



# East Bayfront Boardwalk & In-water Pipe

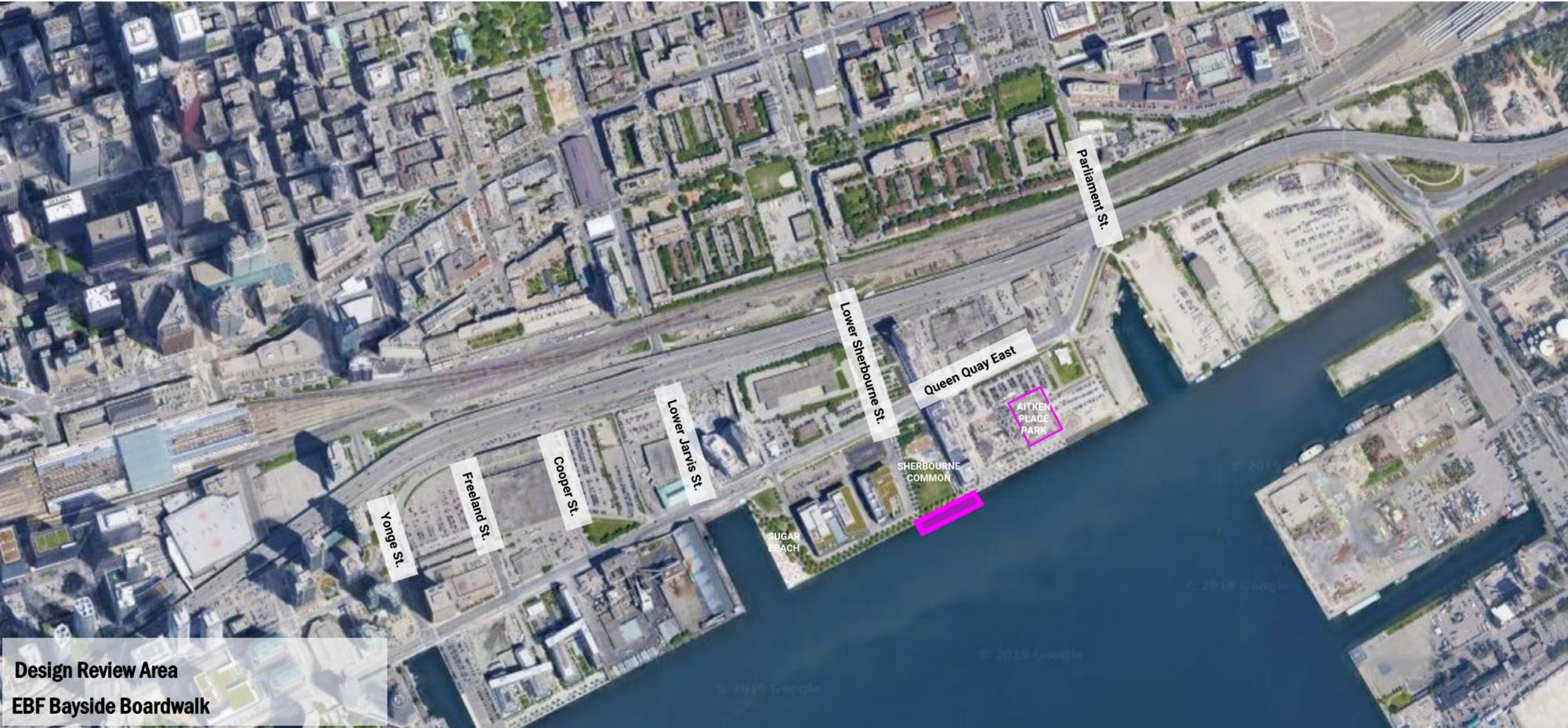
Detailed Design

December 11<sup>th</sup>, 2019

# Site Context

## East Bayfront Boardwalk & In-water Pipe

Proponent: Waterfront Toronto  
Design Team: West 8, DTAH, WSP  
Review Stage: Detailed Design



Design Review Area  
EBF Bayside Boardwalk

# Project Description & Background

## Project Description

- +/- 158.5 of Boardwalk located adjacent to Shelbourne Common
- The In-Water Pipe will connect the Dockside subdivision's storm drainage to the Bayside subdivision.

## Project Timeline

- October 2019 – Schematic Design DRP
- December 2019 – Detailed Design DRP (Likely final review)
- 2020 Q1 – Tender
- 2020 Q2 – Construction start, duration 1 year

## Boardwalk @ Bayside Public Realm DRP Recap

- September 2011: East Bay Front Water's Edge Update
- November 2012: Queens Quay East Bay to Parliament Street
- October 2019: Boardwalk SD

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### In-water Pipes & Boardwalk

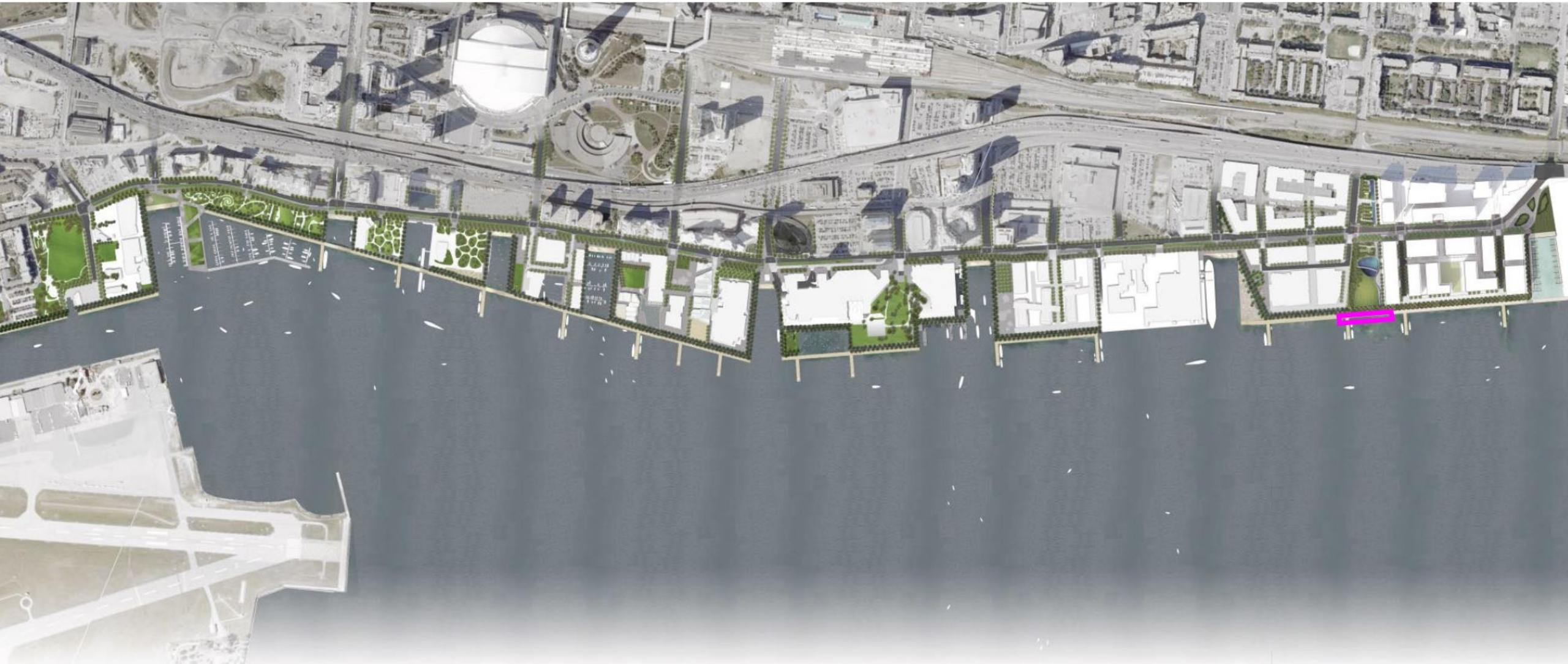
- The In-Water Pipe will connect the Dockside subdivision's storm drainage to the Bayside subdivision. A new sewer pipe has been designed adjacent to the dock-wall to replace the SCO conveyance; Dockside storm water will flow to Bayside storm water management system.



# Central Waterfront Master Plan Future Network of Boardwalks

East Bayfront Boardwalk &  
In-water Pipe

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# Destination Artwork

## East Bayfront Boardwalk & In-water Pipe

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- A highly visible, major artwork on Toronto's waterfront
- Could be a single piece or multiple components across the site (park, WEP, water), located anywhere within the identified zone
- Will respond to the physical, cultural, social, ecological and historical context of the site
- Artwork will be installed after the boardwalk

# Existing Photos Area of Proposed Boardwalk

East Bayfront Boardwalk &  
In-water Pipe

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# Existing Photos At Sherbourne Common Looking East

East Bayfront Boardwalk &  
In-water Pipe

Proponent: Waterfront Toronto  
Design Team: West 8, DTAH, WSP  
Review Stage: Detailed Design



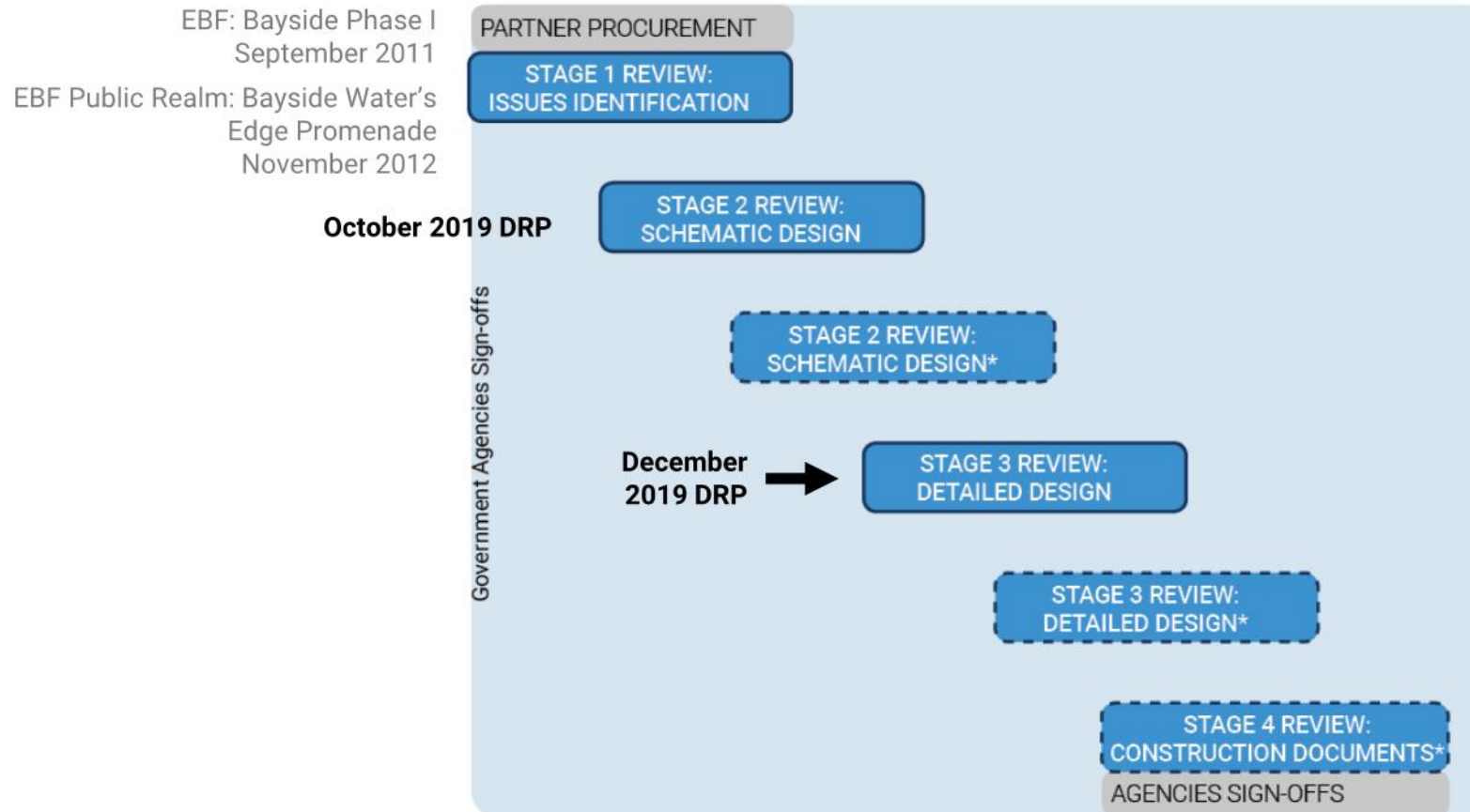


# Project Approval Stage

## DRP Stream 2: Public land – Agencies Sign-Offs

### East Bayfront Boardwalk & In-water Pipe

Proponent: Waterfront Toronto  
Design Team: West 8, DTAH, WSP  
Review Stage: Detailed Design



\*This review will only be required if the project has changed significantly since the previous review, or the Panel, Waterfront Toronto, or City staff have significant outstanding concerns.

