

September 28, 2023

Keating Channel Pedestrian Bridge

Design Competition – Virtual Design Presentations

1. Land Acknowledgment

Waterfront Toronto acknowledges that the land upon which we are undertaking our revitalization efforts is part of the traditional territory of the Mississaugas of the Credit First Nation and that Toronto is covered by Treaty 13 with the Mississaugas of the Credit First Nation (MCFN).

In addition, Waterfront Toronto acknowledges that Toronto has historically been a gathering place for many Indigenous people, including the Mississaugas of the Credit, the Anishnaabe, the Chippewa, the Haudenosaunee and the Wendat peoples, and is home to many First Nations, Inuit and Métis peoples today.



2. Opening by the Mississaugas of the Credit First Nation



Today's Agenda

1	5:30 – 5:35pm	Welcome & Land Acknowledgment
2	5:35 – 5:40pm	Opening by MCFN
3	5:40 – 6:00pm	Introduction
4	6:00 – 7:40pm	Design Presentations
1	6:00 – 6:20pm	Entuitive Corporation
2	6:20 – 6:40pm	EXP Services Inc.
3	6:40 – 7:00pm	Henning Larsen Architecture
4	7:00 – 7:20pm	RJC Engineers Ltd.
5	7:20 – 7:40pm	Zeidler Architecture Inc.
5	7:40 – 7:45pm	Closing Remarks

3. Introduction



- Each of the five teams will be given 20 minutes to present their design proposal tonight
- The chat and Q&A functions are not available
- A recording of this presentation will be posted on our website: waterfrontoronto.ca/kcpb-shortlist-materials
- An online survey will be posted following the presentations and will be up for one week to collect your feedback
- All input from the online survey will be consolidated and shared with the committee that will be selecting the final design
- The winning design will be announced fall 2023

Project Location



Project History

The Keating Channel Precinct Plan (2010), the Villiers Island Precinct Plan (2017), and the Port Lands Planning Framework (2017) imagined a pedestrian and cyclist bridge that crossed the Keating Channel, linking the Central Waterfront to Promontory Park and Villiers Island. These plans were all informed by extensive community consultation and engagement.



An artistic illustration from the Keating Channel Precinct Plan for the Keating Channel Pedestrian Bridge (2010)

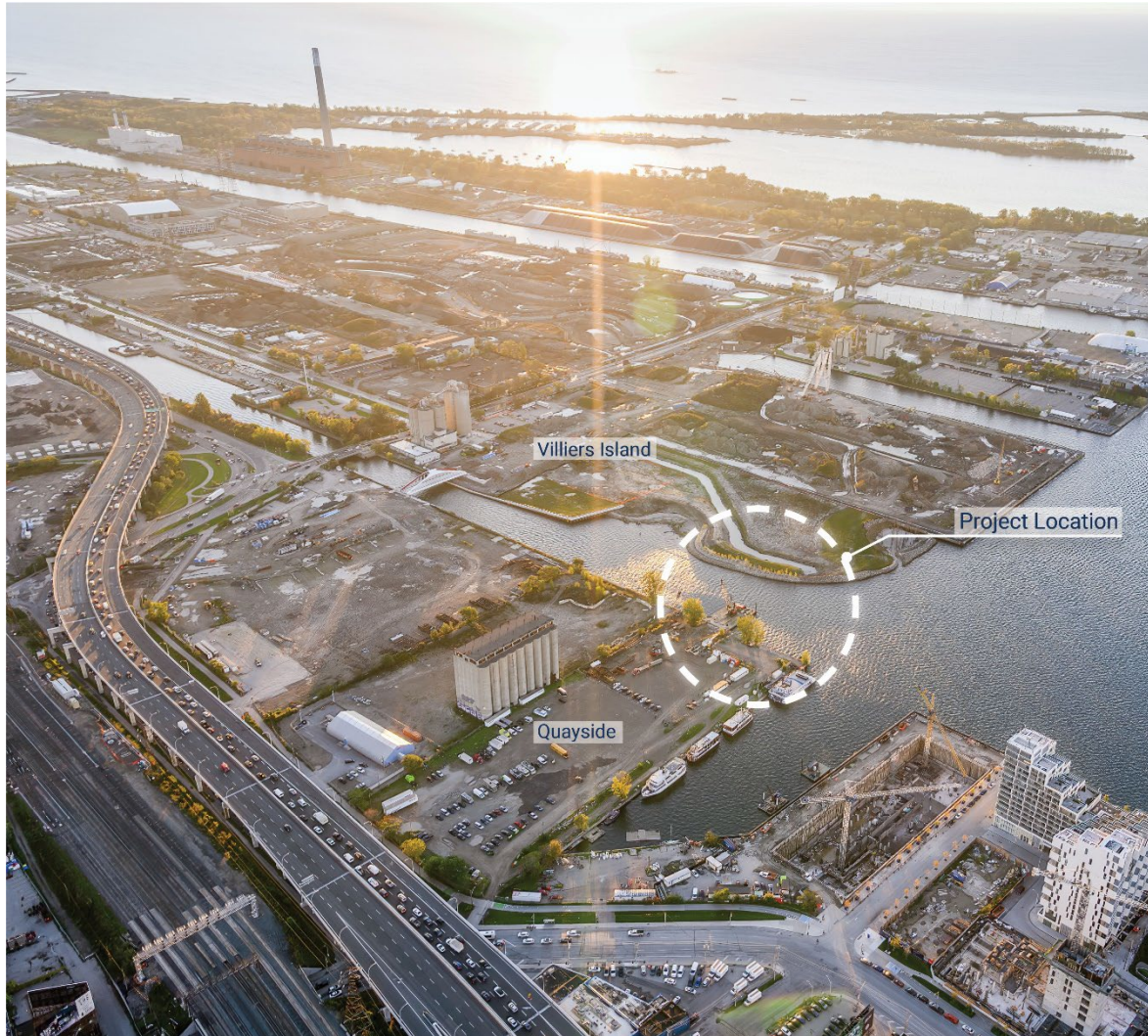


An artistic illustration displaying from the Villier's Island Precinct Plan for the Keating Channel Pedestrian Bridge (2017)



An artistic illustration from the Keating Channel Precinct Plan for Keating Channel Pedestrian Bridge (2010)

Project Team



- In March 2022, the City of Toronto applied in partnership with Waterfront Toronto to the Active Transportation Fund from the Federal government for the Keating Channel Pedestrian Bridge. The grant was awarded in January 2023
- A project team was formed, consisting of the City of Toronto, Waterfront Toronto and Host Nation and Treaty Holder, the Mississaugas of the Credit First Nation
- A Community Advisory Committee (CAC) was created to support the project team throughout this process

Canada



Toronto



Project Goals



1 Create a Beautiful and Distinctive Gateway to the Waterfront



2 Connect the City and Villiers Island



3 Incorporate a Living Landscape



4 Create with Indigenous Voice and Agency



5 Embody Sustainable Strategies and Innovation



6 Create a Place for All People

Site Context



Quayside and East Bayfront Communities – *North Landing Site*



East Bayfront Water's Edge Promenade



Keating Channel Promenade



Villiers Island





Promontory Park North – South Landing Site

Promontory Park South – PlayPark



Timeline



4. Design Presentations

1. Maamawi Bridge

Lead Firm: Entuitive Corporation, CA & US

Engineer: Schlaich Bergermann Partner, DE

Architect: Grimshaw Architects, UK

Architect & Indigenous Consultant: Two Row Architect, CA

Landscape Architect: O2 Planning + Design, CA (with MVVA)

Maamawi Bridge

KEATING CHANNEL PEDESTRIAN BRIDGE

ENTUITIVE

SEPTEMBER 28, 2023



Our vision was driven by the desire to provide a **beautiful, modern, accessible** and **sustainable** structure founded on **Indigenous principles** connecting to the environment that seamlessly transitions the user from the urban environment at the Water's Edge Promenade to the naturalized park setting to the south, while providing multiple experiential opportunities along the way.

We have named our bridge **Maamawi'**, an Indigenous term meaning **"connect"**, which captures the essence of our design intent.

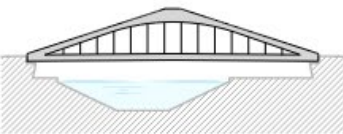


Three Big Moves

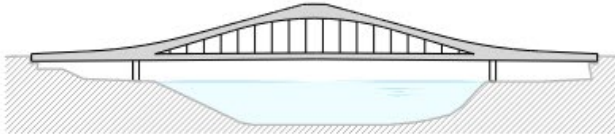
1. Design Based on Indigenous Principles



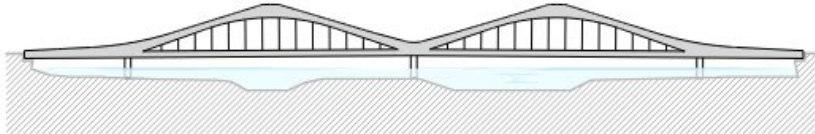
2. Maamawi' as part of the Port Lands Bridges Family



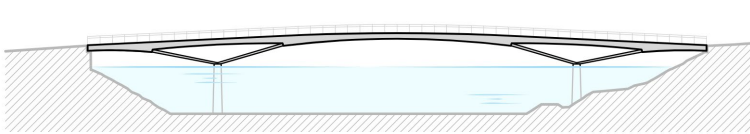
CHERRY ST. NORTH BRIDGE



CHERRY ST. SOUTH BRIDGE



COMMISSIONER ST. BRIDGE



KEATING CHANNEL PEDESTRIAN BRIDGE

3. An Armature for a 21st C Living Landscape



Three Big Moves

1. Design Based on Indigenous Principles



2. Maamawi' as part of the Port Lands Bridges Family



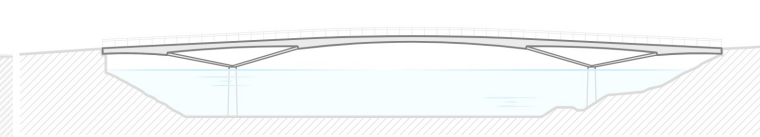
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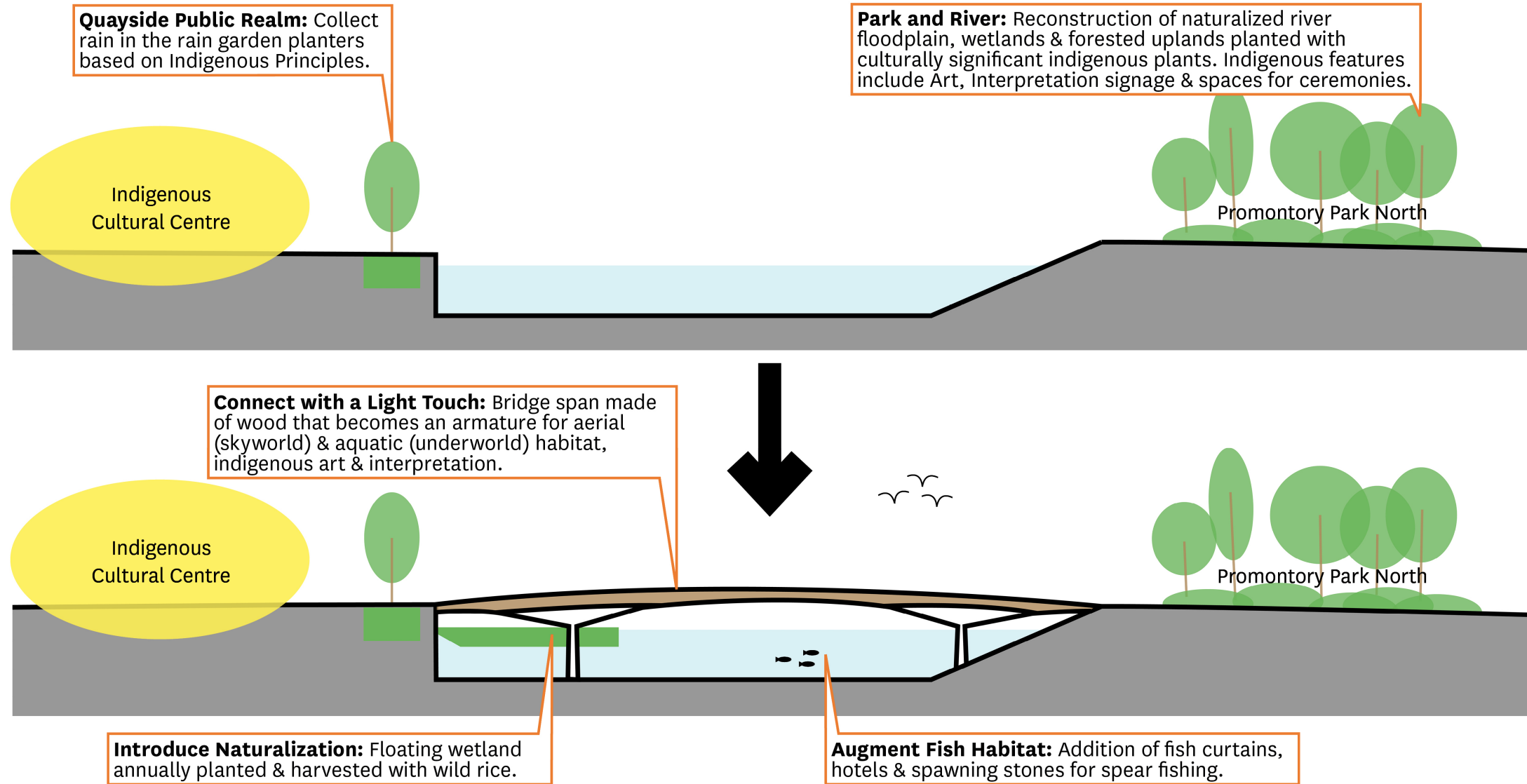


KEATING CHANNEL PEDESTRIAN BRIDGE

3. An Armature for a 21st C Living Landscape



Connecting Indigenous Principles, Features and Programming



Building on Indigenous Principles

1 *All Our Relations*

We are all integrated and interconnected with nature and all that surrounds us.

2 *Planning for the Seventh Generation*

We are mindful that the decisions we make today affect future generations after we are gone, and must be durable and maintainable.

3 *The Presence of Craft*

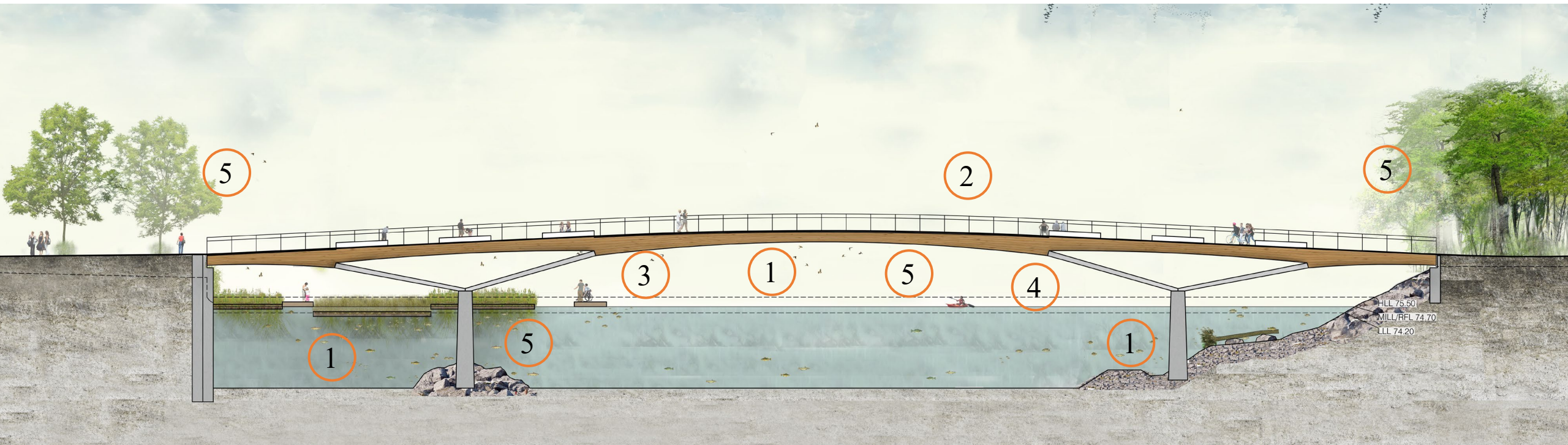
We create beautiful structures with superior craftsmanship, apparent from the way in which they are made, celebrating material joinery.

4 *Take Only What is Needed*

We select and configure materials for their inherent strengths, achieving high strength:weight ratios so as to minimize waste.

5 *Celebration of Indigenous Culture*

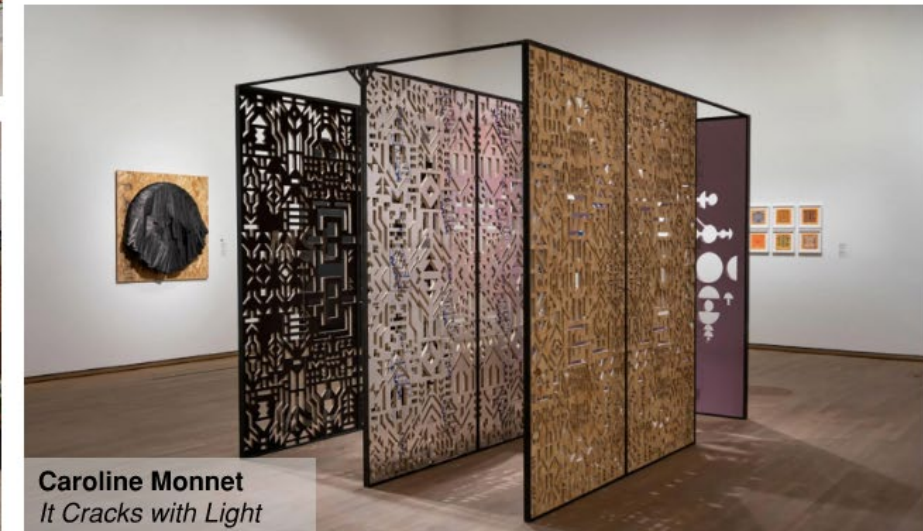
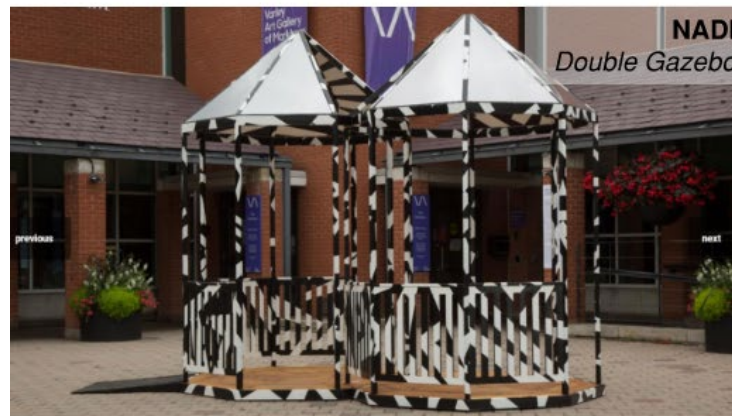
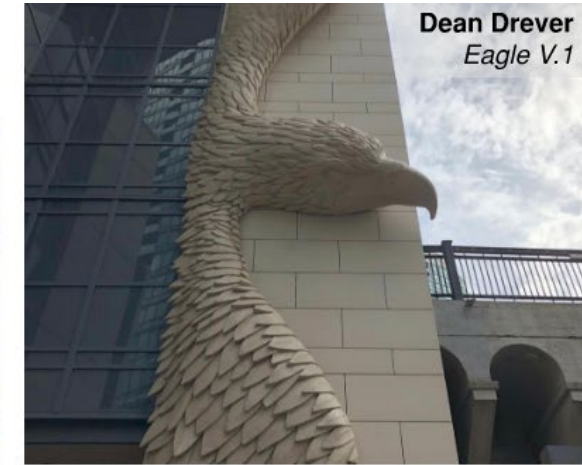
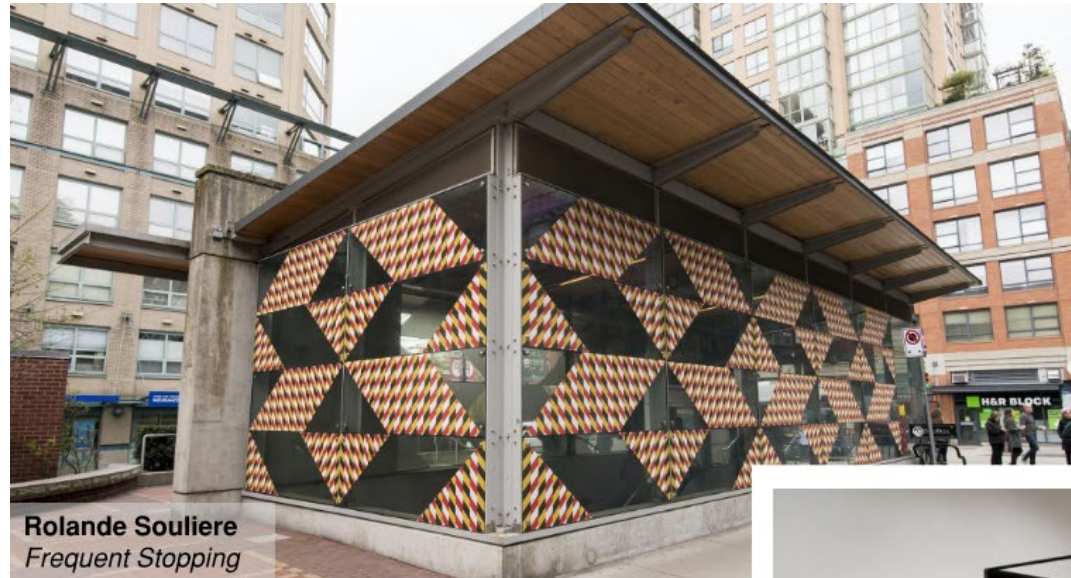
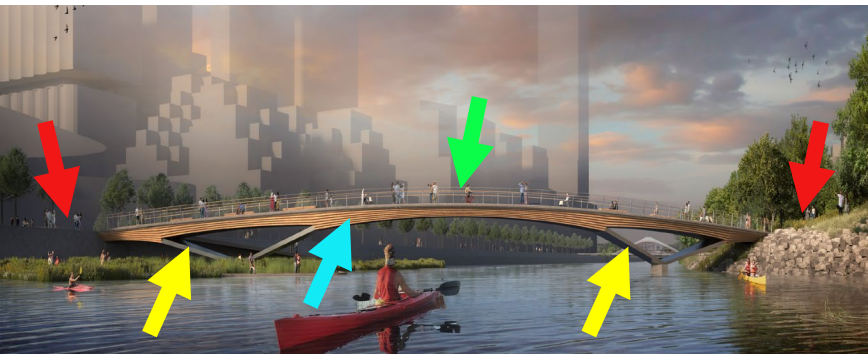
We celebrate the seasons as reflected in the migratory patterns of birds and fish, planting and harvesting, and the changing landscape.



Creating Opportunities for Public Art and Interpretation

- ✓ Feature the work of a local Indigenous artist to present their work in a meaningful and impactful way.
- ✓ Focuses on points of connection and intersection as key public art sites.

Key Opportunities for Public Art:



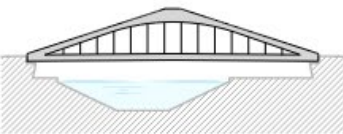


Three Big Moves

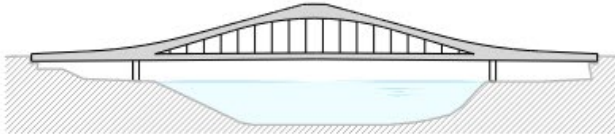
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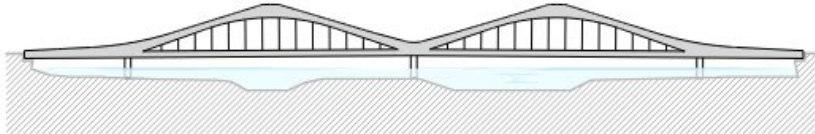
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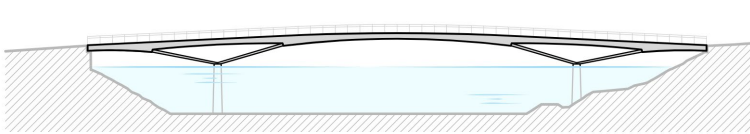
CHERRY ST. NORTH BRIDGE



CHERRY ST. SOUTH BRIDGE



COMMISSIONER ST. BRIDGE



KEATING CHANNEL PEDESTRIAN BRIDGE

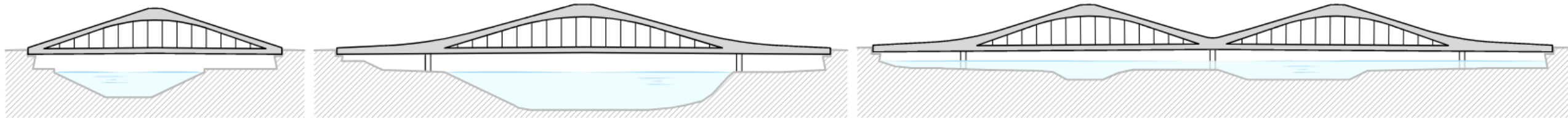
3. An Armature for a 21st C Living Landscape



Beautiful, Distinct and Compliments the Existing Family of Bridges

Our proposed bridge has been designed as an inversion of the Port Lands bridges' typology of an above deck superstructure with a timber superstructure below deck.

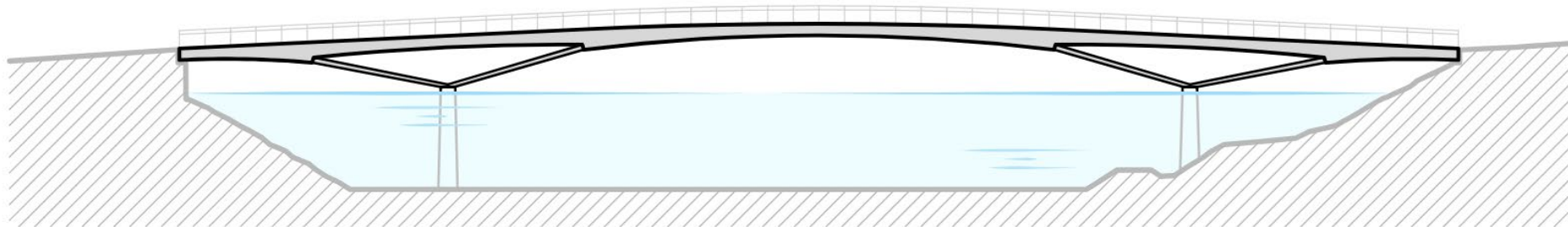
The elegant, smooth and modern form is consistent with the 'City of the Future' design mandate for the Port Lands bridges.



CHERRY ST. NORTH BRIDGE

CHERRY ST. SOUTH BRIDGE

COMMISSIONER ST. BRIDGE



KEATING CHANNEL PEDESTRIAN BRIDGE - MAAMAWI'

Layout Plan

Water's Edge Promenade

Keating Channel

Parliament Slip

35.00m APPROX. TUG
BOAT CLEARANCE

79.06
79.06
79.03
+74.20
+74.20
80.5

5.00m

R86.50

R106.00

79.06

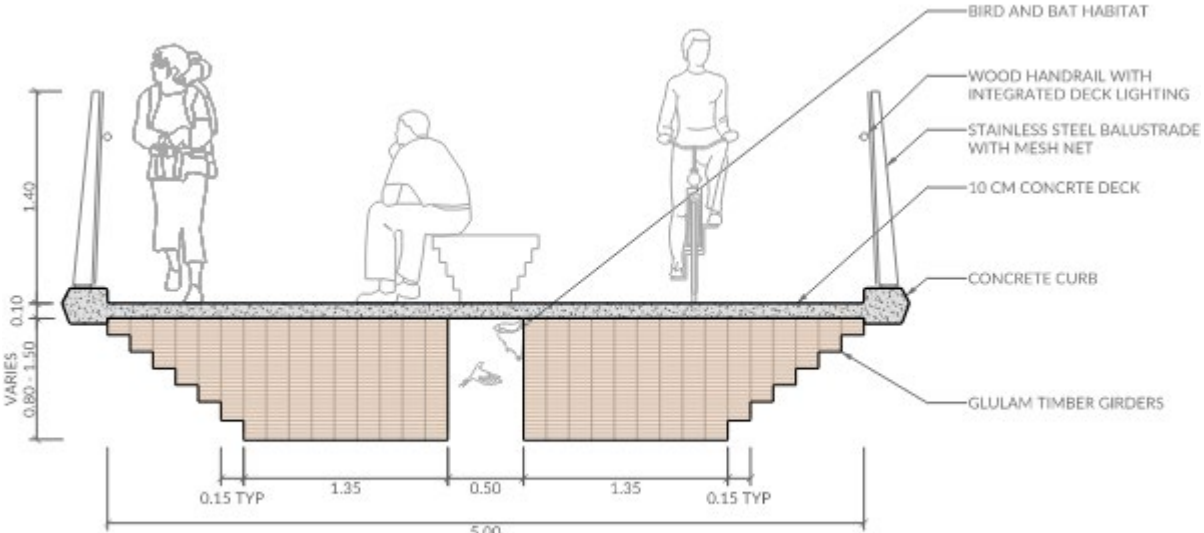
5.00m

Promontory Park North

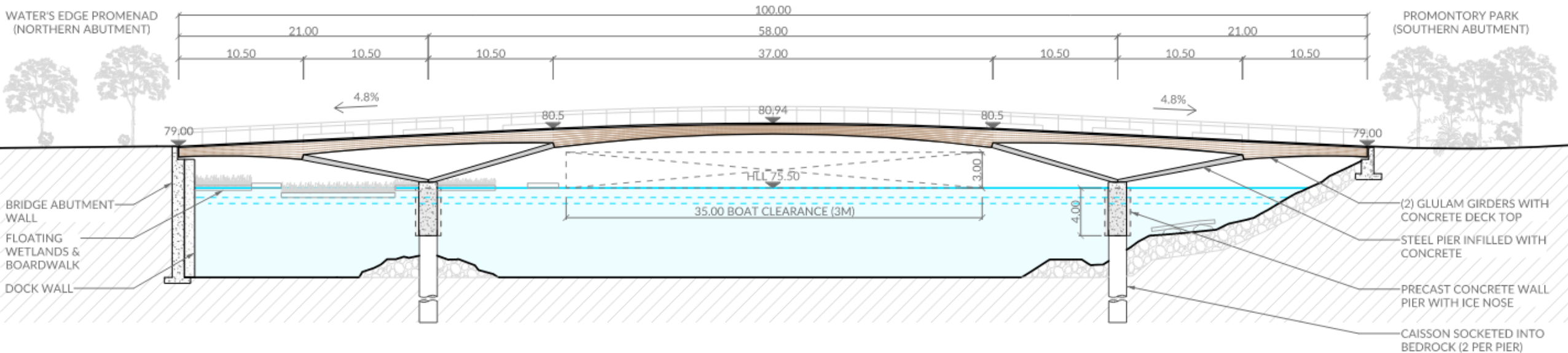
Inner Harbour

*Westerly North Landing and Sweeping
Curved Alignment Promote Spectacular Lake
Views.*

*Laminated Timber Elegantly Shaped
to Efficiently Span the Channel*



CROSS SECTIONS 1:50



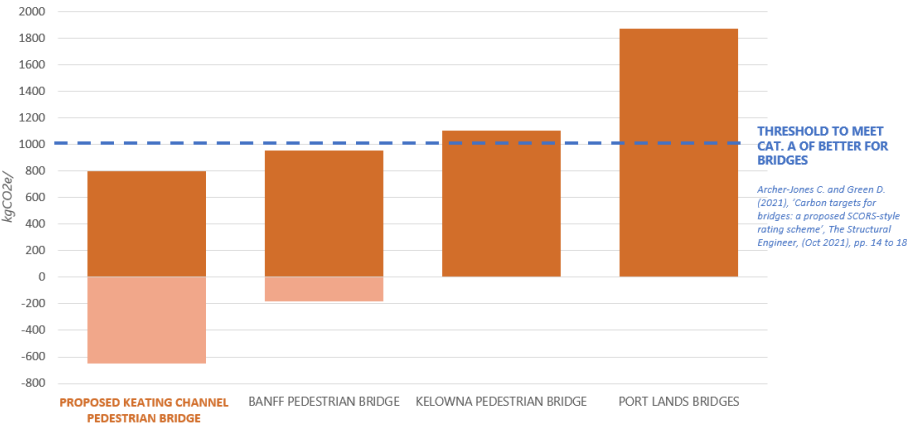
PROFILE SECTION 1:350

Sustainability Integral to Every Aspect

✓ By intertwining Indigenous teachings and modern innovation, Maamawi’ demonstrates sustainability that is integrated into each aspect of the design.

