

**#ONENYC**

**NYC**

Mayor's Office of  
Recovery and Resiliency

**NYC  
DDC**

Department of  
Design and  
Construction



NYC Parks



**NYC**

Environmental  
Protection

# **EAST SIDE COASTAL RESILIENCY PROJECT**

Gouverneur Gardens Board - Montgomery St. Tie-Back Update  
September 15, 2016

# **EAST SIDE COASTAL RESILIENCY PROJECT**

## **Montgomery Street Tie-Back Update**

**Site Walk-Through - 30 minutes**

**Presentation - 30 minutes**

**1. East Side Coastal Resiliency Project Status**

**2. Where We Were: Preliminary Alignment + Community Feedback**

**3. What We Have Been Working On: Engineering and Design Development**

**4. Where We Are Now: Revised Alignment and Design Approach**

**5. Visualizations & Effects On Planting**

**Discussion - 30 minutes**

## **1. East Side Coastal Resiliency Project Status**

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Discussion - 30 minutes



# EAST SIDE COASTAL RESILIENCY

## Project Goals

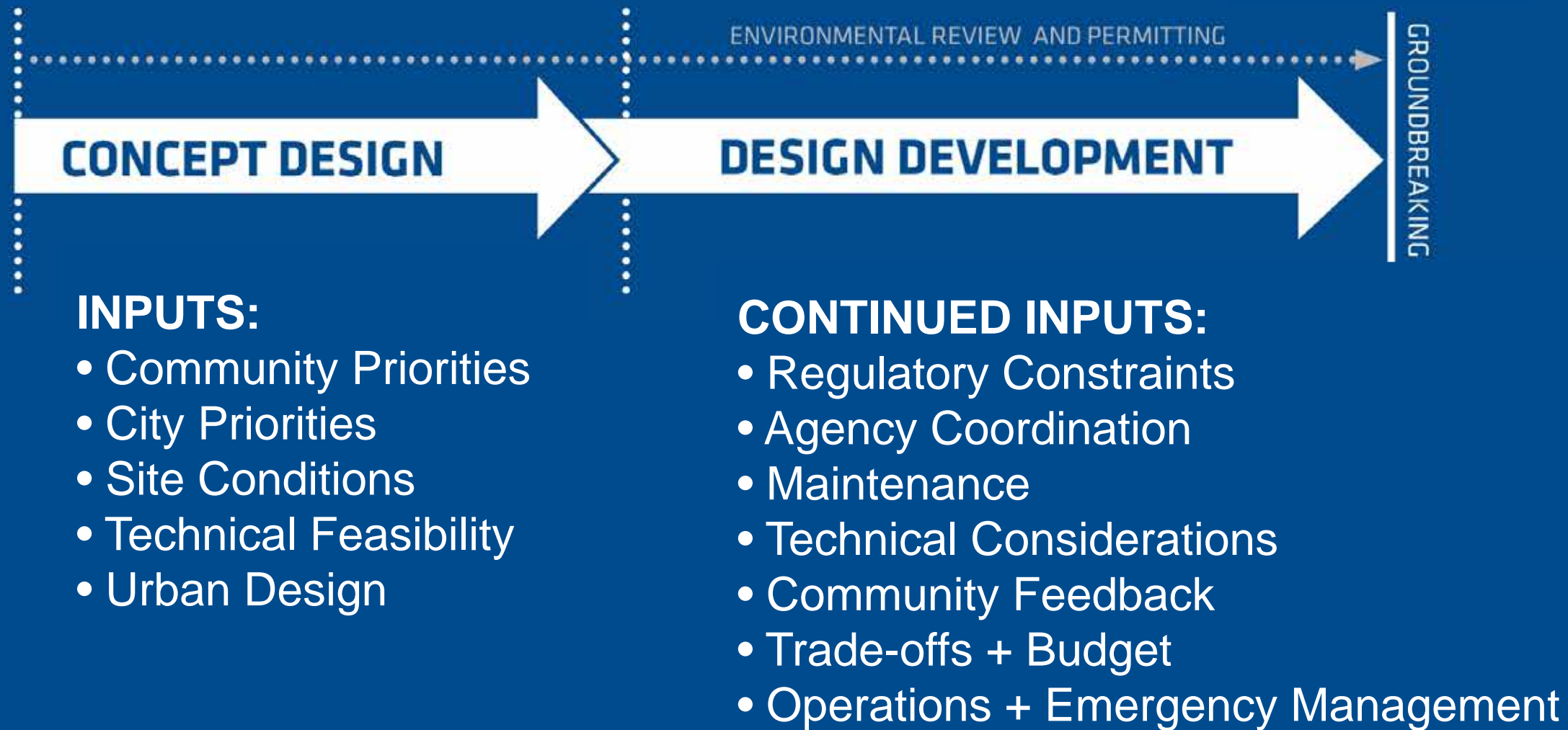
- Provide a reliable, integrated flood protection system; minimize use of closure structures and deployables
- Improve waterfront open spaces and access
- Respond quickly to the urgent need for increased flood protection and resiliency
- Achieve implementation milestones and project funding allocations as established by HUD





# EAST SIDE COASTAL RESILIENCY

## Design Timeline



# EAST SIDE COASTAL RESILIENCY Community Engagement Recap (2015)

## ROUND 1

x2 Meetings



MARCH 19TH + 23RD

How do you use the waterfront?

## ROUND 2

x3 Meetings



MAY 18TH, 28TH, 30TH

Access and Flood Protection:  
What are the options?

## ROUND 3

x4 Meetings

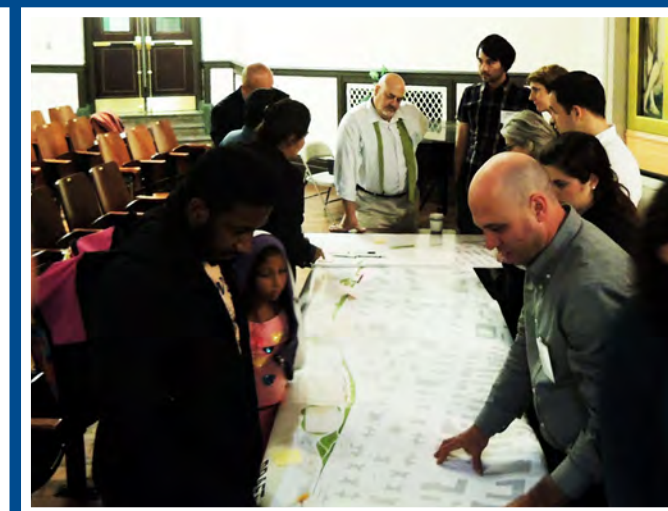


JULY 28TH, 29TH, 30TH + SEPT. 10TH

How do we combine options?

## ROUND 4

x2 Meetings



OCTOBER 6TH + 8TH

Initial Design Direction:  
Feedback and Discussion



COMMUNITY ENGAGEMENT



# EAST SIDE COASTAL RESILIENCY

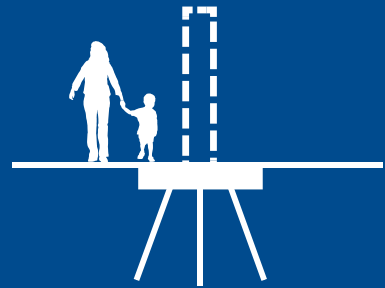
## Montgomery Street Workshop (October 2015)



