ELLIOTT BAY SEAWALL PROJECT

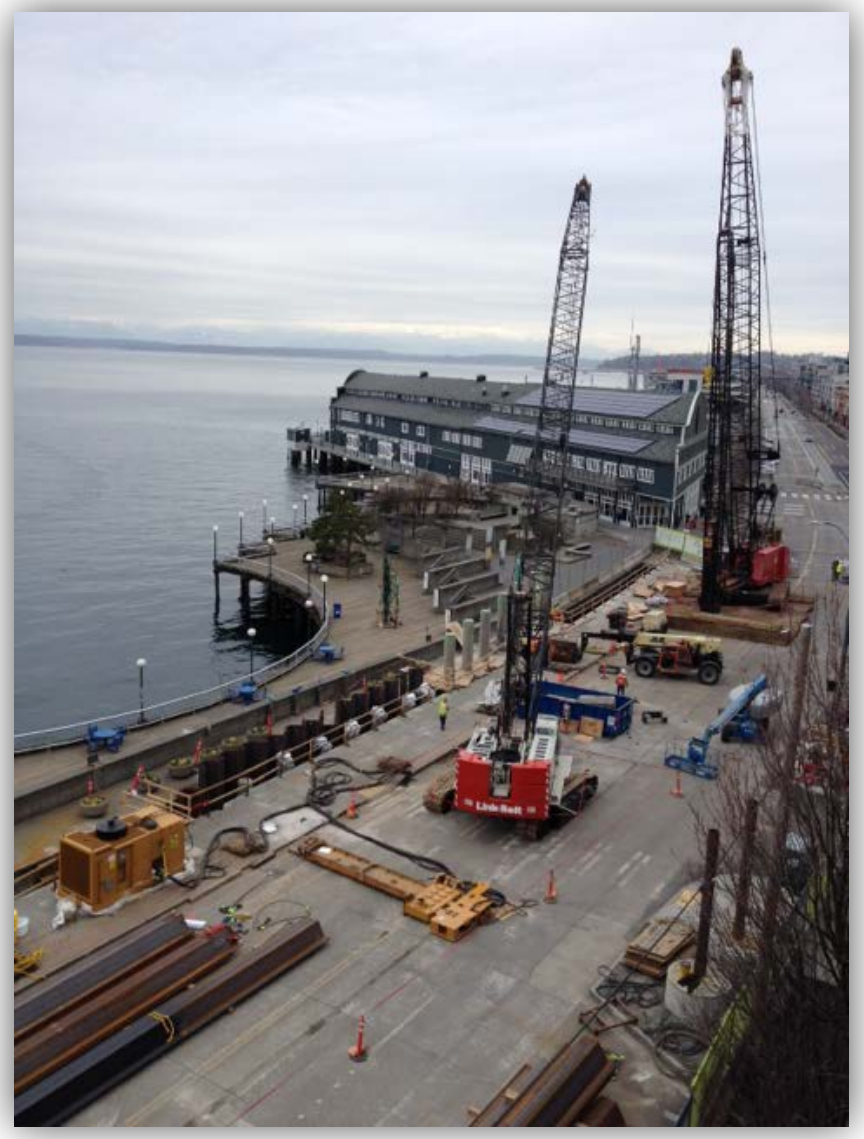
Shoreline and Coastal Planners Group

Jessica Murphy

July 11, 2017

TODAY'S PRESENTATION

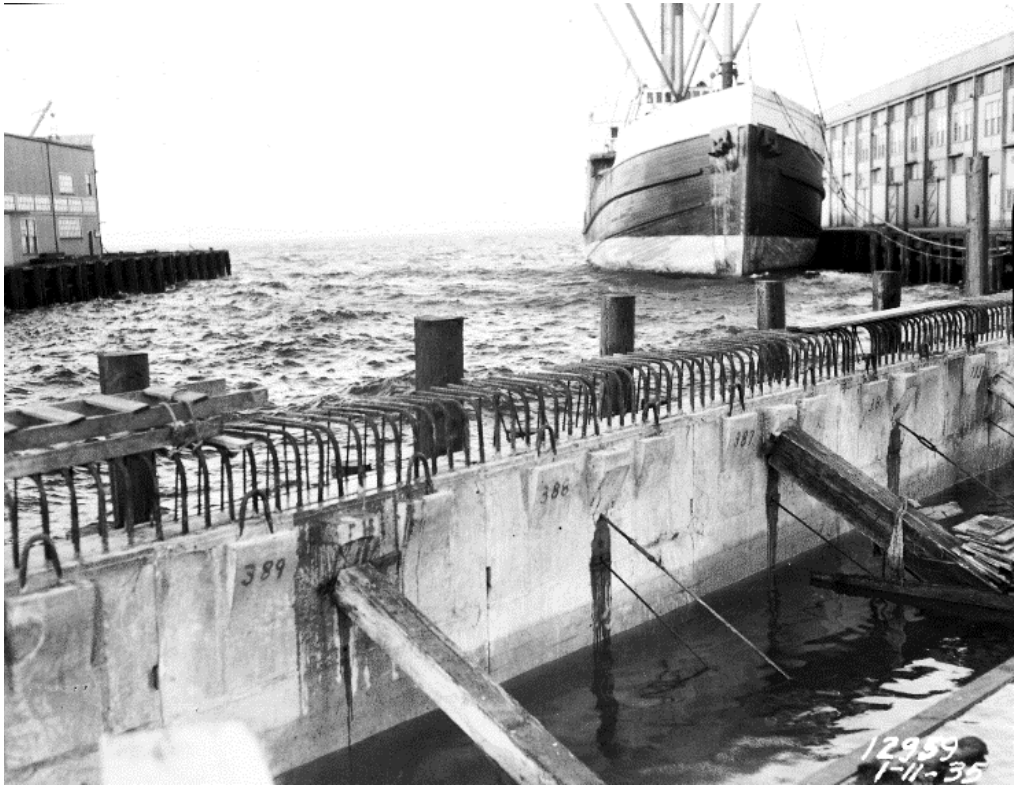
- Introduction
- Purpose and Need
- Engineering Challenges
  - Structural
  - Habitat/permitting
- Future



FOUNDATION OF THE WATERFRONT

PROJECT PURPOSE AND NEED

- **Reduce risk of damage from:**
  - Coastal storms
  - Seismic activity
- **Protect**
  - public safety
  - critical infrastructure
  - economic activities
- **Improve the degraded ecosystem**

