

## **CITY OF ALEXANDRIA** **Project Implementation**

# **Waterfront Flood Mitigation Waterfront Commission Update**

September 16, 2025

Draft, Deliberative, Pre-Decisional



# Project Updates

- ▶ Outreach Update
- ▶ Restate Project Goals & Objectives
- ▶ Project Design Updates & Response to Feedback to Date
- ▶ Constructive Feedback Requested:
  - ▶ Specific Landscape Features
  - ▶ Pump Station Design & Materials
- ▶ Consideration During Construction
  - ▶ Avoidance, Minimization, and Mitigation
- ▶ Share your Questions and Concerns!



# Outreach Opportunities

## ▶ Outreach Events – September

- ▶ Old Dominion Boat Club
- ▶ Alexandria Waterfront Alliance
- ▶ Old Town Civic
- ▶ Waterfront/Parks and Recreation Commissions
- ▶ Individual Stakeholders

## ▶ Outreach Events – October

- ▶ Waterfront/Parks and Recreation Commissions
- ▶ Stakeholder Groups
- ▶ Individual Stakeholders

## ▶ Door-to-Door Outreach and Survey (Business/Residential)

## ▶ Business/General Stakeholder Newsletters

## ▶ Public Event Pop-Ups – Fall

- ▶ Old Town Farmers Markets
- ▶ Arts Festival

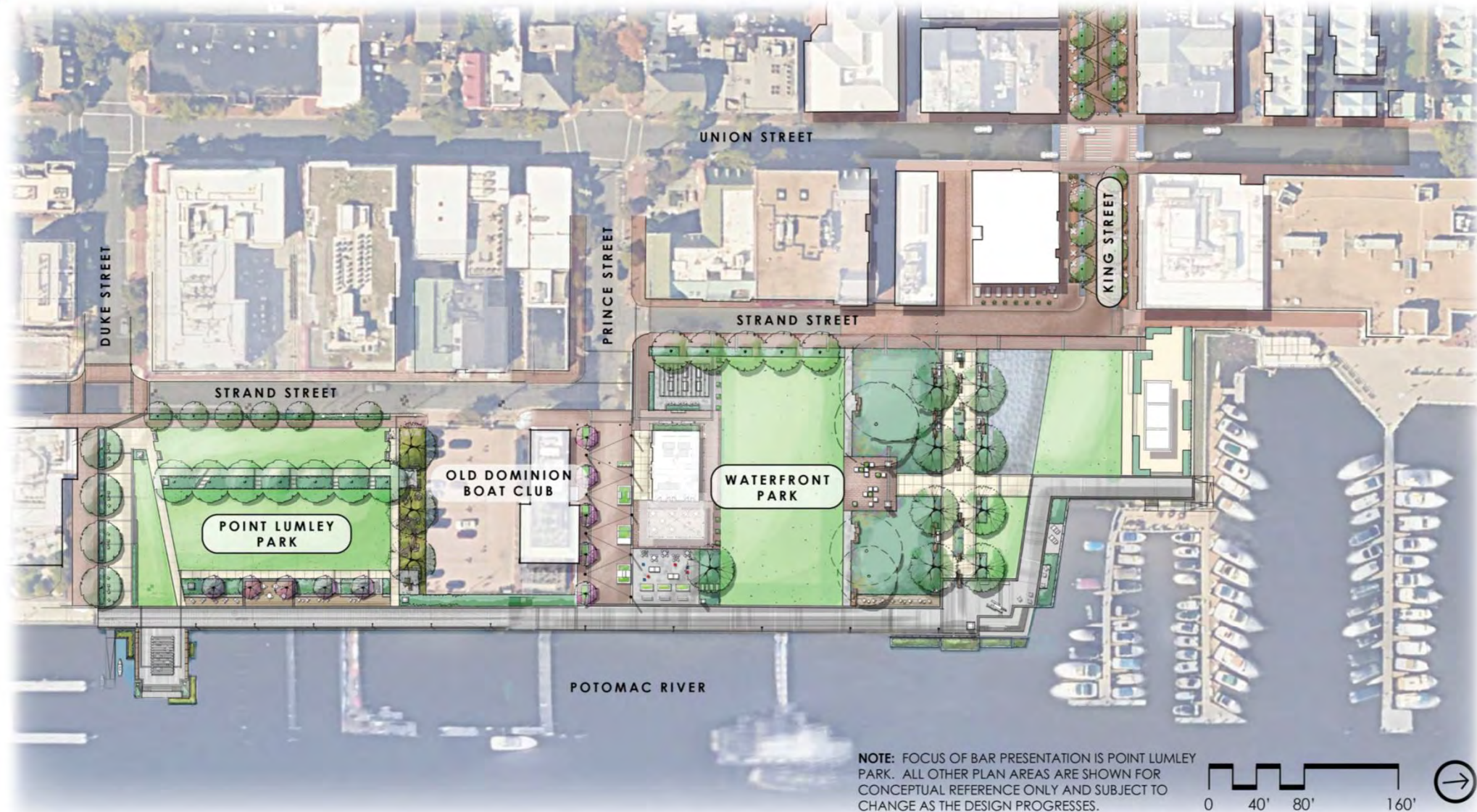
## ▶ Construction Impact Mitigation Meetings – October/November

- ▶ Average Duration of Construction Phases / Closures
- ▶ Maintenance of Access
- ▶ Potential for Trolley and Bus Routing to Strand Street / Businesses
- ▶ Activation of Spaces





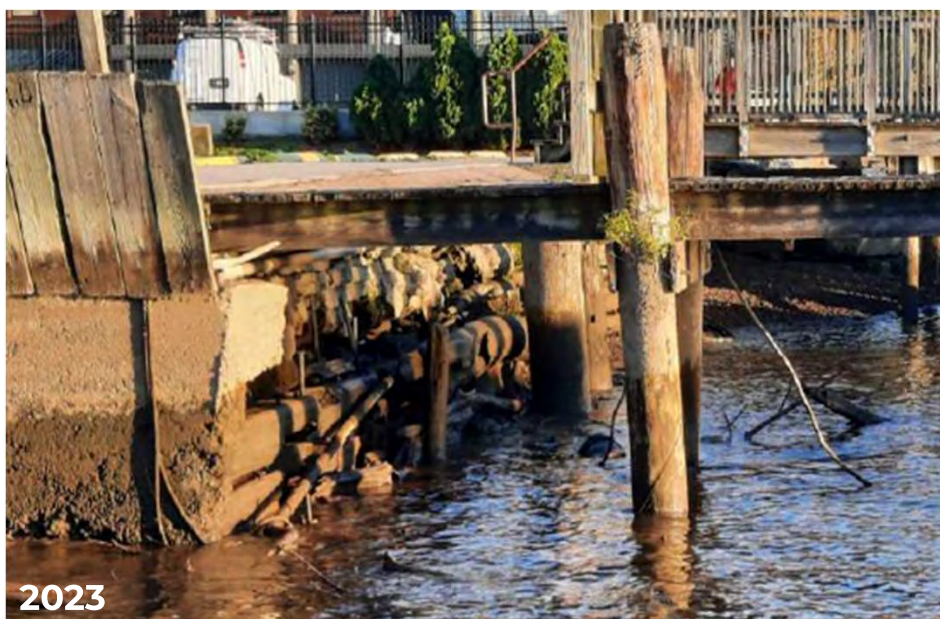
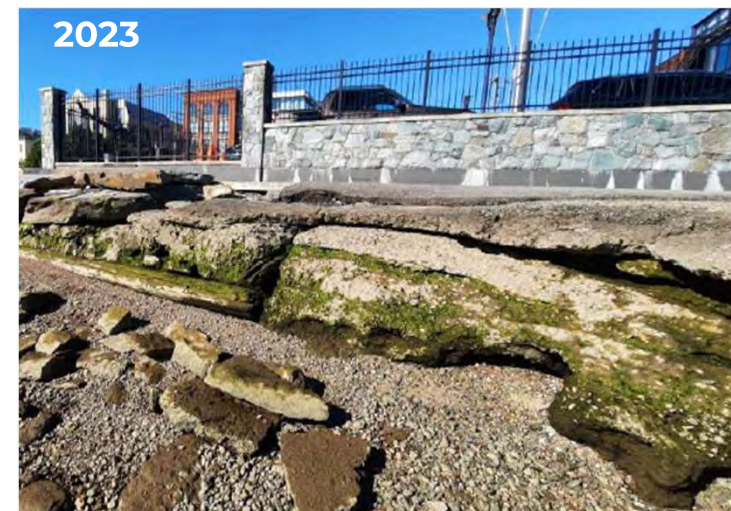
# Public Space and Amenities







# Aging & Failing Infrastructure







# Flooding Sources & City Impacts

## OVERTOPPING

of Bulkhead

### Solution:

Raised bulkhead/flood barrier(s)  
& pump station.