EMBODIED CARBON ANALYSIS
AS COMPARED WITH THREE PEDESTRIAN BRIDGES

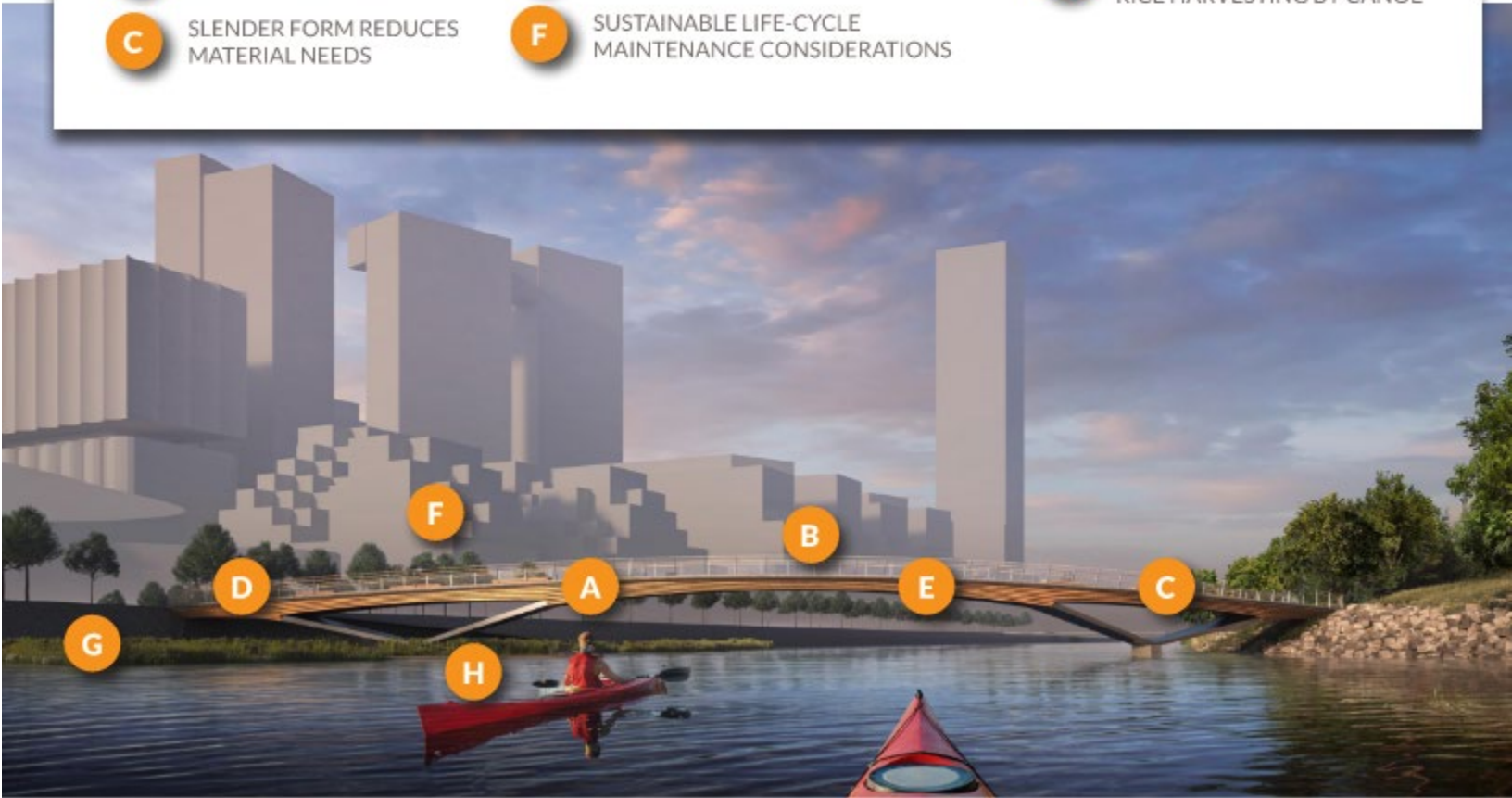
■ BIOGENIC CARBON INTENSITY
■ A1 - C4 EMBODIED CARBON INTENSITY



- A LOW CARBON TIMBER GIRDERS
- B LOW CARBON DURABLE CONCRETE TOPPING
- C SLENDER FORM REDUCES MATERIAL NEEDS

- D DURABLE DETAILS - FAST DRYING & MOISTURE PROTECTION
- E CLIMATE RESILIENT FLOOD LEVEL HEIGHT
- F SUSTAINABLE LIFE-CYCLE MAINTENANCE CONSIDERATIONS

- G WETLAND SPACE FOR HABITAT
- H CULTURAL CONNECTION ENABLES TRADITIONAL WILD RICE HARVESTING BY CANOE

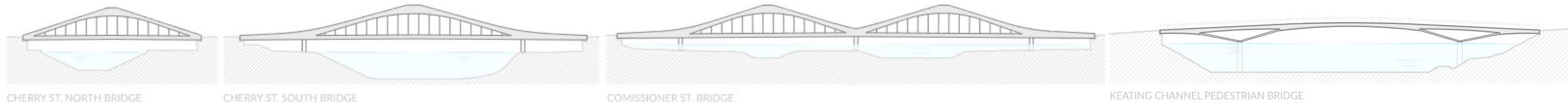


Three Big Moves

1. Design Based on Indigenous Principles



2. Maamawi' as part of the Port Lands Bridges Family



3. An Armature for a 21st C Living Landscape

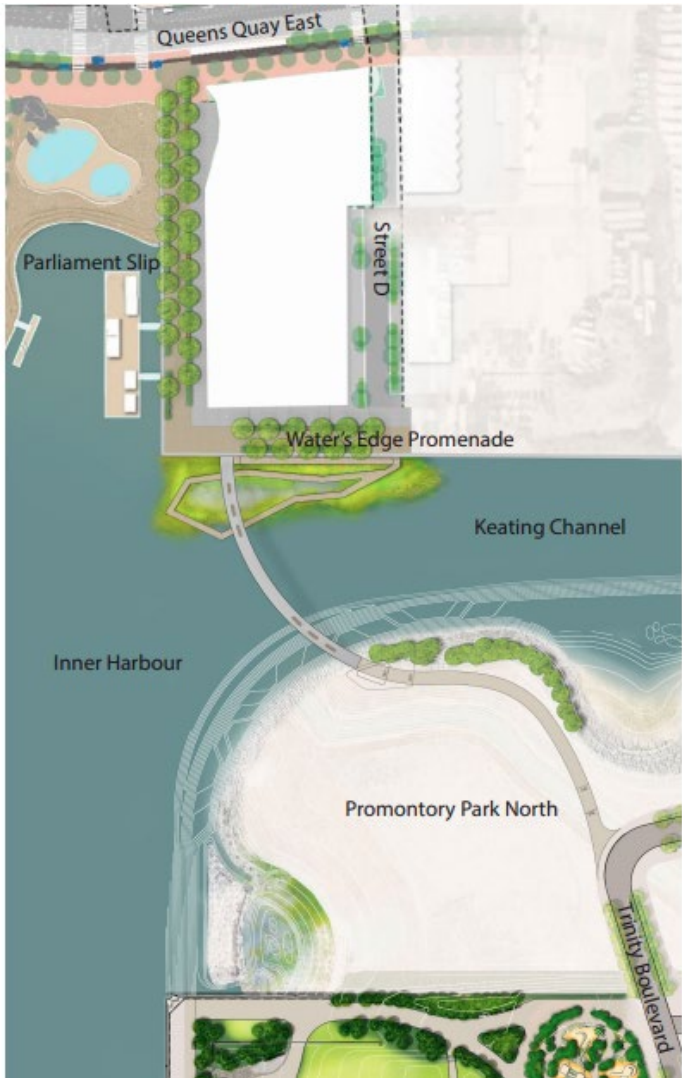


Delivering an Integrated Landscape Plan



A Forward-Thinking Approach to the Future Context

Phase 1



Phase 2



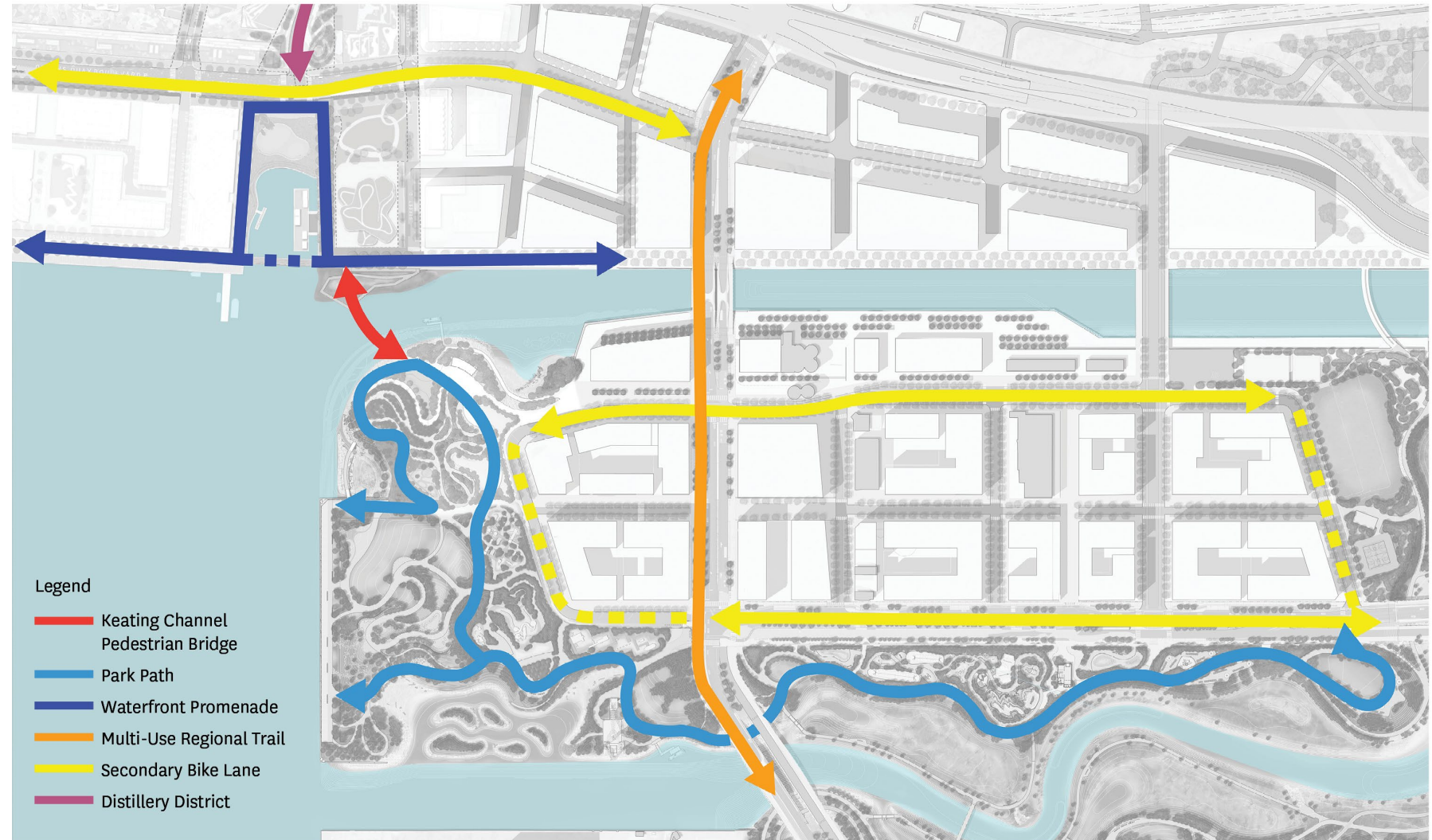
Phase 3



Provides Safe, Direct and Equitable Access between the City and Villiers Island

- ✓ Landing site shifted west to effortlessly link Promontory Park North with the Indigenous Cultural Center plaza and Water's Edge Promenade.
- ✓ Graceful curve and 5m width naturally slow cyclists to provide a safe and comfortable experience for all visitors.

As a pair, the Keating Channel and Cherry Street bridges give visitors flexibility to choose a pace that works for them.

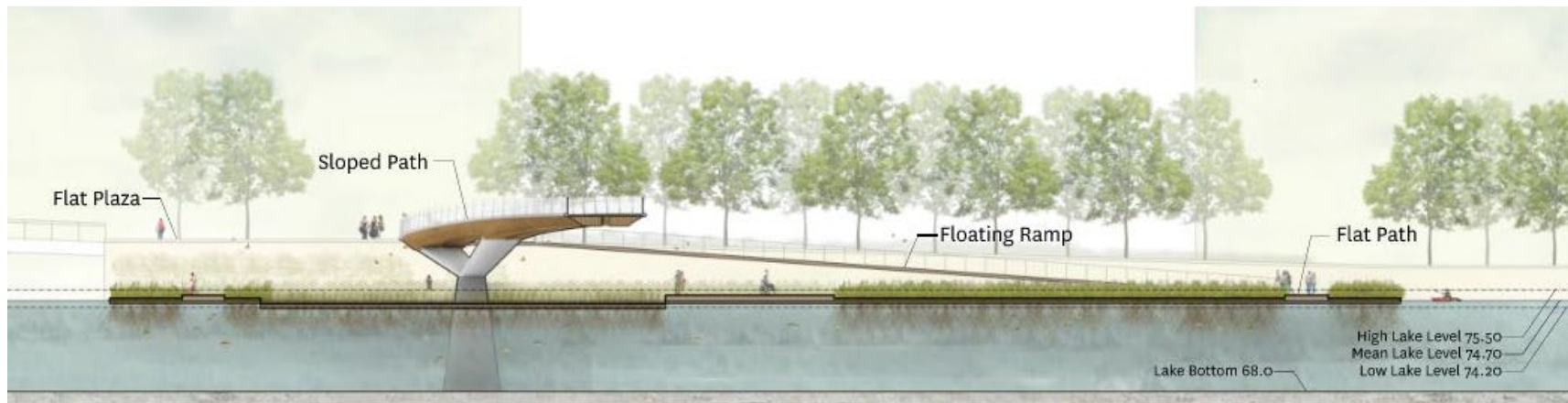




Inclusive, Accessible, Comfortable Experience for all People of all Ages and Abilities

A universal and equitable approach is one that does not differentiate between members of the public – everyone is welcome to the bridge in the same way.

- ✓ Singular, barrier-free path of travel along the bridge unites the community in shared experience.
- ✓ Lifting of dock wall and Water's Edge Promenade to meet the bridge landing provides a universally accessible transition onto north landing site and a seamless transition to a gently sloped Parliament Slip bridge to the west.
- ✓ Seating is placed strategically along the bridge to provide places for rest and relief.
- ✓ Integrated lighting in the handrails provides high indication of the path of travel.



ENTUITIVE



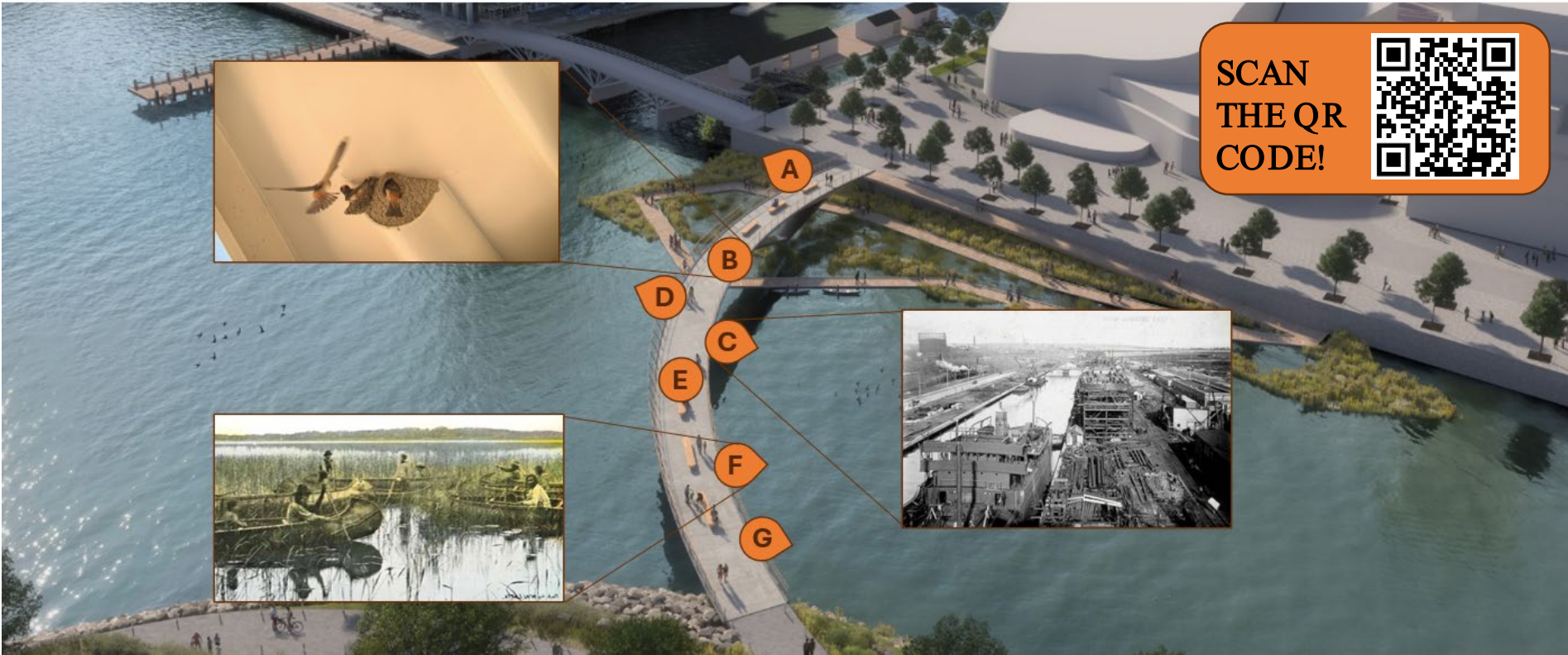
*Priority Goal

Innovative Approaches to Creating Connection

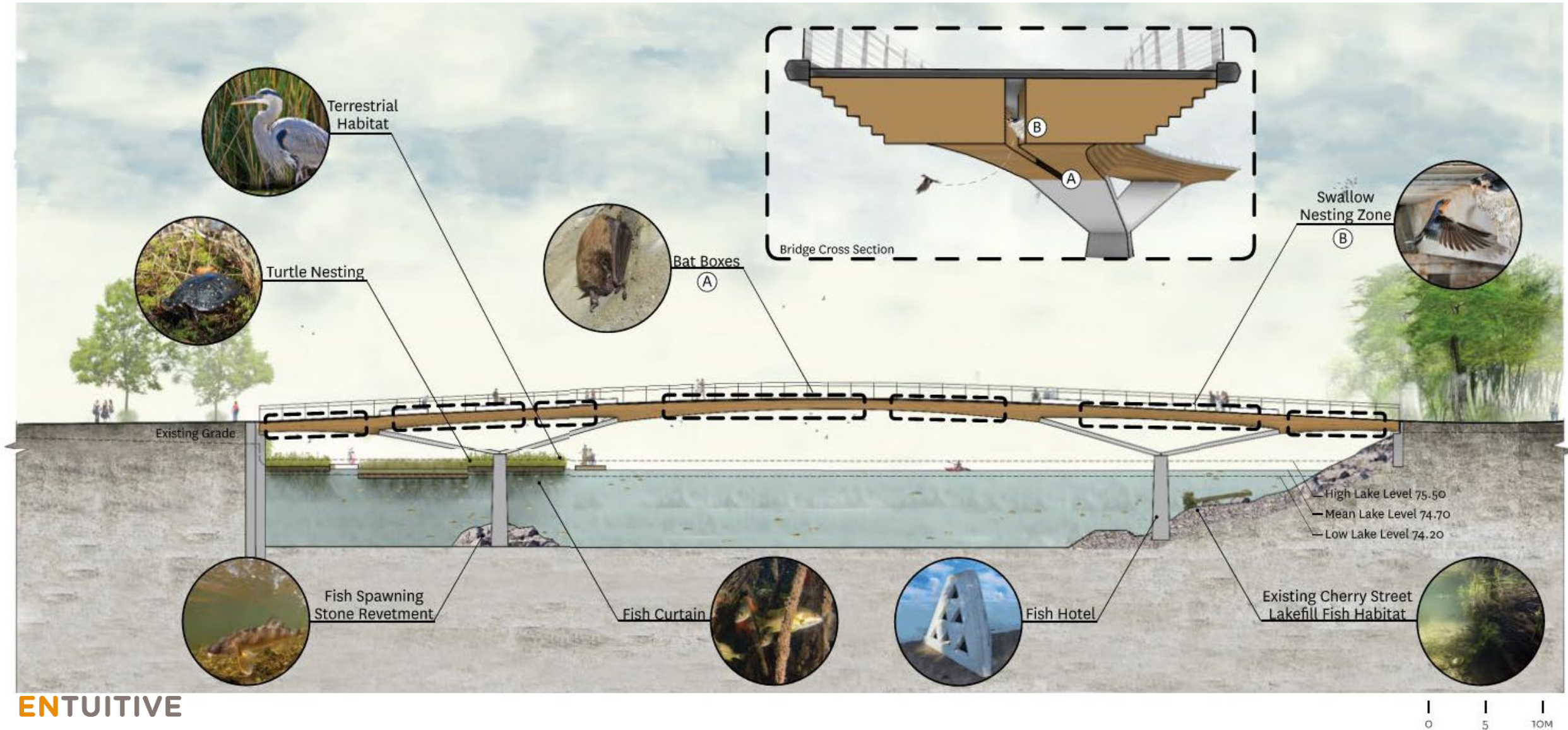


SCAN THE QR CODE TO SEE:

- A** HISTORIC DEVELOPMENT OF THE TORONTO SKYLINE
- B** LIVE CAMERA FEED OF BARN & CLIFF SWALLOW NESTING BENEATH DECK
- C** HISTORY OF THE FORMATION OF THE KEATING CHANNEL
- D** HISTORIC DEVELOPMENT OF THE TORONTO ISLANDS
- E** LIVE CAMERA FEED OF THE FISH NESTING HABITAT AT THE BRIDGE PIER
- F** ACCOUNT OF AREA AS HISTORIC HUNTING & FISHING TERRITORY OF INDIGENOUS PEOPLES
- G** DEVELOPMENT OF THE VARIOUS PORTS AND THEIR HISTORICAL USES



Incorporates and Integrates with Landscape, Biodiversity, and Ecosystem Resilience





2. Nda-Nwendaaganag

Lead Firm: EXP Services, CA & US

Engineer: Buro Happold, UK

Architect: INFORM Studio, US

Architect & Indigenous Consultant: 4 Directions, CA

Landscape Architect: Sprucelab, CA



NDA-NWENDAAGANAG

“ALL MY RELATIONS”

We acknowledge that the Land where the Keating Channel Bridge will be created is part of Treaty 13 (The Toronto Purchase) with the Mississaugas of the Credit First Nation, is part of the Traditional Territory of many nations including the Chippewa, Haudenosaunee and Wendat, and now home to diverse First Nations, Inuit and Métis peoples.

PROJECT GOAL /
CREATE WITH INDIGENOUS VOICE AND AGENCY

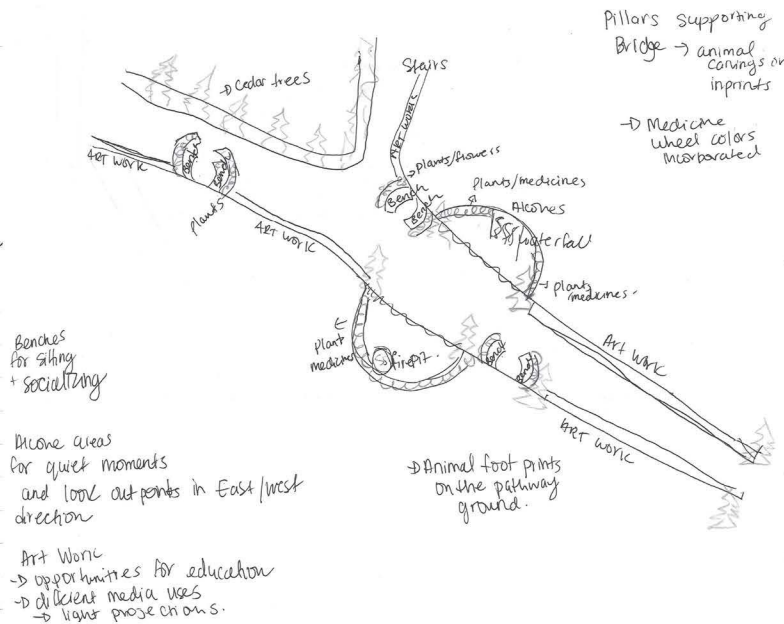
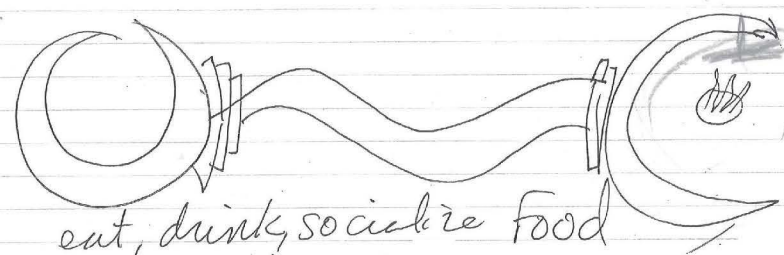


“The prophecies of our people tell us that the time will come to share our knowledge... that our ways will resurface and we will once again be strong. Our teachings are to be shared with all of the races of the world, so that they too can thrive.”

Aimee Bailey (2019), Circle of Turtle Lodge, p. 3



- continuation of south river
 - side height limits ? safety
 - meadow - self care
 - logo - carved
 - Paris area
 - Briss Water to Bridge
 - colors
 - Stone, Wood
 - Curv lines
- SUN
MOON
Edge
Salmon



Benches for sitting + socializing
Niche areas for quiet moments and look out points in East/West direction
Art Work
→ opportunities for education
→ different media uses
→ light projections

Pillars supporting Bridge → animal carvings or inprints
→ Medicine wheel colors incorporated

* Indigenous Co-designers: Tiffany Adair, Megan Clark, Darlene King, Reno Koostachin-King, Gwen Lane, Michelle Letourneau, Roger Misquadis, Judy Rheume



A LIVING BRIDGE FOR NDA-NWENDAAGANAG [ALL OUR RELATIONS]

“So often we hear the Elders say: Listen to your heart. What is my way may not be your way. Listen to the Teachings. Take from them what you need and leave the rest.”

Aimee Bailey (2019), Circle of Turtle Lodge, p.4

MAK-KEE-AN-NUK (TURTLE):

The bridge honours Turtle Teachings as an experience that is holistic and multifaceted.

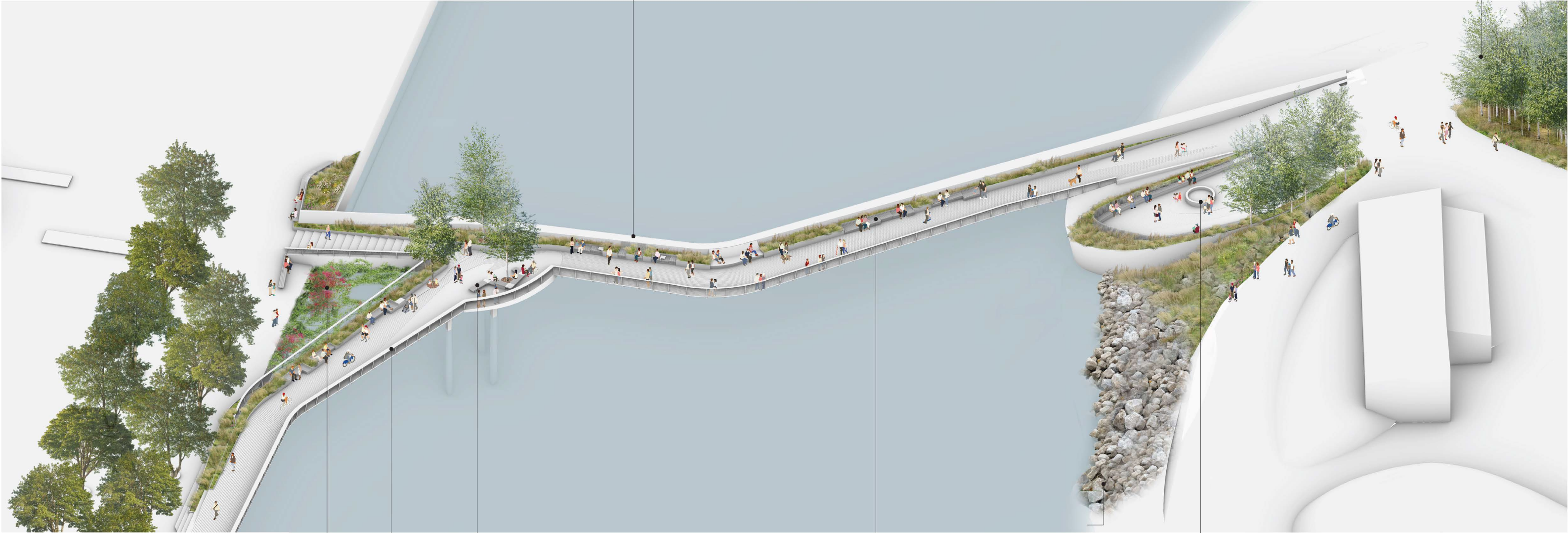
- Stainless steel engraved ‘13 moons’ inlaid into seating areas across the site
- Lifesize metal cast turtles sunning themselves

7TH FIRE WALL: OSH-KI-BI-MA-DI-ZEEG (THE NEW PEOPLE):

Weathered steel curtain wrapped across and under the eastern wall of the bridge, extending from end to end. It is comprised of patterns abstracted from Traditional arts leading from pre-contact (at the entrances, the lower levels of the bridge) to central issues of importance to Indigenous Peoples today.

MISHOOMIS (GRANDFATHER) BIRCH GROVE,

A large grove of wiigwaas (white, paper birch), a native and fast-growing tree species, interspersed with plantings of the seven sacred trees used in sacred fires: willow, cedar, poplar, white pine, maple, and oak. An ecologically biodiverse area planted with a lush understory of ferns, grasses, shrubs and perennials.



NOOKOMIS'S (GRANDMOTHER) DREAMCATCHER:

A metal cable system designed as a dreamcatcher with a large circle opening to view Nibi (water) below, and another layer of nature. Created as a verdant green wall with five native vines species, it will offer a large nesting habitat area for birds and provide local and migratory birds with food (insects, wild grapes) and shelter. Deep edge planters will also include a rainwater harvesting system for irrigation.

SASSAFRAS REST:

A Sassafras ‘mitten leaf’ shaped resting and gathering place where the staircase meets the ramp, and off the main path of travel (an important medicine tree that is now rarely found). Seating is under the shade of trembling aspen trees, and this space can support Water and Full Moon ceremonies.

NIBI (WATER):

Nibi (water) is raised to flow down a metal railing, and a school of lifesize salmon swim upstream, formed of jingle dress cones that sway with the wind. Nibi also splashes slightly on the limestone paved fluid shaped area, honouring the ancient sedimentary rock below Lake Ontario, the Grandparent Stones.

MEADOW PLANTINGS:

Extensive meadow restoration plantings offer food and habitat for birds and pollinators, and a more natural ecopassage for urban wildlife.

ISHKODE (FIRE):

A medicine wheel fire pit in a large gathering area, framed by a curved low wood screen of the seven sacred trees, and restoration plantings.



NIBI (WATER)

Nookomis (Grandmother), Grandmother Moon

“When our Grandmother Nookomis is full, she reflects the light of the sun and sees all.”

Elder Lillian Pitawanakwat (June, 1997), in Aimee Bailey (2019), Circle of Turtle Lodge, p.18

Nibi is presented first in this story of balance to honour the Mississaugas, “the People of the Waters” (thought to be from Minzazaheeg: “people living where there are mouths of many rivers”. Nibi is the life blood of Mother Earth, the rivers her veins. The moon, **Nee-ba-gee’-sis, Grandmother Moon**, watches over us and moves Nibi with her power.

Nookomis’s Dreamcatcher:

The lush green wall that will form from the diverse vine plantings in Nookomis’s Dreamcatcher have seasonal interest with flowers, grapes, and fall coloured leaves, and replicates the aesthetic of gracefully draped vines growing on nearby bridges.

Waabshkaakzaat (Poplar) Trembling Aspen:

Three hardy Trembling Aspen (poplar) trees offer the healing sound of water as they rustle in the wind, shading the generous wood bench seating below. They are planted in deep soil volumes in the structural supports for the bridge, and share soil below the deck to live in community, communicating through their roots systems with mychorrizal fungi.



ISHKODE (FIRE)

Mishoomis (Grandfather), Gee’sis, Grandfather Sun

“Give thanks to Grandfather Sun for his gift of light which allows you to thrive.”

Annie Parker (2019), Circle of Turtle Lodge, p.7

Nimishoomis wiigwaas (Grandfather Birch):

Anishinaabe view trees as ‘Standing People’ that carry the knowledge of the past, present and future (Elder Jules Lavalley, in Aimee Bailey (2019), Circle of Turtle Lodge, p.32.

A large birch grove with biodiverse plantings, will collect adjacent rainwater to naturally irrigate this ecologically restored space.

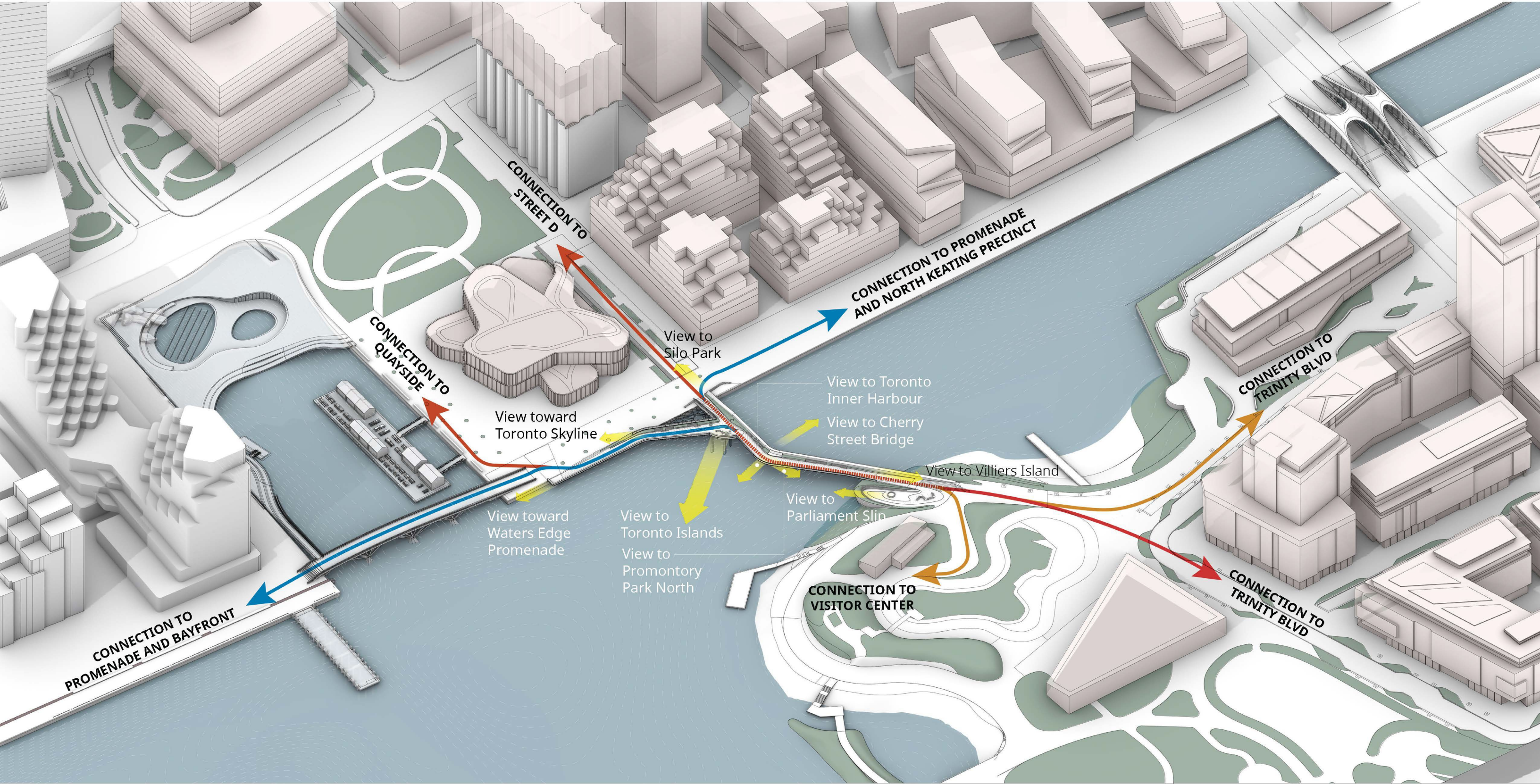
The south shore is where Ishkode (Fire) is found, sacred to Indigenous Peoples around the world, used in ceremony and for prayer, a power that is critical to human survival.

Medicine Wheel Fire Pit:

A large, oval gathering area with a Medicine Wheel designed fire pit at the center (having the colours of the four sacred directions, East/yellow, South/red, West/black, and North/white). A low, curved wall made of vertical timbers of the seven sacred trees frames the space, with their names carved into them going clockwise, beginning with wiigwaas (birch, used to start the fire), followed by oziisigobimizh (willow), waabshkaakzaat (poplar), giizhik (cedar), zhingwaak (white pine), and bgaakmish (oak).



PROJECT GOAL /
CONNECTING THE CITY AND VILLIERS ISLAND



SITE CONTEXT



CONCEPTUAL PLAN



**PROJECT GOAL /
INCORPORATE A LIVING LANDSCAPE**



MASHKIKI (MEDICINE) / NATIVE SPECIES PLANTING DESIGN

“In some Native languages the term for plants translates to “those who take care of us.”

Robin Wall Kimmerer (2013). P.229

“According to Keewaydinoquay’s teachings, plants are thought of as beings with their own histories, stories, beliefs, and ways of life. Anishinaabe protocols require us to introduce plants just as we would introduce another human being...”

Wendy Makoons Geniusz (2015), p.xiii



LEGEND

- Seasonal interest - Spring
- Seasonal interest - Summer
- Seasonal interest - Fall
- Seasonal interest - Winter
- Bird habitat
- Pollinator species



BRIDGE MEADOW

TREES



Waabshkaakzaat
Trembling Aspen
(Populus)

SHRUBS



Gozigwaakomin
Allegheny Serviceberry
(Amelanchier laevis)



Paakzigan
Bearberry
(Arctostaphylos
canadensis)



Odigadimanido
New Jersey Tea
(Ceanothus
americanus)



Northern-Bush
Honeysuckle
(Diervilla lonicera)



St. John's Wort
(Hypericum
kalmianum)



Bush Cinquefoil
(Potentilla fruticosa)



Canadian Yew
(Taxus canadensis)

PERENNIALS



Aadjdamowana
Yarrow
(Achillea millefolium)



Pearly Everlasting
(Anaphalis
margaritacea)



Canadian Windflower
(Anemone canadensis)



Asters
(Aster species)



Purple and Pale Purple Coneflower
(Echinacea purpurea & E. pallida)



Prairie Smoke
(Geum triflorum)



Kansas Gayfeather
(Liatris spicata)



Common Bee Balm
(Monarda didyma)



Evening Primrose
(Oenothera biennis)



Mamaakade-niingweyag
Black-eyed Susans
(Rudbeckia hirta)

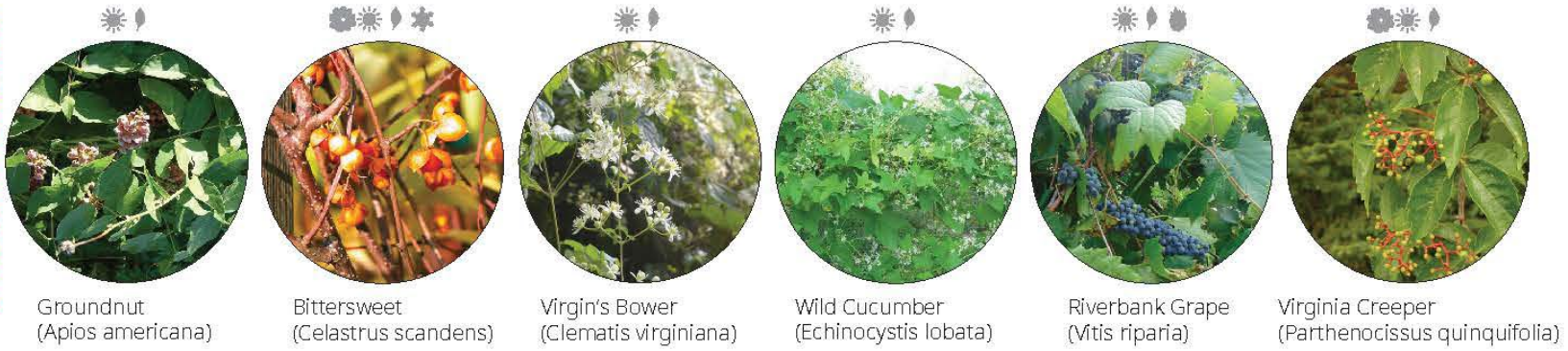


Waasakoneg+wag
Goldenrod
(Solidago species)

GRASSES



VINES (DREAM CATCHER)



THE SEVEN SACRED TREES (IN ORDER OF USE IN FIRE)

LEGEND

- Seasonal interest - Spring
- Seasonal interest - Summer
- Seasonal interest - Fall
- Seasonal interest - Winter
- Bird habitat
- Pollinator species



FERNS

BERRIES

SHRUBS



PROJECT GOAL /
EMBODY SUSTAINABLE STRATEGIES



1 LONGEVITY OF STRUCTURE / A bridge that is admired for its presence on the landscape just as much as its value to daily use.