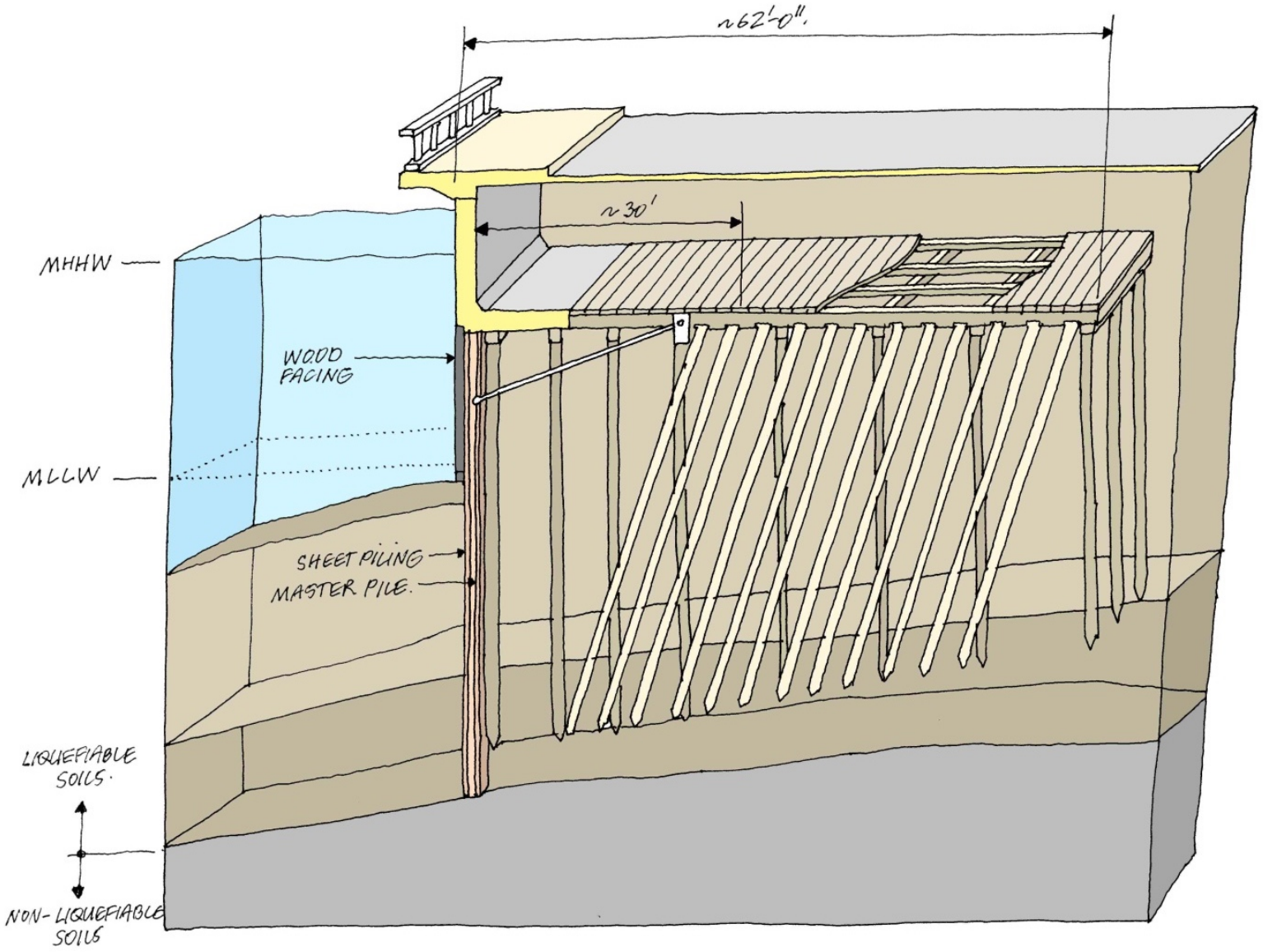

12959
1-11-35


18961-3
8-9-54

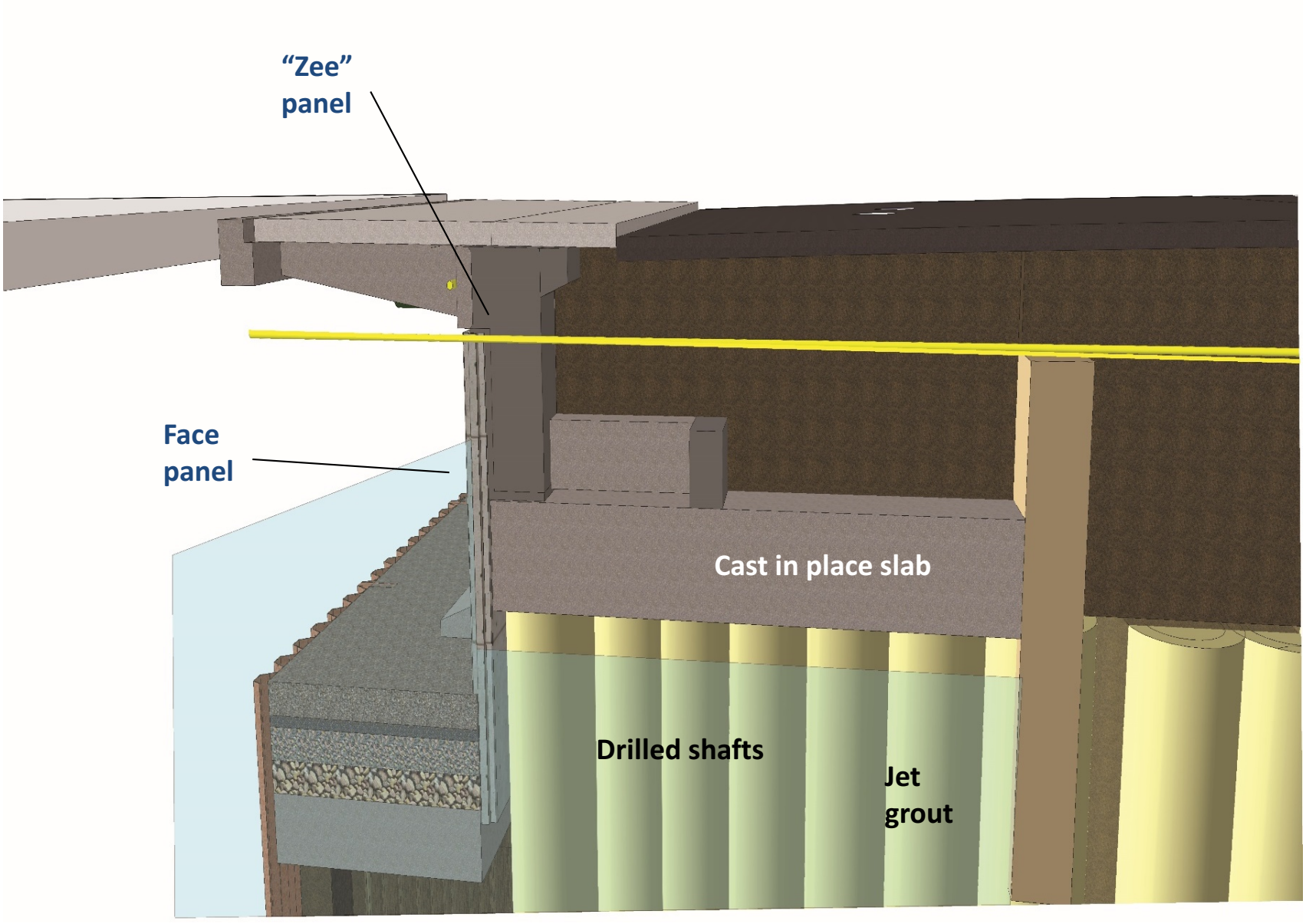
RESULT OF SEAWALL FAILURE

STRUCTURAL DESIGN

OLD WALL DESIGN

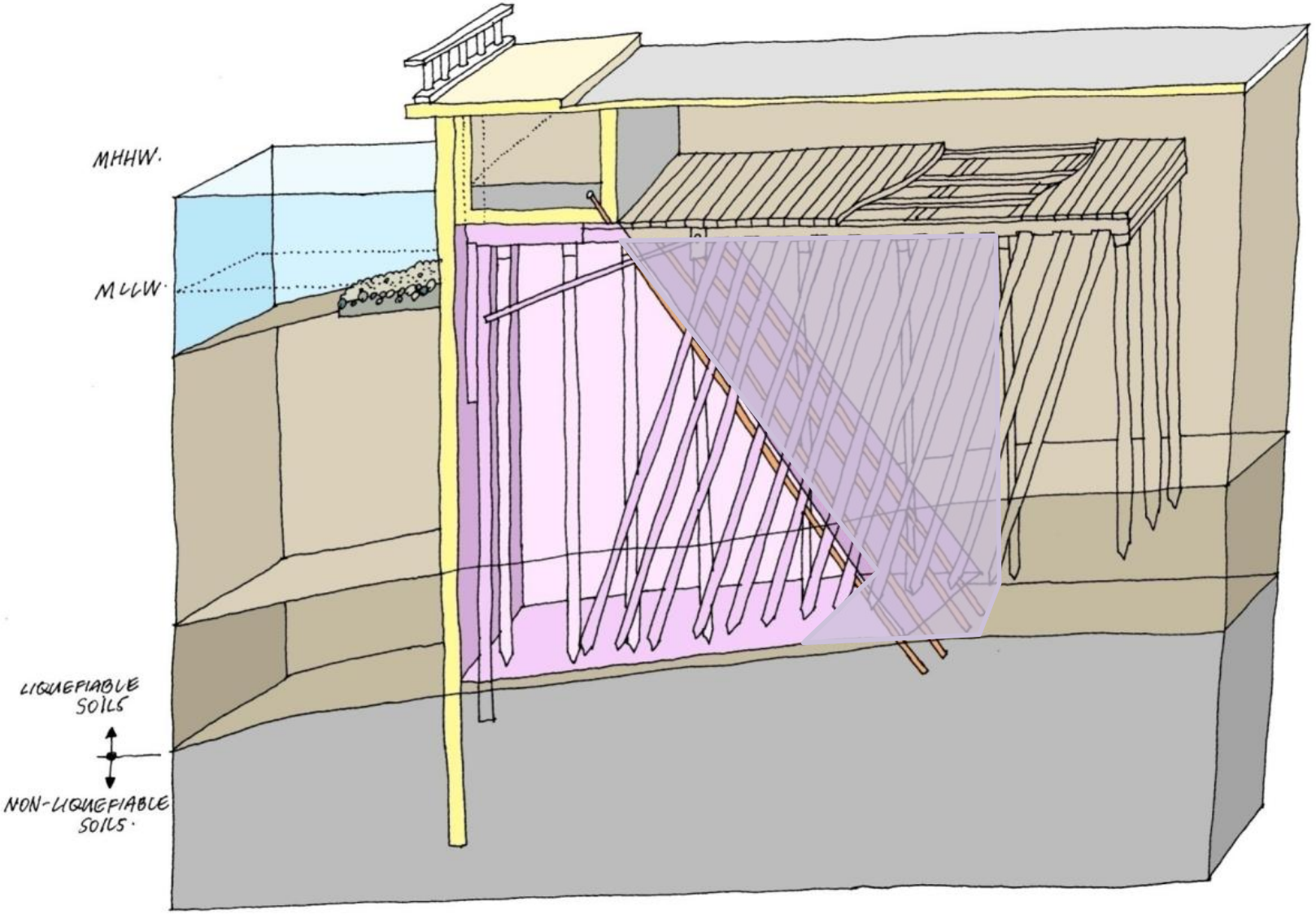


NEW WALL DESIGN



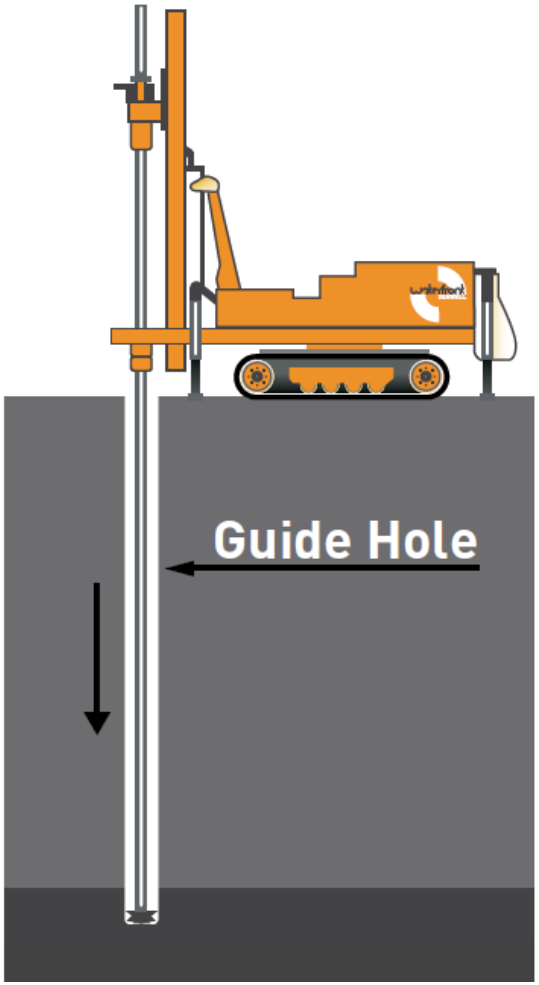
RELIEVING PLATFORM CONDITION

STRUCTURAL SOLUTION – JET GROUTING