### Ranges of Cost\*/City Impacts:

\*\$20,000 - \$50,000 annually for major debris

\*~\$300k-500k – sandbag mobilization (annual)

\*\$500k-\$1M – Inlet & Street Cleanup (annual)

\*Events and Festivals Impacted = Lost Revenue

\*Tourism Impacted

## BACKFLOW

into River Outfalls

### Solution:

New outfall structure and  
pump station.

### Ranges of Cost\*/City Impacts:

\*Increased sewer inspection required

\*\$500k-\$1M/yr river sediments removal

\*Street Closures

\*Pedestrian safety/closed crosswalks

\*Businesses impacted = lost revenue

## INUNDATION

of Storm Sewers

### Solution:

Replace aging (50+ years old)  
and undersized storm pipes.

### Ranges of Cost\*/City Impacts:

\*~\$300k-\$500k – sandbag mobilization (annual)

\*\$100K-\$250K– Street Cleanup (annual)



# Riverine Overtopping & Flooding

Draft, Deliberative, Pre-Decisional



# The Number of Overtopping Events Continues to Increase

<u>Potomac River Surface Elevation</u> Flooding Analysis Over Time At Prince Street/Waterfront	<u>Prince Street-End</u> ( <u>Elev. 2.4</u> )	<u>Bulkhead at Waterfront</u> ( <u>Elev. 3.0</u> )
In the Last 20 Years, we've seen an average of ....	145 events/yr	37 events/yr
In the Last 5 Years, we've seen an average of ....	185 events/yr	48 events/yr
In the Last 2 Years, we've seen an average of ....	194 events/yr	54 events/yr
In the Last 1 Year, we've seen...	227 events/yr	93 events/yr
By Year 2100, we anticipate...	353 events/yr	341 events/yr



# Pump Station Design Progression:

## Initial Concept of Single Station: (Presented in summary/fall 2024)



## Revised Concept: (Presented spring 2025):



- Smaller footprint, elevated design & increased public amenities

Draft, Deliberative, Pre-Decisional



[illegible]

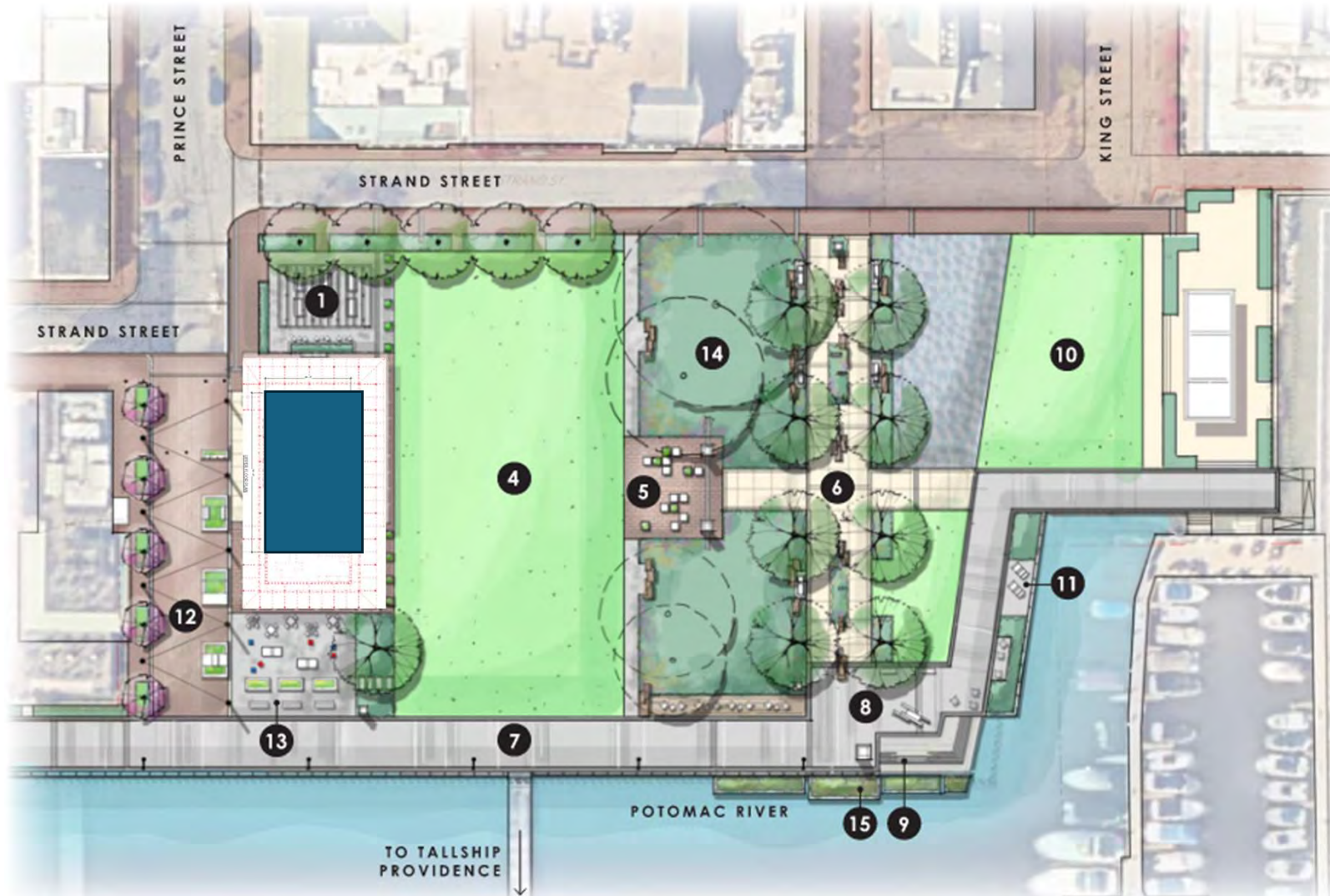
**LEGEND:**

- 1 Trellis structure with picnic tables and catenary lighting
- 2 Pump station
- 3 Covered plaza / venue space
- 4 Multi-use lawn
- 5 Arrival plaza with crate-inspired seating
- 6 Wales Alley River Gateway
- 7 Promenade
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- 10 N. Waterfront area - to be replaced in kind
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- 14 Preserved existing trees (understory to be determined with arborist)
- 15 Floating wetlands attached to bulkhead





# Site Plan: Reduced Station Size



The proposed site plan uses a rectilinear framework as an homage to the historic wharfs and 1845 shoreline layout. This simple framework also aims to maximize programmable space, integrate the existing context, and create direct connections to the Potomac River that engage the waterfront and reinforce views.

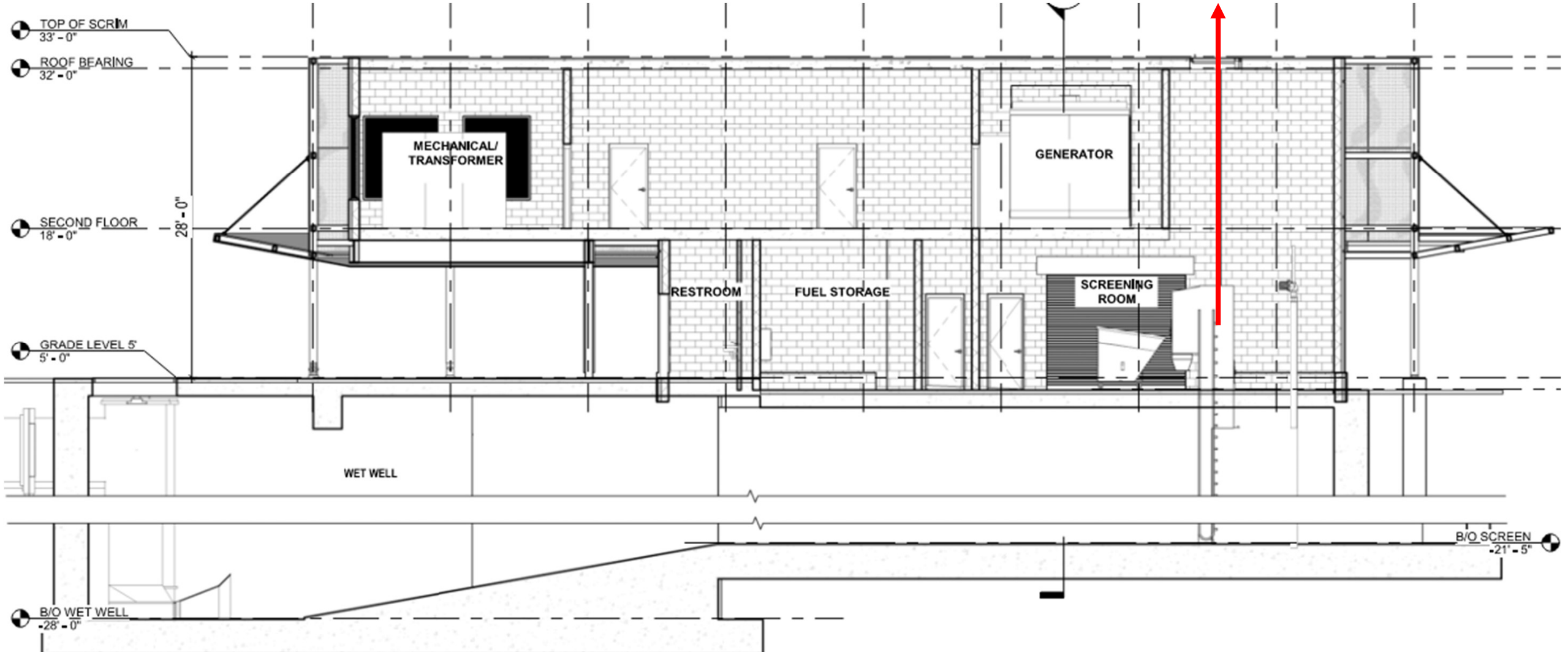
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(Building length reduced 18-22' (55' total if canopy eliminated))



