



# TREASURE ISLAND AND YERBA BUENA ISLAND

Treasure Island Development Authority  
BCDC Commission Presentation

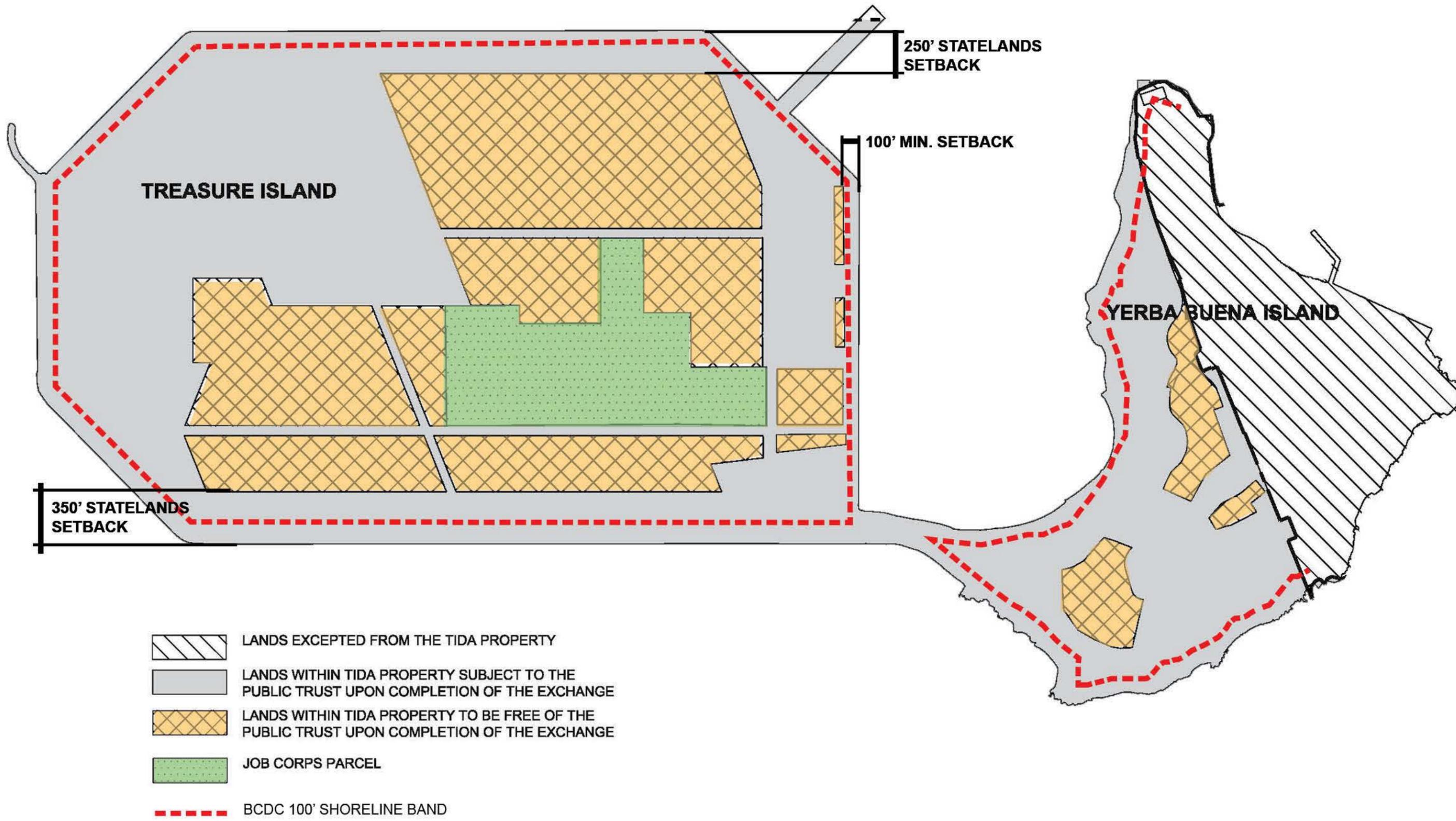
April 2, 2015

# AGENDA

- **PROJECT PHASING AND PUBLIC ACCESS (TIDA)**
- **GEOTECHNICAL IMPROVEMENTS IN MAJOR PHASE 1 (ENGE0)**
- **SEA LEVEL RISE STRATEGIES AND SHORELINE IMPROVEMENTS (Moffatt & Nichol)**

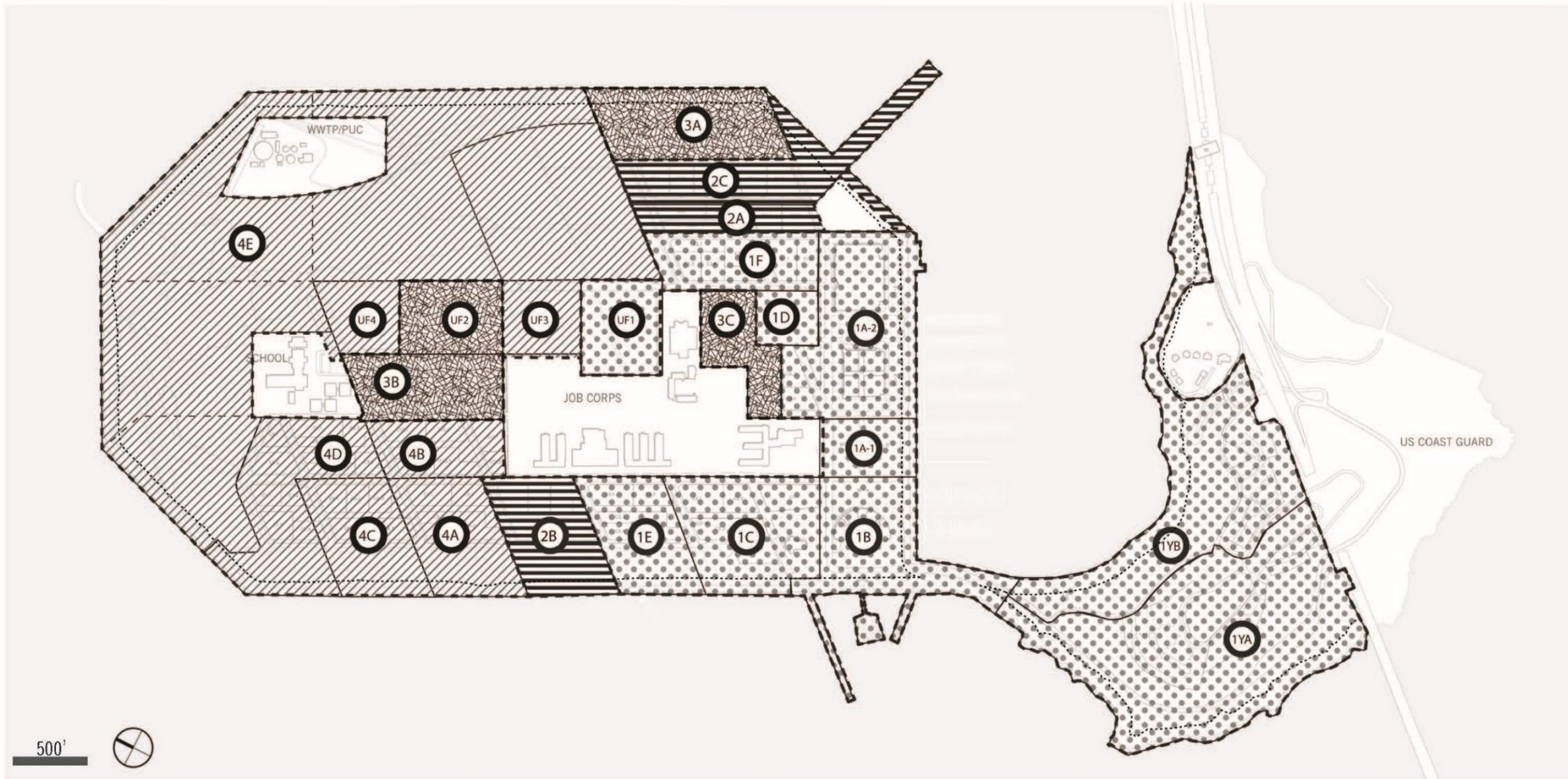
# SCHEDULE

- January 22, 2015 ECRB Presentation
- February 9, 2015 DRB Sixth Review
- **April 2, 2015** **BCDC Commission: Informational Presentation**
- July-August 2015 BCDC Commission: Presentation for Application
- Aug-Sept 2015 BCDC Commission: For Major Permit Approval
- Dec 2014- Sept 2015 Other Agency Approvals
- Oct 2015-Jan 2016 Sub-Phase 1 – Final Improvement Plan Approvals
- Feb 2016 Construction Start





- MAJOR PHASE YBI
- MAJOR PHASE 1
- MAJOR PHASE 2
- MAJOR PHASE 3
- MAJOR PHASE 4



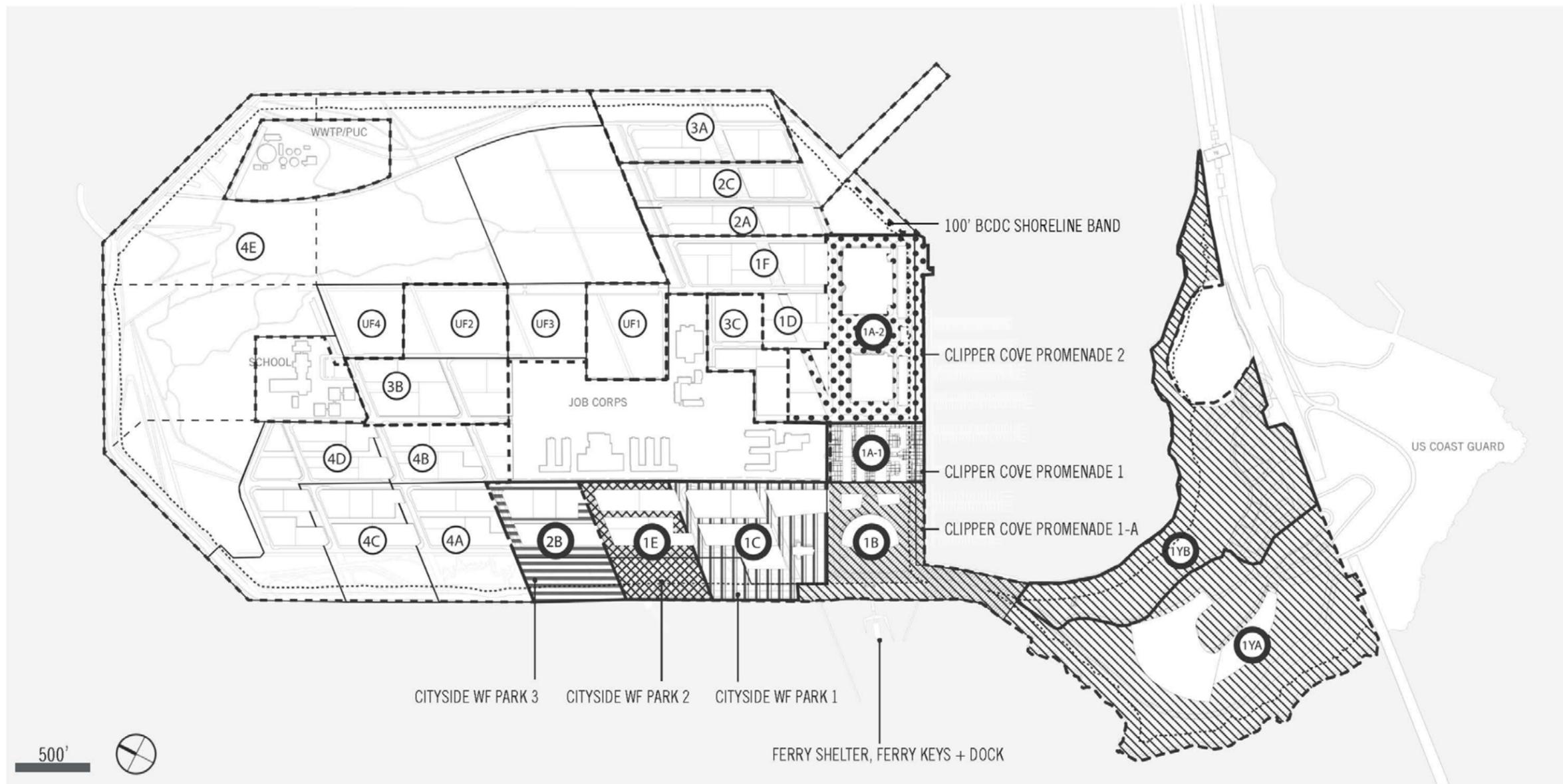
LEGEND Phasing Overview

-  MAJOR PHASE 1 (MP 1)
-  MAJOR PHASE 2 (MP 2)
-  MAJOR PHASE 3 (MP 3)
-  MAJOR PHASE 4 (MP 4)

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**Treasure and Yerba Buena Islands**

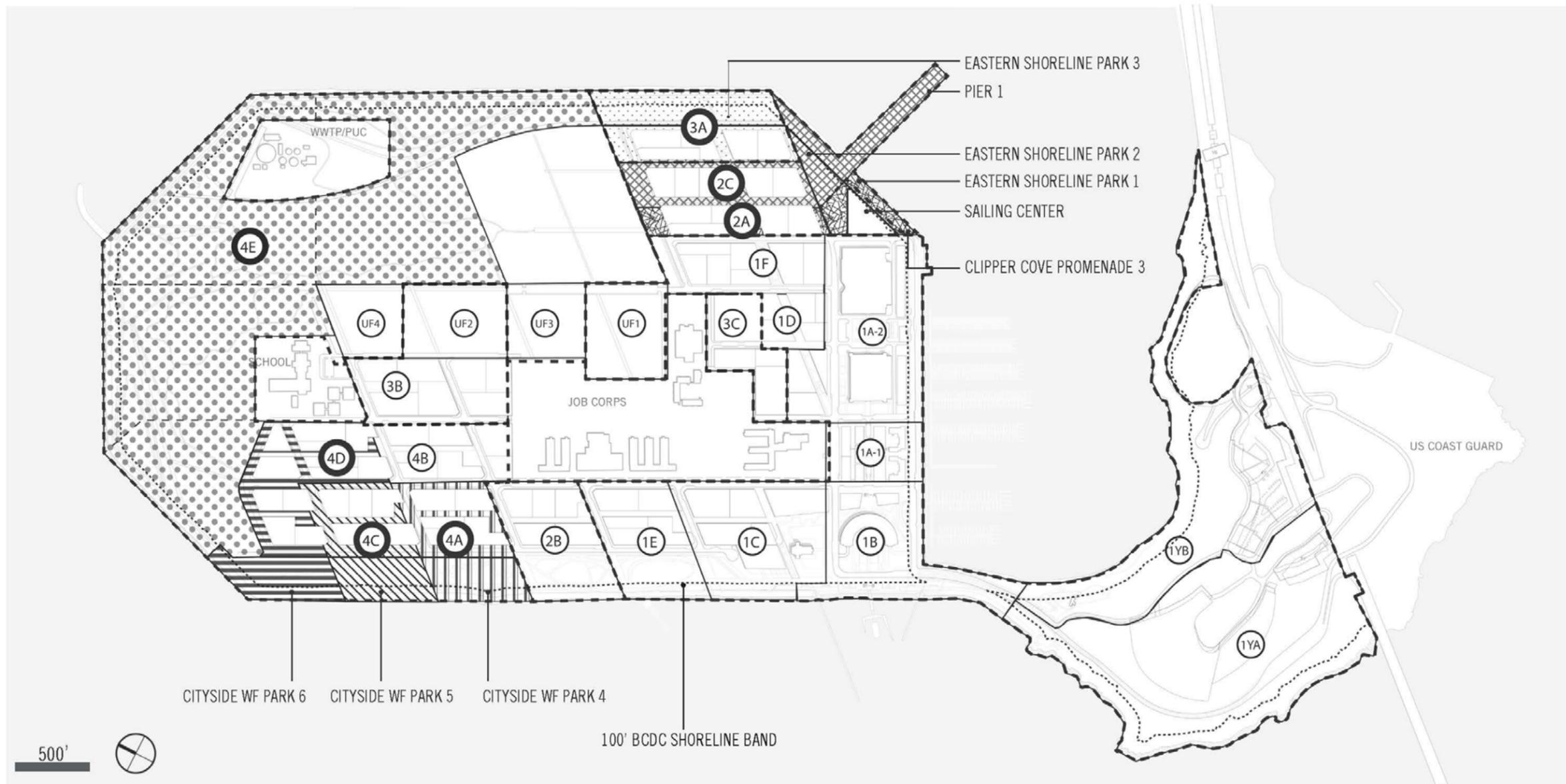
Phasing Overview  
Exhibit E.1



**LEGEND** Phasing MP 1 : Public Access Improvements

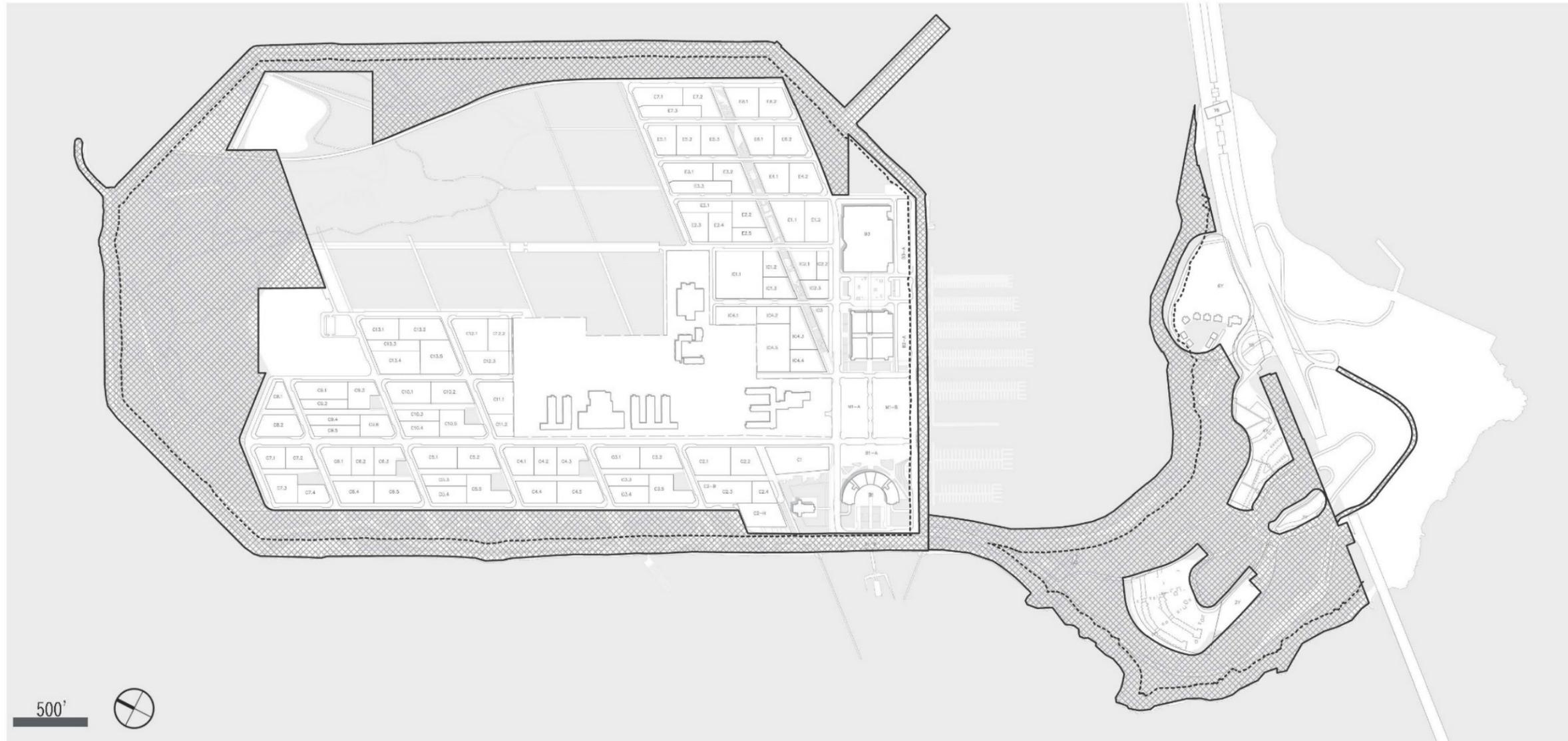
-  1YB, 1YA, and Clipper Cove Promenade 1-A provided in conjunction with infrastructure improvements on Block 1B
-  Cityside Waterfront Park 1 provided in conjunction with infrastructure improvements on Block 1C
-  Cityside Waterfront Park 2 provided in conjunction with infrastructure improvements on Block 1E
-  Cityside Waterfront Park 3 provided in conjunction with infrastructure improvements on Block 2B
-  Clipper Cove Promenade 1 provided in conjunction with infrastructure improvements on Block 1A-1
-  Clipper Cove Promenade 2 provided in conjunction with infrastructure improvements on Block 1A-2
- No Shoreside public access improvements associated with Block 1D, 1F, 3B, 3C, 4B, UF-1, UF-2, UF-3, UF-4

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**LEGEND** Phasing MP 2-4 : Public Access Improvements

- 
 Clipper Cove Promenade 3, Eastern Shoreline Park 1, and Sailing Center Pad provided in conjunction with infrastructure improvements on Block 2A, Ferry Shelter Structure, Ferry Keys, Pier, Gangway and Dock provided in conjunction with 2A
- 
 Eastern Shoreline Park 2 and Pier 1 provided in conjunction with infrastructure improvements on Block 2C
- 
 Eastern Shoreline Park 3 provided in conjunction with infrastructure improvements on Block 3A
- 
 Cityside Waterfront Park 4 provided in conjunction with infrastructure improvements on Block 4A
- 
 Cityside Waterfront Park 5 provided in conjunction with infrastructure improvements on Block 4C
- 
 Cityside Waterfront Park 6 provided in conjunction with infrastructure improvements on Block 4D
- 
 Northern Shoreline Park provided in conjunction with infrastructure improvements of adjacent inboard parcels that allow acces to the shore (DISCUSS)
- No Shoreside public access improvements associated with Block 1D, 1F, 3B, 3C, 4B, UF-1, UF-2, UF-3, UF-4