# Recap from October 2019

## Schematic Design Consensus Comments

East Bayfront Boardwalk &  
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Proponent: Waterfront Toronto  
Design Team: West 8, DTAH, WSP  
Review Stage: Detailed Design

### General

- Commended the team for taking past boardwalk projects into consideration while offering design options moving forward.
- The on-going update to the Marine Use Strategy is important and should be brought forth for review when ready.

### Boardwalk and Bench Design

- Supported the proposed 6m width, herringbone board pattern, and the proposed elevation of the boardwalk.
- Supportive of the gentle transition from Water's Edge Promenade to boardwalk and elimination of handrails.
- Supportive of the granite bench concept with some concerns for the warmth of the material in shoulder seasons and user comfort consider further refinement.
- Suggested considering a tiered boardwalk where a portion of the boardwalk steps down to a lower elevation around the vertical pipe access points and can be submerged during high water levels to serve smaller boats and create a different experience.

### Materiality

- Appreciated the exploration and research on materials and samples.
- Concerned with the yellow cedar in terms of sustainability and cost, consider alternatives such as Ash and reference FSC certification standards to ensure sustainable sourcing and processing.
- Test the wood material options through seasonal exposure and consider the effect of weathering

# Areas for Panel Consideration – Waterfront Toronto

East Bayfront Boardwalk &  
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- Boardwalk Wood Selection / Pattern
- Elimination of boardwalk access point near water outfall
- Boardwalk handrails at the ends



# In Water Pipe Boardwalk Refresh

## Detailed Design - Design Review Panel

December 11, 2019

**WEST 8**



# Approved Design Approach

Design Direction Presented and Approved at October 2019 DRP

## 1. WIDTH

6m walking width with 0.5m mooring edge and toe rail

## 2. ELEVATION

One step below WEP, 0.12m, no handrails

## 3. BENCH

Strip of Canadian Shield  
2m wide Granite



## 4. WATERS EDGE CONDITION

Galvanized steel toe rail with strengthened profile, glulam yellow cedar edge beam

