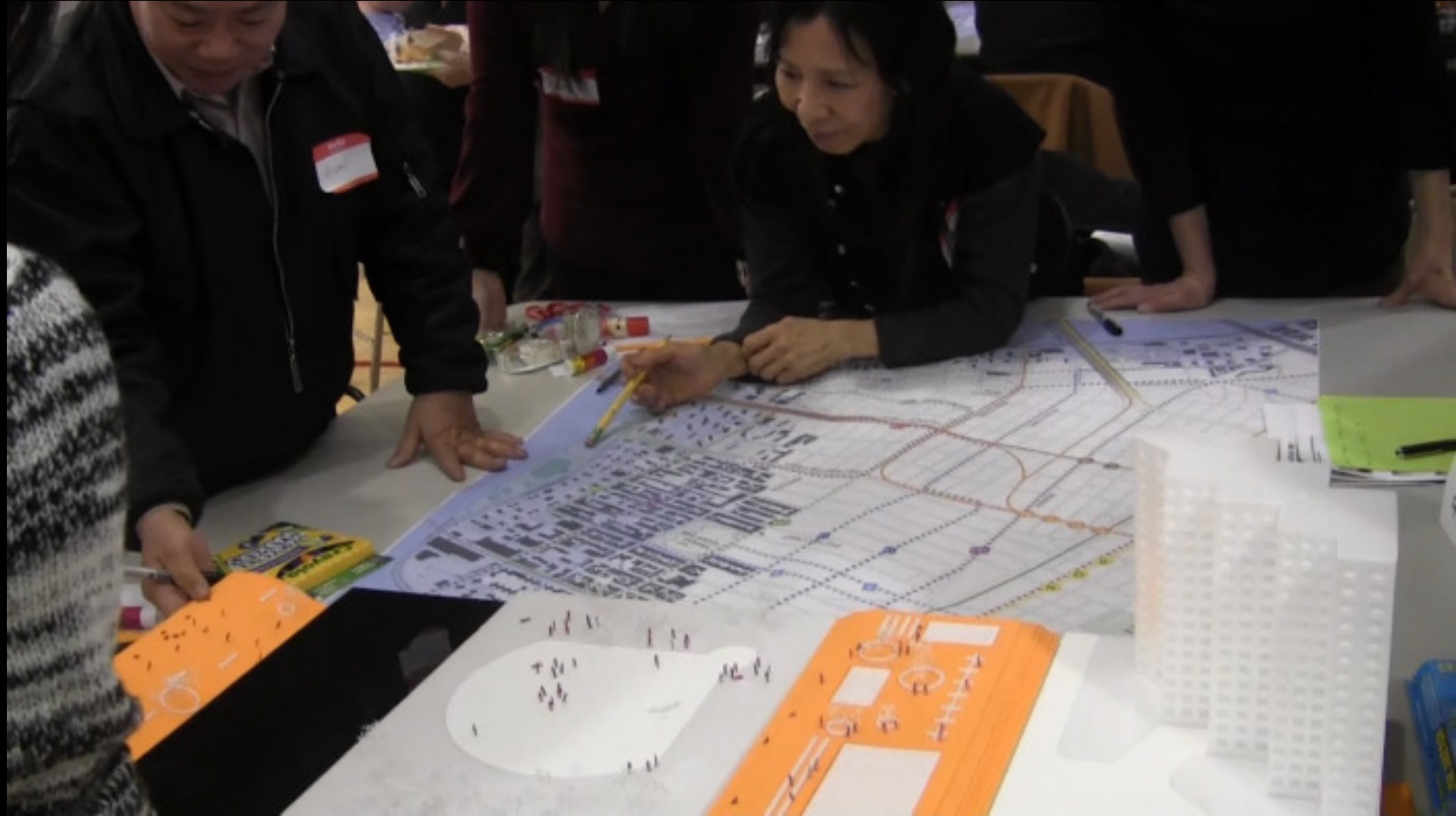




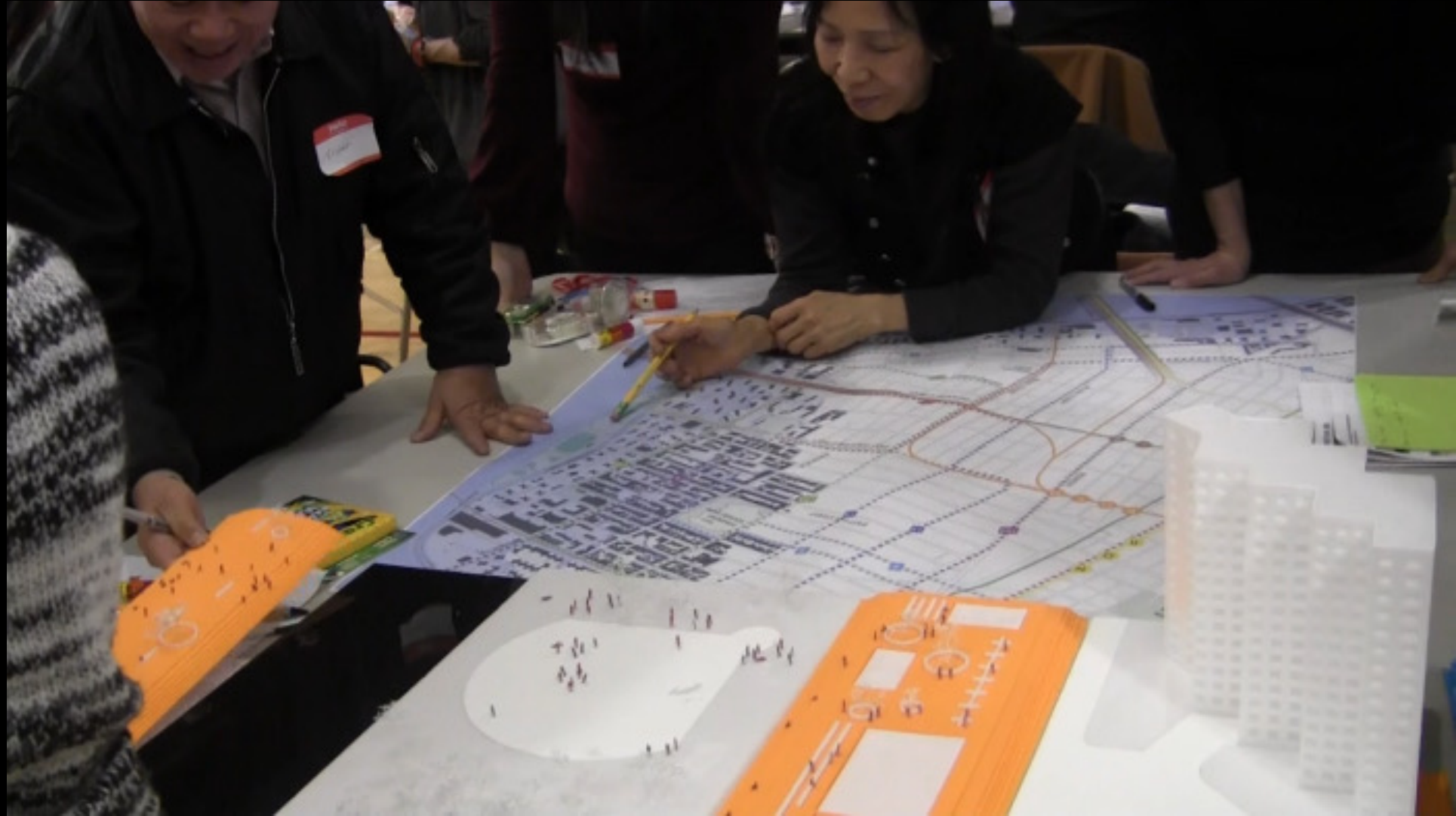






























**THE BRIDGING BERM**  
ADA ACCESSIBLE RAMPING CONNECTIONS



THE BIG U - FROM BIG U TO SMALL Us



**SMALLER Us  
MEANS SMALLER AREAS  
AND MANAGEABLE SCALES**

4.9米  
年 海拔 4.2米  
0年 海拔 3.7米  
2年 海拔 3.4米  
河河岸 海拔 2.4米

### ONE 韧性纽约 ONE RESILIENT NYC

Sea Level Rise in NYC | 纽约海平面上涨

#### NYC | 曼哈顿韧性设计

曼哈顿韧性设计旨在通过一系列策略，包括提高建筑标准、增加绿地、以及改善排水系统，来增强城市对海平面上升的抵御能力。设计团队与社区合作，确保方案既能保护基础设施，又能提升居民的生活质量。