LEGEND

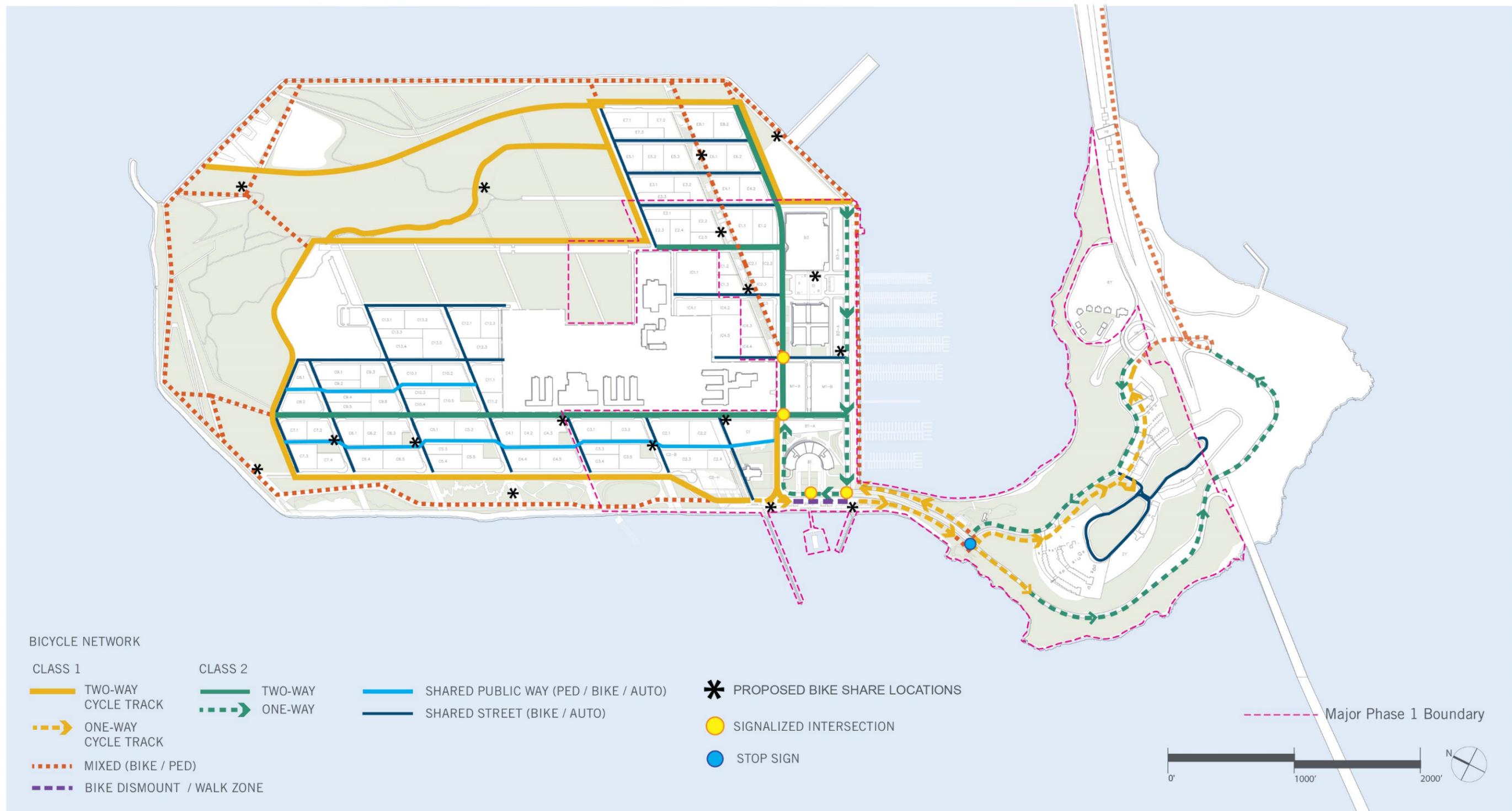
- BCDC 100' SHORELINE BAND
- ▨ DEDICATED PUBLIC ACCESS (APPROXIMATELY 200 ACRES)

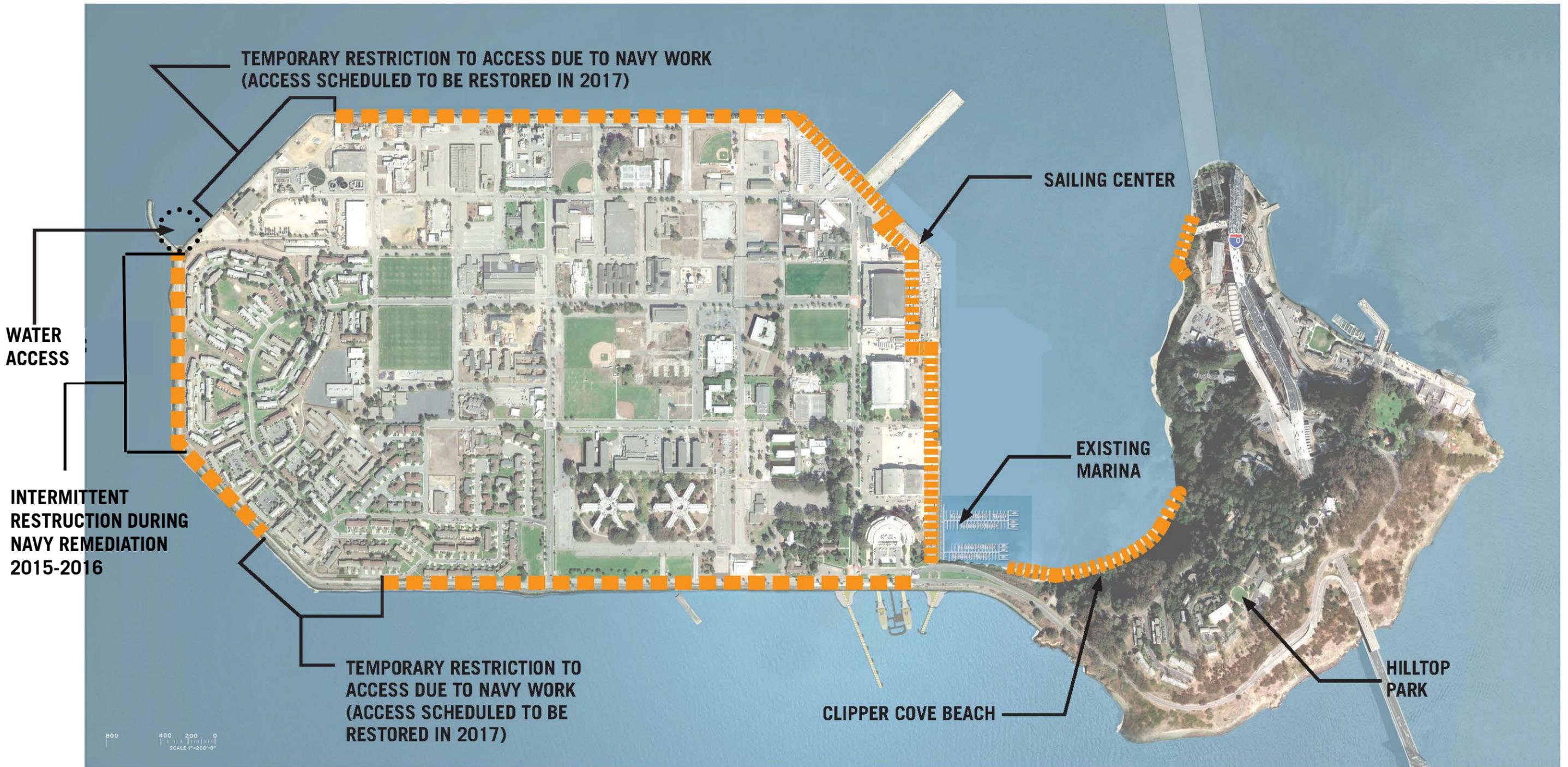
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**Treasure and Yerba Buena Islands**

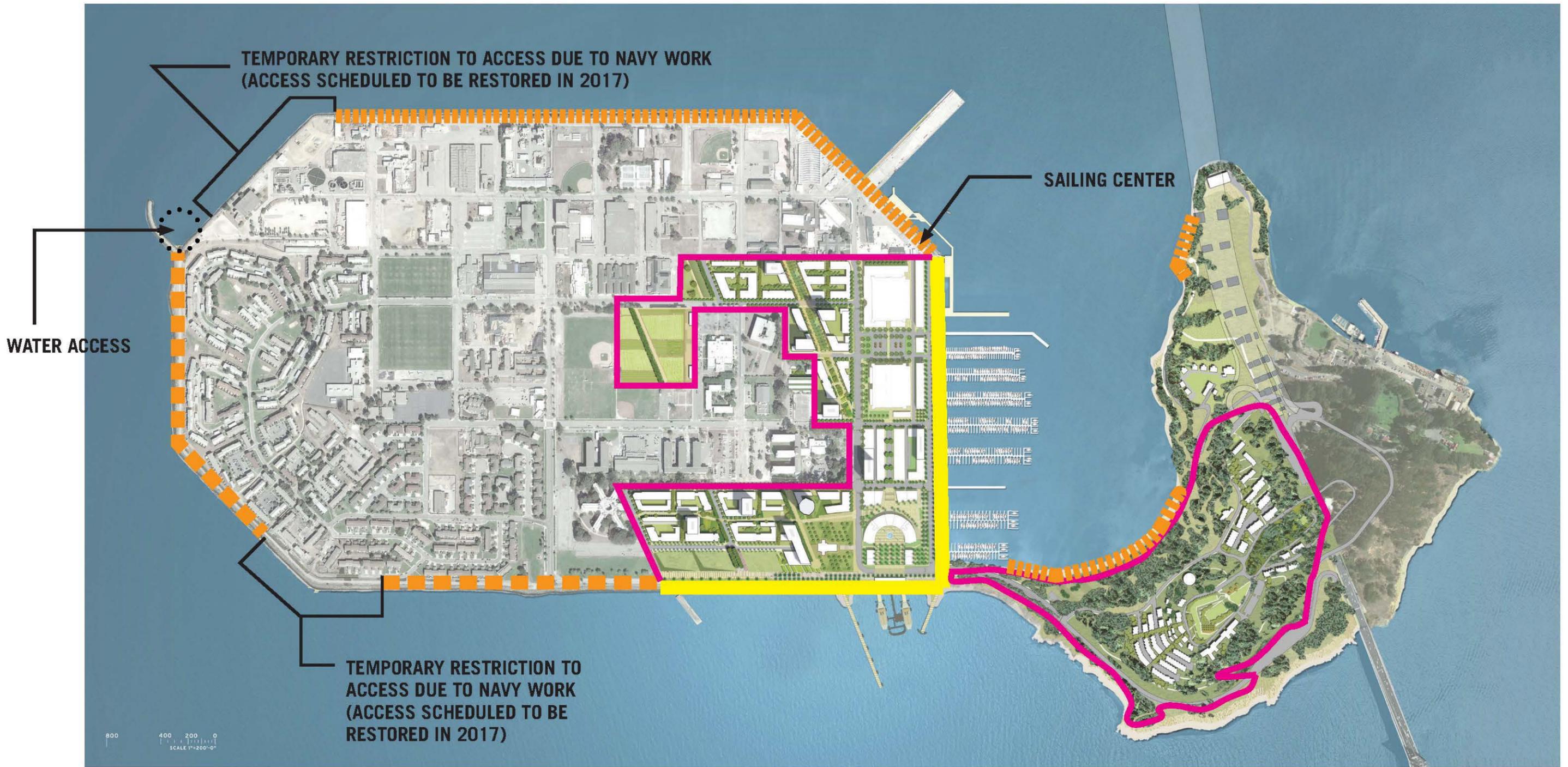
**Dedicated Public Access + Open Space**

Exhibit B





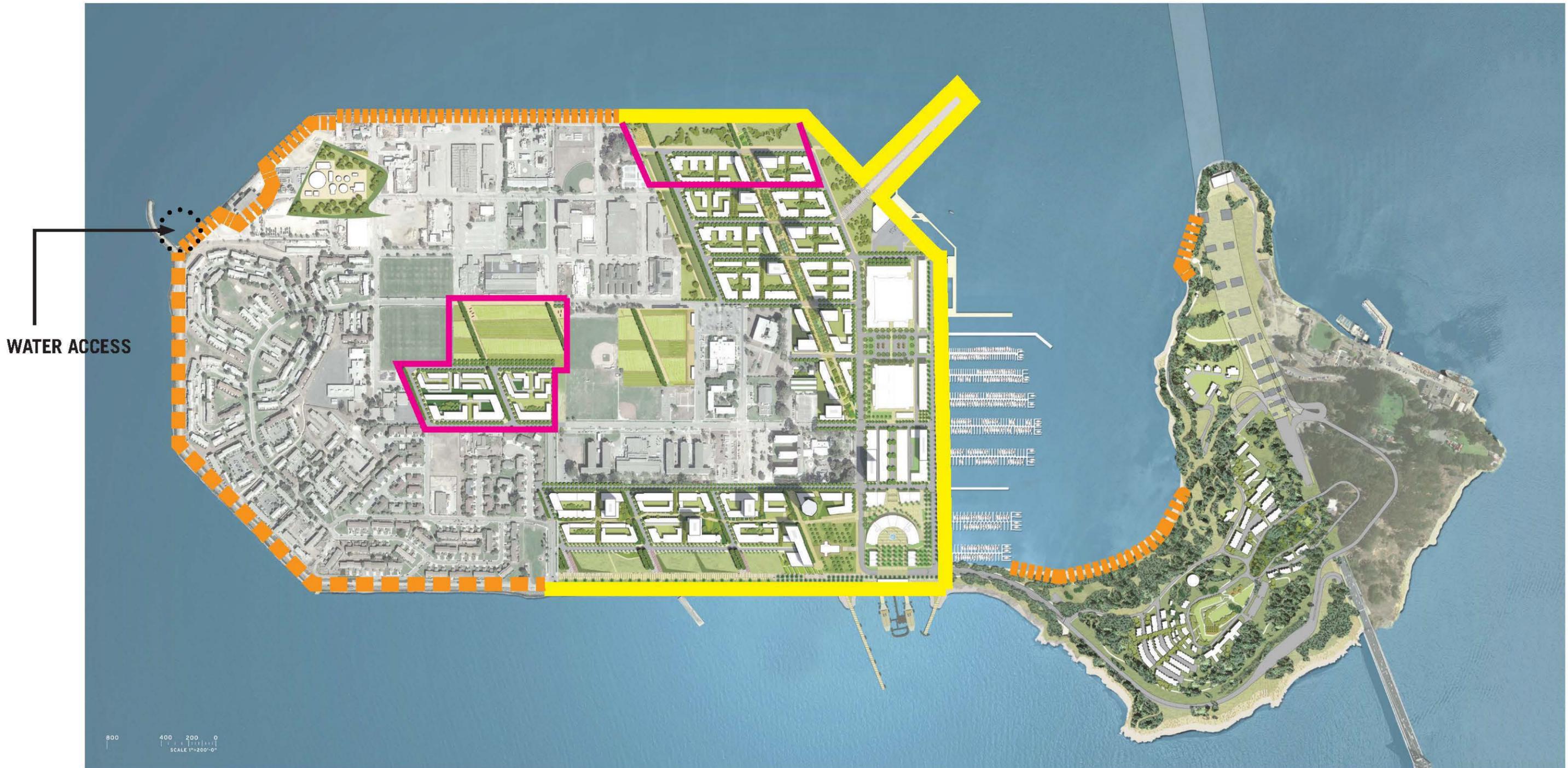
-  SHORELINE ACCESS
-  SHORELINE PATH



- ||||| EXISTING SHORELINE ACCESS
- EXISTING SHORELINE PATH
- IMPROVED SHORELINE ACCESS - PROMENADES
- MAJOR PHASE I



- EXISTING SHORELINE ACCESS**
- EXISTING SHORELINE PATH**
- IMPROVED SHORELINE ACCESS - PROMENADES**
- MAJOR PHASE II**

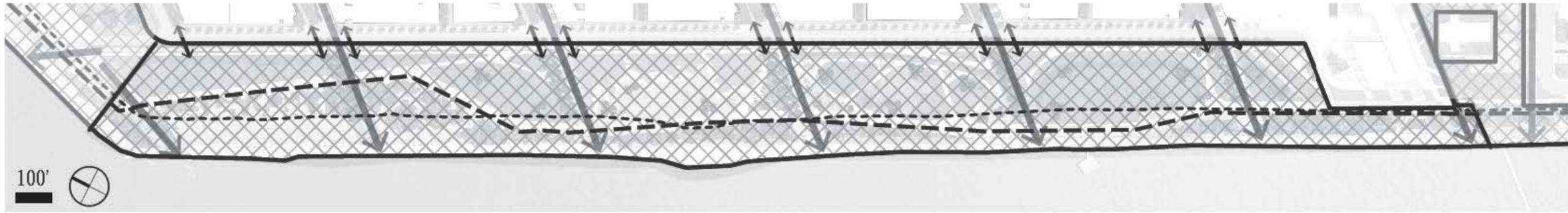


- EXISTING SHORELINE ACCESS
- EXISTING SHORELINE PATH
- IMPROVED SHORELINE ACCESS - PROMENADES
- MAJOR PHASE III



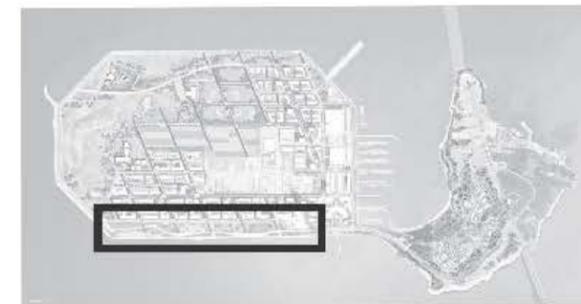
-  EXISTING SHORELINE ACCESS
-  EXISTING SHORELINE PATH
-  IMPROVED SHORELINE ACCESS - PROMENADES
-  ACCESS PATHS THROUGH GRASSLANDS

**DEDICATED PUBLIC ACCESS** ⑤ Cityside Park



**LEGEND**

- 100' BCDC SHORELINE BAND
- . - . - . BAY TRAIL
- ← PEDESTRIAN ACCESS
- ↔ CROSSWALK
- ▨ DEDICATED PUBLIC ACCESS  
(TOTAL AREA: 24.6 ACRES)



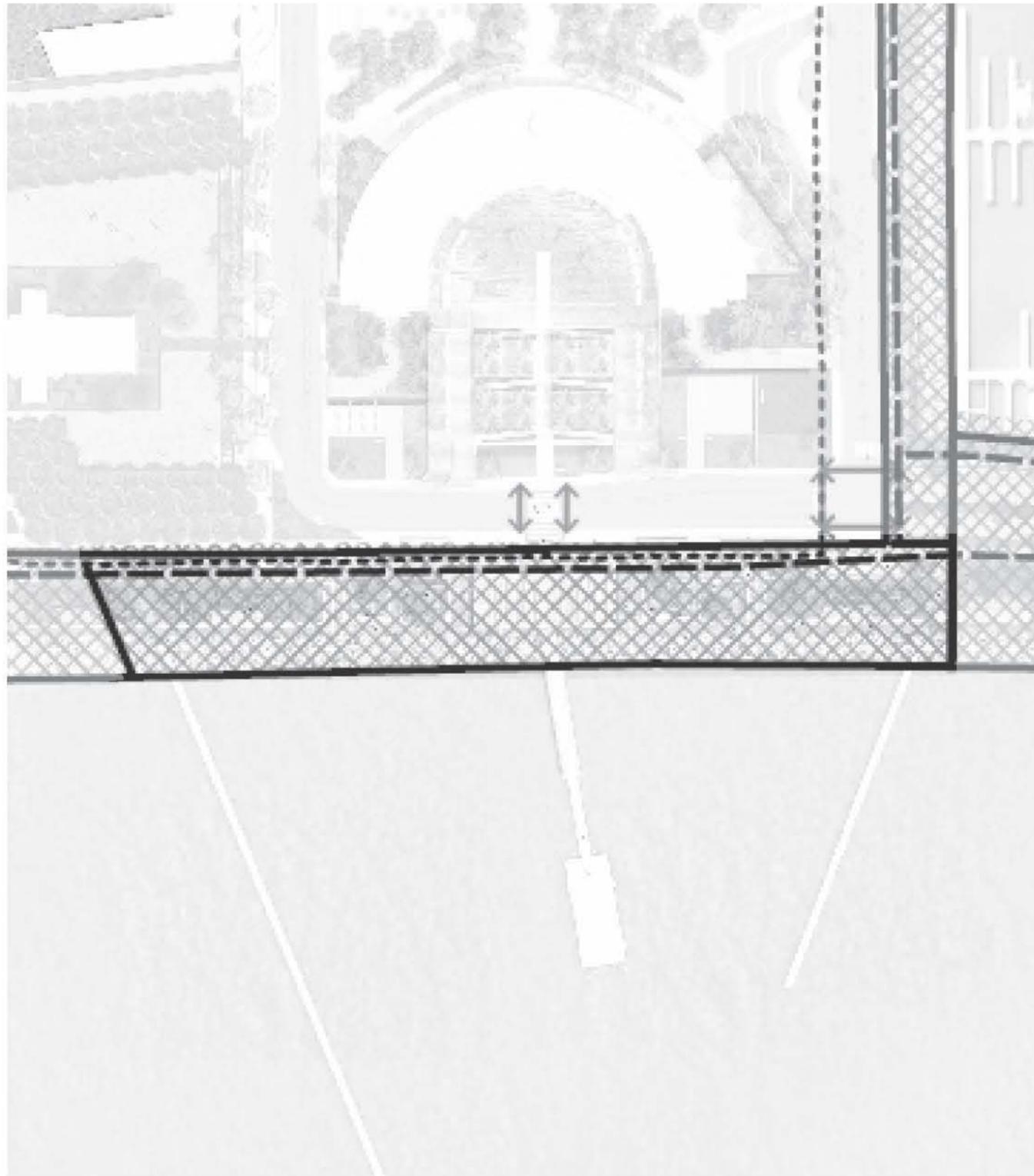
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# CITYSIDE WATERFRONT PARK