# Prior Pump Station Cross Section



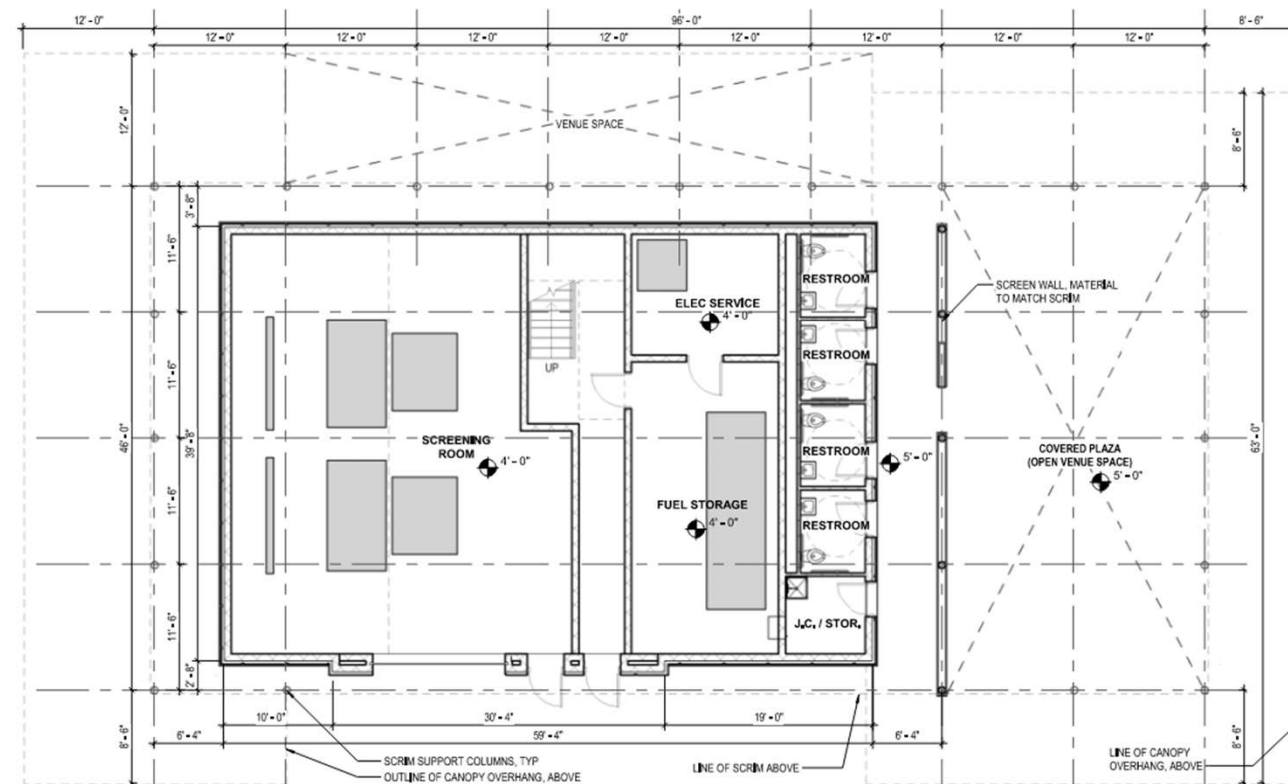




96'

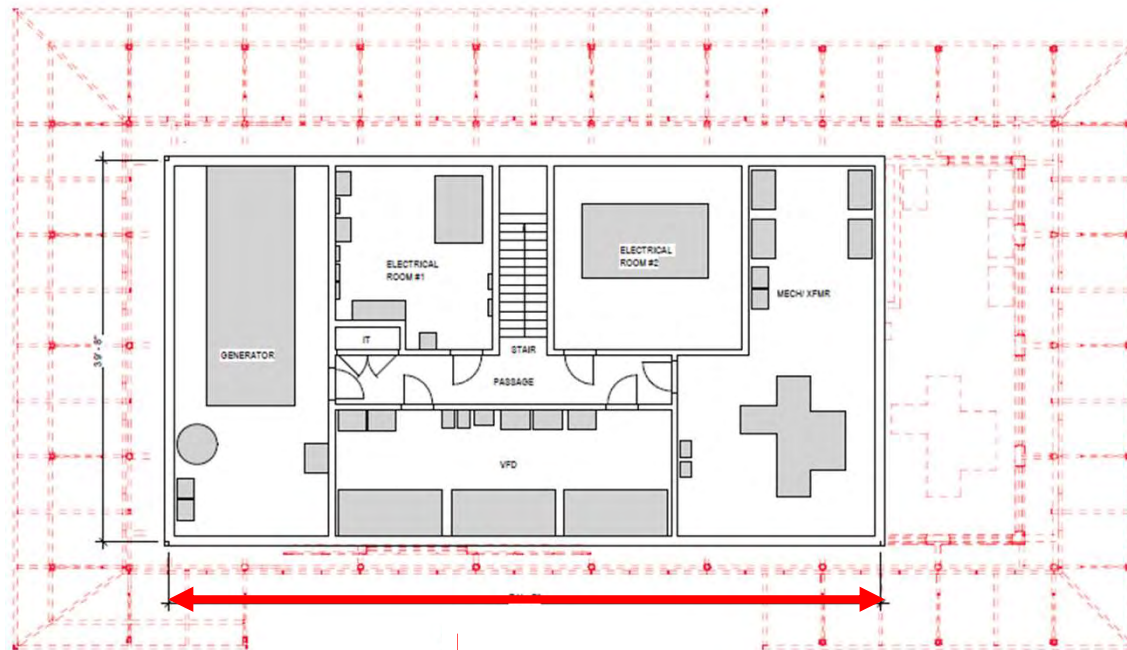
~129'

**2<sup>nd</sup> Floor area previously open to lower level**



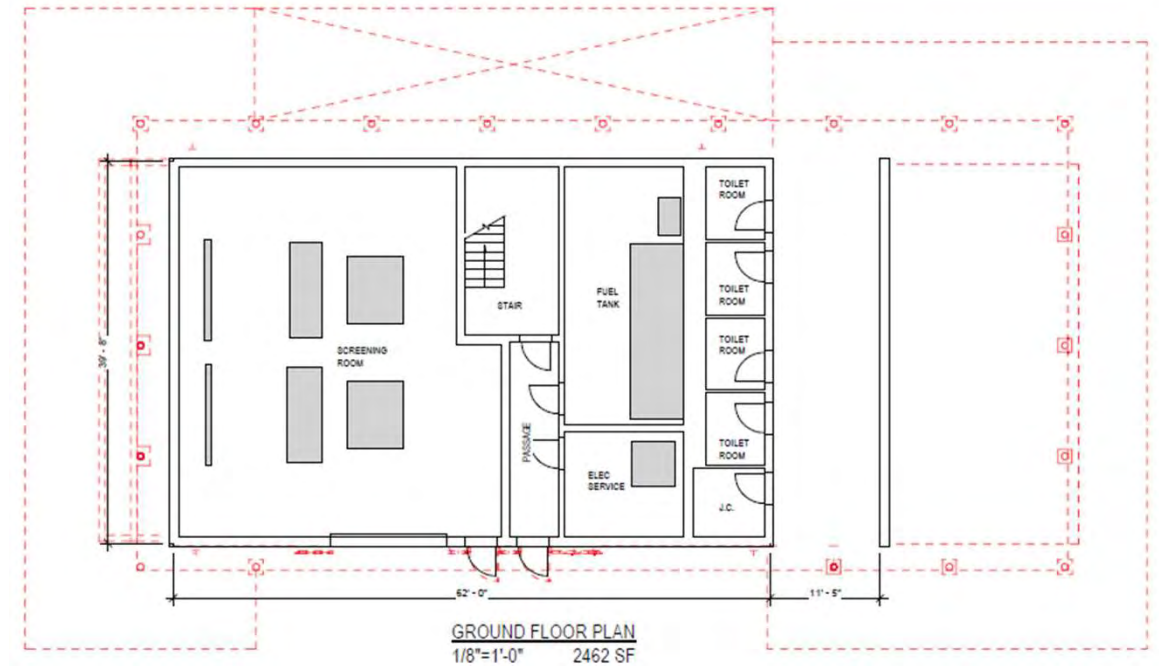


# Pump Station Floorplan Reduced



74'