#### THE BIG U

THE BIG U 是一个创新的韧性设计概念，旨在通过建造一个巨大的“U”形屏障，来保护曼哈顿下城免受海平面上升的影响。该屏障将包括步行道、自行车道、以及绿地，为居民提供安全、健康的出行选择。

#### HOSPITAL ROW | 医院街

医院街韧性设计旨在通过一系列策略，包括提高建筑标准、增加绿地、以及改善排水系统，来增强城市对海平面上升的抵御能力。设计团队与社区合作，确保方案既能保护基础设施，又能提升居民的生活质量。

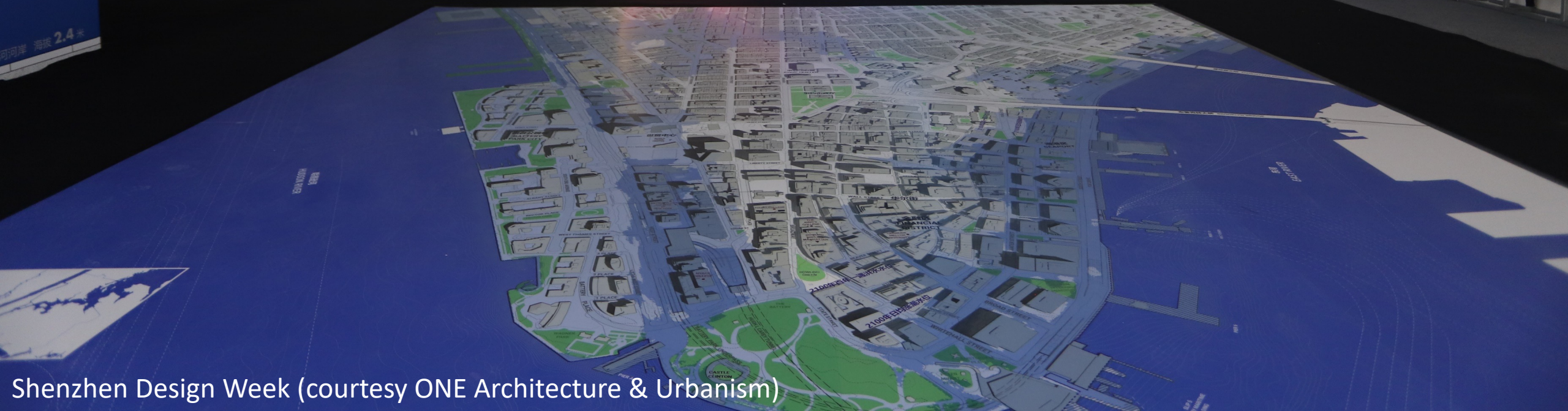
#### ESCR | 曼哈顿东区沿海韧性设计

曼哈顿东区沿海韧性设计旨在通过一系列策略，包括提高建筑标准、增加绿地、以及改善排水系统，来增强城市对海平面上升的抵御能力。设计团队与社区合作，确保方案既能保护基础设施，又能提升居民的生活质量。

#### BMCR | 布鲁克林桥城哥马利沿海韧性设计

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NYC E/EDC 2025  
ACOM



Shenzhen Design Week (courtesy ONE Architecture & Urbanism)



# THE BIG U

## PHASE 1: EAST SIDE COASTAL RESILIENCY







**VLADACK  
HOUSES**

**GOMPERS  
HOUSES**

**LES HOUSES III & V**

**LES HOUSES II**

**BARUCH  
HOUSES**

**LILLIAN WALD  
HOUSES**

**CAMPOS PLAZA  
HOUSES**

**JACOB RIIS  
HOUSES**

East Side Coastal Resilience (courtesy BIG/ONE Architecture & Urbanism/MNLA)

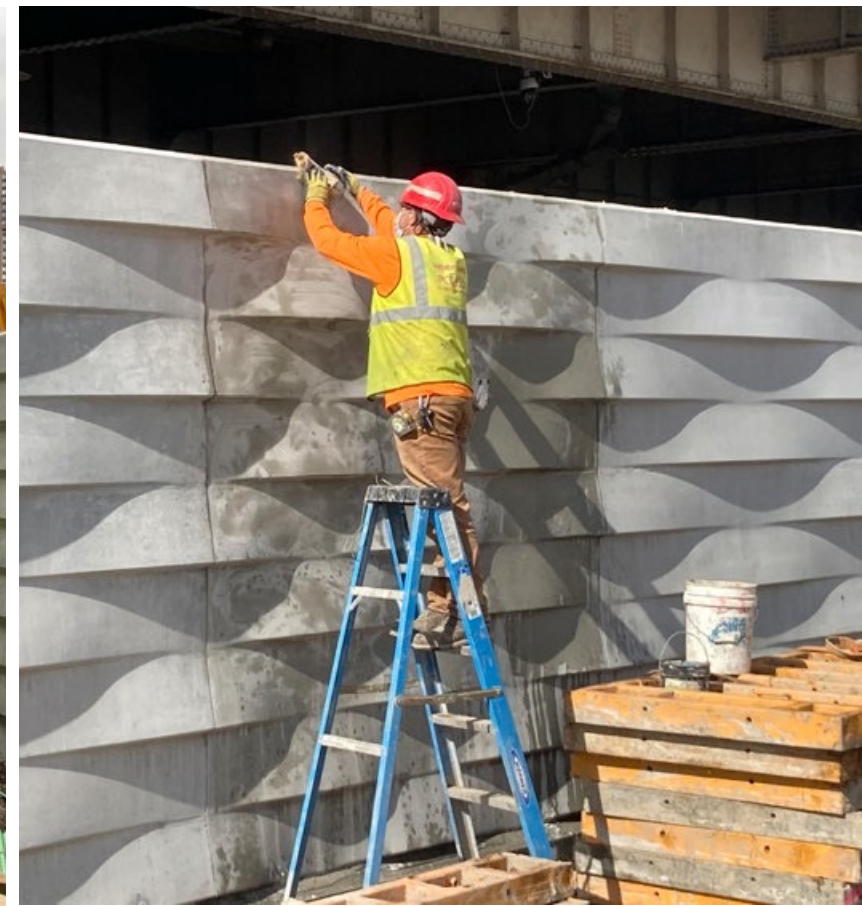
# ARCHITECTURE

ESC  
R



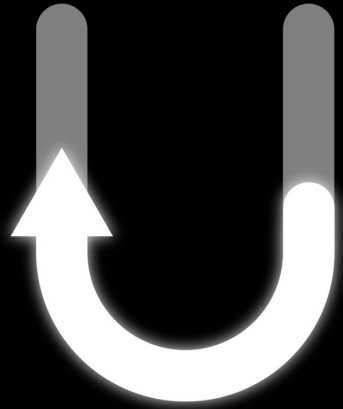
# ARCHITECTURE

ESC  
R





ESCR construction (photo by Dean Moses)