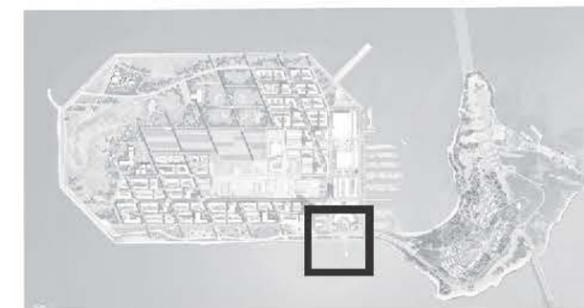


**DEDICATED PUBLIC ACCESS** ① Waterfront Plaza



LEGEND

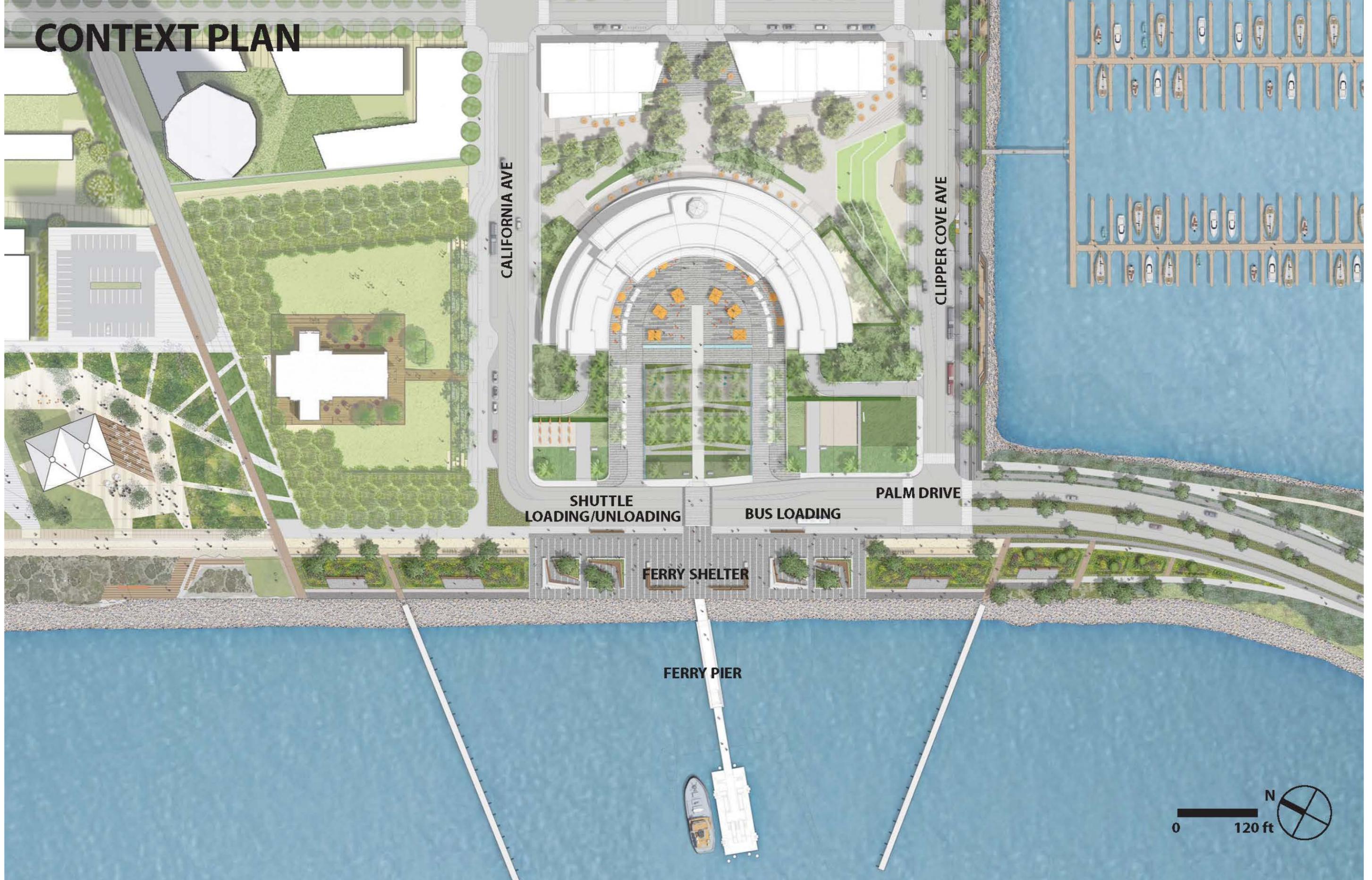
- 100' BCDC SHORELINE BAND
- BAY TRAIL
- ← PEDESTRIAN ACCESS
- ↔ CROSSWALK
- ▨ DEDICATED PUBLIC ACCESS  
(TOTAL AREA: 2 ACRES)

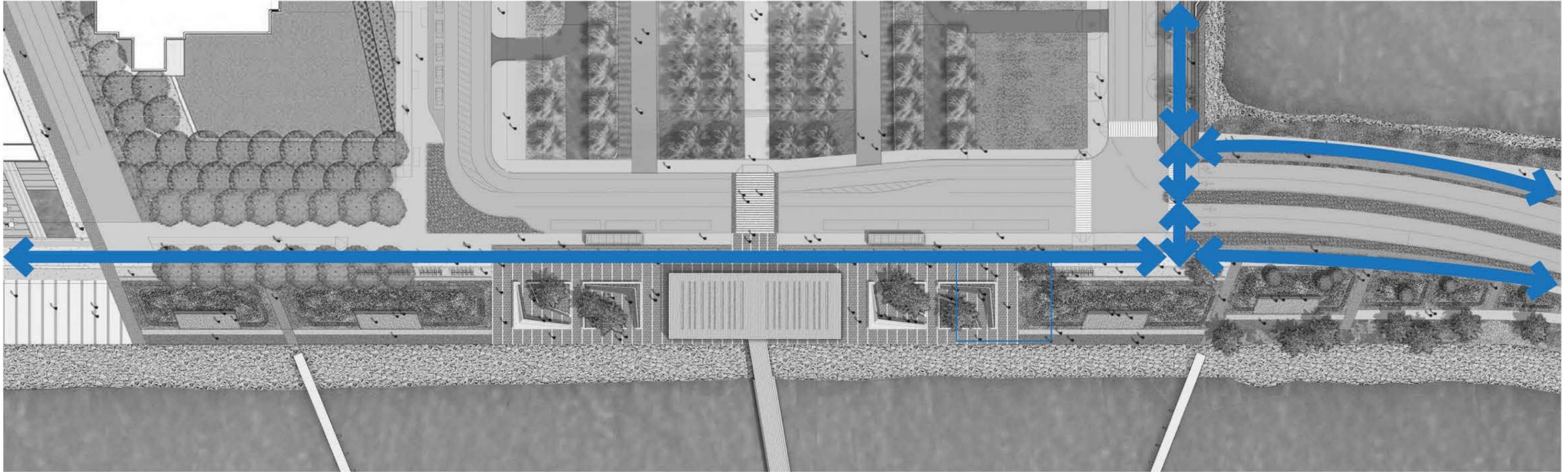


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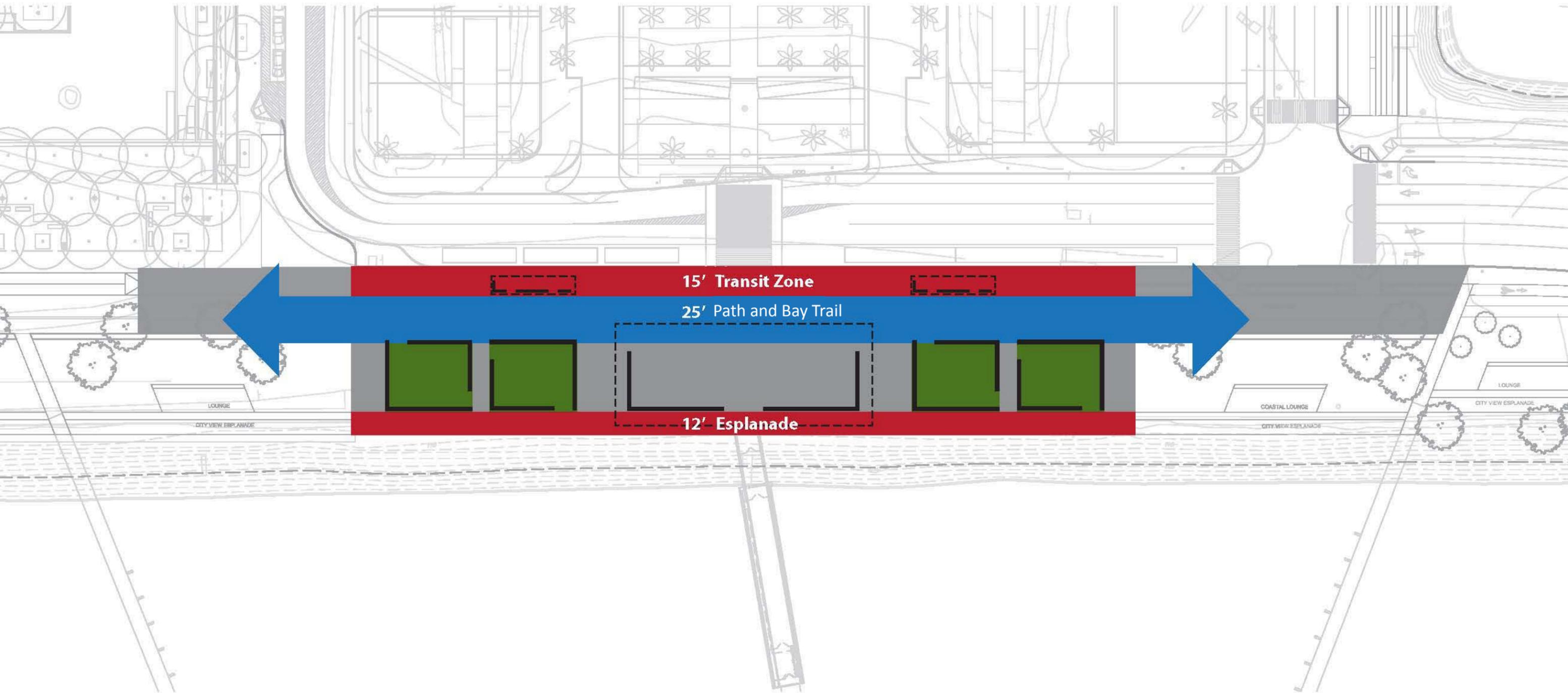
# CONTEXT PLAN

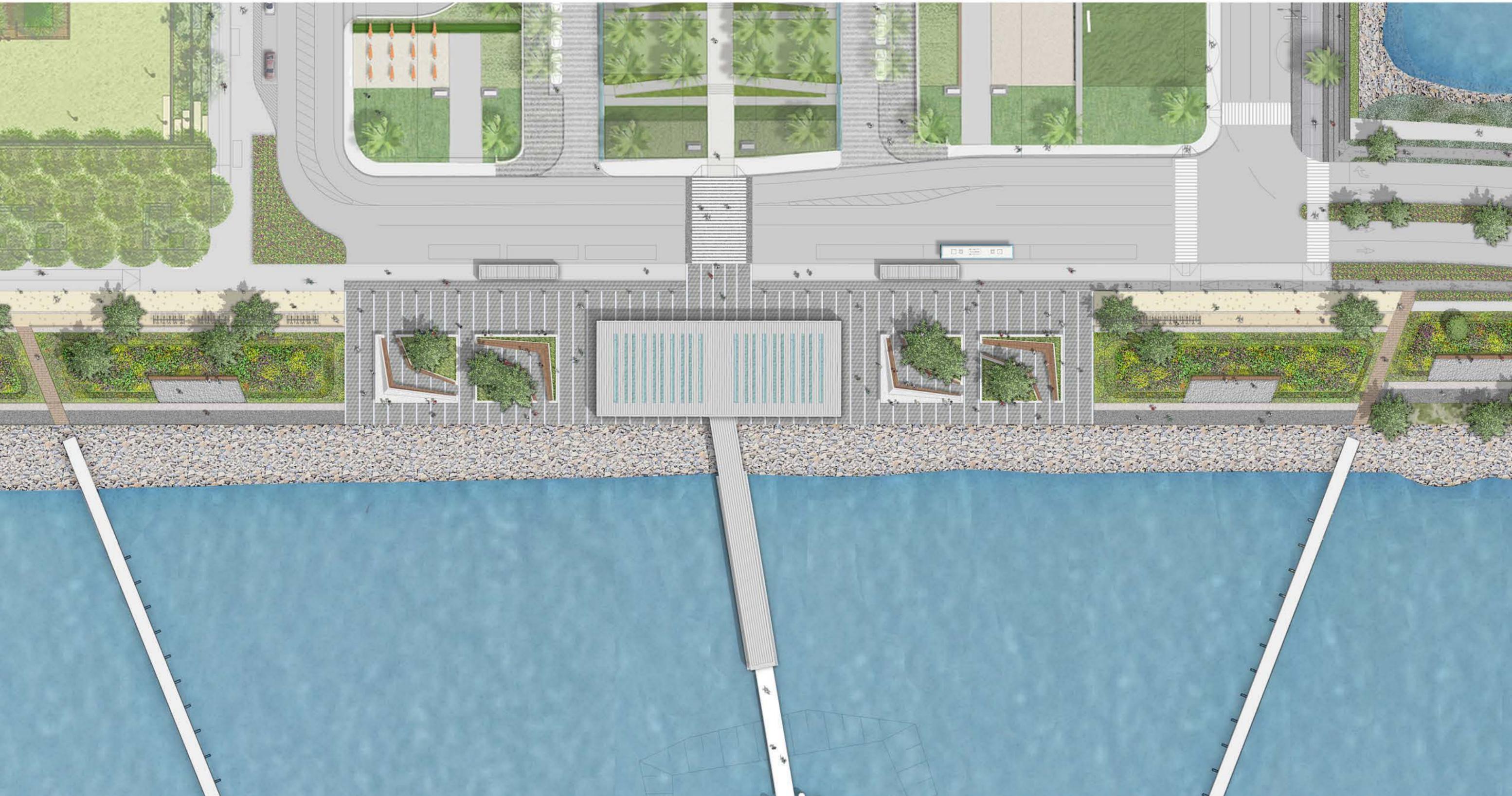




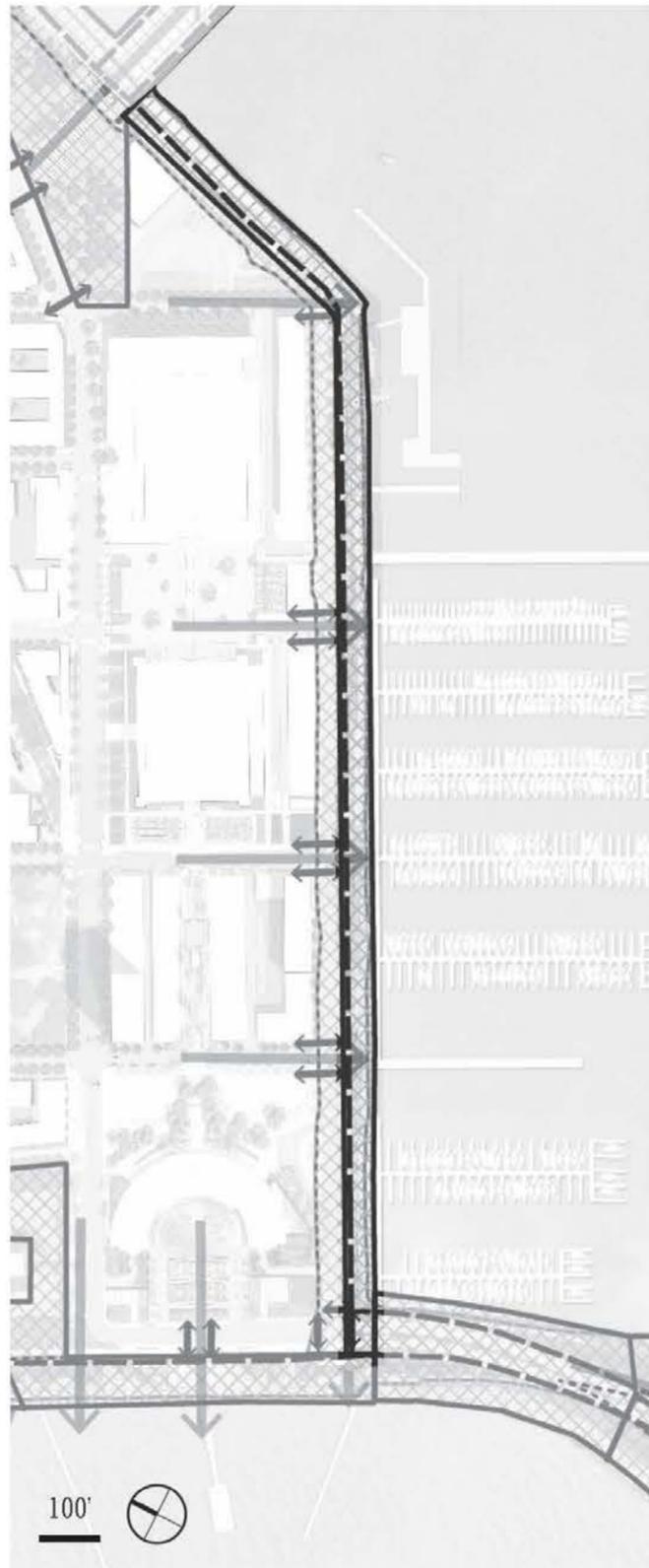
# PROPOSED DESIGN SOLUTION

## Flexible Zone



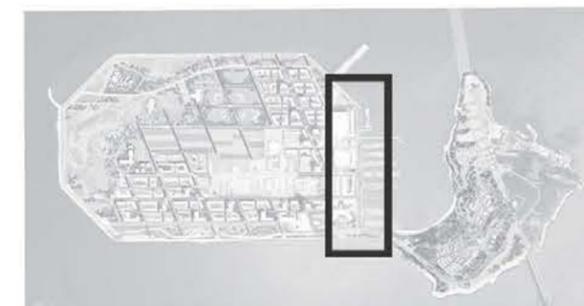


# DEDICATED PUBLIC ACCESS ② Clipper Cove Promenade



## LEGEND

- 100' BCDC SHORELINE BAND
  - - - - - BAY TRAIL
  - ← PEDESTRIAN ACCESS
  - ↔ CROSSWALK
  - ▨ DEDICATED PUBLIC ACCESS
- (TOTAL AREA: 4.9 ACRES)

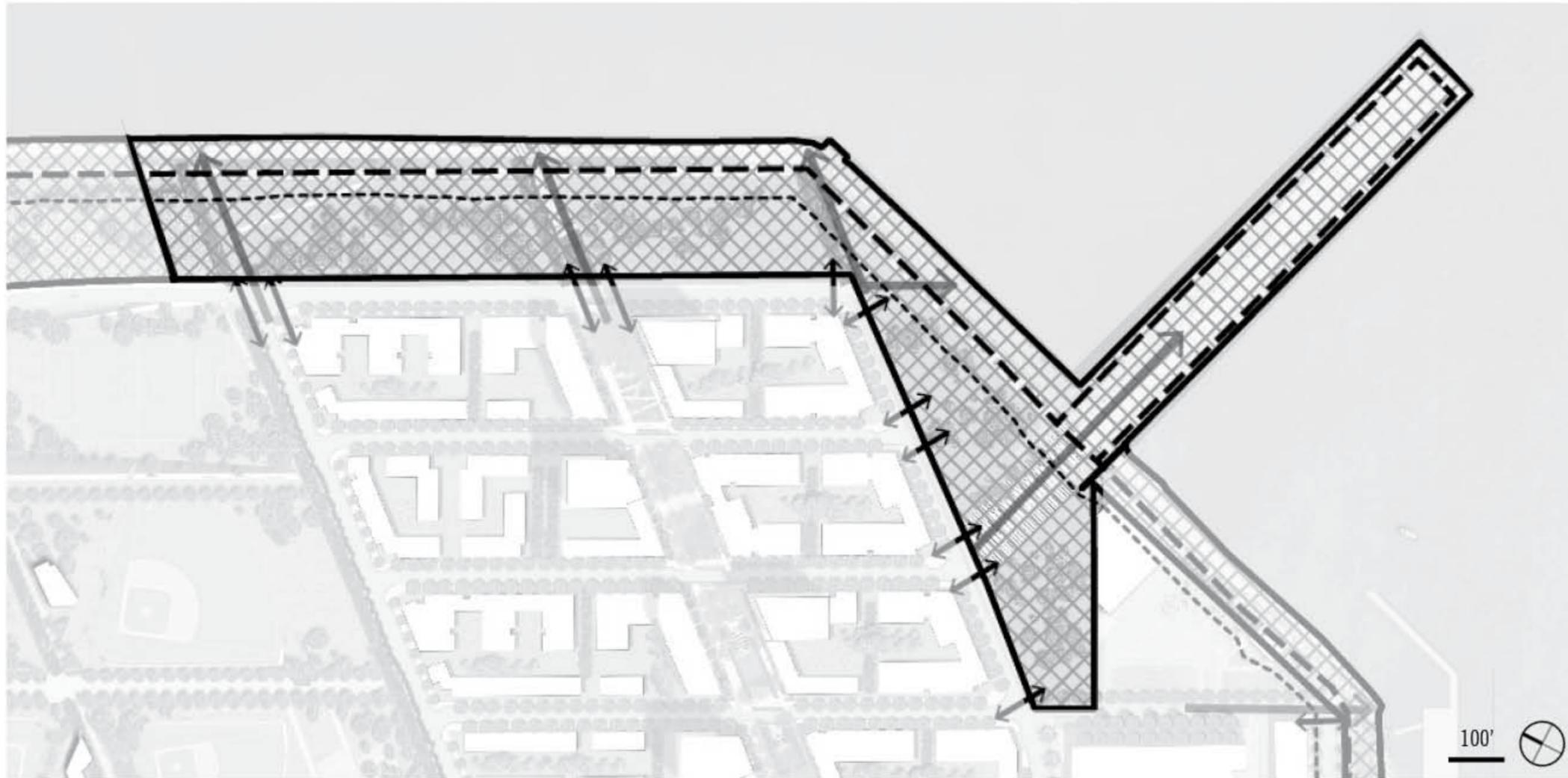


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**DEDICATED PUBLIC ACCESS** ③ Eastern Shoreline Park



**LEGEND**

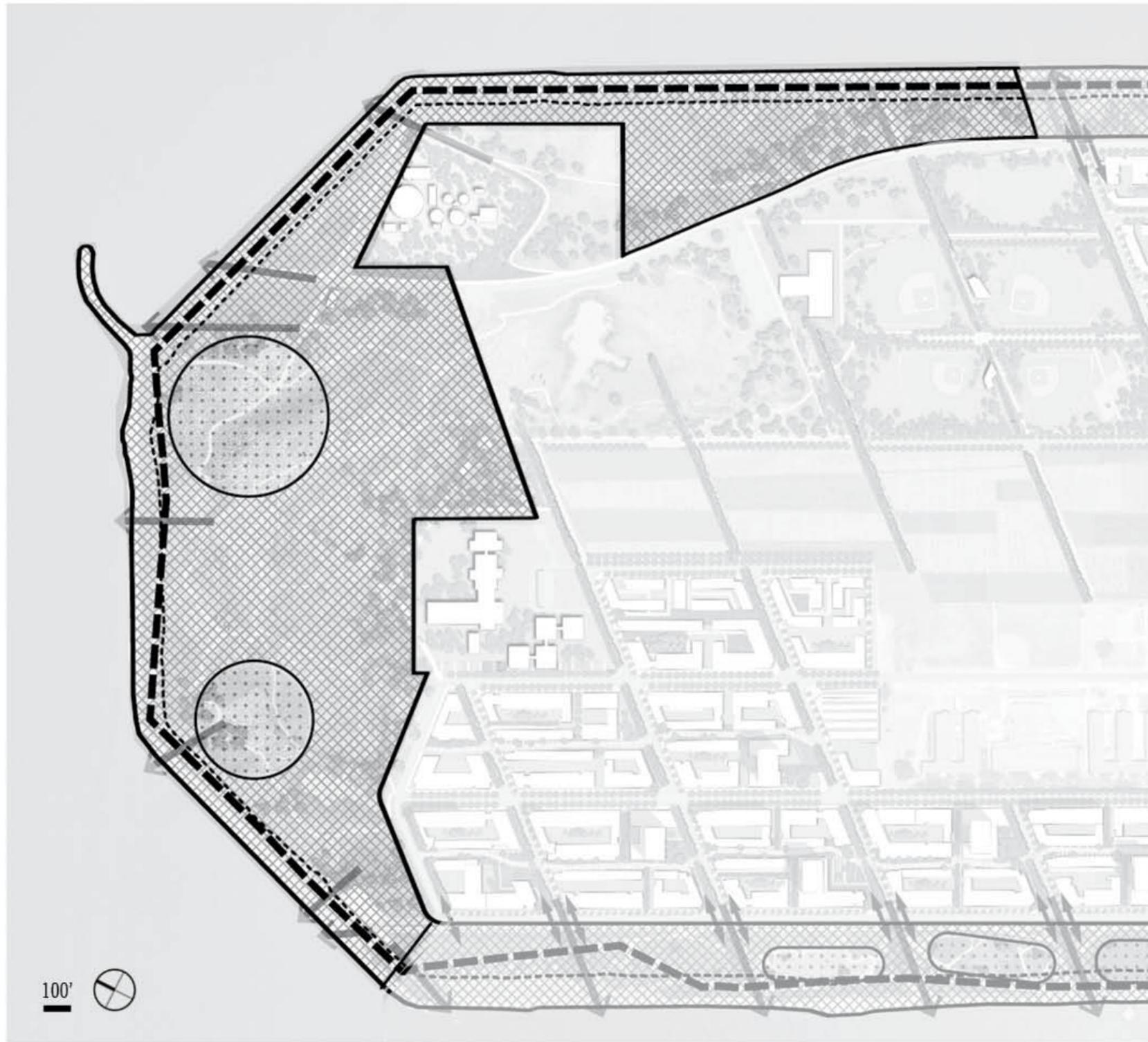
- 100' BCDC SHORELINE BAND
  - BAY TRAIL
  - ← PEDESTRIAN ACCESS
  - ↔ CROSSWALK
  - ▨ DEDICATED PUBLIC ACCESS
- (TOTAL AREA: 15.3 ACRES)