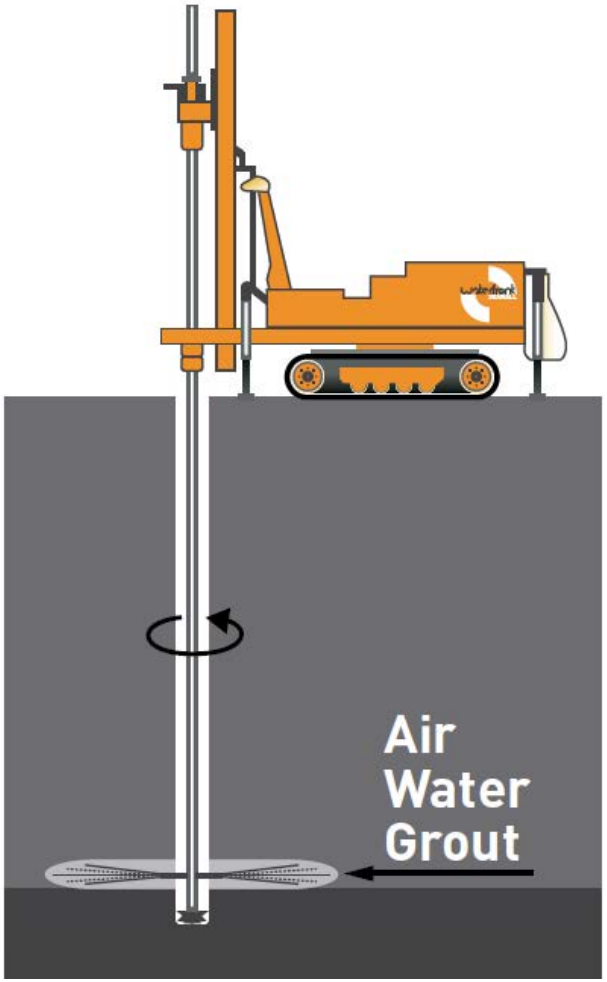


JET GROUTING PROCESS

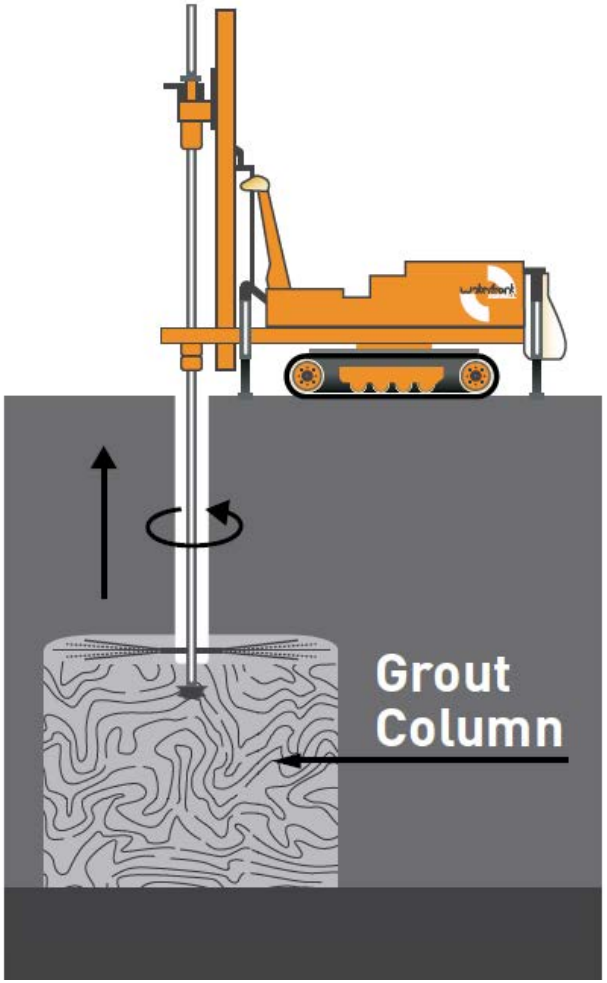
Step 1



Step 2



Step 3



JET GROUT

MAJOR STRUCTURAL ELEMENTS

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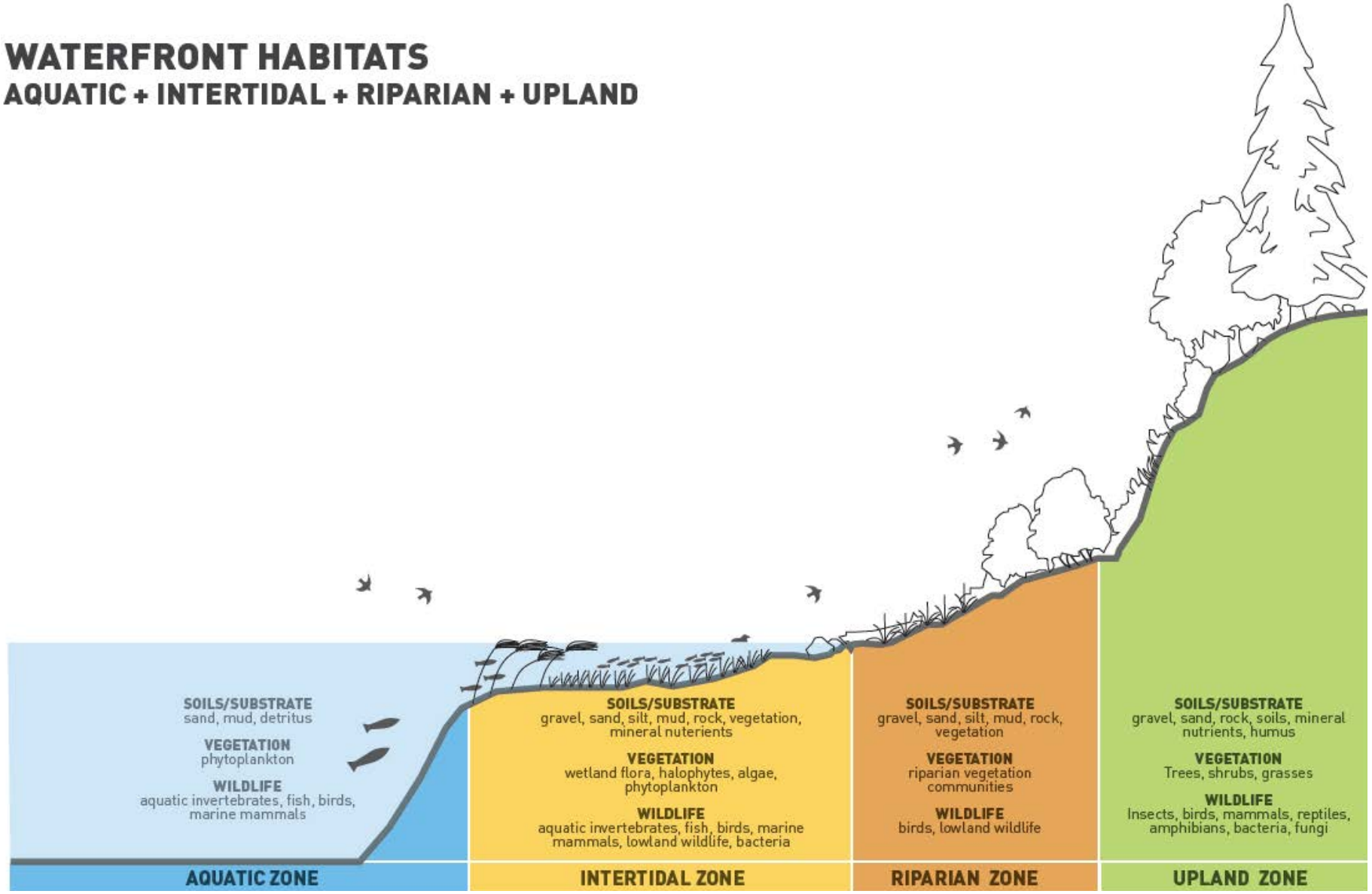
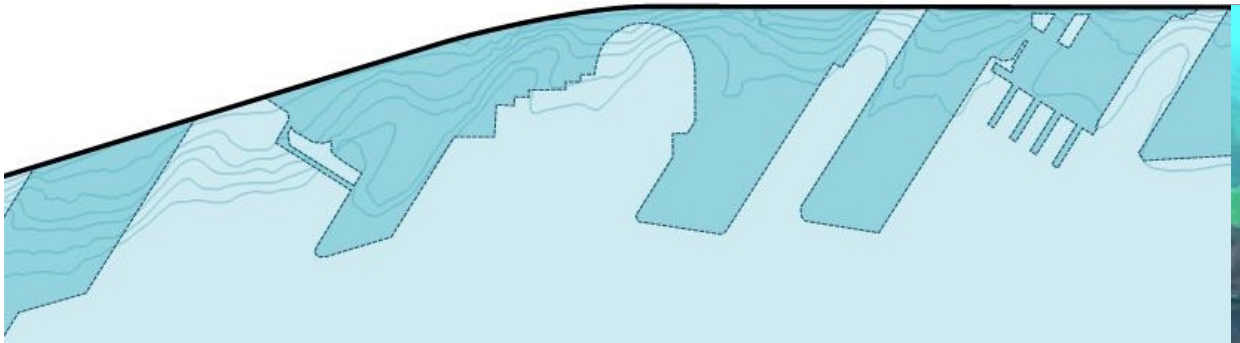
HABITAT DESIGN