Building length reduced ~18-22'  
(~55' total if canopy eliminated)







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# Pump Station Prior Design

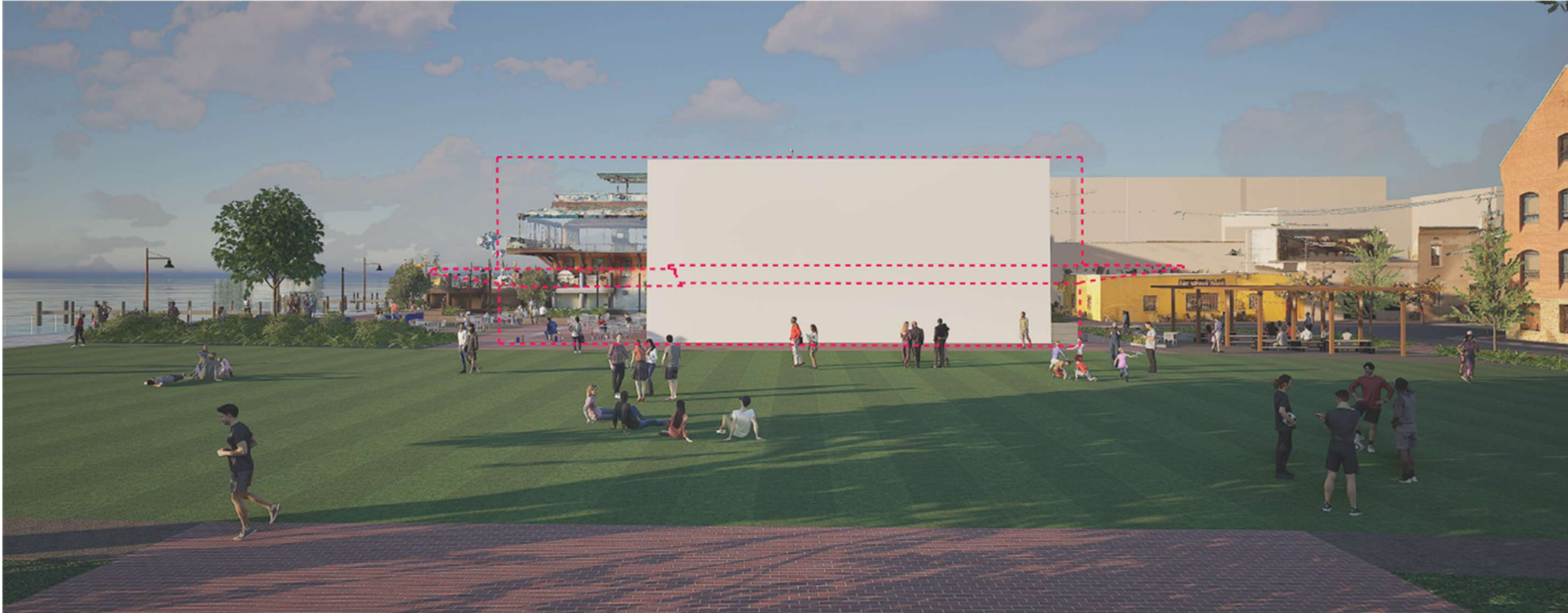






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# Pump Station Reduced







Draft, Deliberative, Pre-Decisional

# Pump Station Prior Design







# Pump Station Reduced







Draft, Deliberative, Pre-Decisional

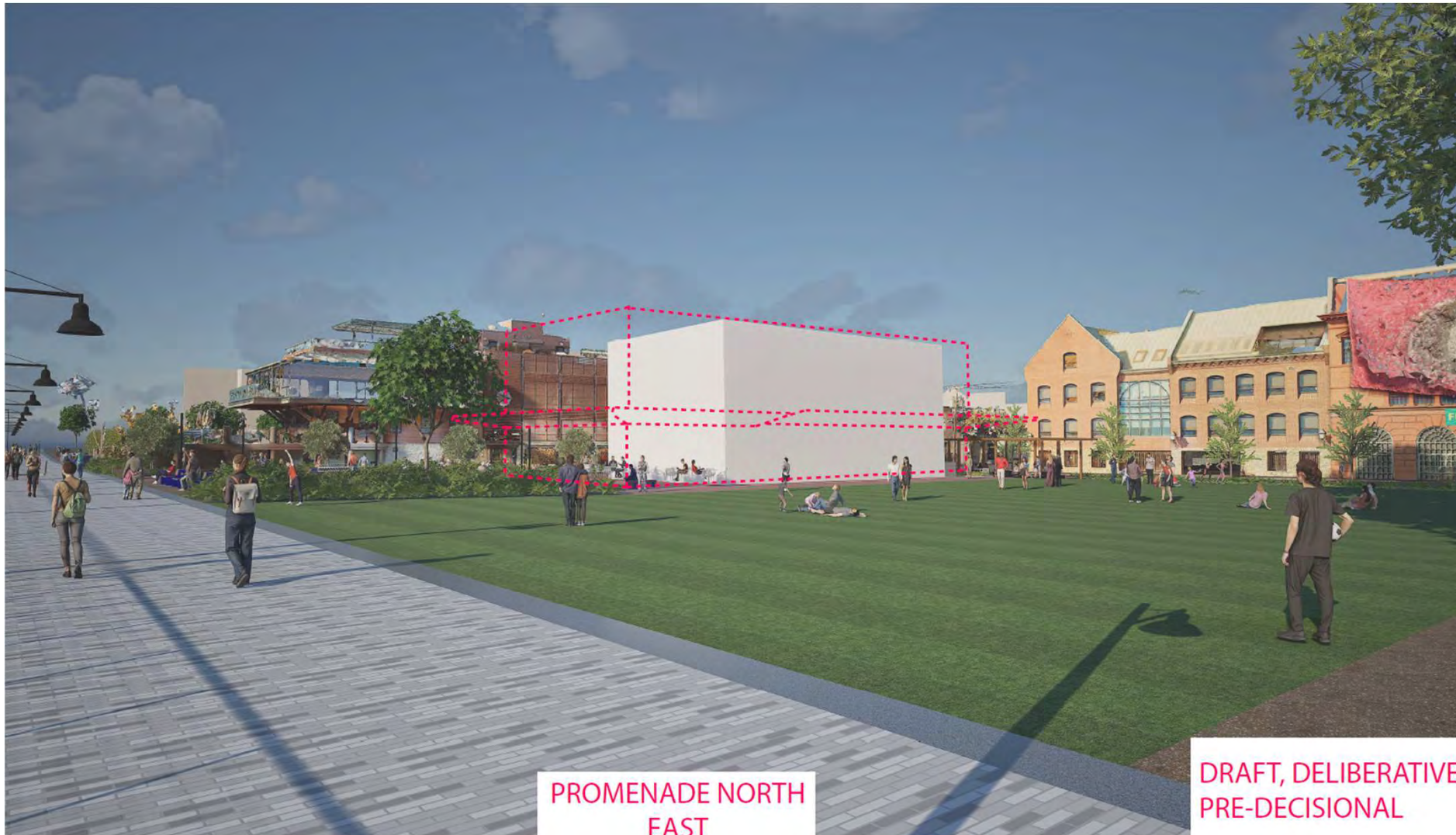
# Pump Station Prior Design







# Pump Station Reduced



PROMENADE NORTH  
EAST

DRAFT, DELIBERATIVE,  
PRE-DECISIONAL





# Current Pump Station Materials



COLUMNS AS A DEVICE TO REPRESENT NAUTICAL SURROUNDS



STRUCTURAL TECHTONICS AND RELATIONSHIP TO SAIL BOATS



VIEW FROM BASE OF KING STREET



SCRIM MATERIAL INSPIRATION



BOARD-FORMED CONCRETE PANEL TO REFERENCE HISTORIC CRIBBING



# Architecture: Feedback Requested!



Open to Revisit  
Architecture





Draft, Deliberative, Pre-Decisional

## WATERFRONT FLOOD MITIGATION PROJECT

### Alternative Architectural Concepts

**Maintain Current Approach:  
Modern Architecture /  
References to History**



**Classical Architecture /  
Direct Reference to Old  
Town**



**Landscape & Park  
Integration to  
Architecture  
(Planters, Green  
Walls, etc.)**



# Green Walls



Adjacent trees and sky are reflected in the scrim to blend building and environment.