**LOWER MANHATTAN COASTAL RESILIENCY**

**COASTAL STORMS**

**BY 2050, NEARLY 1/3  
OF BUILDINGS IN LOWER  
MANHATTAN WILL BE AT  
RISK FROM A 100 YEAR  
STORM SURGE.**

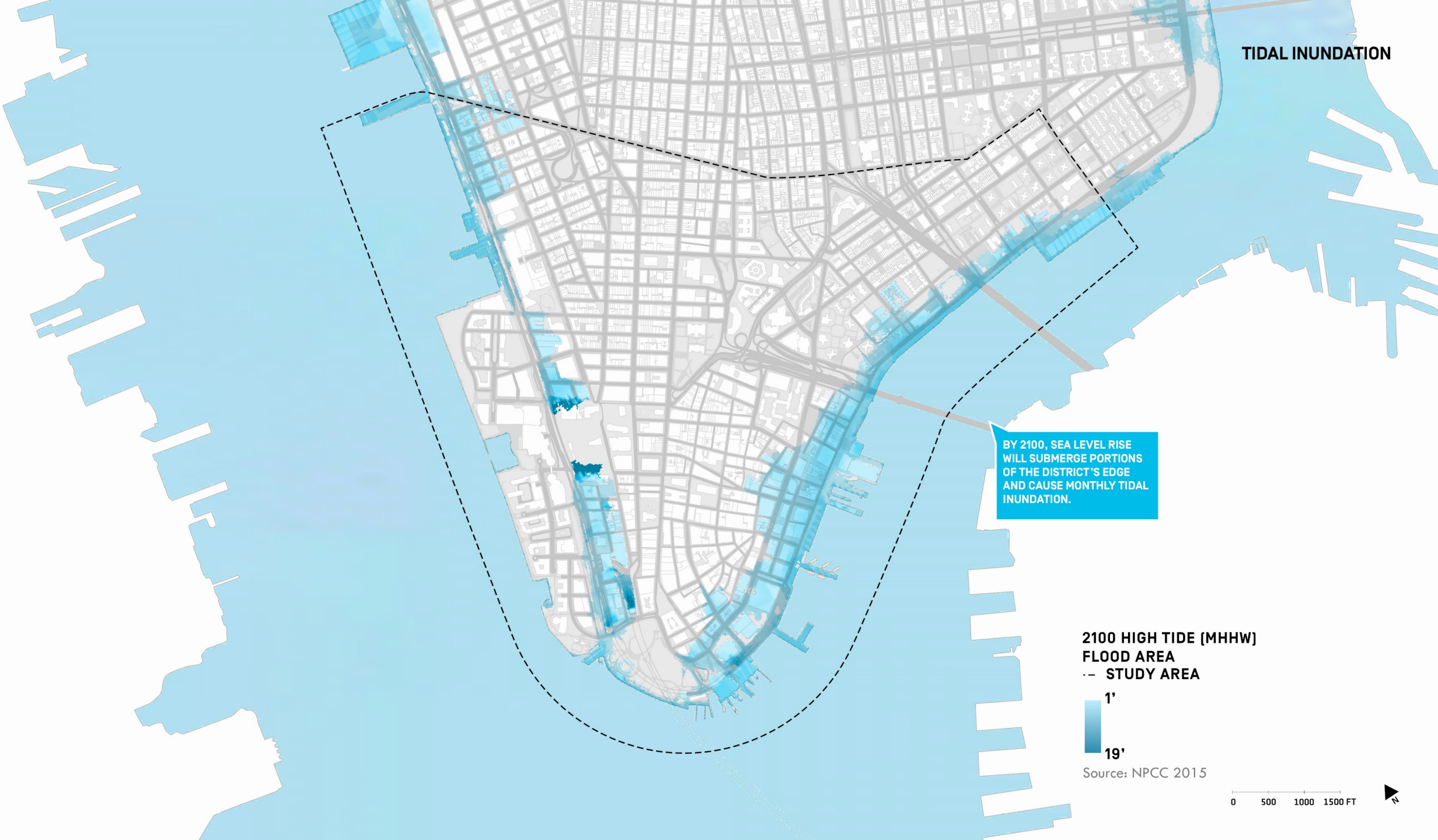
**BY 2100, MORE THAN  
50% WILL BE.**

- 1' 19' 2050 100-YR COASTAL STORM FLOOD
- 2100 100-YR COASTAL STORM FLOOD
- STUDY AREA

Source: NPCC 2015

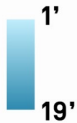


TIDAL INUNDATION



BY 2100, SEA LEVEL RISE WILL SUBMERGE PORTIONS OF THE DISTRICT'S EDGE AND CAUSE MONTHLY TIDAL INUNDATION.

2100 HIGH TIDE (MHHW)  
FLOOD AREA  
-- STUDY AREA



Source: NPCC 2015

0 500 1000 1500 FT



**GROUNDWATER TABLE RISE**

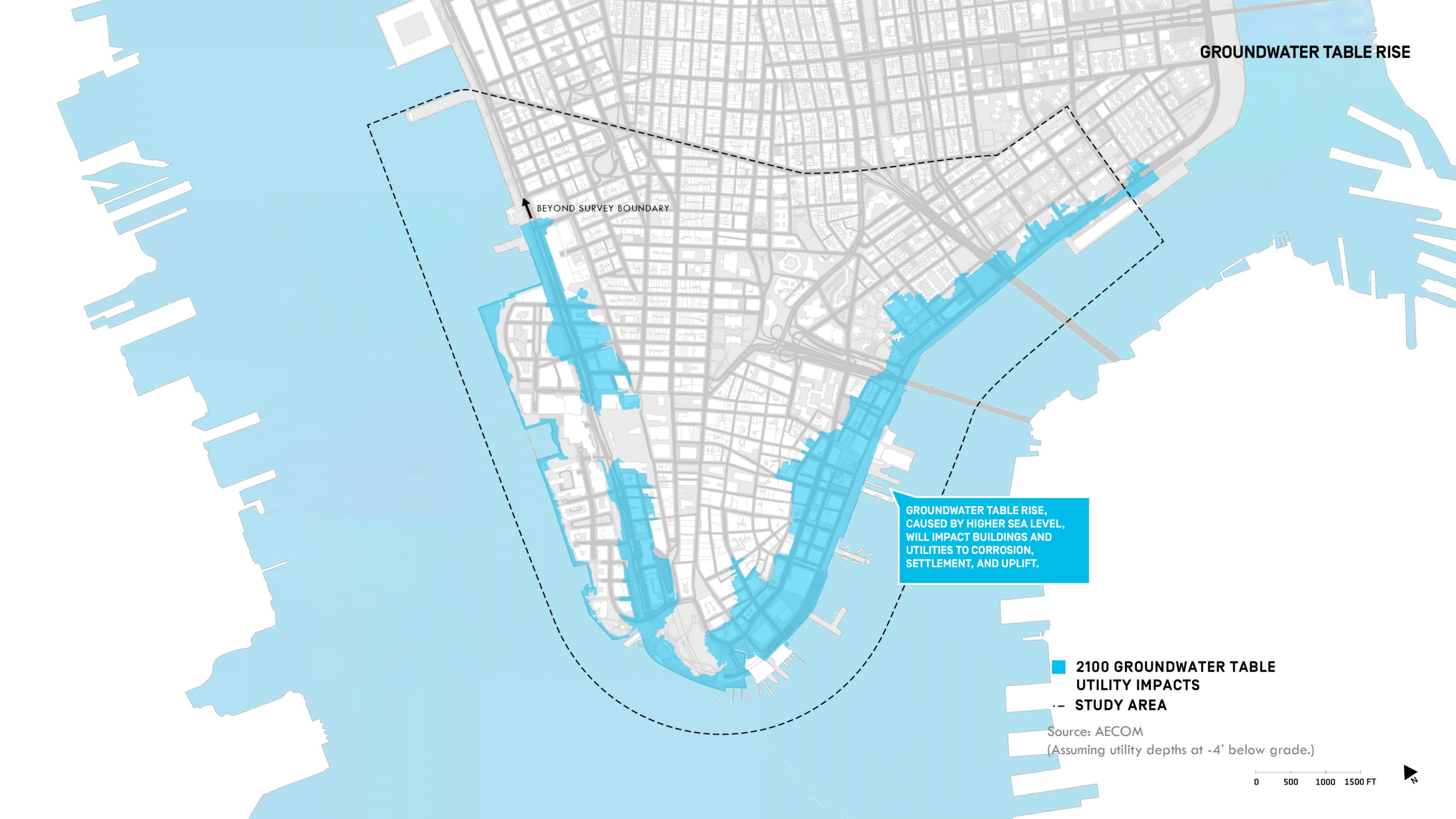
BEYOND SURVEY BOUNDARY

GROUNDWATER TABLE RISE,  
CAUSED BY HIGHER SEA LEVEL,  
WILL IMPACT BUILDINGS AND  
UTILITIES TO CORROSION,  
SETTLEMENT, AND UPLIFT.