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**DEDICATED PUBLIC ACCESS ④ Northern Shoreline Park**



**LEGEND**

- 100' BCDC SHORELINE BAND
- BAY TRAIL
- ← PEDESTRIAN ACCESS
- ↔ CROSSWALK
- ▨ DEDICATED PUBLIC ACCESS  
(TOTAL AREA W/CAMP GROUND  
AREAS: 83.8 ACRES)
- ▤ CAMP GROUND AREAS

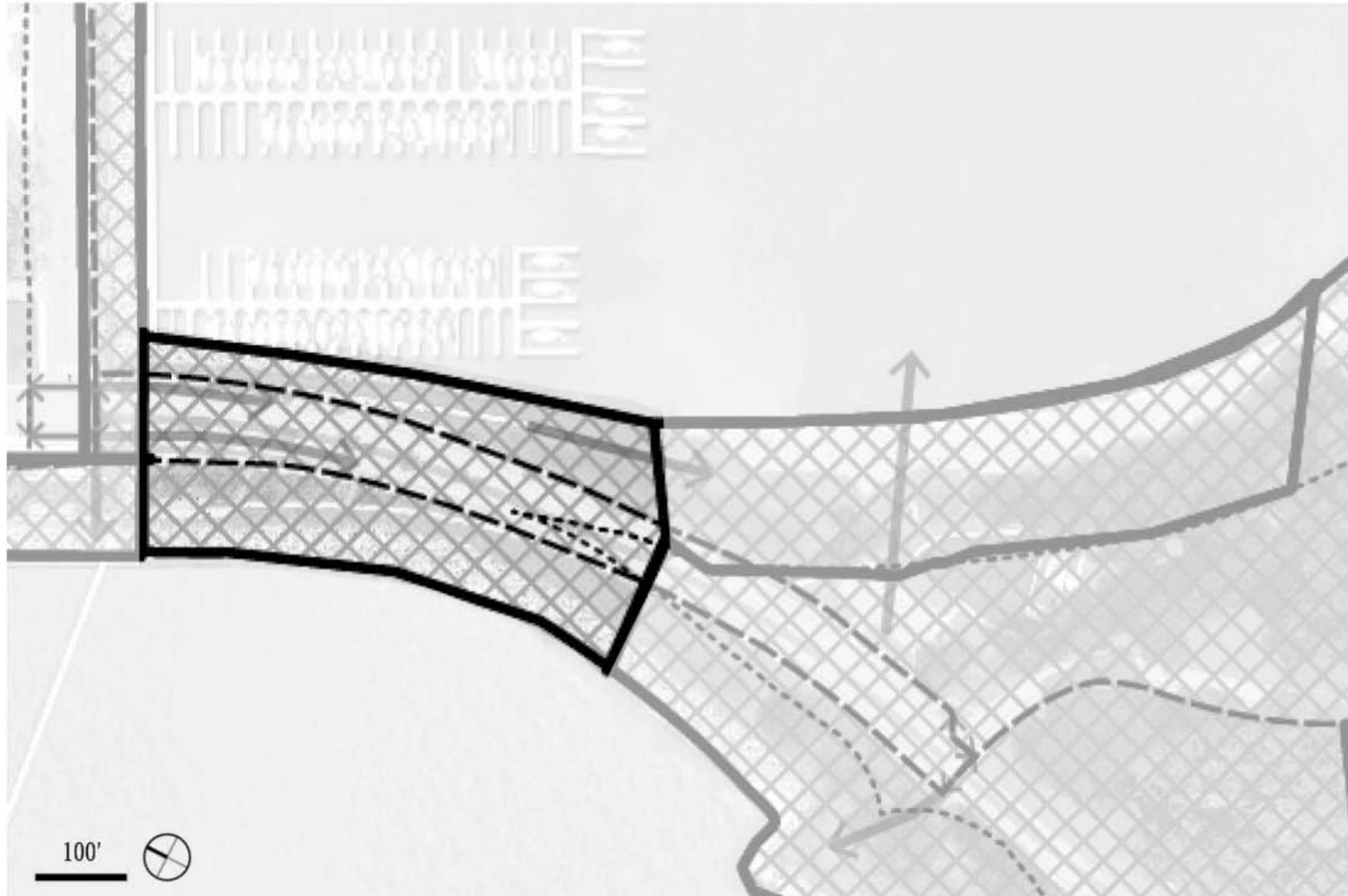
100'



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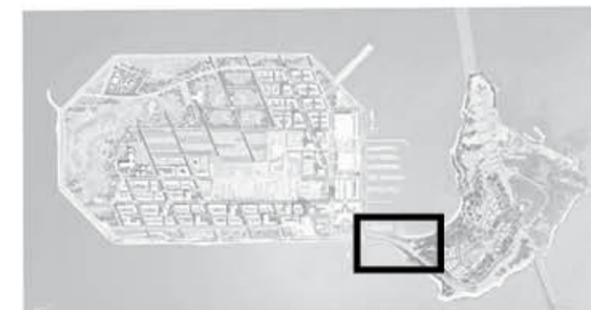


# DEDICATED PUBLIC ACCESS ⑥ Causeway



## LEGEND

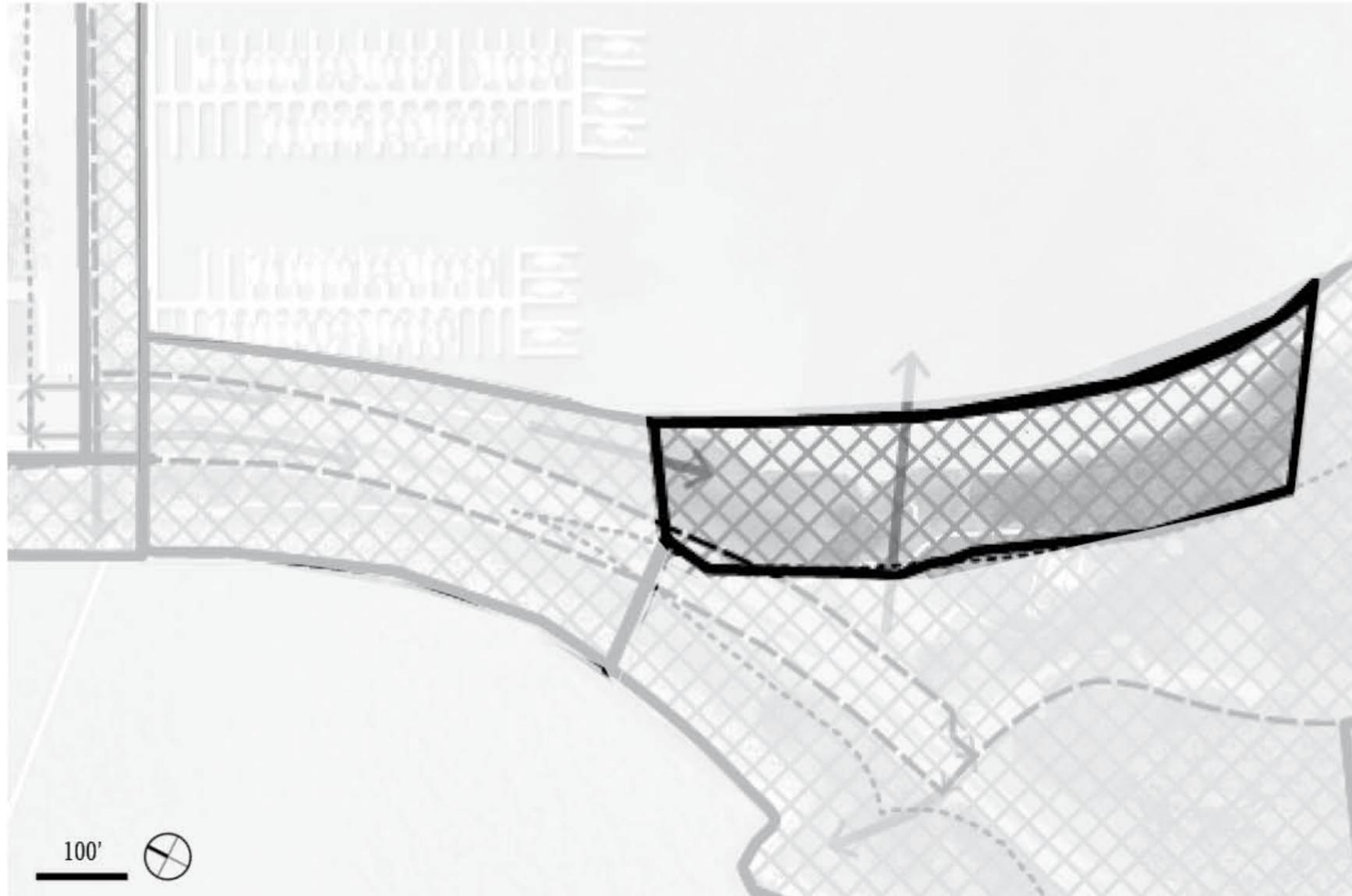
- 100' BCDC SHORELINE BAND
- BAY TRAIL
- ← PEDESTRIAN ACCESS
- ↔ CROSSWALK
- ▨ DEDICATED PUBLIC ACCESS  
(TOTAL AREA: 2.9 ACRES)



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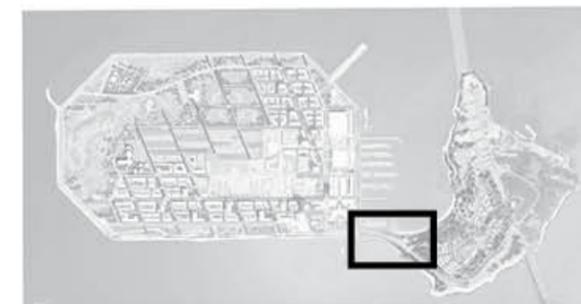


**DEDICATED PUBLIC ACCESS** ⑦ Beach Park



**LEGEND**

- 100' BCDC SHORELINE BAND
- BAY TRAIL
- ←-----→ PEDESTRIAN ACCESS
- ↔ CROSSWALK
- ▨ DEDICATED PUBLIC ACCESS  
(TOTAL AREA: 2.8 ACRES)



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# DEDICATED PUBLIC ACCESS ⑧ Yerba Buena Island



## LEGEND

- 100' BCDC SHORELINE BAND
  - BAY TRAIL
  - ← PEDESTRIAN ACCESS
  - ↔ CROSSWALK
  - ▨ DEDICATED PUBLIC ACCESS
- (TOTAL AREA: 62.4 ACRES)



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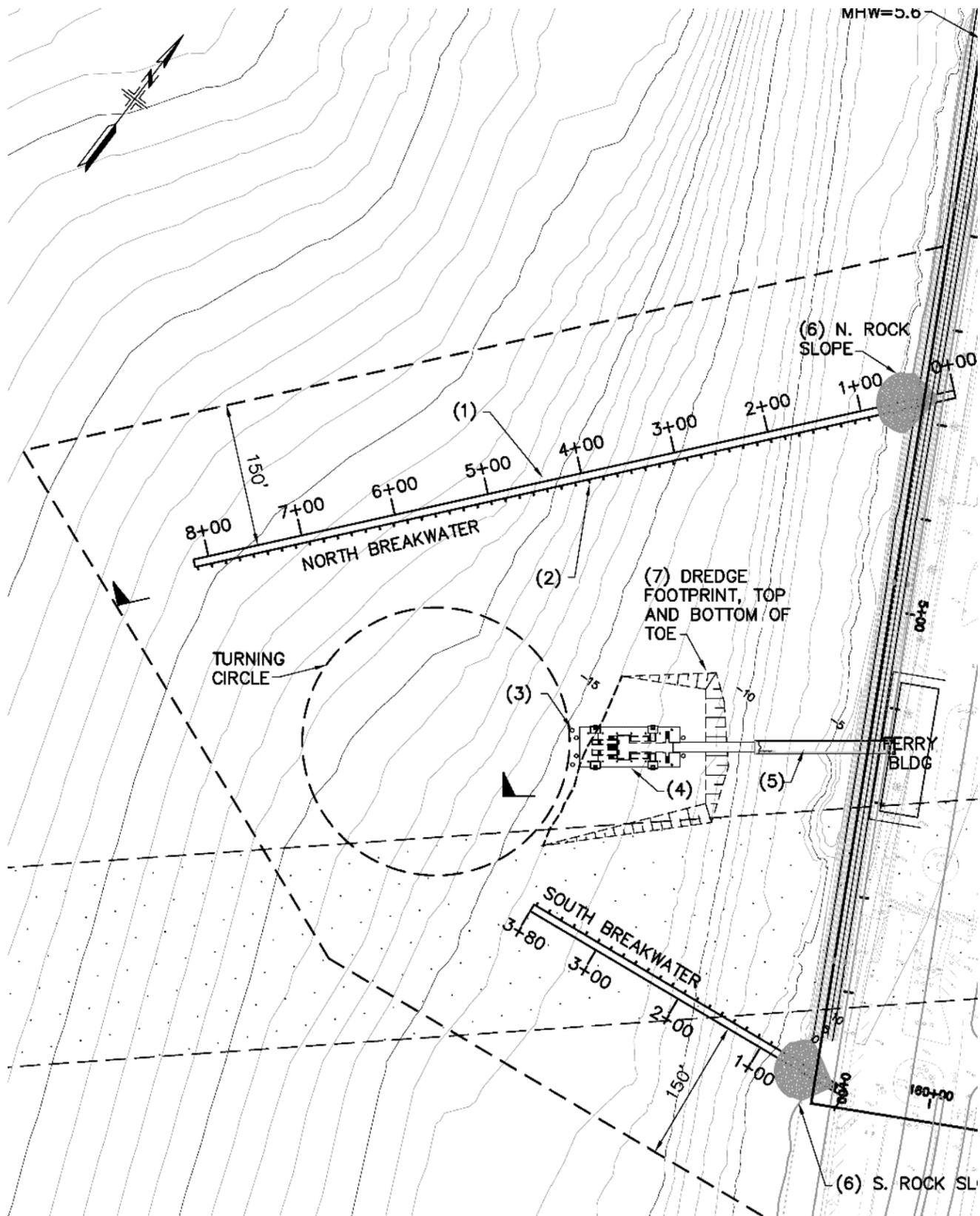




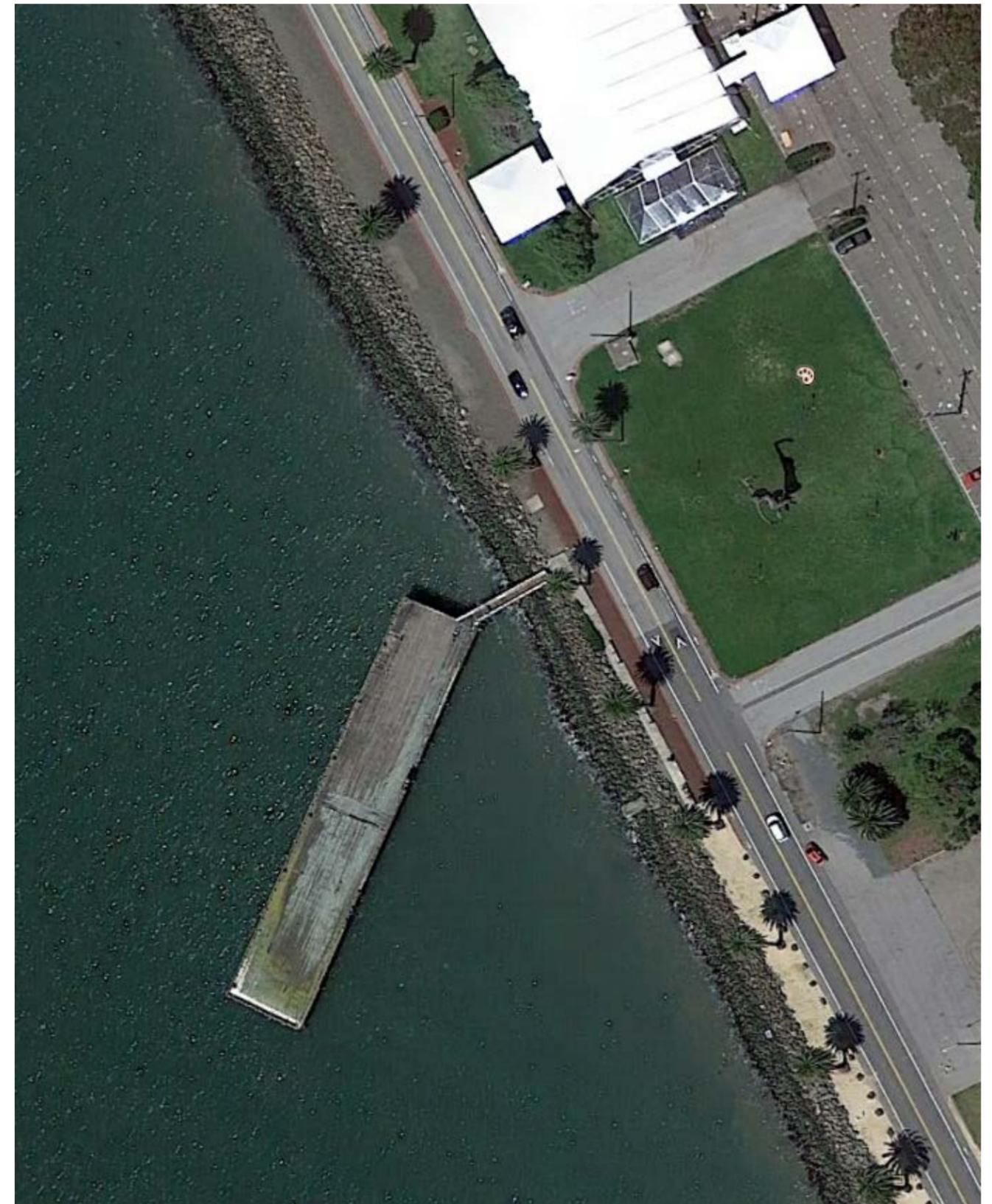
FISHING PIER  
TO BE REMOVED



NEW FERRY  
TERMINAL



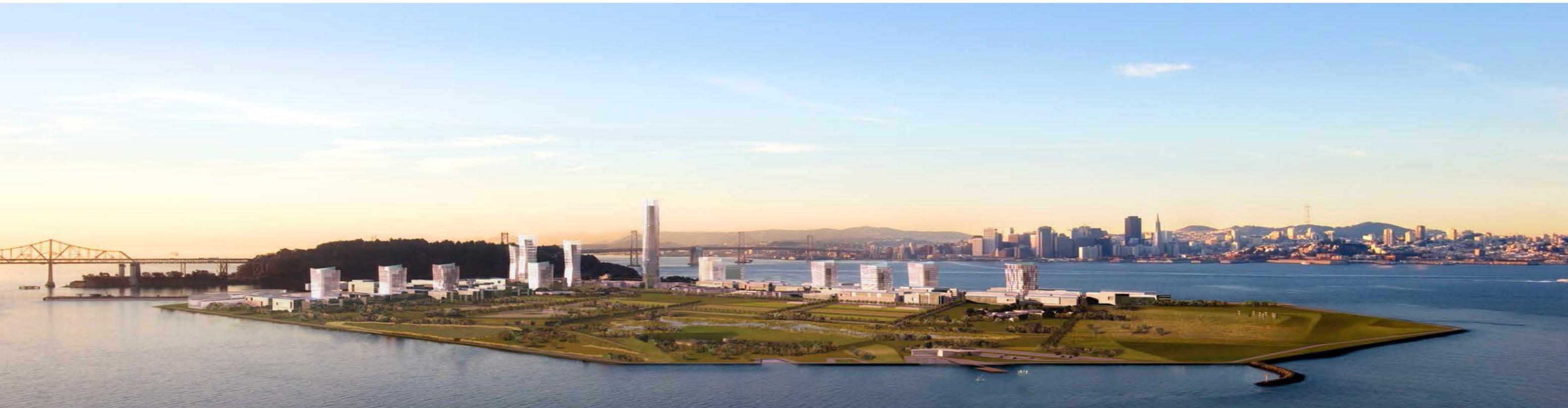
Ferry Pier/Dock and Breakwaters  
= 11,700 sf Shaded Fill