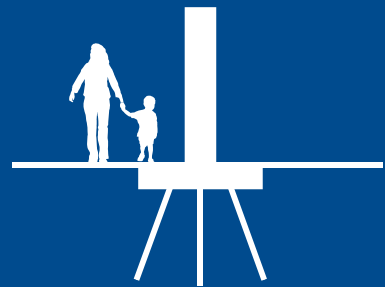


# EAST SIDE COASTAL RESILIENCY

## Types of Flood Protection



**DEPLOYABLE**



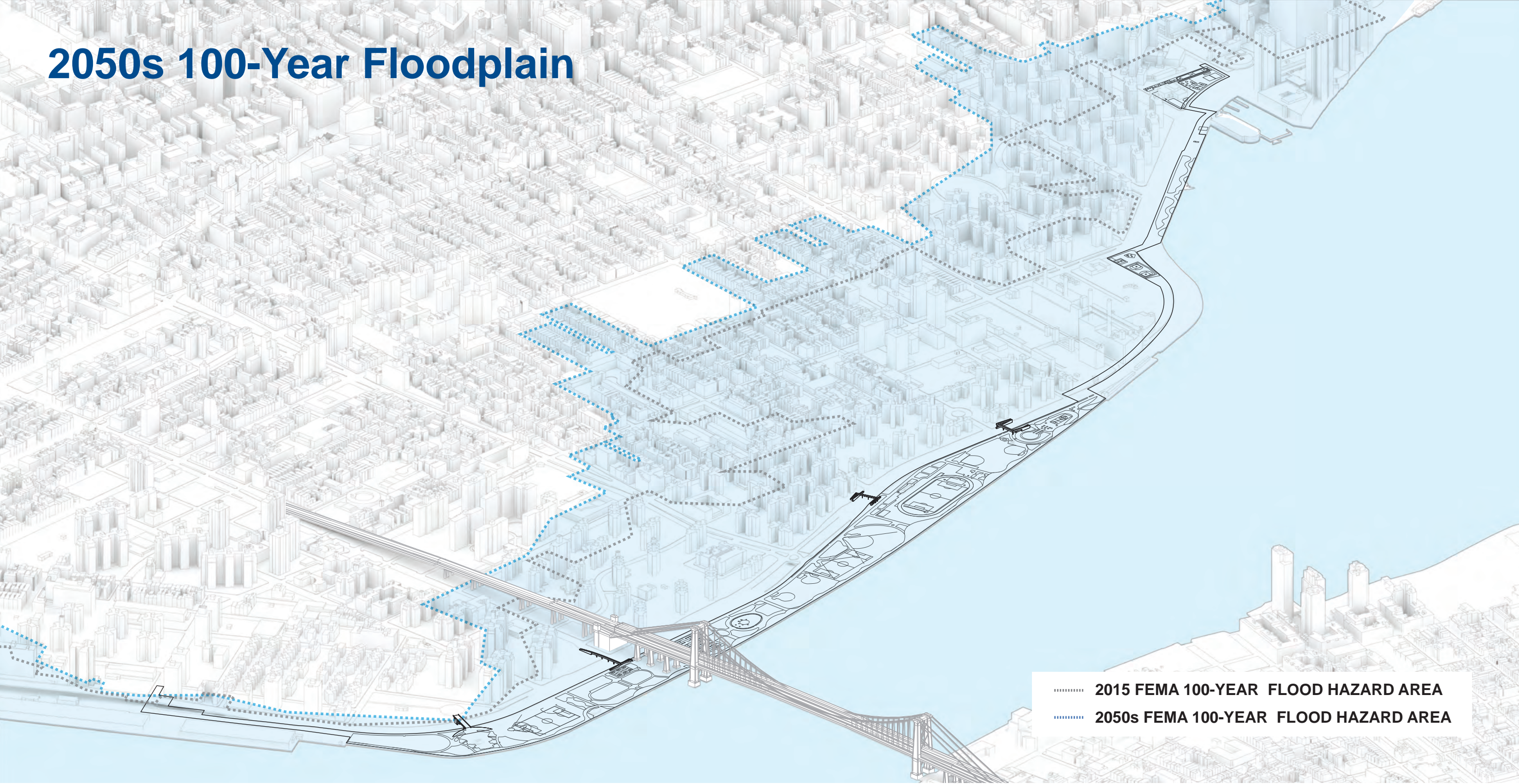
**FLOODWALL**



**EARTHEN LEVEE**



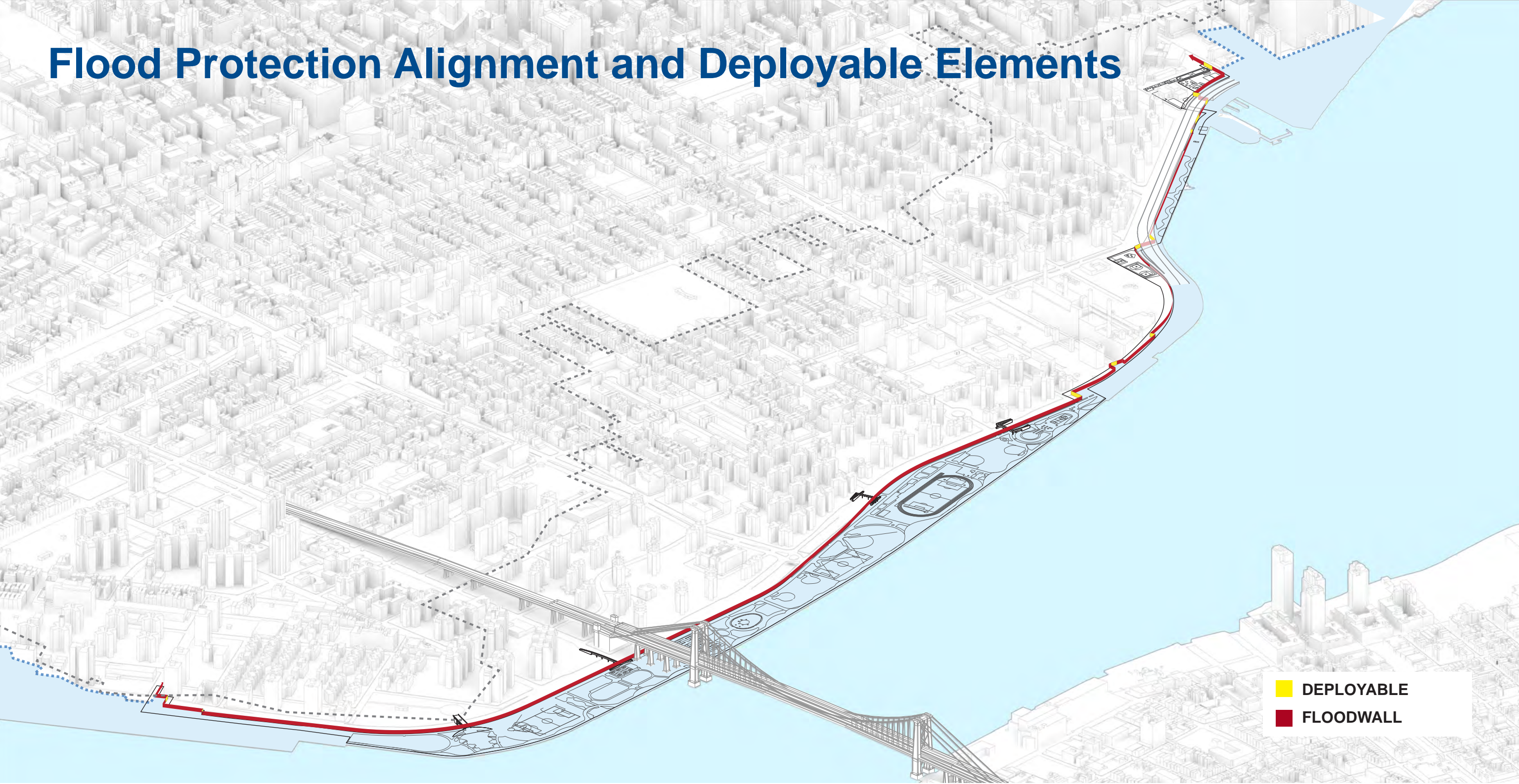
# 2050s 100-Year Floodplain



..... 2015 FEMA 100-YEAR FLOOD HAZARD AREA  
..... 2050s FEMA 100-YEAR FLOOD HAZARD AREA



# Flood Protection Alignment and Deployable Elements

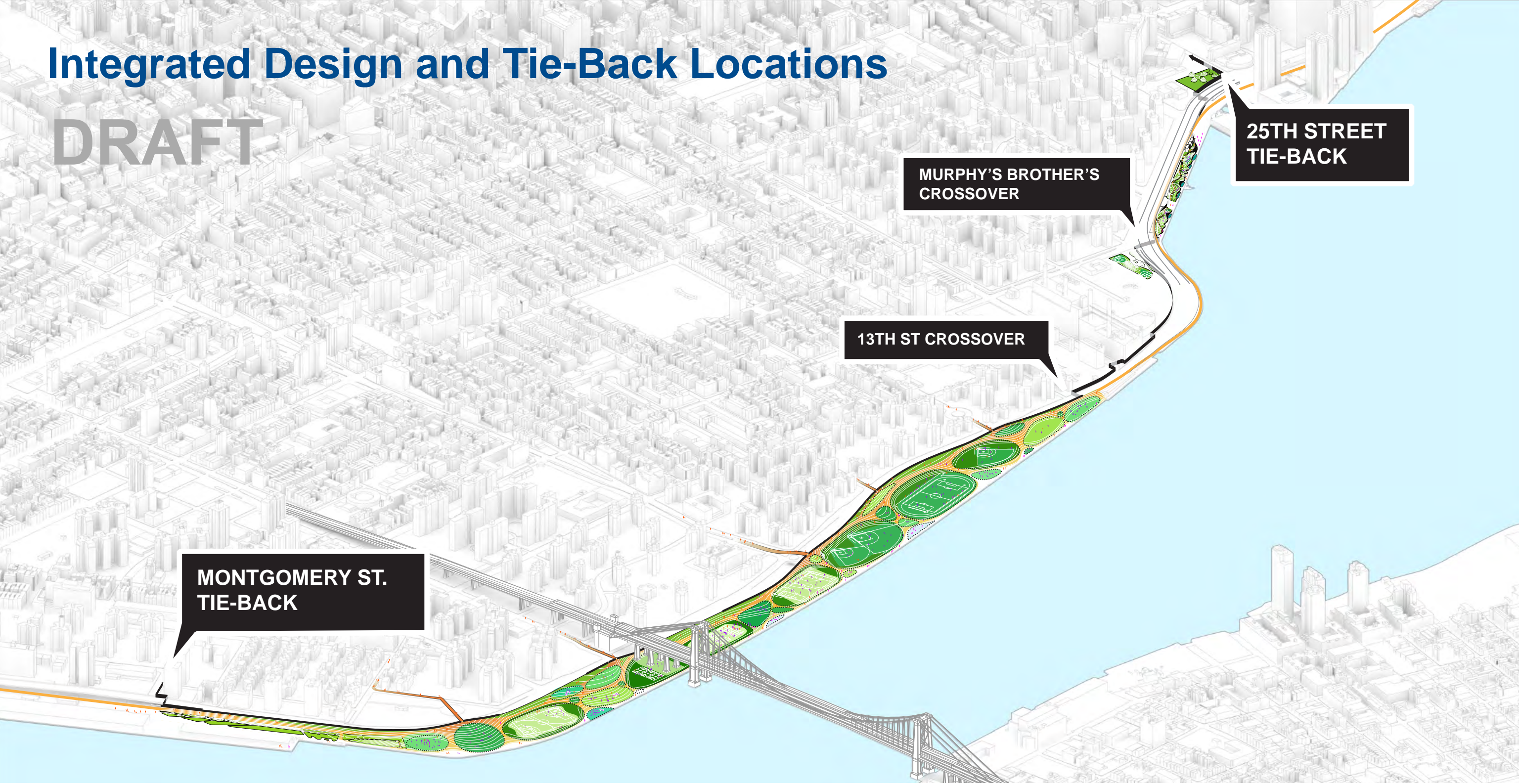


**DEPLOYABLE**  
**FLOODWALL**



# Integrated Design and Tie-Back Locations

DRAFT



MONTGOMERY ST.  
TIE-BACK

13TH ST CROSSOVER

MURPHY'S BROTHER'S  
CROSSOVER

25TH STREET  
TIE-BACK



# FLOOD RISK

## 2050s 100-Year Floodplain





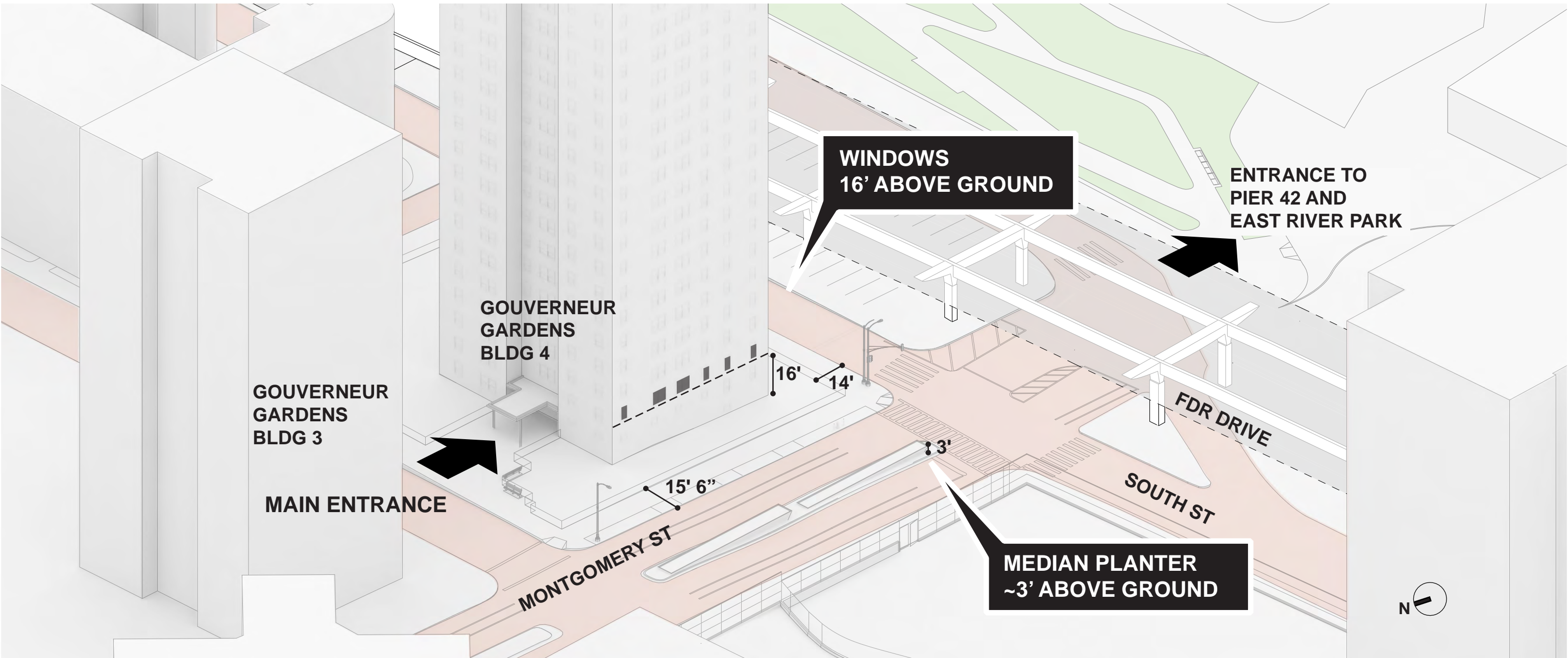
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Discussion - 30 minutes