**2100 GROUNDWATER TABLE  
UTILITY IMPACTS**  
-- **STUDY AREA**

Source: AECOM  
(Assuming utility depths at -4' below grade.)

0 500 1000 1500 FT



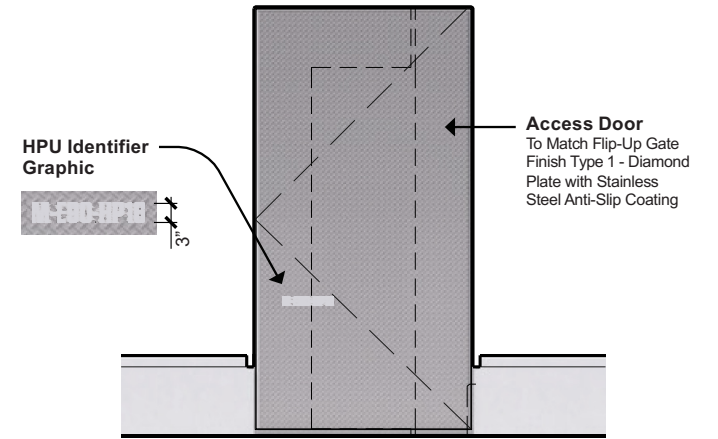
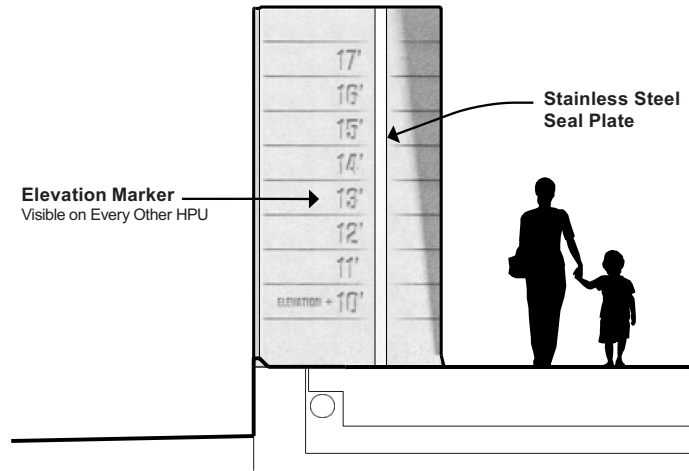
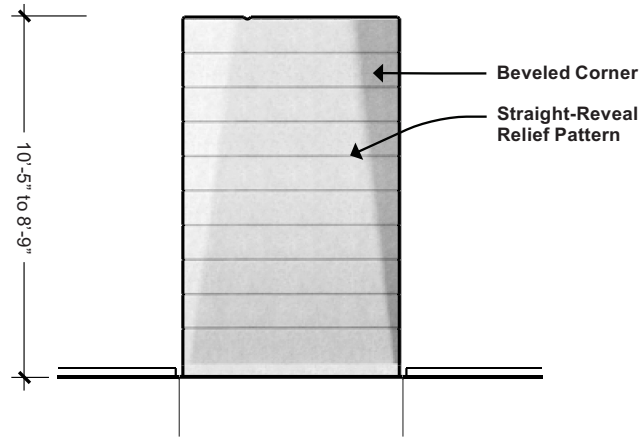
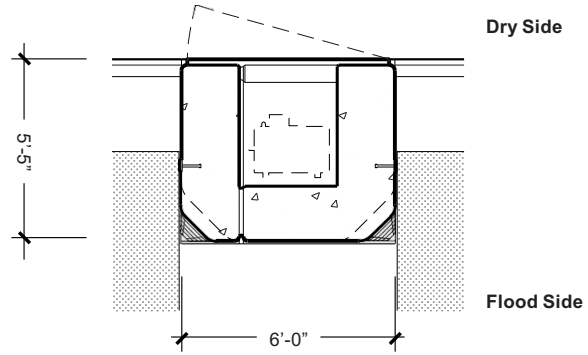




Brooklyn Montgomery Coastal Resilience (courtesy AECOM/ONE Architecture & Urbanism)