NEARSHORE ECOSYSTEM: A PIECE OF THE PUZZLE



RAILROAD AVENUE (1931)

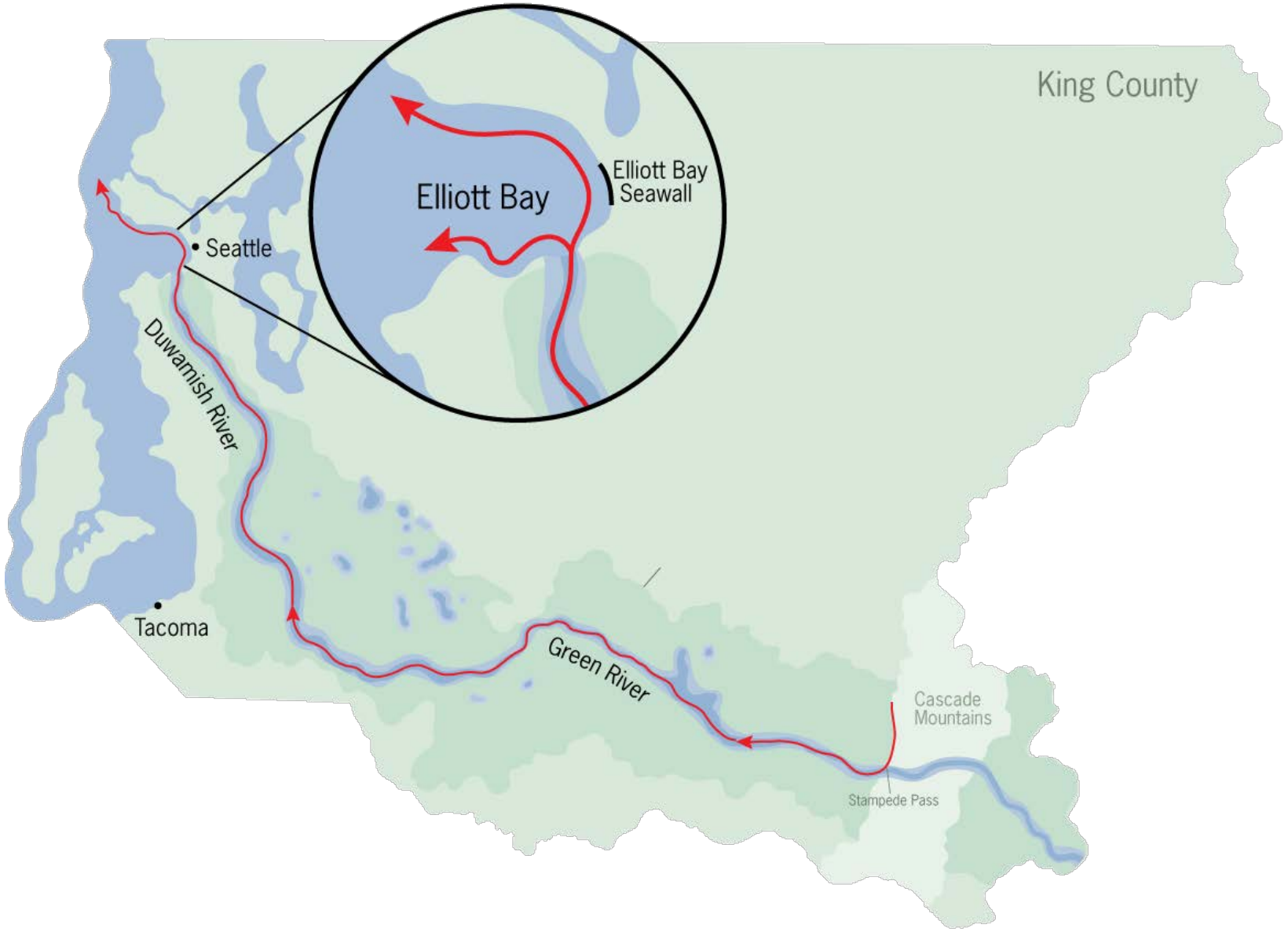
LEARNING FROM THE EXPERTS



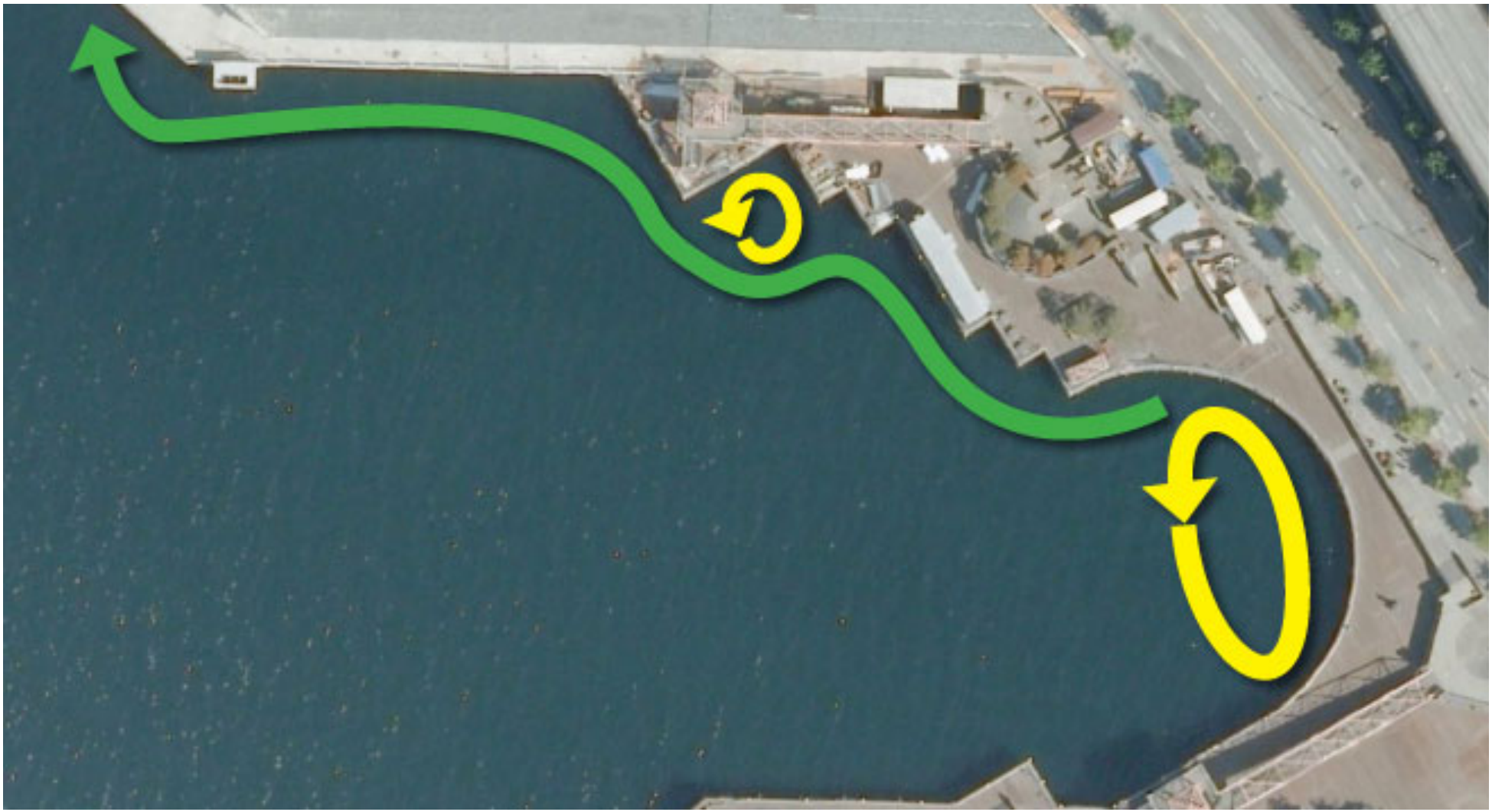
The City of Seattle has worked closely with UW and other experts to investigate how the project could restore habitat along the seawall.