## 5. DECK PATTERN

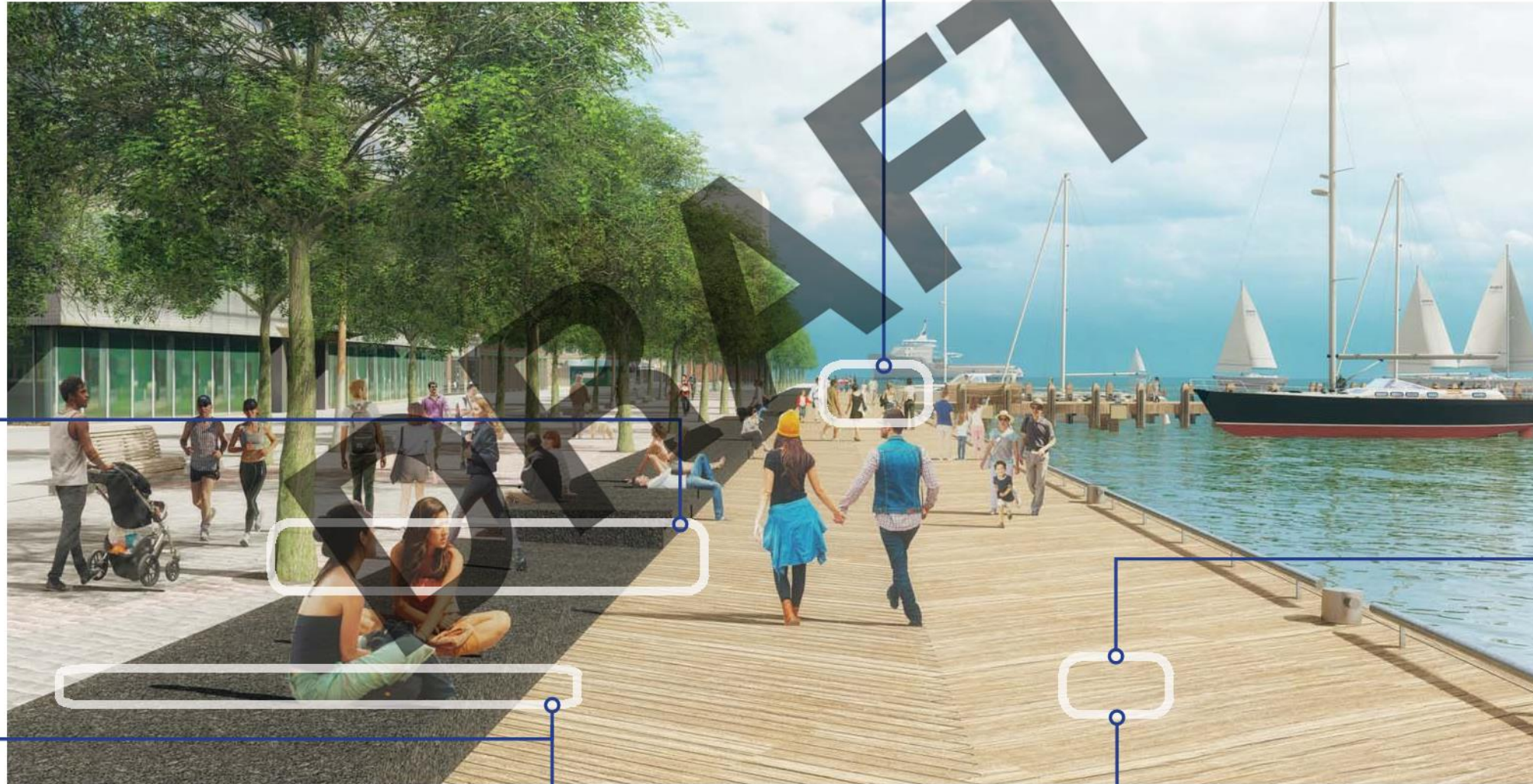
Asymmetrical Herringbone

## 6. WOOD TYPE

More Research Needed to choose the most ethical and sustainable and durable wood

# Design Development Topics

Proposed Design for Discussion Today



## 1. ACCESS POINTS

Alignment, sizing, and circulation, future connection to finger piers

## 2. BENCH REFINEMENT

Finish, dimension, attachment, lighting, overall form

## 3. LIGHTING

Concept approach

## 4. TEMPORARY WATERS EDGE CONDITION

Termination of boardwalk at E and W ends,

## 5. DECKING DETAILS

1:1 study, integration of stormwater access hatches, attachment details

## 6. WOOD TYPE

Further Research and Conclusions

## Design Principles



**Iconic**

**Consistent Innovative  
Recognizable Timeless**



**Simple**

**Elegant Versatile  
Maintenance Friendly**



**Robust**

**Durable Resilient  
Sustainable Harbour Friendly**

# Context: Waterfront Walk Refresh + The Primary Waterfront





# Context: Waterfront Walk Refresh + The Primary Waterfront





# Attachment to Future Finger Piers and Future Boardwalk Extensions

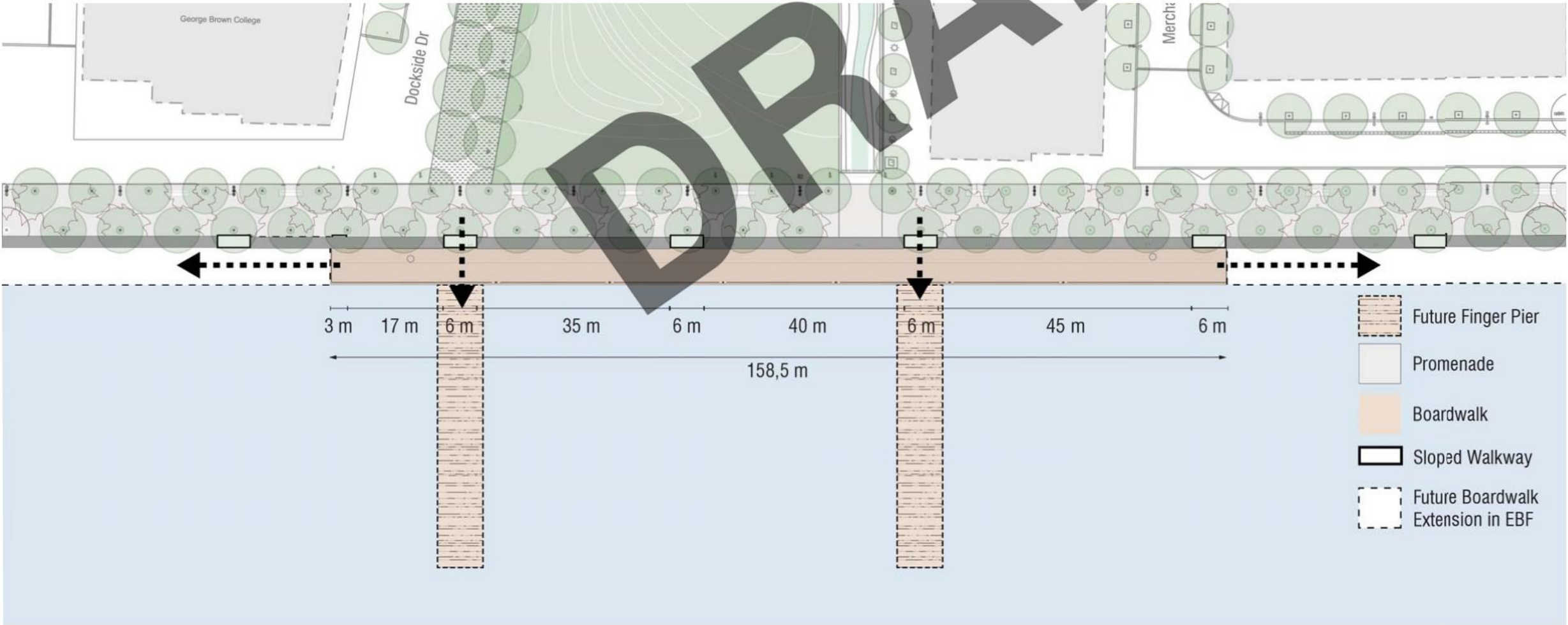
## Adaptive Design



Current condition

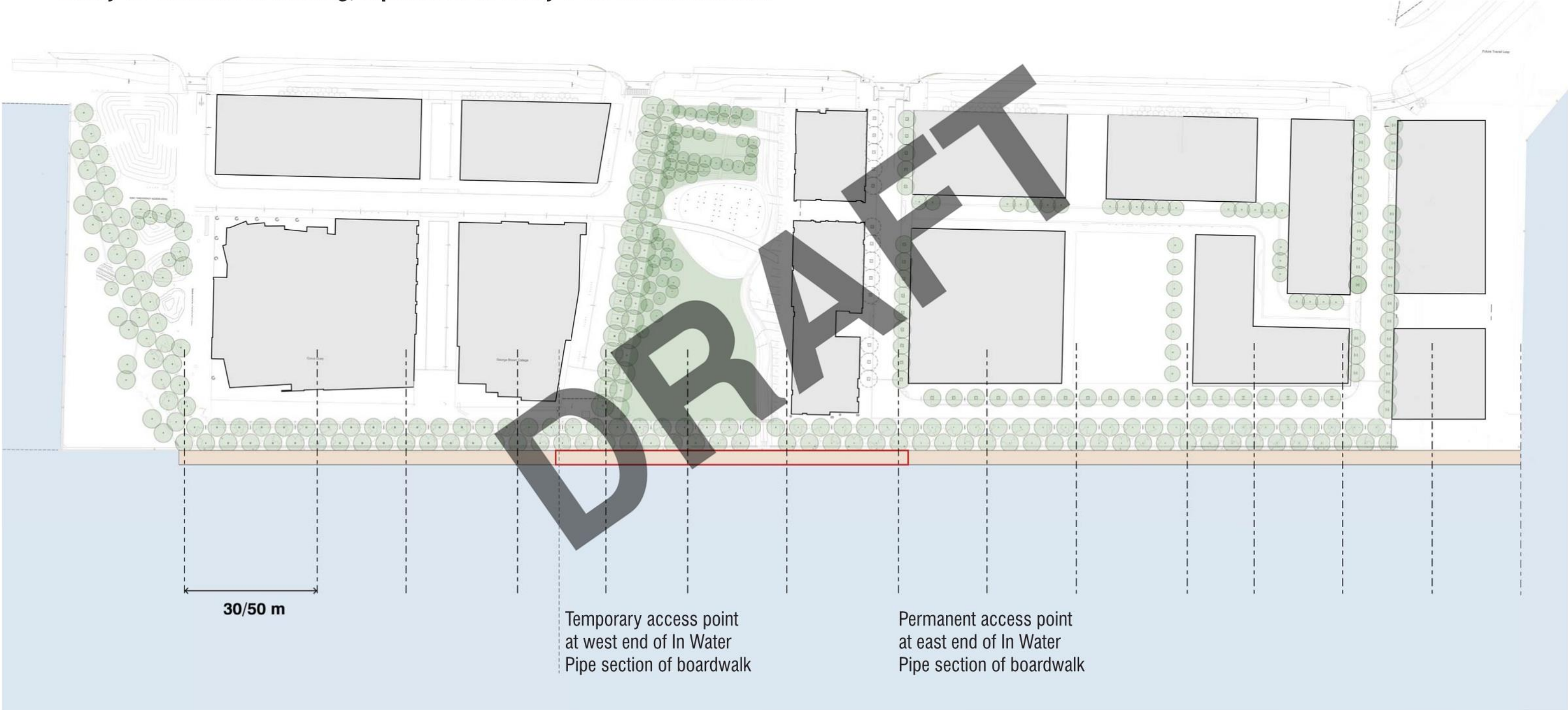


Future finger pier aligned with pedestrian path

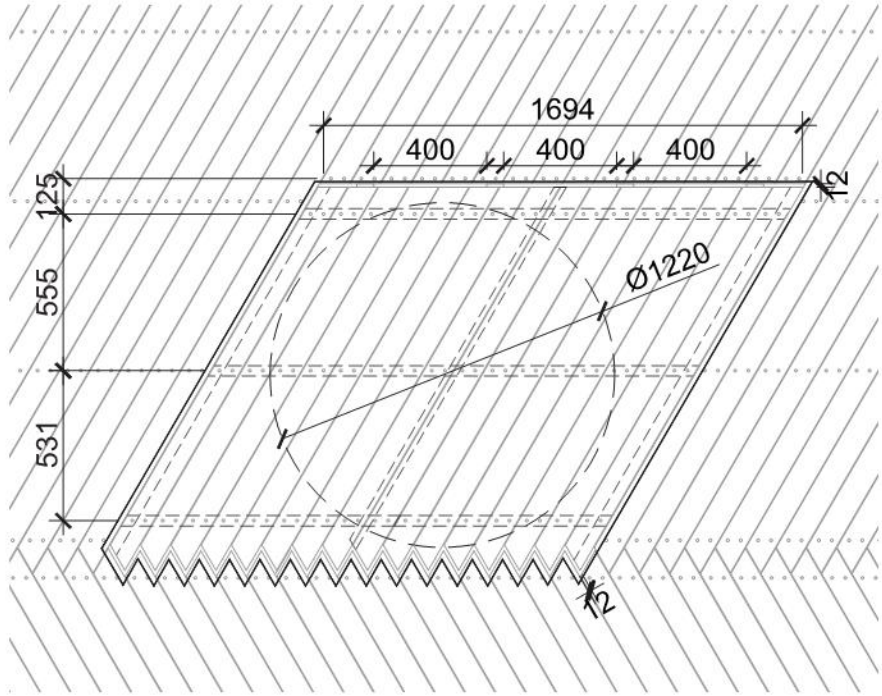
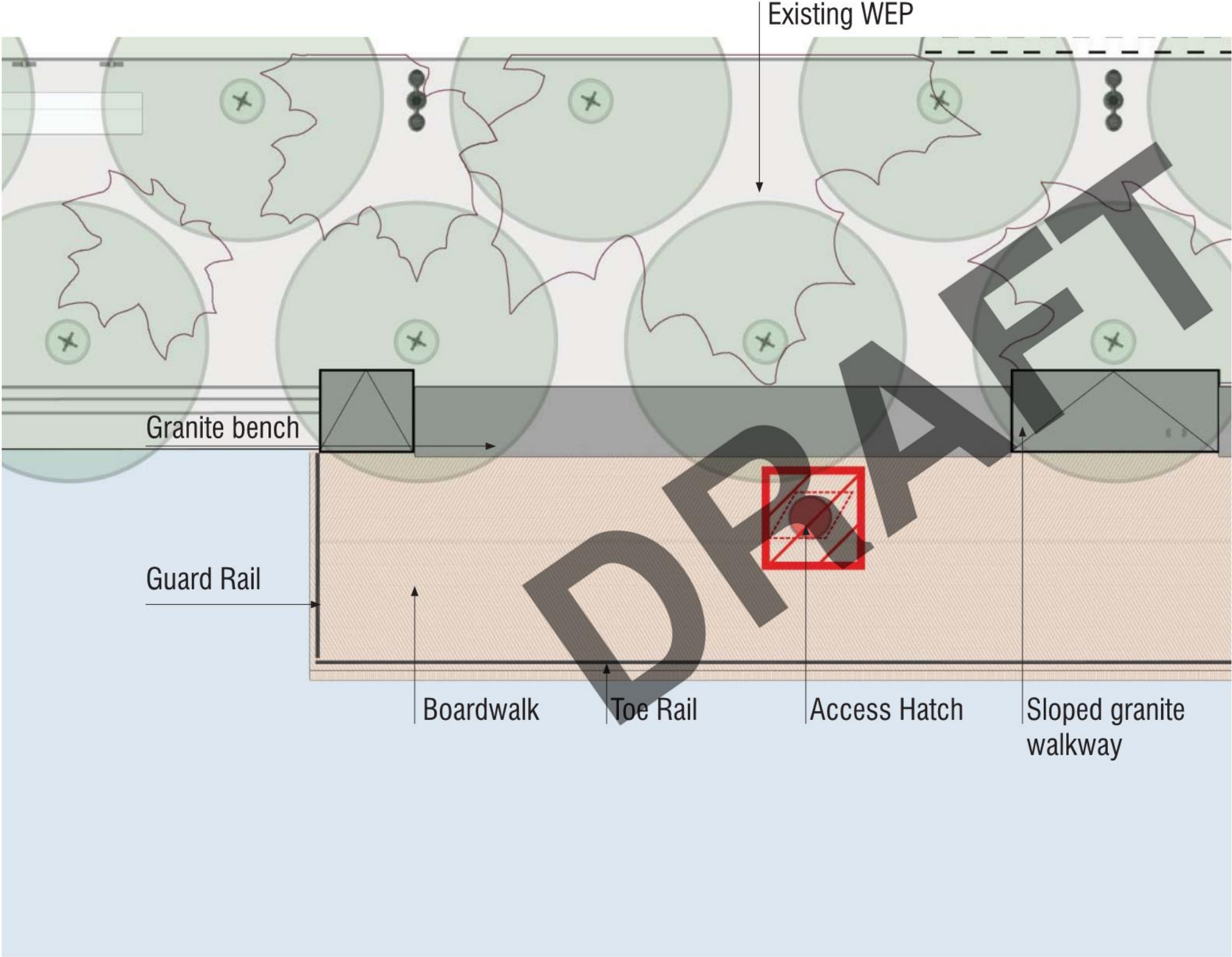


# Study: 15 Access Points Every 30-50m Across the 600m of East Bayfront

Aligned with pedestrian access routes and building entrances. All sloped walkways to maximize accessibility (no steps).  
Every 30 seconds of walking, equivalent to every 5-10 6m storefronts.



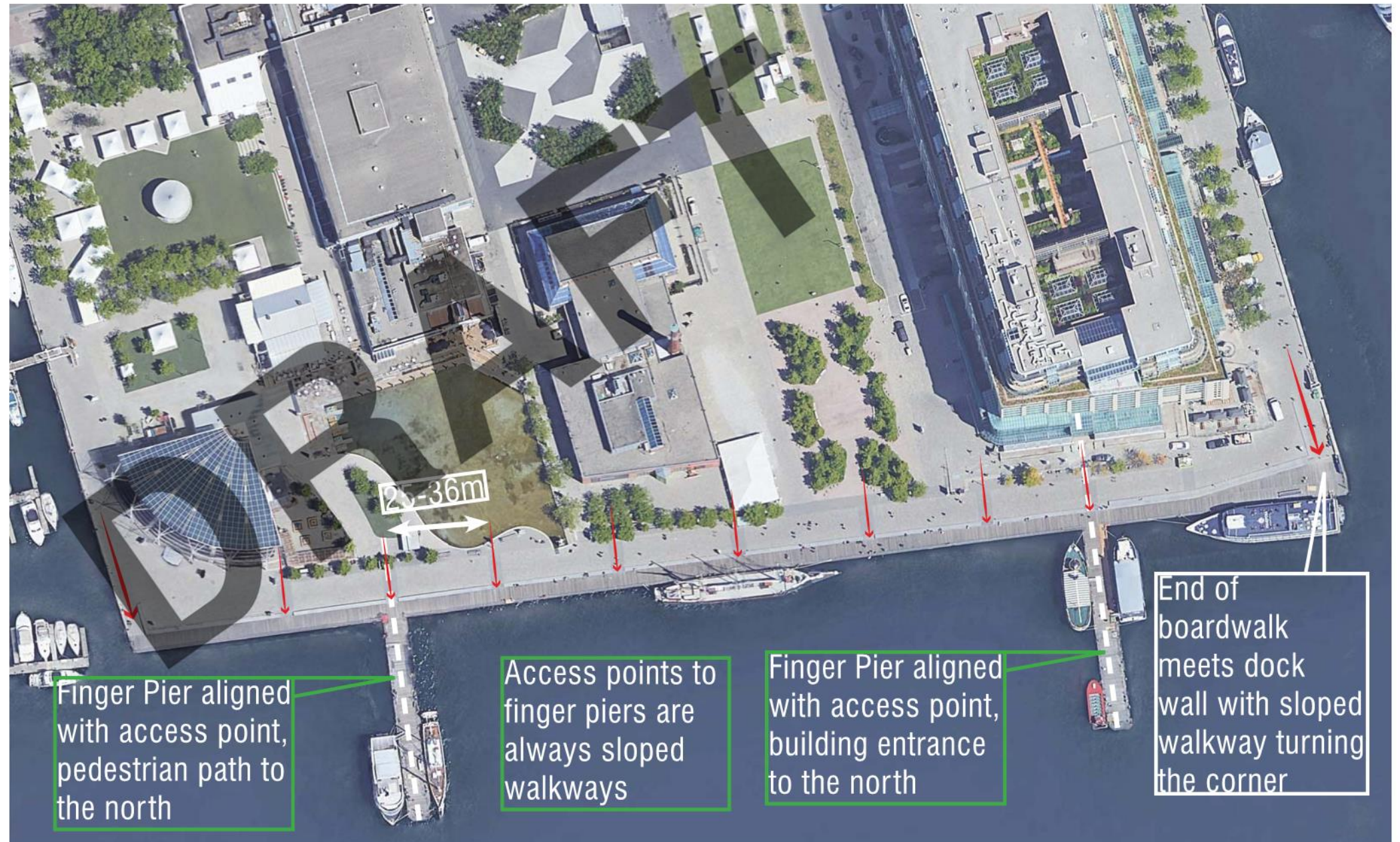
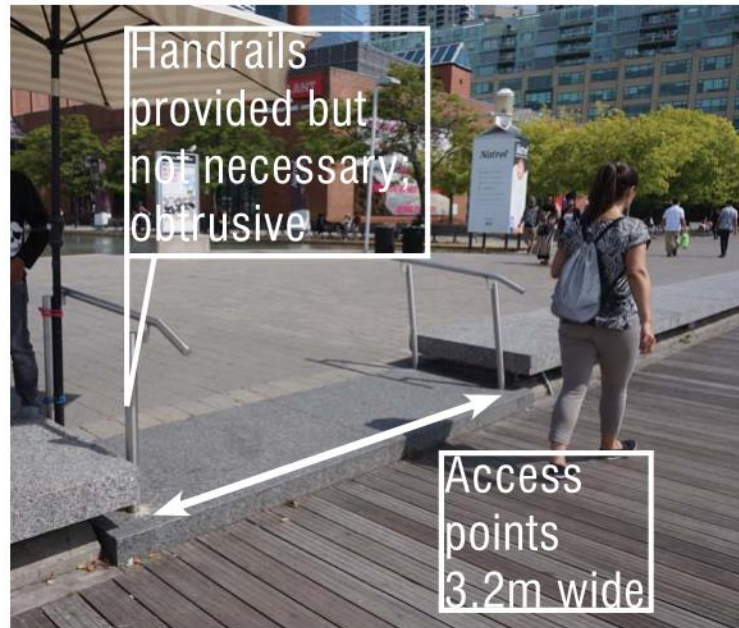
# Access Points - Edge Conditions