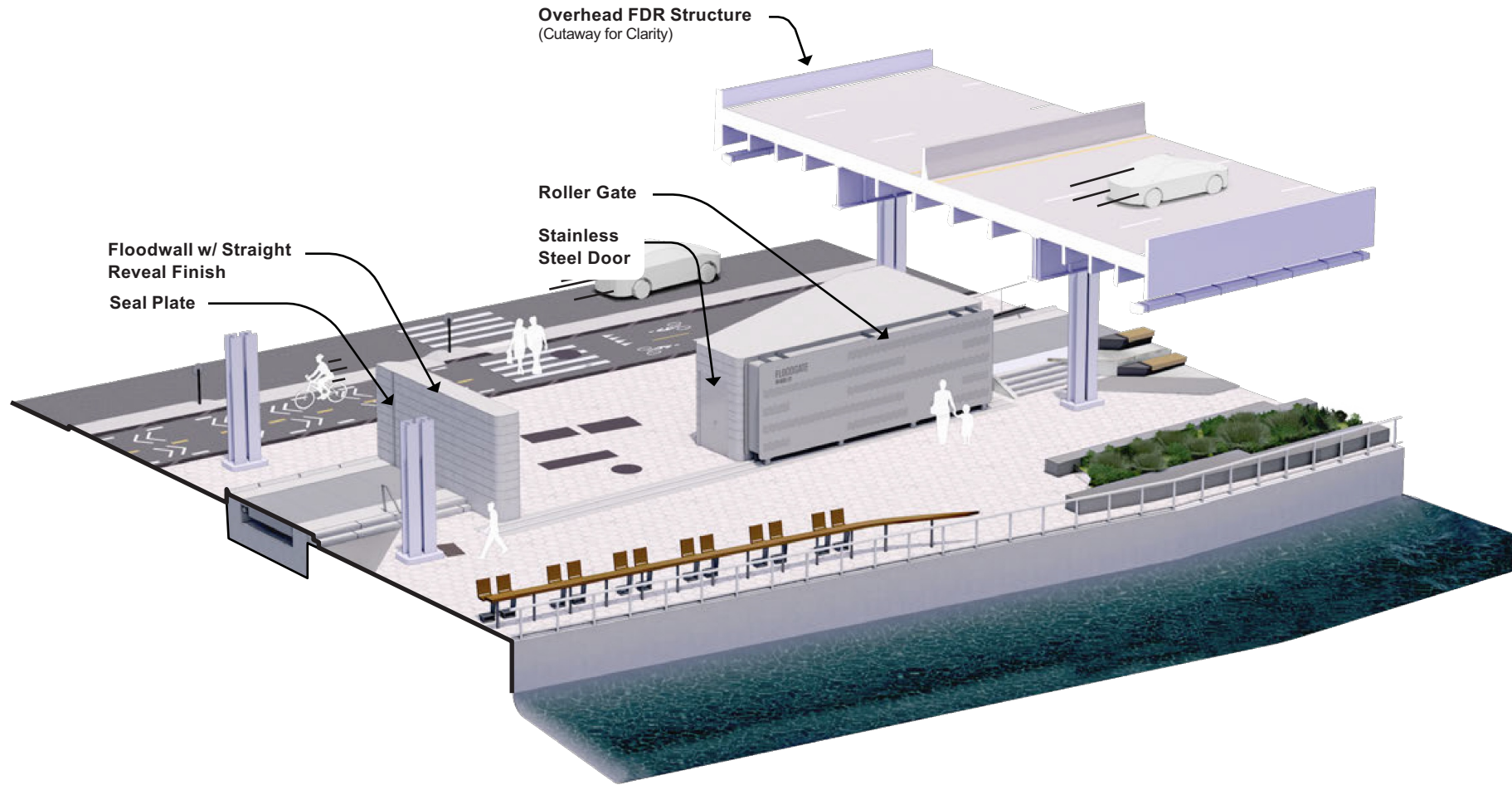
# ARCHITECTURE

BMC  
R



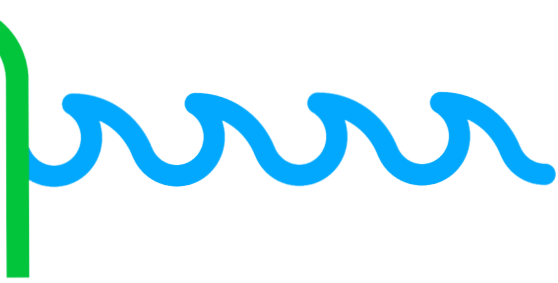
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BMC  
R



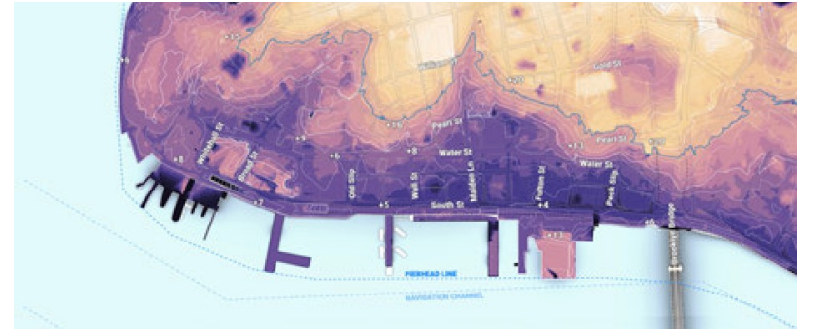
# FiDi and Seaport

Climate  
Resilience  
Plan



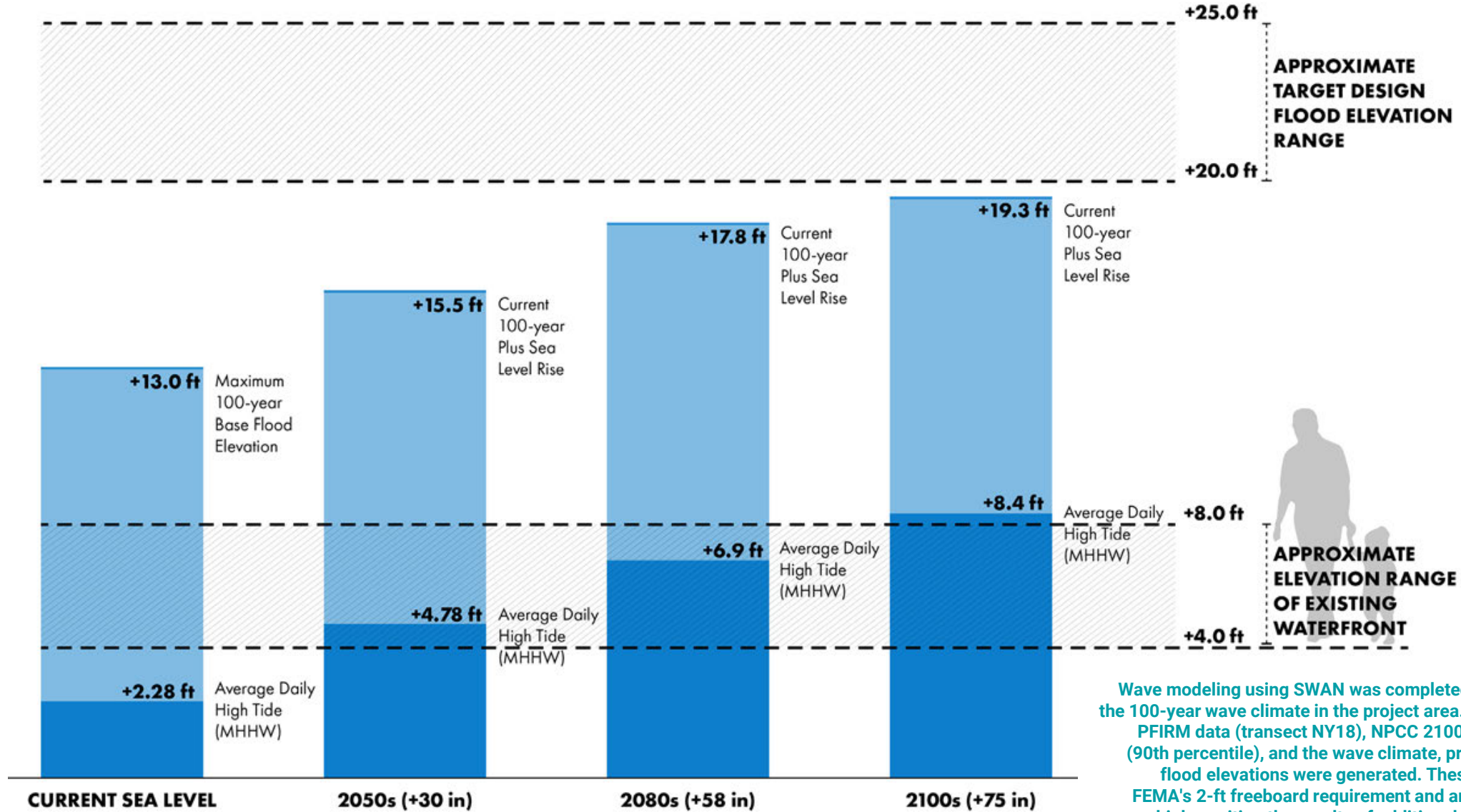
# URBAN DESIGN AND INFRASTRUCTURE

## Fidi-Seaport Resilience Master Plan



# Coastal Defense

## Preliminary Design Flood Elevation Targets



Wave modeling using SWAN was completed to characterize the 100-year wave climate in the project area. Based on FEMA PFIRM data (transect NY18), NPCC 2100 SLR projections (90th percentile), and the wave climate, preliminary design flood elevations were generated. These values include FEMA's 2-ft freeboard requirement and are conservatively high awaiting the results of additional modeling and an overtopping analysis.