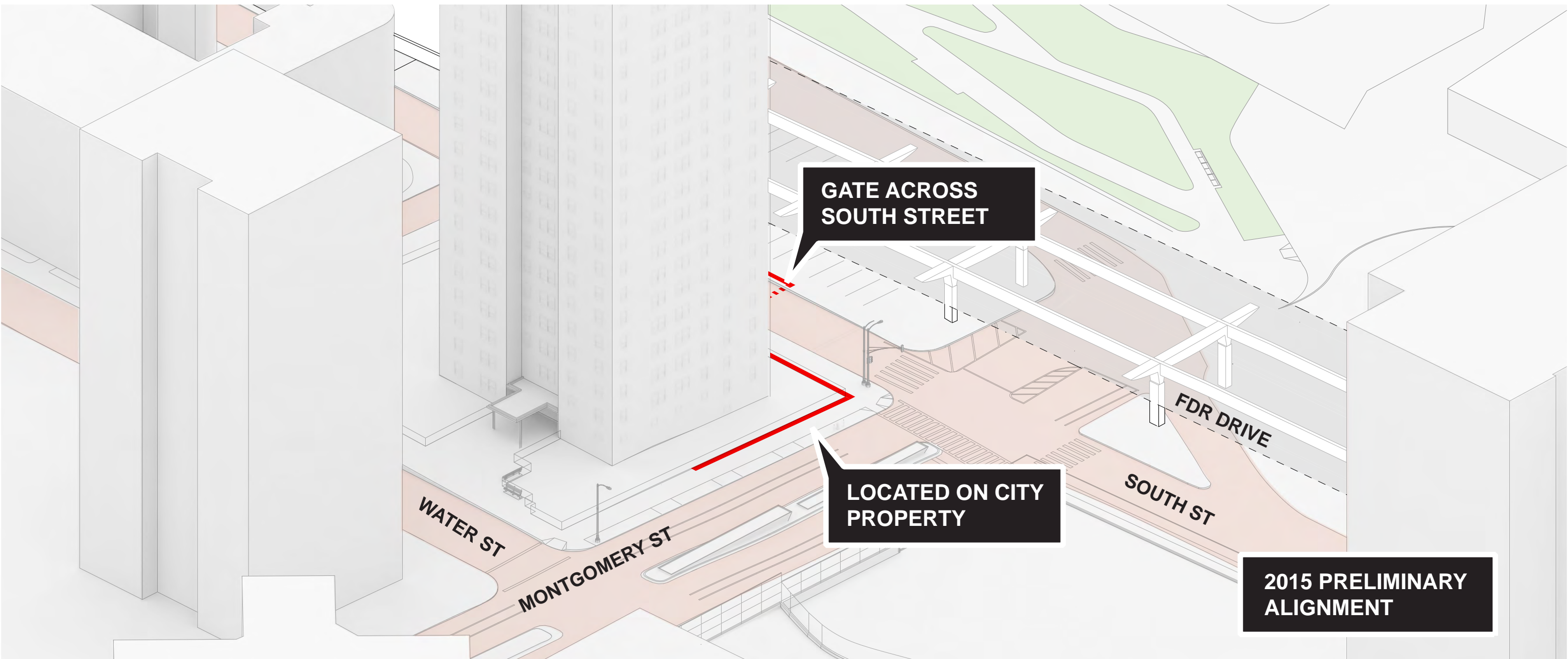
# MONTGOMERY STREET TIE-BACK

## Existing Conditions



# MONTGOMERY STREET TIE-BACK

Preliminary Alignment Footprint (Fall 2015)



# MONTGOMERY STREET TIE-BACK

Fall 2015 Community Feedback



WALL HEIGHT IS A CONCERN—  
CAN SOMEONE HIDE HERE?

WALL ALONG SOUTH  
STREET WILL MAKE THE  
STREET FEEL CLOSED IN

DON'T STORE GATE  
AGAINST OUR YARD.

WE DON'T WANT  
TO FEEL WALLED IN.

VISIBILITY AROUND SHARP  
CORNER MAY BE AN ISSUE.

MINIMIZE HEIGHT  
OF WALL.





# MONTGOMERY STREET TIE-BACK DESIGN PRINCIPLES

- ✓ **Safety**
  - Design with security and visibility in mind
- ✓ **Reliability & Maintainability**
  - Incorporate passive elements to maximize reliability
- ✓ **Integration**
  - Minimize overall visual impact of flood protection
  - Incorporate attractive urban design features

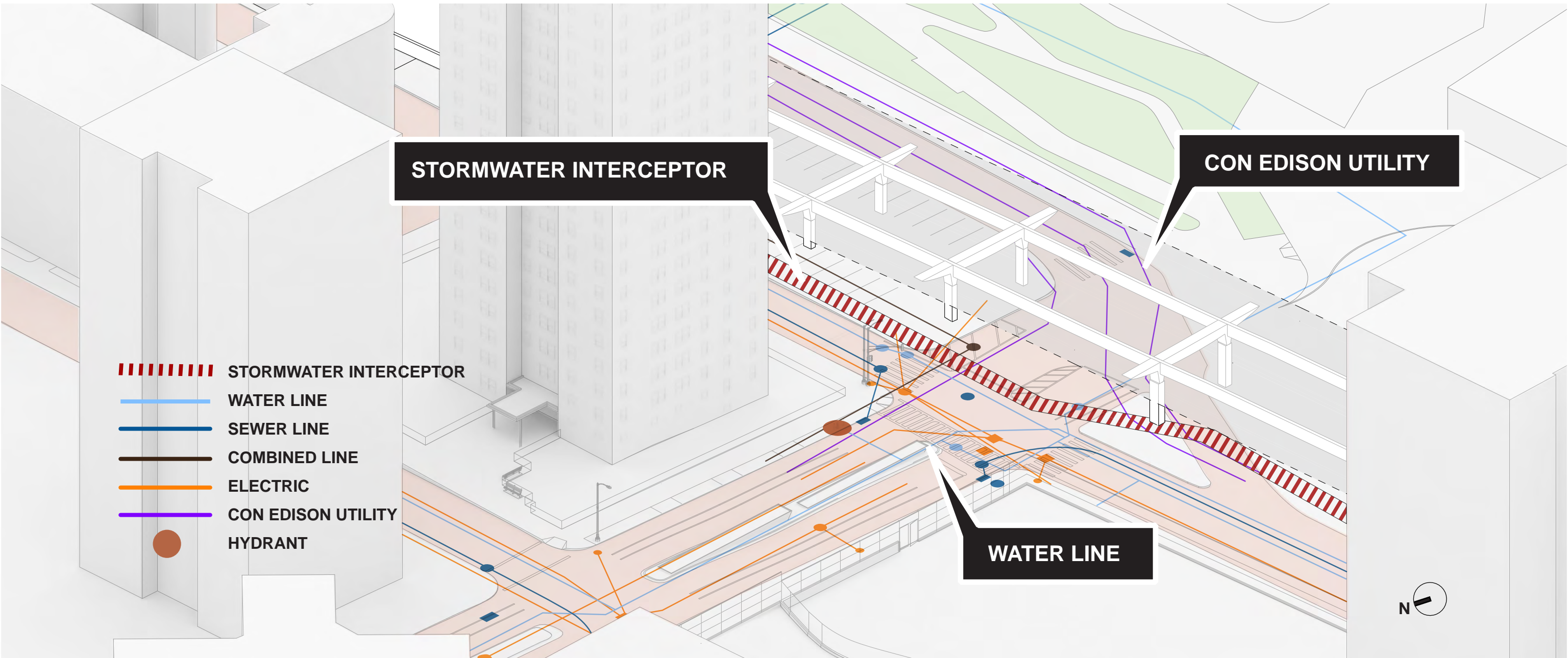
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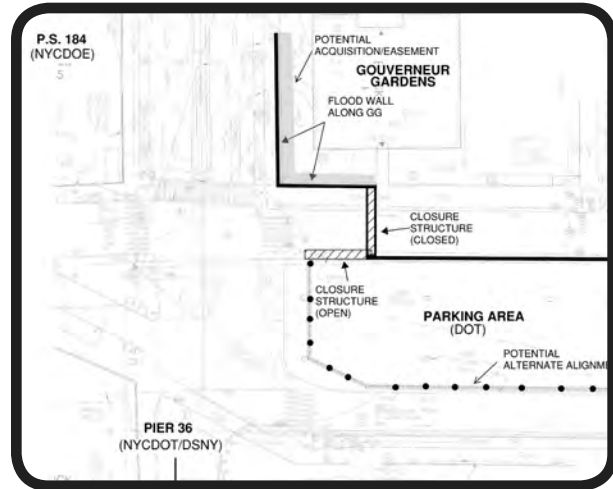
# MONTGOMERY STREET TIE-BACK

## Engineering Constraints: Surveyed Underground Elements

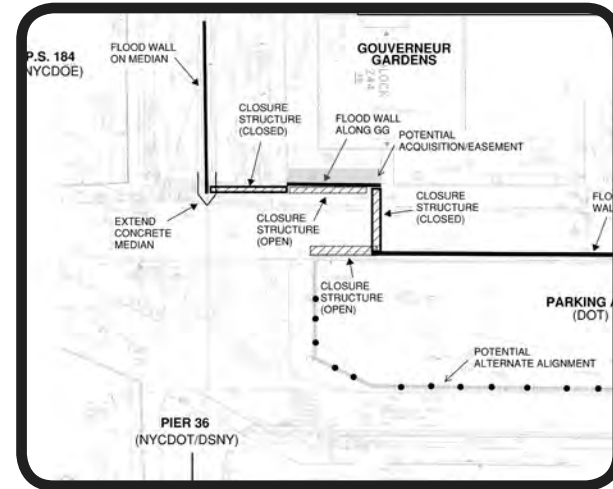


# MONTGOMERY STREET TIE-BACK

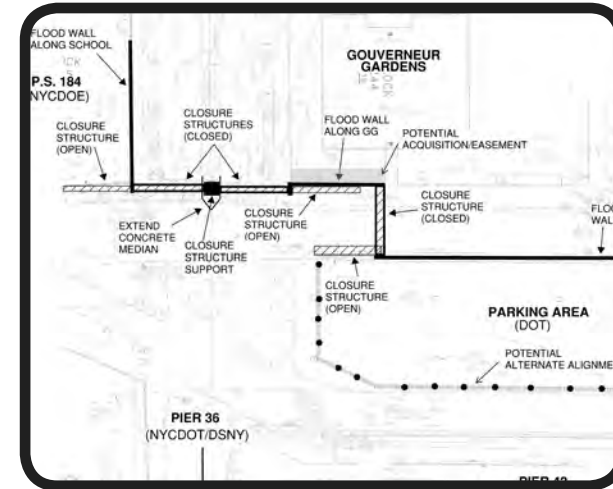
## Alignment Studies (Spring 2016)



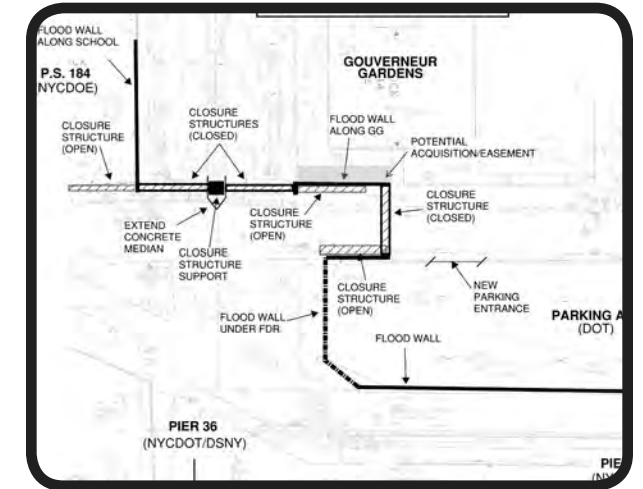
1. Gouverneur Gardens and South St.



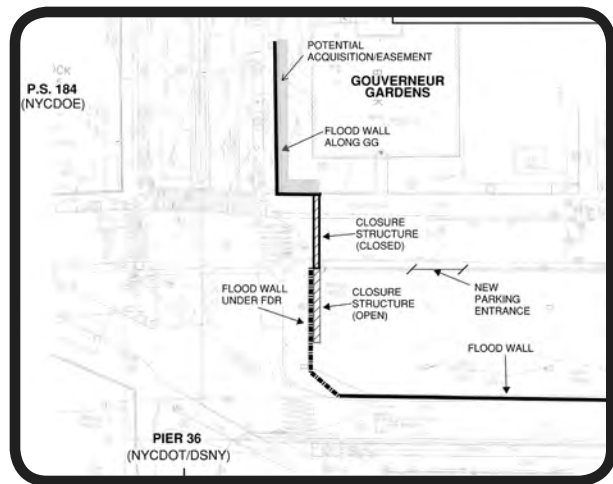
2. Montgomery St. Median and South St.



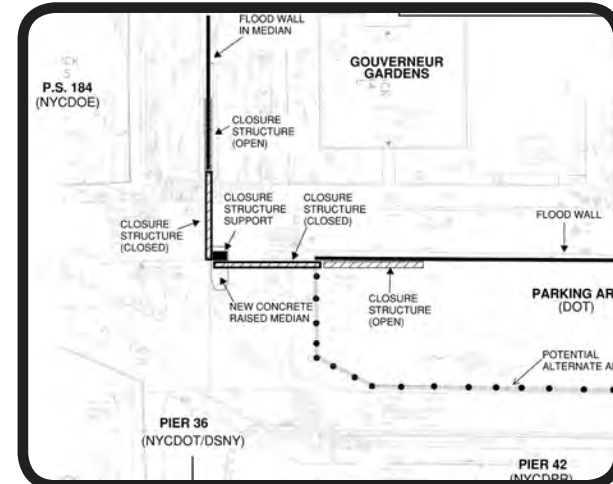
3. Along PS 184 and South St.