Proposed access hatch integration detail

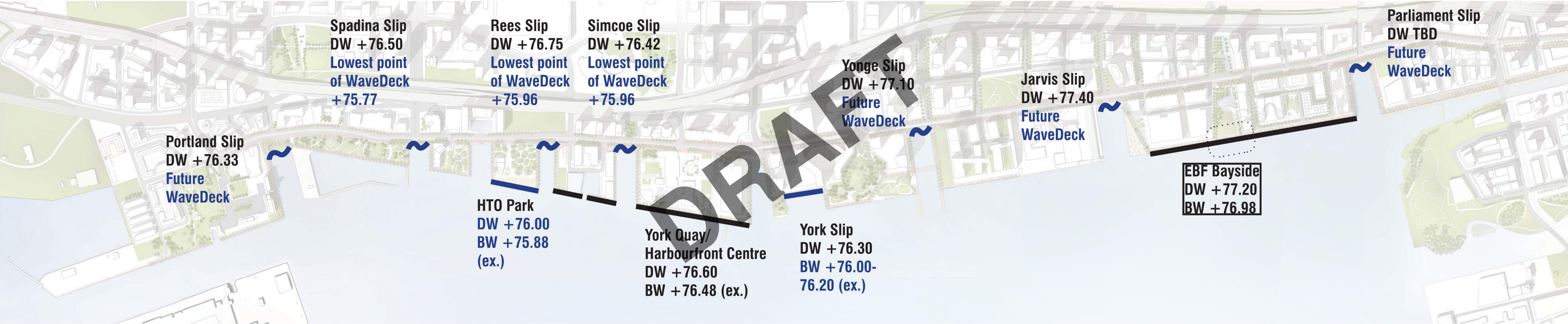
# Research: York Quay Analysis

## Grade change between promenade and boardwalk



# Response: Touching the Water

Appropriate for WaveDecks, HTO Park, Inner Slips and Marinas



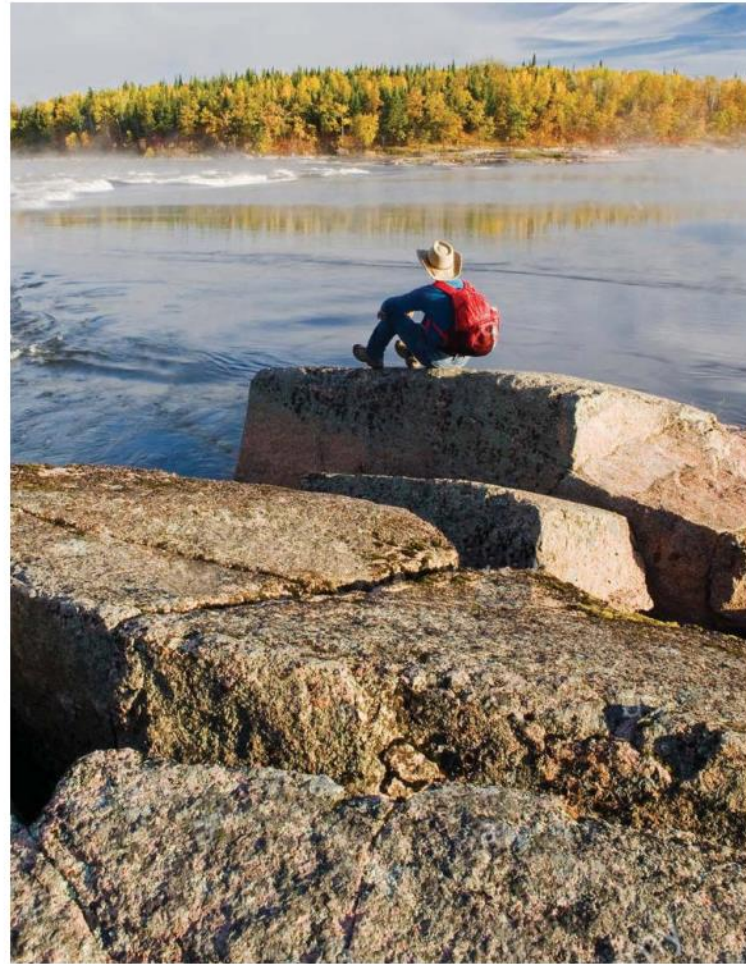
New TRCA High Water Level = 76.08m  
 Summer Average = 75.04m  
 Winter Average = 74.04

DW = Dock Wall  
 WD = WaveDeck  
 BW = Boardwalk

## 2. Bench - The Abstracted Rock on the Waters Edge

Canadian Granite is durable, elegant, sober, spectacular, and consistent

Concept Design



Hiker sitting on the Canadian Shield with Lake Overlook



Visitors to Toronto's Waterfront sitting on the Canadian granite bench with lake overlook between the Waters Edge Promenade and the Boardwalk



# A Variety of Seating Options at the Waters Edge

Furnishings complete the public realm by providing different opportunities for seating and programming



Backed wooden benches typically provided on the Waters Edge Promenade



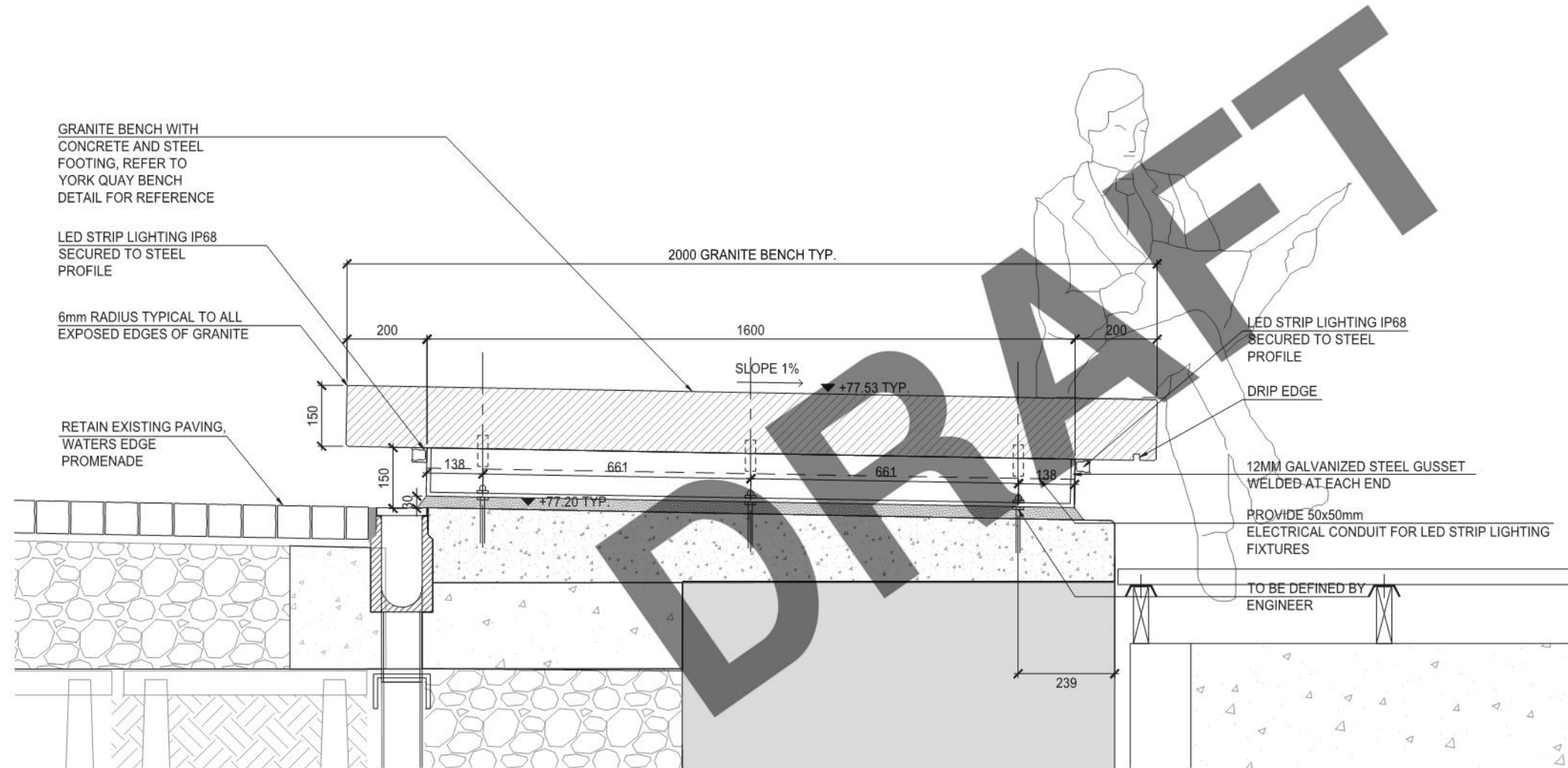
Caledonia granite bench to evoke the rough and varied quality of stone along the Canadian lakefront, for sitting, spreading out, lying down, and star gazing



Reference: Waters Edge Promenade, East Bayfront

Moveable Muskoka-type chairs provide deep, relaxed seating with backs and arm rests, and flexibility in placement