2 WEIGHT OPTIMIZATION / The bridge's design saved materials by optimizing its structure through rigorous engineering modeling and force-based calculations.



3 RECYCLED MATERIALS / The use of recycled steel and locally sourced limestone helps to reduce the bridge's overall carbon footprint.



4 CARBON SEQUESTERING SUBSTITUTES / Portland cement, concrete admixtures, and Kebony decking hold onto carbon that would be released into the atmosphere.



5 HABITAT IMPROVEMENT / Non-human species will benefit from rock rip rap and habitat netting, allowing more biodiversity to flourish in the area.



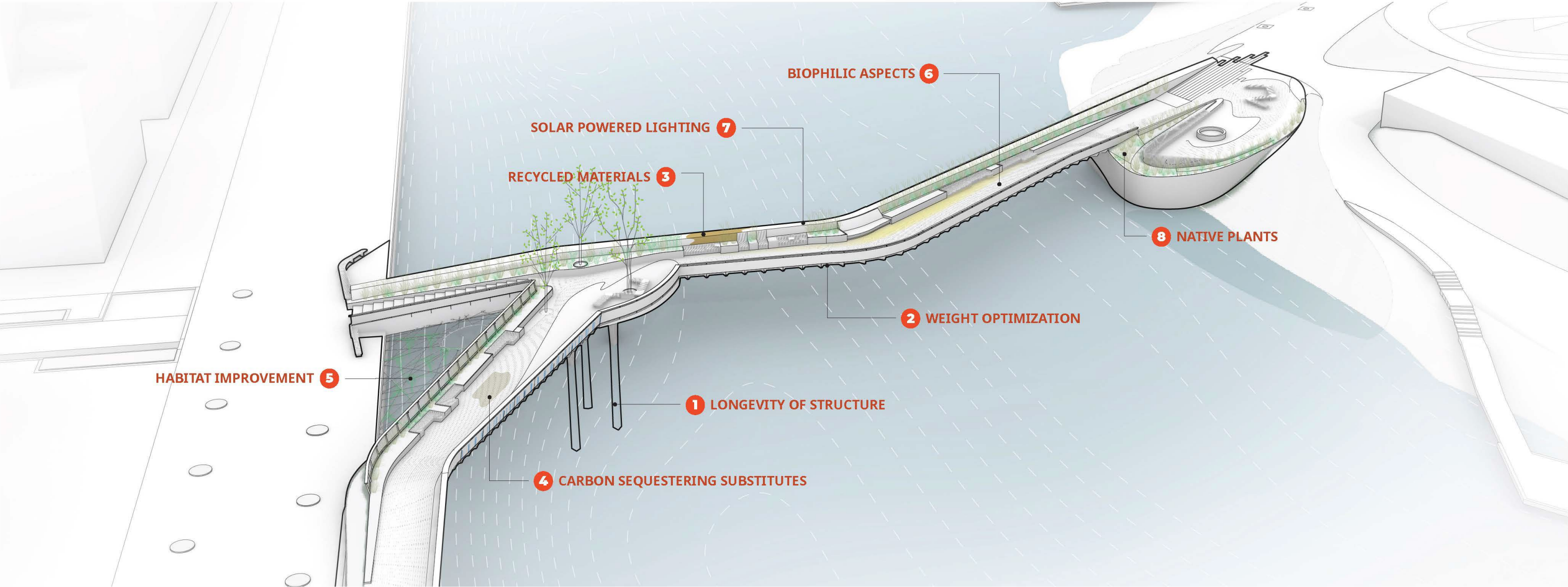
6 BIOPHILIC ASPECTS / The warmth of carbon-sequestering wood is used throughout, along with body-adjacent water and natural vegetation to improve health.



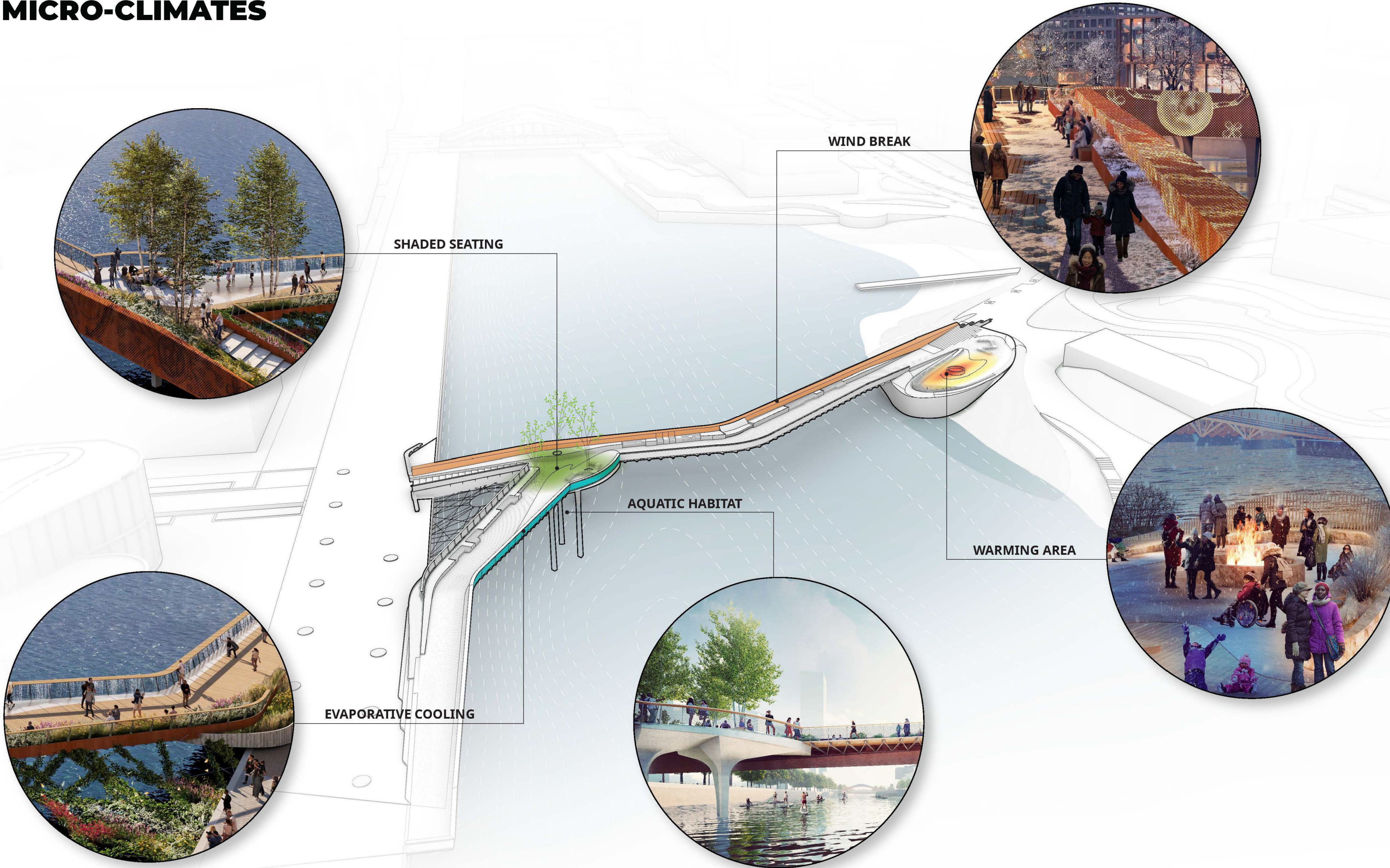
7 SOLAR POWERED LIGHTING / LED fixtures and low carbon lights minimize light pollution and electricity consumption.



8 NATIVE PLANTS / Low-maintenance and low-water vegetation provides decreased use of natural resources and contributes to biophilic and habitat aspects.



MICRO-CLIMATES



PROJECT GOAL /
CREATE A PLACE FOR ALL PEOPLE



SURFACE MATERIALS



WEATHERED STEEL



LANDSCAPE
EDGING



PERFORATED
SKIN



ENGINEERED MODIFIED WOOD



SEATING



DECKING



RAILING
CAP



QUEENSTON LIMESTONE



FLAMED
PAVER &
STEPS



CLEFT
ABUTMENT
CLADDING



CONCRETE



PIERS



STAINLESS STEEL



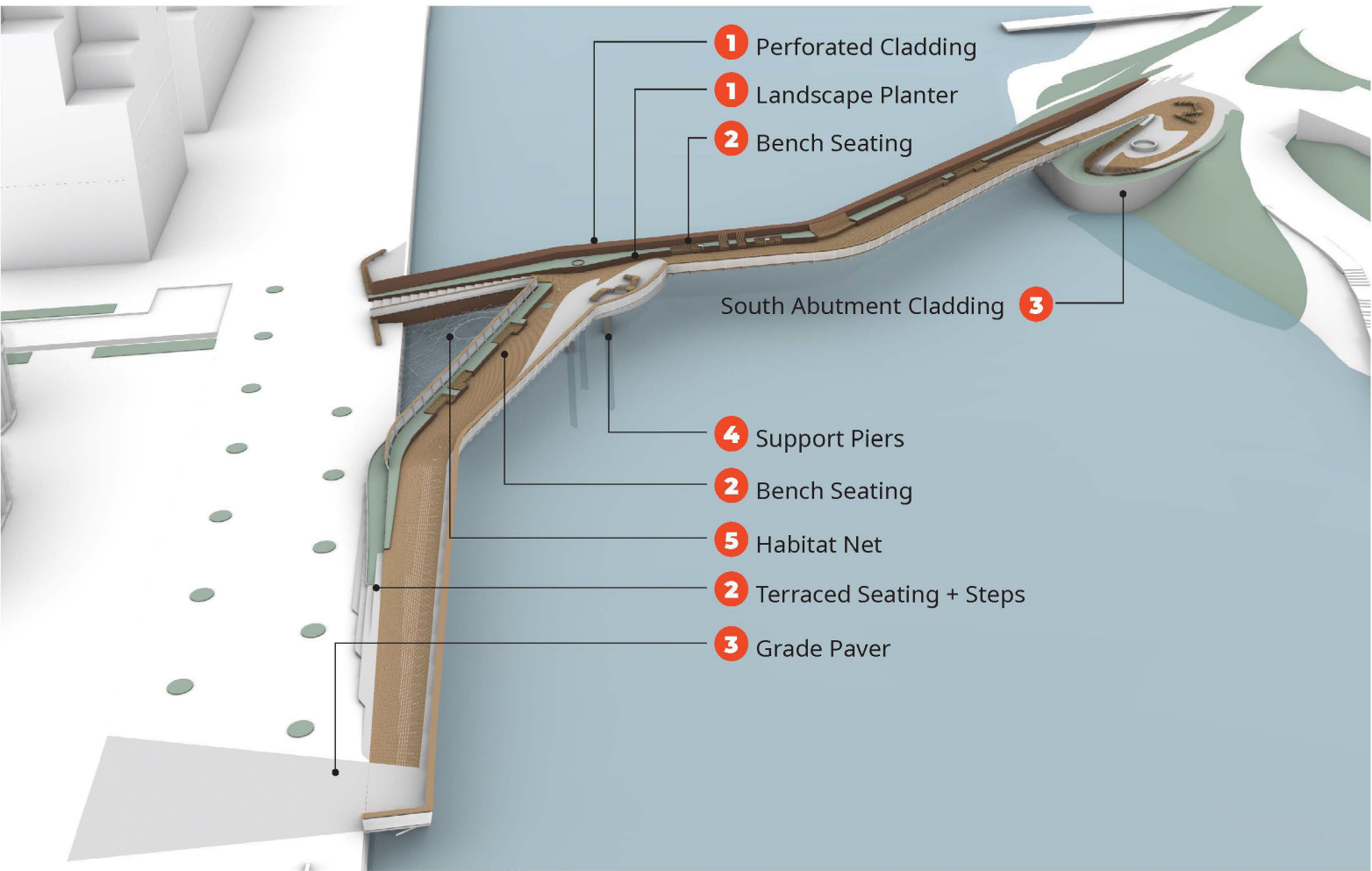
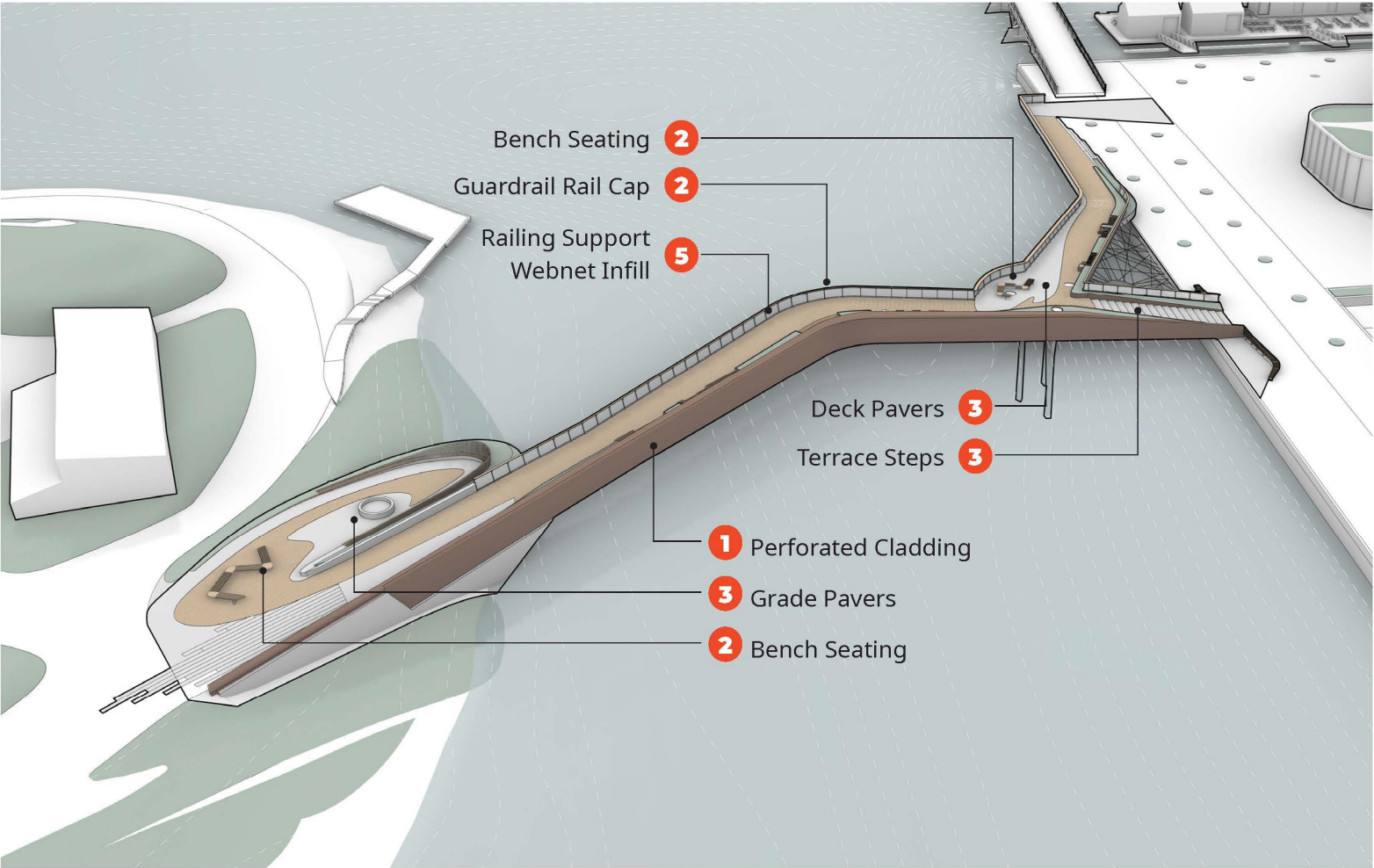
RAILING



HABITAT
NET



STRUCTURAL
RIBS



UNIVERSAL ACCESSIBILITY

TACTILE INDICATORS & PATHWAYS

Tactile indicators are strategically placed near trees, and tactile pathways run the length of the bridge to safely guide visually impaired individuals, enabling them to navigate independently

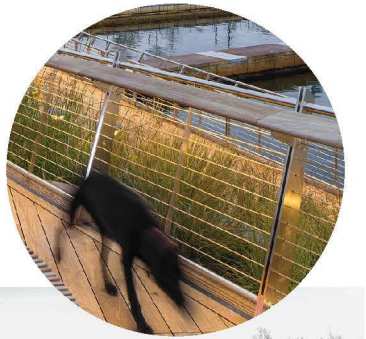


SEATING OPTIONS

Diverse selection of seating options positioned throughout the entire bridge, designed to cater to various body sizes and mobility needs. Beneath the trees, you'll find bench seating areas that not only offer a cool, shaded place to sit but also accommodate service animals comfortably beneath the benches.

RAILINGS

Wooden handrail made from locally sourced wood with integrated light to clearly light the pathway.

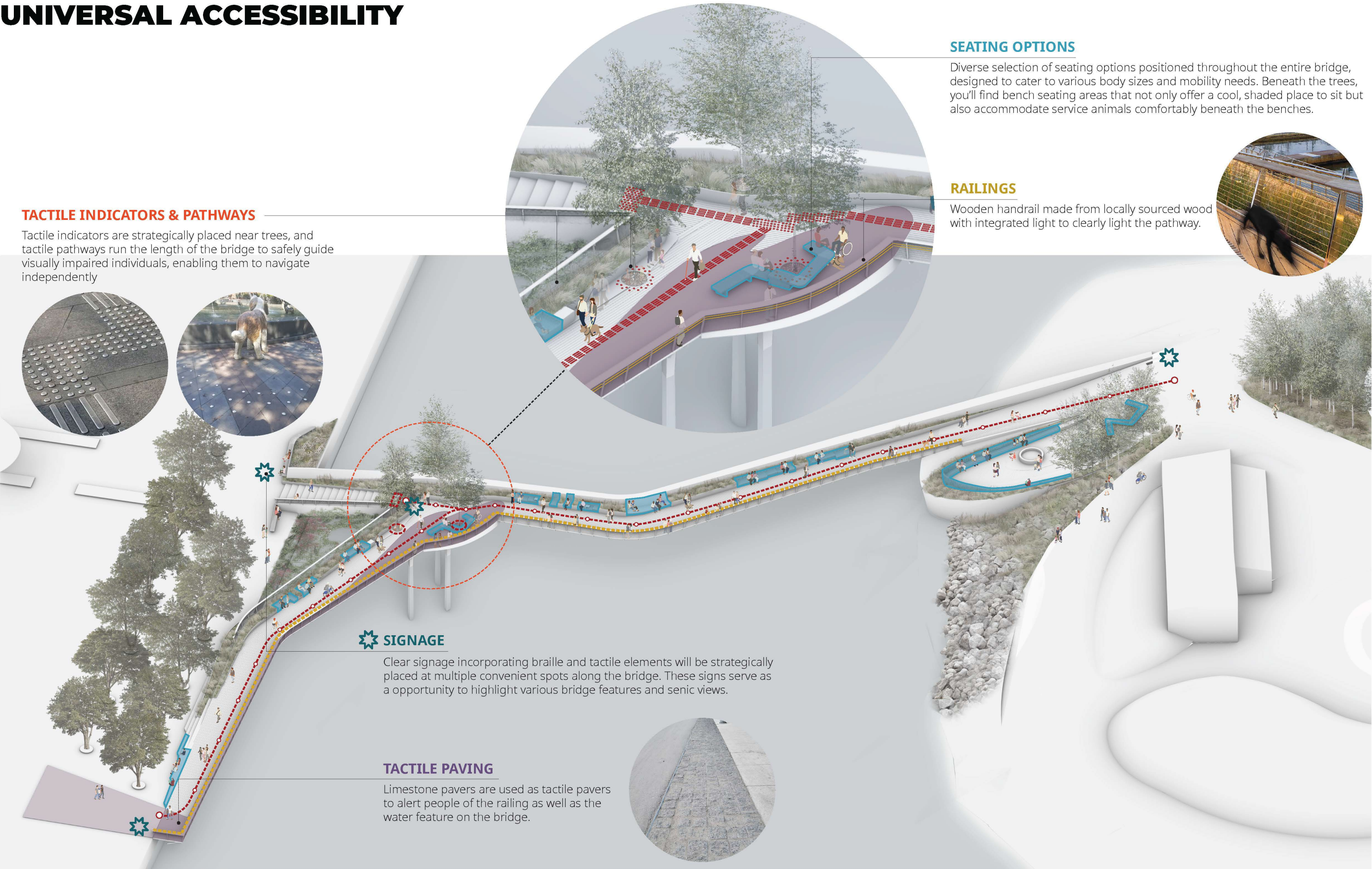


SIGNAGE

Clear signage incorporating braille and tactile elements will be strategically placed at multiple convenient spots along the bridge. These signs serve as an opportunity to highlight various bridge features and scenic views.

TACTILE PAVING

Limestone pavers are used as tactile pavers to alert people of the railing as well as the water feature on the bridge.



SEATING / NORTH BRIDGE + PROMENADE

D STREET STAIR

- (1) Cascading D Street Stair
- (2) East Bench facing new Indigenous Cultural Center
- (3) West Bench Nookomi's Dreamcatcher



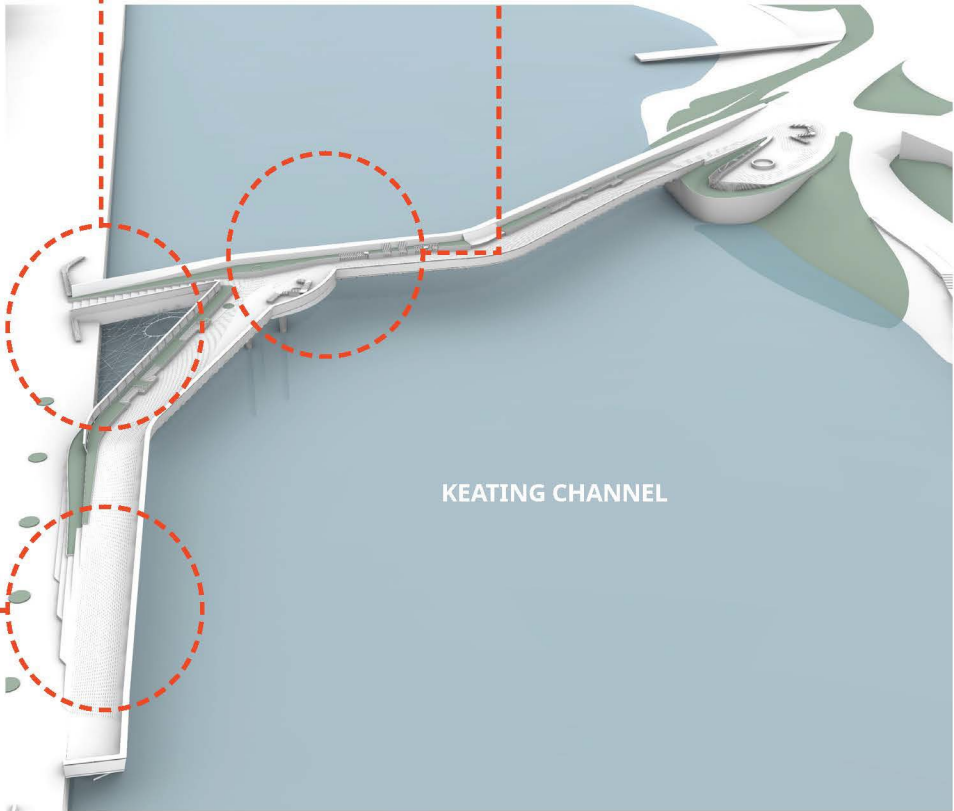
SASSAFRAS REST AREA

- (5) Trembling Aspen trees bench
- (6) Wood Benches along the 7th Fire Wall



NDA-NWENDAAGANAG THRESHOLD STEPS

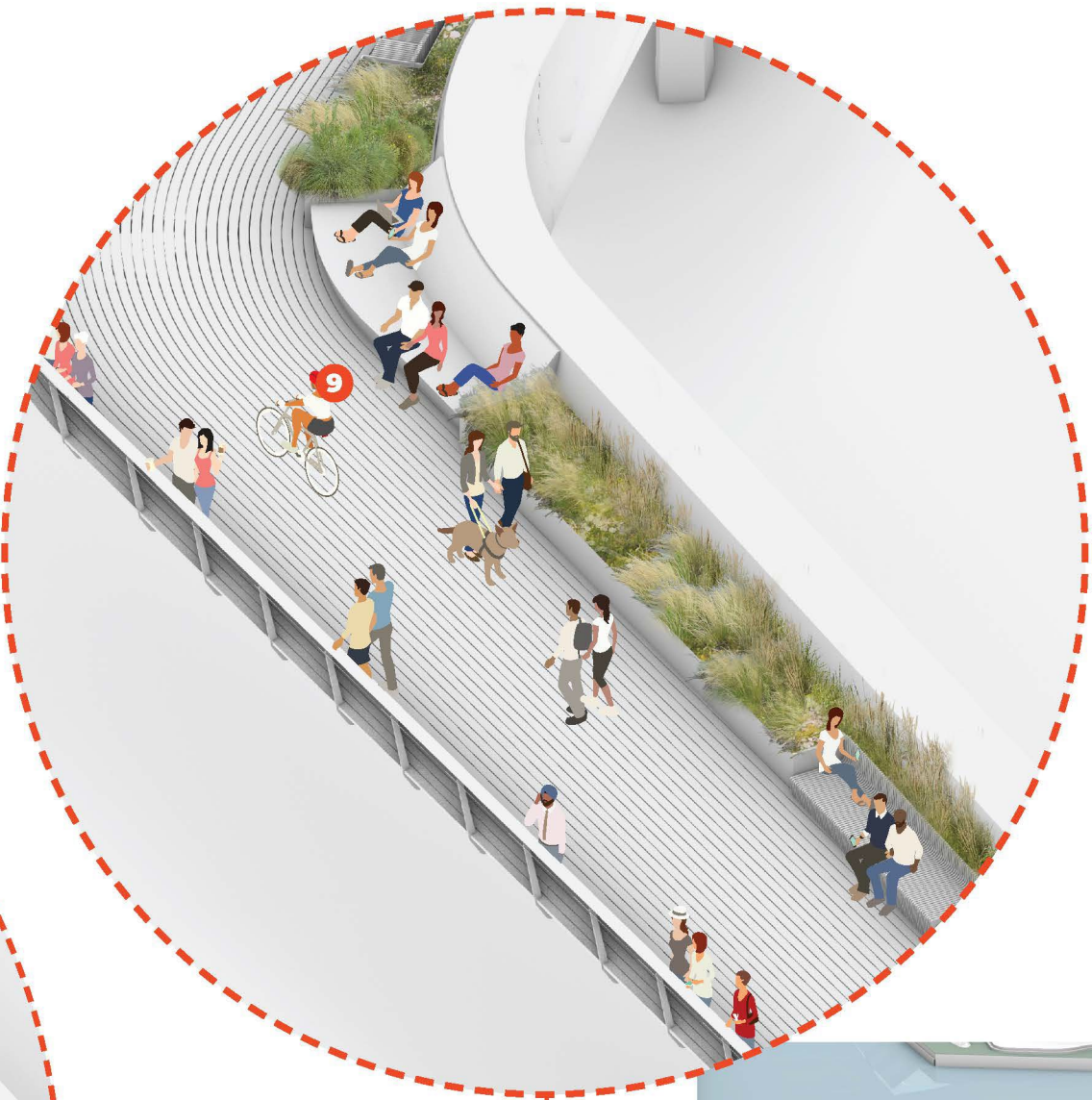
- (4) Seating in the shade of trees along the Waterfront Promenade



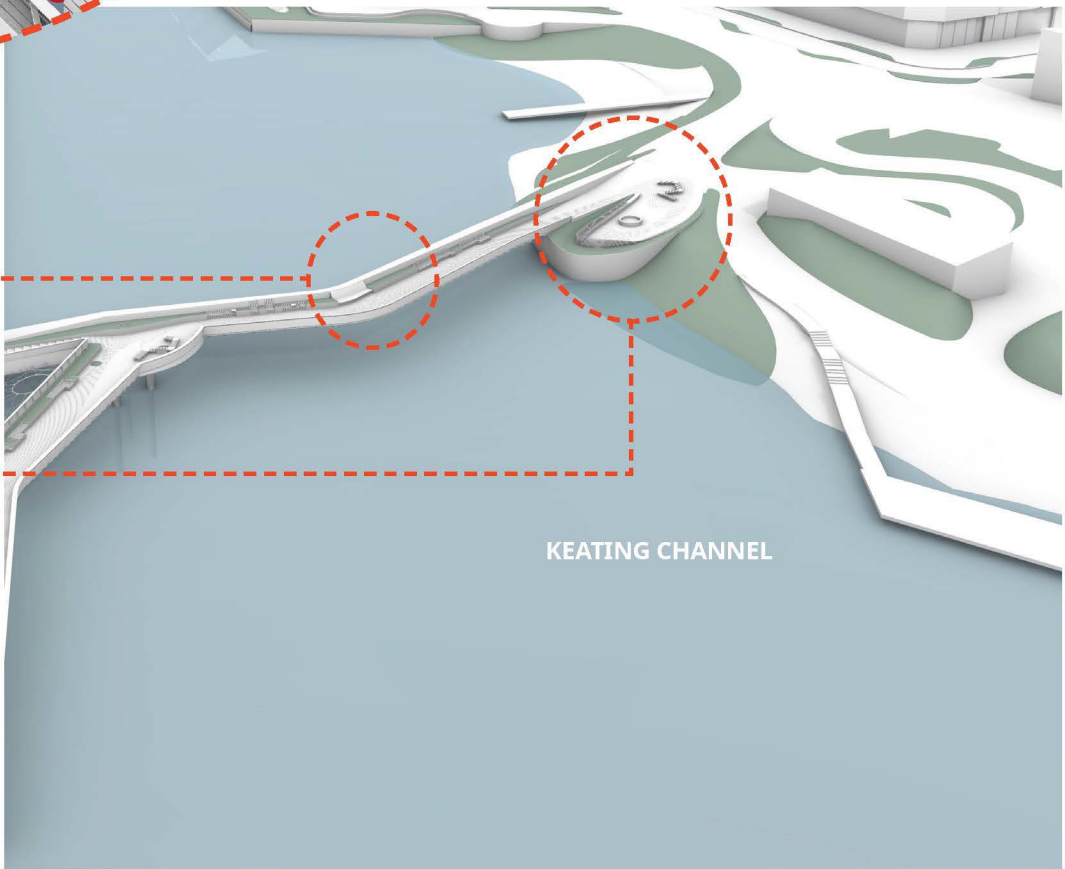
KEY PLAN

SEATING / SOUTH BRIDGE + SHORE

ISHKODE: FIRE SEATING AT THE MEDICINE WHEEL FIRE PIT:
(7) that encircles the Medicine Wheel-inspired fire pit seating
(8) Open seating oriented towards the bridge and Villiers Island



SUN DECK SEATING
(9) The Loungers arranged to maximize sun exposure and sunset views.



KEY PLAN

LIGHTING DESIGN

INTEGRAL STAIR LIGHTING

Integrated stair lighting can create more of a formal lighting gesture to this large staircase



SPOT LIGHTING

Adjustable spotlights can illuminate the landscape vine installation from the side of the bridge to minimize glare and ecological impacts



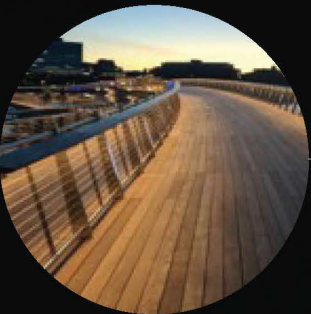
PATHWAY / LANDSCAPE LIGHTING

Low level, full cutoff bollards along the landscape margins will provide localized ambient lighting within plant and flower beds.



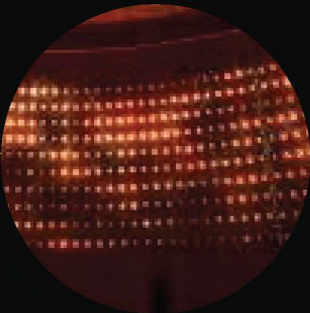
INTEGRAL HANDRAIL LIGHTING

Integrated linear handrail lighting on the western edge of the bridge provides an even, indirect wash on the wood deck, balancing the warm glow of the perforated weathered steel scrim.



BACKLIT PERFORATED WEATHER STEEL SCRIM

A future city landmark and cultural destination, the dynamic light of this artistic intervention mimics the movement and color of fire behind the weathered steel scrim, creating an everchanging vignette along the horizon.