- **Studies include:**
  - Fish counts
  - Light penetrating surface studies
  - Wall surface texture studies

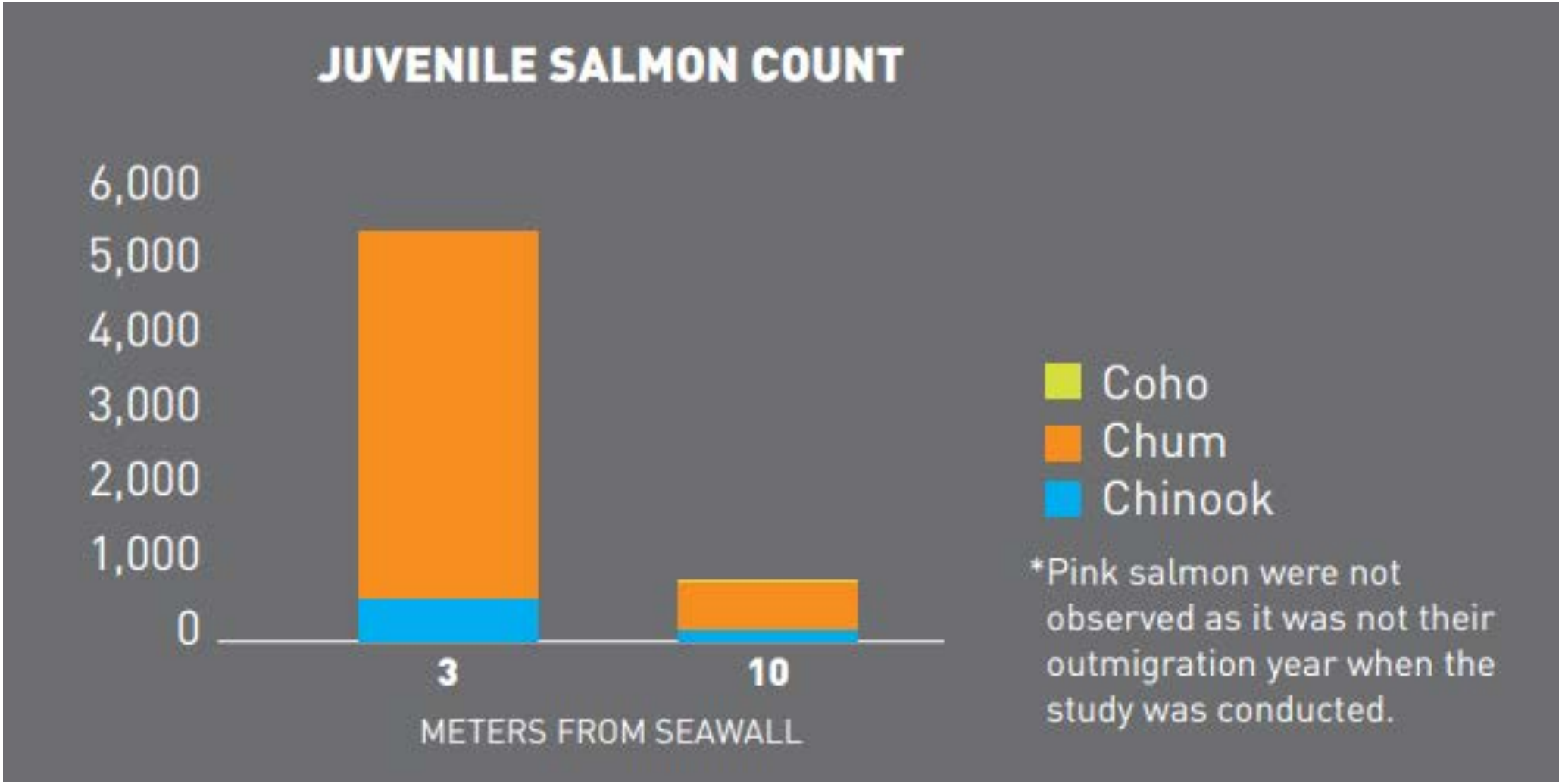
SALMON MIGRATION PATH



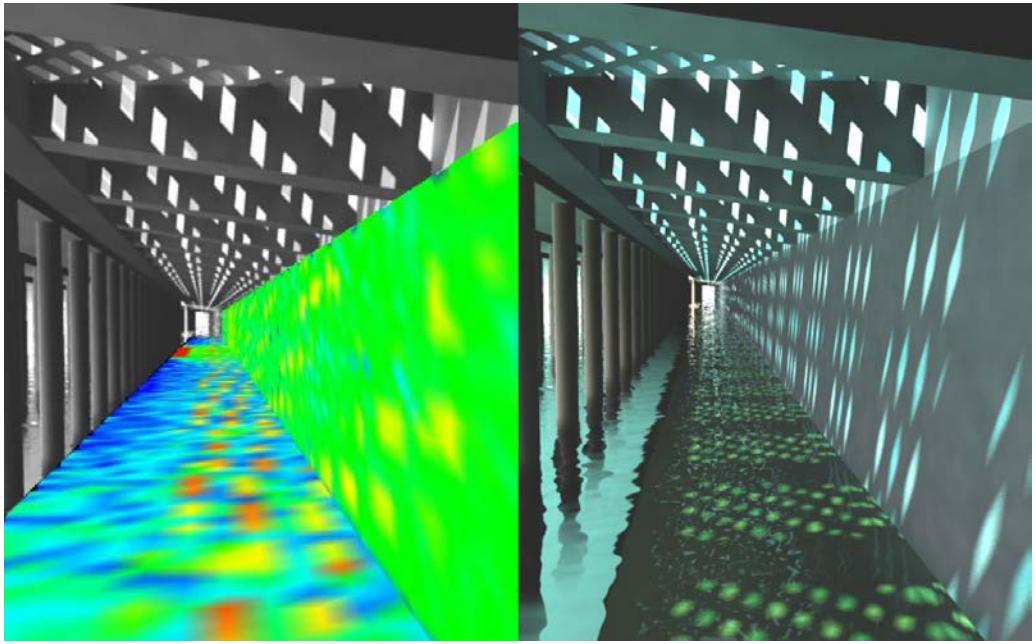
OBSERVATIONAL STUDIES: FISH BEHAVIOR AT PIERS



OBSERVATIONAL STUDIES: FISH COUNTS



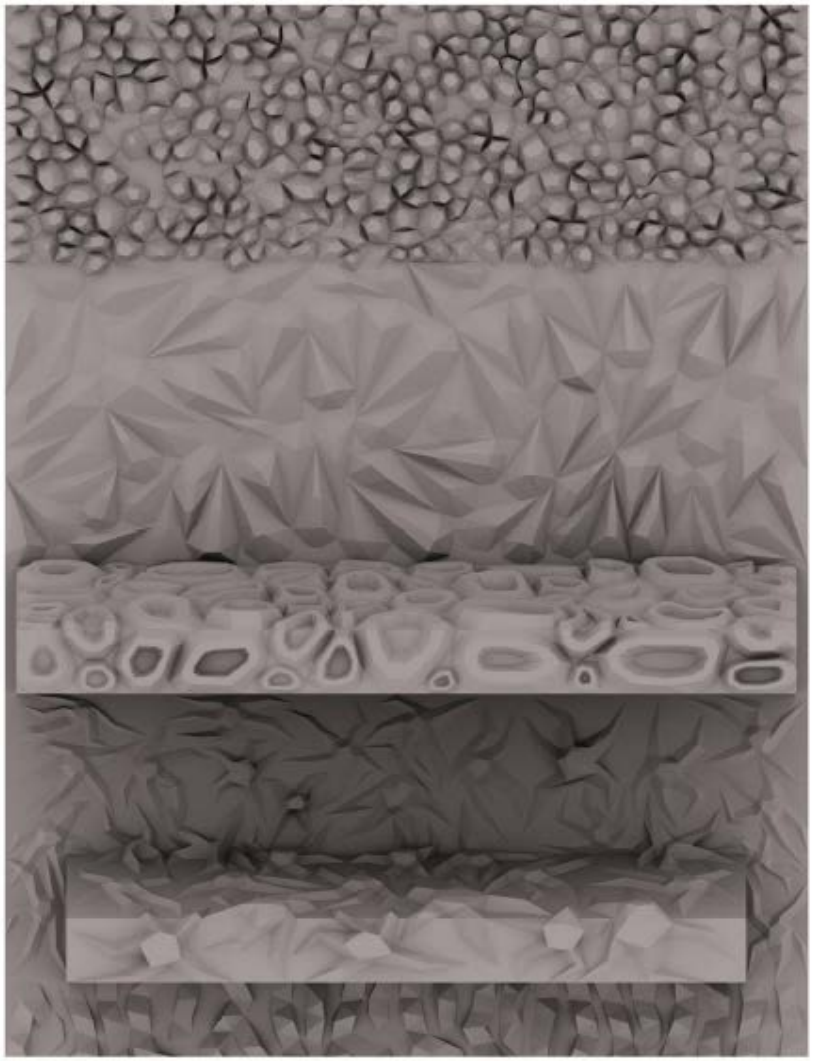
LIGHT PENETRATING SURFACE STUDY



- Located on Pier 62/63
- Installed October 2012
- Evaluate 3 types of LPS
  - Glass panel
  - Grating
  - Solar tube
- Used computer modeling to find optimum light penetration to habitat below

WALL FACE TEXTURE STUDY

- Four year study
- Test panels attached to existing seawall
- Several different panel textures and designs studied
- Textured wall surfaces promoted additional habitat growth