# Detailed Design: Bench Foundation and Details

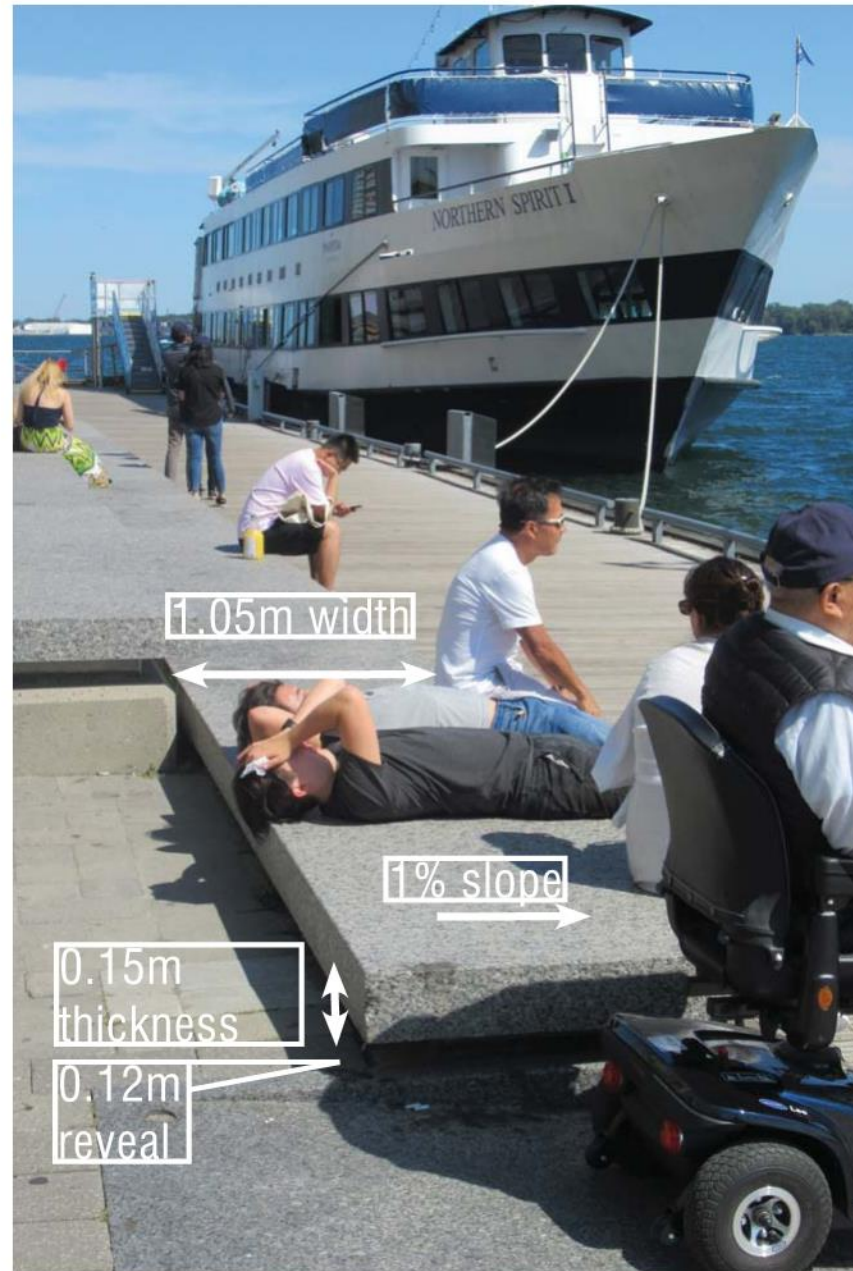


1 TYPICAL GRANITE BENCH - SECTION  
1:10

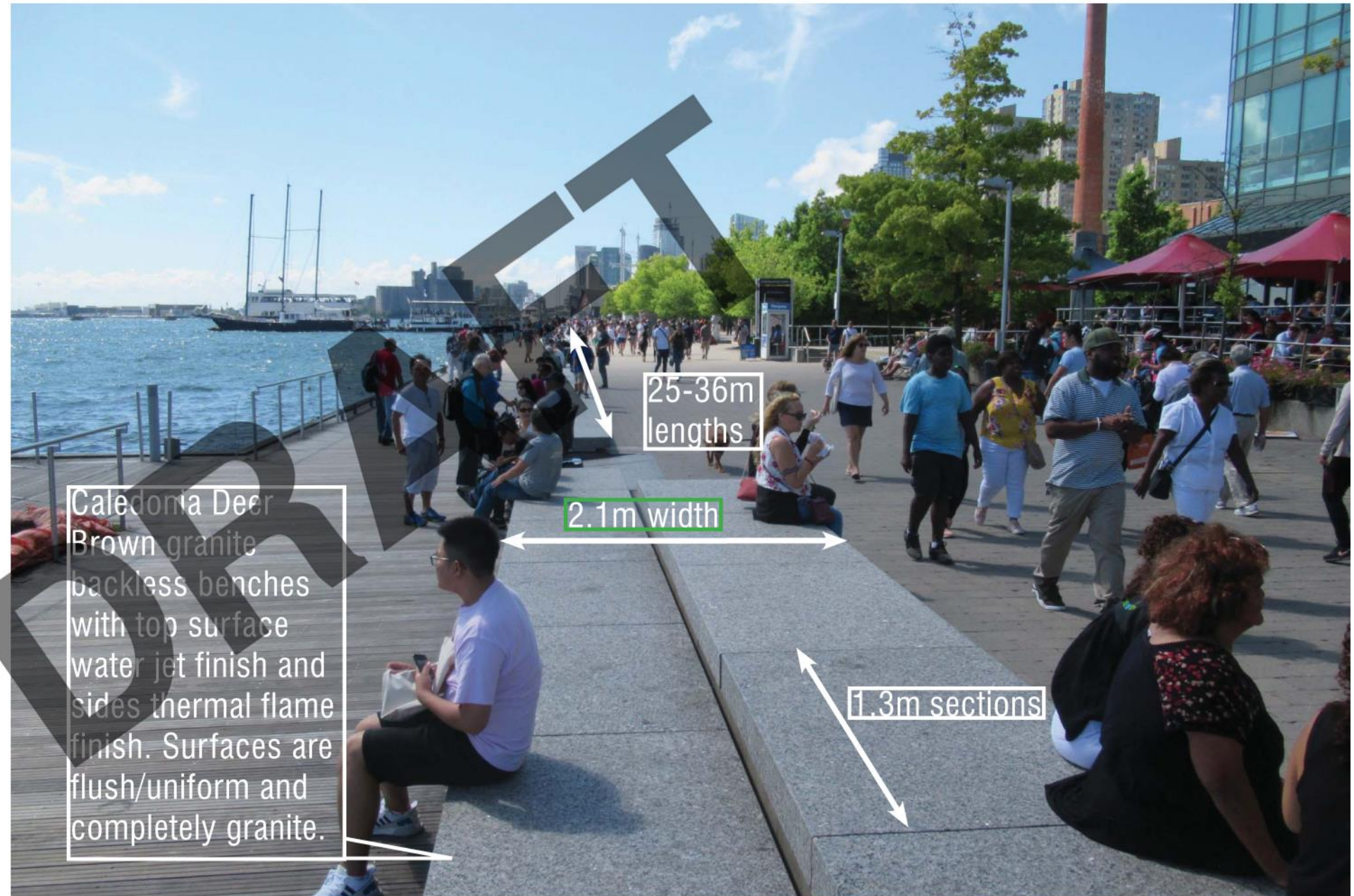
- ✓ 200mm overhang
- ✓ 1% slope toward direction of lake
- ✓ 6mm radius to corners for comfort
- ✓ 150mm thickness of granite slab
- ✓ Steel foundation tied to dock wall cap
- ✓ Caledonia granite
- ✓ Mechanically fastened LED lighting
- ✓ Drip notch on underside of bench for drainage

# Research: York Quay Analysis

## Bench form and dimension



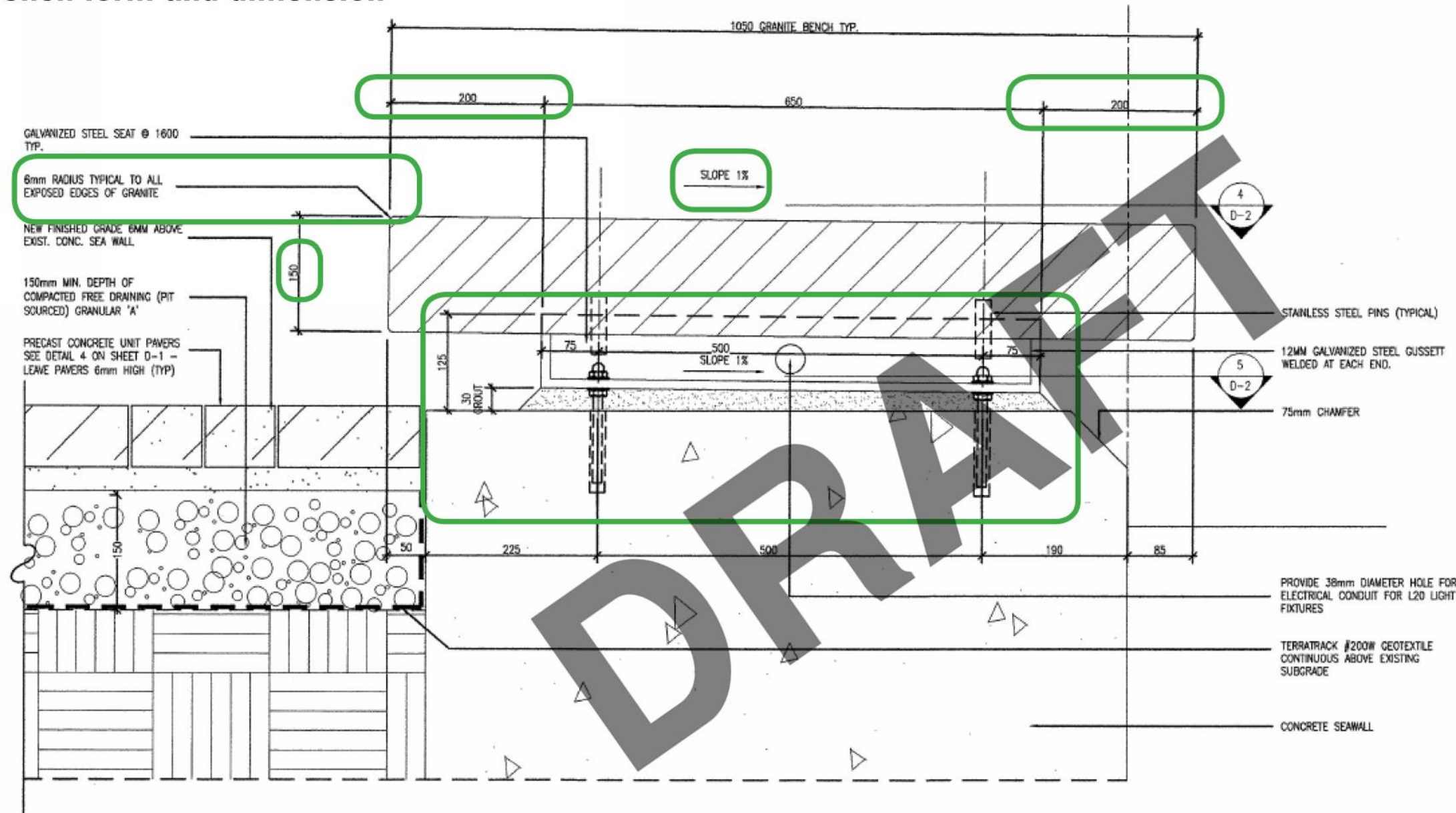
Single bench configuration



Double Bench Configuration

# Research: York Quay Analysis

## Bench form and dimension



- ✓ 200mm overhang
- ✓ 1% slope toward direction of lake
- ✓ 6mm radius to corners for comfort
- ✓ 150mm thickness of granite slab
- ✓ Steel foundation tied to dock wall cap
- ✓ Caledonia granite

NOTE:  
 PROVIDE SHOP DRAWINGS FOR GRANITE ANCHOR SYSTEM. ALL GRANITE TO BE CALEDONIA DEER BROWN TO MATCH PHASE ONE AVAILABLE THROUGH INTEREX TELEPHONE 416 925-1893. TOP SURFACE TO BE WATER JET FINISH. SIDES TO BE THERMAL FLAME FINISH.

6 Typical Granite Bench – Section

scale: N.T.S.