UNDER BENCH LIGHTING

Soft lighting concealed underneath benches pools light at gathering and seating areas

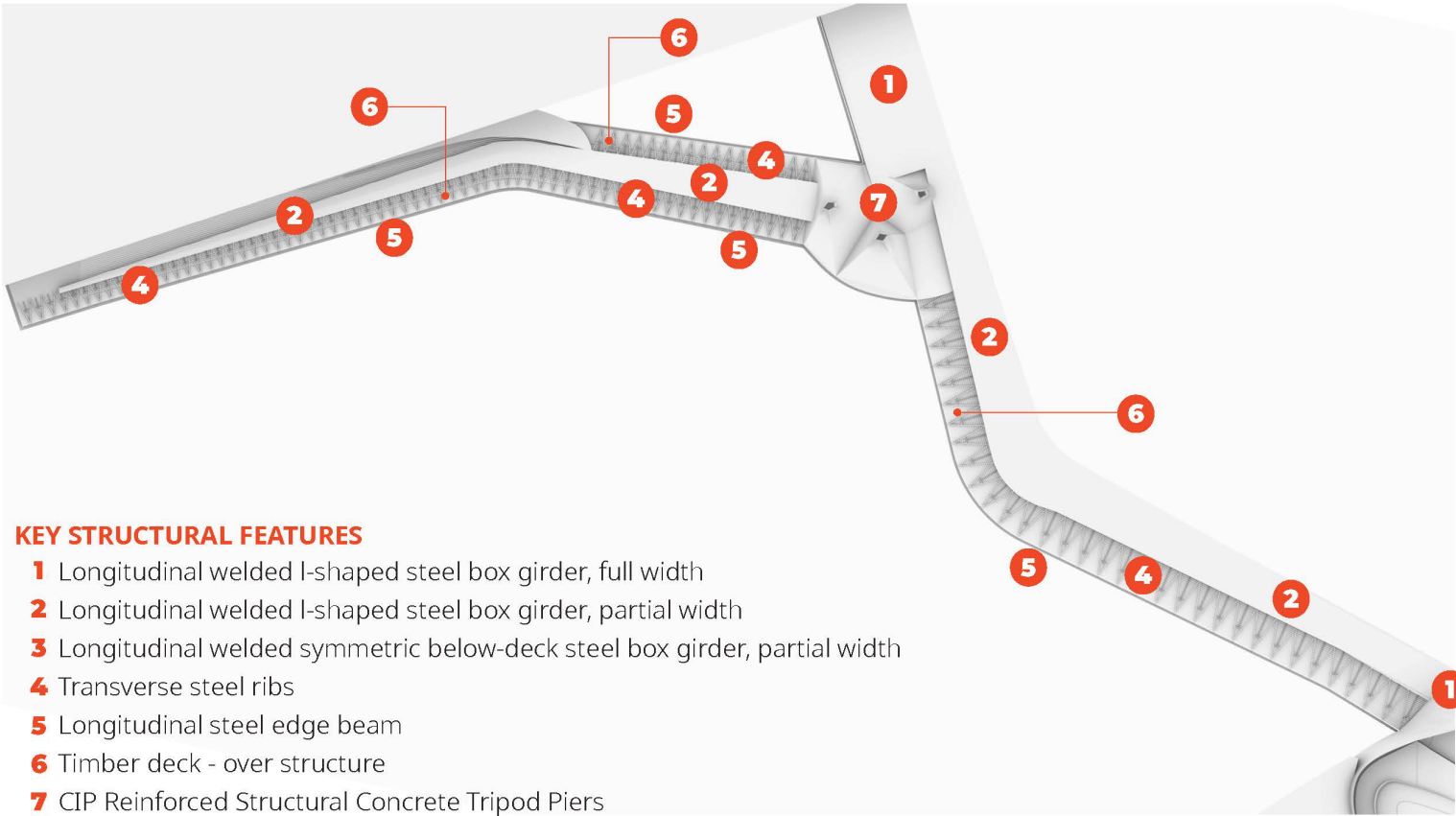


UNDER BENCH LIGHTING

Soft lighting concealed underneath benches pools light at gathering and seating areas

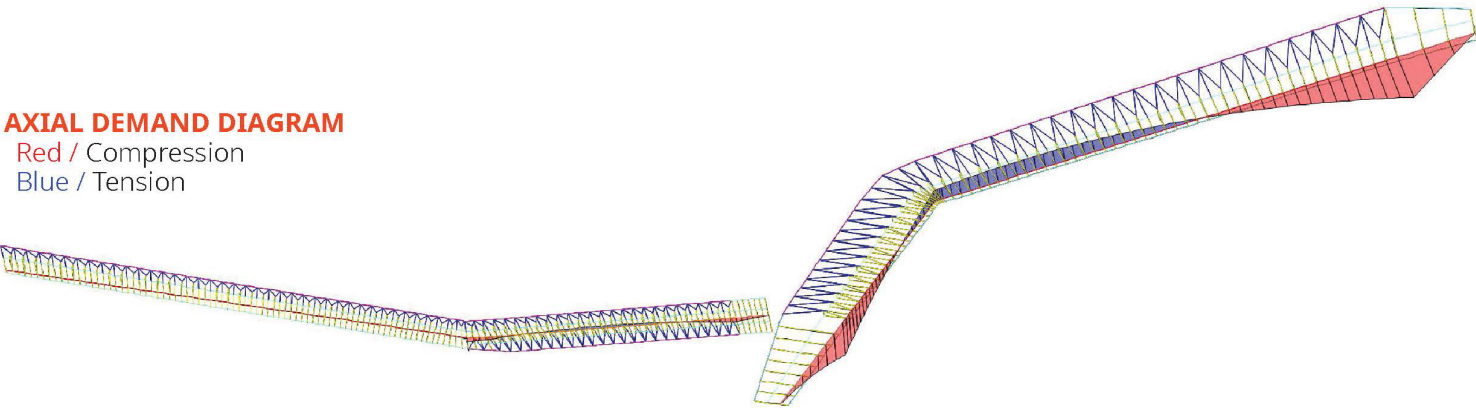


STRUCTURAL / IMPLEMENTATION



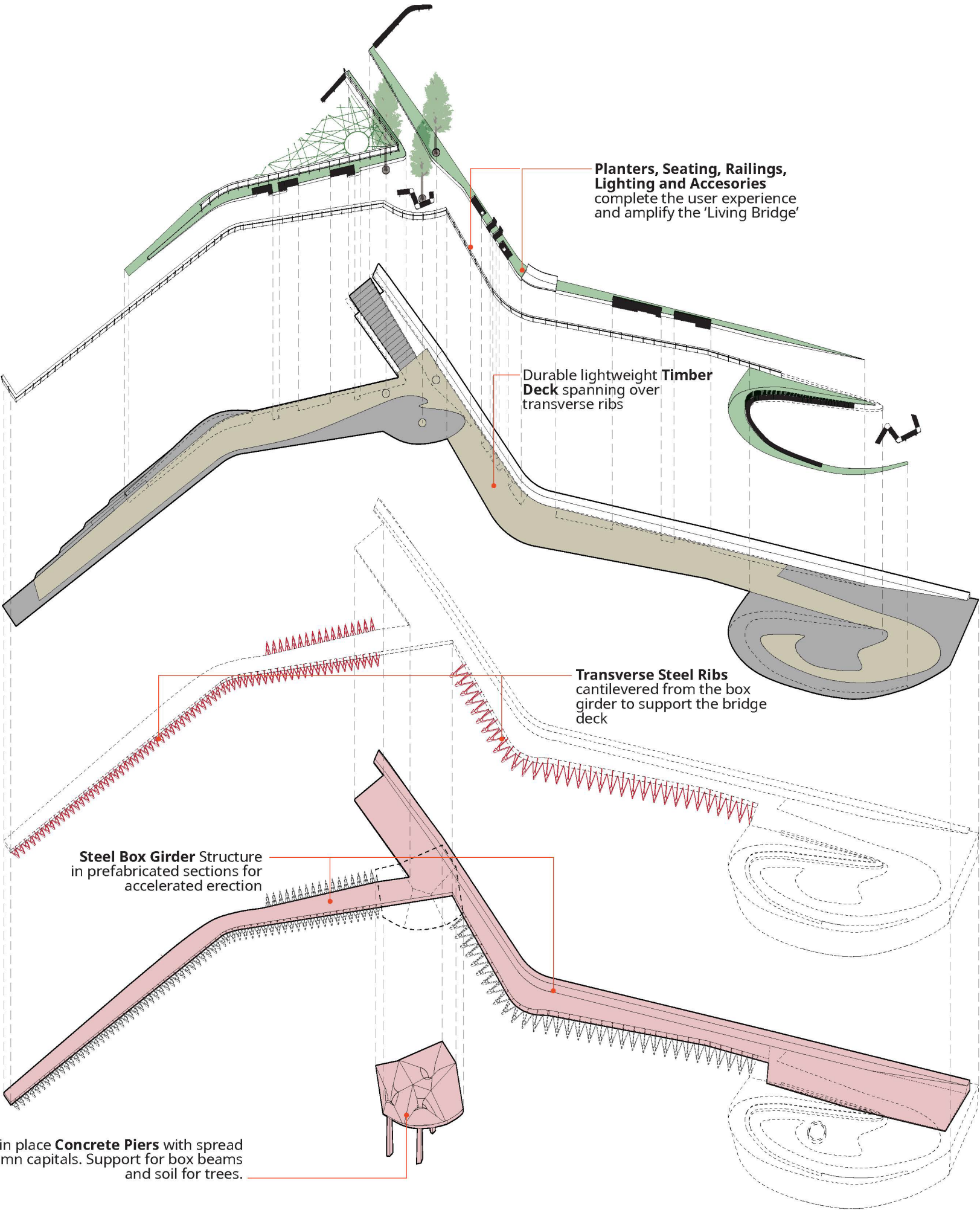
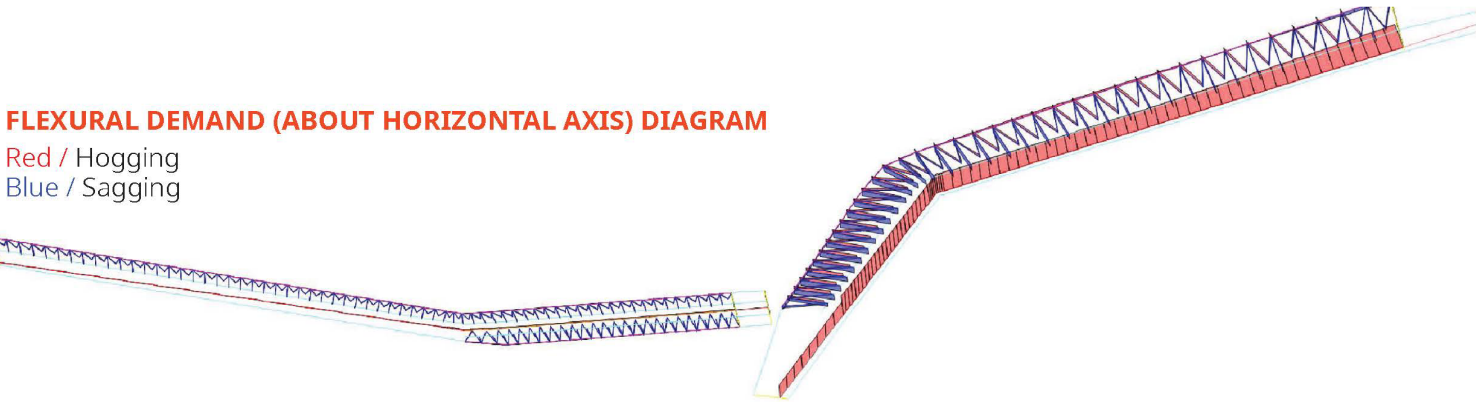
AXIAL DEMAND DIAGRAM

Red / Compression
Blue / Tension

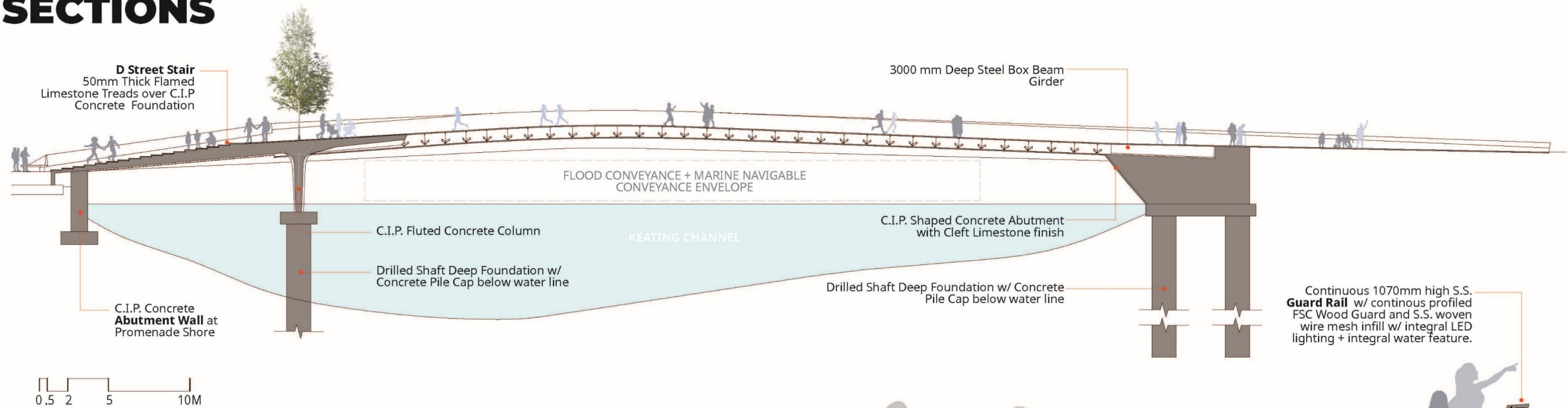


FLEXURAL DEMAND (ABOUT HORIZONTAL AXIS) DIAGRAM

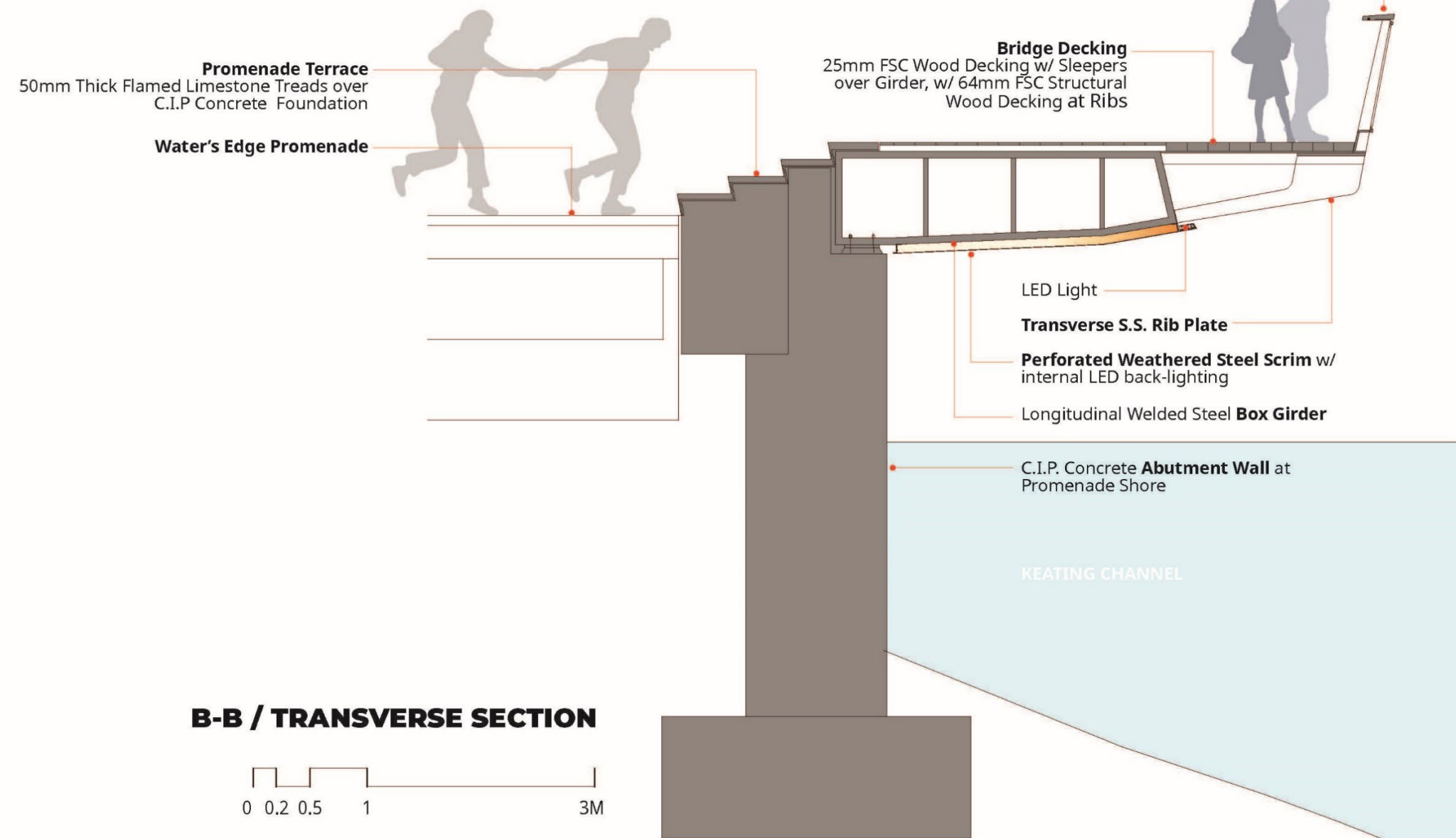
Red / Hogging
Blue / Sagging



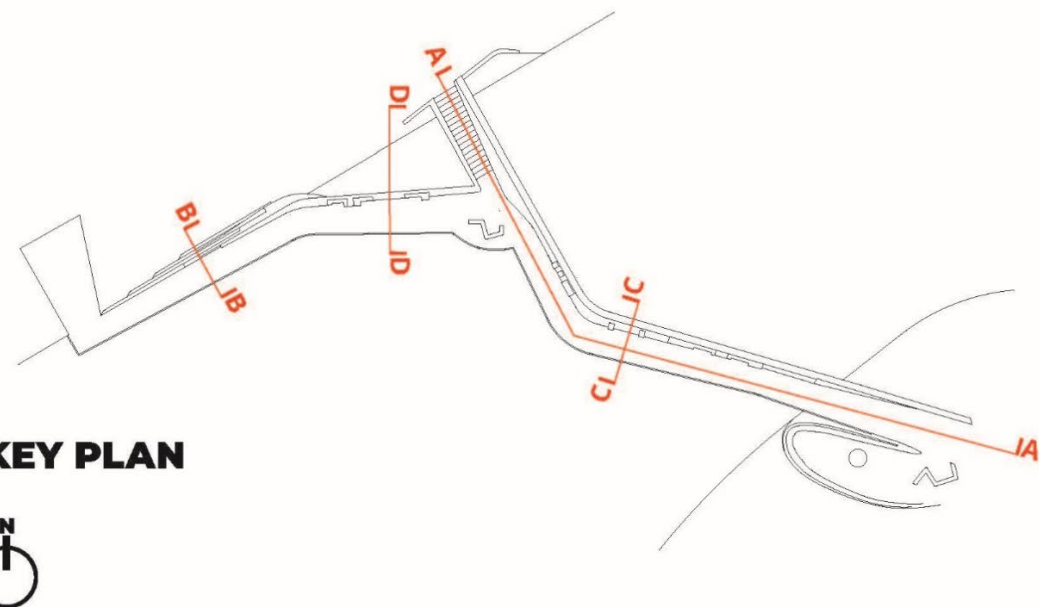
SECTIONS



A-A / LONGITUDINAL SECTION



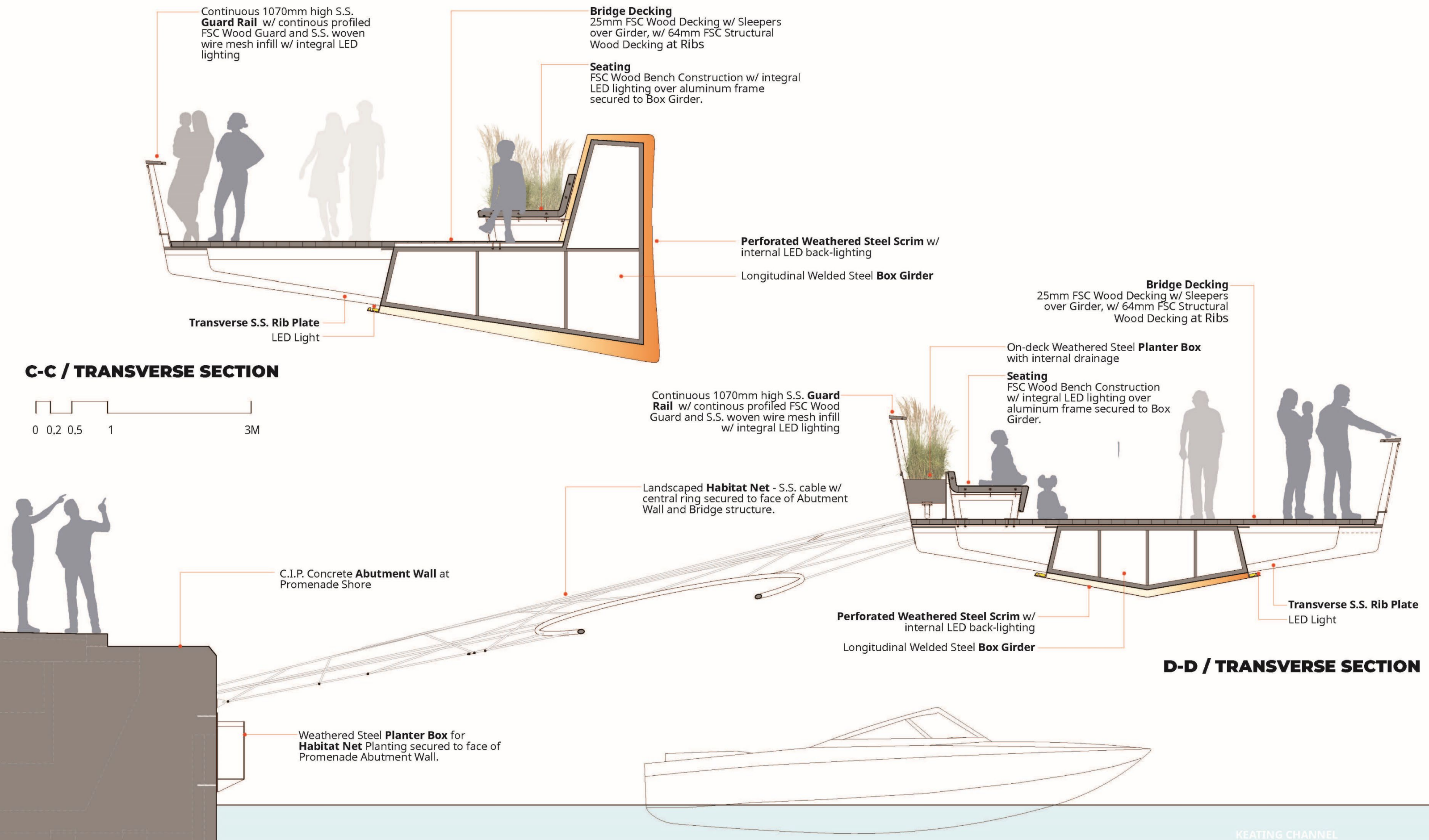
B-B / TRANSVERSE SECTION



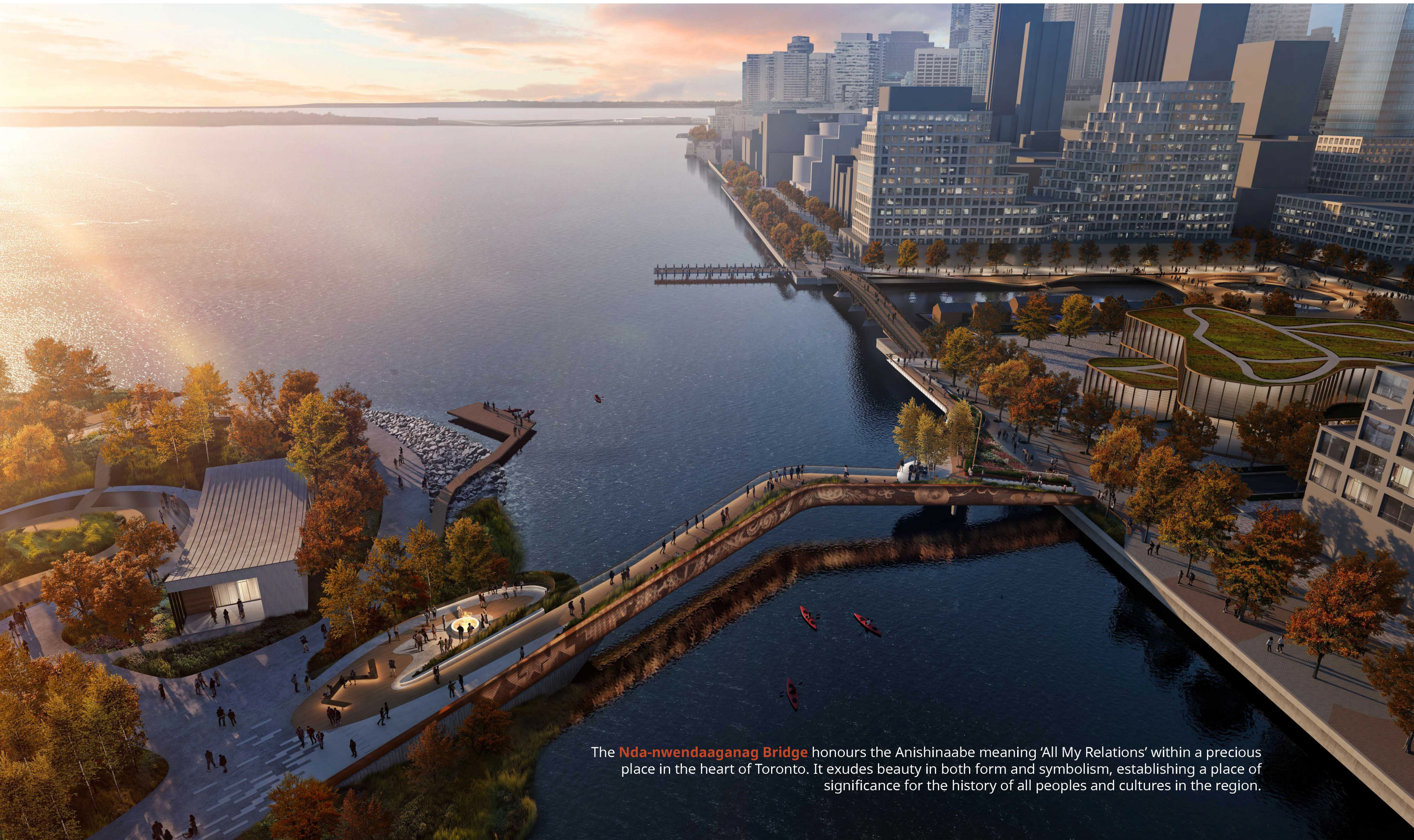
KEY PLAN



SECTIONS



PROJECT GOAL /
CREATE A BEAUTIFUL AND DISTINCTIVE GATEWAY TO THE WATERFRONT



The **Nda-nwendaaganag Bridge** honours the Anishinaabe meaning 'All My Relations' within a precious place in the heart of Toronto. It exudes beauty in both form and symbolism, establishing a place of significance for the history of all peoples and cultures in the region.

3. The Salmon Run

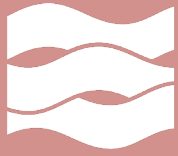
Lead Firm: Henning Larsen Architecture, DK

Engineer: Ramboll, US

Architect: Henning Larsen, DK

Architect & Indigenous Consultant: Two Row Architect, CA

Landscape Architect: Henning Larsen, DK



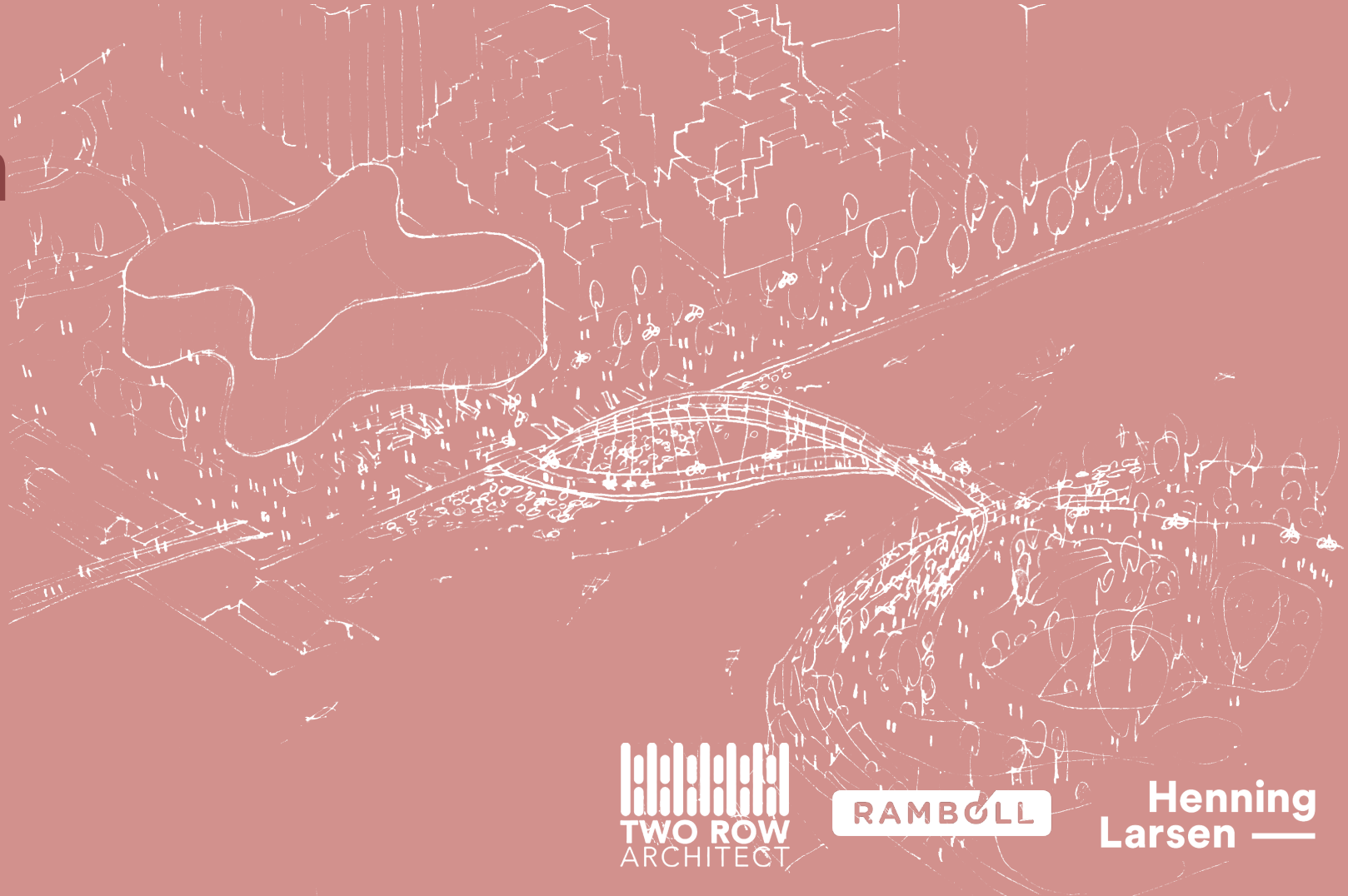
WATERFRONTToronto



The Salmon Run

Keating Channel Pedestrian Bridge

Toronto, Ontario



Design Competition
September 28th, 2023



RAMBOLL

Henning
Larsen —

Our team



Henning
Larsen —



Matthew Hickey
Indigenous Design



Daniel Baumann
Design Partner



Kritika Kharbanda
Sustainability Specialist

Opening

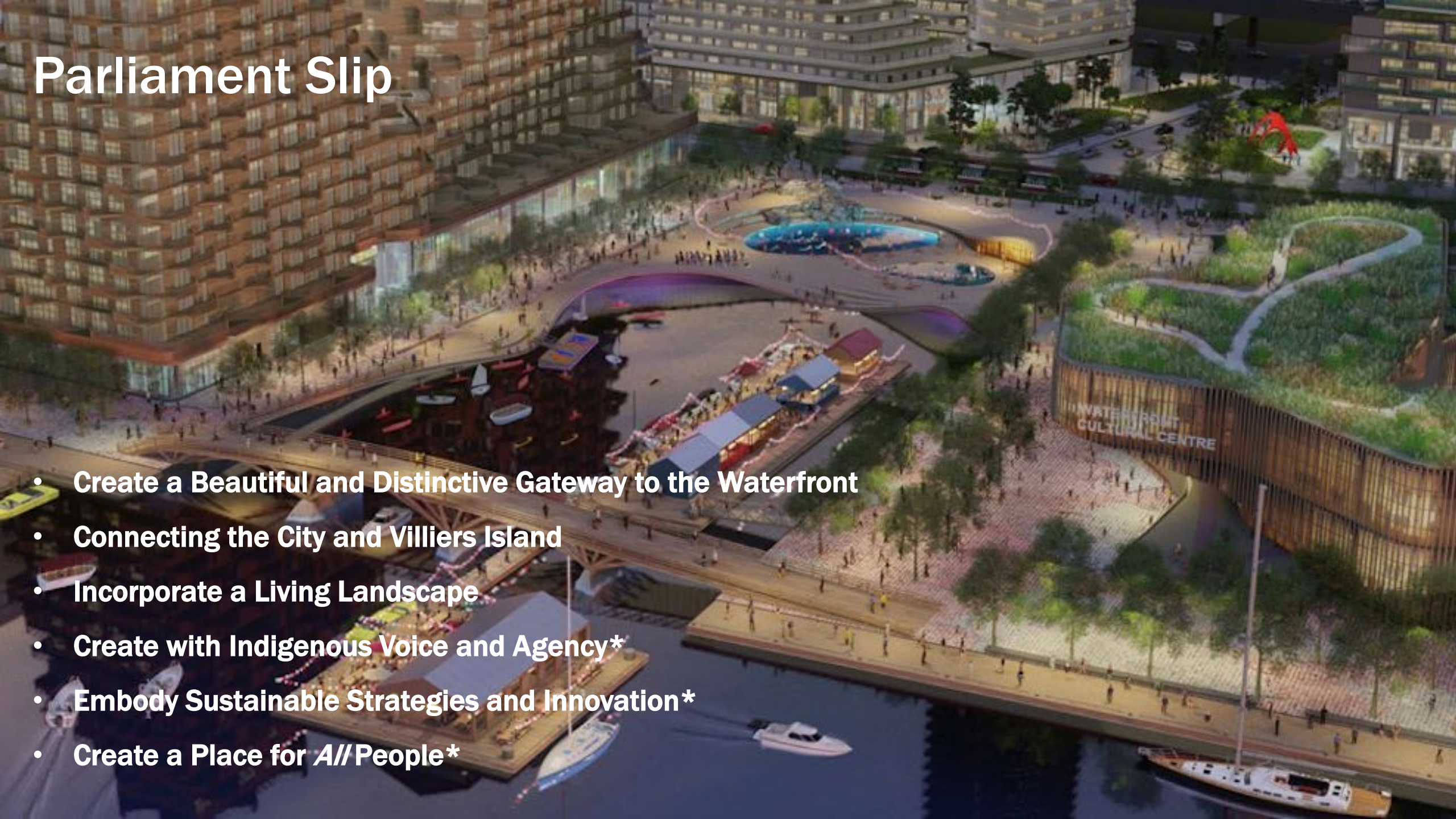


Urban Context



Parliament Slip

- Create a Beautiful and Distinctive Gateway to the Waterfront
- Connecting the City and Villiers Island
- Incorporate a Living Landscape
- Create with Indigenous Voice and Agency*
- Embody Sustainable Strategies and Innovation*
- Create a Place for *All* People*





The Promenade

Villiers Island



Water



A Crossing



A Crossing



A Crossing



A Crossing



The Journey



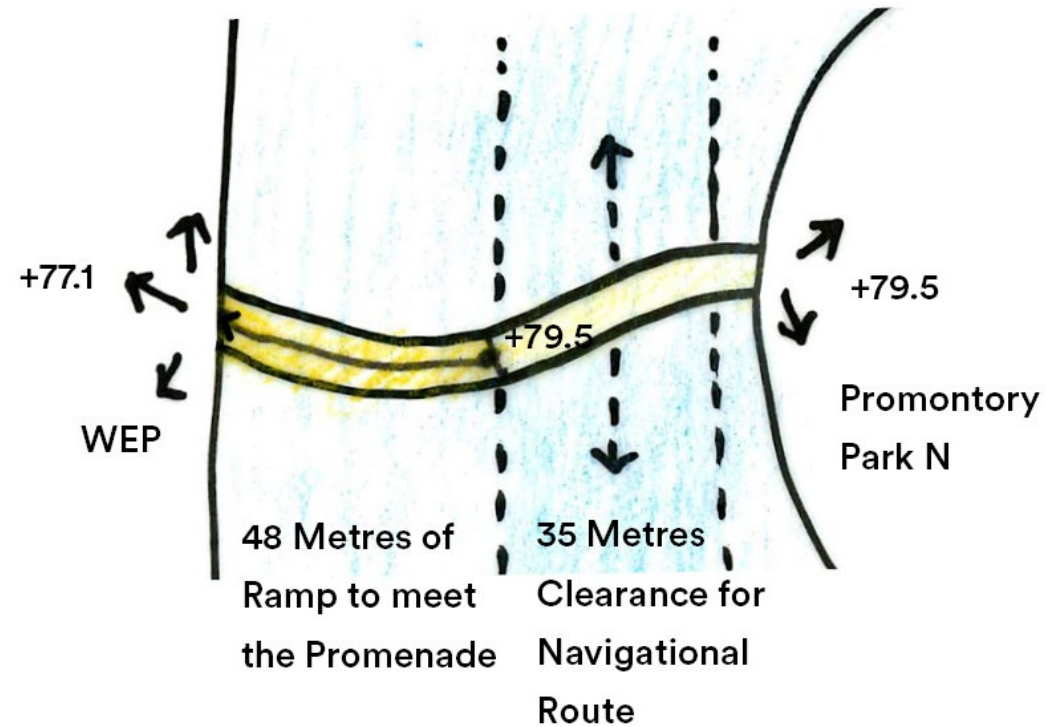
The Salmon Run



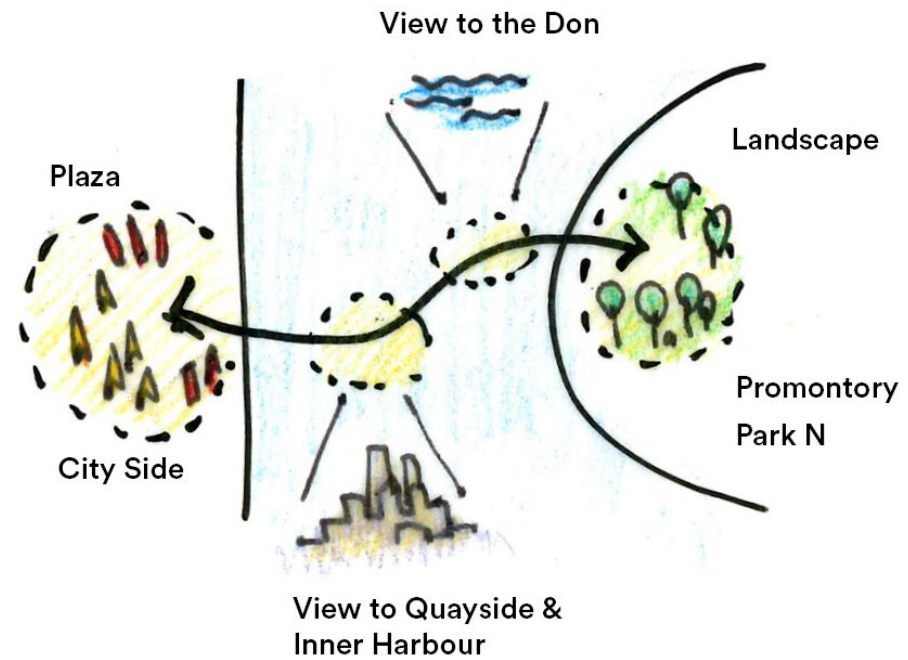




Creating an Accessible Bridge

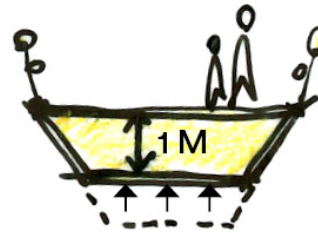
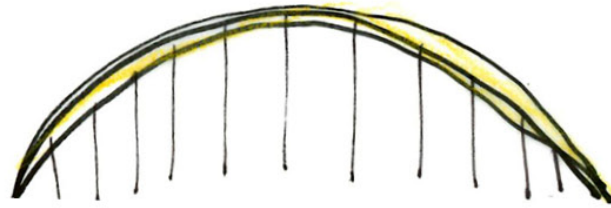