Green walls integrate planting into the facade, softening building massing while offering environmental benefits such as insulation, air filtration, and stormwater management. They can be adapted to complement both modern and historic architectural contexts.

Alternative to planter walls, a reflective material can be used to create a 'green' facade reflecting the adjacent canopy trees. (Image #2)

- 1 **Vertical Living Gallery** | Bangkok, Thailand
- 2 **Hayes Primary School** | Kenley, UK
- 3 **17 Glen Avenue** | Cape Town, South Africa
- 4 **Musée du Quai Branly** | Paris, France
- 5 **Park Plaza** | Santa Fe, Mexico City
- 6 **New Street Square** | London, UK
- 7 **Ion Orchard Residences** | Singapore



# Vines



Vine-covered trellises add texture and seasonal interest to building walls, reducing visual impact and increasing air filtration and shade as a flexible, low-profile green infrastructure strategy.

- 1 **MFO Park** | Zürich, Switzerland
- 2 **Swiss RE Headquarters** | Munich, Germany
- 3 **Tan's Garden Villa** | Singapore
- 4 **The Base** | Bangkok, Thailand
- 5 **Biomedical Research Center** | Granada, Spain
- 6 **Freiburg Office Complex** | Munich, Germany



# Integral Planters



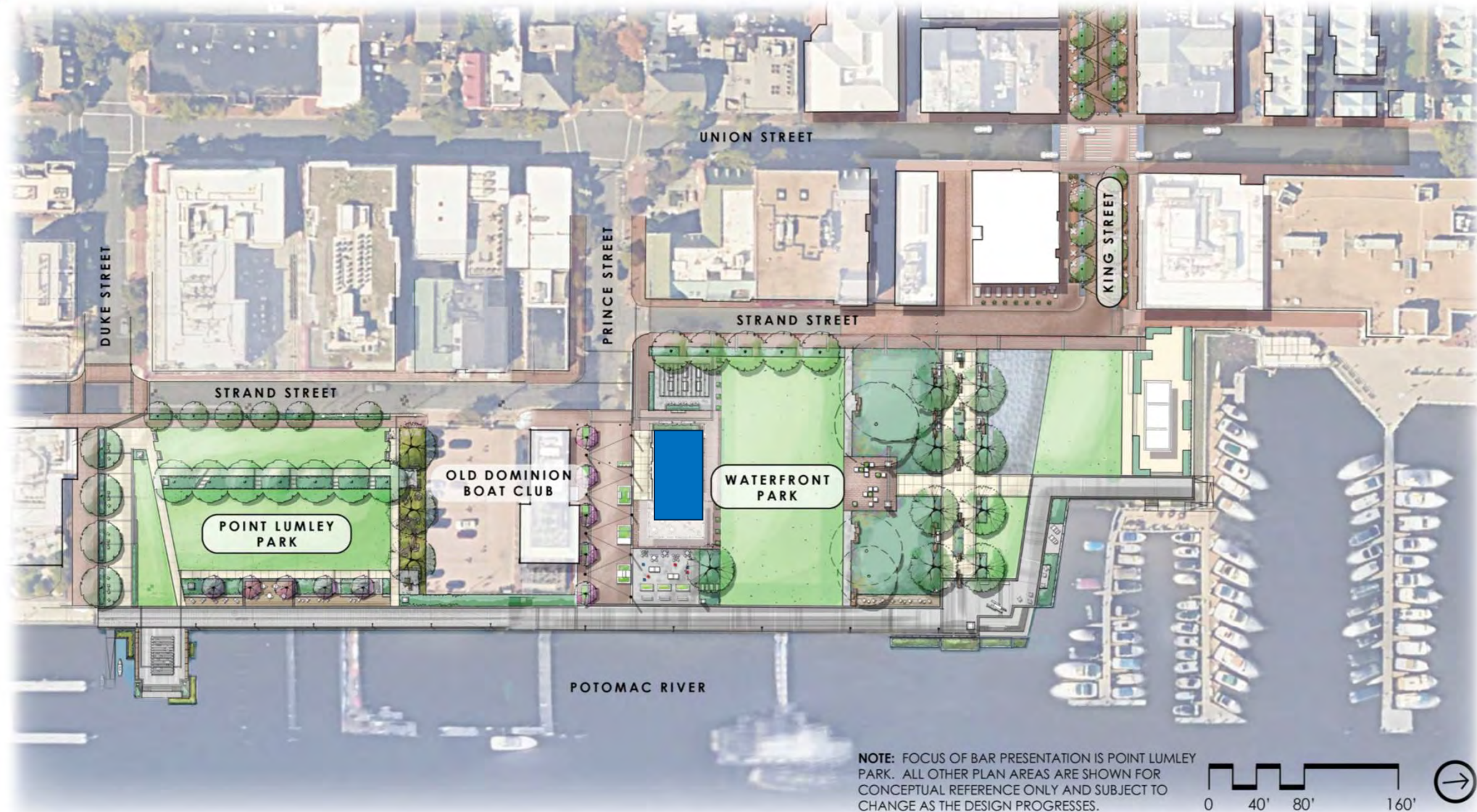
Integral planters can enhance architectural storytelling, incorporate seating, and offer environmental benefits such as rainwater collection, conveyance, and filtration opportunities.

- 1 **Coulée verte René-Dumont** | Paris, France
- 2 **The Highline Spur** | New York, NY
- 3 **Ecological Living Module** | New York City
- 4 **Hooper Street** | San Francisco, CA
- 5 **Hilgard Garden** | Berkley, CA
- 6 **Townhouse** | West London, UK





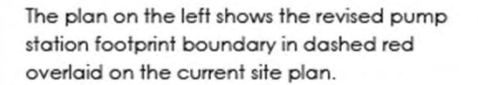
# Site Plan: Feedback Requested







# Revisit Concept Plan?



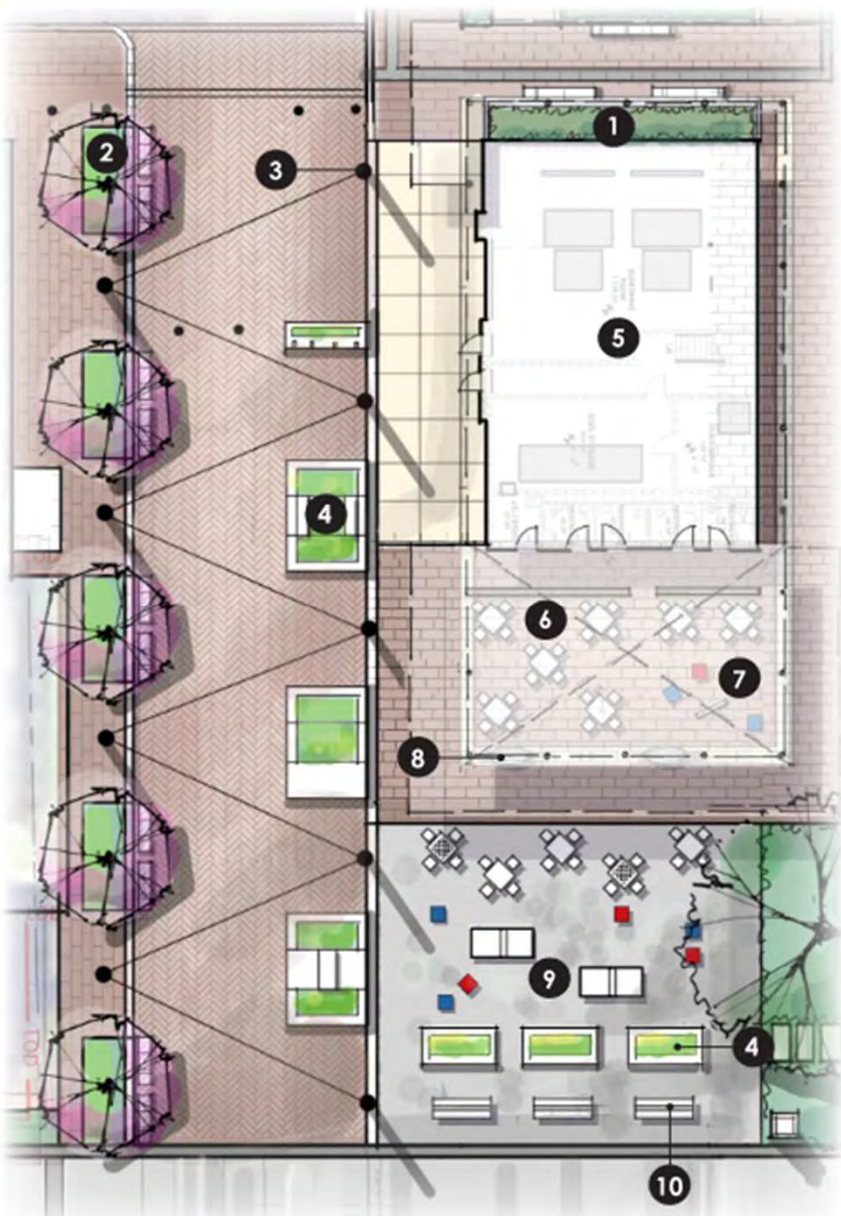
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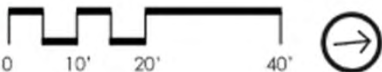