*FiDi-Seaport Climate Masterplan (courtesy ONE Architecture & Urbanism/Scape)*

# URBAN DESIGN AND INFRASTRUCTURE

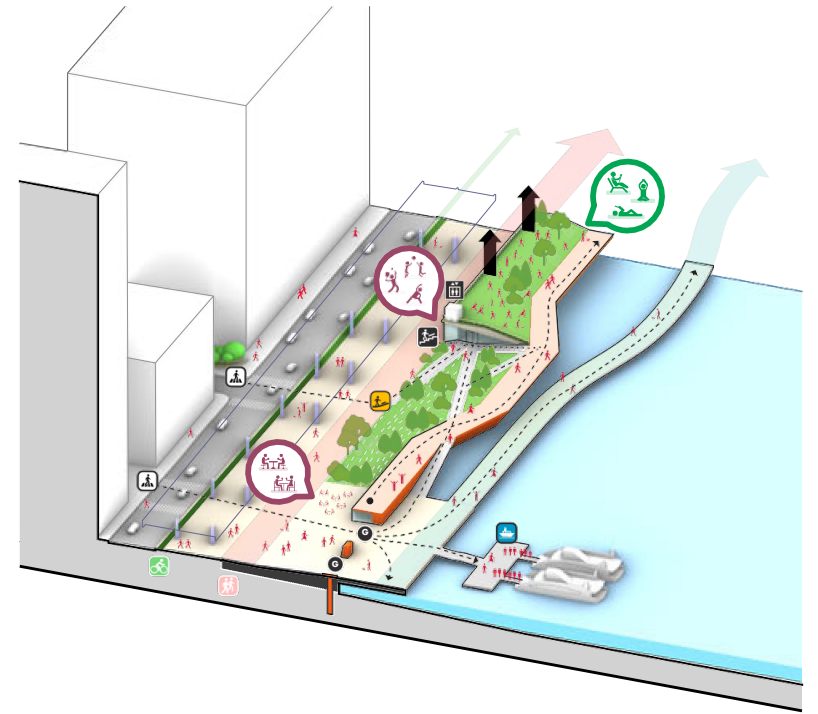
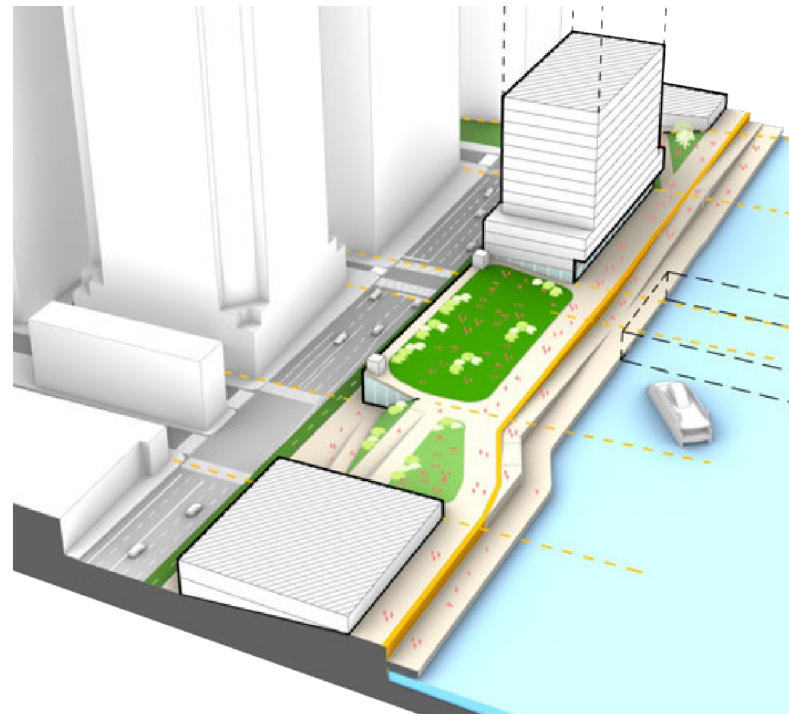
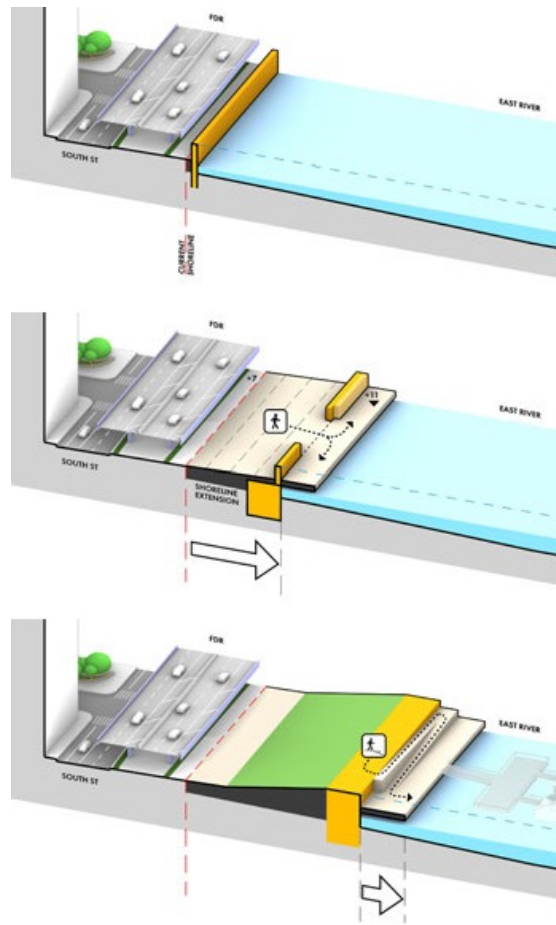
## Fidi-Seaport Resilience Master Plan