Reference: York Quay IFC Drawings, 2005

# 3. Lighting Concept - Accent Four Sides of Bench to Illuminate Safe Route

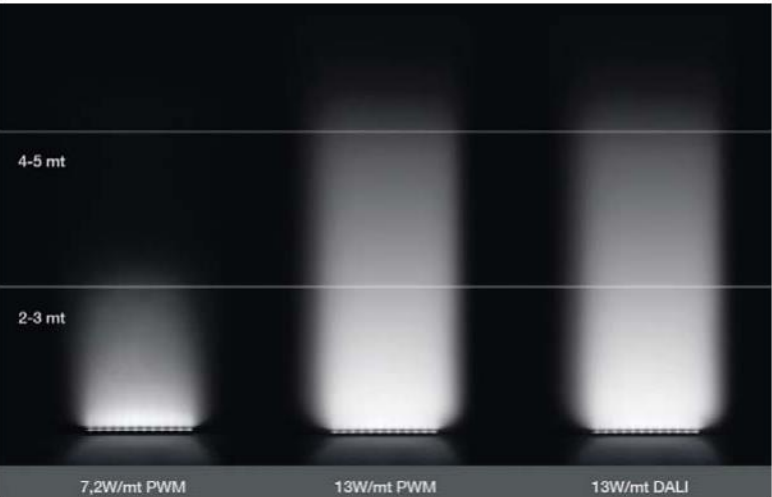
Design objective to light safe route, access points, and edge of boardwalk from single light source recessed below the bench



### Lighting Criteria

Waterproof Rating: IP68  
Light Temperature: 2500-2700k (warm)

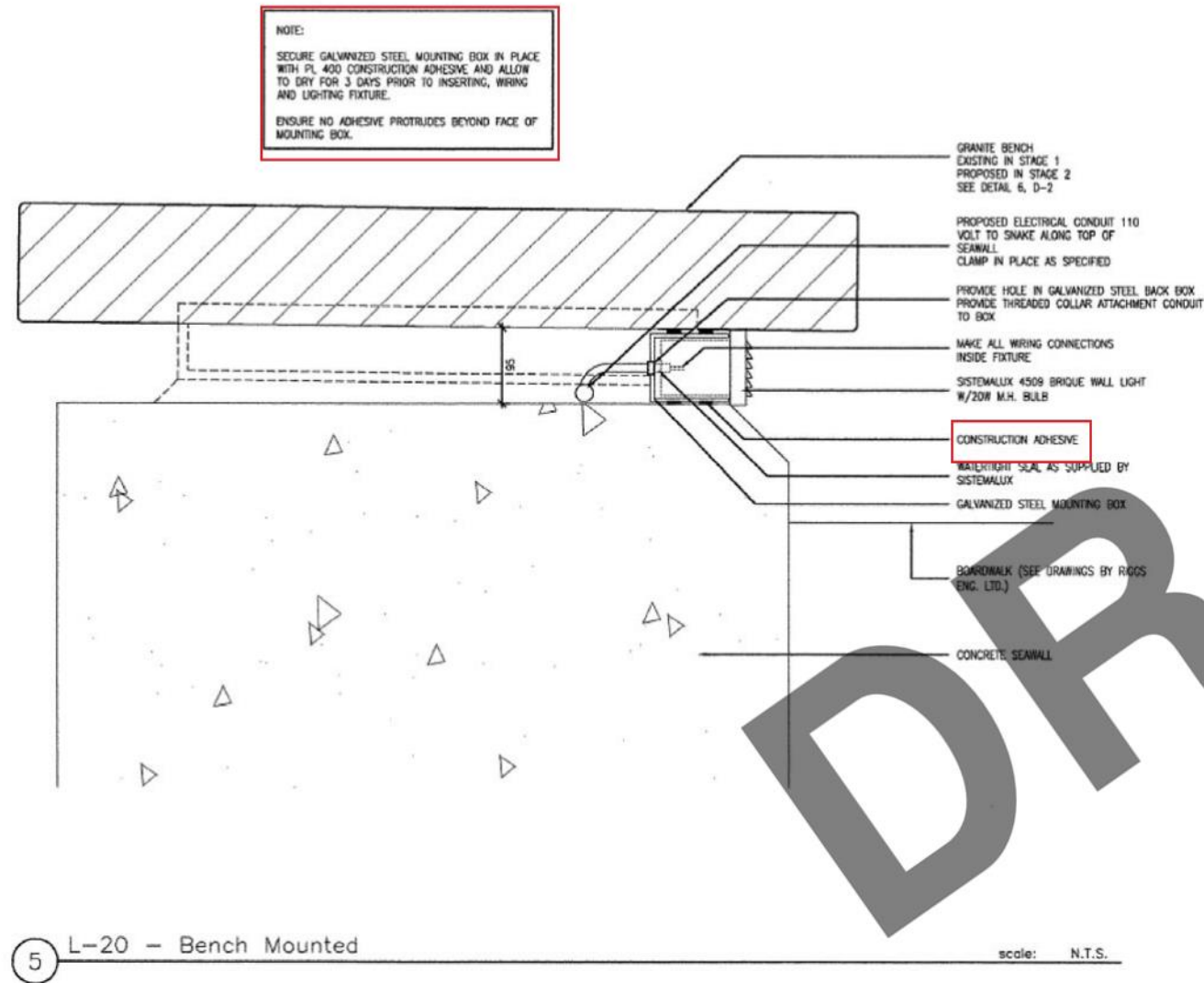
Design to City of Toronto Parks standards



Basis of design product:  
iGuzzini - Linealuce Mini 37R surface

# Research: York Quay Analysis

## Installed with adhesive



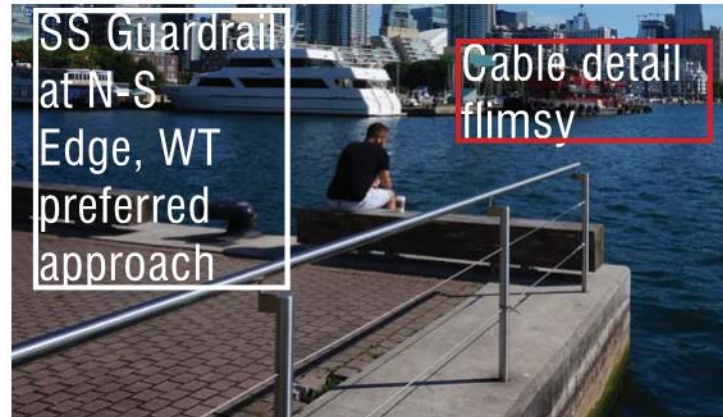
# 4. Temporary Waters Edge Condition

Termination of the east and west edges of the boardwalk, guiding ships away from the boardwalk

## Existing Inventory of Conditions



HTO Park Boardwalk - Toe Rail with Navigational light on steel pile



Portland Slip WEP - Wooden Bench with Stainless Steel Guardrail



York Quay and Police Basin Boardwalks - Toe Rail with Stainless Steel Guardrail



## Detailed Design Recommendation

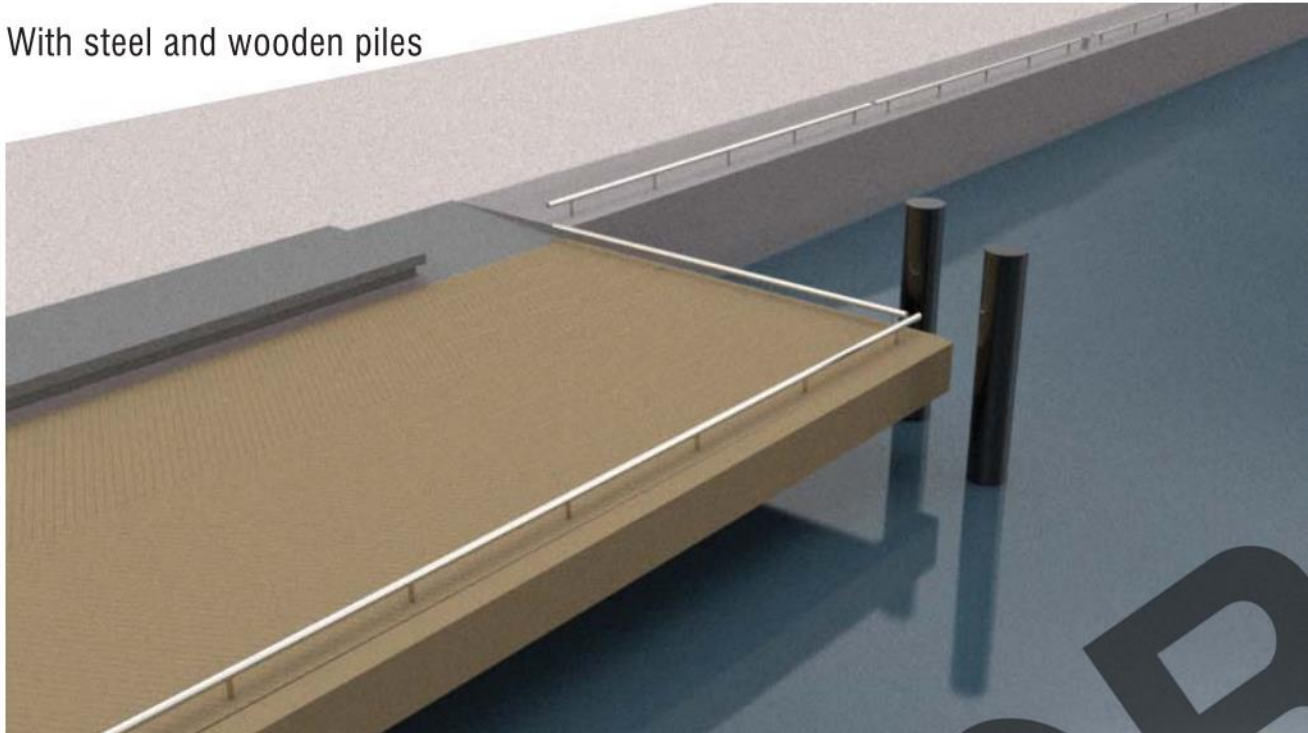


Continue galvanized steel toe rail around the corner.

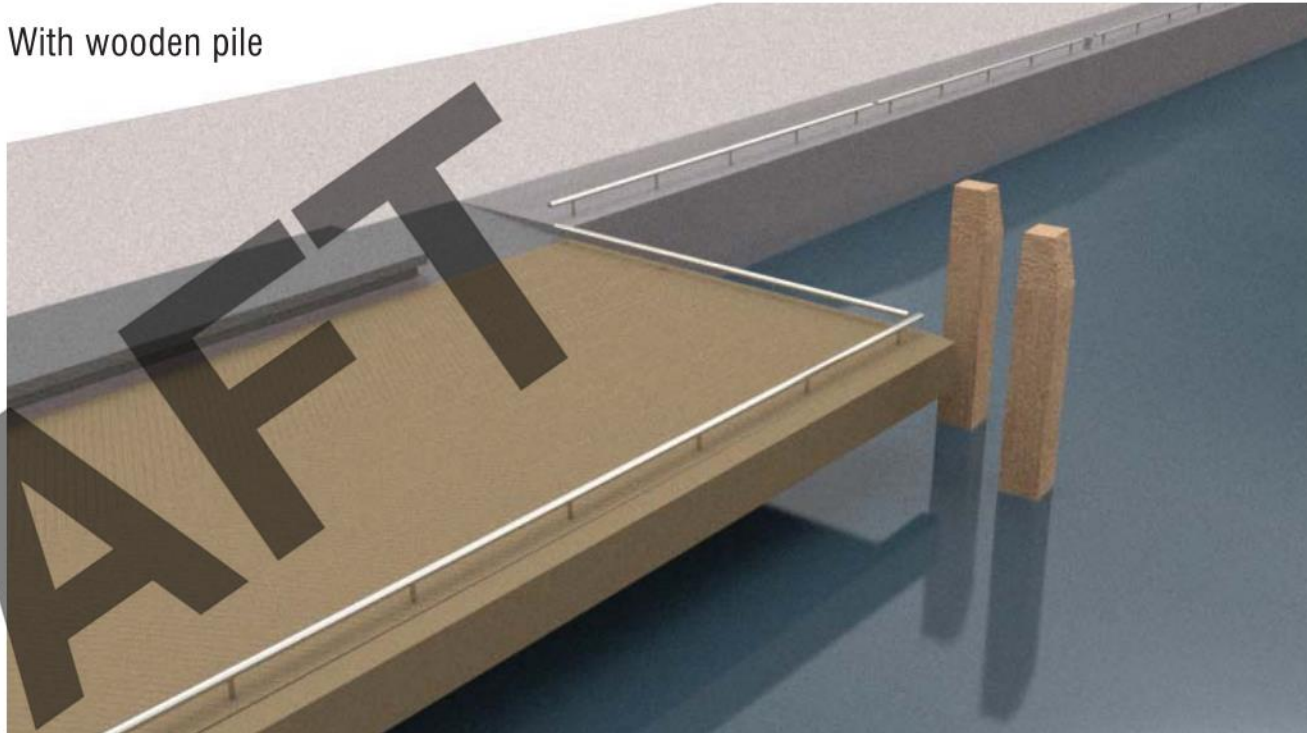
Steel pile dolphins with wood fenders that match fenders on underside of boardwalk and future finger piers. Dolphins can be taken out and relocated as boardwalk is extended.