# Prince Street and East Plaza



## LEGEND:

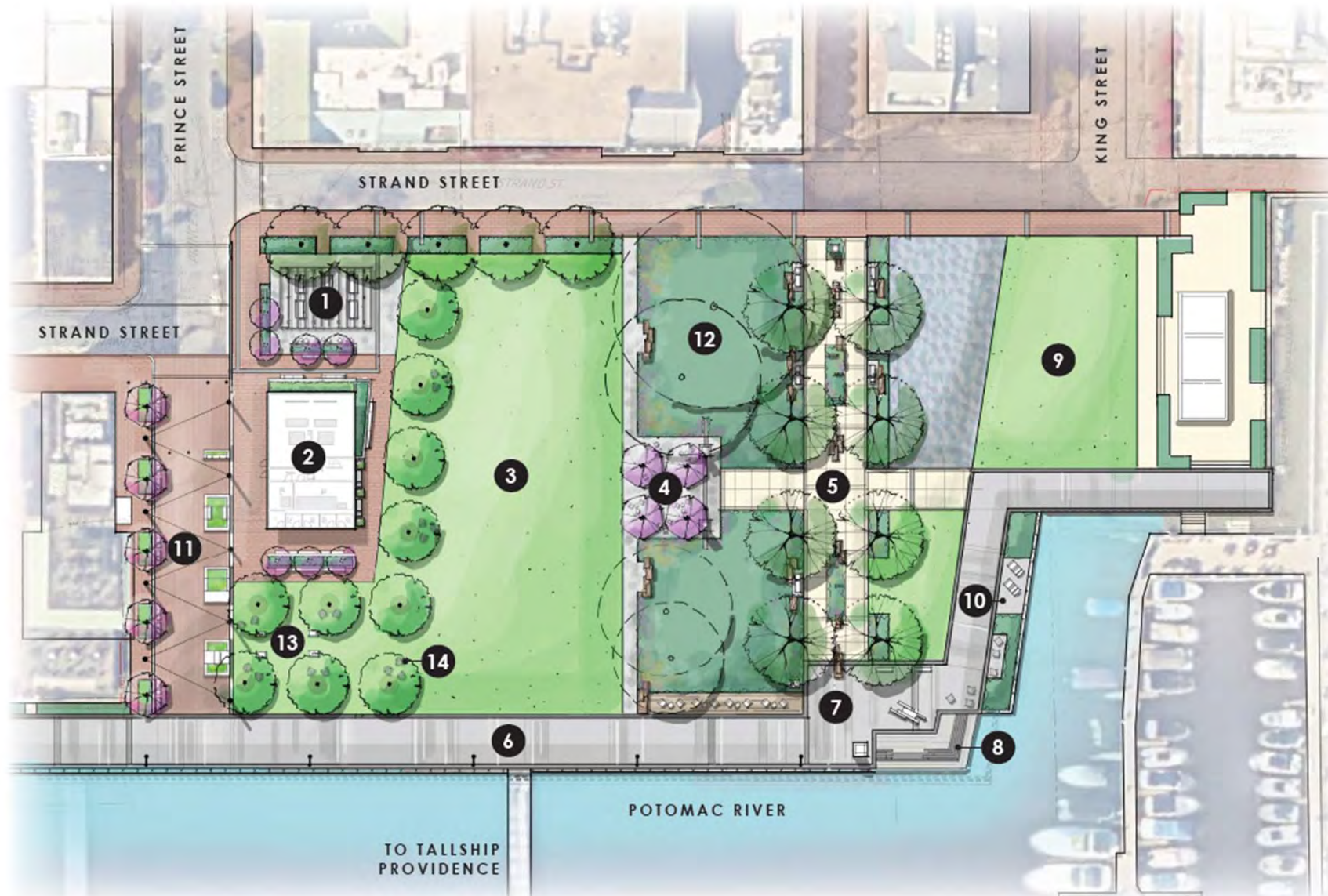
- 1 Raised bioretention planter
- 2 In-ground planters + benches
- 3 Poles with catenary lighting
- 4 Movable planters with seating
- 5 Pump Station
- 6 Covered plaza / venue space with movable tables and chairs
- 7 Movable Connect Four game or similar with movable cube seating
- 8 Hammocks / swing attached to canopy (removable for events)
- 9 Ping pong tables
- 10 Specialty double-sided promenade seating







# Alternate 1 – Remove East Plaza



The new site plan leverages the pump station's smaller footprint to maximize landscape, lawn, and canopy. The pump station recedes to the background behind a grid of trees. Adirondack chairs, cornholes, and other movable games can be integrated under the tree canopy if desired.

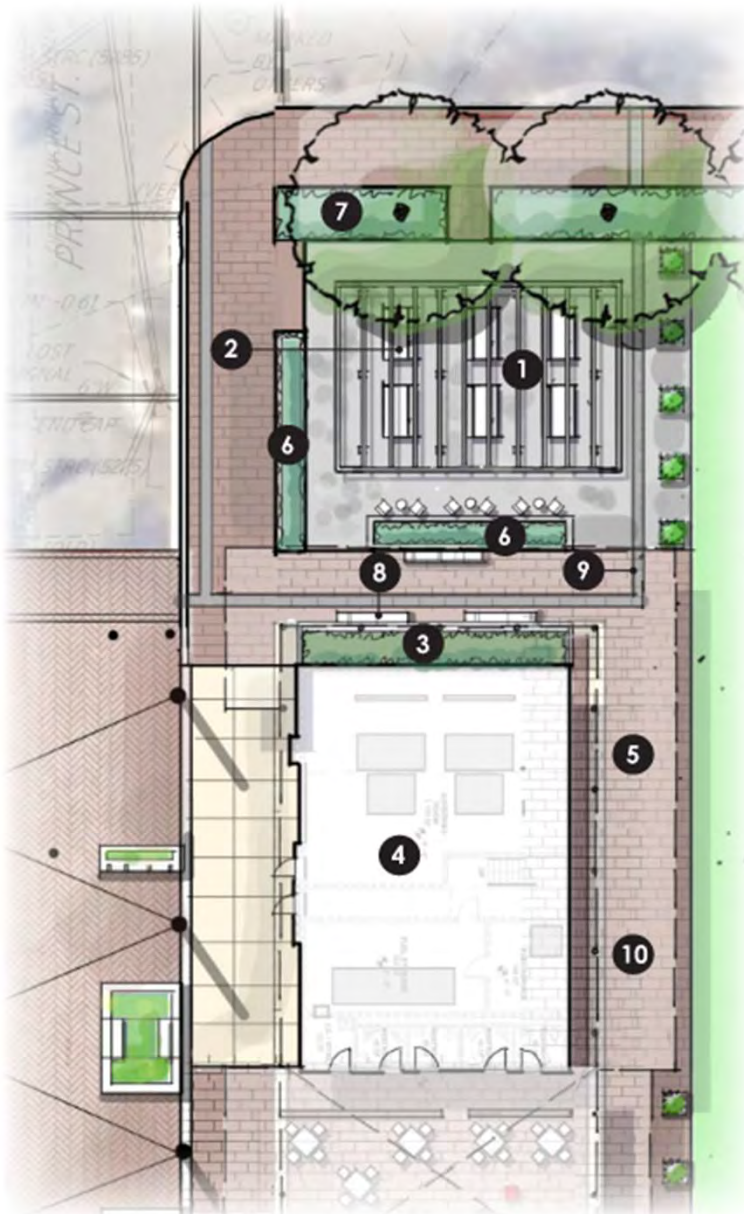
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- 12 Preserved existing trees (understory to be determined with arborist)
- 13 Optional cornholes and/or other movable games
- 14 Optional Adirondack chairs