HABITAT DESIGN

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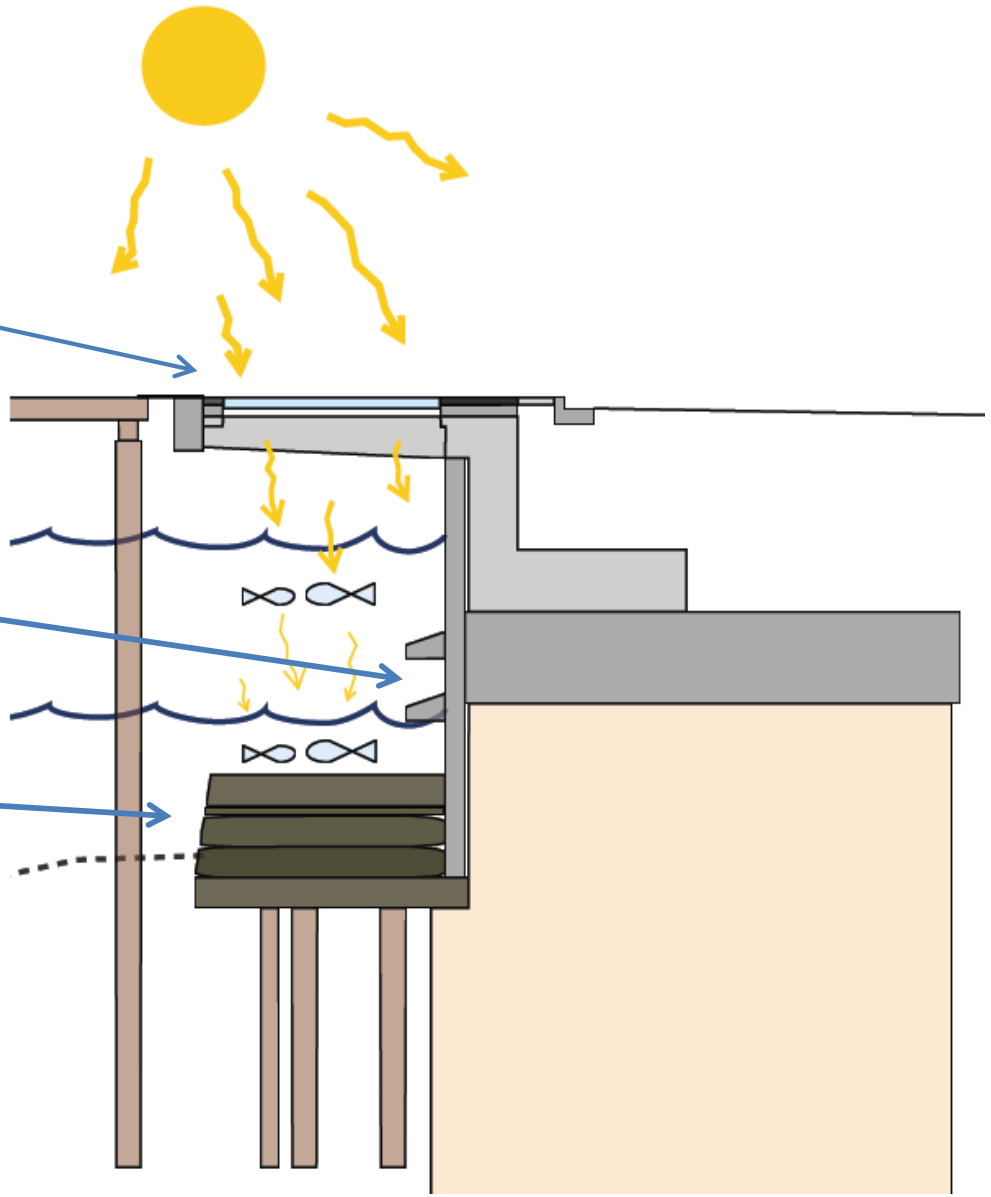
Light penetrating sidewalks

Textured wall face & habitat shelves

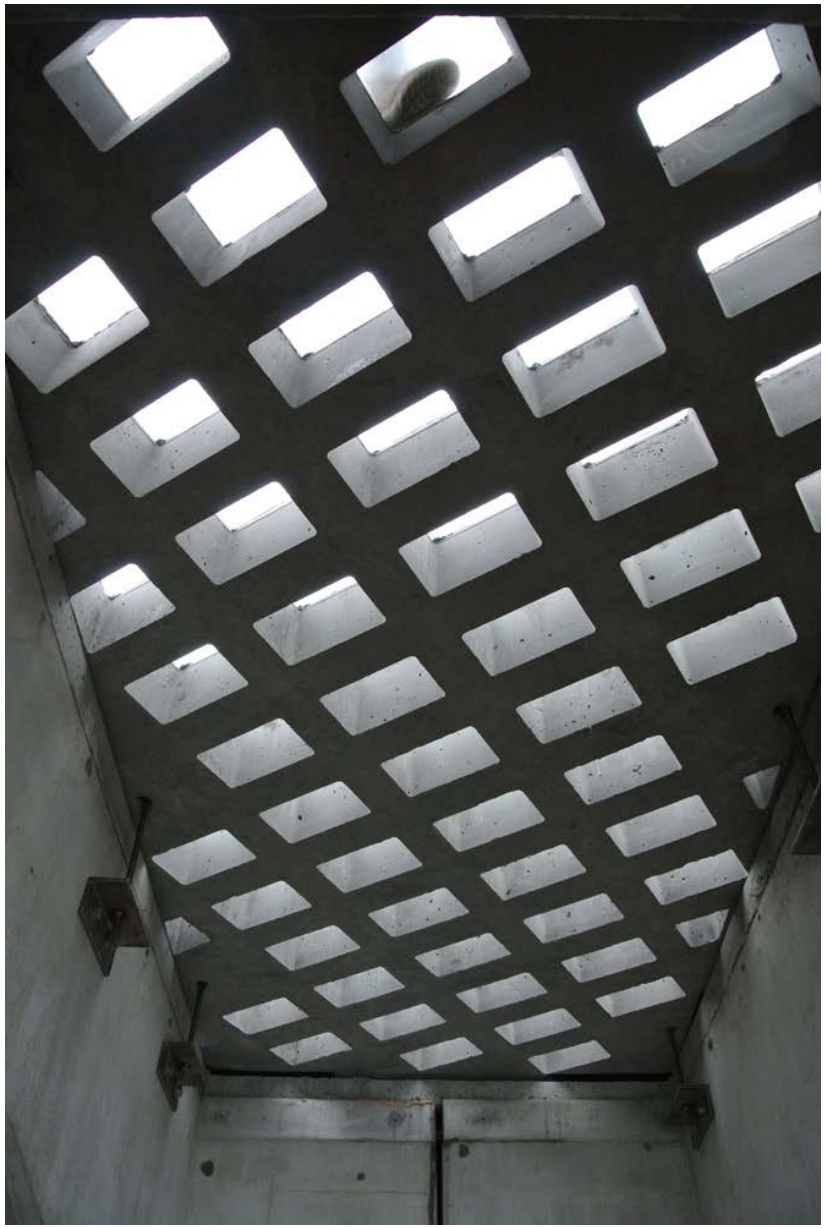
Habitat bench



HABITAT SHELVES AND MARINE MATTRESSES

LIGHT PENETRATING SURFACE SIDEWALKS

LIGHT PENETRATING SURFACE SIDEWALKS



FUTURE MONITORING

- Light penetration
- Invertebrate colonization
- Salmon presence and behavior
- Adaptive design elements
- Seismic monitoring

QUESTIONS?