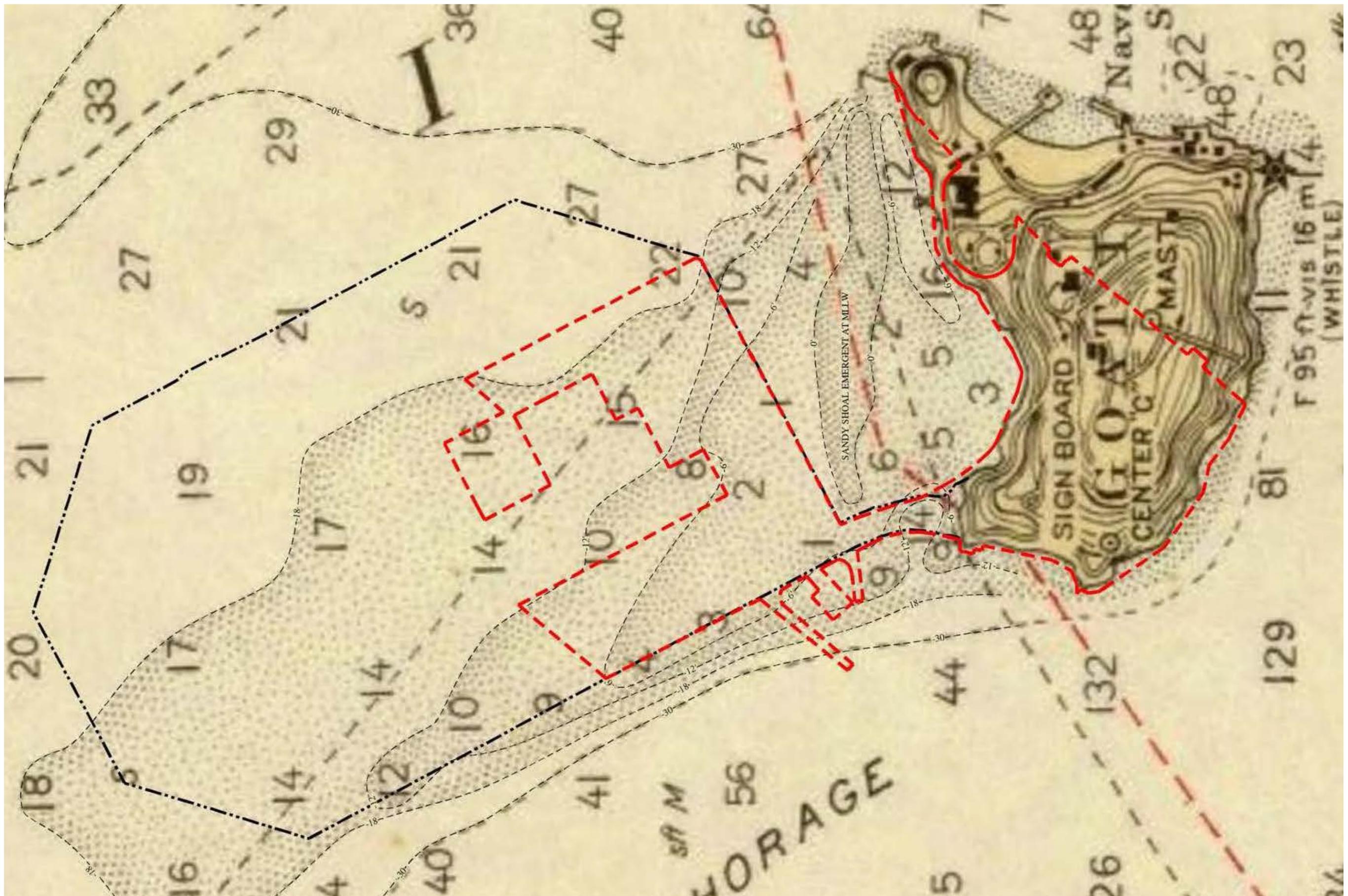


West Fishing Pier = 11,945 sf Shaded Fill

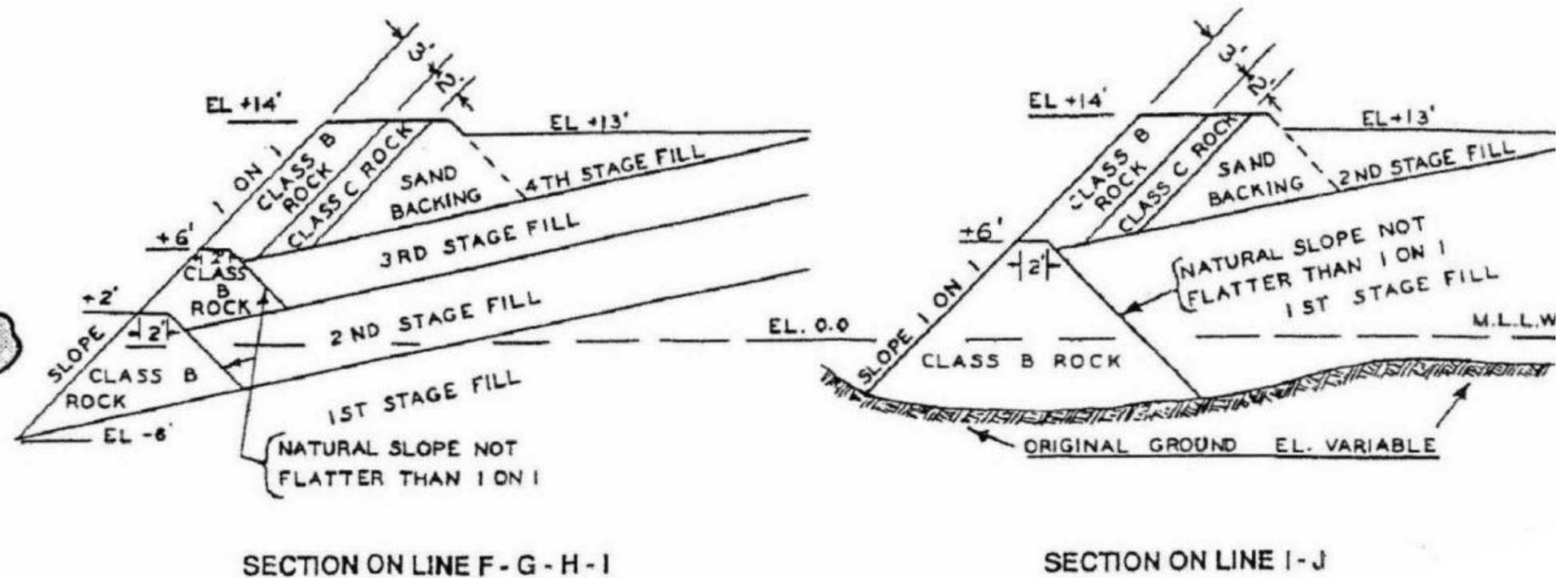
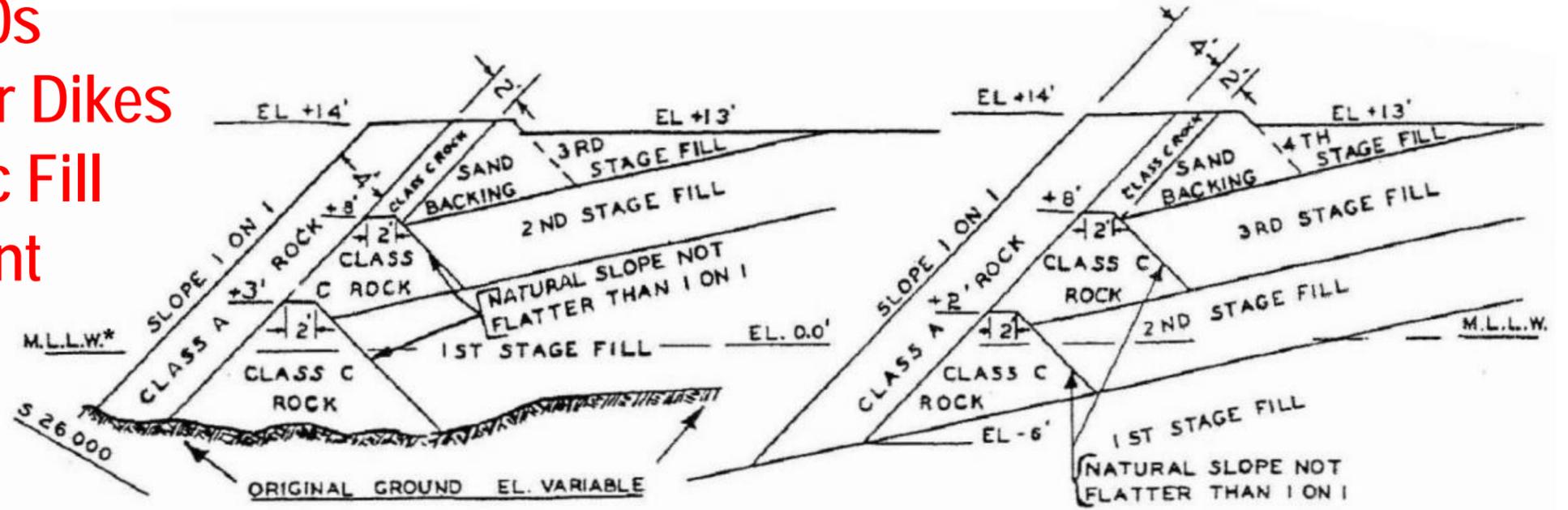
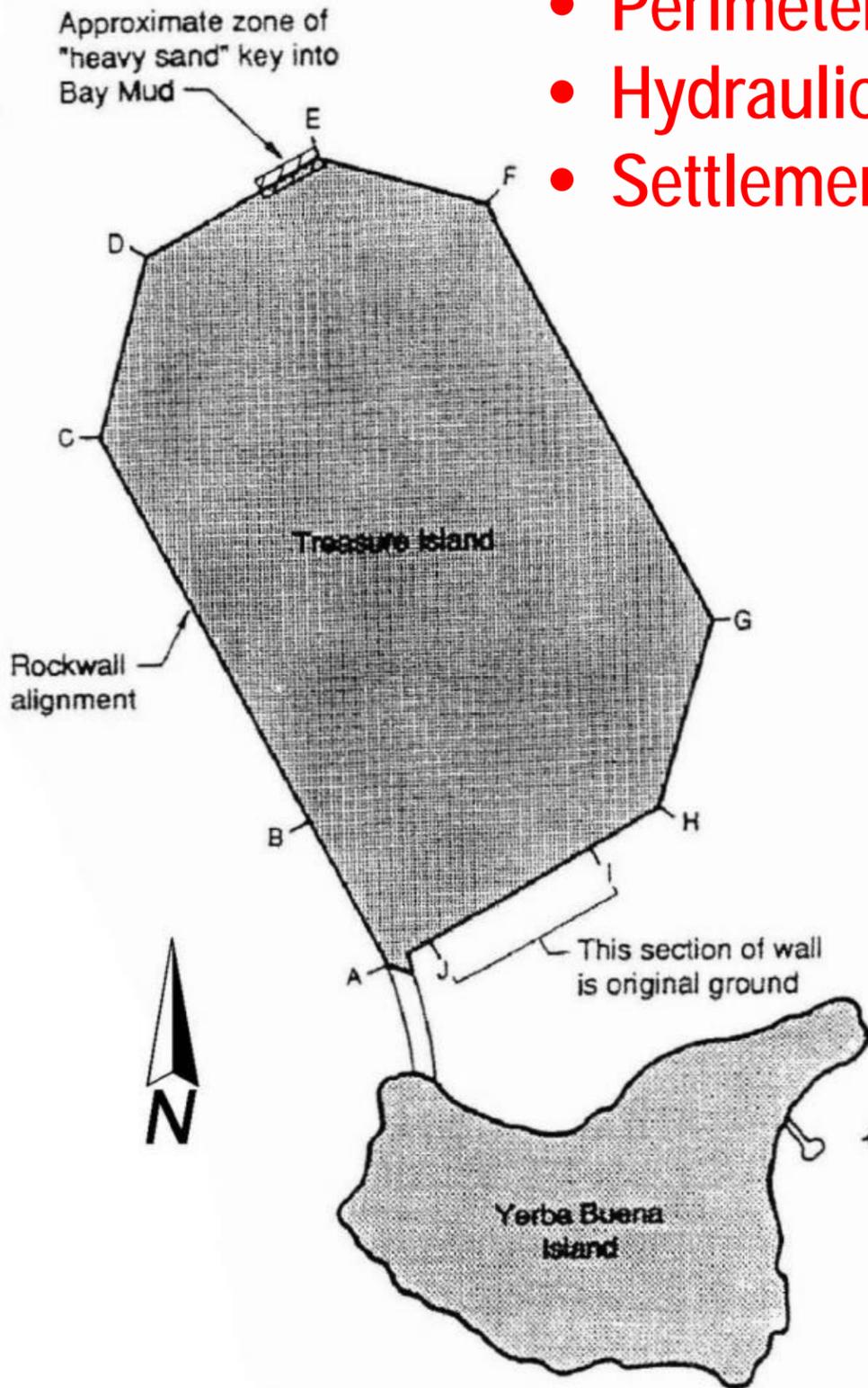


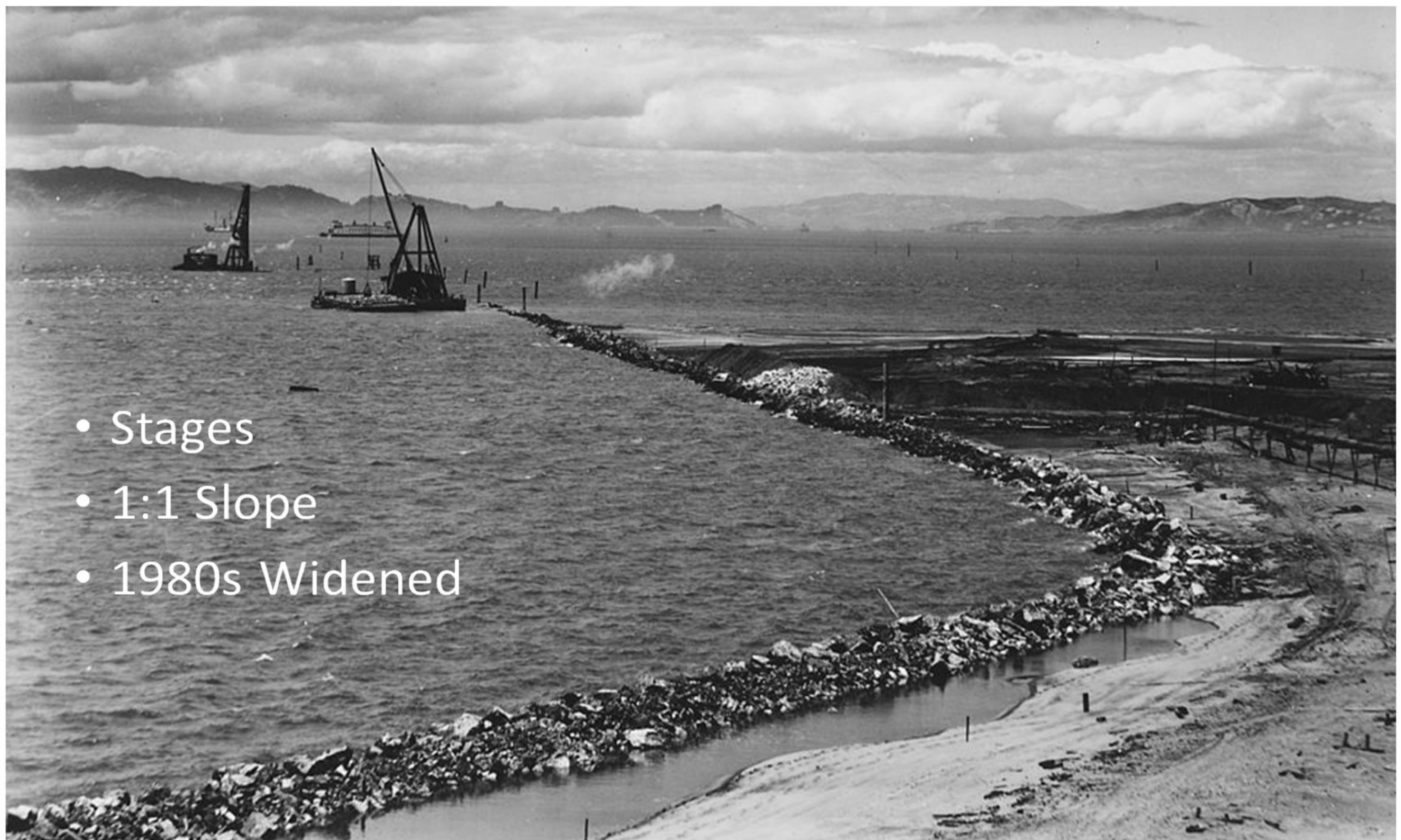
# GEOTECHNICAL MITIGATION FOR TREASURE ISLAND MAJOR PHASE 1





- Late 1930s
- Perimeter Dikes
- Hydraulic Fill
- Settlement

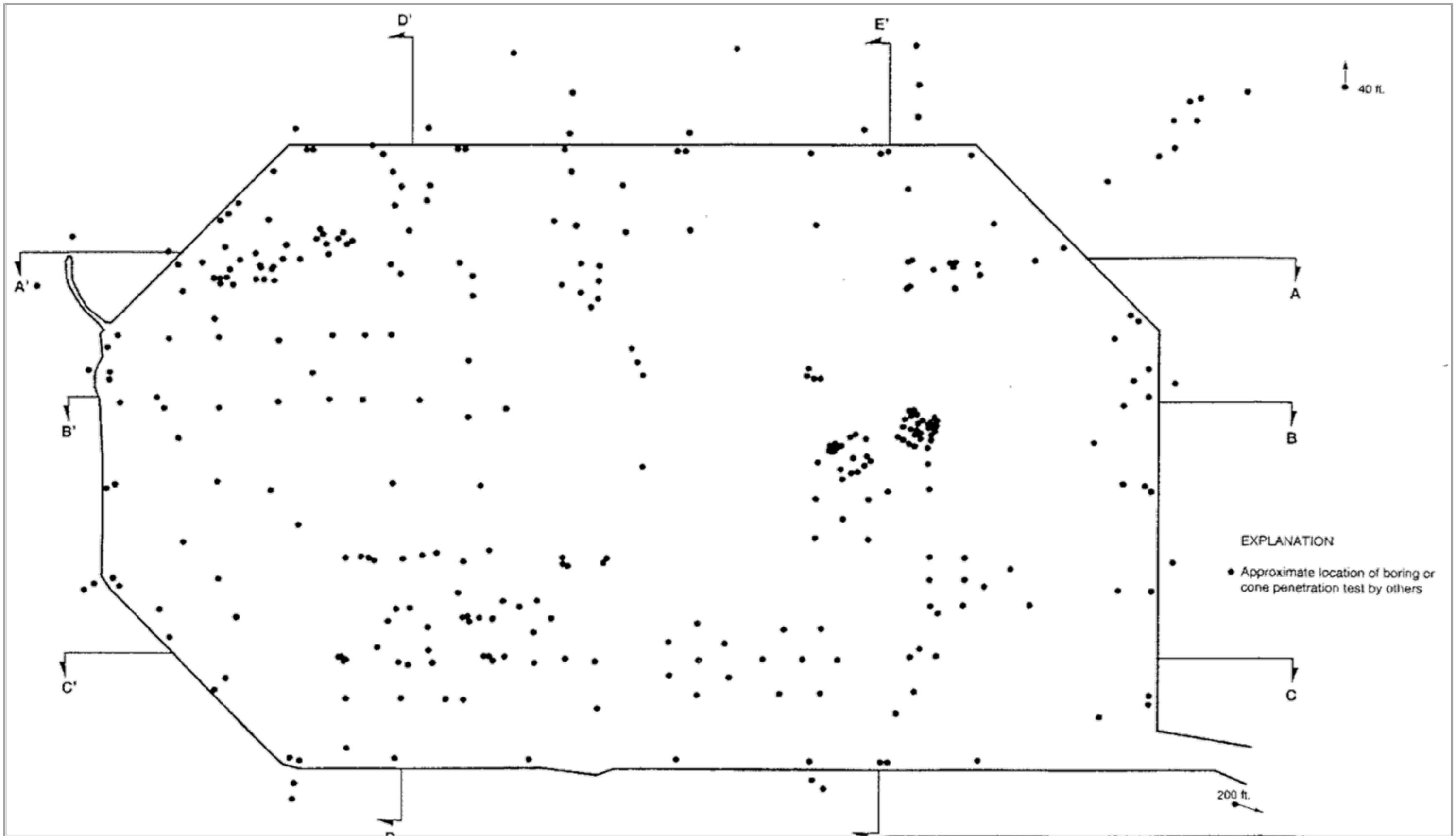


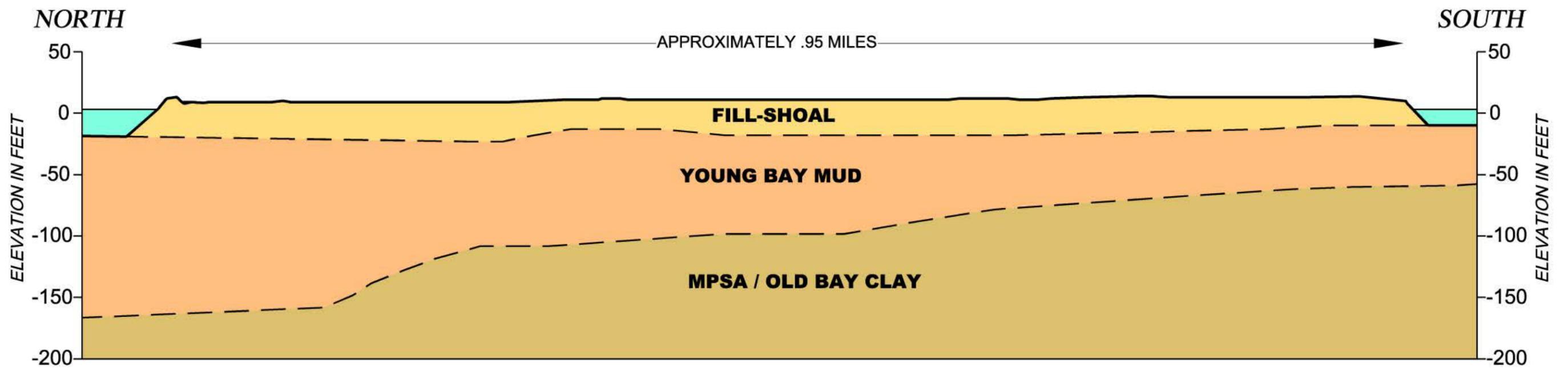
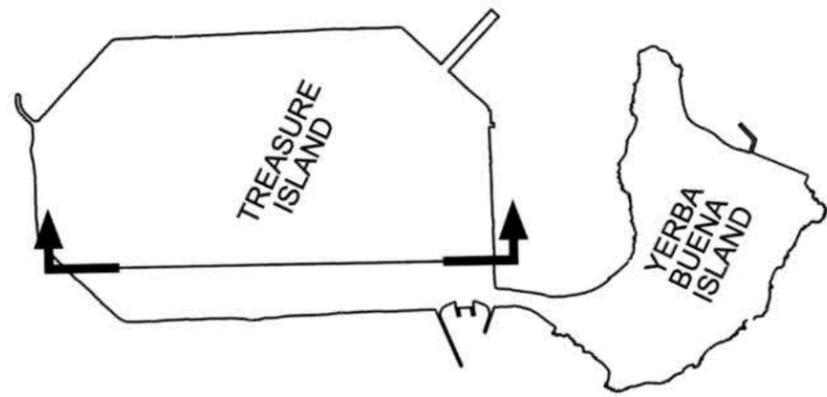
- 
- Stages
  - 1:1 Slope
  - 1980s Widened