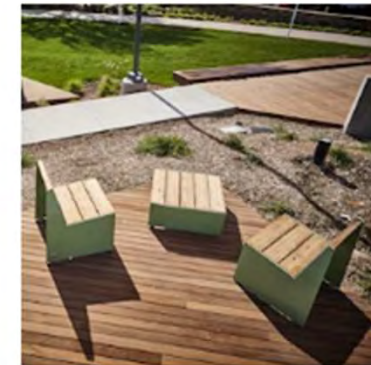


# Strand Street West Plaza



## LEGEND:

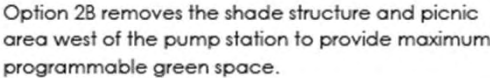
- 1 Trellis with catenary lighting: columns to align with pump station building canopy grid
- 2 Picnic tables
- 3 Raised bioretention planter
- 4 Pump station
- 5 Pump station canopy
- 6 Raised planting areas
- 7 Planting areas at grade
- 8 Seating along planter walls
- 9 Historic 1845 shoreline banding
- 10 Stage / performance area







# Alternate 2 – Remove West Plaza Max Lawn Space



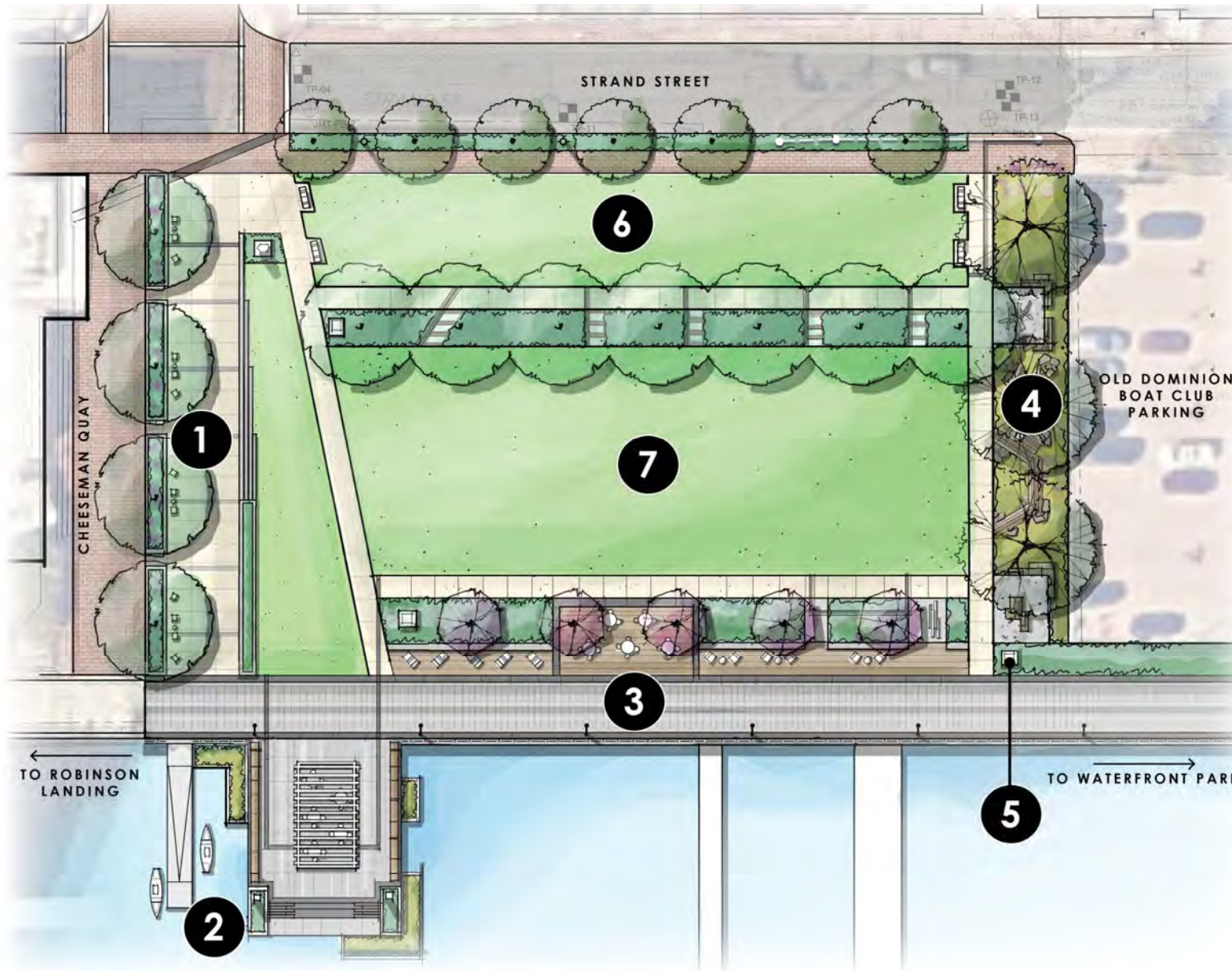
**LEGEND:**

- 1 Passive green space or programmable game lawn with cornholes, seat walls, and sliding wood crate seating
- 2 Pump station
- 3 Multi-use lawn
- 4 Arrival plaza with movable seating
- 5 Wales Alley River Gateway
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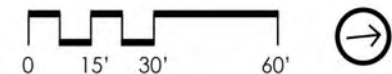
# Site Plan: Feedback Requested



In keeping with the **Alexandria Small Area Waterfront Plan**, art, history, and storytelling will be woven throughout the park's function zones to create **unique and memorable experiences** unique to Alexandria, Virginia.

## LEGEND:

- 1 **Shipbuilding/River Gateway walk** and lawn with feature stairs and relocated Shipbuilder statue
- 2 **Wharf** with signature shade structure, waterfront steps, floating wetlands, and kayak launch
- 3 **20' Promenade** with seating and plaza
- 4 **Bioretention** with boardwalk and children's play/learning nodes
- 5 **African American Heritage Trail** signage
- 6 Future **Rosenbaum bequest garden** location
- 7 Grand event lawn







# Construction Considerations and Planning

- ▶ Avoid & Minimize Impacts (where feasible)
  - ▶ Sidewalks remain open
  - ▶ Thoughtful phasing of work
  - ▶ Maximum Pedestrian & Delivery Access
  - ▶ Parking Mitigation
  - ▶ Reduce construction duration (multi-shift work)
- ▶ Direct Collaboration & Communication:
  - ▶ Business-Focused Stakeholder Group
  - ▶ Business Survey and Data Collection
  - ▶ Direct outreach to individual businesses
  - ▶ Clear communication as planning continues
- ▶ Evaluate options for phased park closure/opening
- ▶ Transit Planning/Rerouting Options
  - ▶ Before / During / Post Construction