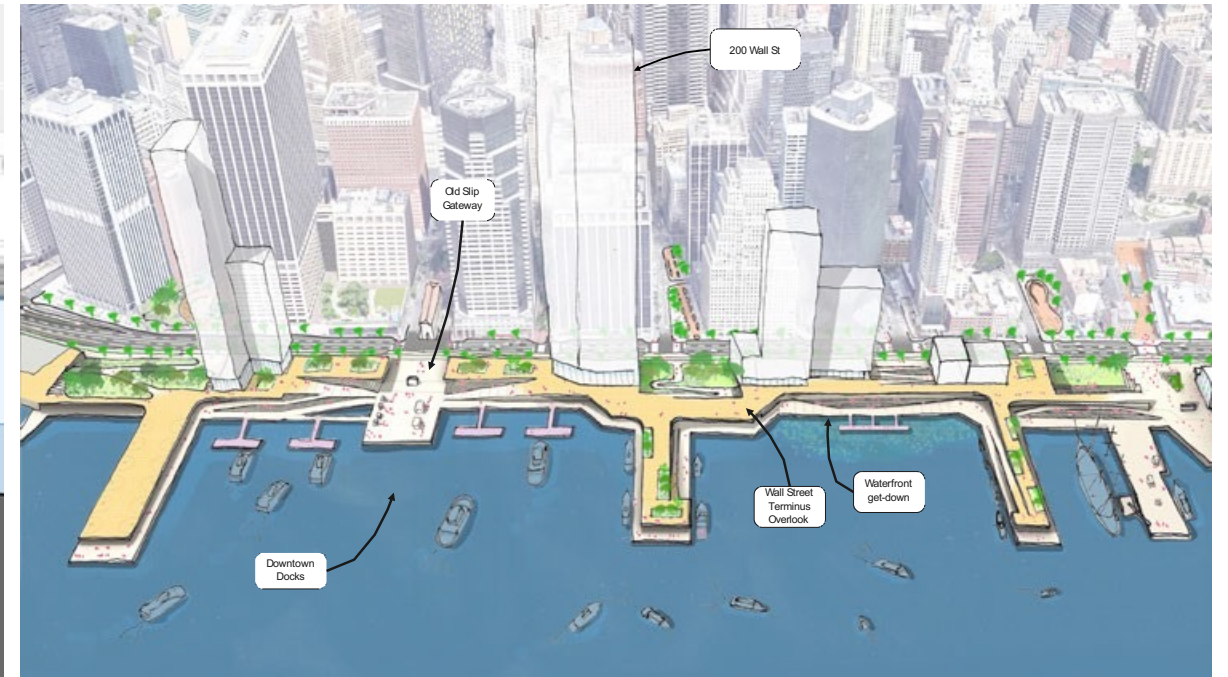
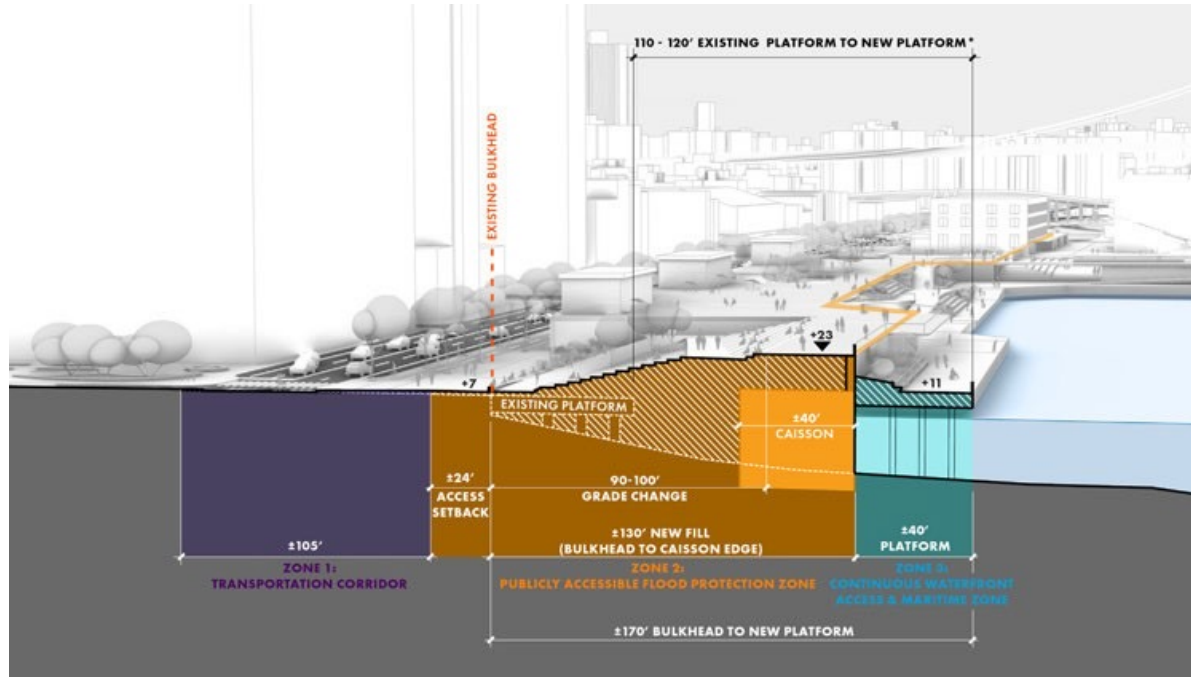
# URBAN DESIGN AND INFRASTRUCTURE

## Fidi-Seaport Resilience Master Plan



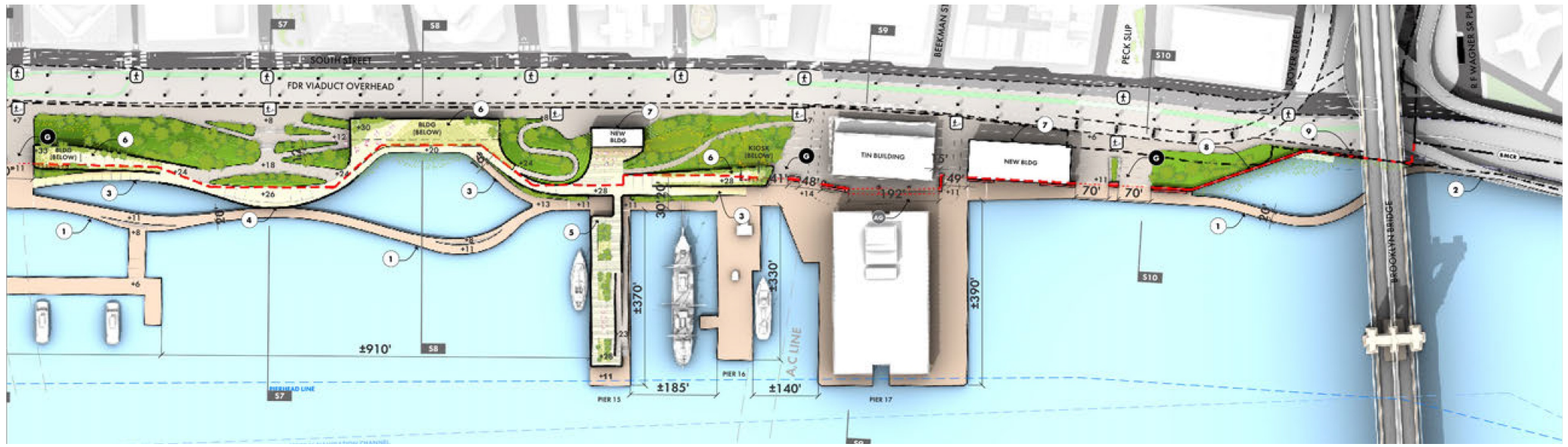
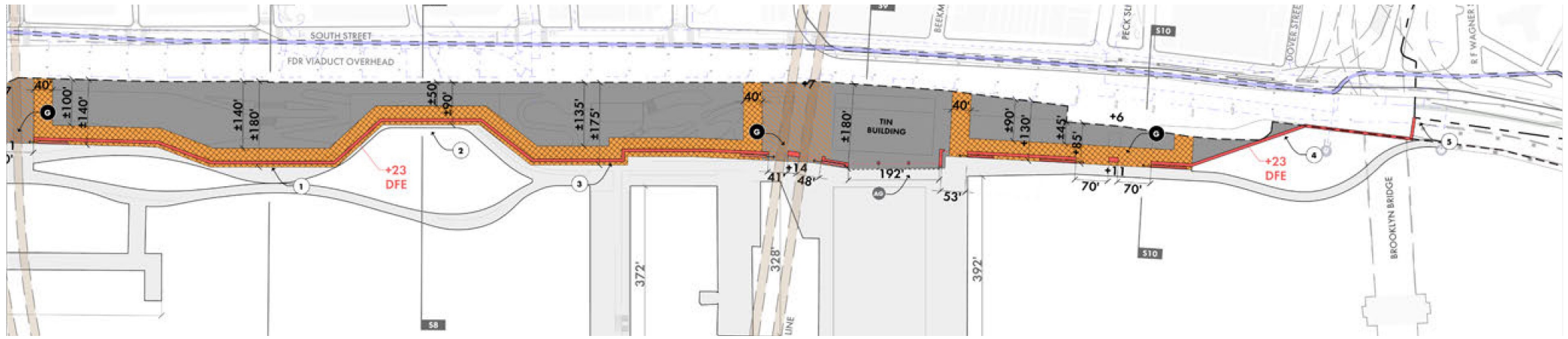
# URBAN DESIGN AND INFRASTRUCTURE