# Research: East and West Termination Points

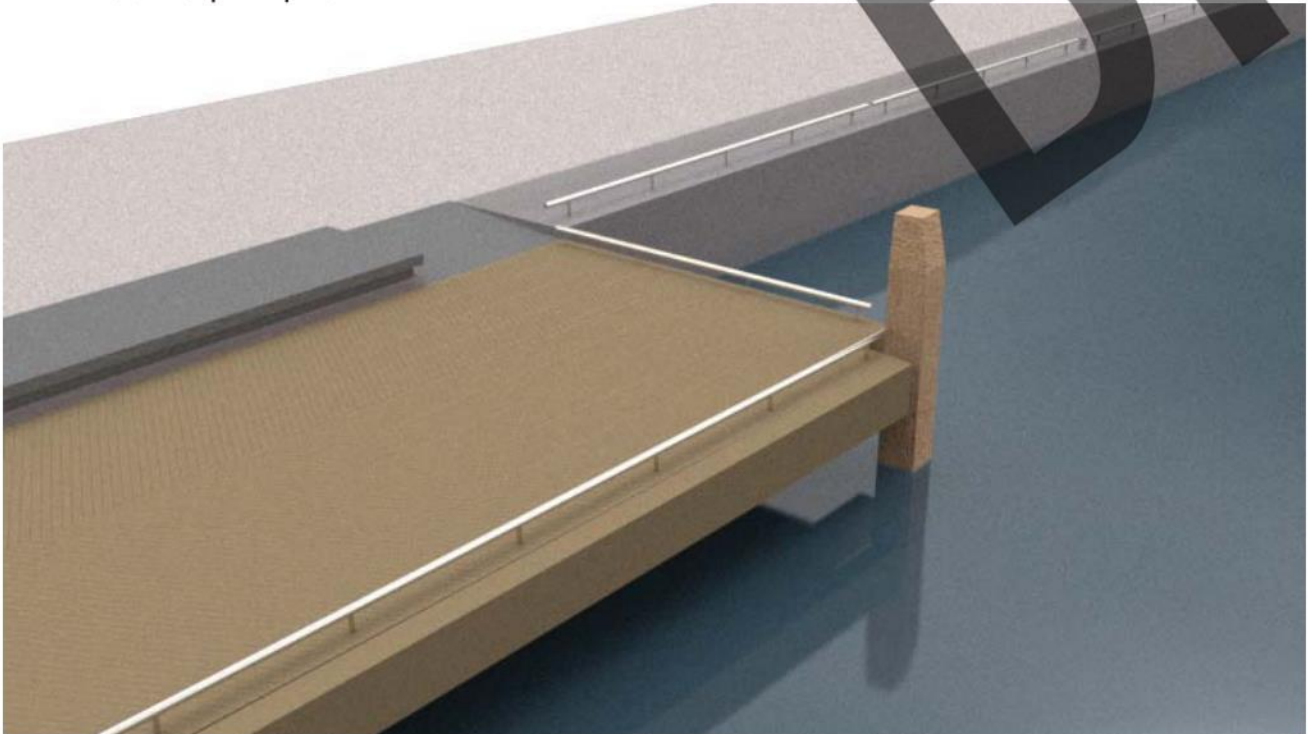
With steel and wooden piles



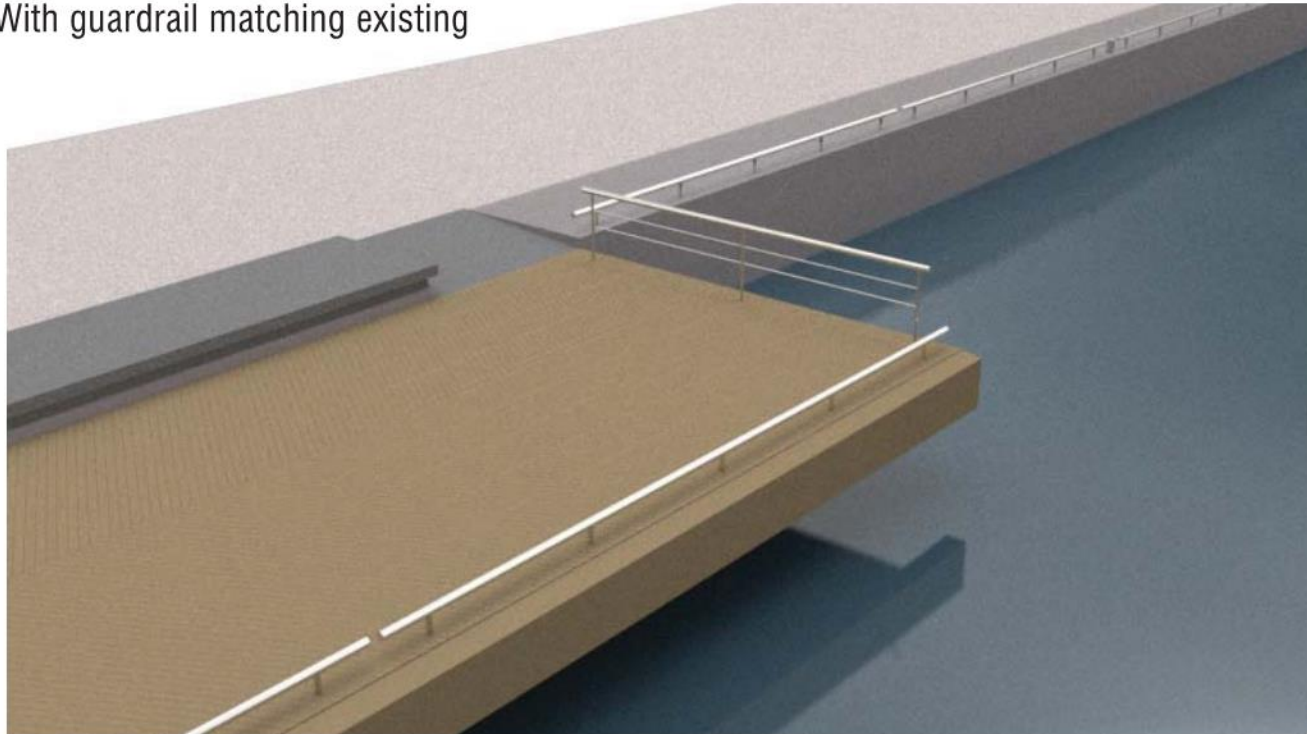
With wooden pile



With inset dolphin pile



With guardrail matching existing



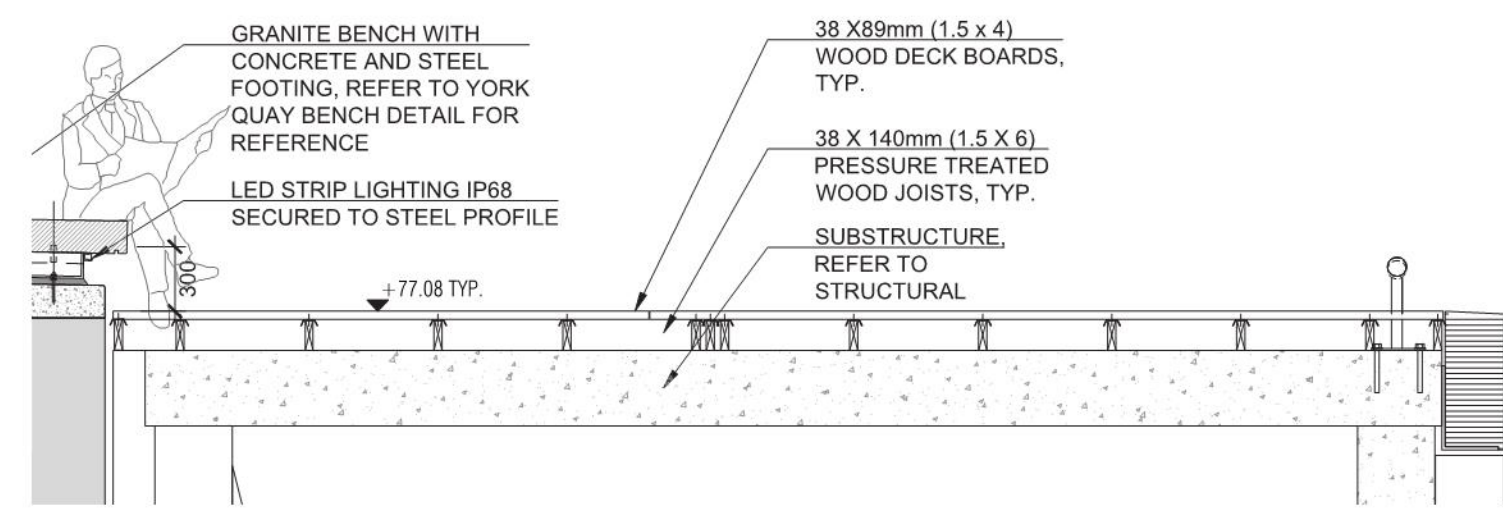
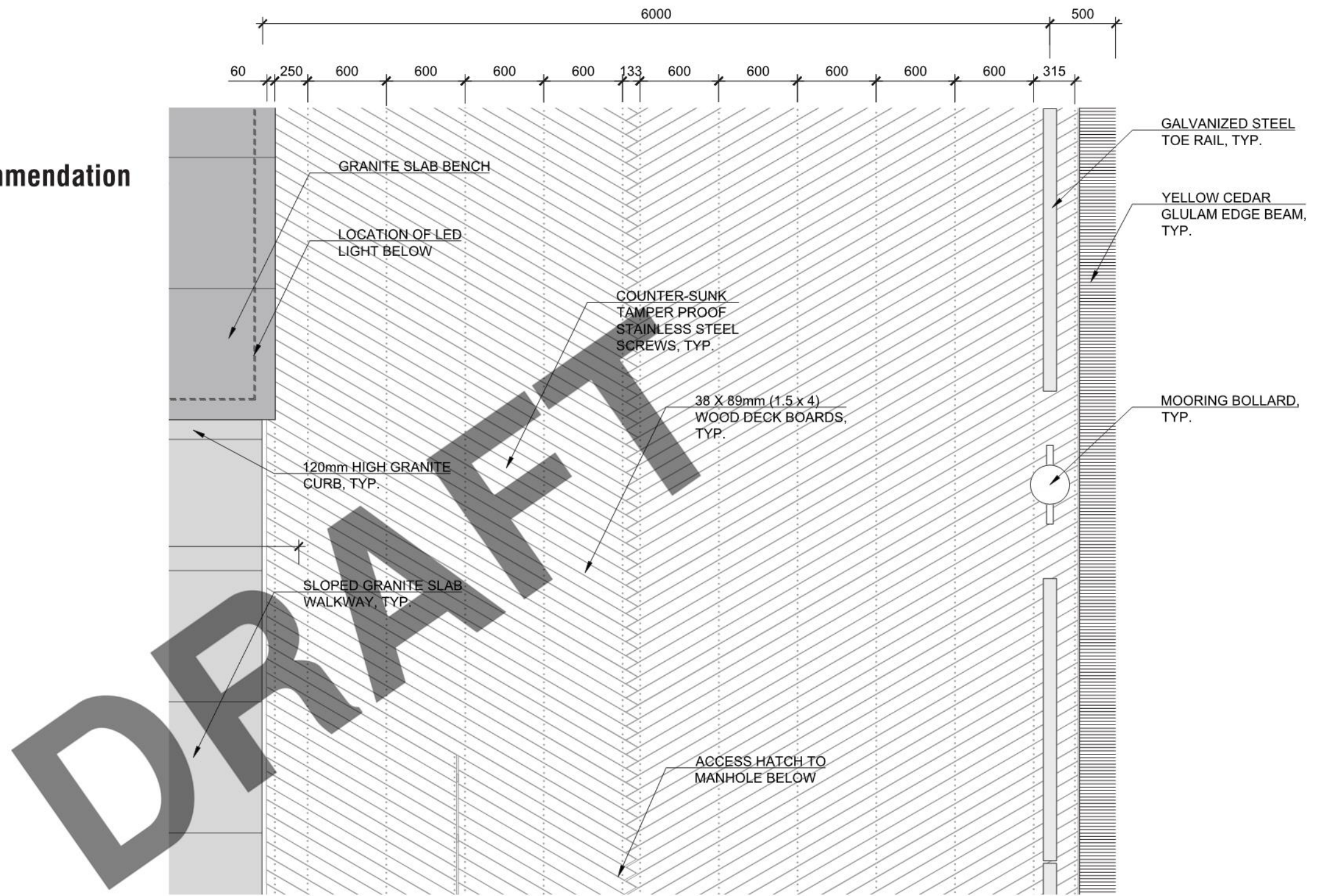