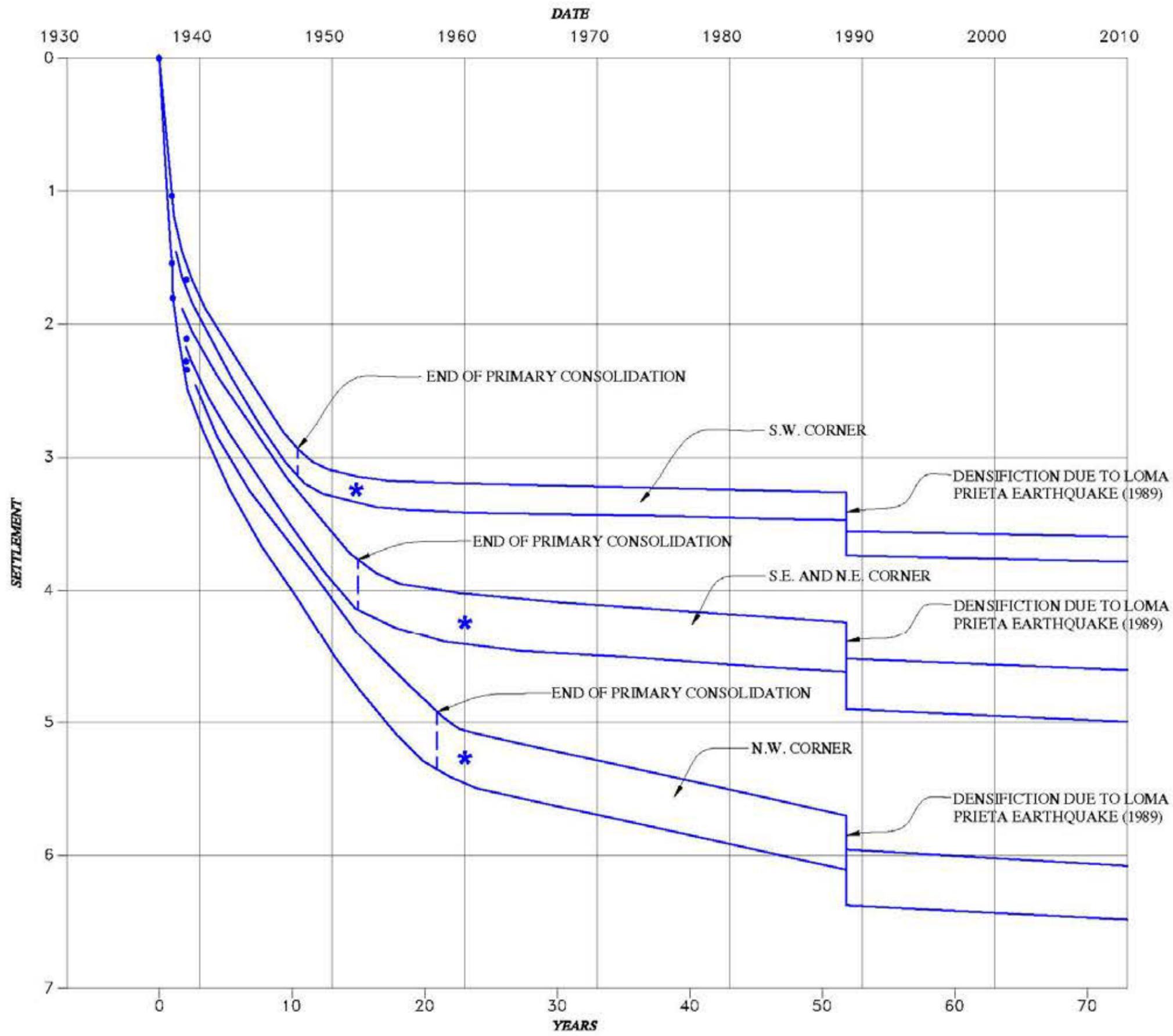


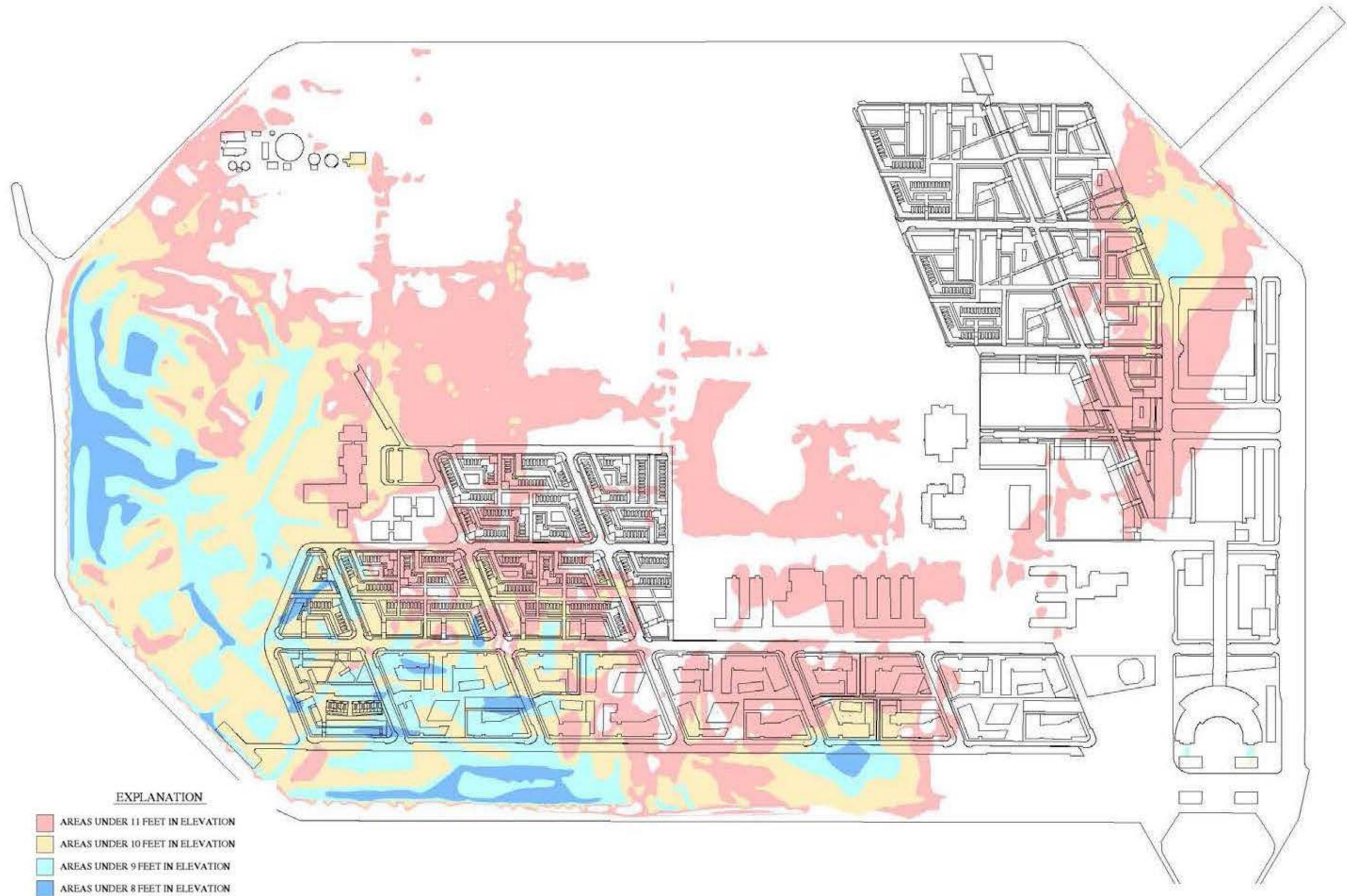
800 Residential Units  
Commercial Leasing Program  
Recreational Uses

Job Corps Campus (Department of Labor)  
Coast Guard Facility







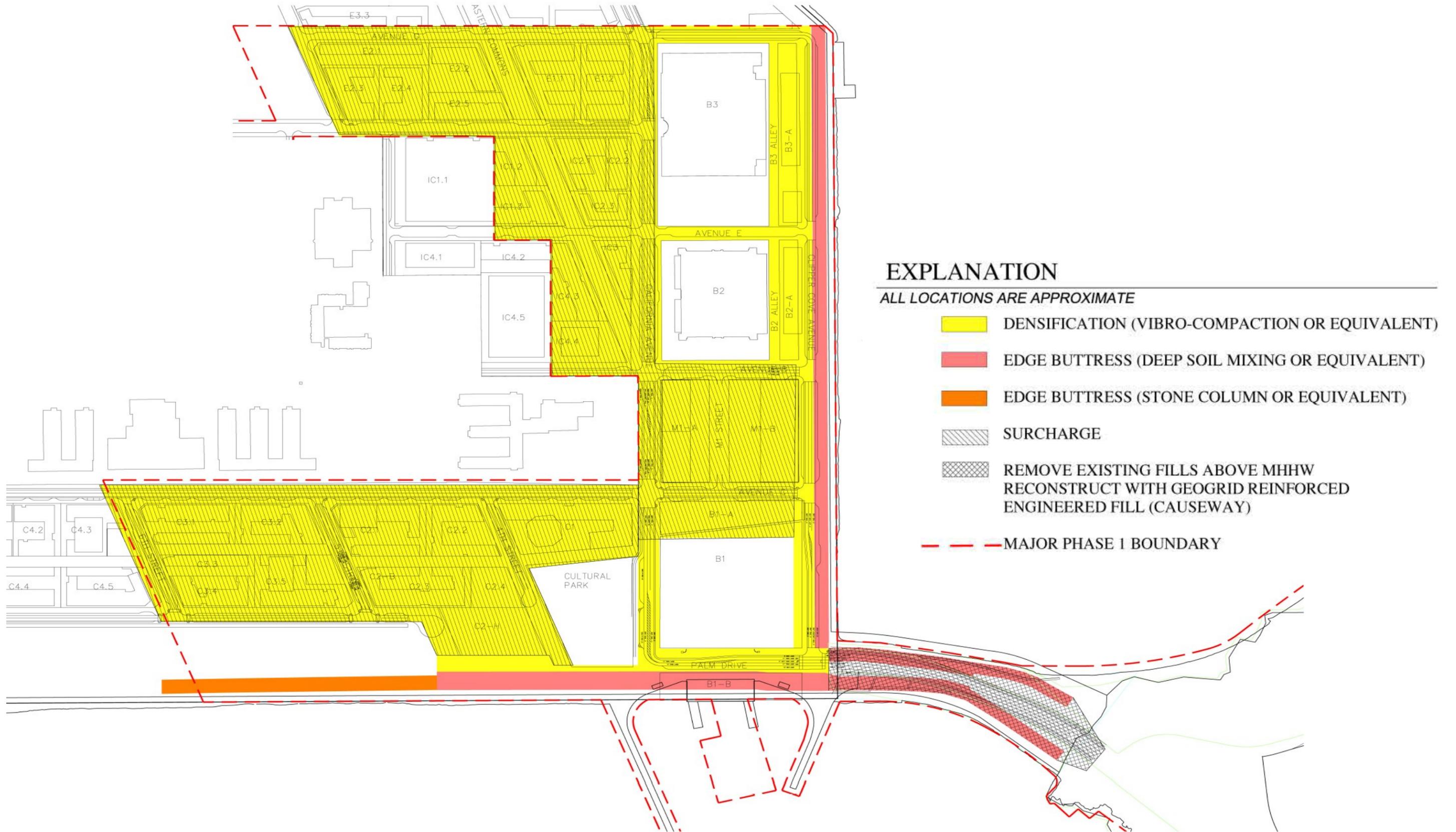


## CONCERNS

- Liquefaction
- Lateral Spreading
- Seismic settlement
- Seismic Slope Deformation
- Kinematic loads on offshore structures
- Static settlement under new loads

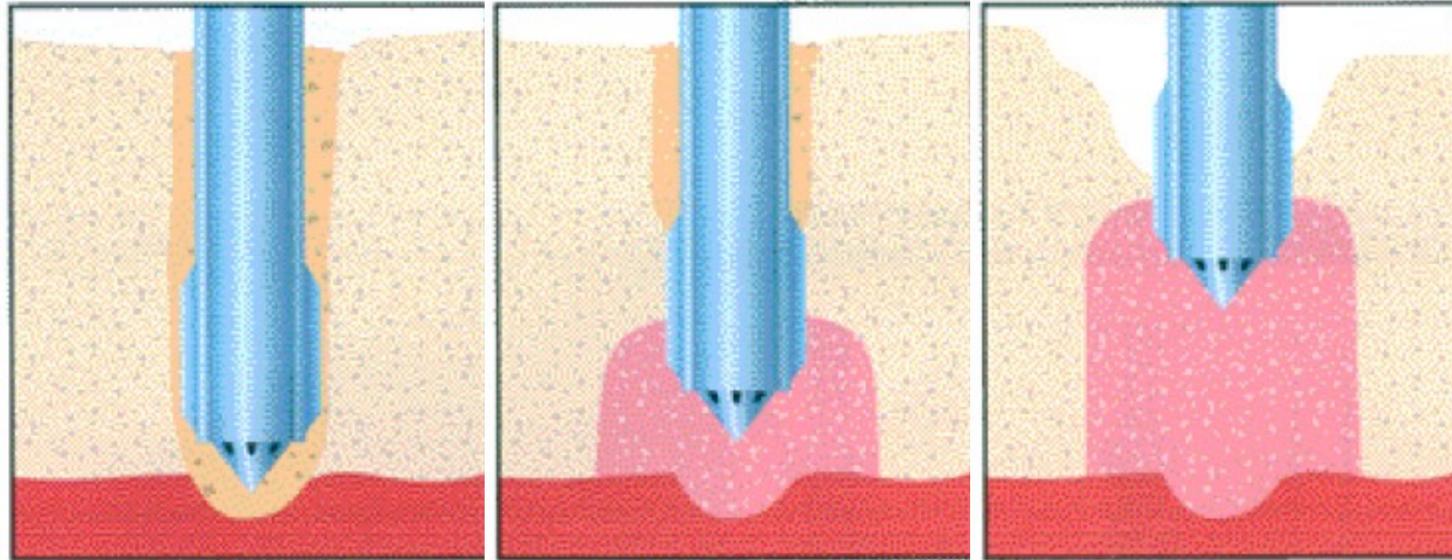
## MITIGATION MEASURES

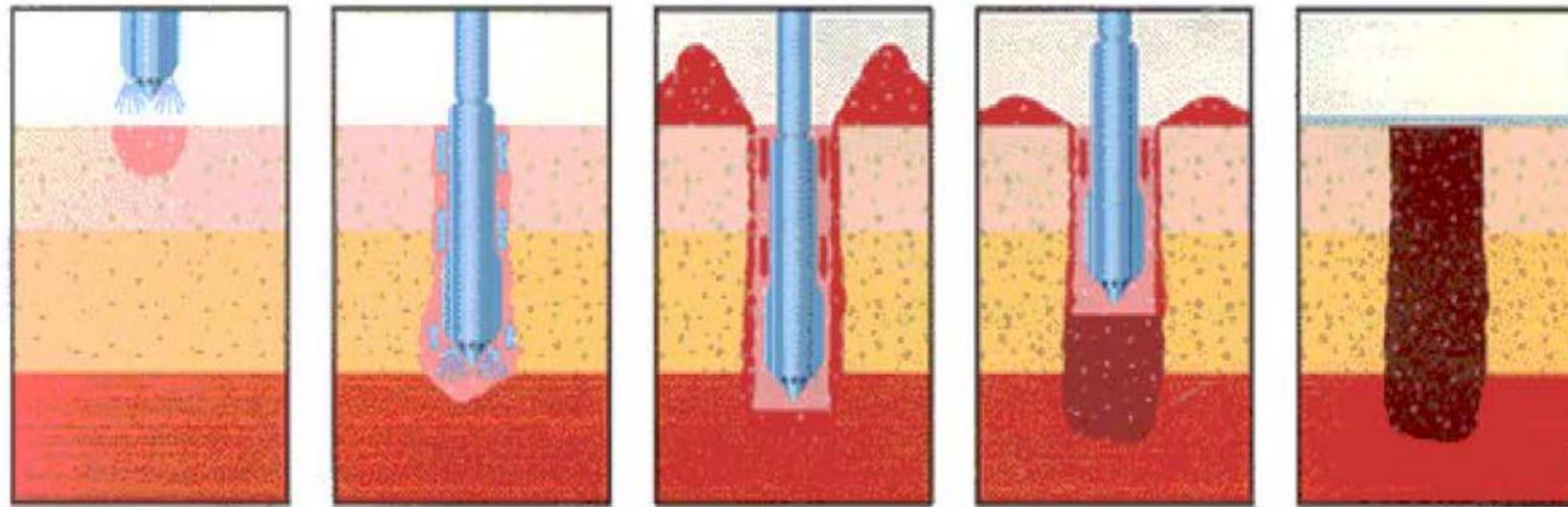
- Stone columns and setbacks
- Deep Soil Mix (DSM) buttresses
- Sheet pile or DSM soldier pile walls
- Vibro-compaction
- Lateral design of offshore piles
- Surcharging with wick drains

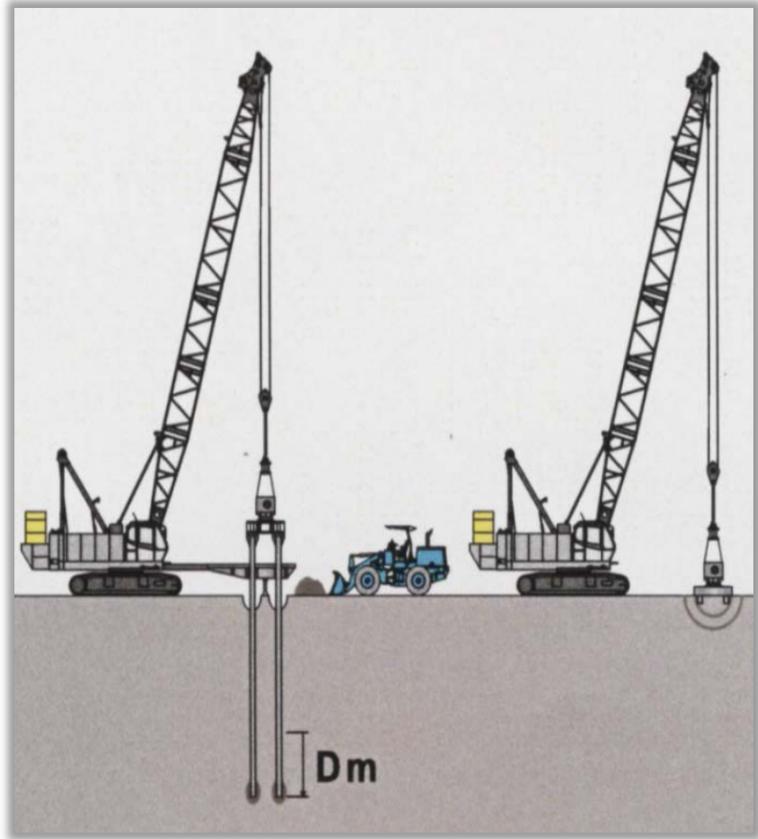
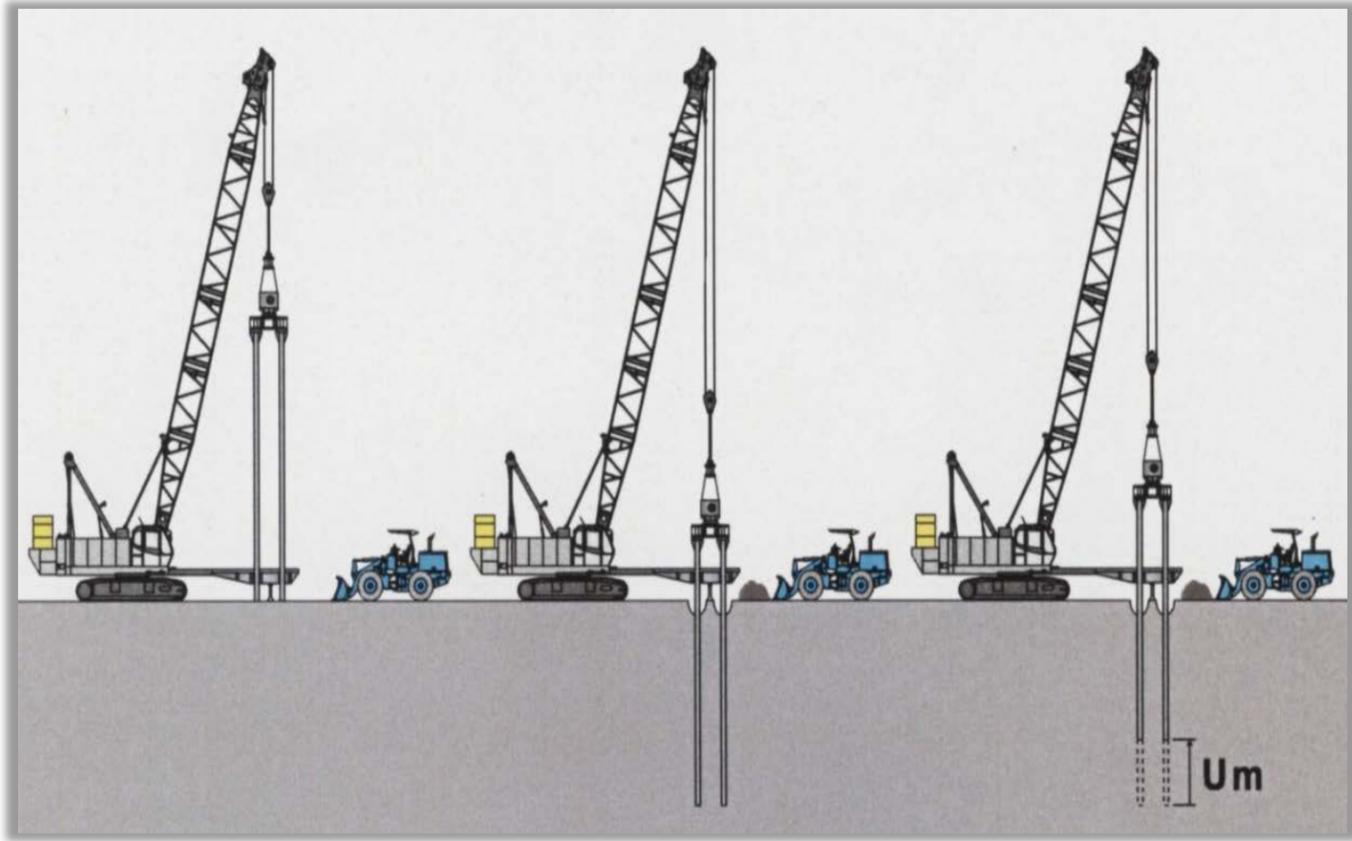