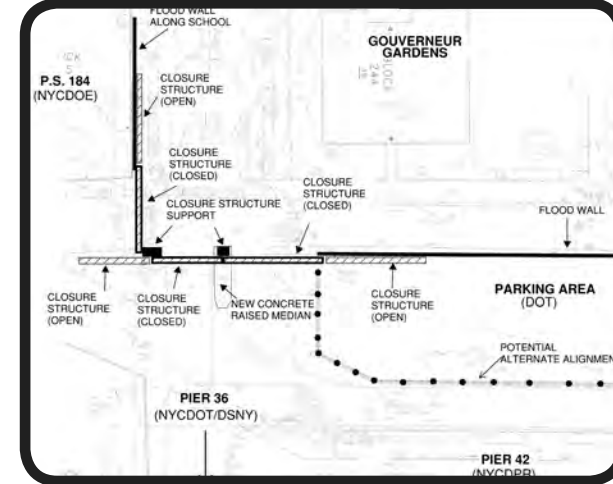
4. Along PS 184 and Southern Edge of FDR



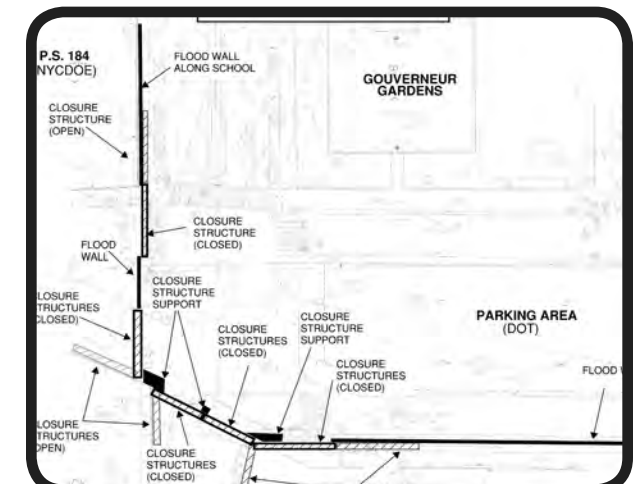
5. Gouverneur Gardens and South of FDR



6. Montgomery St. Median and South St. (Cross Under FDR)



7. Along PS 184 and South St. (Cross Under FDR)

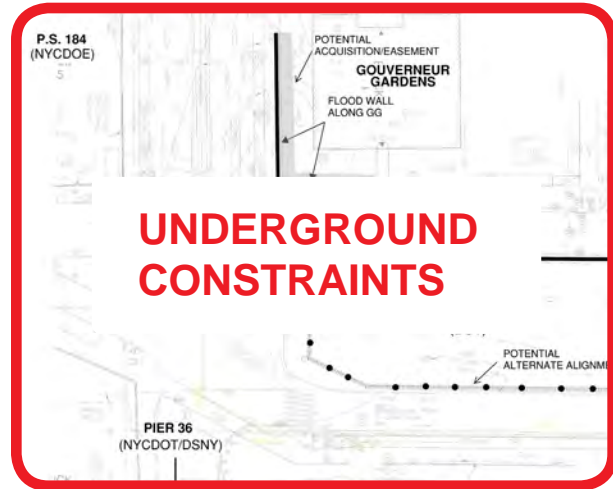


8. Along PS 184 and Southern Edge of FDR (Cross at Pier 36 Entrance)

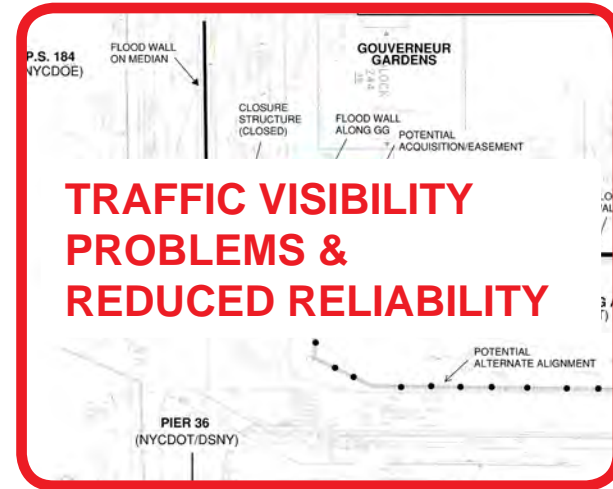


# MONTGOMERY STREET TIE-BACK

## Alignment Studies (Spring 2016)



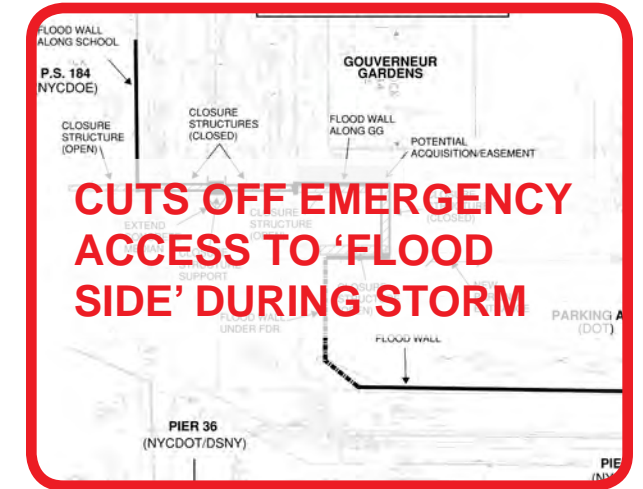
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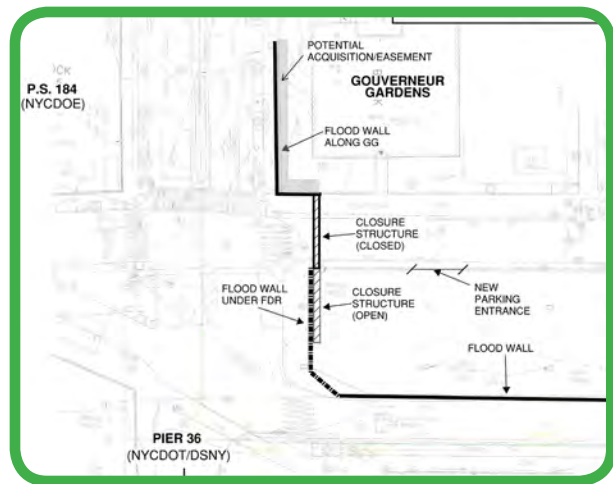
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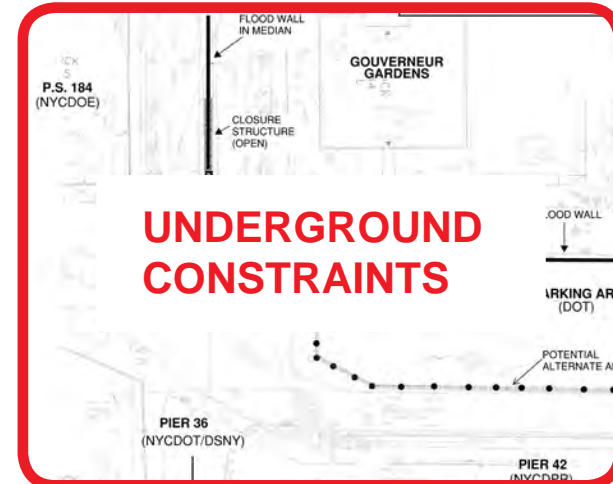
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4. Along PS 184 and Southern Edge of FDR



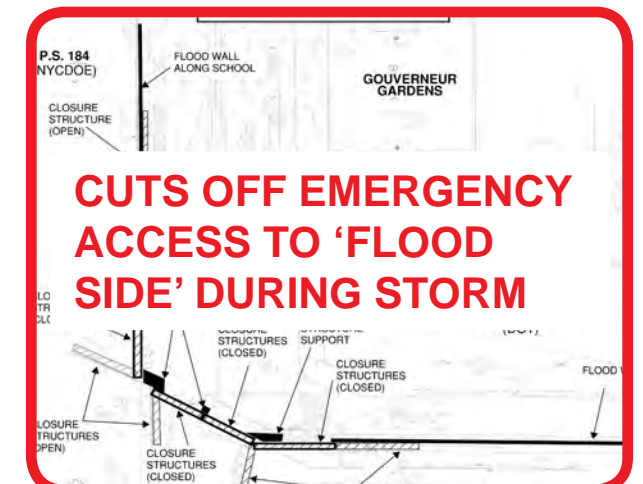
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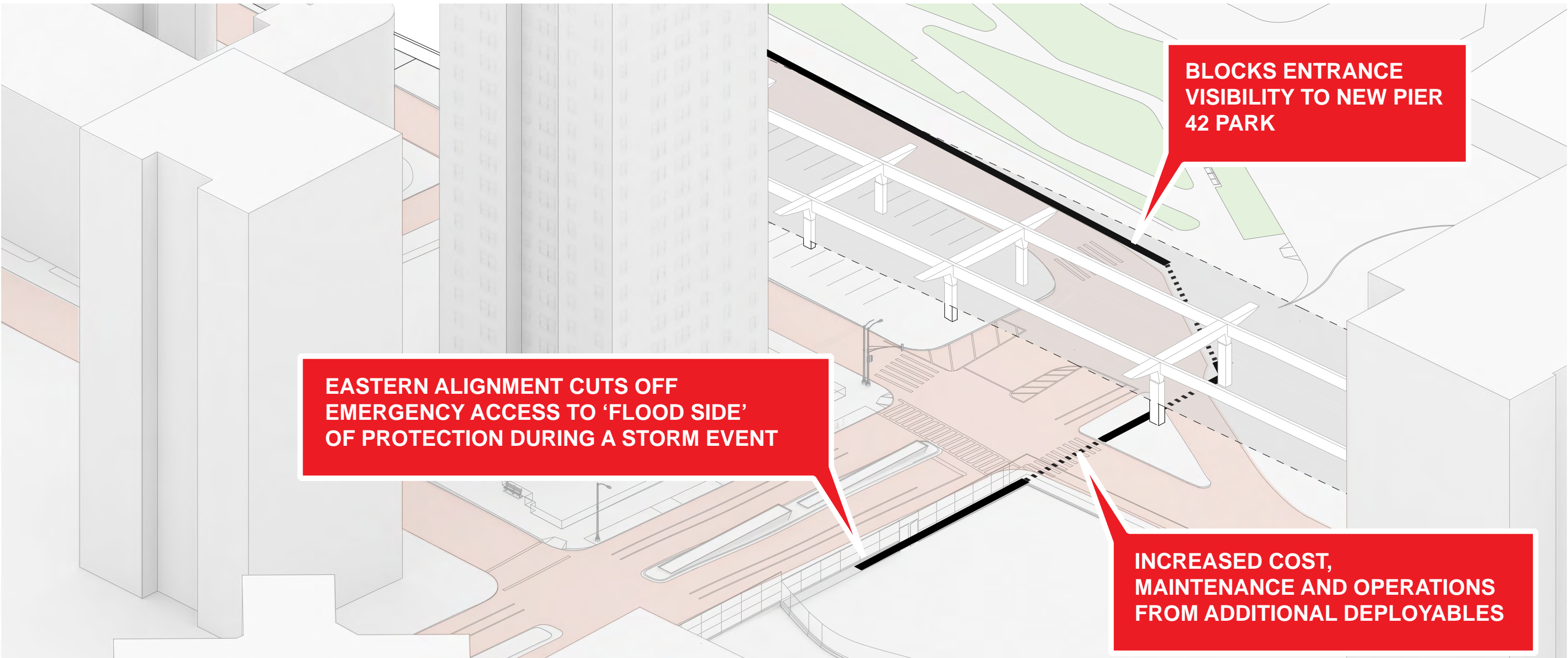
7. Along PS 184 and South St. (Cross Under FDR)