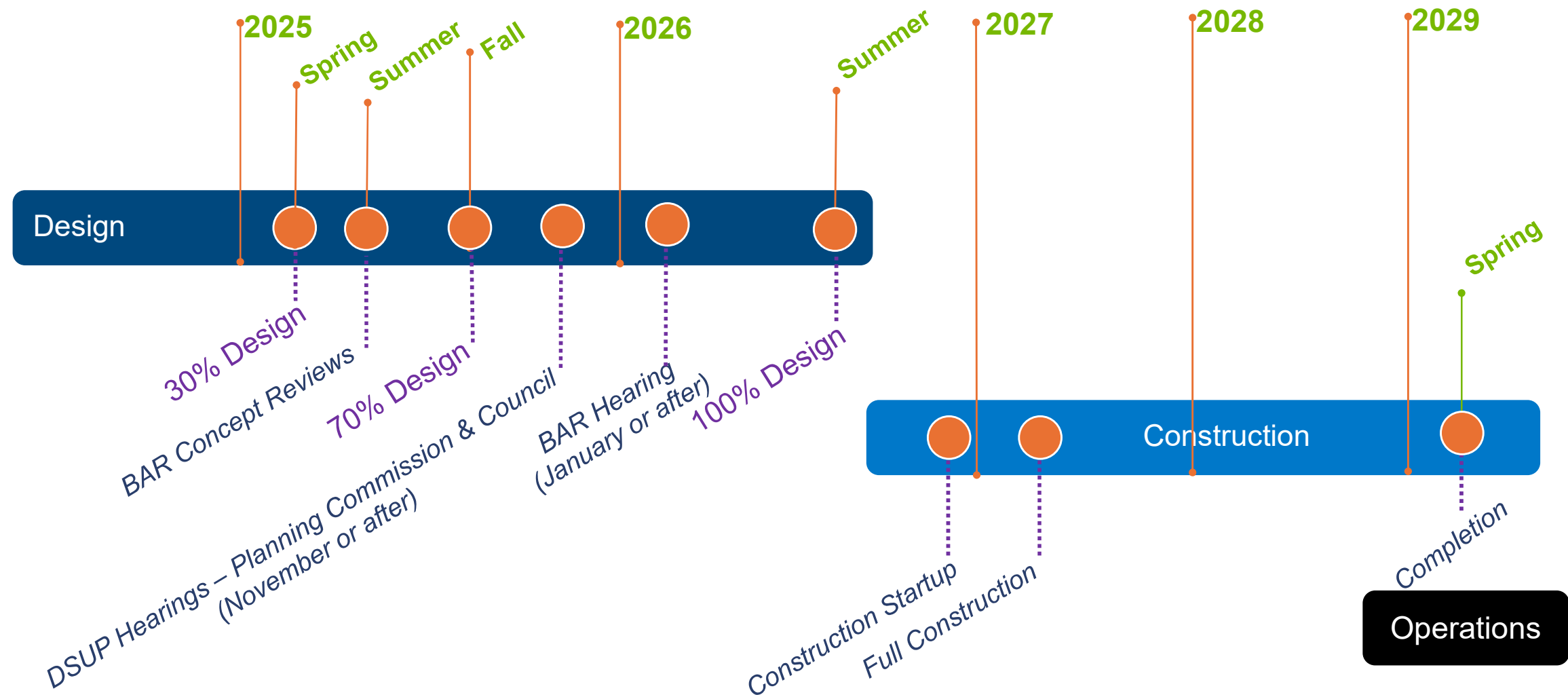
# Other ideas considered?

- ▶ Green Infrastructure
- ▶ Pervious Pavement (brick pavers – streets and sidewalks)
- ▶ Bioretention & Raingardens
- ▶ Stormwater Ponds in Parks
- ▶ Underground Storage (stormwater)
- ▶ Multiple pump stations
- ▶ Allow parks & streets to flood / Floodproof Buildings
- ▶ Deep dredging of Potomac River
- ▶ Flood barriers without a pump station
- ▶ Levee system (Army Corps)





# Anticipated Schedule







# Project Information & Updates

▶ Participate in upcoming Business-Owner Stakeholder Meetings

▶ <https://www.alexandriava.gov/Waterfront>

▶ Email Project Manager: [Matthew.Landes@AlexandriaVA.gov](mailto:Matthew.Landes@AlexandriaVA.gov)

▶ Signup for Updates and Newsletter:



▶ Signup for Alexandria eNews:



▶ Go To Planning & Zoning category

▶ Select “Waterfront Planning”



# Reference Slides





# Alternative Pump Station Location Evaluation

- 1 110 S Union
- 2 1 Prince Street
- 3 2&6 Prince Street
- 4 Point Lumley Park
- 5 Foot of Prince Street



(locations suggested for evaluation by stakeholders)





# 1 Prince Street Considerations

## ▶ **Additional \$25M – \$45M of new funding.**

- ▶ Estimated initial range of costs & risks associated with acquisition, design/re-permitting.
- ▶ Factors increased costs of construction and inflation due to delay.
- ▶ More in-depth assessment would be warranted to establish a formal and specific budget request.

## ▶ **Acceptance of Longer Implementation Schedule: 2 – 4 years**

- ▶ For obtaining new funding, acquisition, redesign, environmental/NEPA compliance, re-permitting
- ▶ Potential to increase construction duration.

## ▶ **Acceptance of increased community and business impacts:**

- ▶ Increased construction footprint anticipated in Right of Way
- ▶ Longer duration of community impacts
  - ▶ S. Union Street from King to Prince (5-8 months ). This segment is not currently impacted by current design.
  - ▶ Closures on Strand Street and unit block of Prince Street (8-18 months) for safe construction of the station and project.

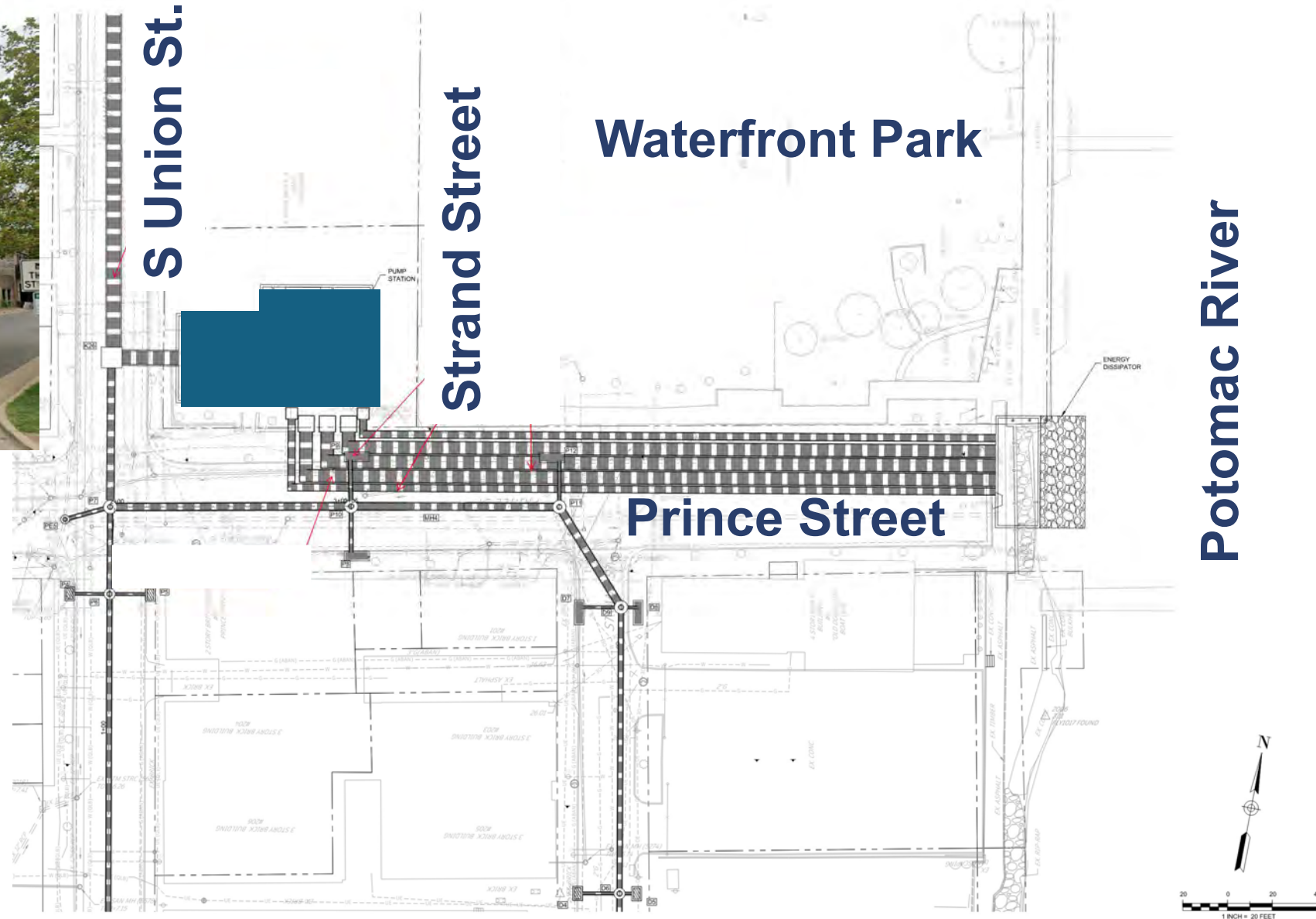


# Alternative Site – 1 Prince

Conceptual Draft, Deliberative, Pre-Decisional



- Likely technically Feasible:
  - Constraints / Increased Costs & Risks-
    - Restricted laydown & staging
    - Risks to adjacent structures
    - Limited crane swing/access space
    - Potential damage / foundation risks
    - Sewer conflicts Union and Strand
  - Increased community impacts:
    - Longer closure of S Union and Prince





# Stormwater Infrastructure Plan