Penetration

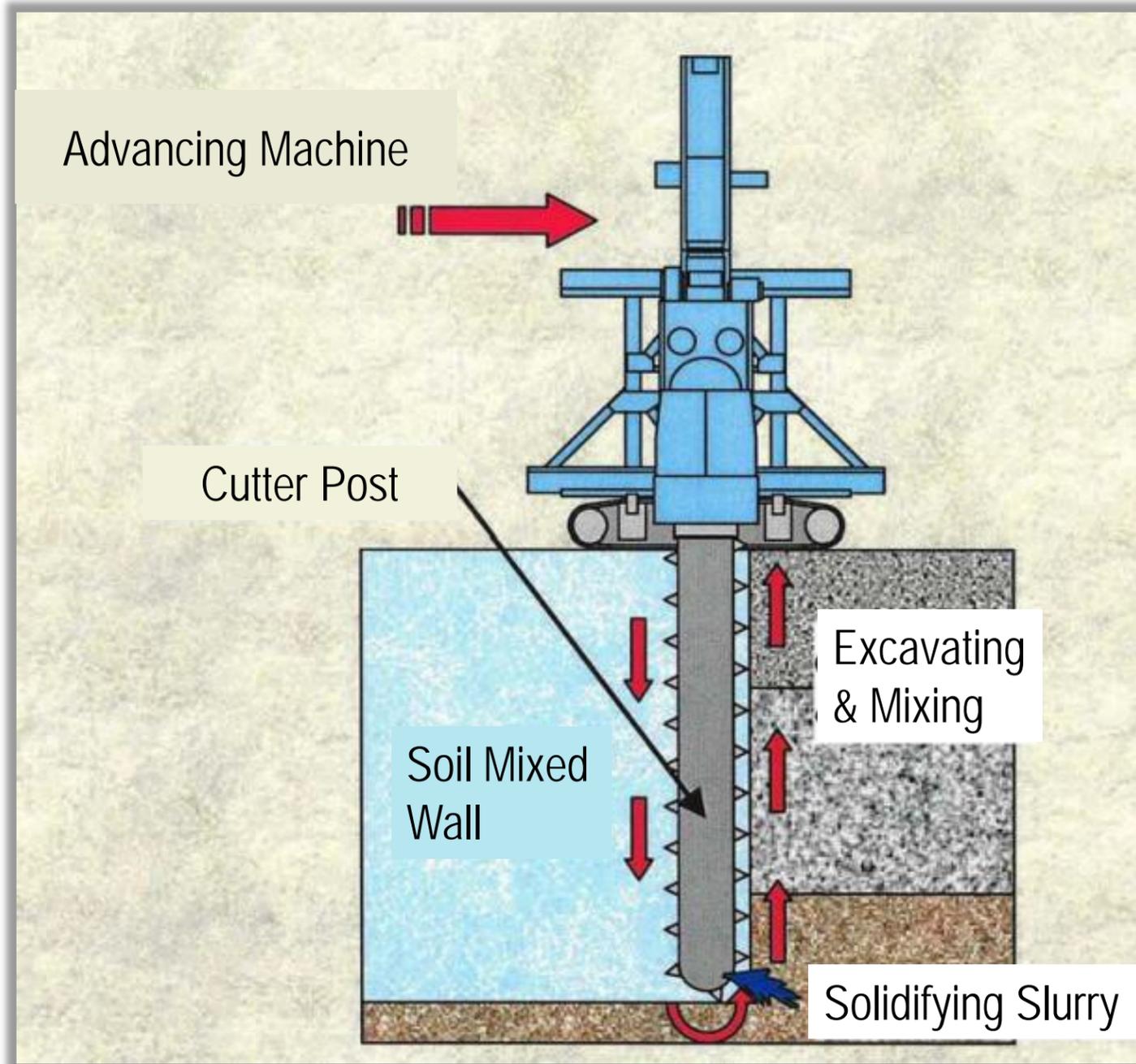
Compaction and Withdrawal



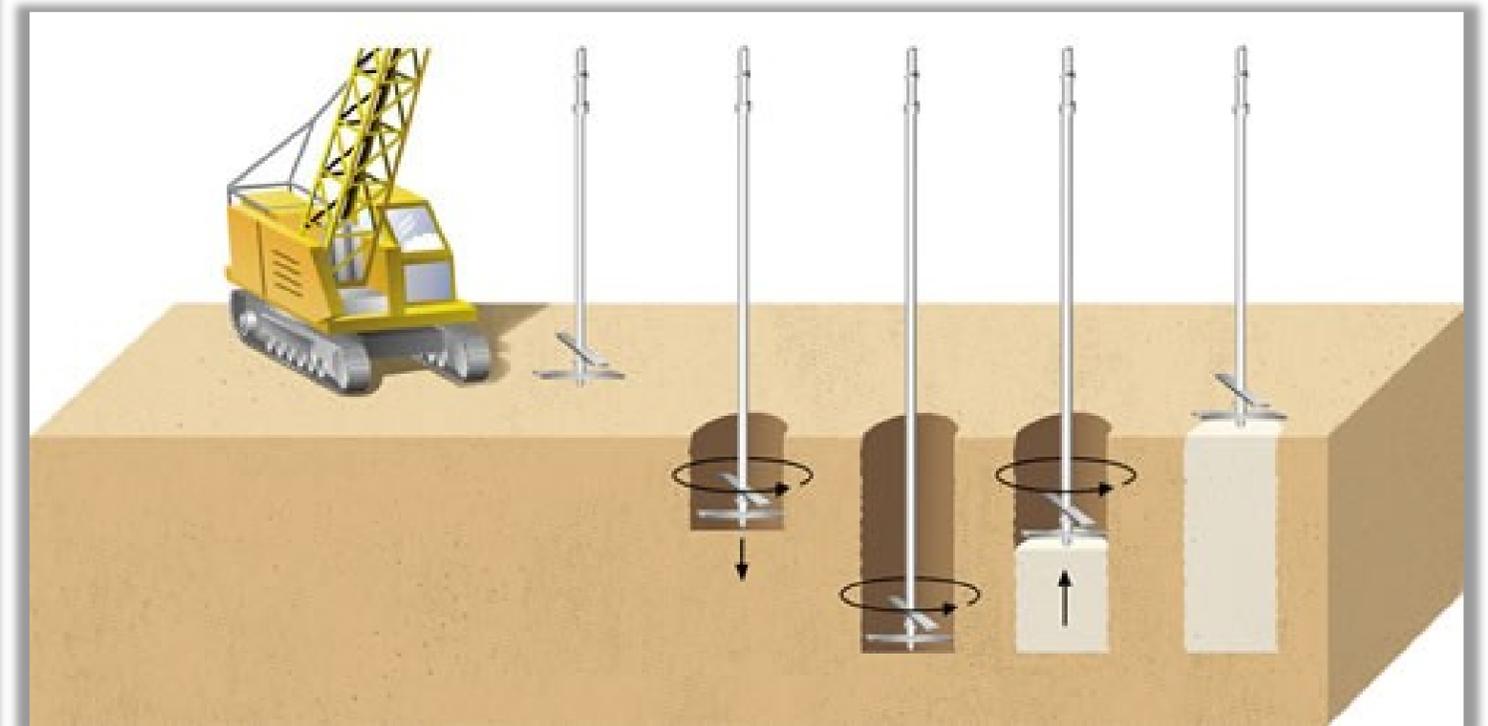




# Trench-cutting Re-mixing Deep Wall Method (TRD)

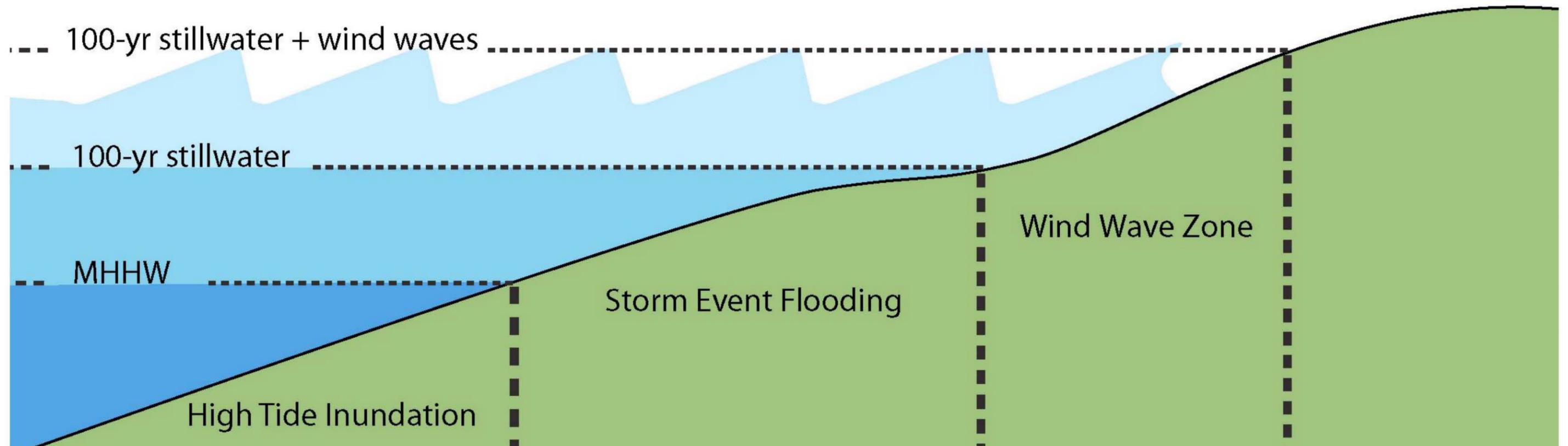


# Soil-Cement Columns (SCC)

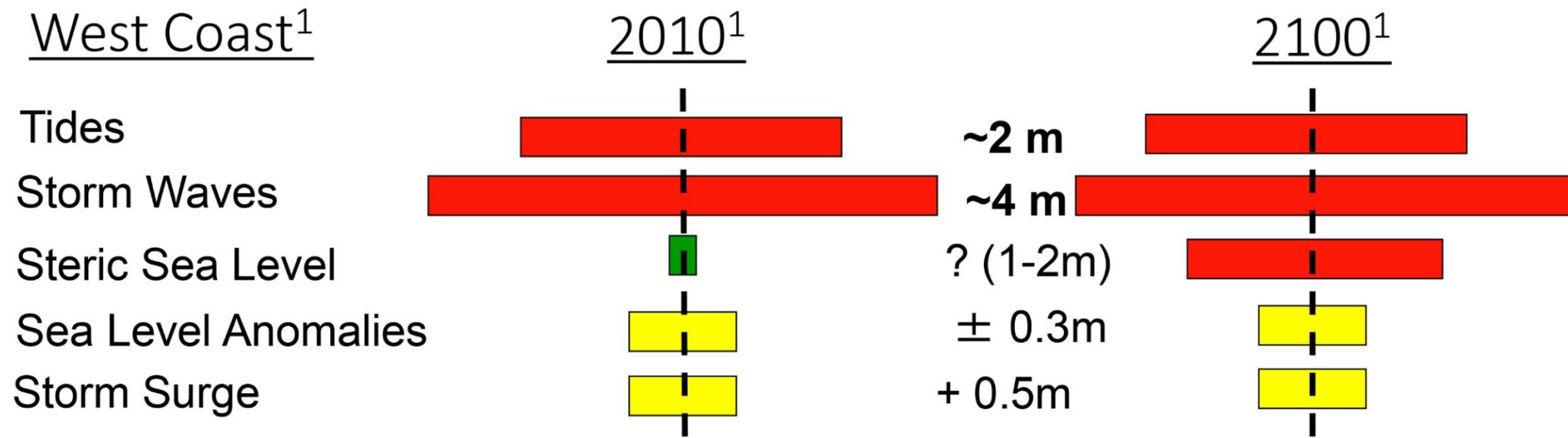




# SEA LEVEL RISE MITIGATIONS AND SHORELINE IMPROVEMENTS IN MAJOR PHASE 1

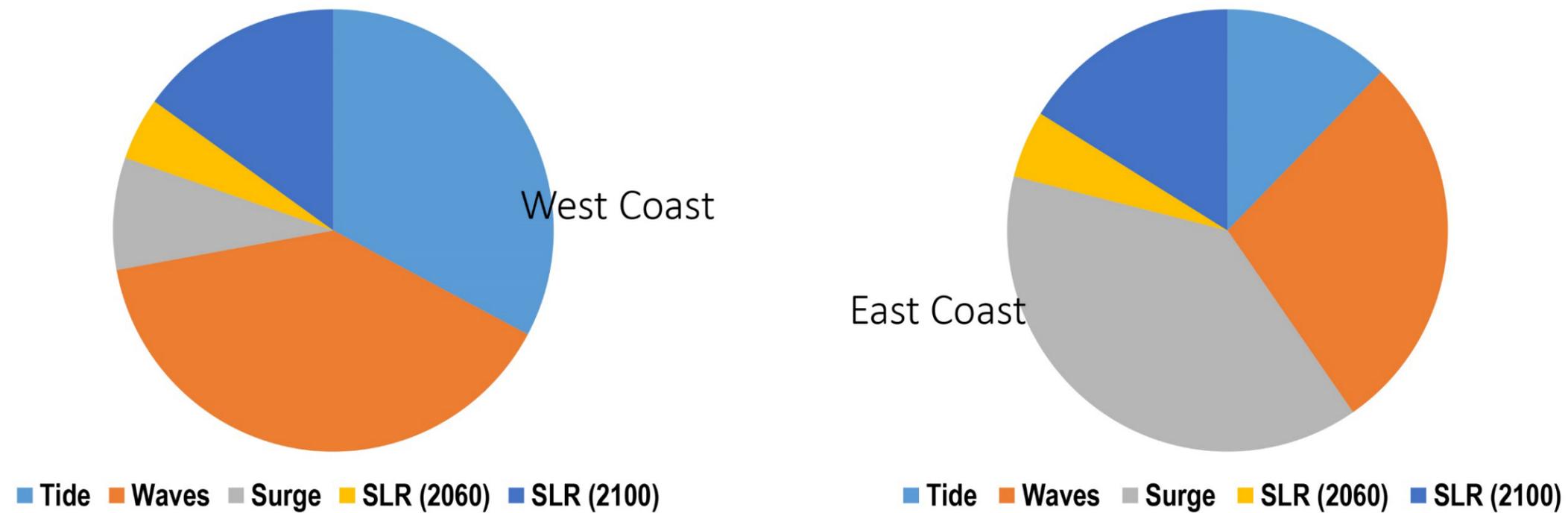


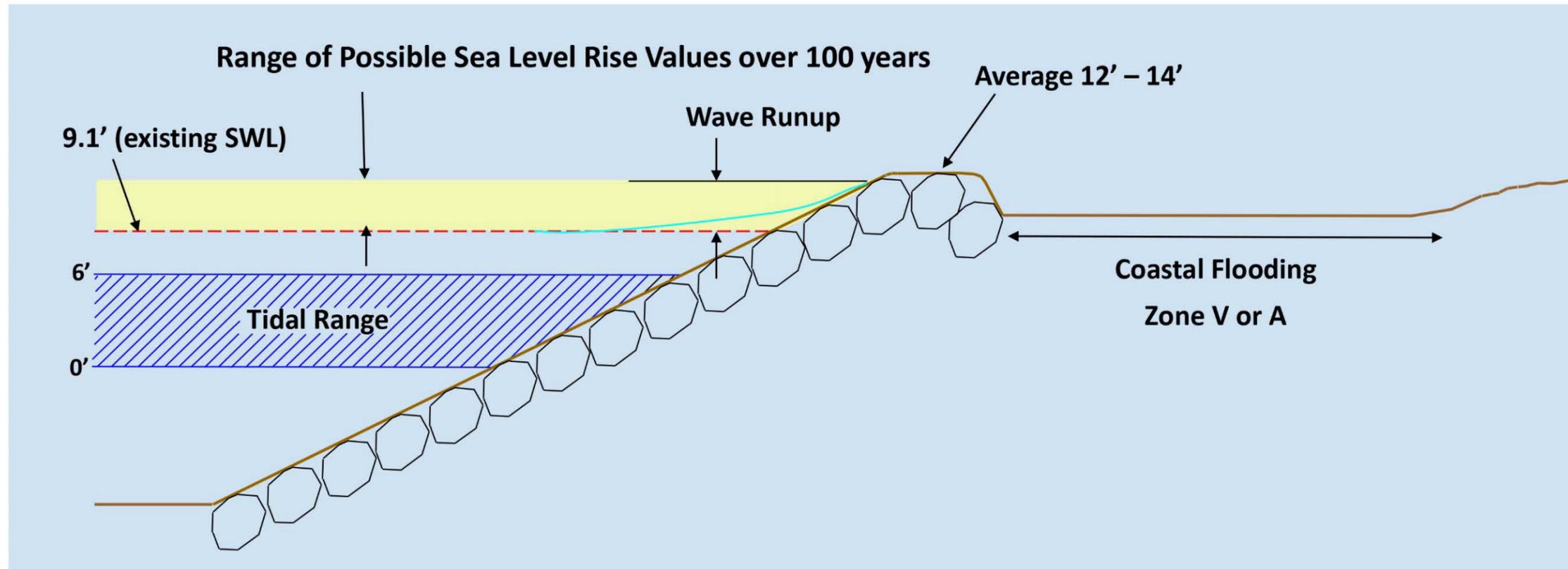




Source: Guza, R., Sea Level Rise Presentation, Scripps Institute of Oceanography, Oct 28, 2011

Comparison - West Coast vs. East Coast of US





### Design Life, Risk and Consequence

- **Seismic/Tsunami:** *Low Probability – significant consequences (if unmitigated)*
- **SLR:** *High Probability – low immediate risk*

### *Adaptive Management linked to SLR Observations*

# Sea Level Rise

## Planning and Design Approach

**TIME**

Build High and Monitor

**SPACE**

Ample setbacks and open Spaces

**FUNDING**

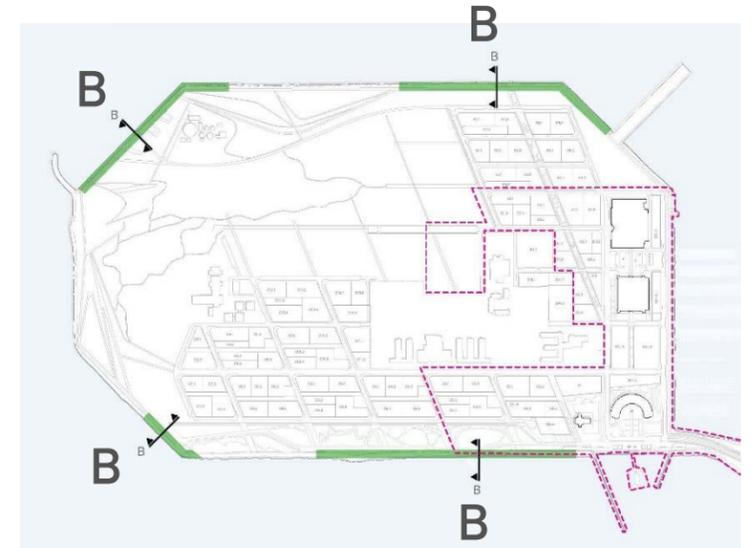
Project Generated

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**PLENTY OF OPTIONS**

SECTION B

PROPOSED WITH 16" SLR



MEDIUM VULNERABILITY

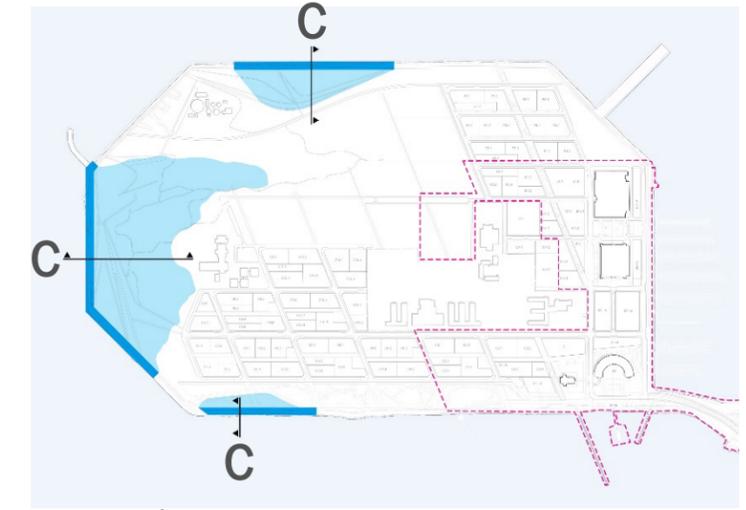
HIGH VULNERABILITY

SECTION B

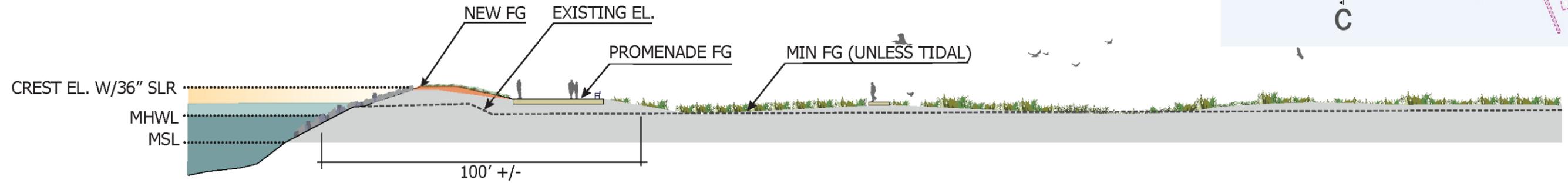
PROPOSED WITH FUTURE ADAPTATION FOR 36" SLR