Celebrating the Site



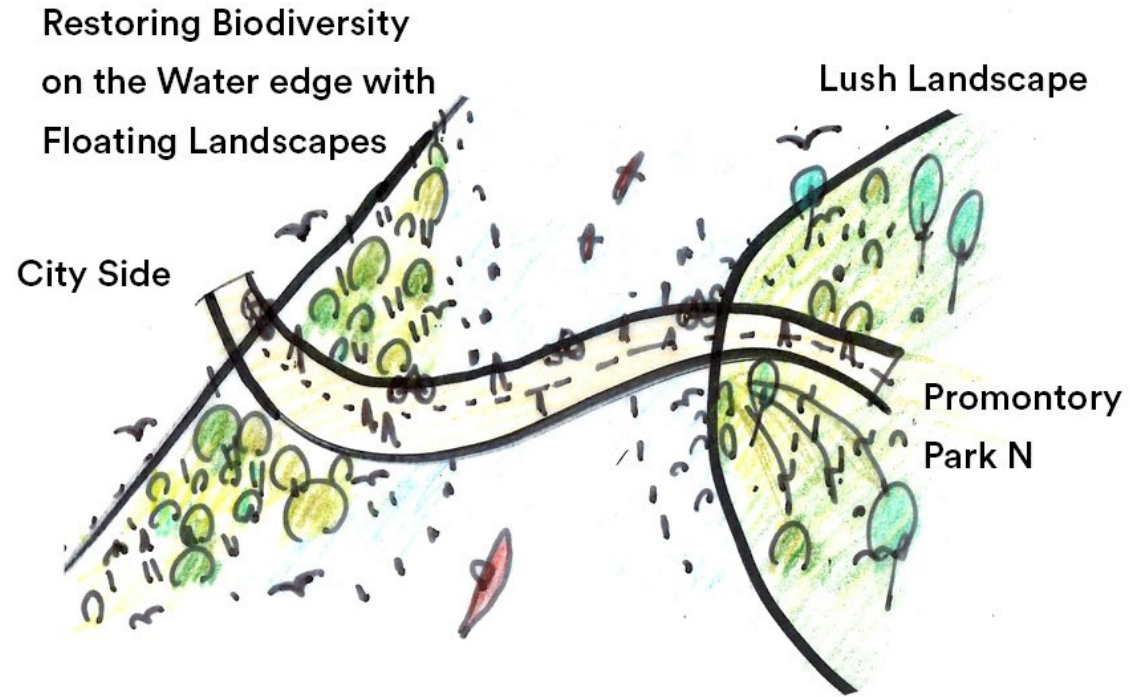
Minimize Material Use

The Structural Arch



Pedestrian Deck
w/ 1 Metre Depth

Creating a Restorative Landscape





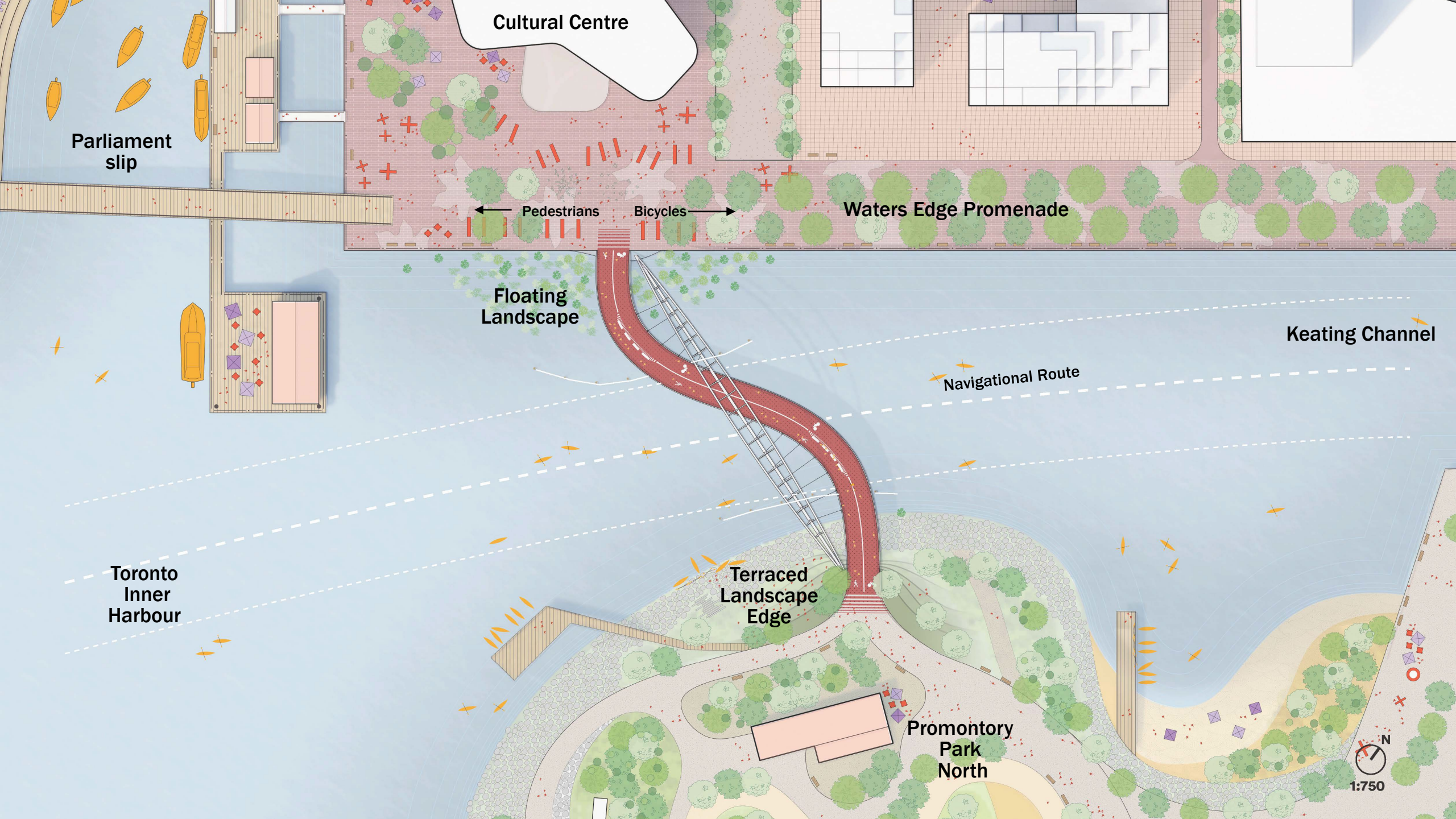
Villiers Island

Promontory
Park North

Keating Channel

Water's Edge
Promenade

Floating
Landscape



Cultural Centre

Parliament slip

Pedestrians

Bicycles

Waters Edge Promenade

Floating Landscape

Keating Channel

Navigational Route

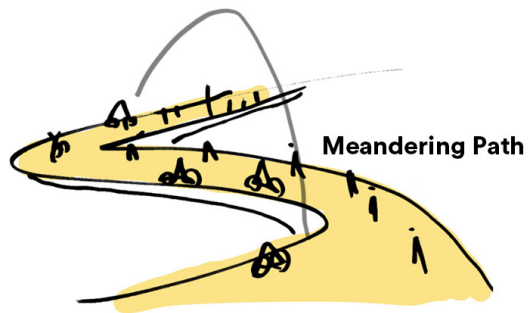
Toronto Inner Harbour

Terraced Landscape Edge

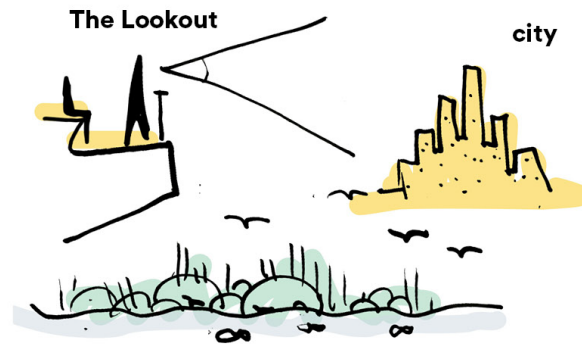
Promontory Park North



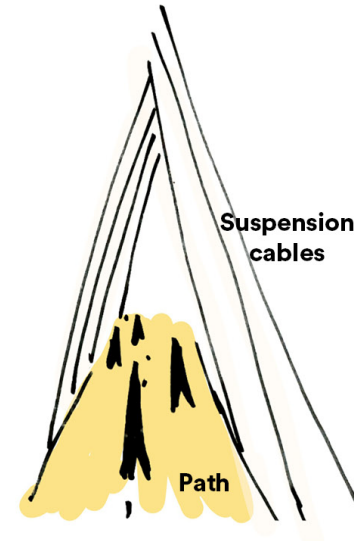
Celebrating the Threshold



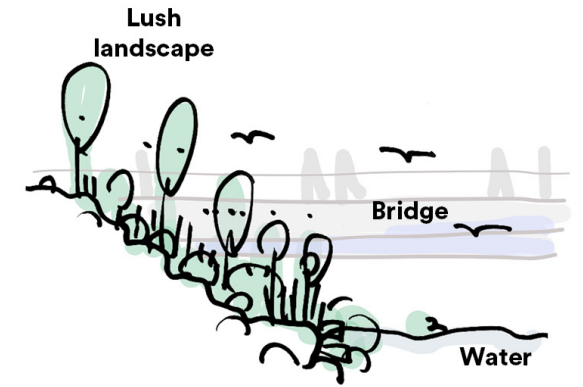
THE APPROACH



CREATING MOMENTS TO APPRECIATE THE
WATER AND THE VIEW



CELEBRATING THE THRESHOLD



CELEBRATING NATURE



Villiers Island

Water's Edge
Promenade'



Villiers Island

Keating Channel

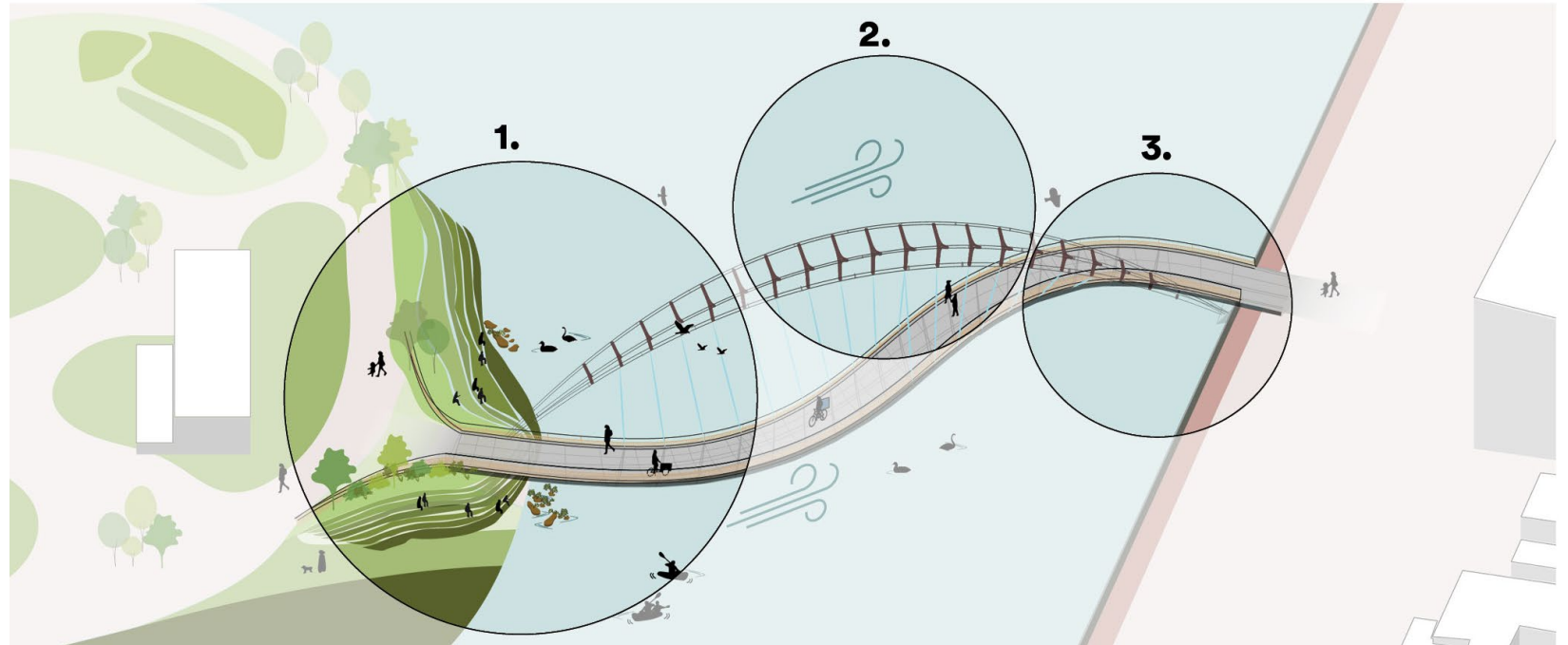
Promontory Park North

To the Future, To the Past



'Layered' Sustainability

Strategies for layers beyond the bridge – the 'skyworld', 'earth,' as well as the 'underworld' ...



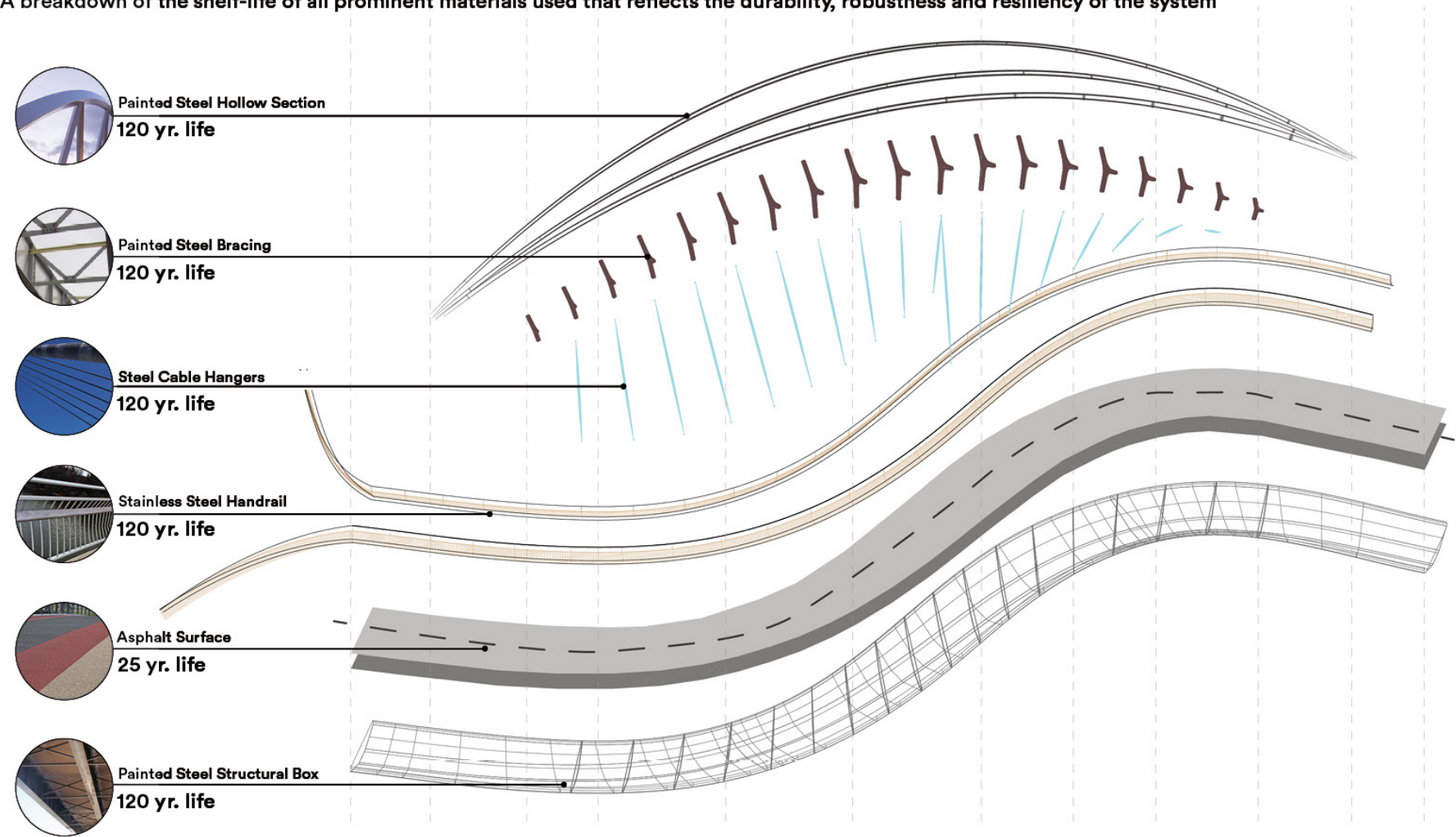
1. Enhancing Urban Ecology
Co-existence of humans & nature as one ecosystem

2. A Resilient Structure
Ensuring a robust form & structure that boasts of longevity against the climate extremes

3. Ease of Construction & Low Maintenance
Evidence-based, Efficient Engineering

Life Cycle Considerations

A breakdown of the shelf-life of all prominent materials used that reflects the durability, robustness and resiliency of the system



Enhancing Bio-diversity

Reference images showing the use of modular, floating landscape systems and their impact on creating biodiversity 'pockets.'











4. The Harbour Eye

Lead Firm: RJC Engineers Ltd, CA

Engineer: Anta Ingenieria Civil, ES

Architect: Smoke Architecture Inc, CA

Architect & Indigenous Consultant: Smoke Architecture Inc. + MinoKamik, CA

Landscape Architect: Michael Van Valkenburgh Associates, US

BUILD A TEAM

RJC
Mark Bowen
Bridge Engineer & Team Lead



+

Smoke Architecture
Jennifer Kinnunen
Architect & Indigenous Engagement



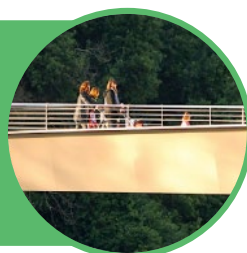
+

MVVA
Gullivar Shepard
Landscape Architect & Design Integrator

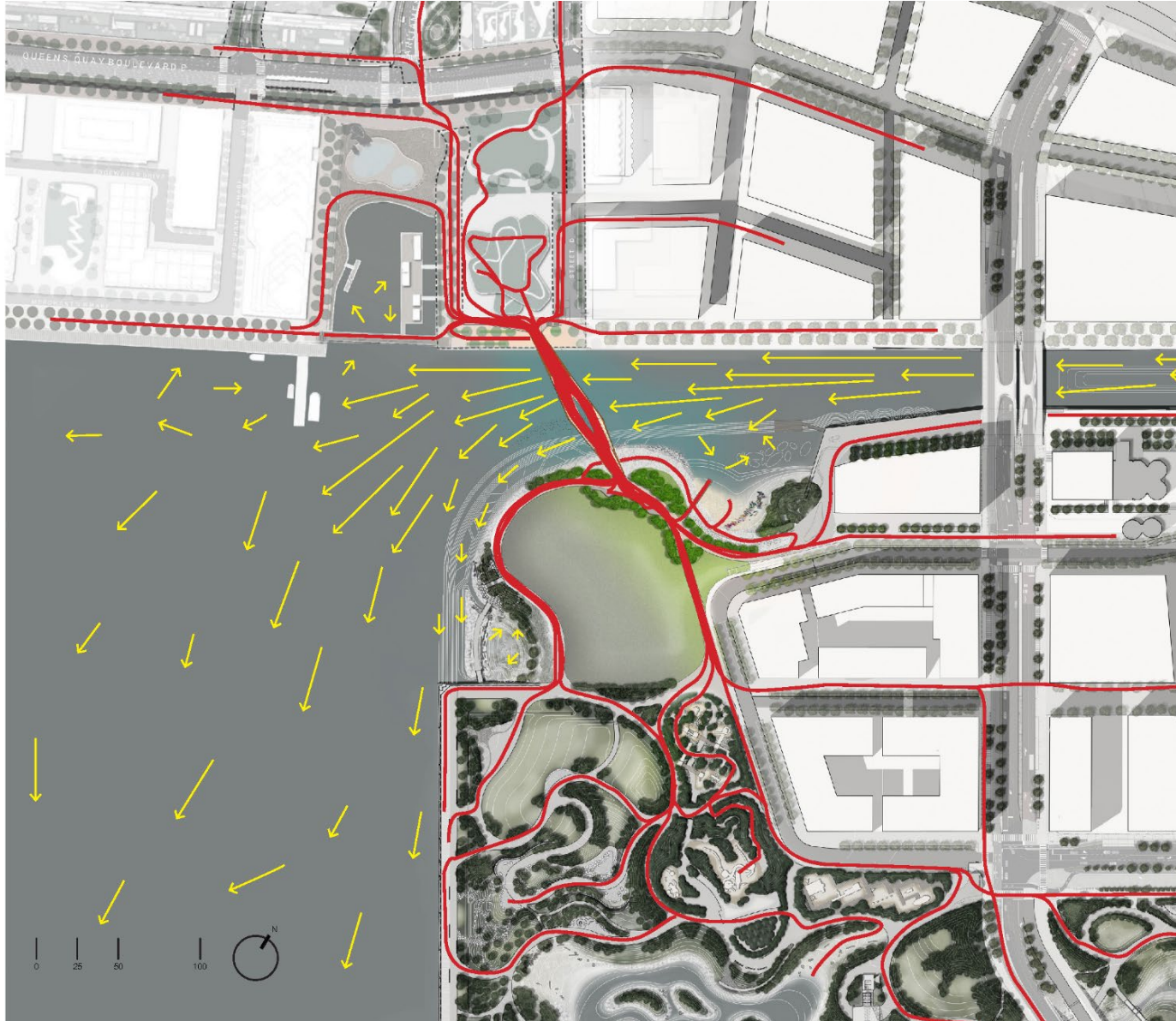


+

ANTA
Mario Guisasola
Bridge Designer



HARNESS TWO FLOWS



Life Ebbs In Two Directions With This Proposed Bridge

The surface-dwellers of the bridge flow between the hyper-urbanism of the Central Waterfront and the hyper-naturalism of the Port Lands project

The bridge sits at the transition between the higher velocity flows of the Keating Channel, and the open harbour waters that are deeper and more complex

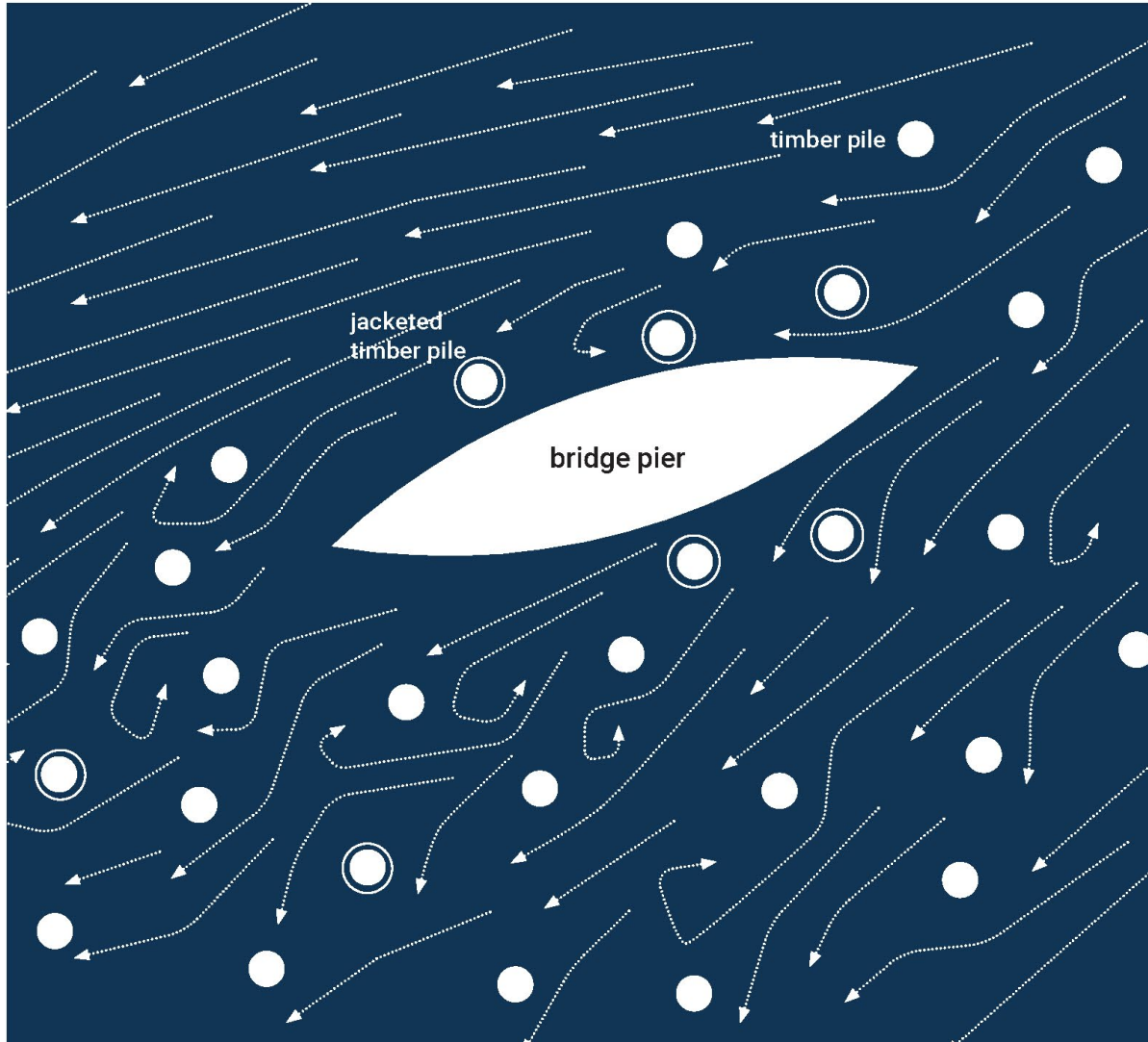


RESPOND TO THE DISTINCT GEOGRAPHY OF THIS LOCATION

BUILD A MOSAIC OF ECOLOGICAL NICHES

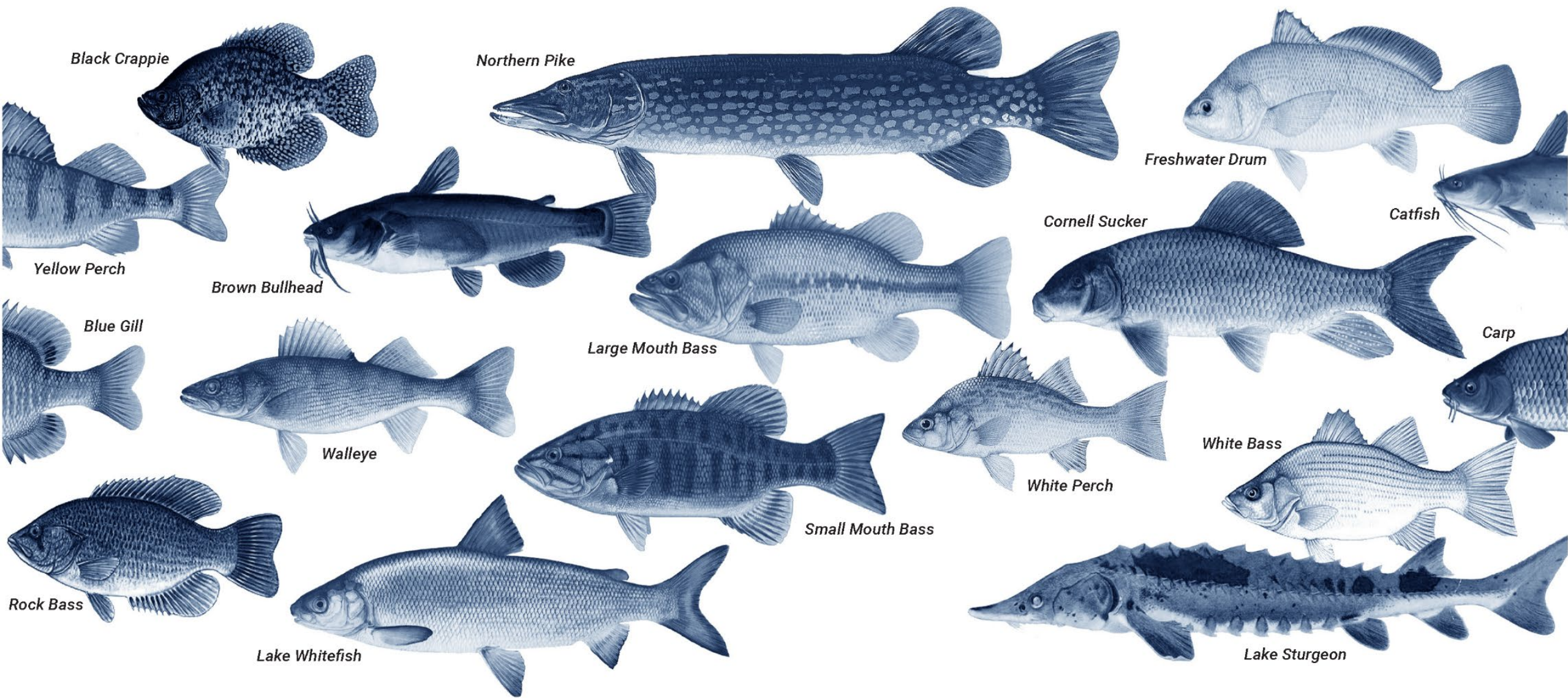


UNDERSTAND AQUATIC HABITATS

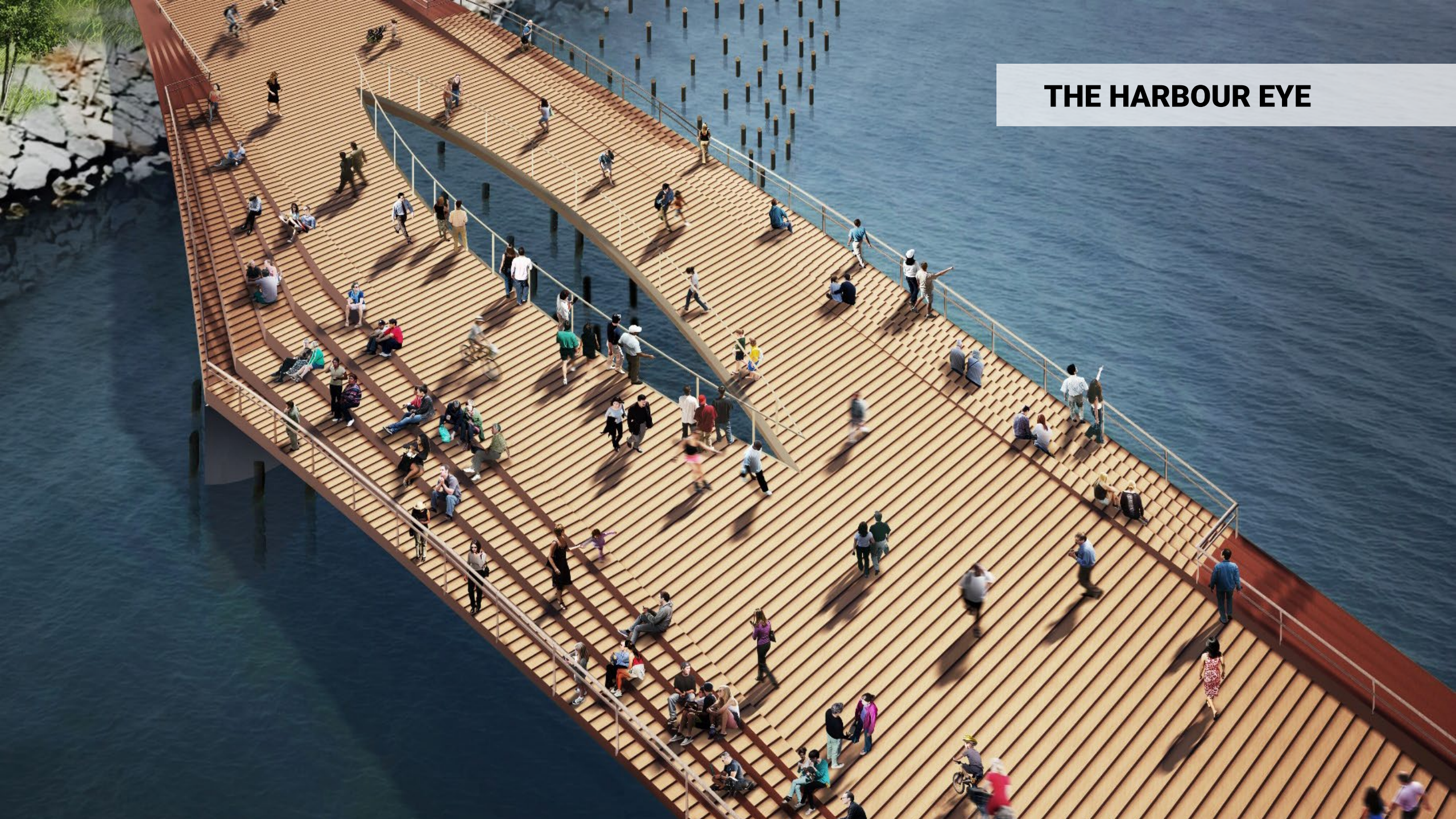


Interference of Keating Channel flows in the wood pile field create a mosaic of pools, eddies, seams, and hydraulic cushions that provide a rich landscape for aquatic habitat

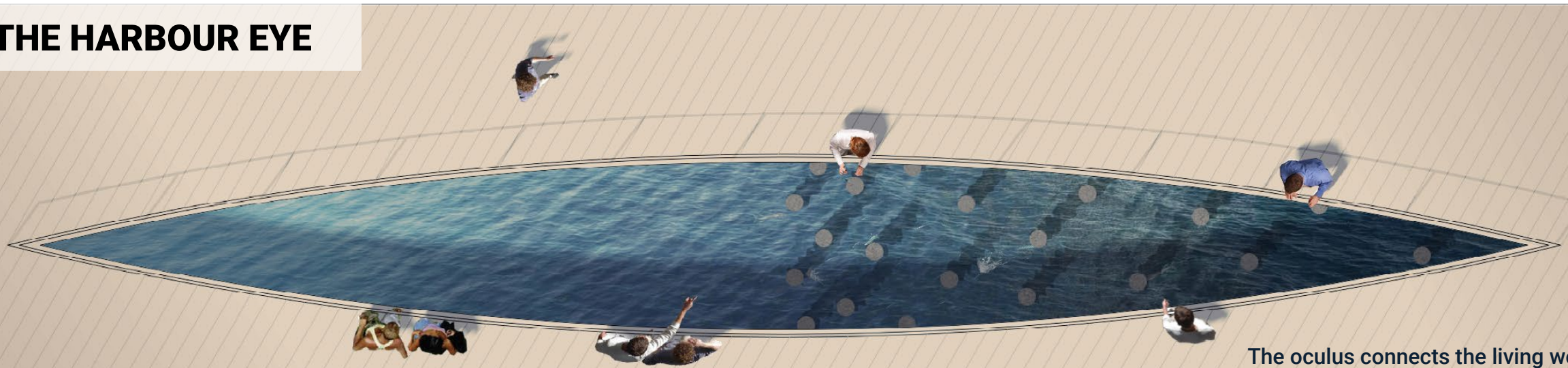
PROMOTE THE FISH HABITAT OF THE GREAT LAKES