8. Along PS 184 and Southern Edge of FDR (Cross at Pier 36 Entrance)

# MONTGOMERY STREET TIE-BACK

Alignment Study: Along PS 184, Alt. 1



**BLOCKS ENTRANCE  
VISIBILITY TO NEW PIER  
42 PARK**

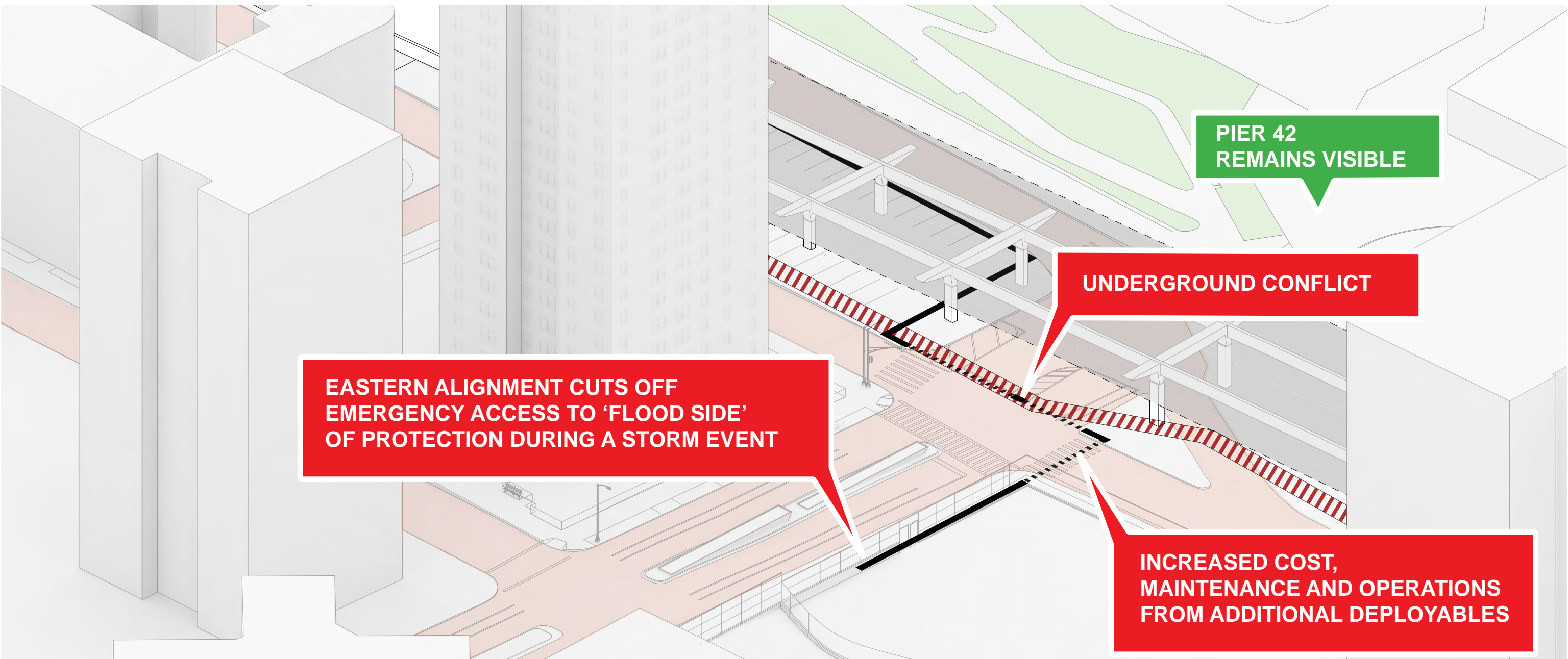
**EASTERN ALIGNMENT CUTS OFF  
EMERGENCY ACCESS TO 'FLOOD SIDE'  
OF PROTECTION DURING A STORM EVENT**

**INCREASED COST,  
MAINTENANCE AND OPERATIONS  
FROM ADDITIONAL DEPLOYABLES**



# MONTGOMERY STREET TIE-BACK

Alignment Studies: Along PS 184, Alt. 2



PIER 42  
REMAINS VISIBLE

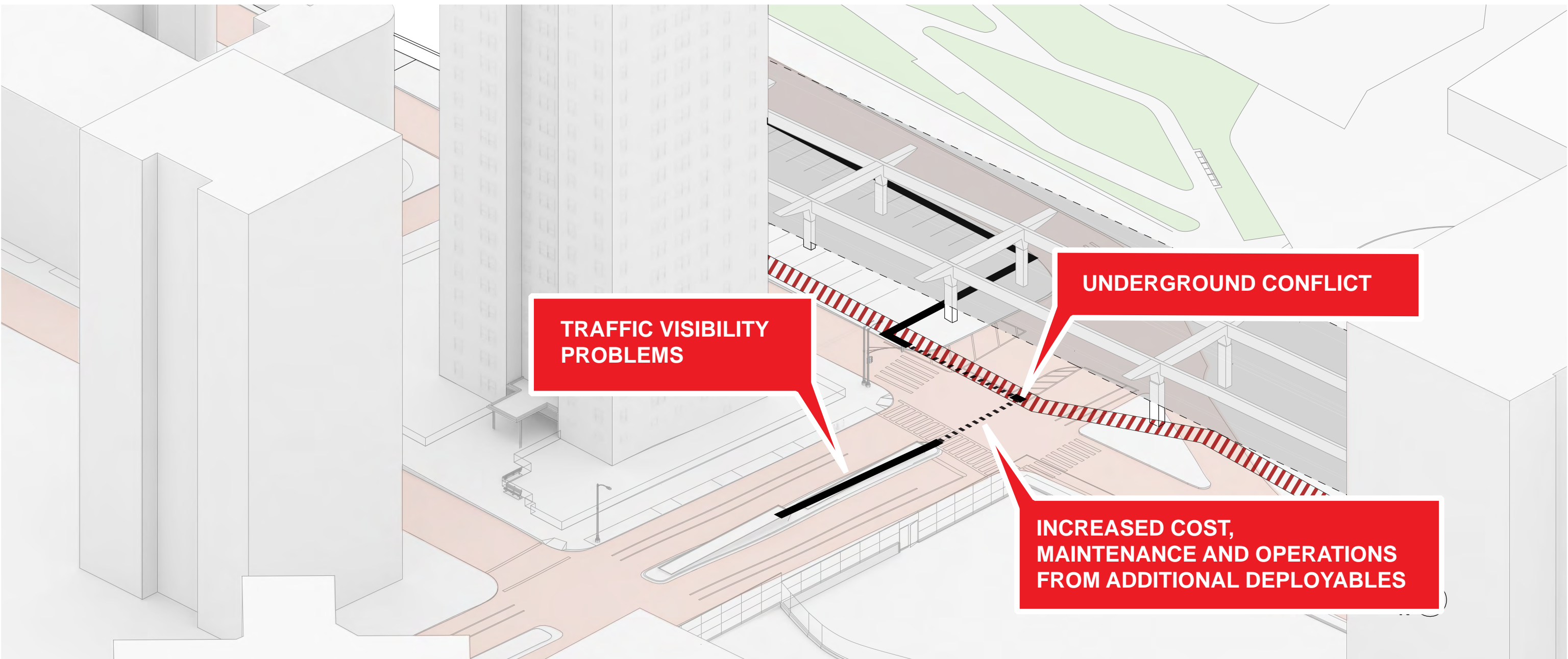
UNDERGROUND CONFLICT

EASTERN ALIGNMENT CUTS OFF  
EMERGENCY ACCESS TO 'FLOOD SIDE'  
OF PROTECTION DURING A STORM EVENT

INCREASED COST,  
MAINTENANCE AND OPERATIONS  
FROM ADDITIONAL DEPLOYABLES

# MONTGOMERY STREET TIE-BACK

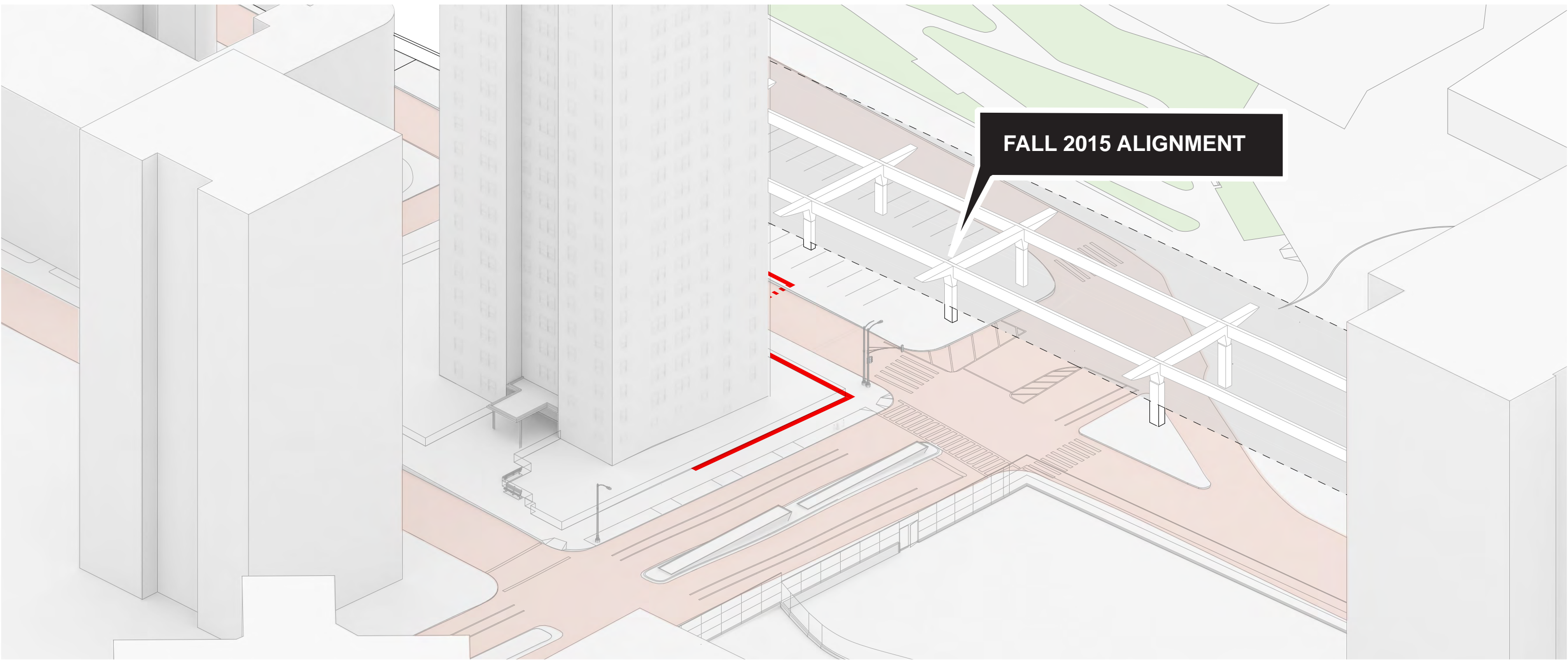
Alignment Studies: In the Montgomery Median