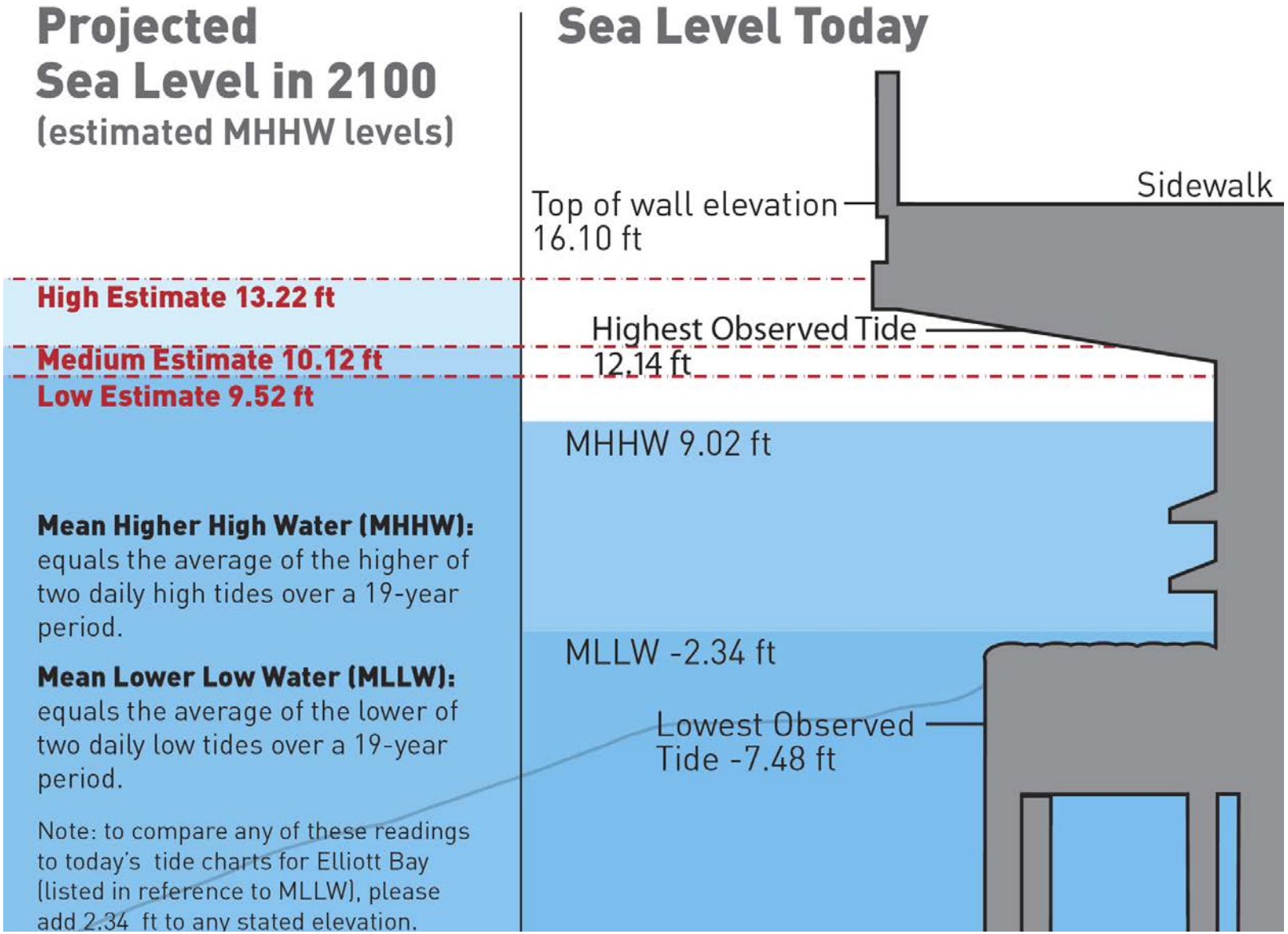
Email: seawall@waterfrontseattle.org

Website: waterfrontseattle.org/seawall

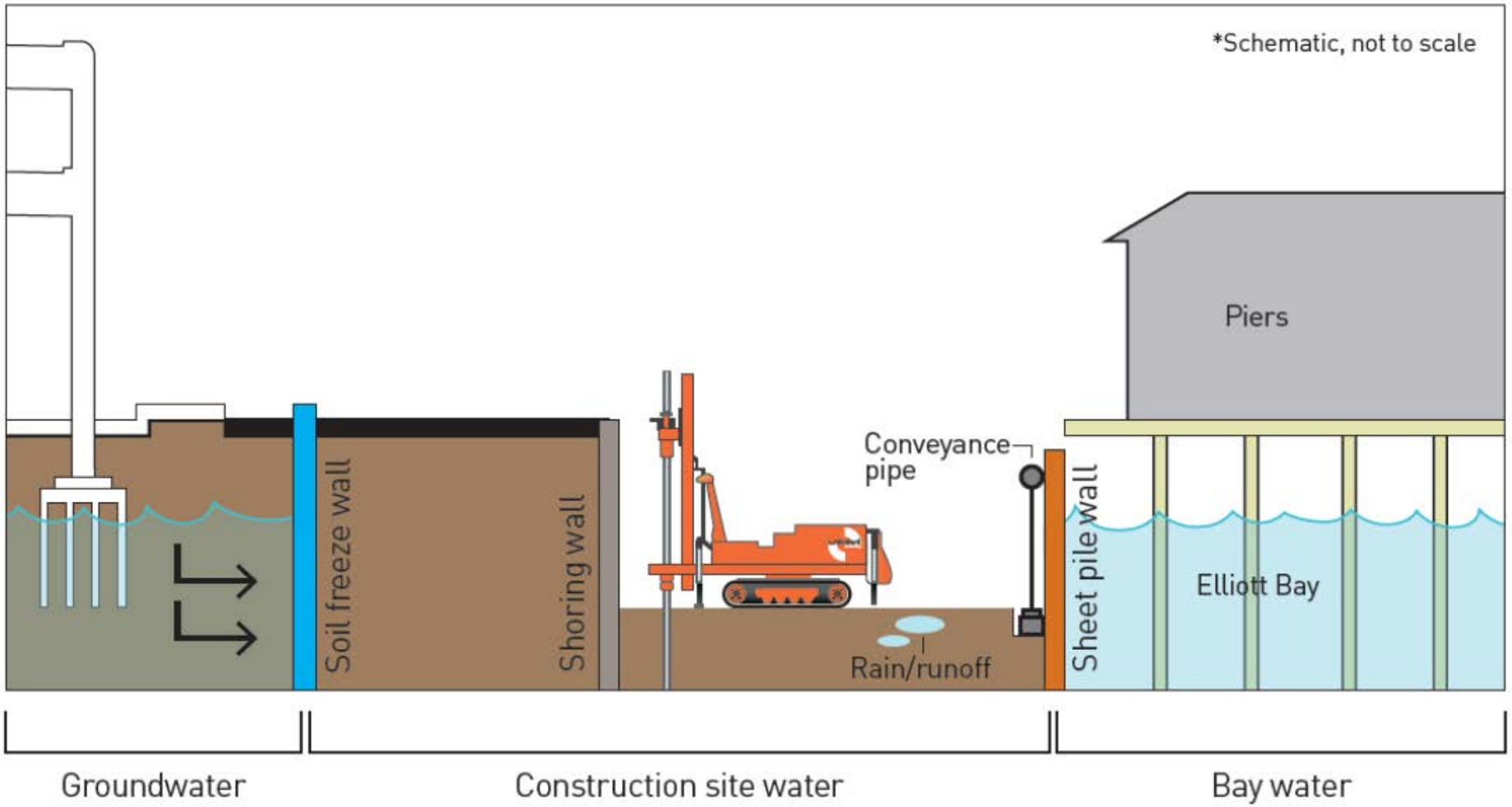
Construction hotline: 206.618.8584

BACK POCKET

SEA LEVEL RISE



WATER MANAGEMENT



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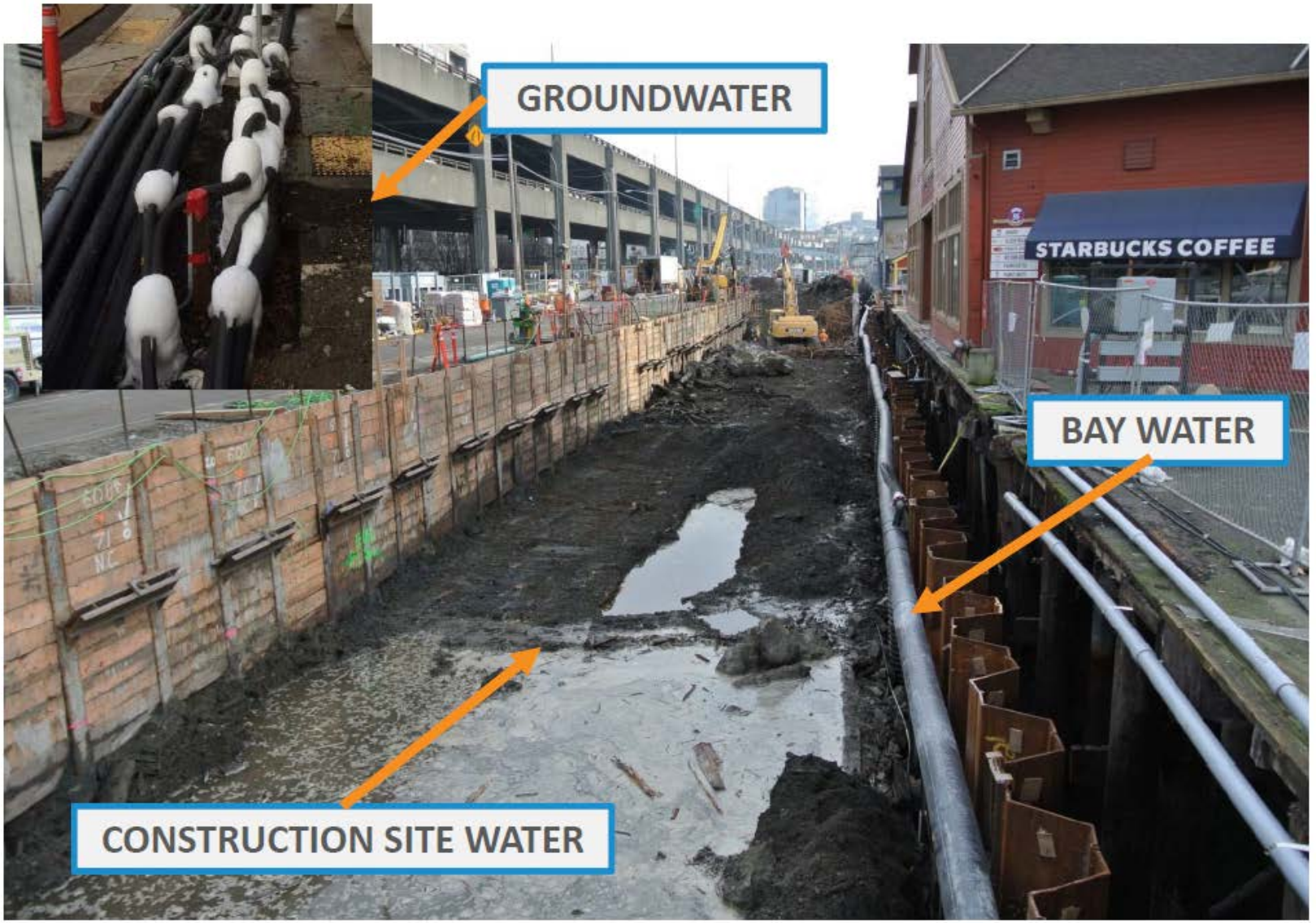
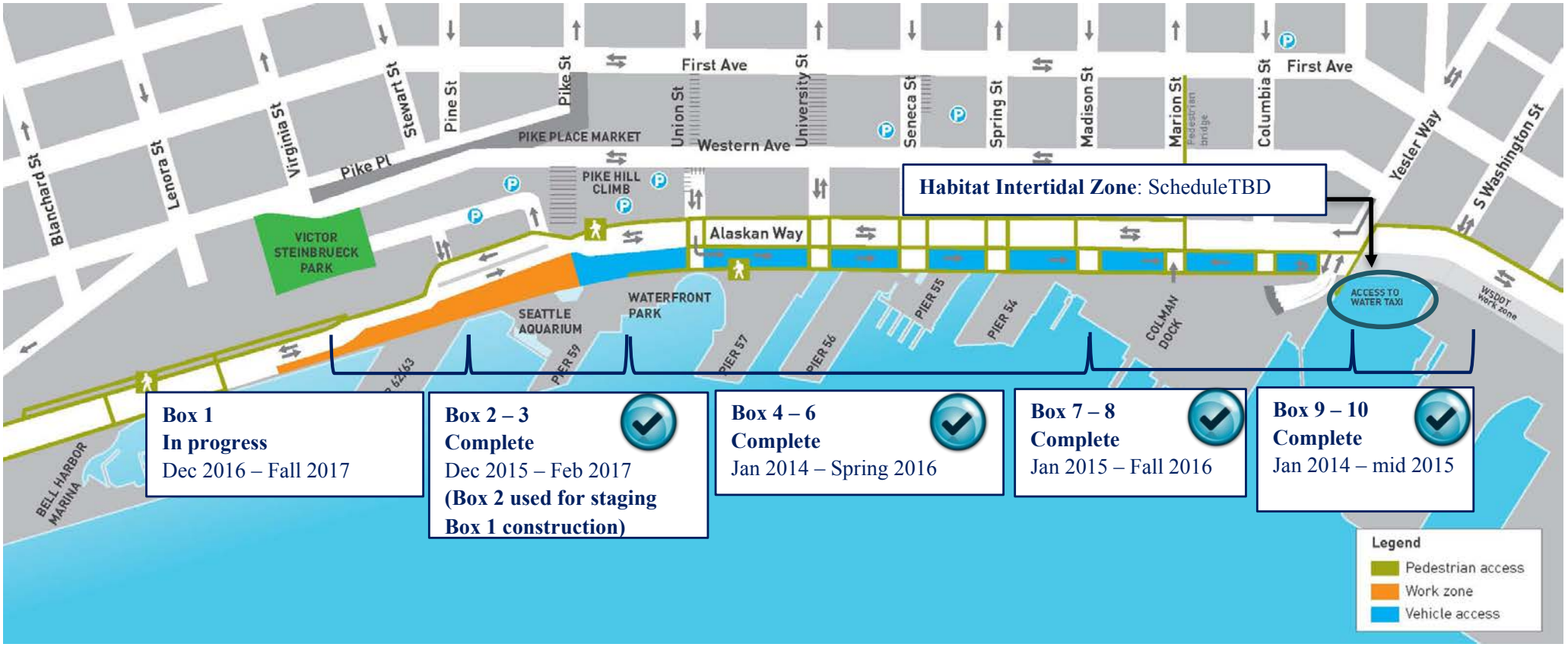
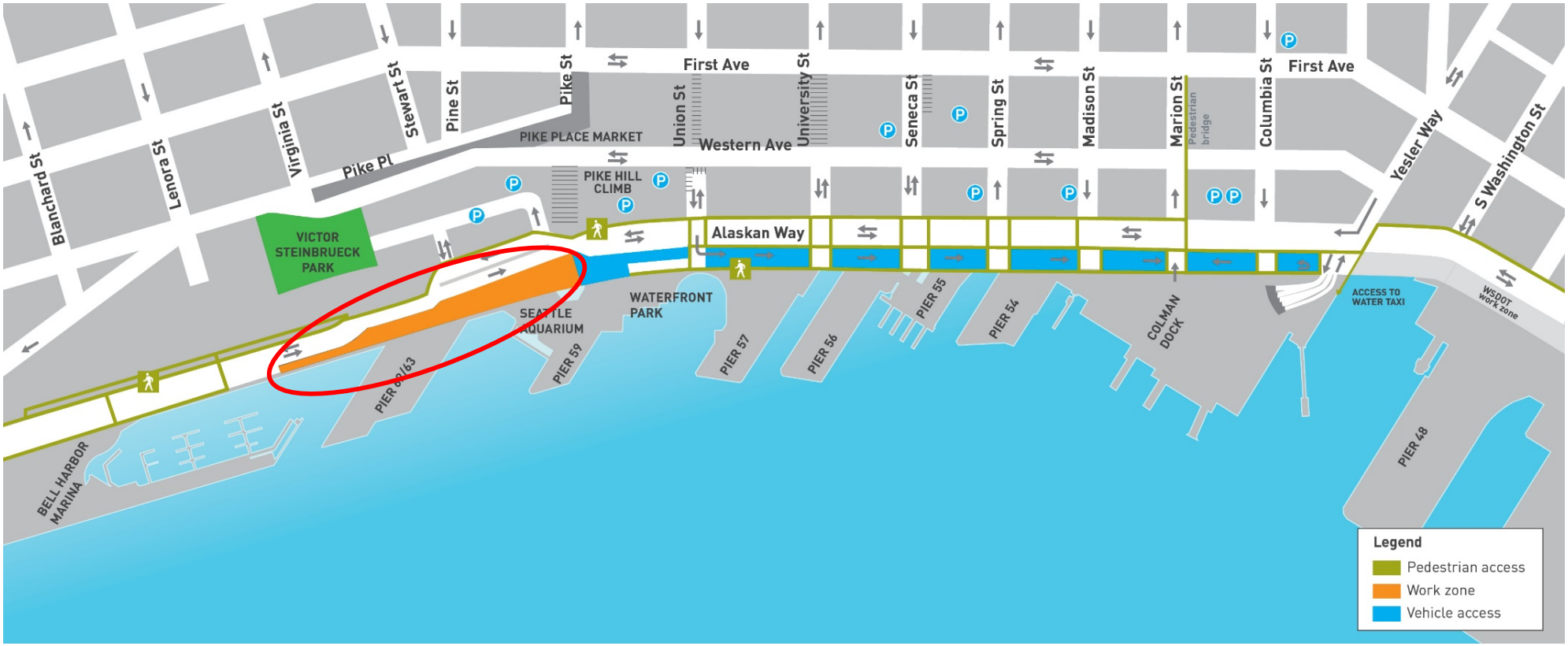


SCHEDULE


Habitat Intertidal Zone: ScheduleTBD
Box 1
In progress
Dec 2016 – Fall 2017
Box 2 – 3
Complete
Dec 2015 – Feb 2017
(Box 2 used for staging Box 1 construction)
Box 4 – 6
Complete
Jan 2014 – Spring 2016
Box 7 – 8
Complete
Jan 2015 – Fall 2016