THE HARBOUR EYE

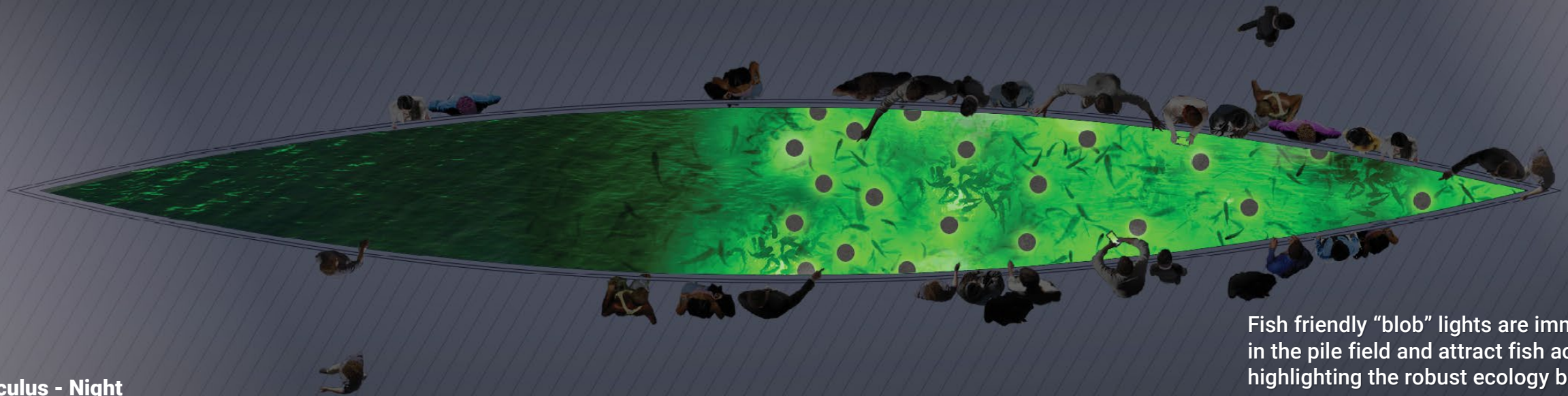


THE HARBOUR EYE



Oculus - Day

The oculus connects the living world below the water's surface to the terrestrial and reflects the celestial landscape far above



Oculus - Night

Fish friendly "blob" lights are immersed in the pile field and attract fish activity, highlighting the robust ecology below

THE INTERCONNECTEDNESS OF EVERYTHING



Nexus of Surface - and Water - Dwellers



Historic Fishing Weir ca. 1885



'Changes' by Jim Oskineegish - Anishinaabe

EXPLORE, PLAY, AND ENGAGE



Traditional Fish Weir on the Koeve River, BC

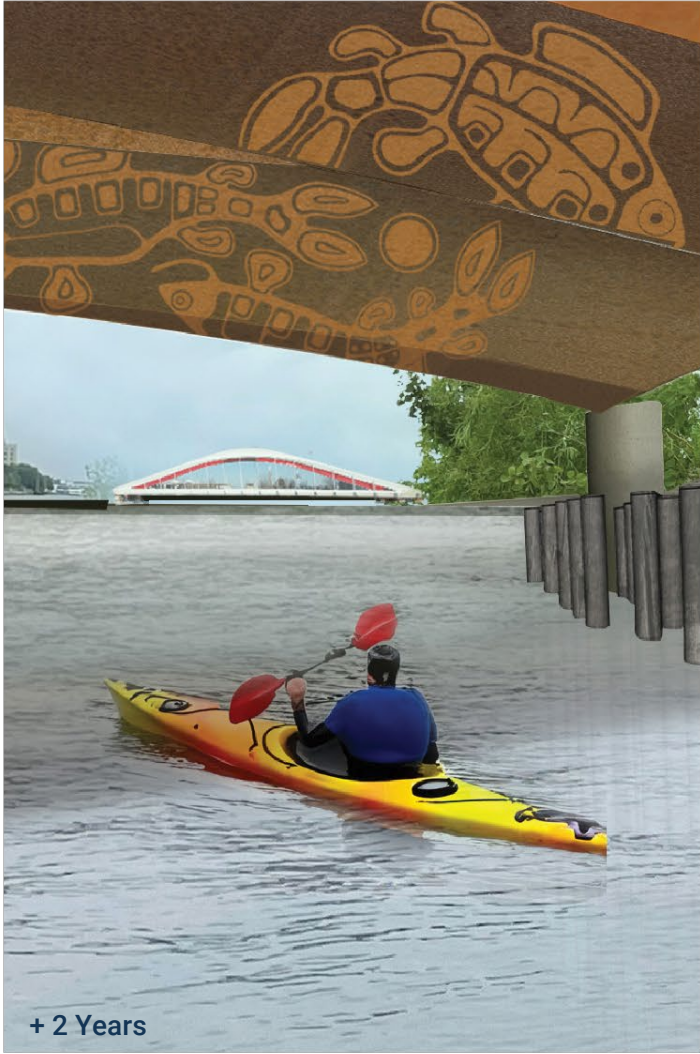
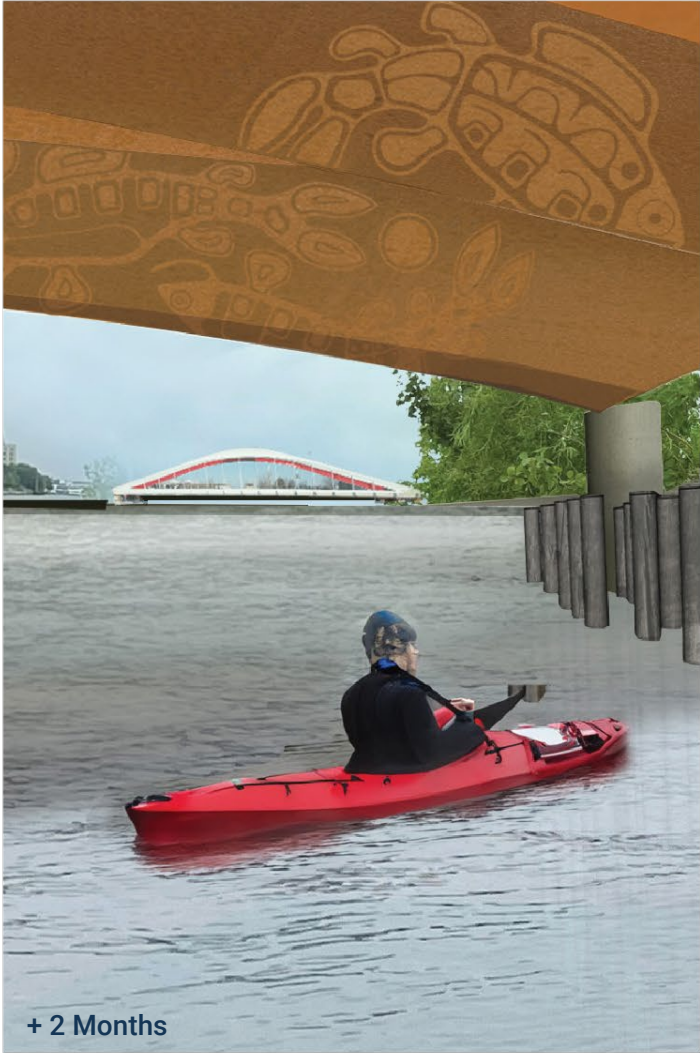


Create Shelter and Places for Nature Play



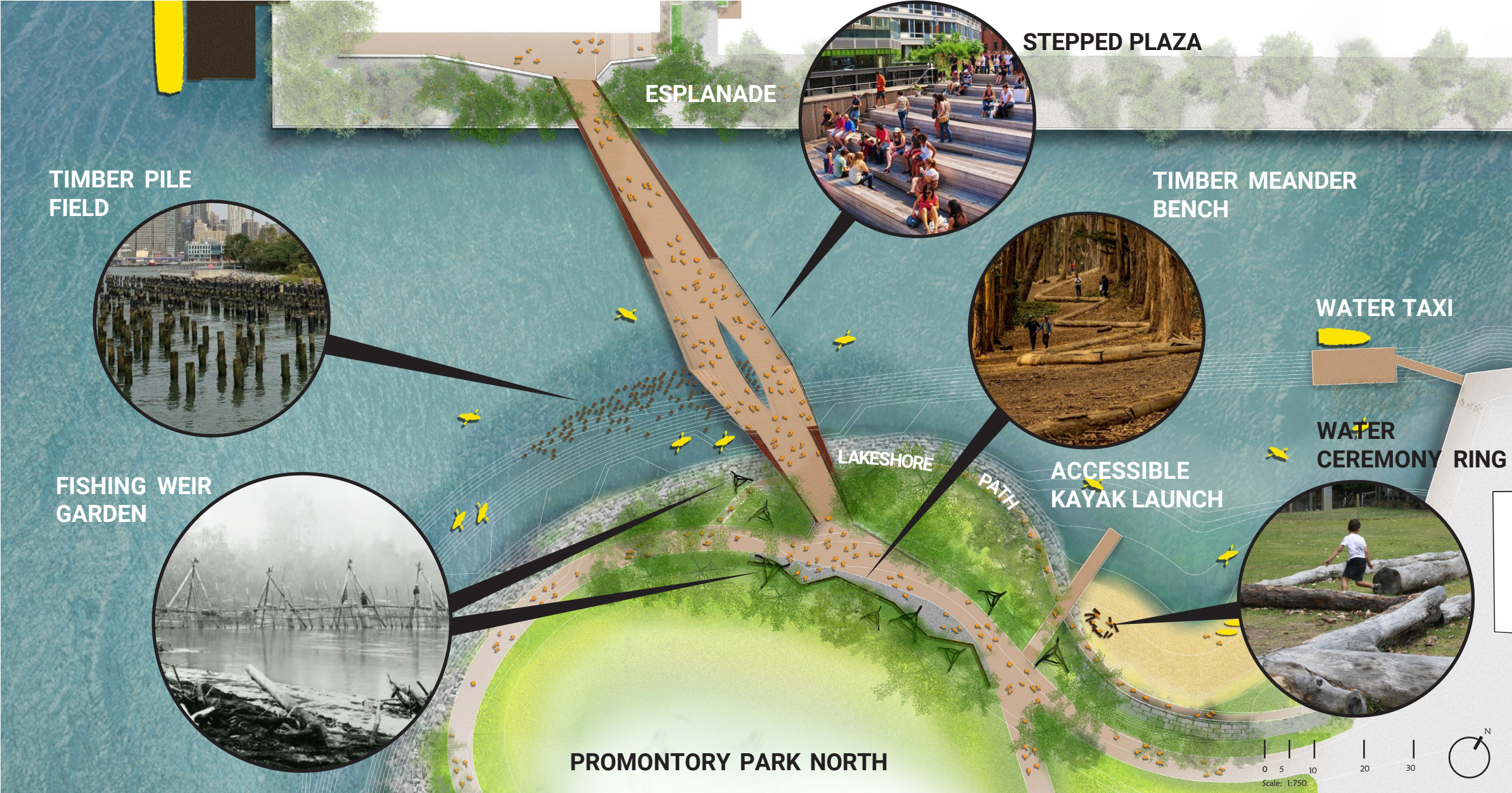
Invite Shoreline Exploration

PROJECT INDIGENOUS VALUES OVER THE WATER



Stenciled chemical applications could stabilize the corrosion of the weathering steel as a strategy for integrating indigenous art on the vaulted undercroft of the bridge

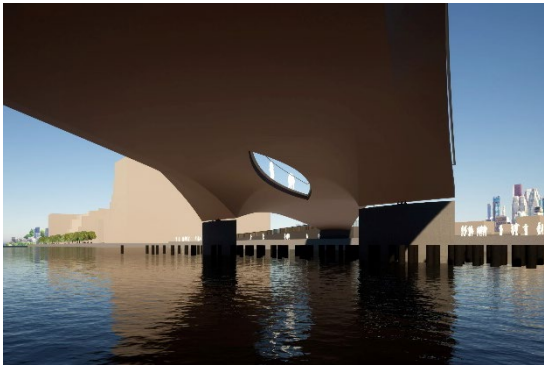
CONNECT THE HYPER-URBAN TO THE HYPER-NATURAL



INNOVATE WITHIN A WELL-TESTED FABRICATION WORKFLOW



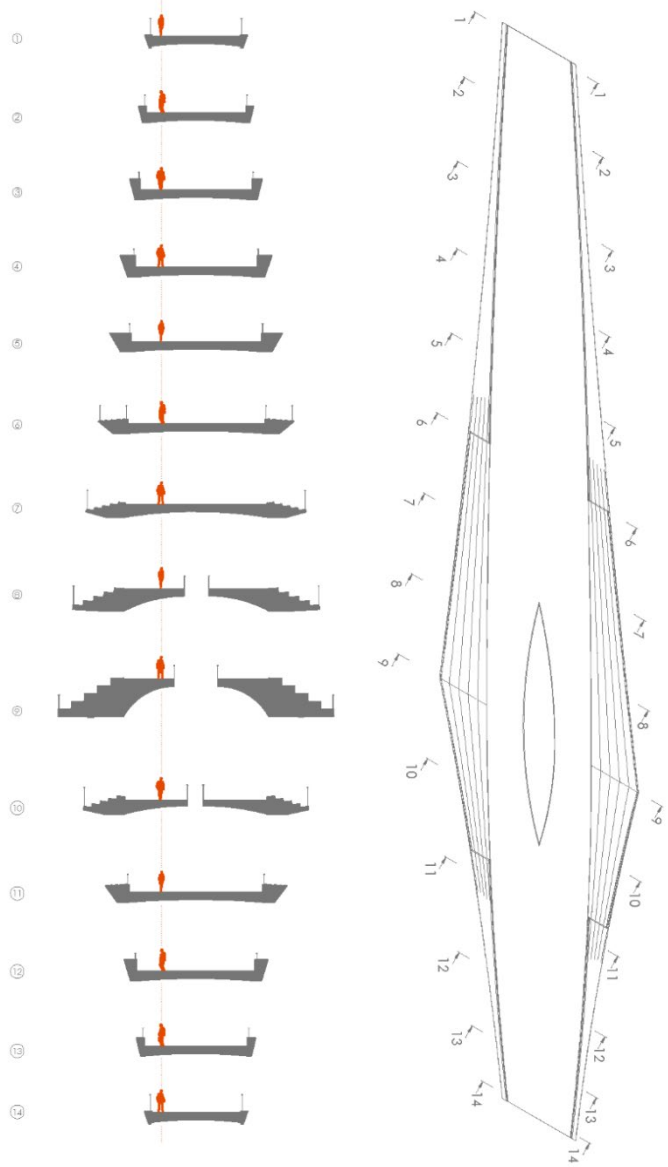
Varied Edge Plate Depth



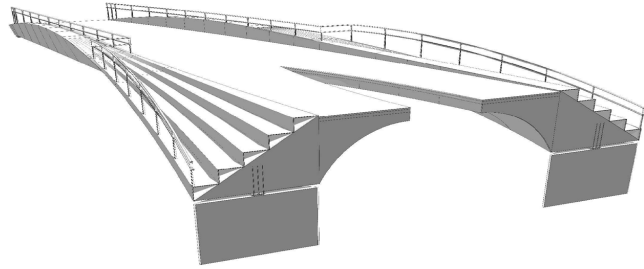
Vaulted Steel Undercroft



Oculus and Plaza Step-down

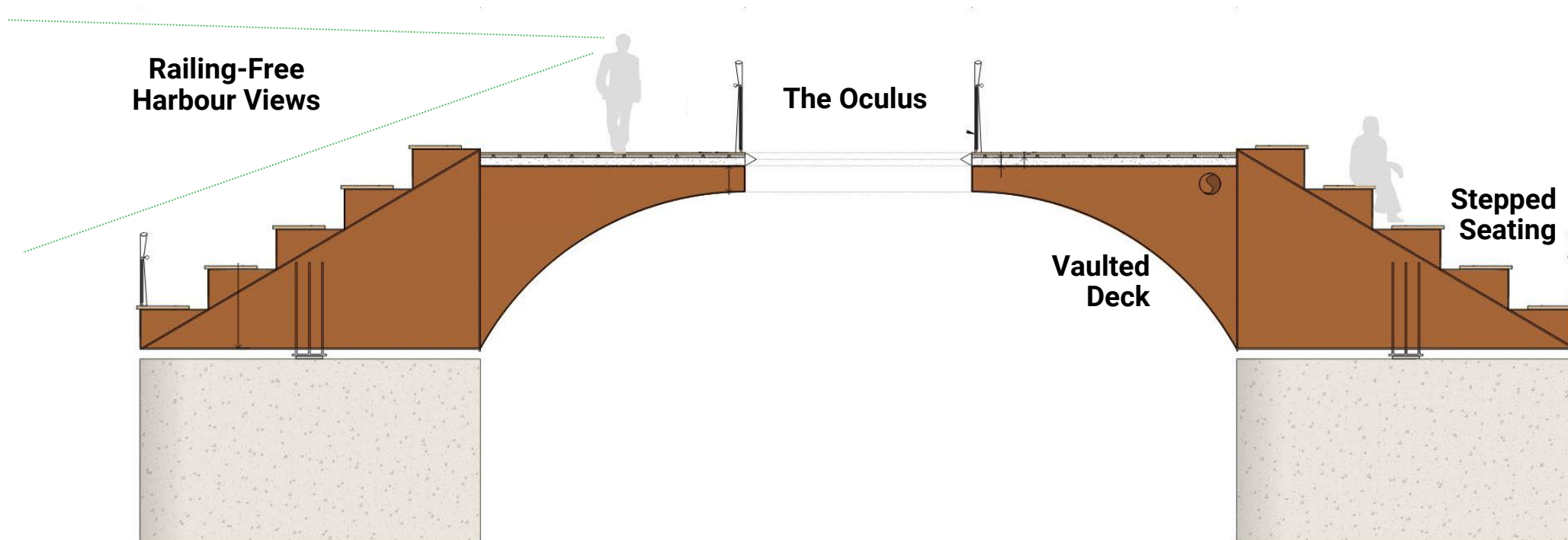


SHAPE A PLACE FOR GETTING CLOSER TO THE WATER



"Simplicity is about subtracting the obvious and adding the meaningful."

- John Maeda



LEARN FROM THE LAWS OF NATURE

LANDSCAPE CONNECTION

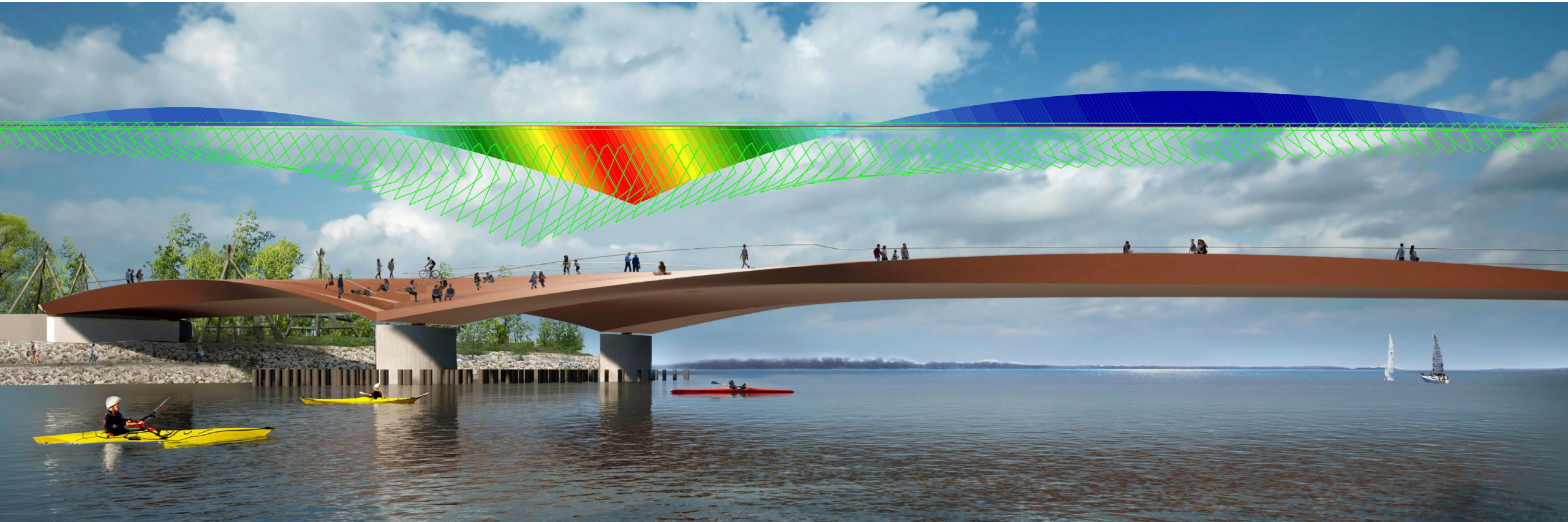
The bridge grows out of the landscape in which it sits

SIMPLICITY

The bridge design provides only what is essential to appreciate the powerful context of its geographic position

STRUCTURAL SHAPE

The bridge form is a rational expression of the forces that flow within the structure



THE HARBOUR EYE



Create a Beautiful
and Distinctive
Gateway to the
Waterfront



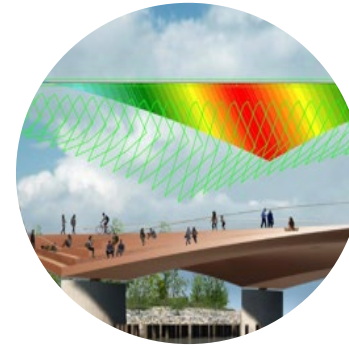
Connect the City
to Nature



Incorporate a
Living Landscape



Create with Indigenous
Voice and Agency



Embody Sustainable
Strategies and
Innovation



Create A Place
for All People

5. Equinox Bridge

Lead Firm: Zeidler Architecture Inc, CA

Engineer: Arup, CA & US & UK

Architect: WilkinsonEyre, UK

Architect & Indigenous Consultant: Two Row Architect, CA

Landscape Architect: PLANT Architect Inc, CA



The Equinox Bridge

Keating Channel Pedestrian
Bridge

Presentation

September 2023



WATERFRONToronto



WilkinsonEyre | ARUP



Land Acknowledgement

"Waterfront Toronto acknowledges that the land upon which we are undertaking our revitalization efforts, and where the designs in this procurement will be realized, is part of the traditional territory of the Mississaugas of the Credit First Nation and that Toronto is covered by Treaty 13 with the Mississaugas of the Credit First Nation (MCFN).

In addition, Waterfront Toronto acknowledges that Toronto has historically been a gathering place for many Indigenous people, including the Mississaugas of the Credit, the Anishinaabe, the Chippewa, the Haudenosaunee and the Wendat peoples, and is home to many First Nations, Inuit and Métis peoples today."

From Design Brief



Team



Prime Proponent

WilkinsonEyre

Design Lead

ARUP

Engineering

PLANT

Plant



Indigenous Consultant/architect



Cost/QS



Dominic Bettison
WilkinsonEyre



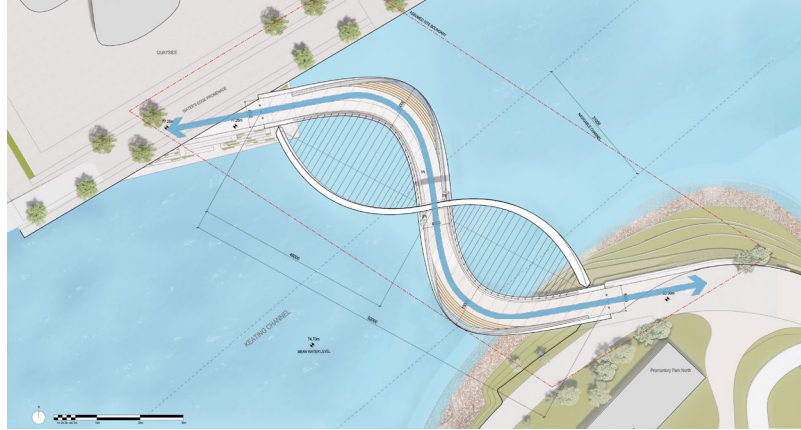
Meighan King Wall
Two Row

Six Project Goals

Beautiful and Distinctive Gateway to the Waterfront



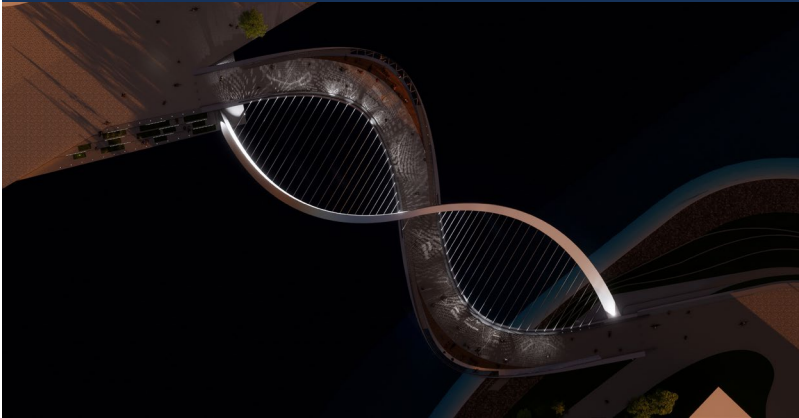
Connecting the City and Villiers Island



Incorporate a Living Landscape



Create with Indigenous Voice and Agency



Embody Sustainable Strategies and Innovation



Create a Place for All People



Site Analysis



Existing naturalised site condition along the south bank.

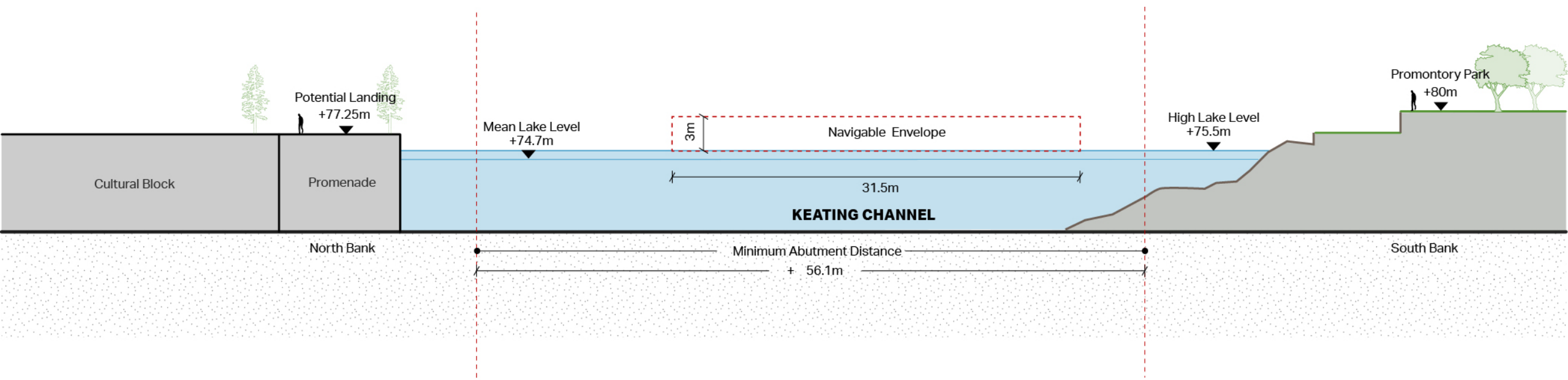


Existing site condition along the north bank with concrete slab.

Connectivity

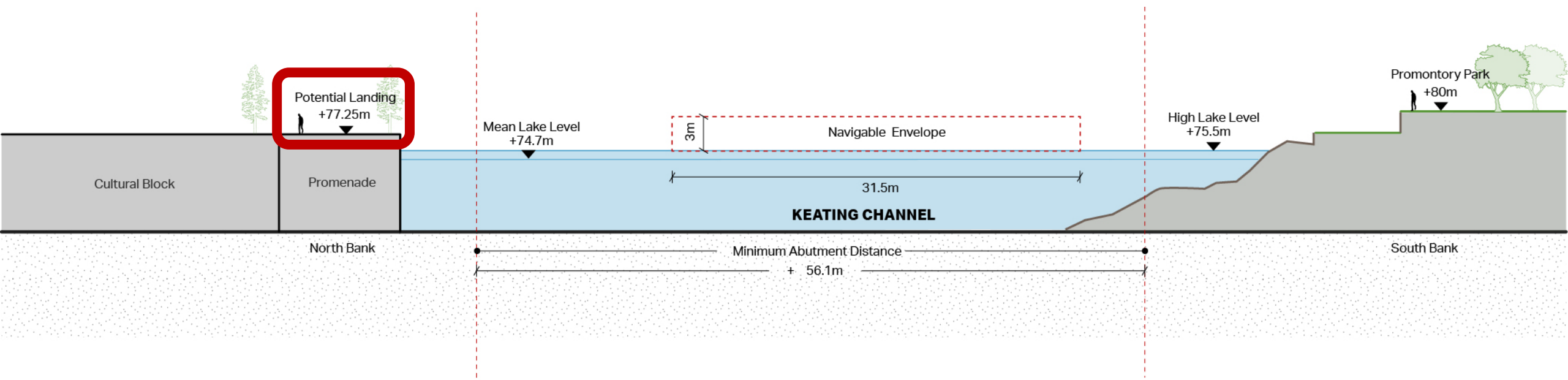


Site Analysis



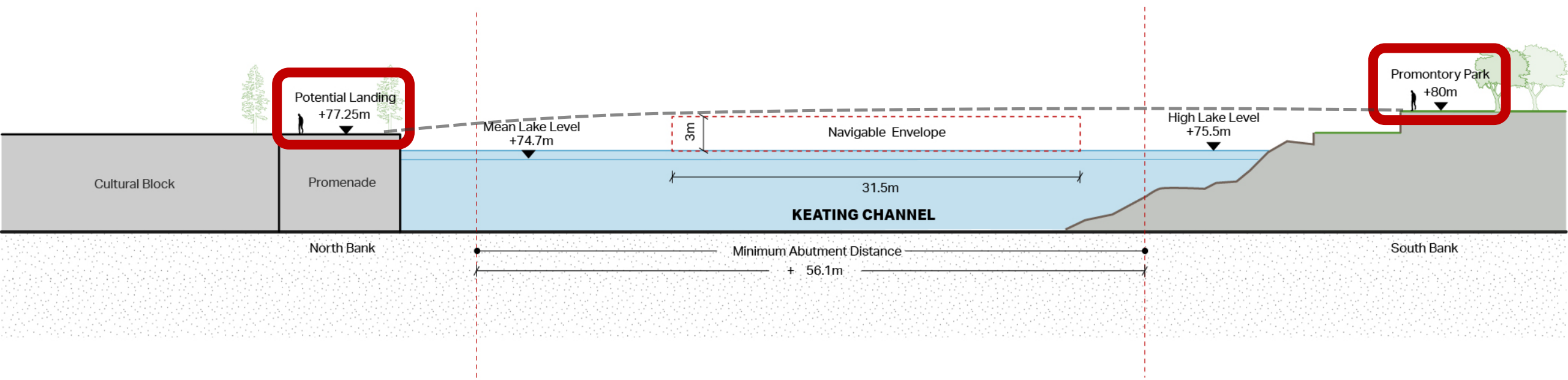
Section through Keating Channel with key site constraints

Site Analysis



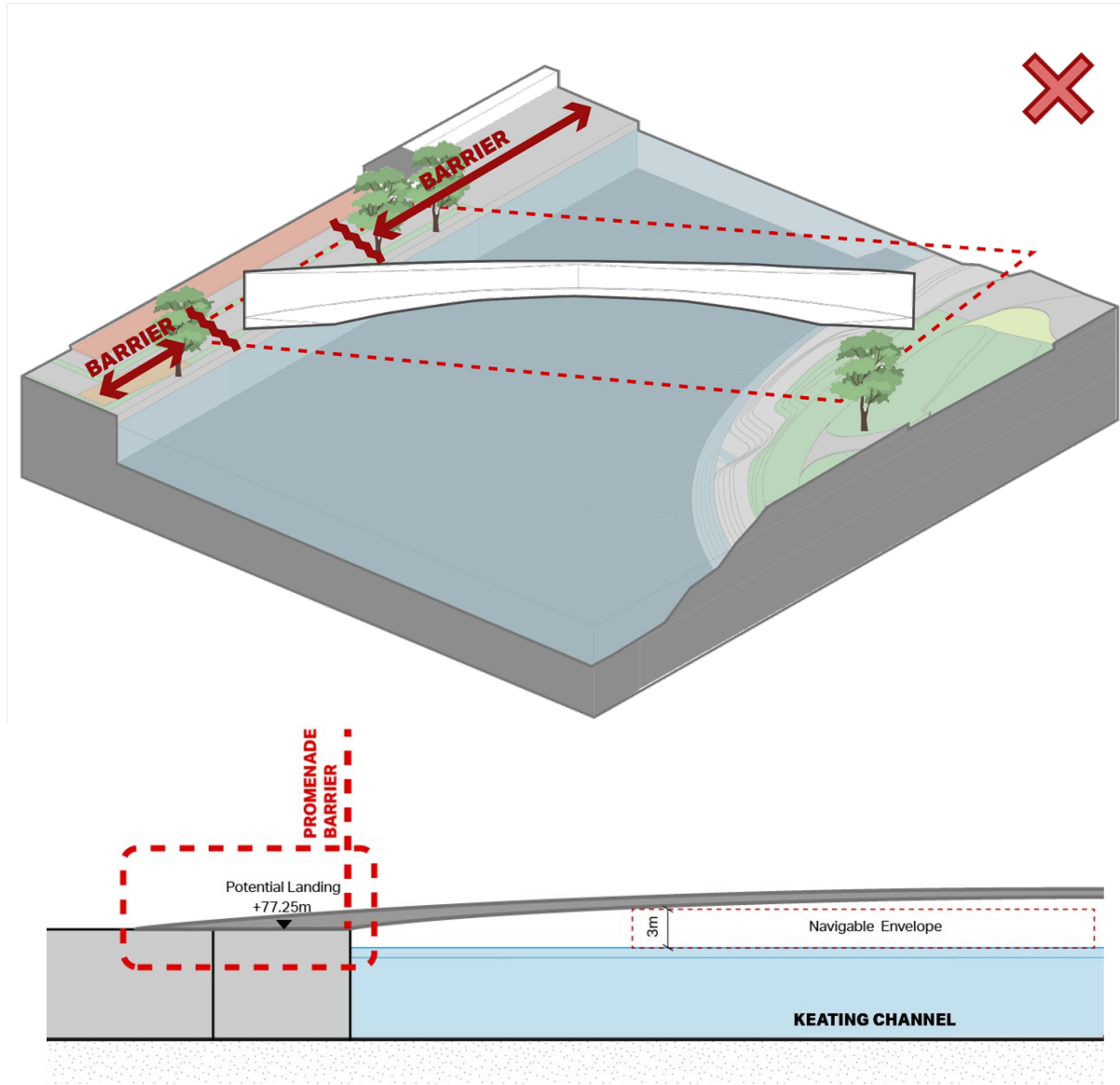
Section through Keating Channel with key site constraints

Site Analysis



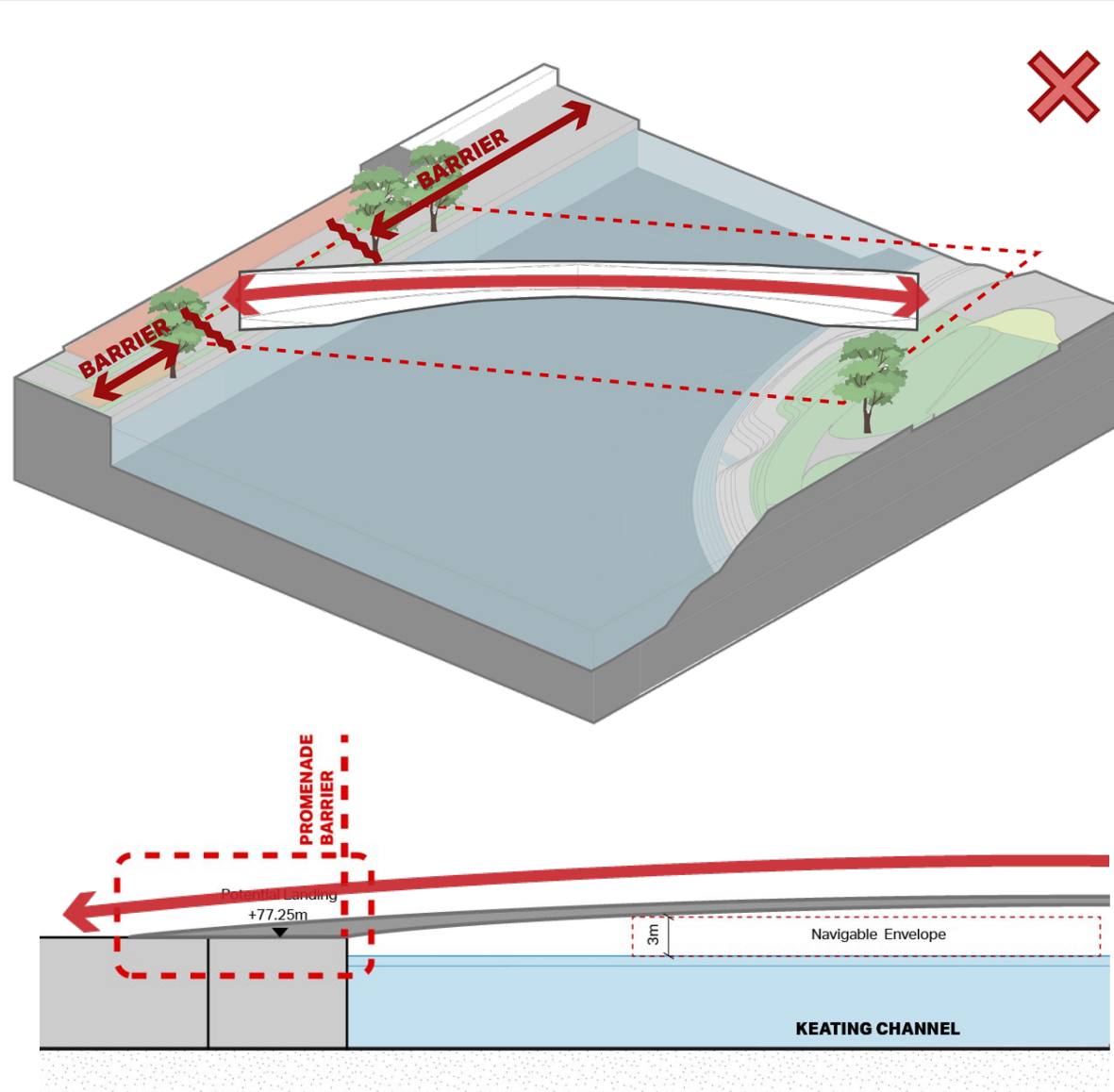
Section through Keating Channel with key site constraints