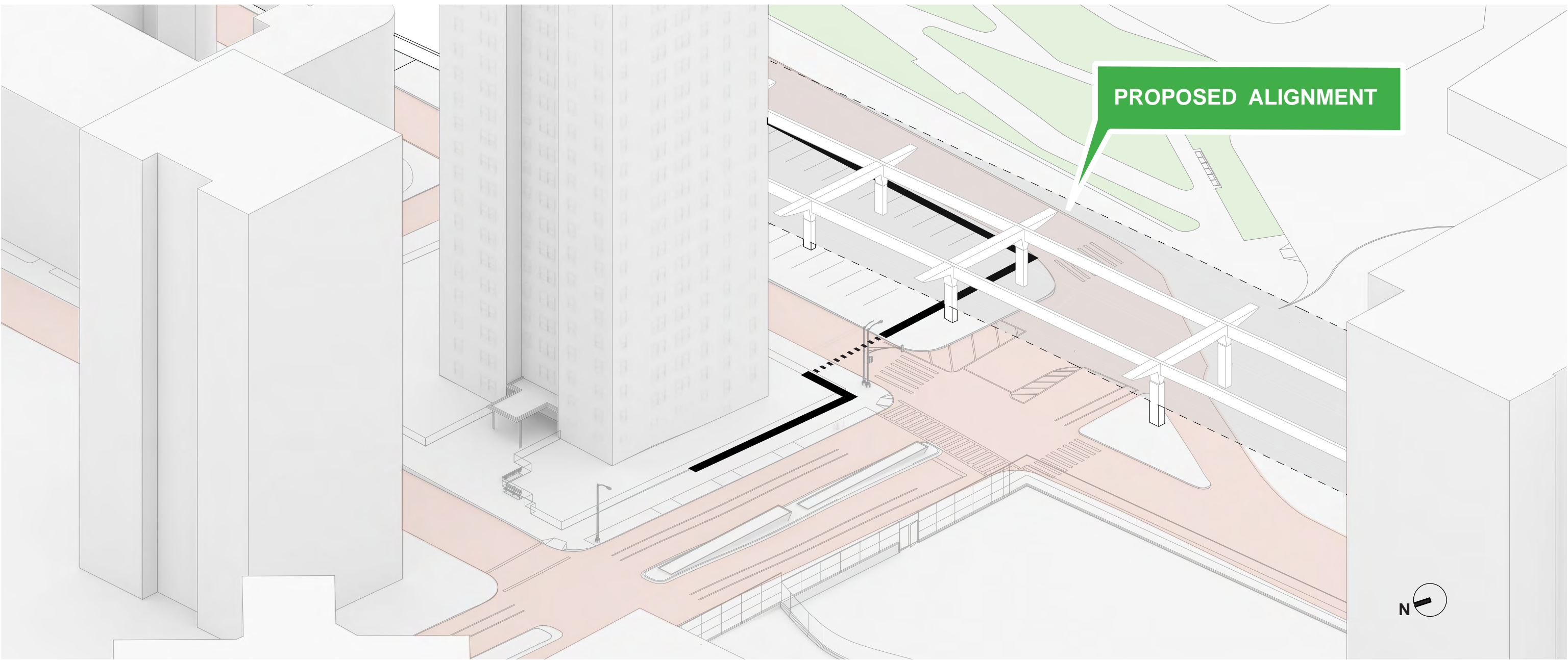
# MONTGOMERY STREET TIE-BACK

Preliminary Alignment Footprint (Fall 2015)



# MONTGOMERY STREET TIE-BACK

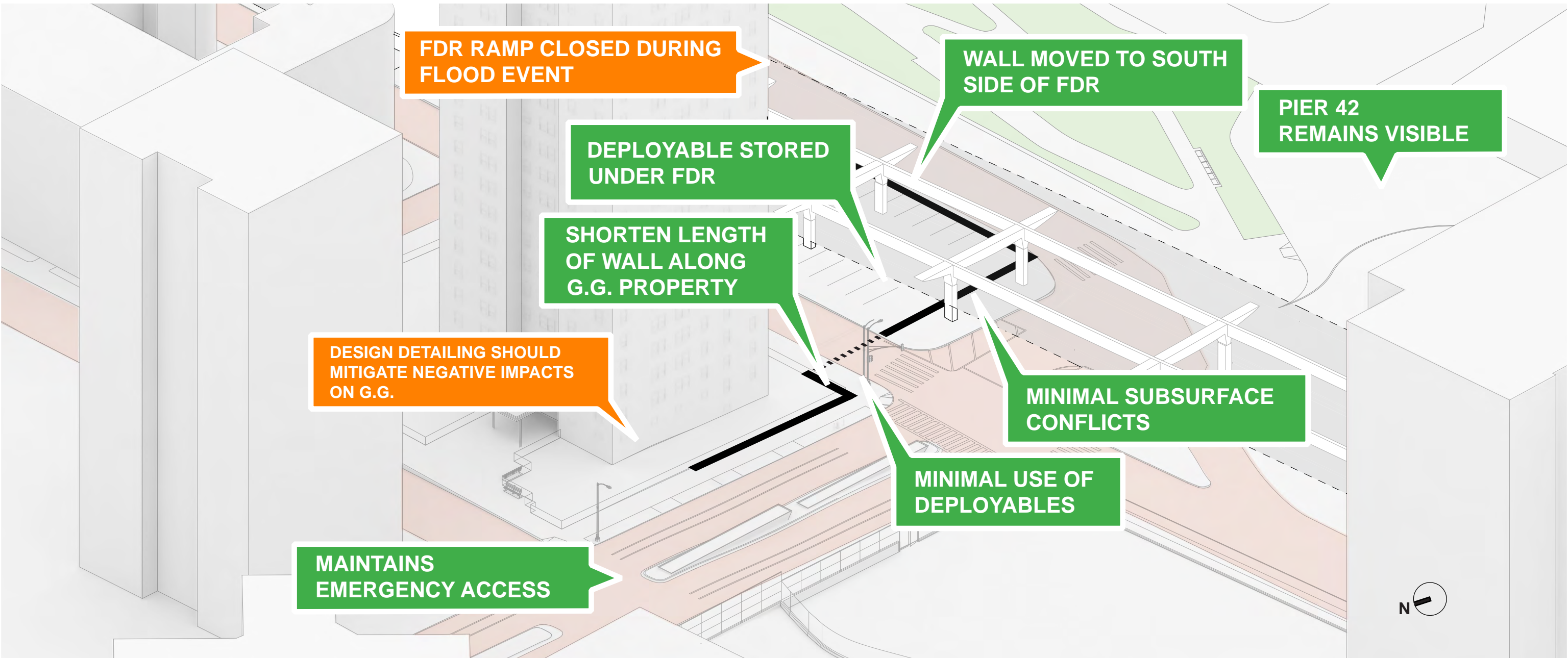
## Revised Alignment Footprint





# MONTGOMERY STREET TIE-BACK

## Revised Alignment Footprint



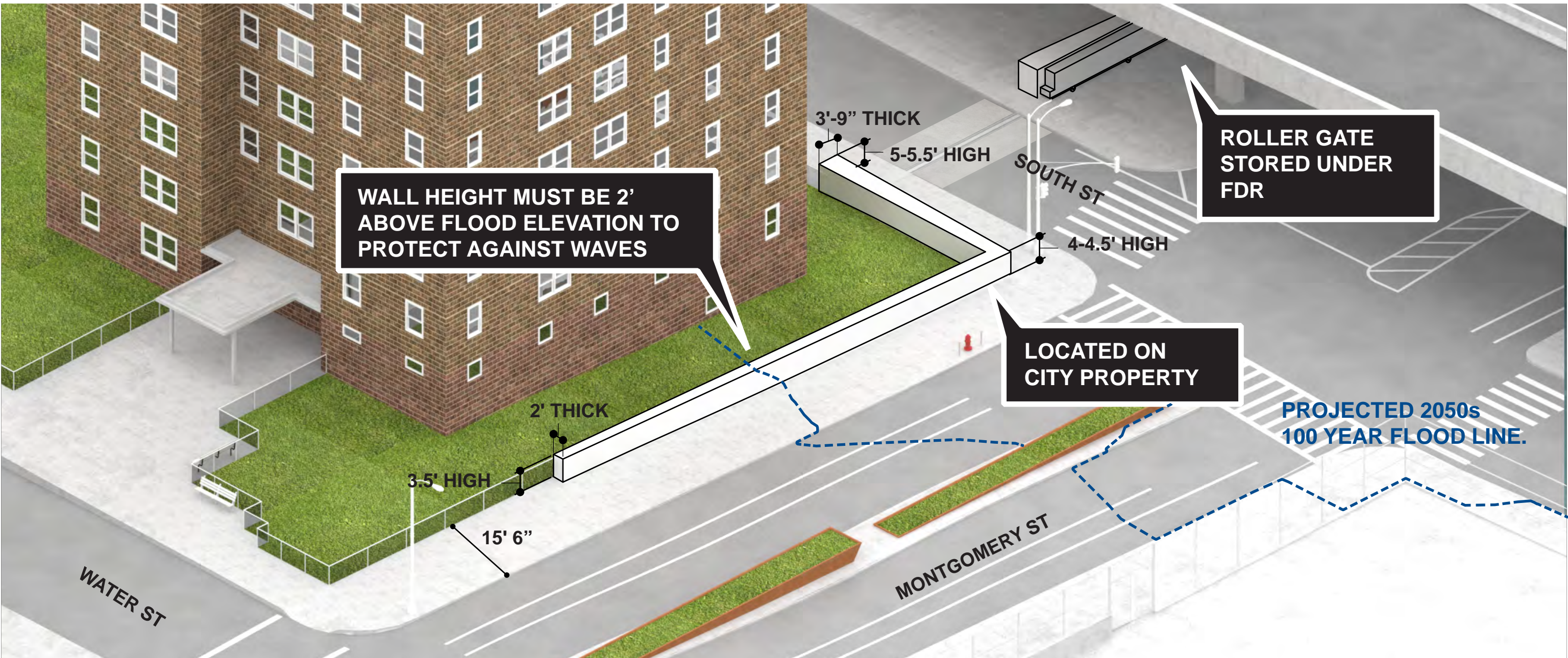
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Discussion - 30 minutes