Box 9 – 10
Complete
Jan 2014 – mid 2015
Legend
Pedestrian access
Work zone
Vehicle access
Alaskan Way
First Ave
Western Ave
Pike Pl
PIKE PLACE MARKET
PIKE HILL CLIMB
VICTOR STEINBRUECK PARK
SEATTLE AQUARIUM
WATERFRONT PARK
COLMAN DOCK
ACCESS TO WATER TAXI
BELL HARBOR MARINA
Blanchard St
Lenora St
Virginia St
Stewart St
Pine St
Pike St
Union St
University St
Seneca St
Spring St
Madison St
Marion St
Columbia St
Yesler Way
S Washington St
PIER 59
PIER 57
PIER 56
PIER 55
PIER 54

CURRENT AREA OF CONSTRUCTION



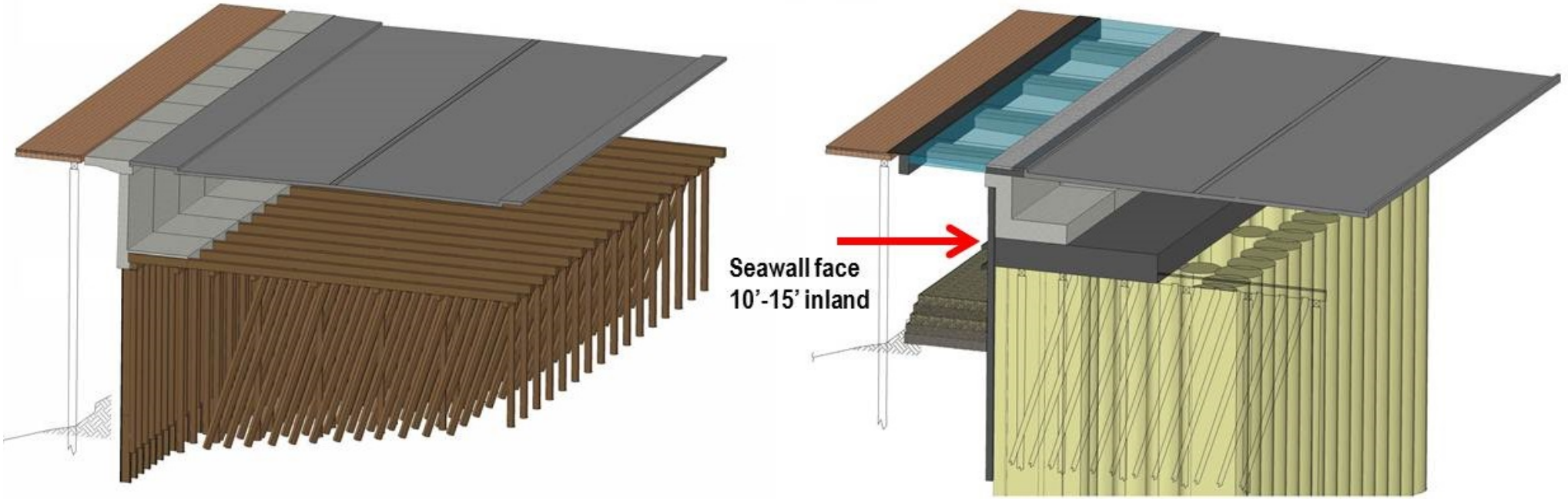
WORK IN BOX 1

- Expected completion fall 2017

RAILROAD AVE (1931)

GRIBBLES

EXISTING VS. NEW SEAWALL



FINAL SEAWALL