## Fidi-Seaport Resilience Master Plan



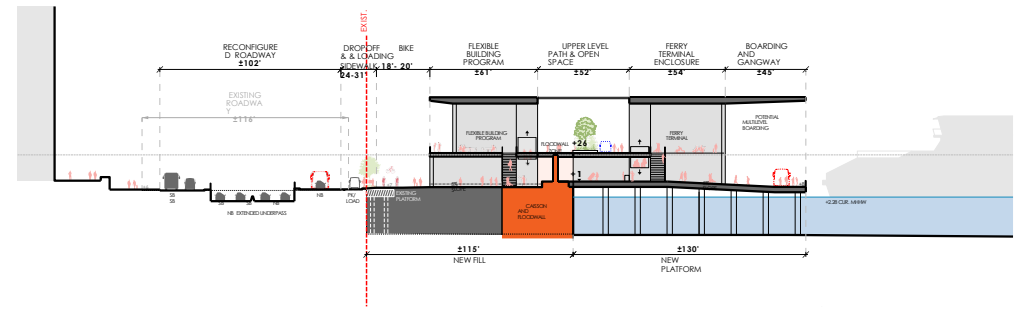
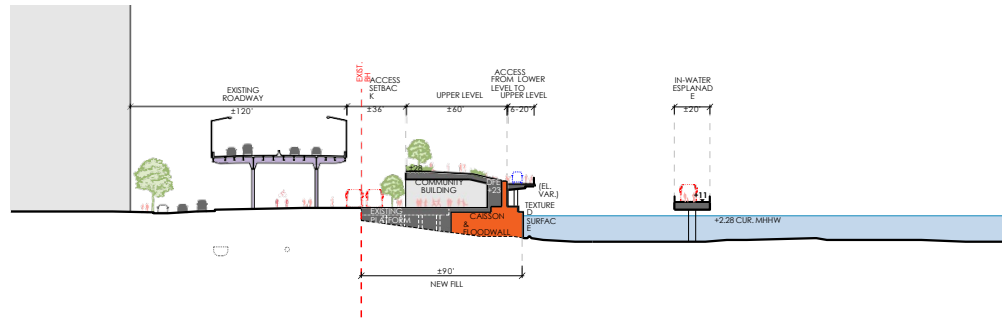
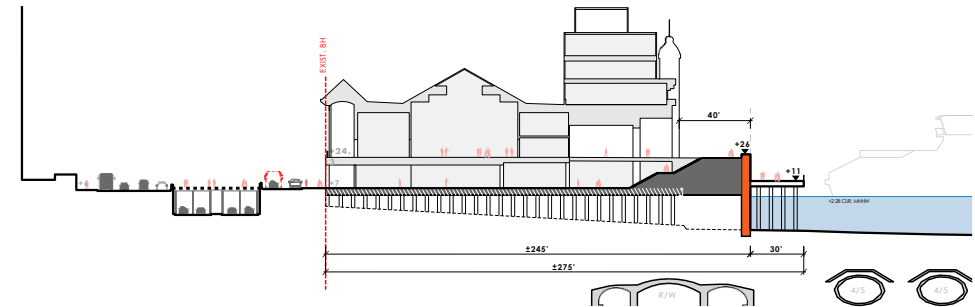
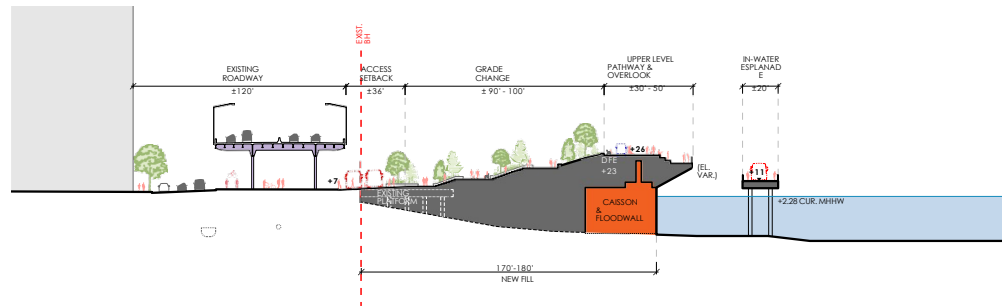
# URBAN DESIGN AND INFRASTRUCTURE

## Fidi-Seaport Resilience Master Plan

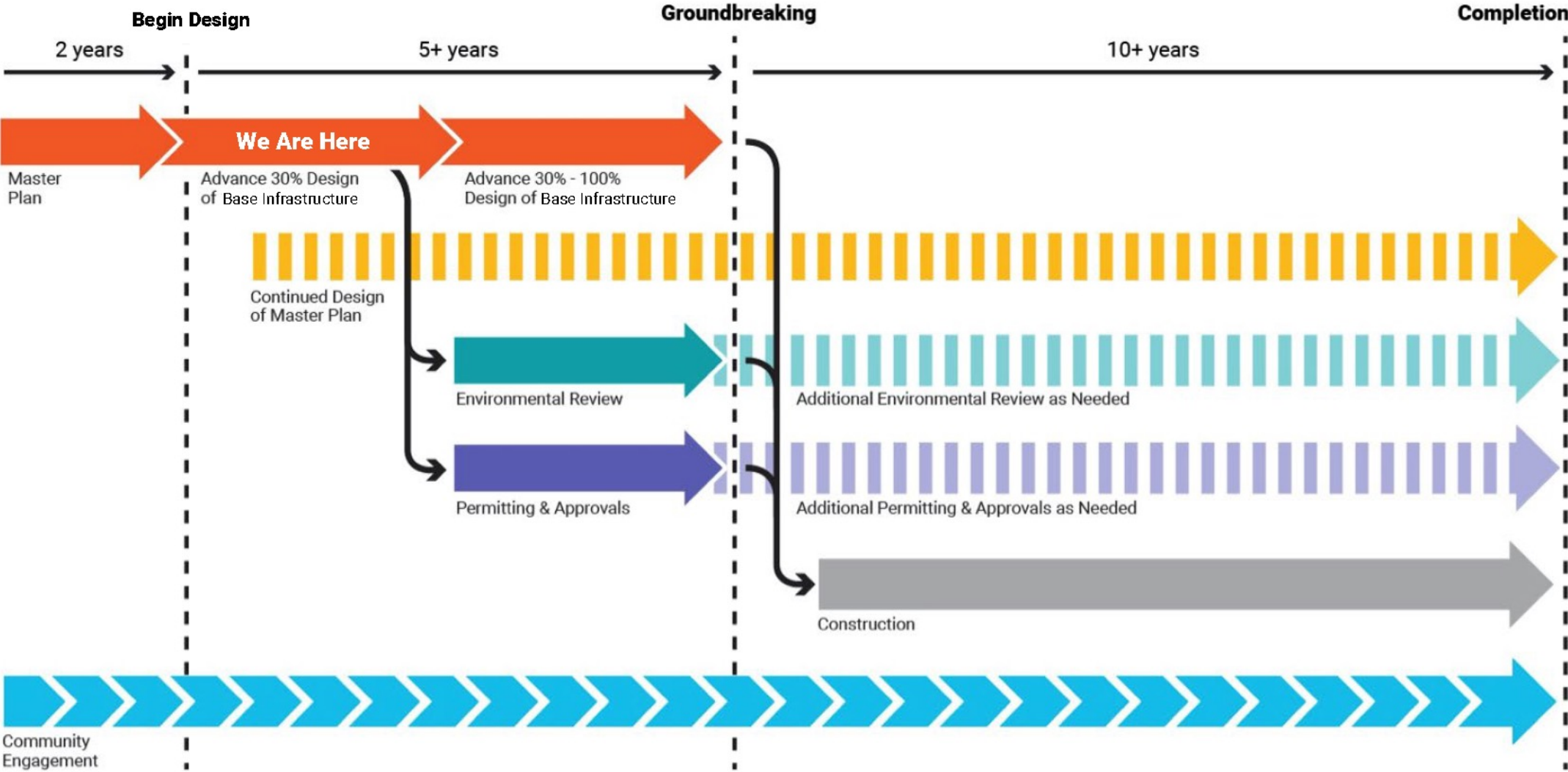


# URBAN DESIGN AND INFRASTRUCTURE

## Fidi-Seaport Resilience Master Plan



# Where We Are in the Planning Process







2100  
HIGH TIDE  
FLOOD DEPTH  
+4.5 FT

2080s  
HIGH TIDE  
FLOOD DEPTH  
+5 FT

2050  
HIGH  
FLOOD  
+1 FT

We will need to build capacity within actors.