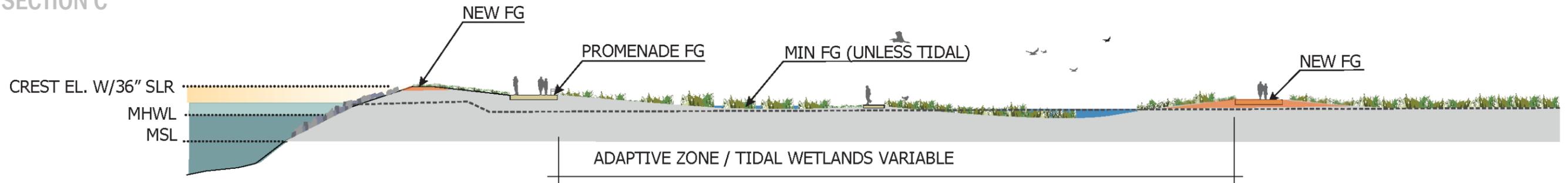
# NORTHERN SHORELINE ADAPTIVE MANAGEMENT STRATEGIES



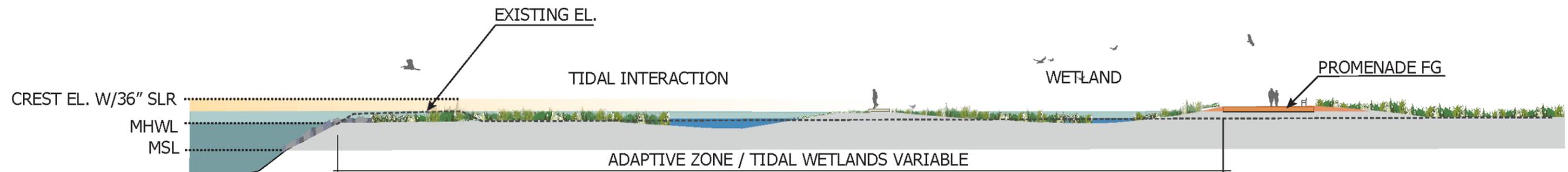
## OPTION A - PROTECTED EDGE WITH CENTRAL GRASSLAND SECTION C



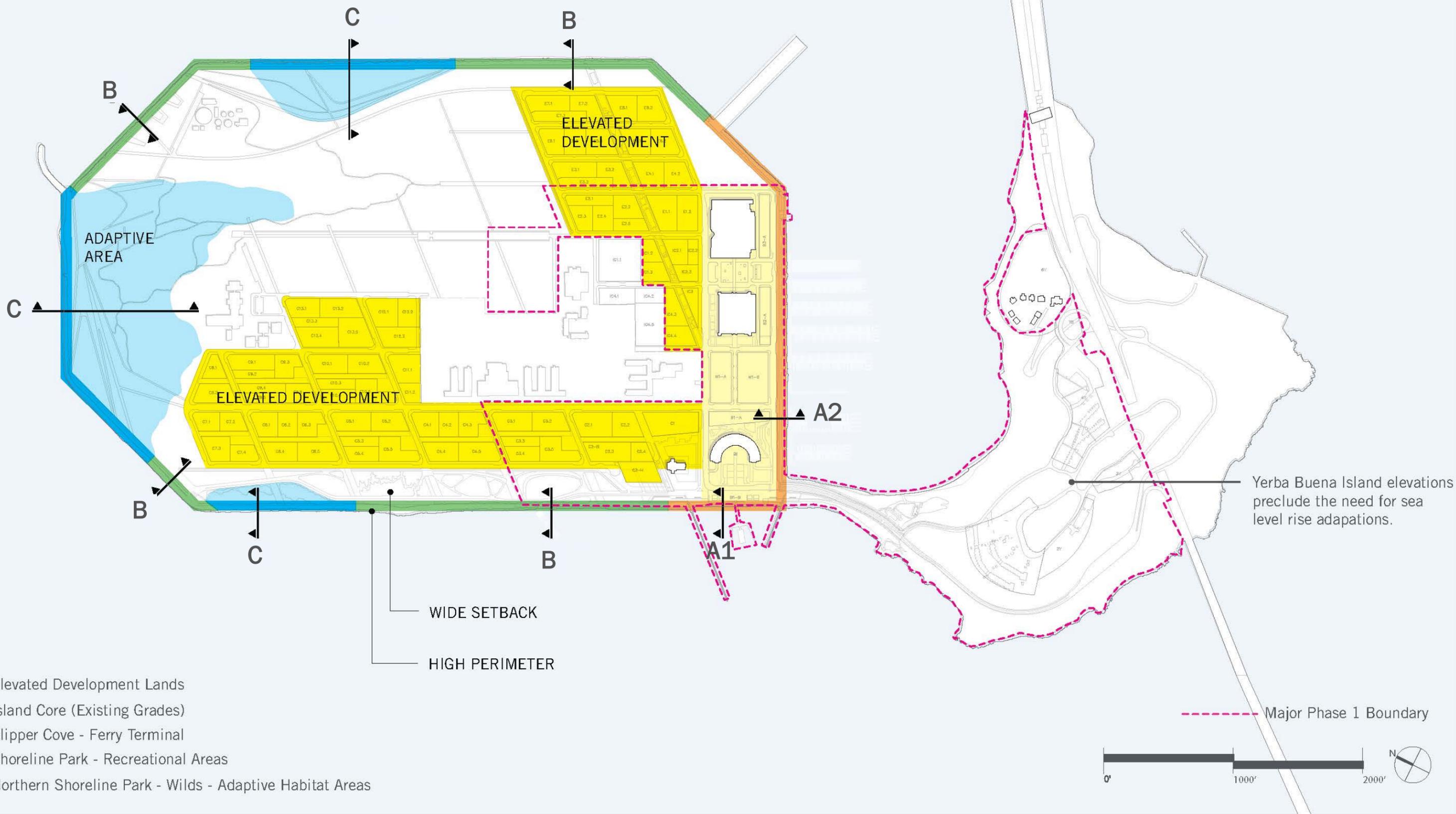
## OPTION B - CENTRAL MARSH SECTION C



## OPTION C - TIDAL WETLAND SECTION C

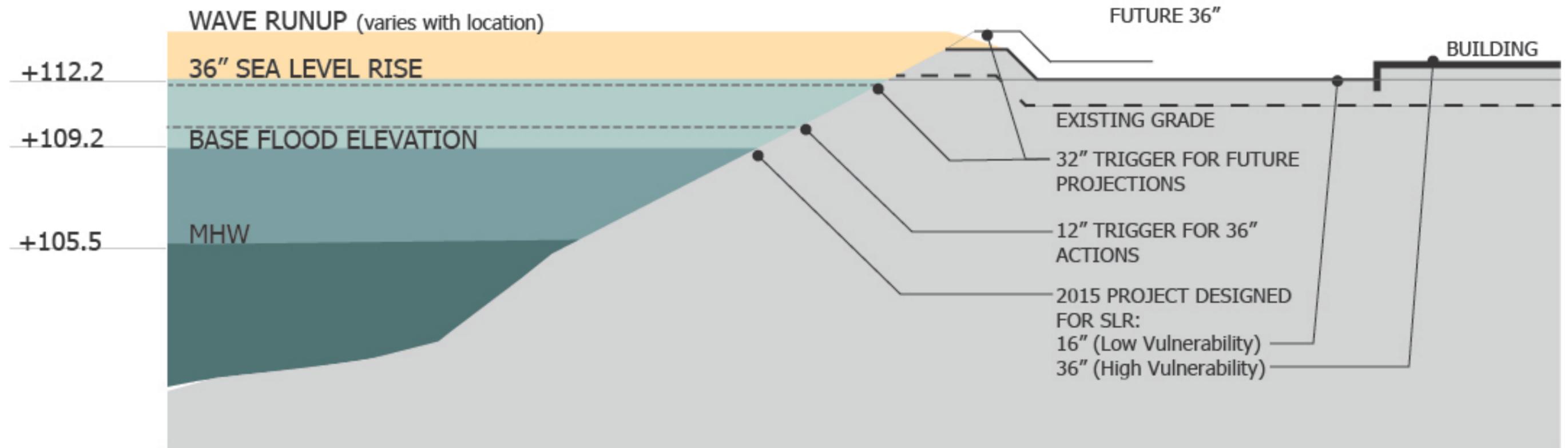


LOW VULNERABILITY



- KEY**
- Elevated Development Lands
  - Island Core (Existing Grades)
  - Clipper Cove - Ferry Terminal
  - Shoreline Park - Recreational Areas
  - Northern Shoreline Park - Wilds - Adaptive Habitat Areas

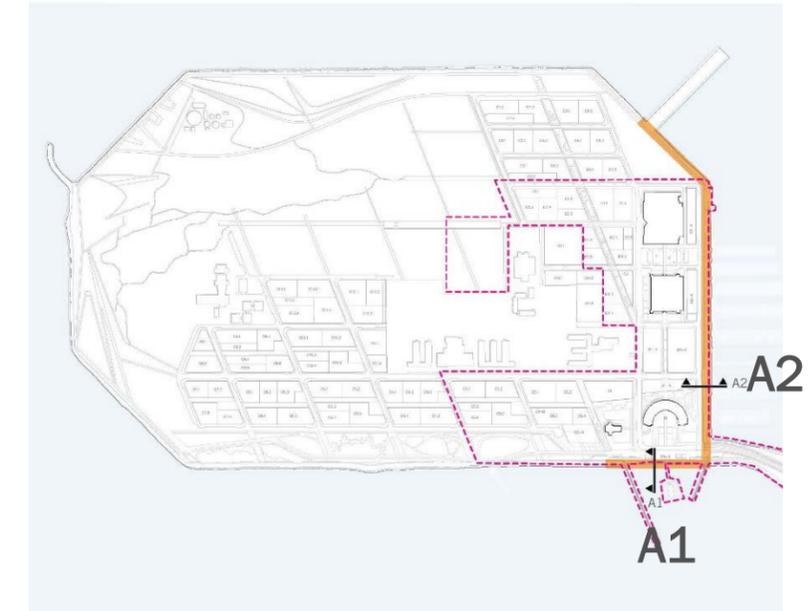
# SEA LEVEL RISE



LEGEND

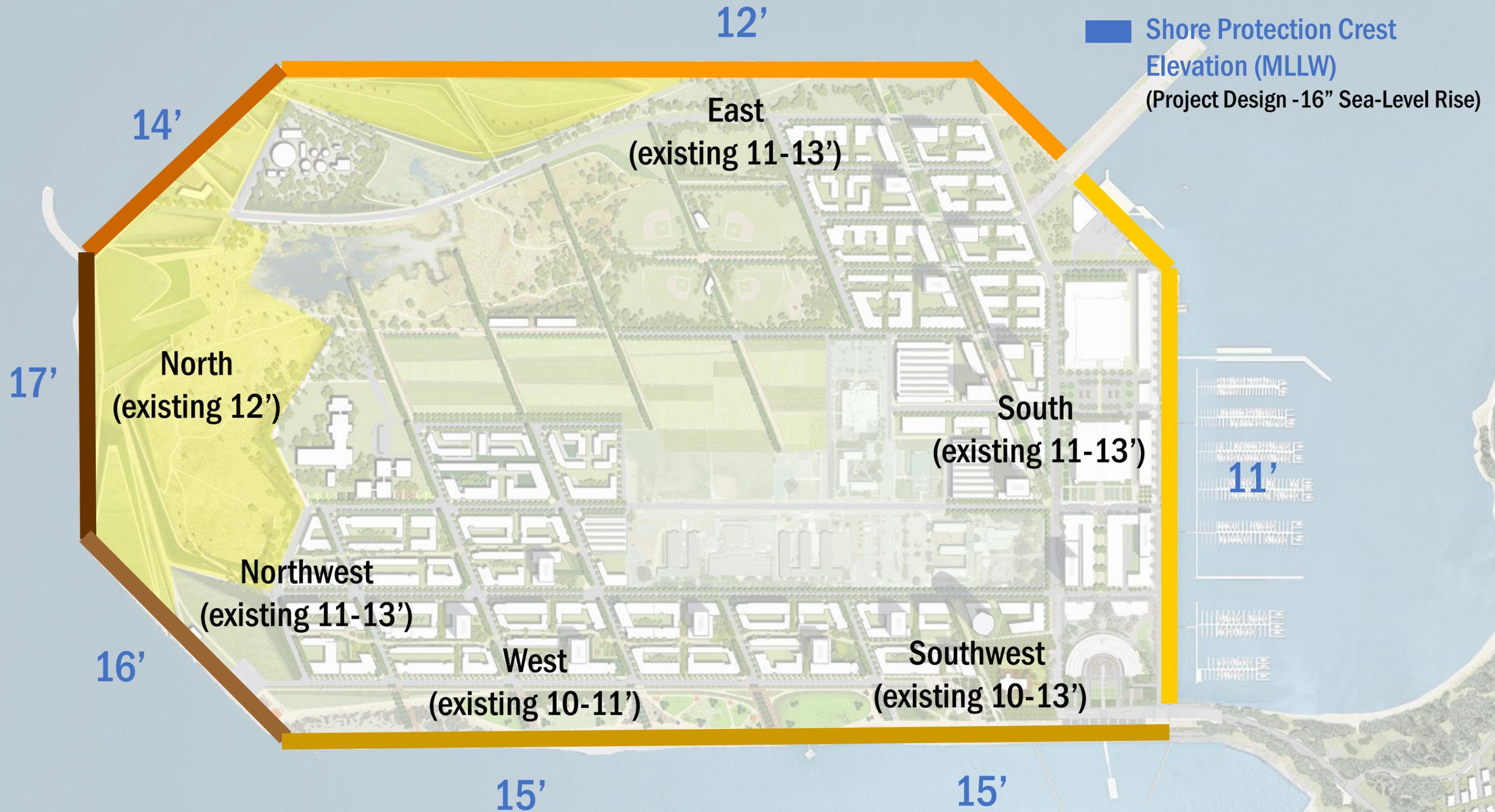
-  WRU Wave Run-Up
-  SLR Sea Level Rise
-  BFE Base Flood Elevation
-  MHW Mean High Water

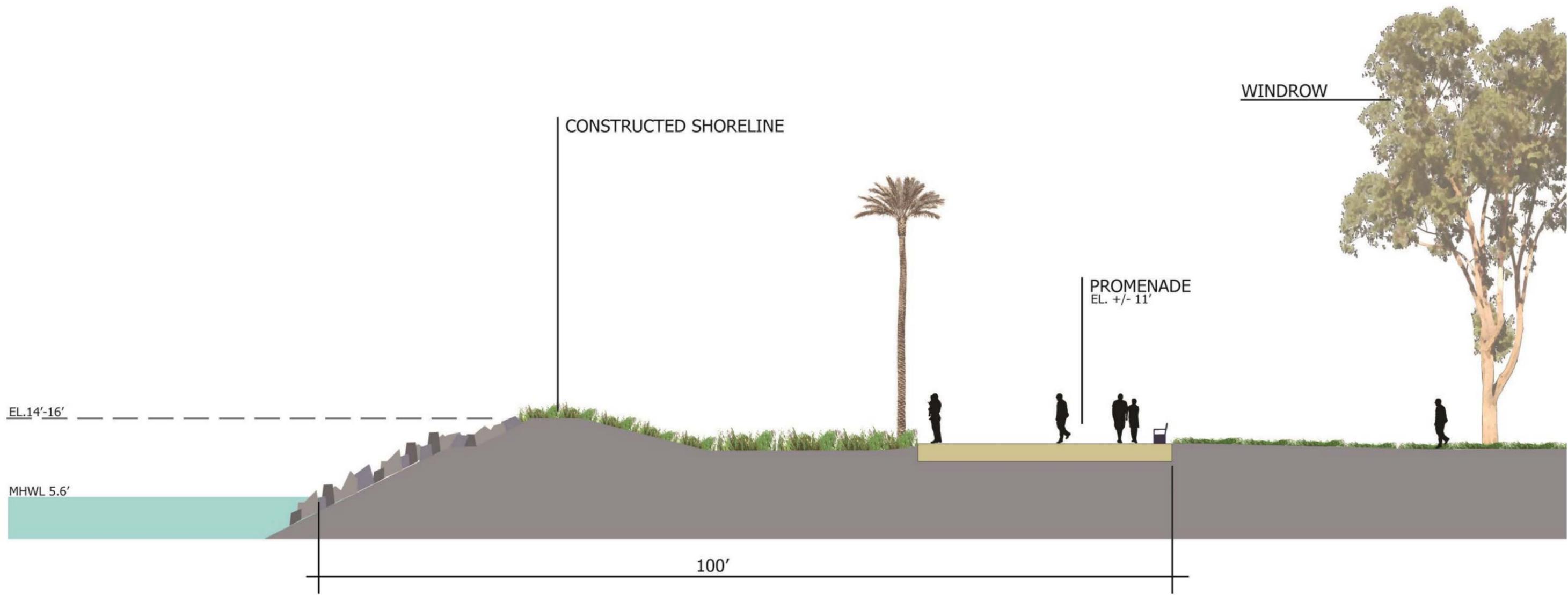
### SECTION A1 FERRY TERMINAL

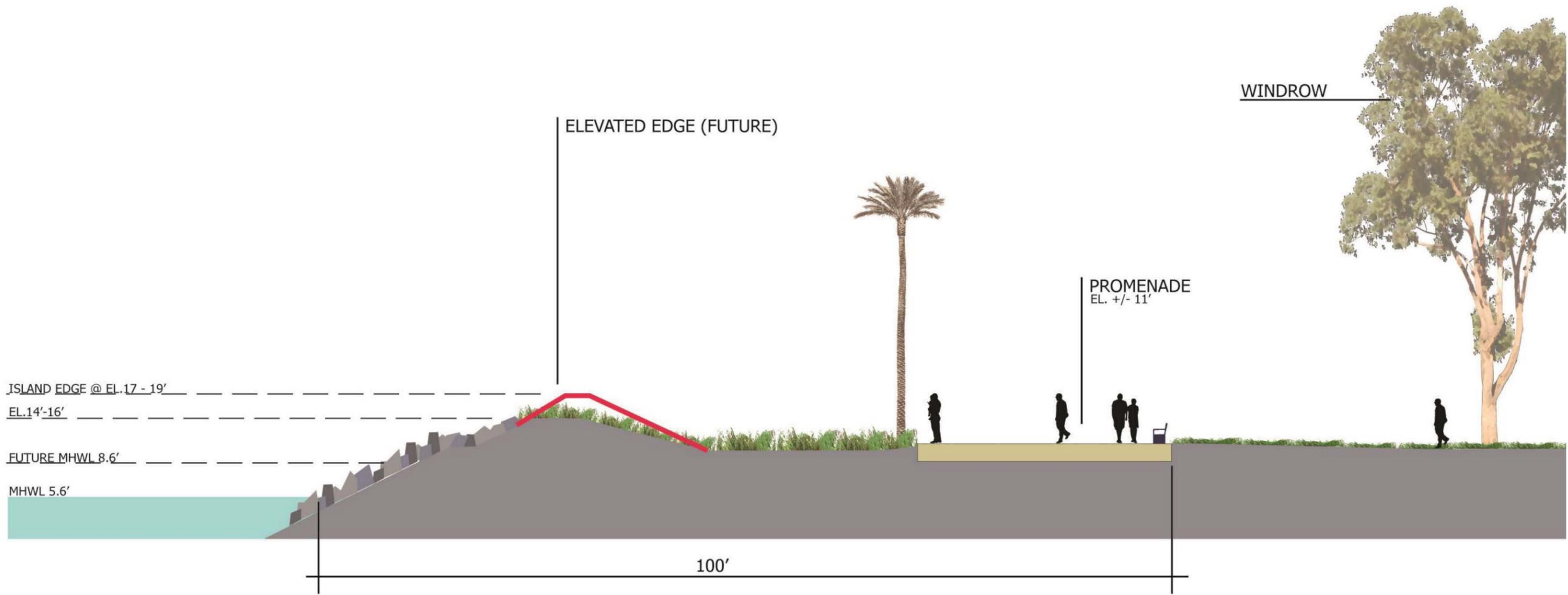


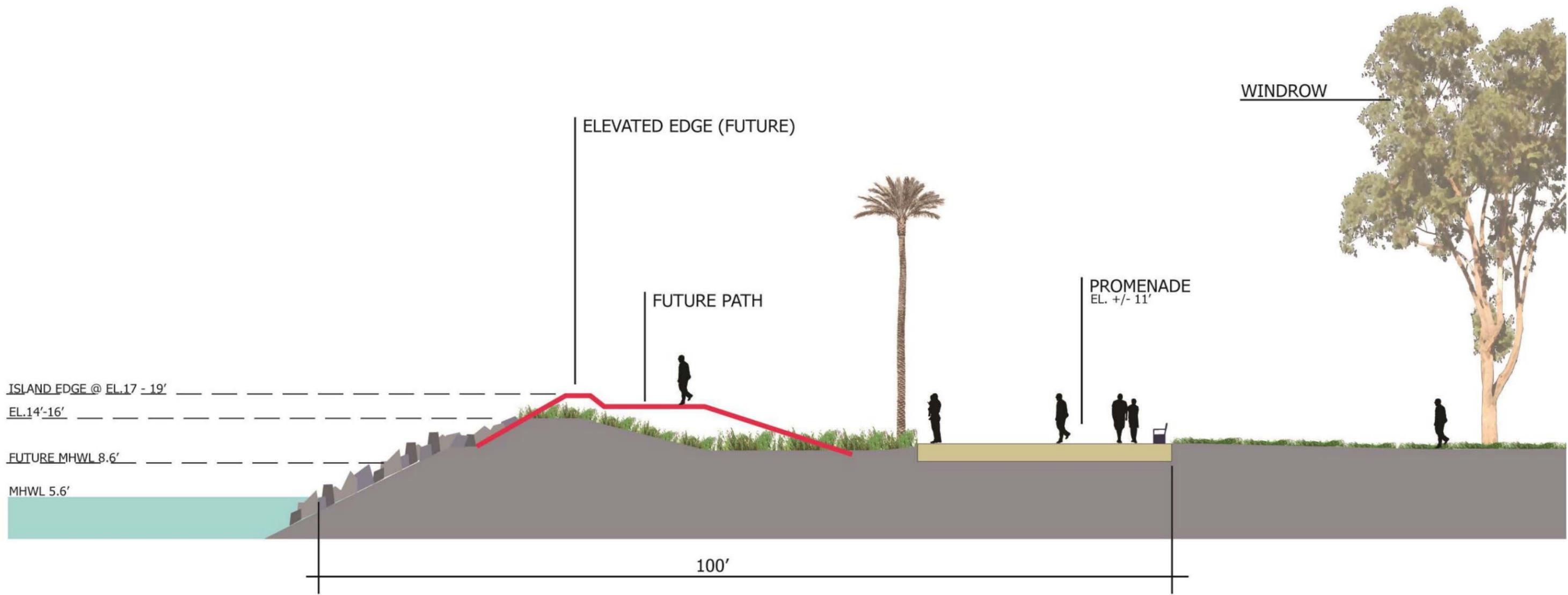
### SECTION A2 CLIPPER COVE PROMENADE





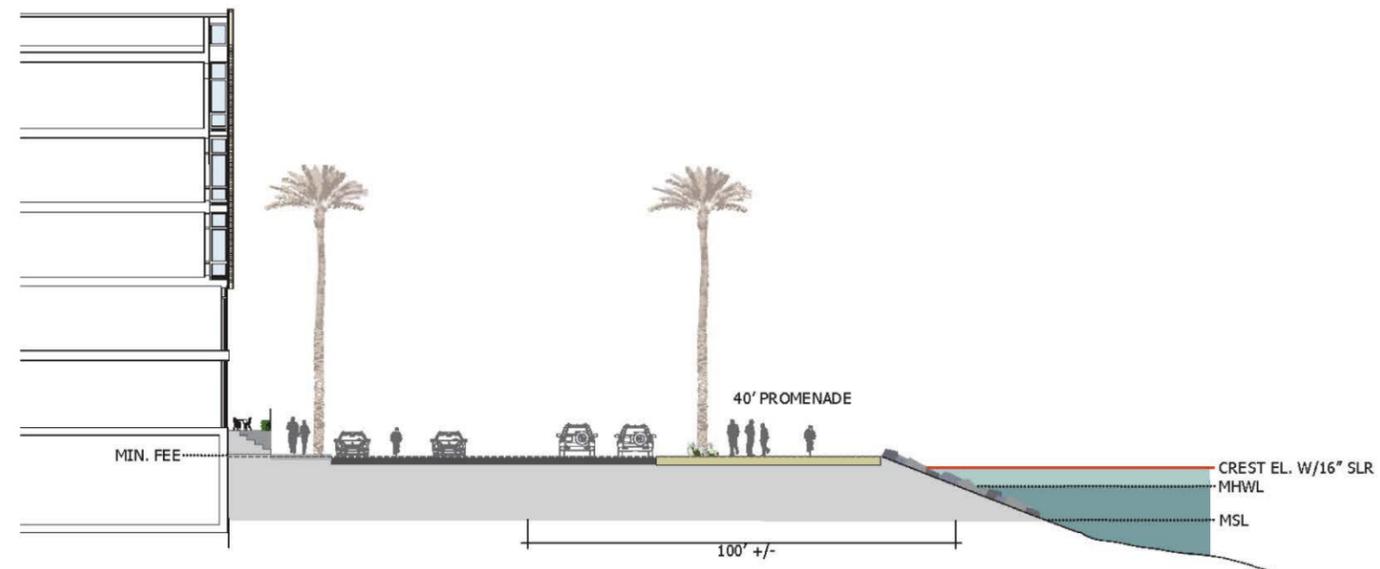






# CLIPPER COVE

## PROPOSED WITH 16" SLR



## PROPOSED WITH 36" SLR