# MONTGOMERY STREET TIE-BACK

## Design Progression: Basic Alignment





# MONTGOMERY STREET TIE-BACK

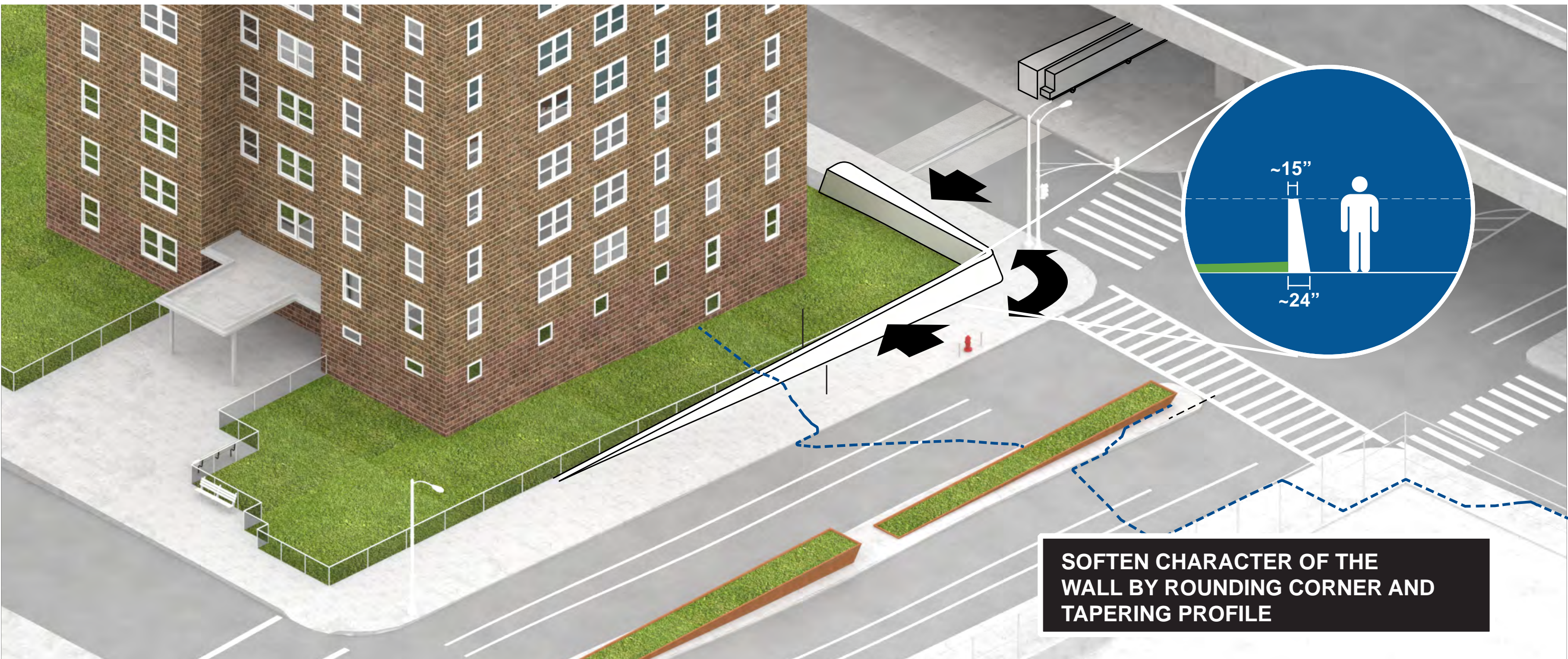
Design Progression: Minimize Height





# MONTGOMERY STREET TIE-BACK

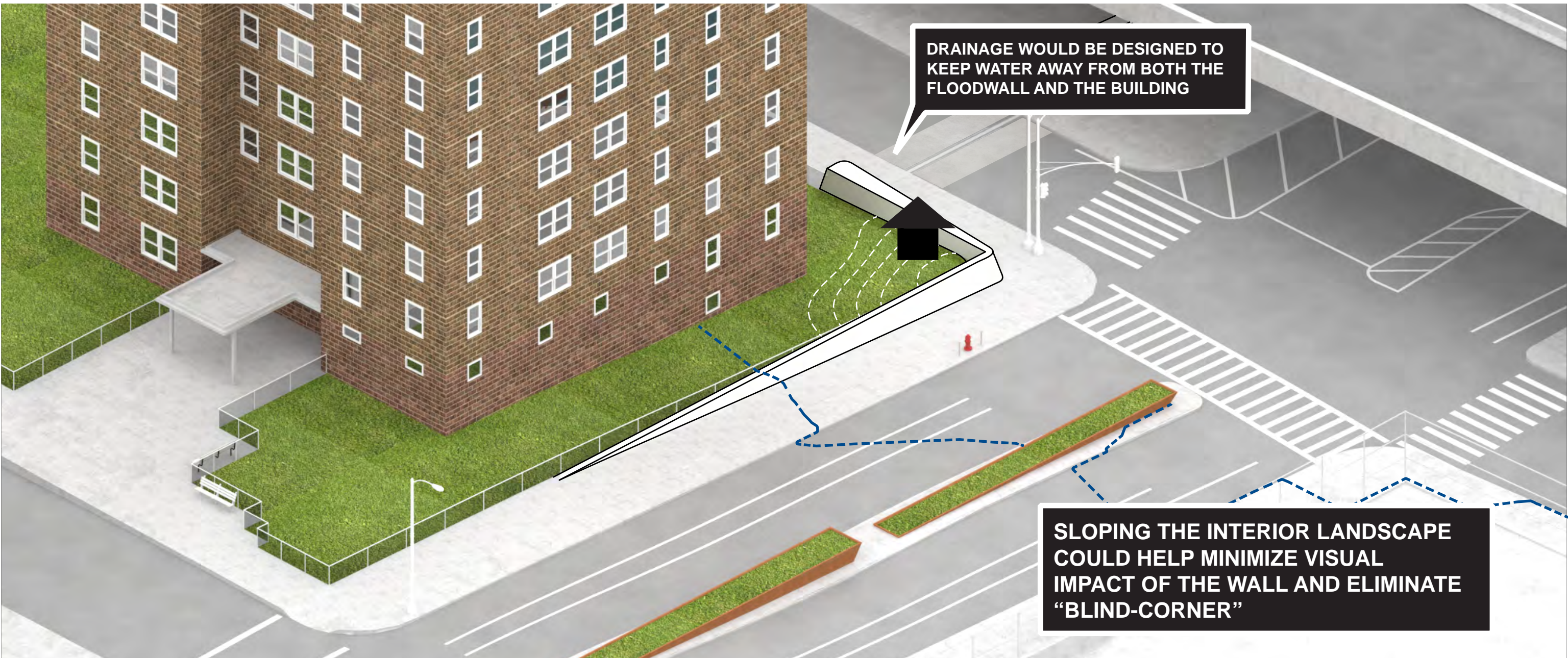
Design Progression: Taper Wall & Round Corners





# MONTGOMERY STREET TIE-BACK

## Potential Design Option 1: Lift Garden



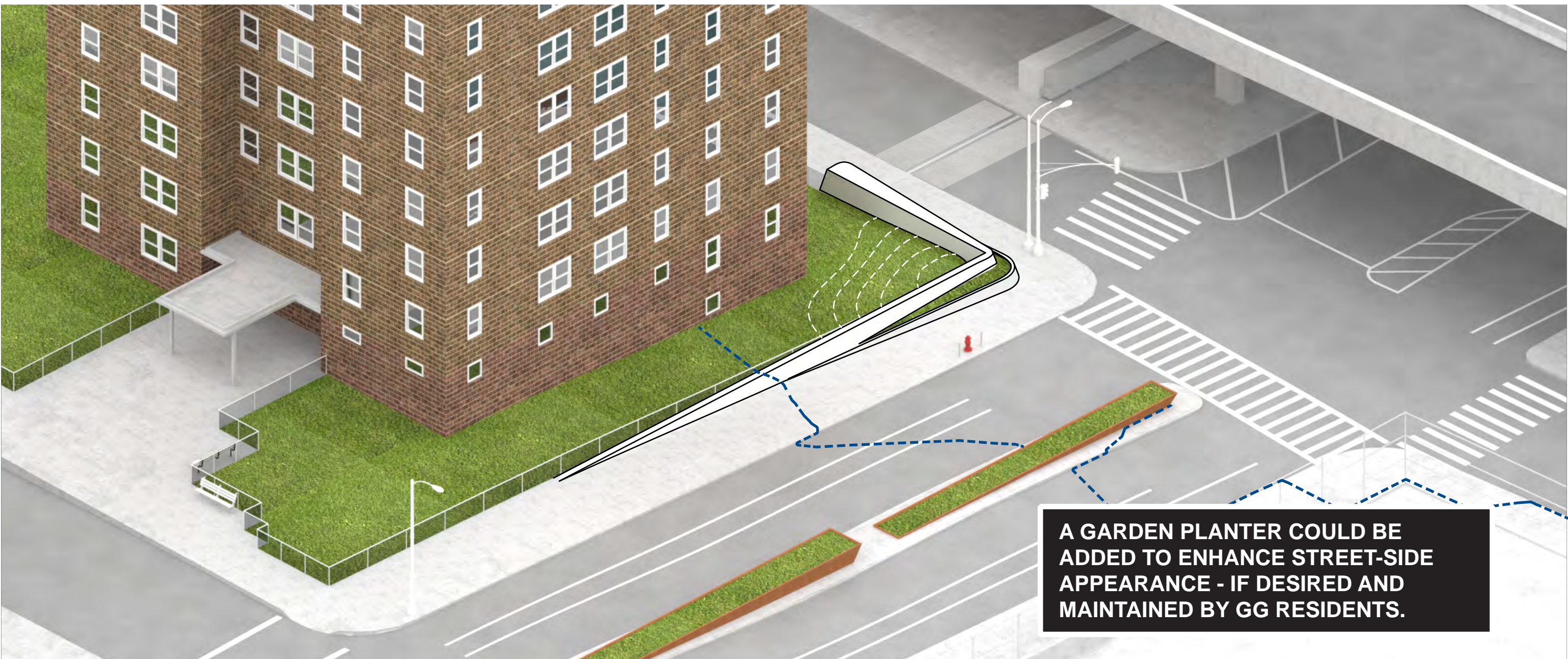
DRAINAGE WOULD BE DESIGNED TO KEEP WATER AWAY FROM BOTH THE FLOODWALL AND THE BUILDING

SLOPING THE INTERIOR LANDSCAPE COULD HELP MINIMIZE VISUAL IMPACT OF THE WALL AND ELIMINATE "BLIND-CORNER"



# MONTGOMERY STREET TIE-BACK

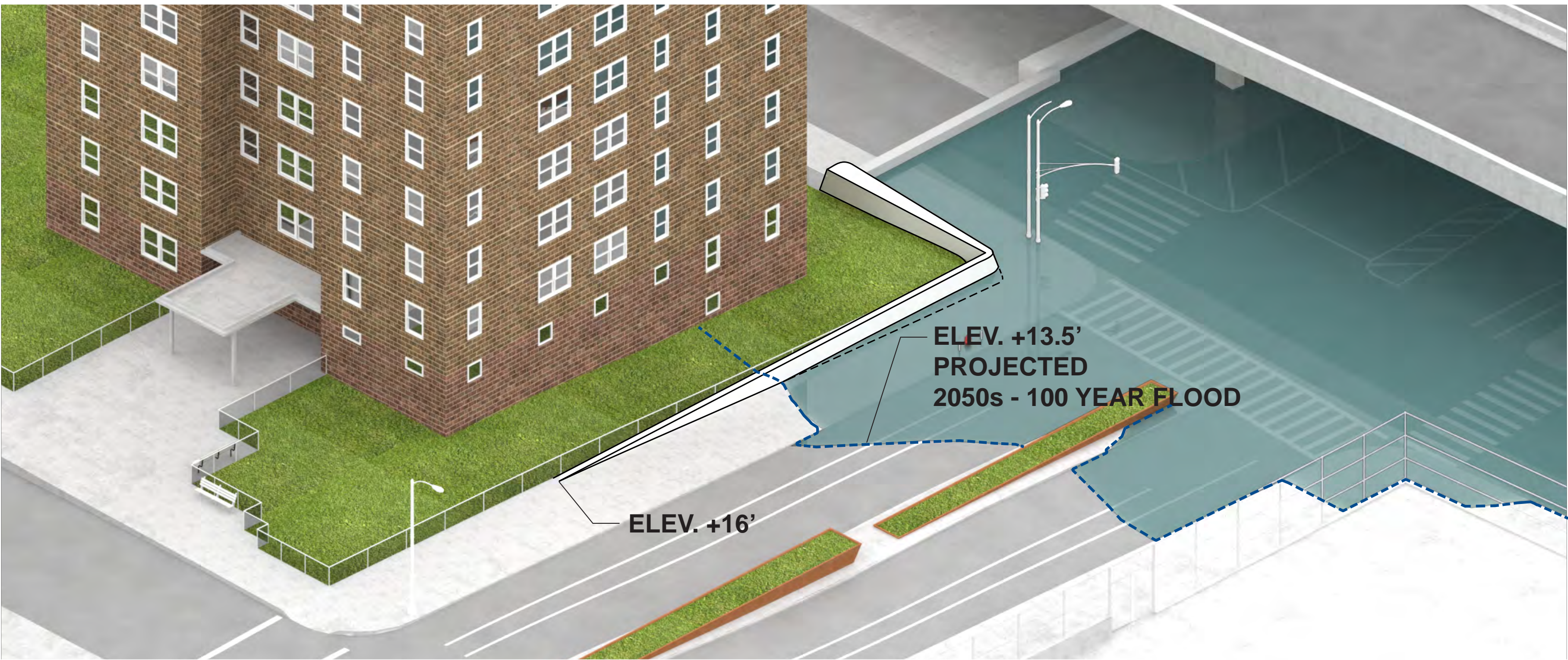
## Potential Design Option 2: Add Planter