Concept Design Studies



Straight Bridge with Ramped Deck

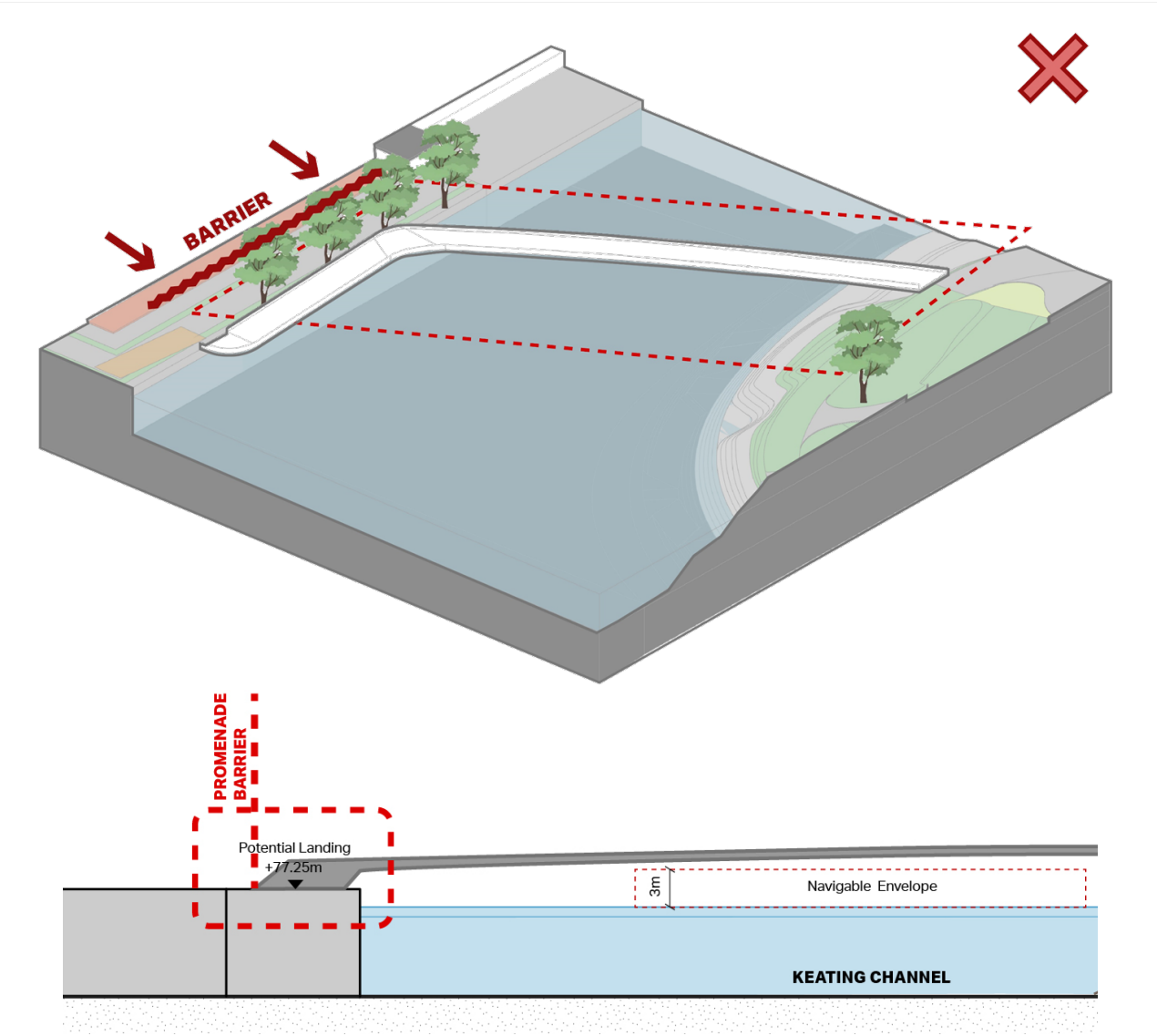
Concept Design Studies



Straight Bridge with Ramped Deck

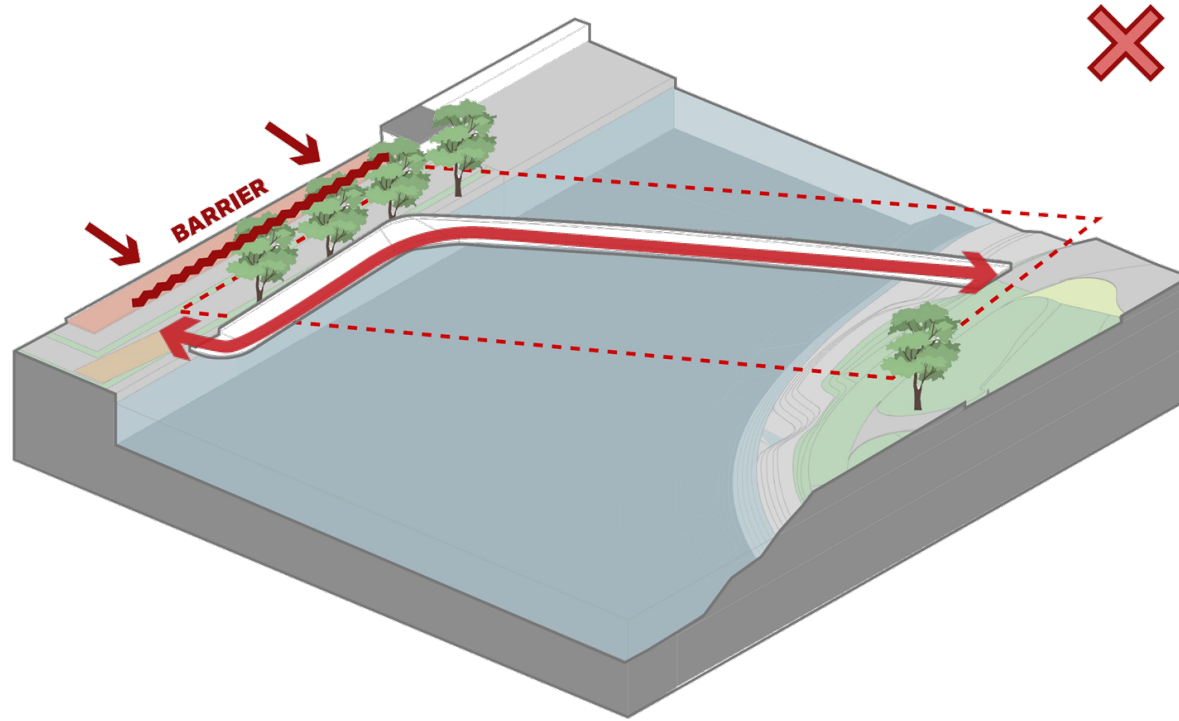
- Diagonal bridge alignment required to minimise impact on quayside
- Creates physical east-west barrier along quayside
- Significant ramp run off on quay edge to resolve levels

Concept Design Studies



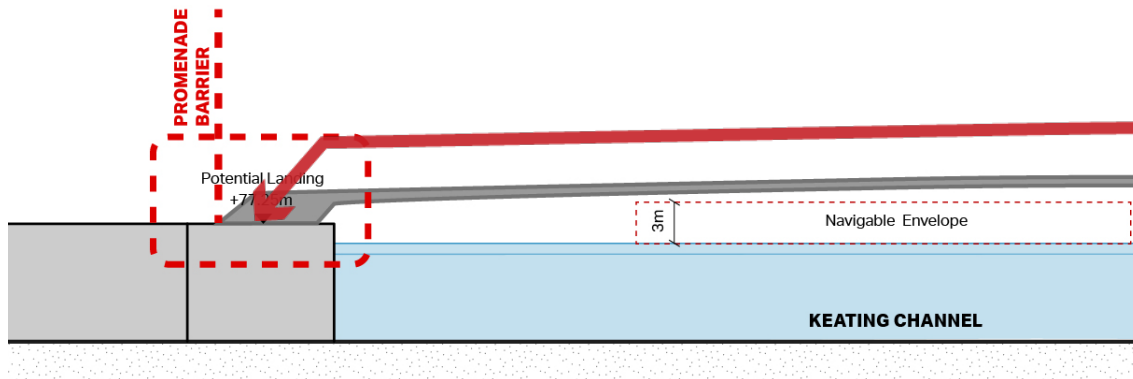
Straight Bridge with Ramping on Quayside

Concept Design Studies



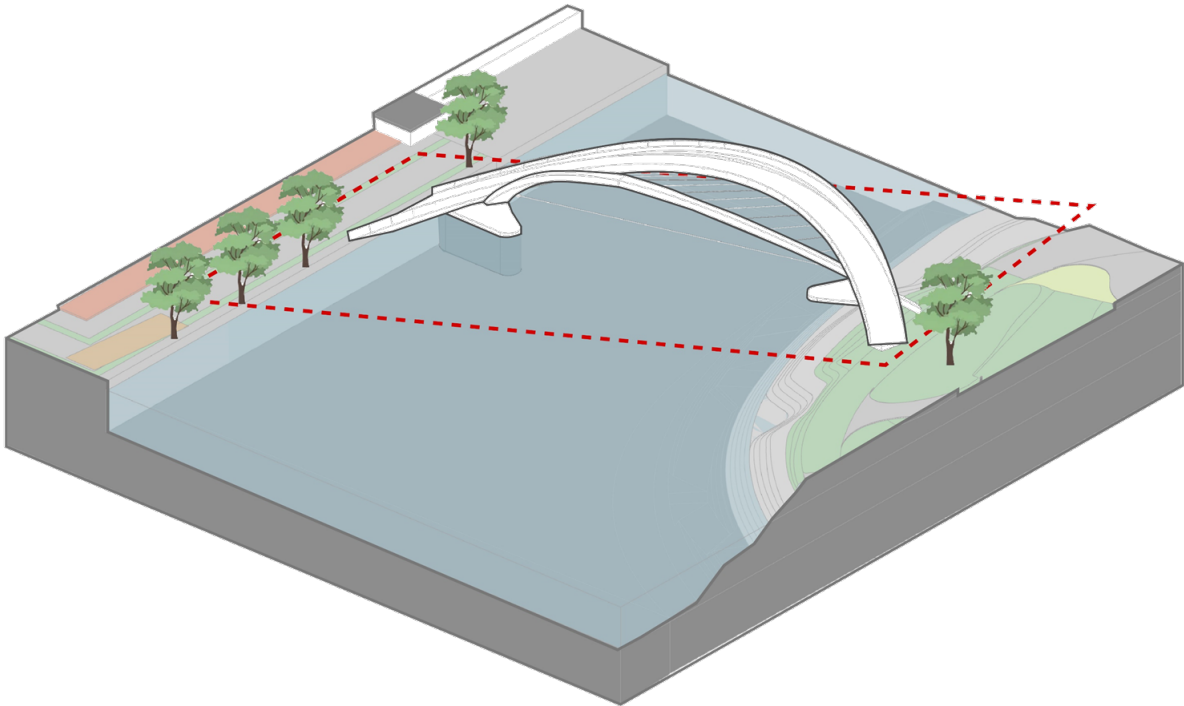
Straight Bridge with Ramping on Quayside

- + Bridge alignment less critical
- Creates physical north-south barrier to water along quayside
- Significant ramp run off parallel to quay edge to resolve levels

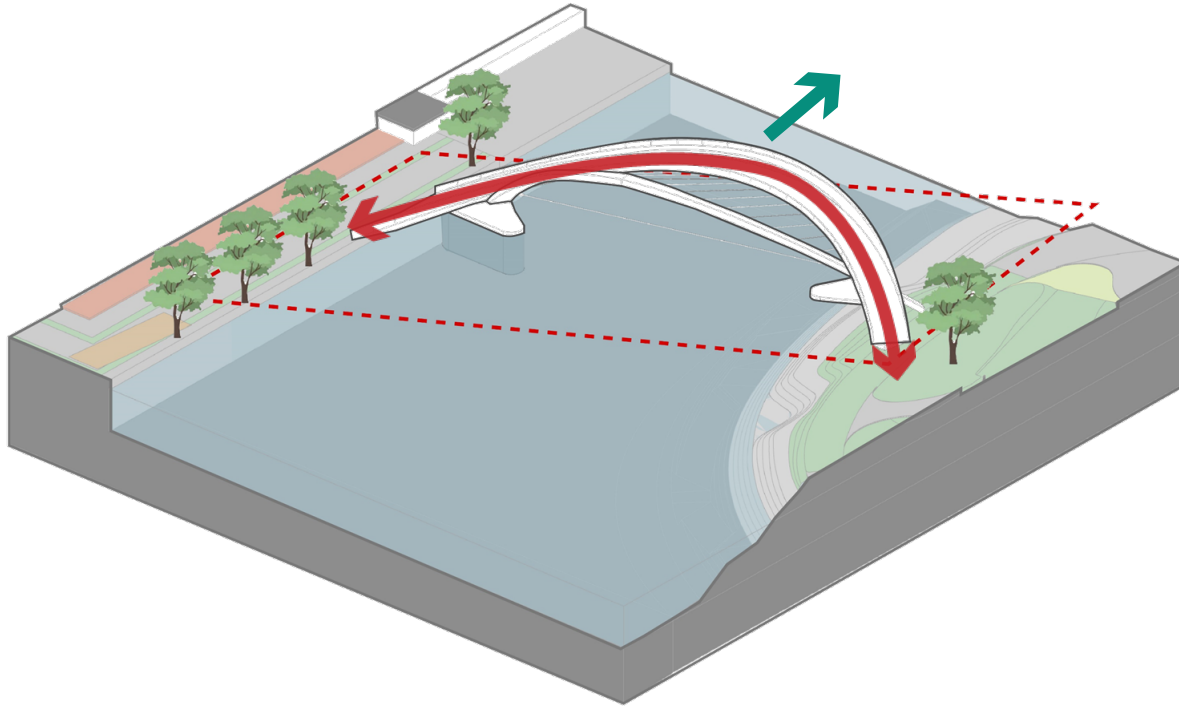


Concept Design Studies

Curved Deck and Arch



Concept Design Studies

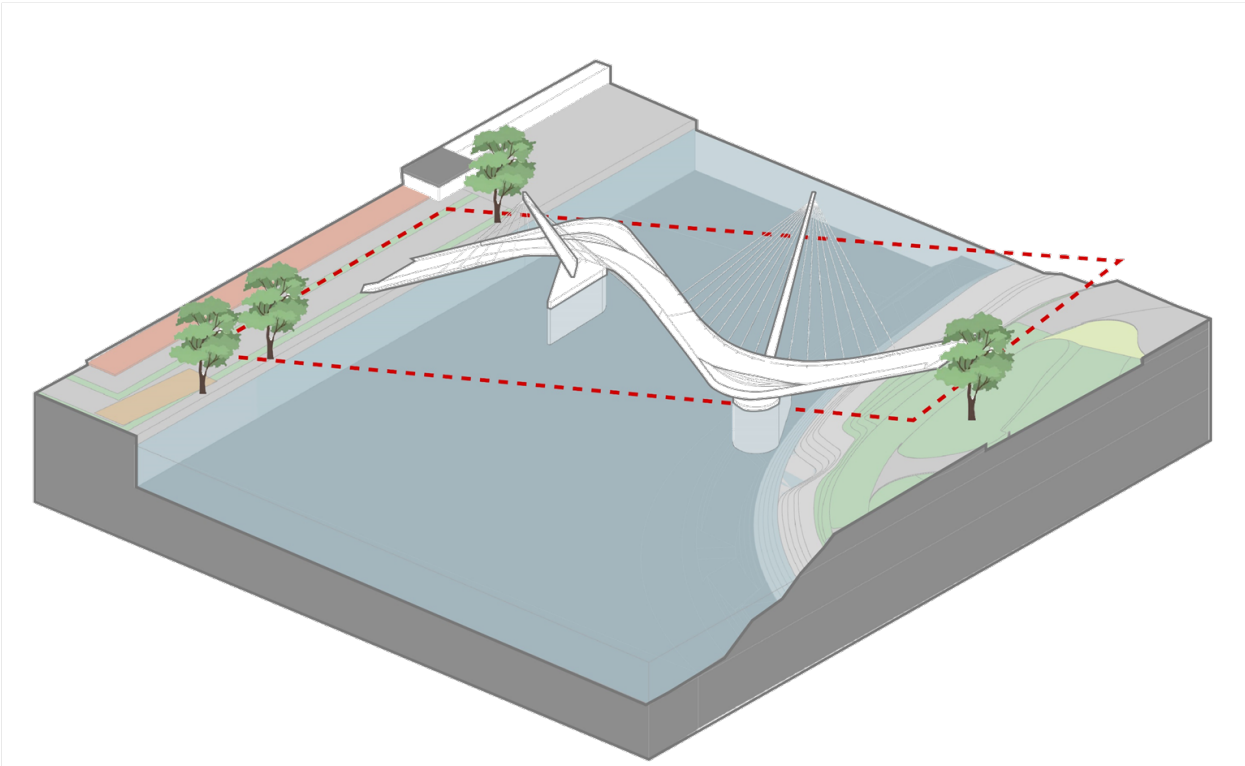


Curved Deck and Arch

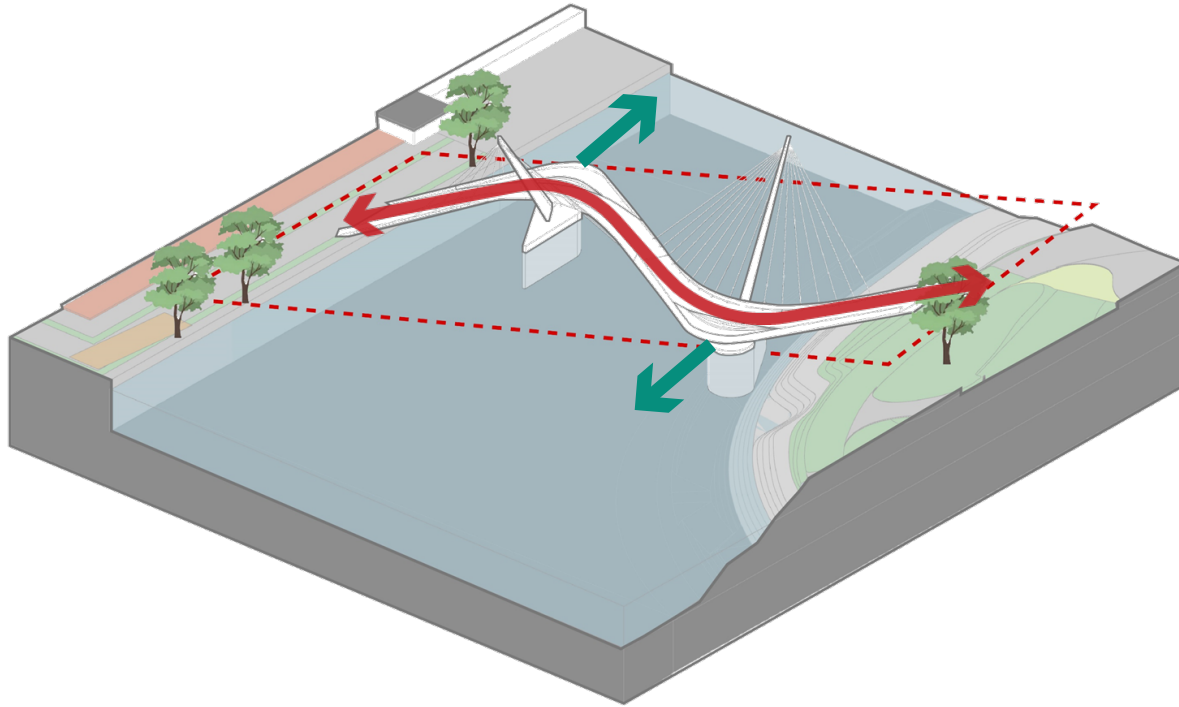
- + No barriers at Quayside promenade
- + Curving deck length resolves levels at Quayside
- + Structurally efficient and cost effective to build
- Deck projects inland, views are not as good

Concept Design Studies

S-Deck and Masts



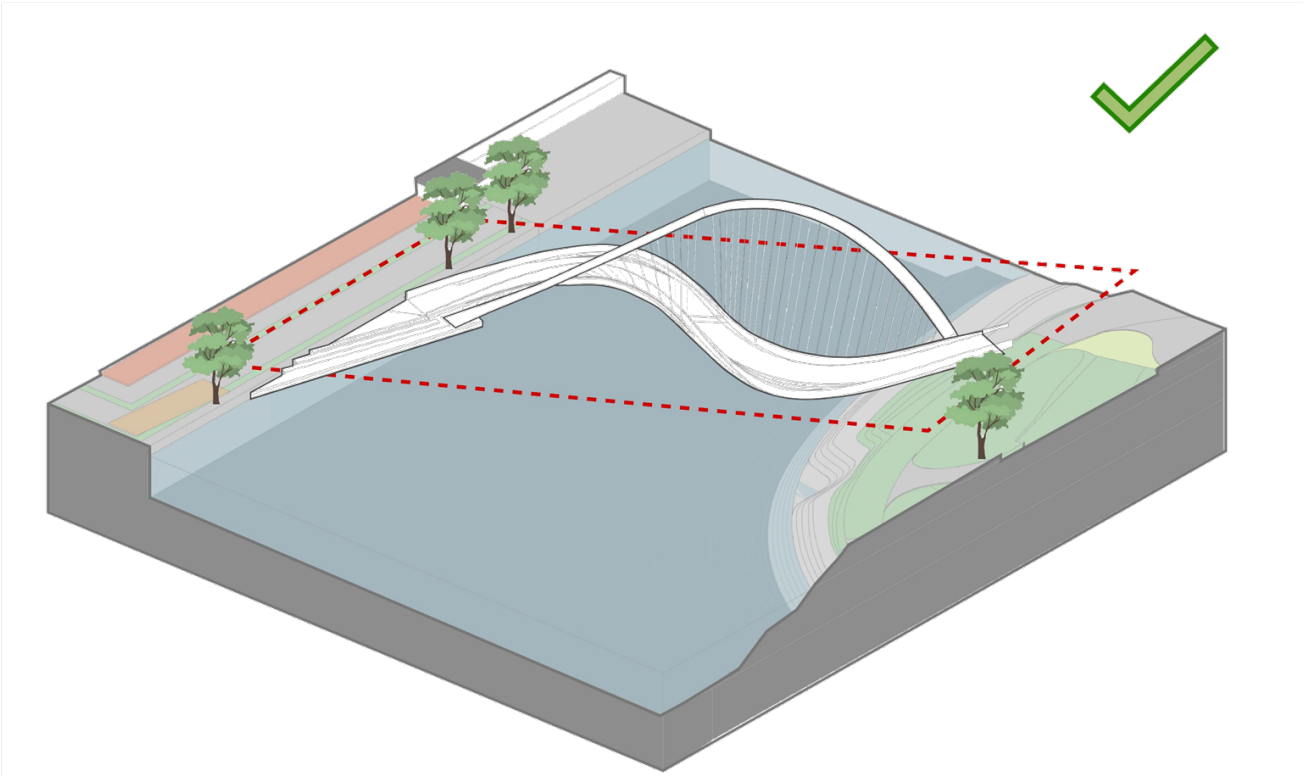
Concept Design Studies



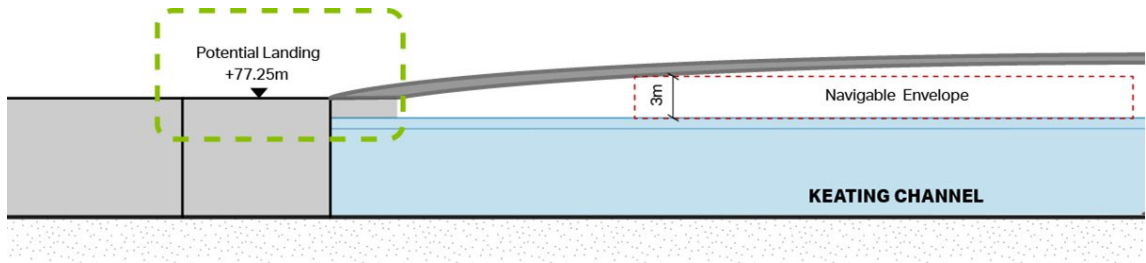
S-Deck and Masts

- + No barriers at Quayside promenade
- + Curving deck length resolves levels at Quayside
- + Natural traffic calming effect to allow pedestrians and cyclists to share bridge safely
- + Equal importance to each side of the bridge, creating a balanced approach and views to both sides
- + Informed by directionality and a connection to place
- Masts are structurally complicated and require piers in the water, more expense
- Doesn't tie in with the family of bridges

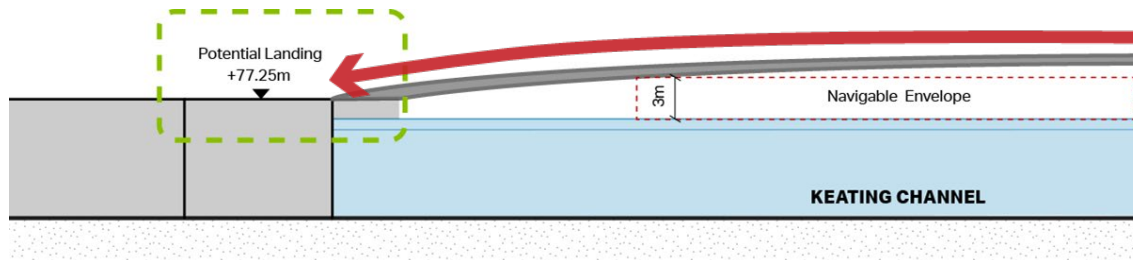
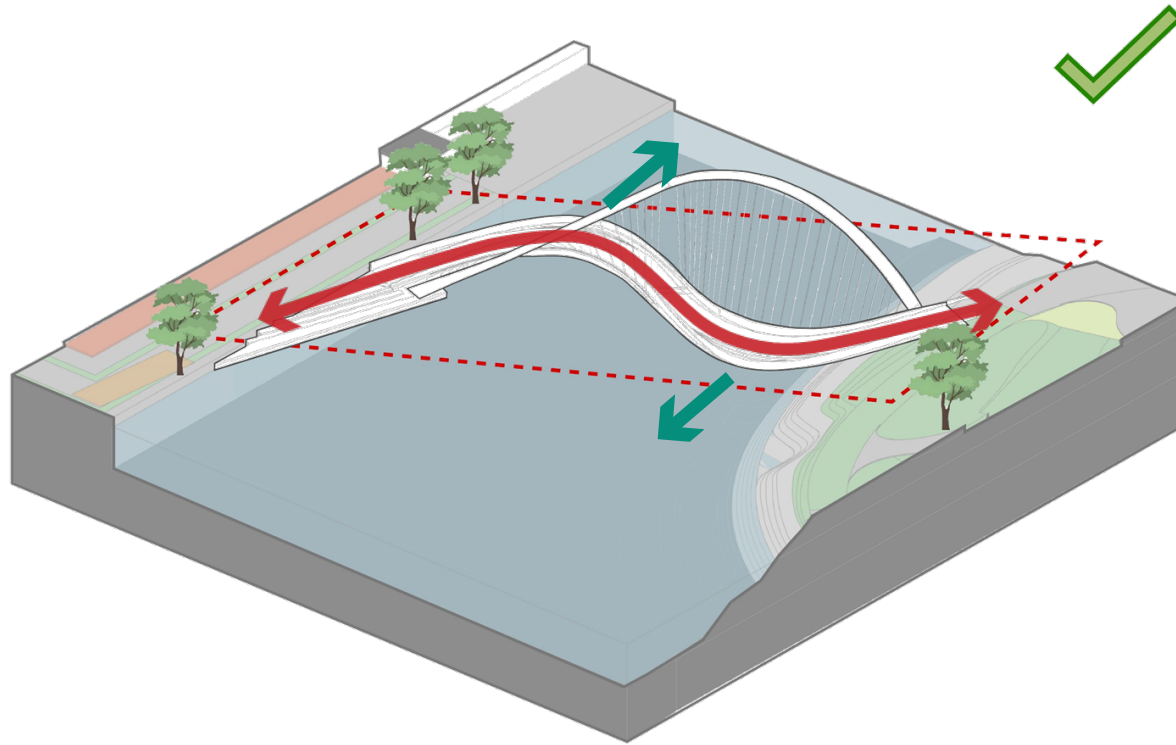
Concept Design Studies



S-Deck and Arch



Concept Design Studies



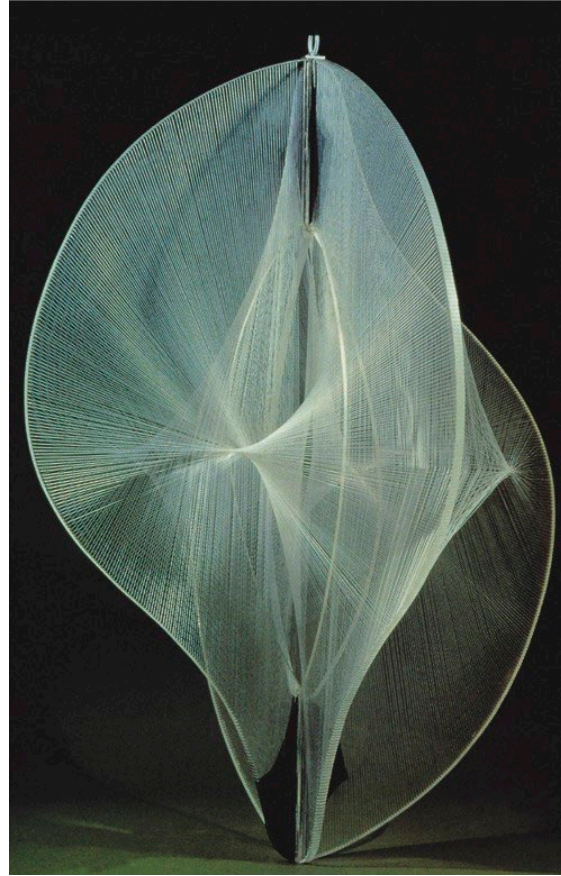
S-Deck and Arch

- + No barriers at Quayside promenade
- + Curving deck length resolves levels at Quayside
- + Natural traffic calming effect to allow pedestrians and cyclists to share bridge safely
- + Equal importance to each side of the bridge, creating a balanced approach and views to both sides
- + Informed by directionality and a connection to place
- + Arch is structurally efficient and requires minimal steel
- + Ties in with the 'family of bridges' approach in elevation, complimenting the Cherry Street North bridges
- + Form aligns with sinuous forms of the deck and natural landscape

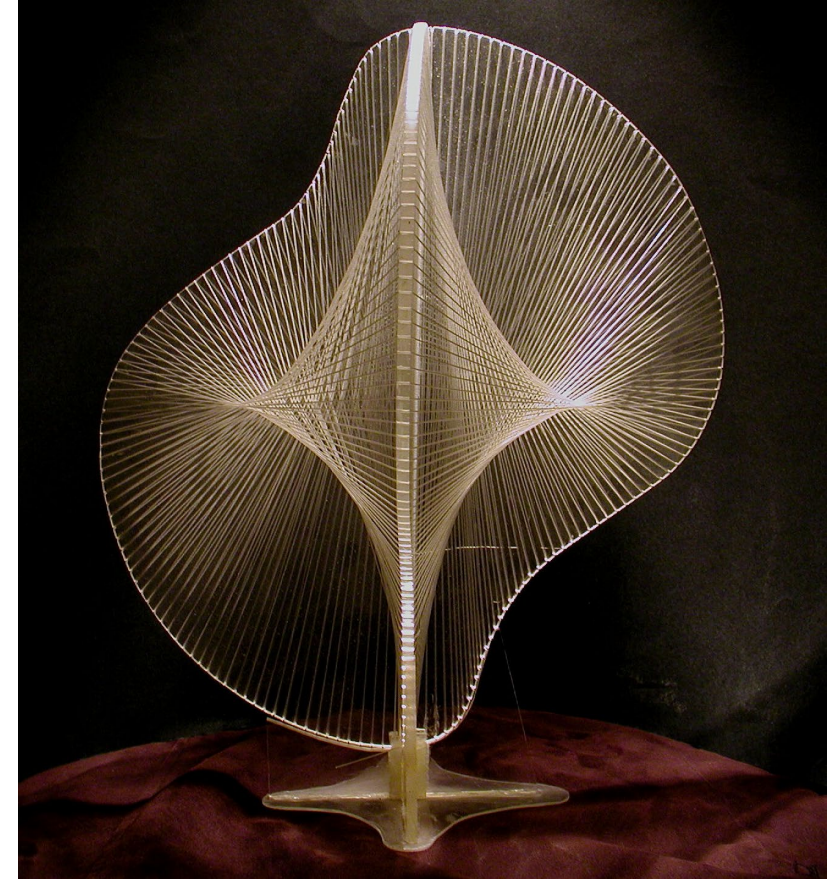
Concept Design Studies



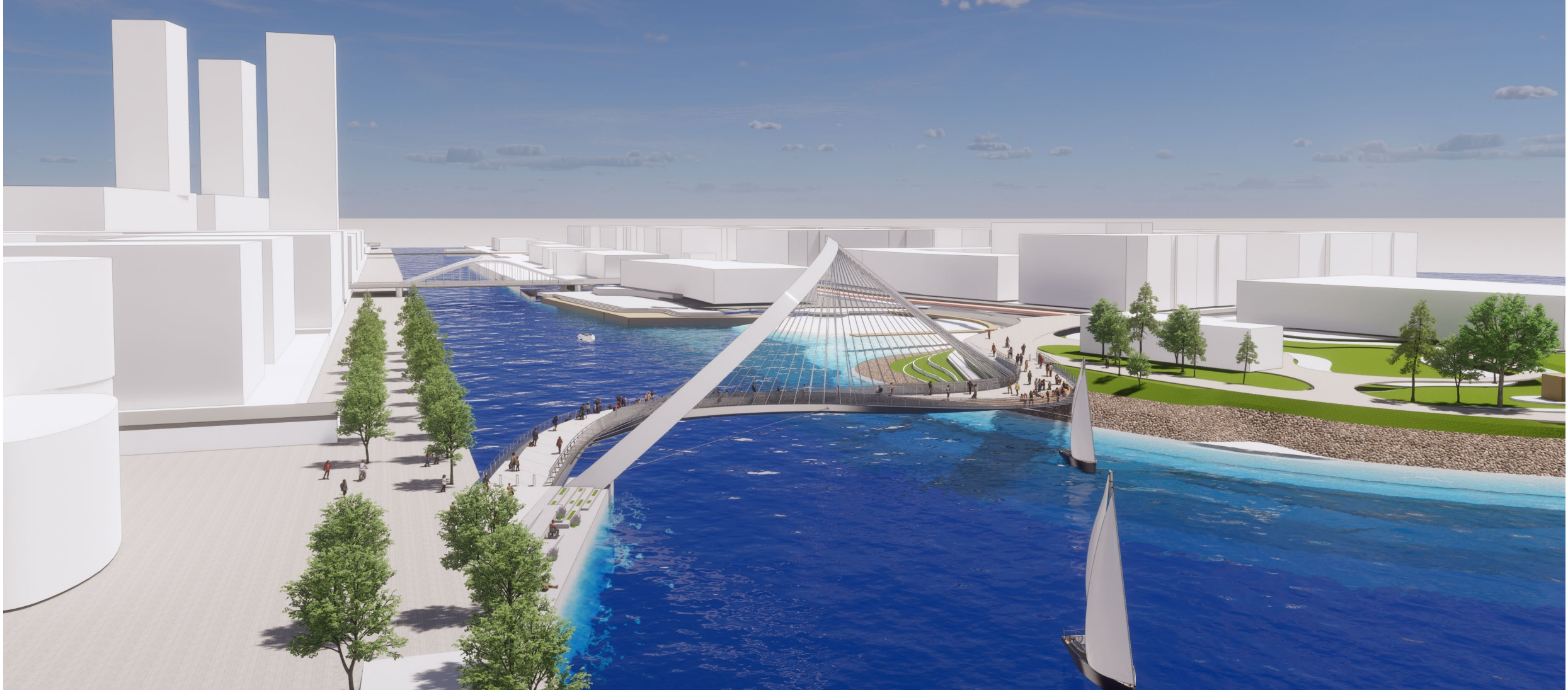
Bridge Deck Geometry and Anti-funicular Arch selected for development in final design