# 5. Decking Details

Access hatch, screws, construction recommendation






Reference: countersunk tamper-proof screws, existing Wave Deck



# 7. Wood Type - Choosing the Most Sustainable and Durable Wood Product for the Waterfront

## DESIGN CRITERIA

Product	Durability <sup>1</sup>	Longevity of Wood	Sustainability Life Span of Tree	Sustainability Transportation and Certification	Narrative	Origin	References
<b>Thermally Modified European Hardwood</b>  ✓ <b>Thermowood Ash</b>	Durability Factor I Janka Hardness 900-2700	25 year guarantee  Thermal modification process prevents rot and insects, and is dimensionally stable	Harvesting diameter of 60cm reached in 60-75 years at 60-80 trees per Ha. in managed European forests. <sup>2</sup>	Ships in containers <sup>4</sup> , and can come with FSC or PEFC certification. Thermal modification process can potentially be applied to various species to address availability in future.	Lumber product on market for 40 years, carried by Home Depot. Possible for thermal modification plant to be set up in North America if market demand grows.	Thermally modified in Tallinn, Estonia  Wood from North American or European Forests	 Reference: CFP Ash Decking   Reference: Thermowood, Battle of Puebla Monument, Mexico, 2011
<b>Canadian Softwood</b>  • <b>Kiln Dried FSC Alaskan Yellow Cedar (second growth)</b>	Durability Factor II Janka Hardness 580	10-15 years  Natural Tannins prevent rot and insects, dimensionally stable	Minimum harvest age 80-100 years for second growth forests. Old growth not considered a “renewable” resource. <sup>3</sup> Wood from dead trees considered usable up to 80 years after death.	Arrives via truck or train. <sup>5</sup>	Canadian lumber, matches look, feel, and spatial quality of the quintessential Canadian Boardwalk and lake front. History of use for boats, houses, and objects by First Nations.	British Columbia, Alaska	 Reference: Kinsol Trestle, Vancouver Island, restored in 2011

<sup>1</sup> Janka Hardness of Ipe is 3200

<sup>2</sup> “Ecology and growth of European Ash (*Fraxinus excelsior L.*)”, D. Dobrowolska, S. Hein, A. Oosterbaan, J.P. Skovsgaard, S. Wagner, 2008

<sup>3</sup> “Summary of Cedar Management Considerations for Coastal British Columbia”, West Coast Region, Ministry of Natural Resource Operations, and Forest Analysis and Inventory Branch, Ministry of Forests, Mines, and Lands, 2011. 2008

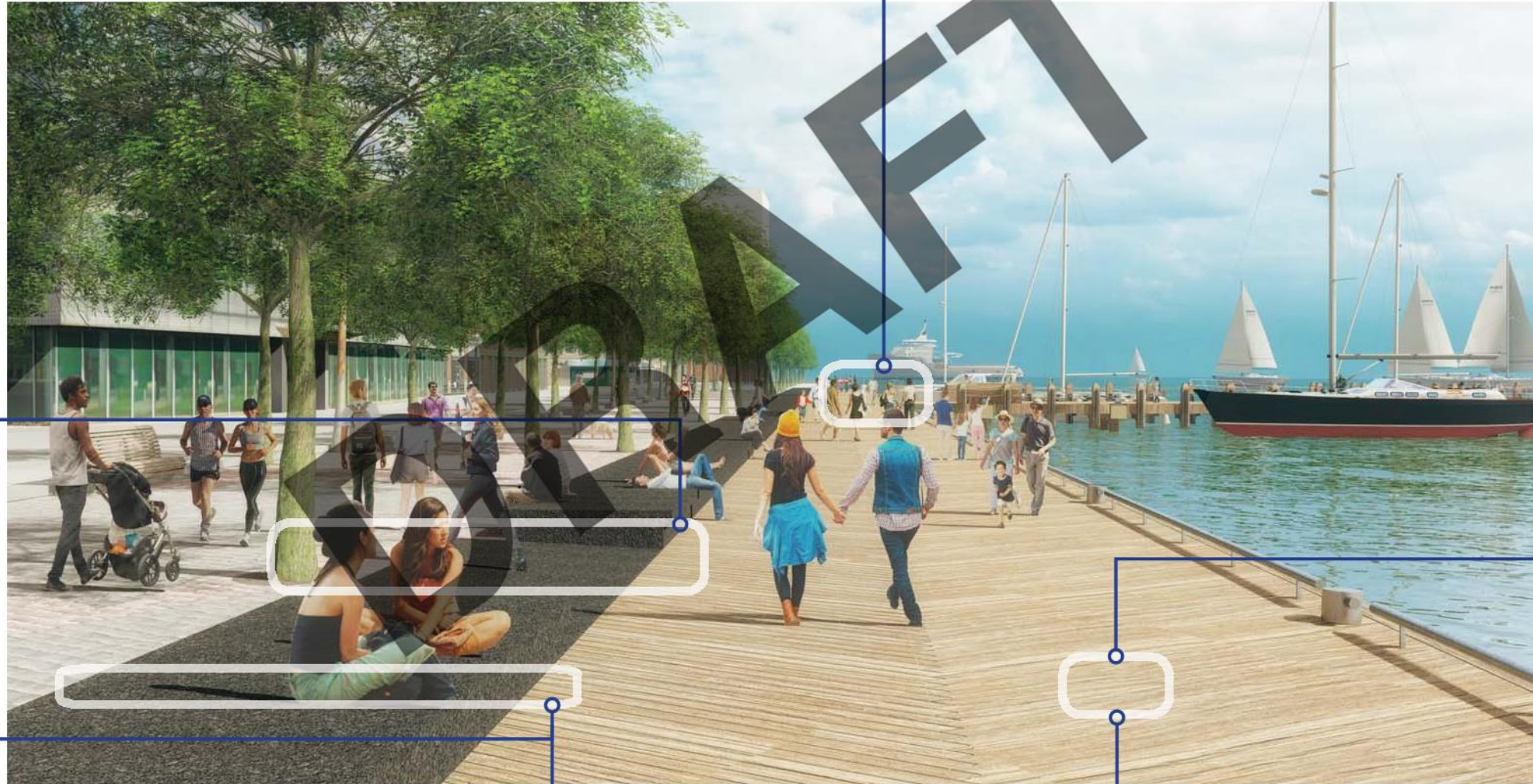
<sup>4</sup> 7.8 - 31.5kg of carbon emissions per metric ton by ship

<sup>5</sup> 15.7 - 52.4kg carbon emissions per metric ton by train; 31.4 - 78.5kg carbon emissions per metric ton by truck

<sup>4,5</sup> Rough calculations based on: driving distance of 5,236km between and Toronto (source: Google Maps); 7882km by boat between Paldaski Port of Tallinn and Toronto (source: sea-distances.org); ranges for emissions per metric ton from <https://timeforchange.org/co2-emissions-for-shipping-of-goods/> Calculation does not take into account the thermal modification and kiln drying process, nor the movement of wood from the forests in Europe to the port in Tallinn.

# Design Development Topics

Recap and conclusion



## 1. ACCESS POINTS

6m wide, all sloped walkways, every 30-50m spacing along East Bayfront with four proposed for the section over the In Water Pipe

## 2. BENCH REFINEMENT

Caledonian granite with Poetic Strips, similar detailing to York Quay

## 3. LIGHTING

Illuminate safe route by bench and the edge of boardwalk

## 4. TEMPORARY WATERS EDGE CONDITION

Guardrail at E and W ends of boardwalk, sloped walkway access

## 5. DECKING DETAILS

Integrated stormwater hatch, countersunk tamper proof screws, 3.5-4m lengths of deck boards

## 6. WOOD TYPE

Thermally modified European hardwood



# **In Water Pipe Boardwalk Refresh**

## **Detailed Design - Design Review Panel - Appendix**

December 11, 2019

**WEST 8**



# Research: Demonstrating a Variety of Seating Options in the Public Realm



Reference: Village of Yorkville Park, Toronto



Reference: Water's Edge Promenade, Toronto



Reference: Canada's Sugar Beach, Toronto



Reference: York Quay, Toronto



Monument for the 150th Anniversary  
of the Battle of Puebla, Mexico, 2011  
Thermory Thermowood Ash



DRAFT

Monument for the 150th Anniversary  
of the Battle of Puebla, Mexico, 2011  
Thermory Thermowood Ash

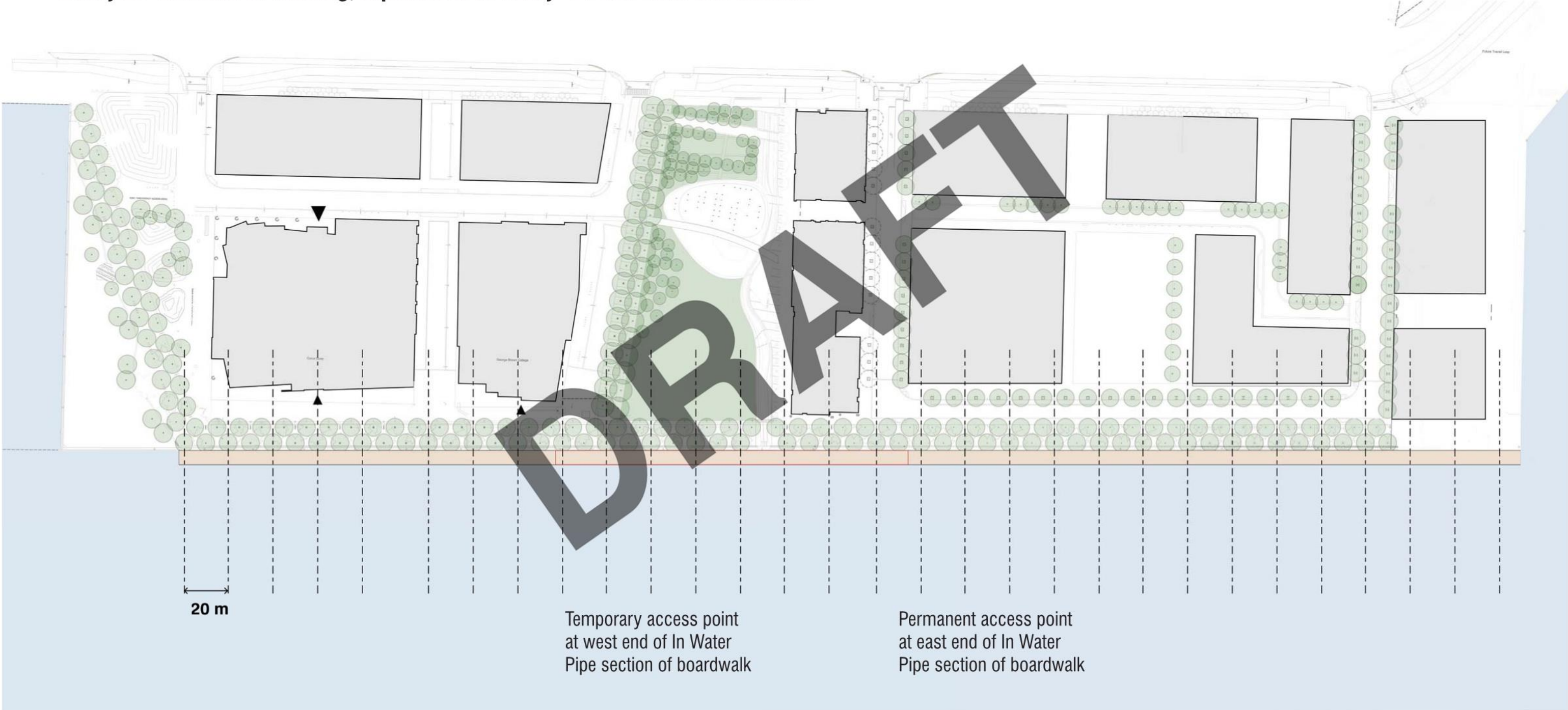




Kinsol Trestle, Vancouver Island,  
restored in 2011 with Alaskan Yellow  
Cedar Deck

# Study: 17 Access Points Every 20-30m Across the 600m of East Bayfront

Conceptually aligned with pedestrian access routes and building entrances.  
Every 20 seconds of walking, equivalent to every 4-8 6m wide storefronts.



# Study: 13 Access Points Every 50m Across the 600m of East Bayfront

Conceptually aligned with pedestrian access routes and building entrances.  
Every 36 seconds of walking, equivalent to every 10 6m wide storefronts.