# MONTGOMERY STREET TIE-BACK

During Flood Event





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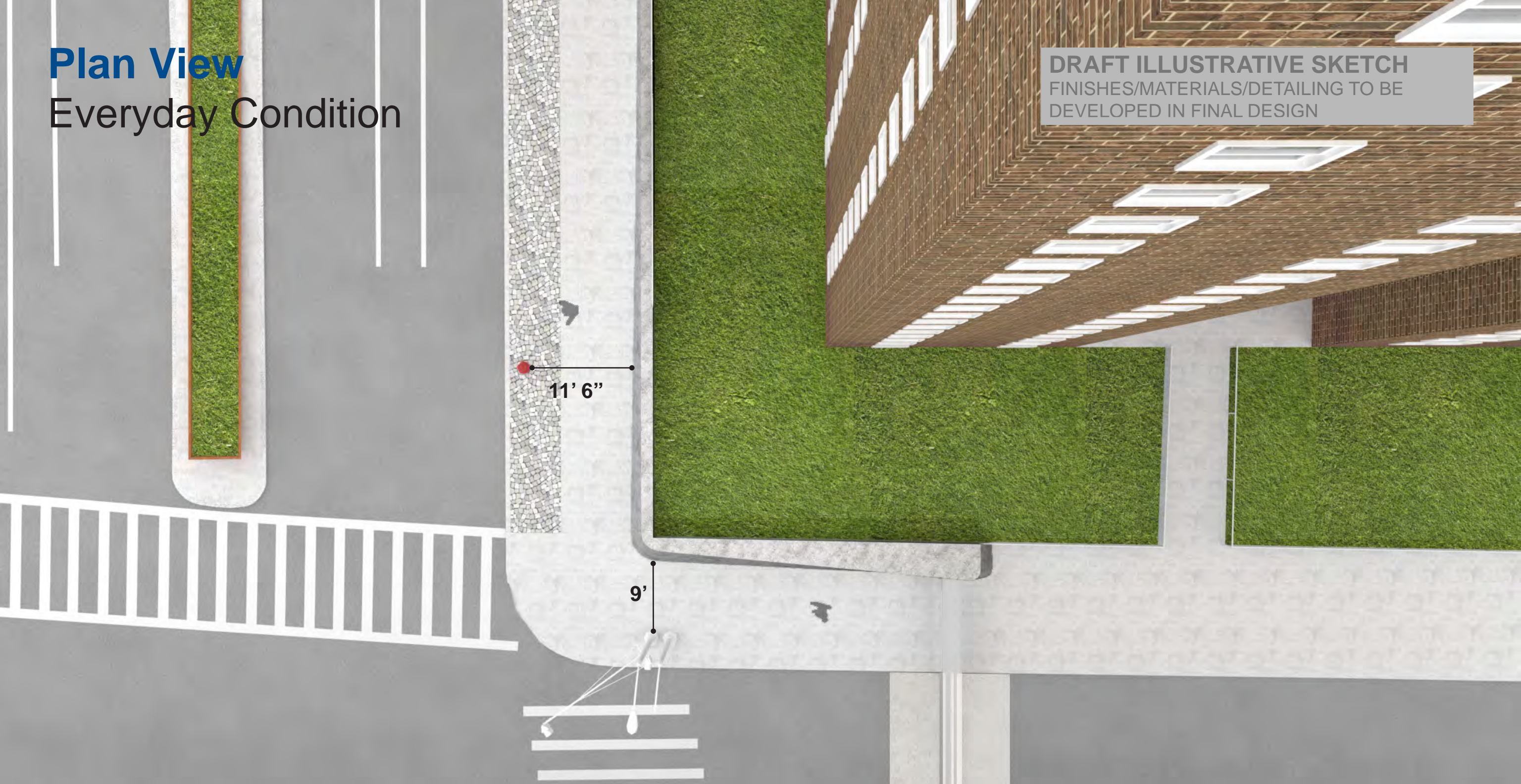
Discussion - 30 minutes



# Plan View

## Everyday Condition

DRAFT ILLUSTRATIVE SKETCH  
FINISHES/MATERIALS/DETAILING TO BE  
DEVELOPED IN FINAL DESIGN





# Plan View

## During Flood Event



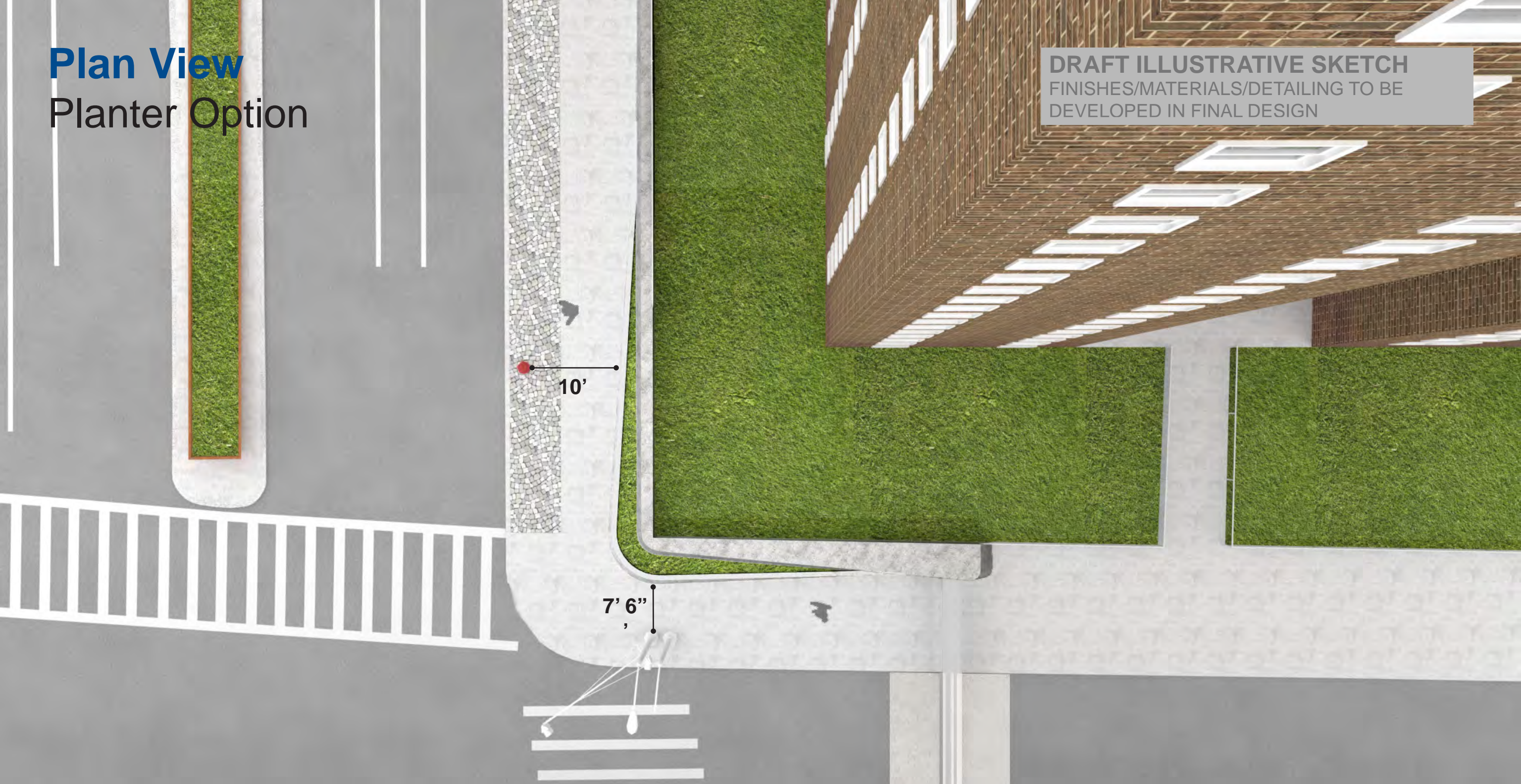
DRAFT ILLUSTRATIVE SKETCH  
FINISHES/MATERIALS/DETAILING TO BE  
DEVELOPED IN FINAL DESIGN



# Plan View

## Planter Option

DRAFT ILLUSTRATIVE SKETCH  
FINISHES/MATERIALS/DETAILING TO BE  
DEVELOPED IN FINAL DESIGN





# View Towards Park

DRAFT ILLUSTRATIVE SKETCH  
FINISHES/MATERIALS/DETAILING TO BE  
DEVELOPED IN FINAL DESIGN





# View Towards Montgomery St. Everyday Condition

DRAFT ILLUSTRATIVE SKETCH  
FINISHES/MATERIALS/DETAILING TO BE  
DEVELOPED IN FINAL DESIGN

POSSIBLE  
REMOVABLE  
COVER PLATE





# View Towards Montgomery St. During Flood Event

DRAFT ILLUSTRATIVE SKETCH  
FINISHES/MATERIALS/DETAILING TO BE  
DEVELOPED IN FINAL DESIGN

GOUVERNEUR GARDENS  
PROTECTED

EL 13.5' DESIGN FLOOD LEVEL  
BASED ON PROJECTED  
2050s - 100 YEAR FLOOD



# View at Corner

## Everyday Condition

DRAFT ILLUSTRATIVE SKETCH  
FINISHES/MATERIALS/DETAILING TO BE  
DEVELOPED IN FINAL DESIGN

POSSIBLE REMOVABLE  
COVER PLATE

GATE TRACK AND  
SEAL PLATE

REMOVABLE COVER PLATE



# View at Corner

## During Flood Event

DRAFT ILLUSTRATIVE SKETCH  
FINISHES/MATERIALS/DETAILING TO BE  
DEVELOPED IN FINAL DESIGN





# Overview

## Existing Conditions





# Overview

## With Flood Protection

DRAFT ILLUSTRATIVE SKETCH  
FINISHES/MATERIALS/DETAILING TO BE  
DEVELOPED IN FINAL DESIGN





# Overview

## Gates Closed

DRAFT ILLUSTRATIVE SKETCH  
FINISHES/MATERIALS/DETAILING TO BE  
DEVELOPED IN FINAL DESIGN





**PLANTING**



# MONTGOMERY STREET TIE-BACK

## Effects On Planting





# MONTGOMERY STREET TIE-BACK

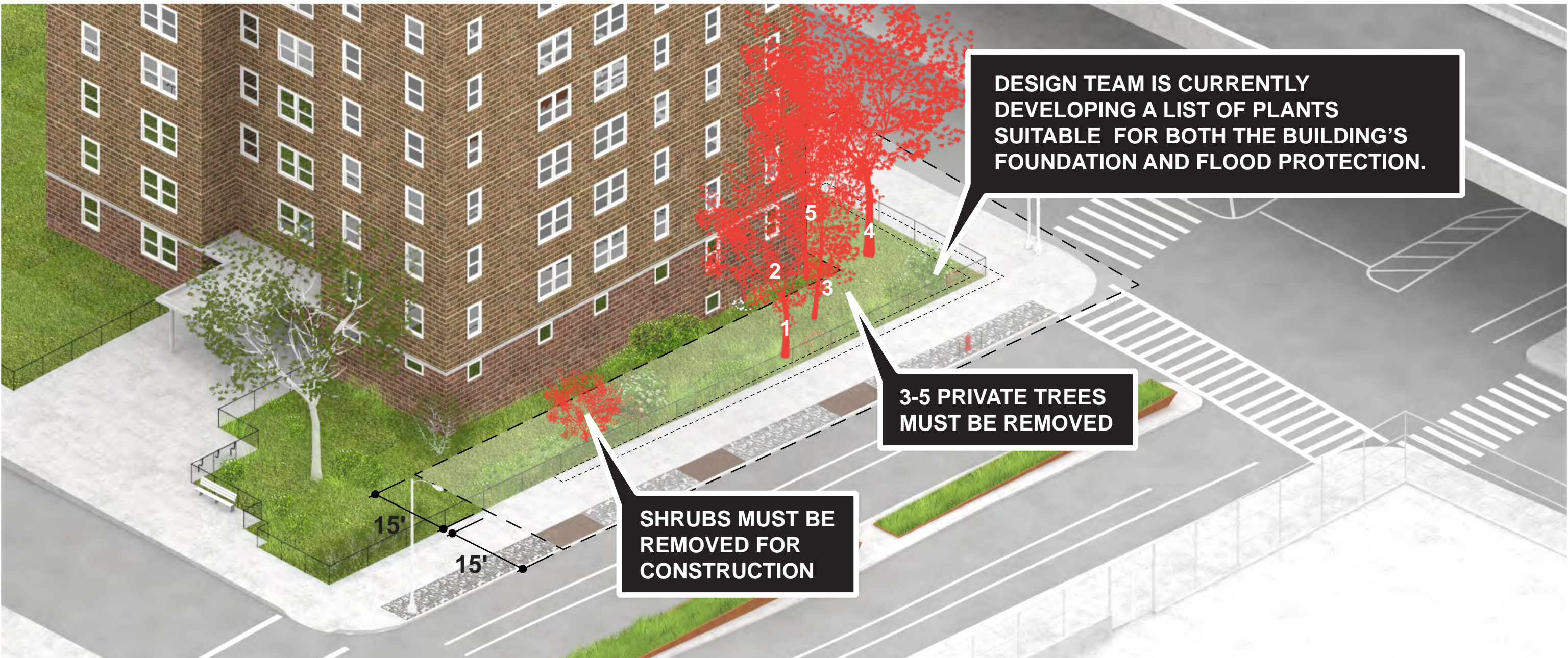
## Effects On Planting





# MONTGOMERY STREET TIE-BACK

## Effects On Planting



DESIGN TEAM IS CURRENTLY DEVELOPING A LIST OF PLANTS SUITABLE FOR BOTH THE BUILDING'S FOUNDATION AND FLOOD PROTECTION.

3-5 PRIVATE TREES MUST BE REMOVED

SHRUBS MUST BE REMOVED FOR CONSTRUCTION

15'  
15'



# MONTGOMERY STREET TIE-BACK

Current Design for Discussion





# MONTGOMERY STREET TIE-BACK

Current Design for Discussion: Planter Option





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