Naum Gabo - Cable Sculptures

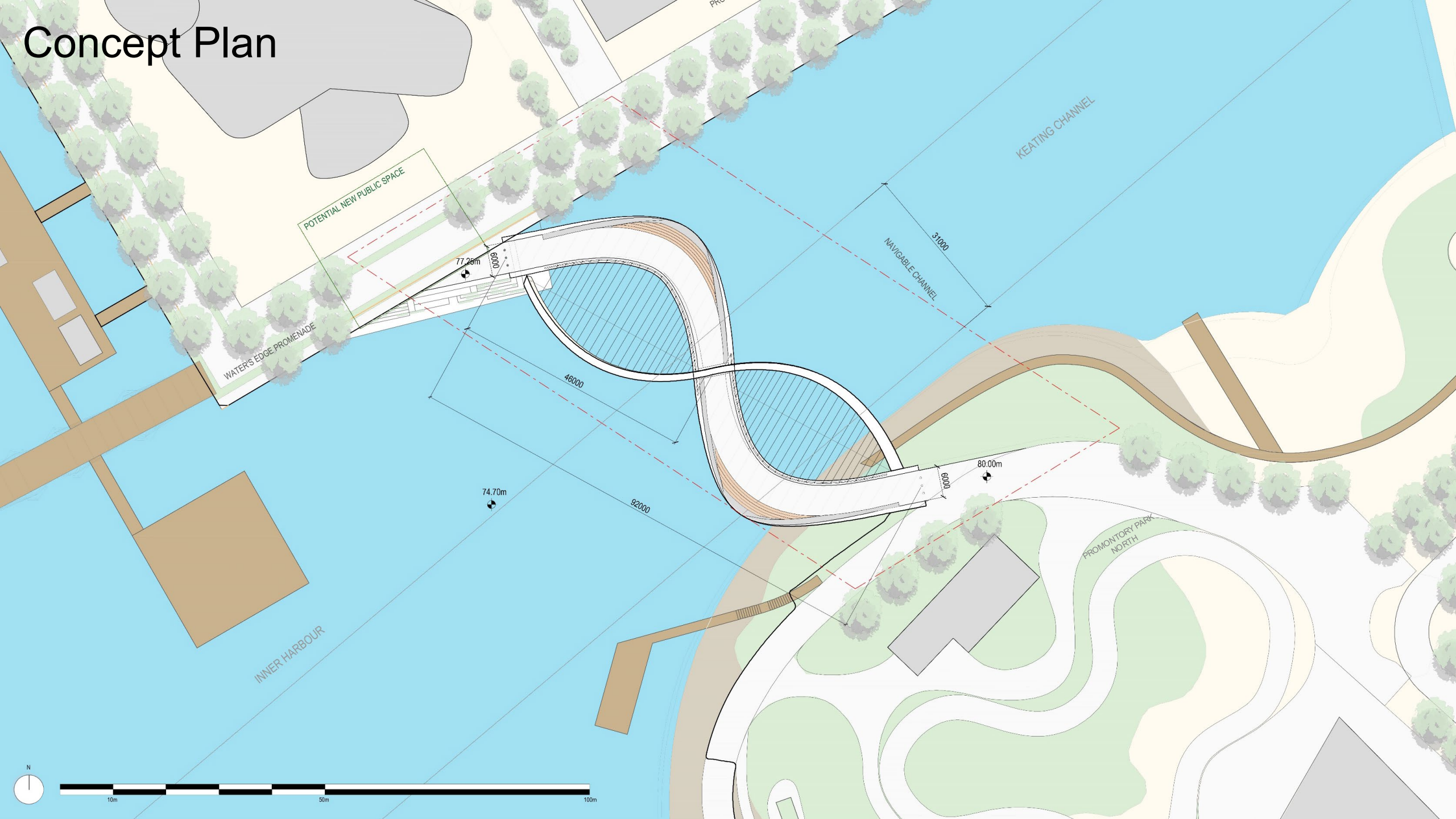


Final Concept Design

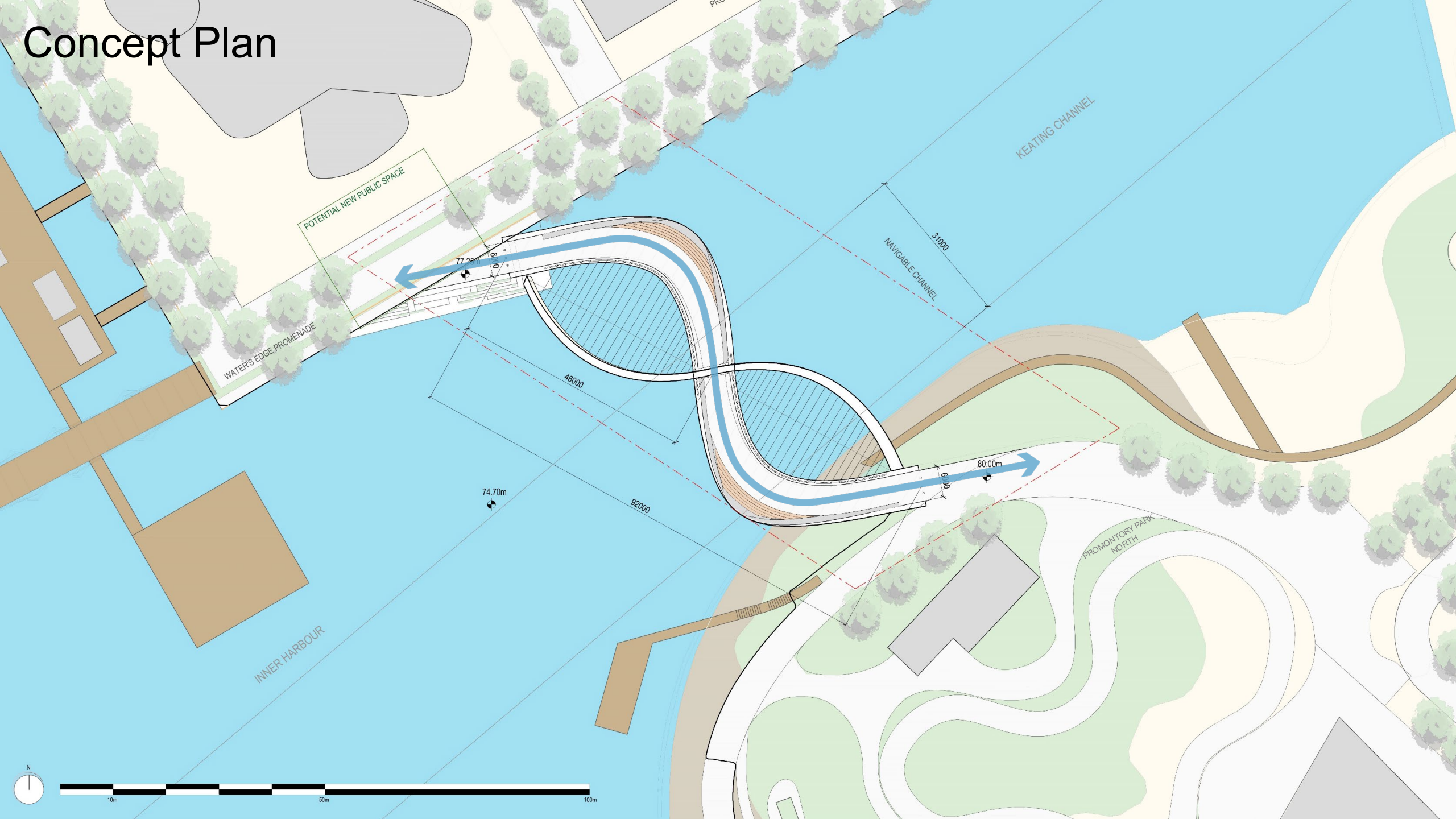


S-shaped bridge aligns with north quay and park finished levels. All ramping is part of bridge geometry

Concept Plan



Concept Plan





Aerial view from North Quay

Final Concept Design



Sinuous bridge deck with integrated perforated wind screens

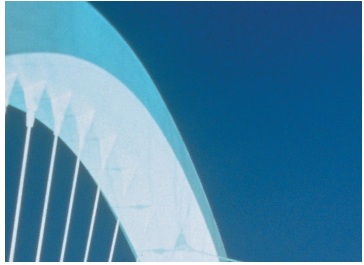


Inclusive spaces for all to enjoy- timber seating accessed via perimeter ramp and steps



Noses to the deck provide seating and connection to the water

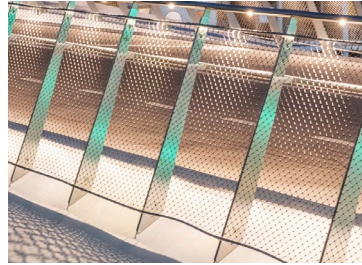
Materiality and Sustainability



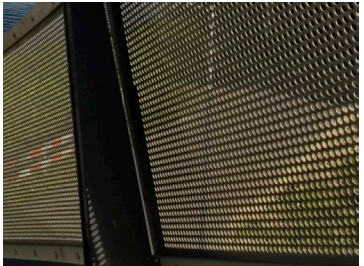
A – Painted Steel



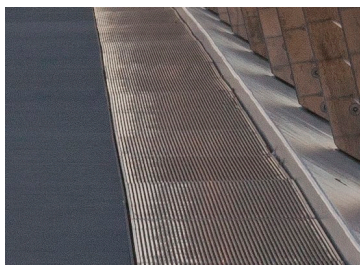
B – Stainless Steel



C – Wire Mesh & Brushed Steel



D – Perforated Metal



E – Wedge Wire



F – Timber Slats



Accessible stepped seating areas for views out to the water



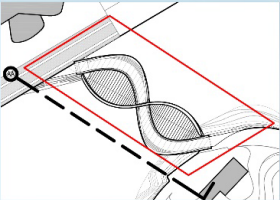
Sectional cut through bridge to indicate conceptual construction and materiality

- Highly efficient arch design reducing steel tonnage and carbon intensity
- Landscaping strategy to align with indigenous planting and include rainwater filtration
- Locally sourced materials
- Low maintenance and high durability of chosen materials

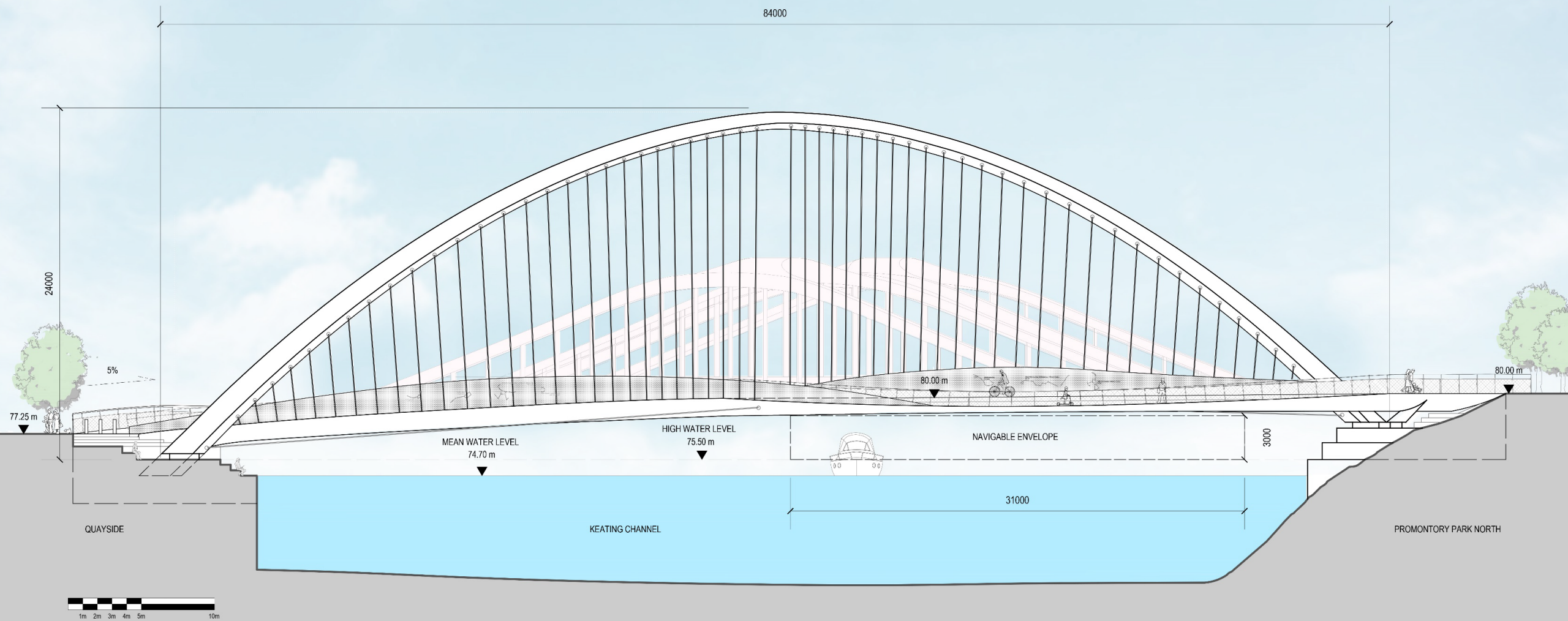


Dusk View of Keating Bridge from South

Longitudinal Section



Key Plan



Indigenous Design Approach

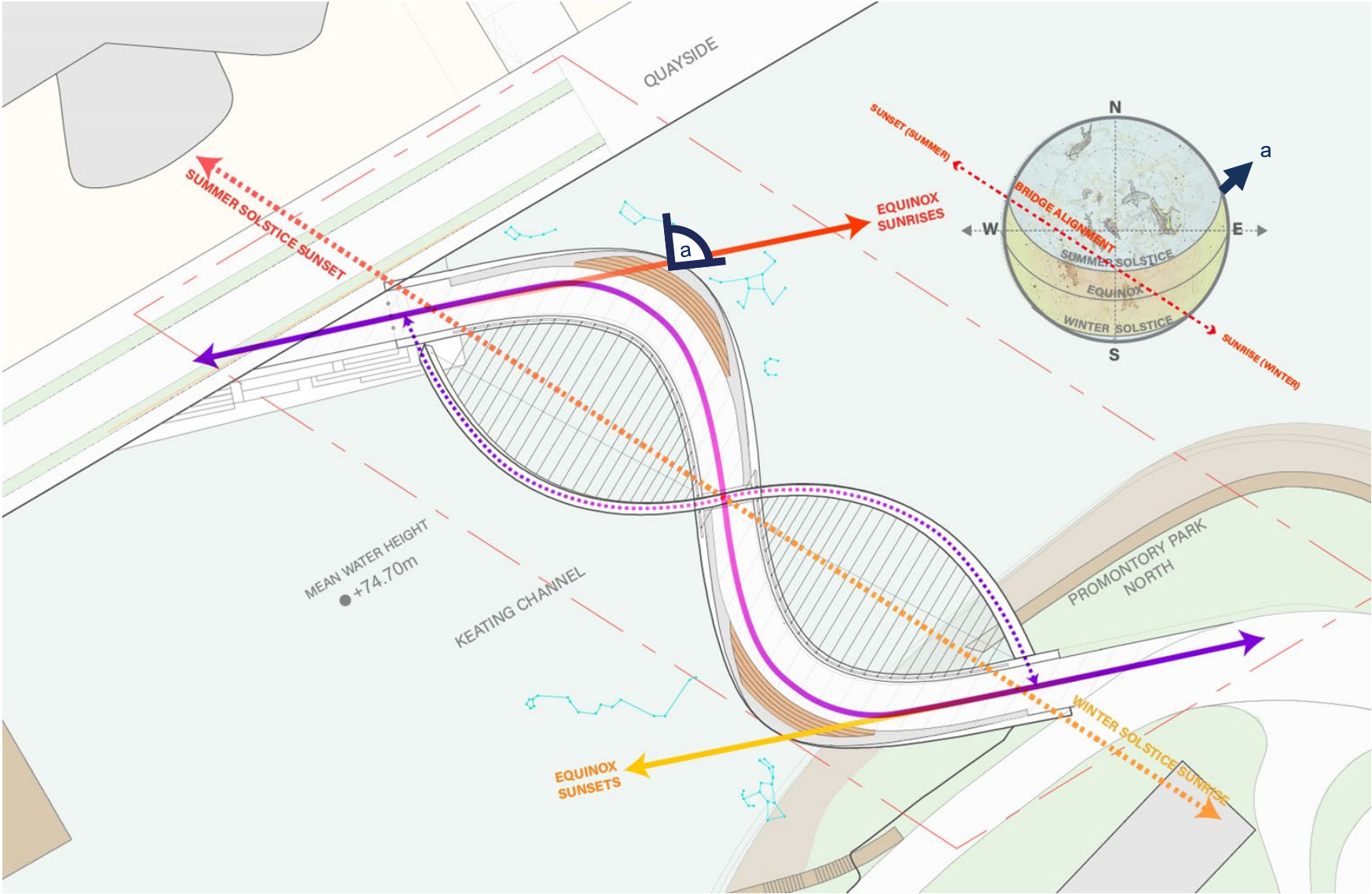
- Design informed by directionality, through connection to the cardinal directions, and to the sky, water, and land
- A form that connects to the summer solstice and winter solstice days.
- Inclusion of native plantings that contribute to soil remediation, water filtration, and the health of the ecosystem
- Connection and acknowledgement to the sacredness of water
- Seating areas that encourage gathering and connection, to each other as well as to All Our Relations
- Work that is done is a good way, driven by consultation with local knowledge keepers and Elders, to listen and learn appropriate way to reflect the unique perspectives, stories, and wisdom of the MCFN in a respectful and contemporary way.



Final Concept Design



Summer Solstice sunrise from the north-east viewing point



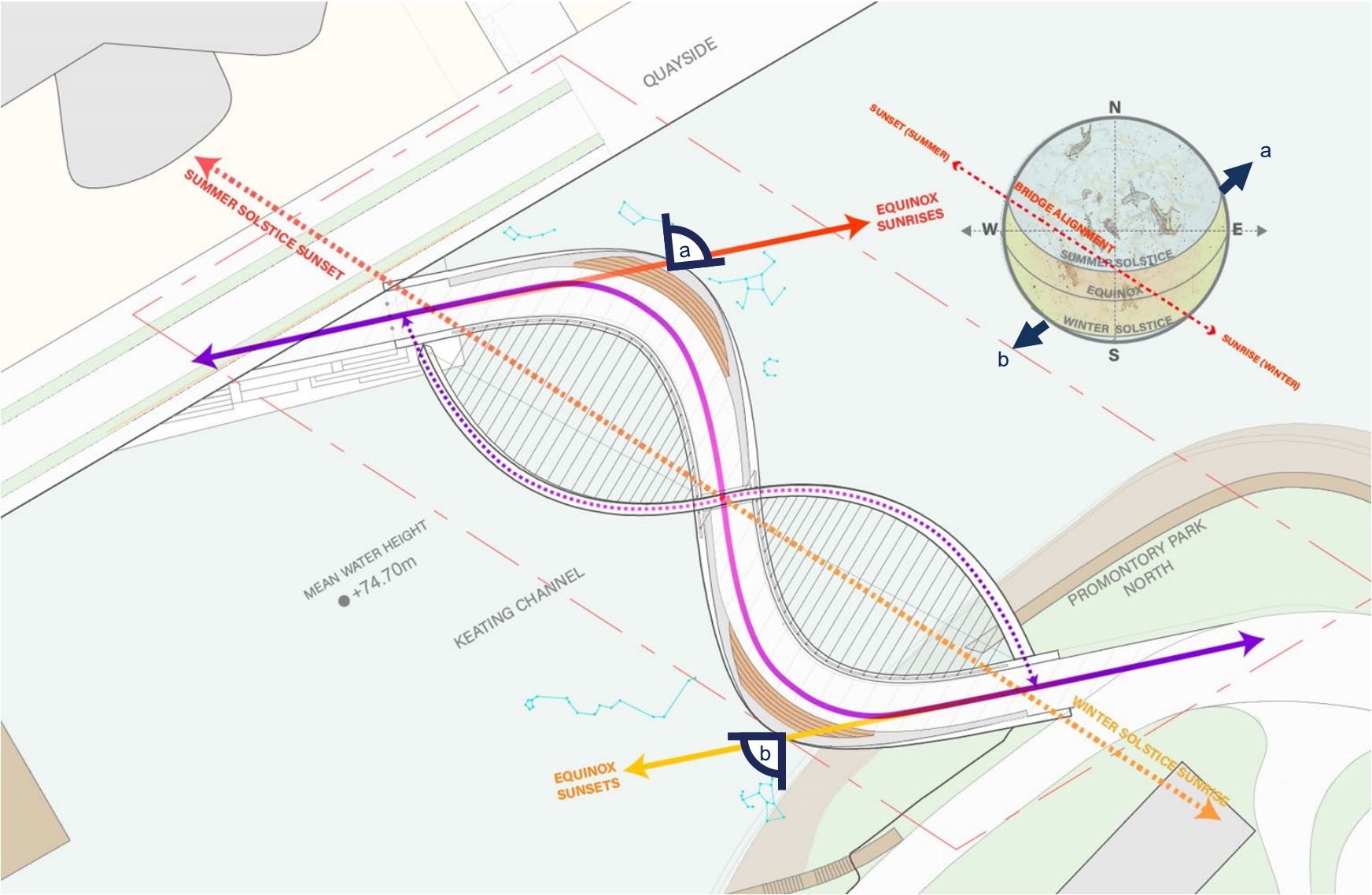
Final Concept Design



Summer Solstice sunrise from the north-east viewing point



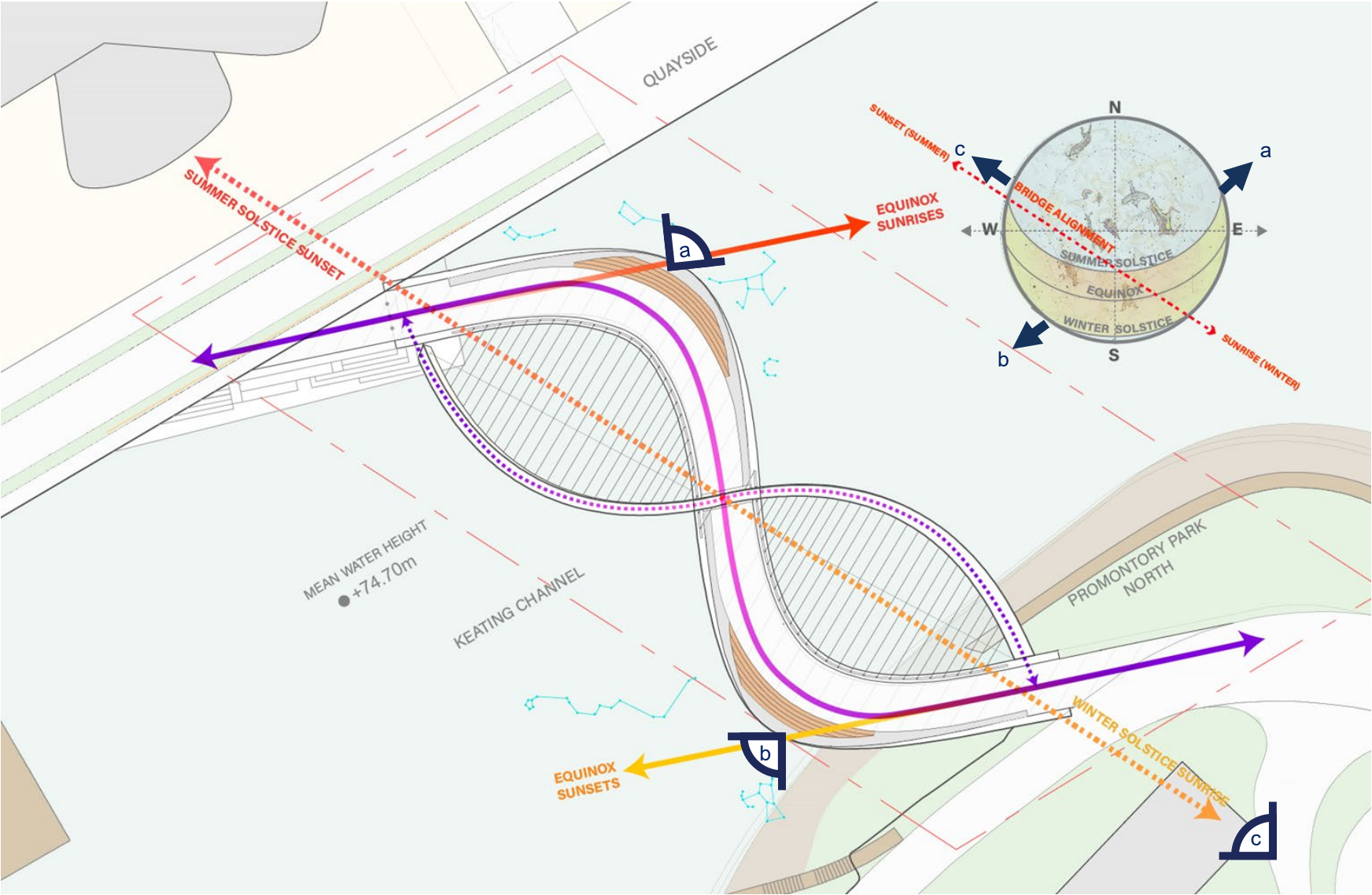
Winter Solstice sunset from the south-west viewing point



Final Concept Design



Summer Solstice sunset through the arch



Final Concept Design



Summer Solstice sunrise from the north-east viewing point



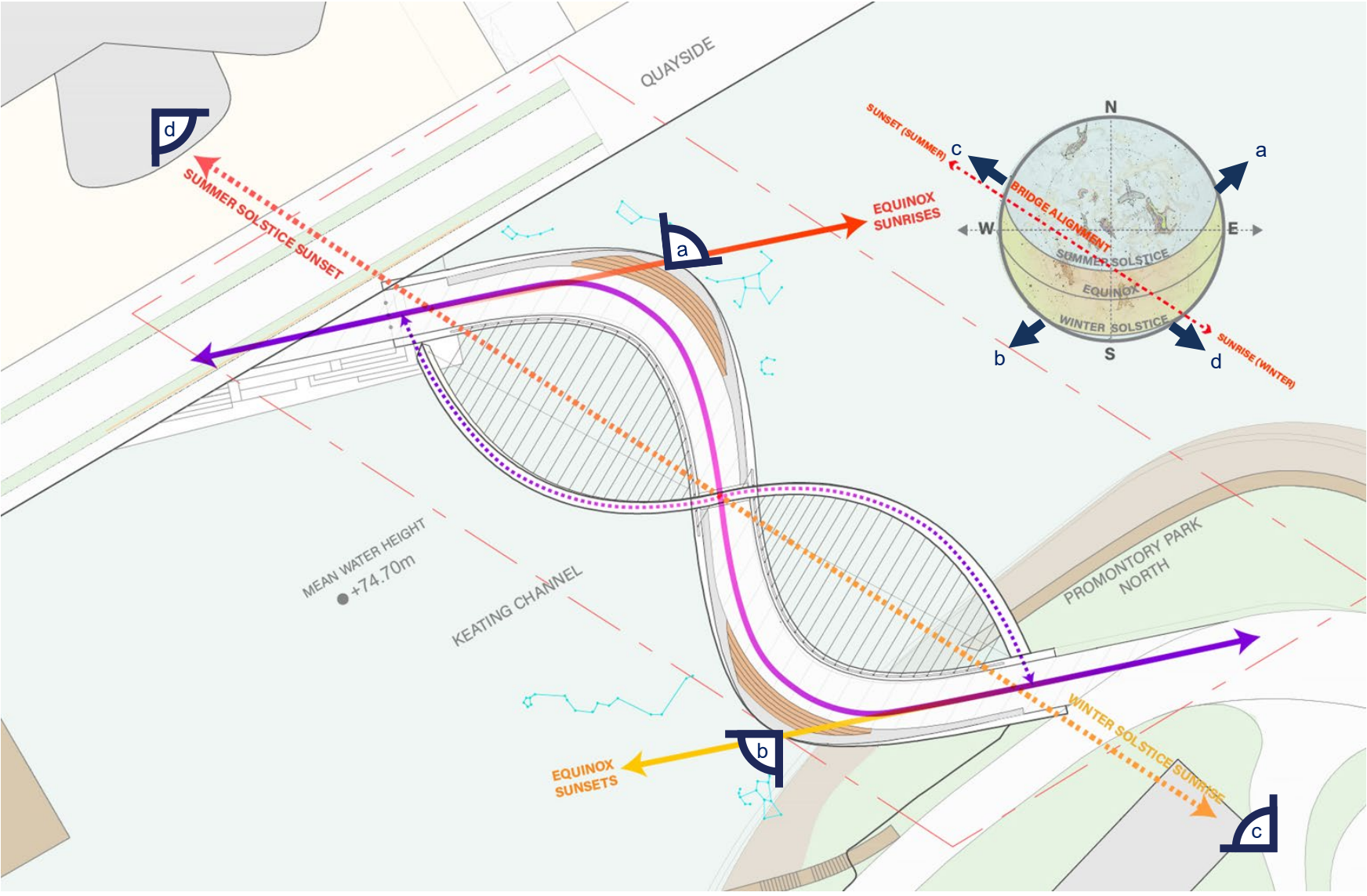
Winter Solstice sunset from the south-west viewing point



Summer Solstice sunset through the arch



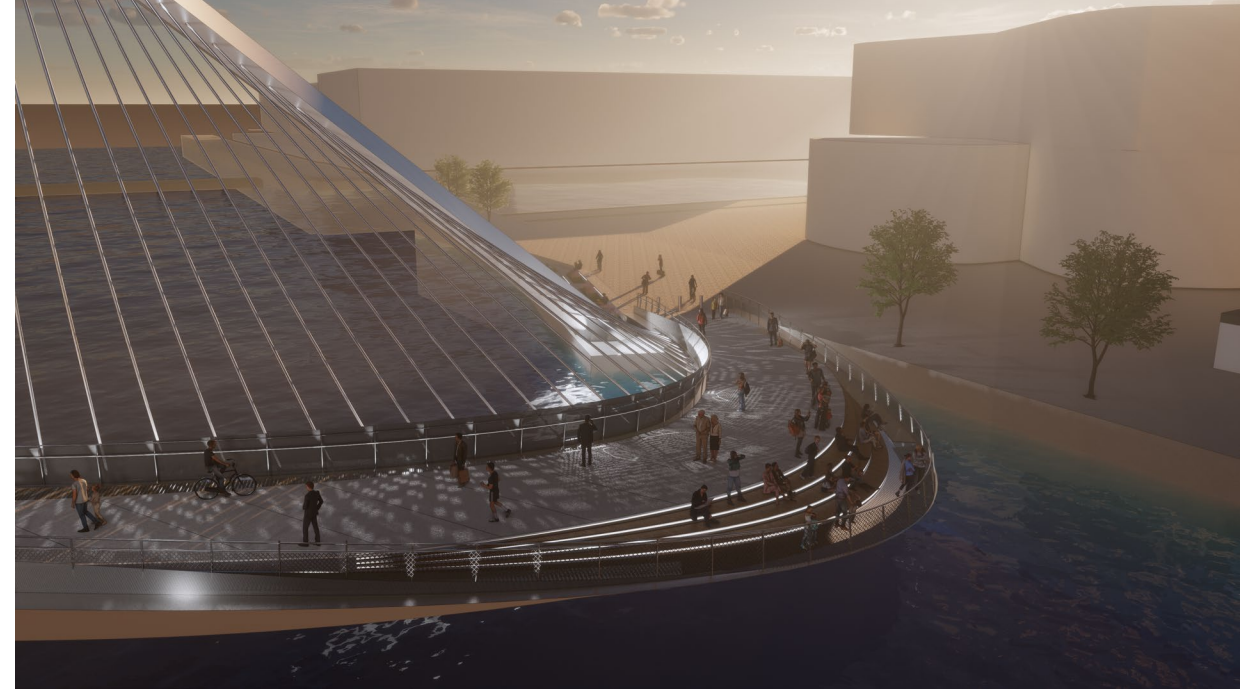
Winter Solstice sunrise through the arch



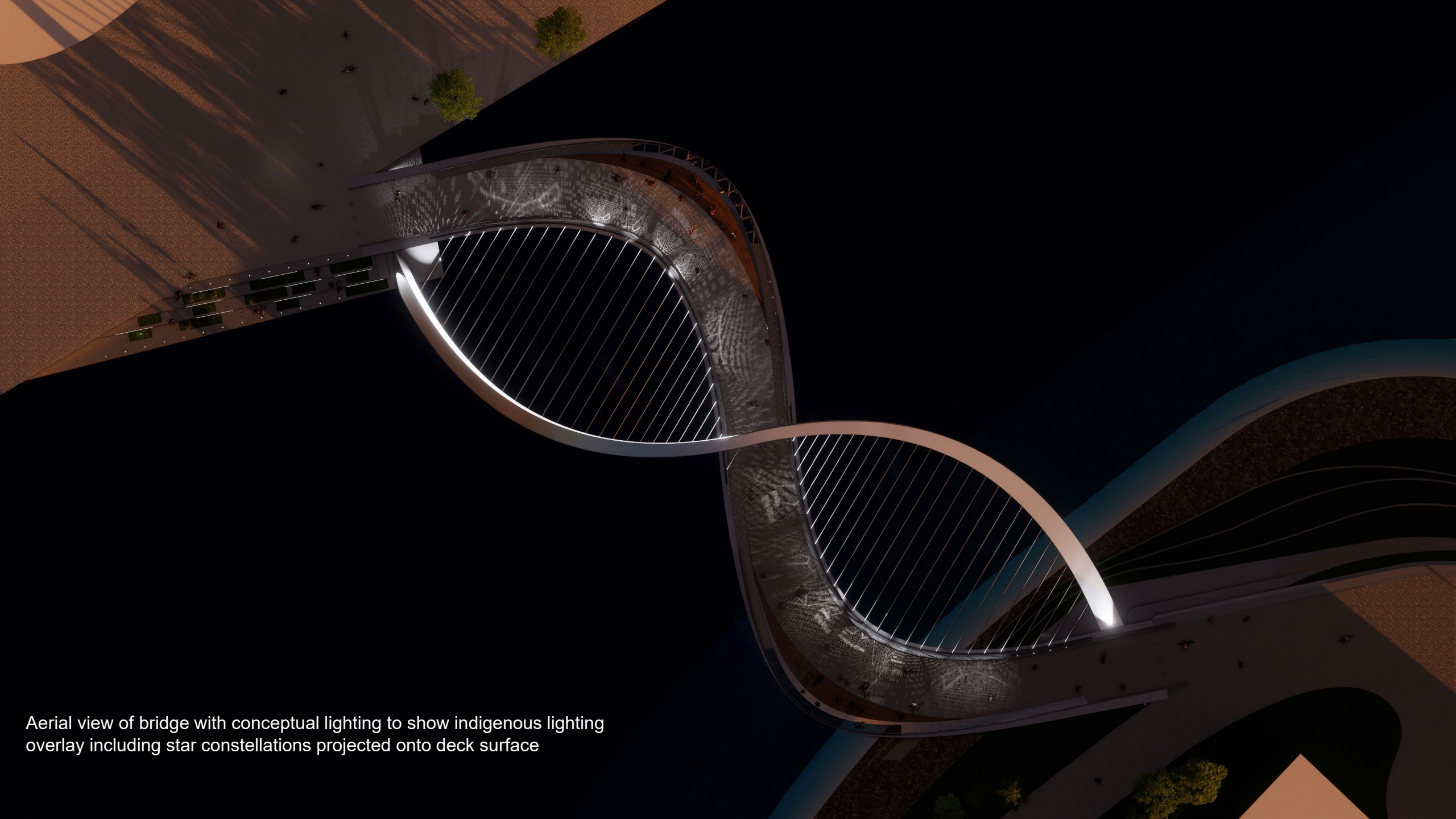
Lighting Design



Constellations are projected across the deck, glistening in the sunset



Light dances in the water reflected from the bridge

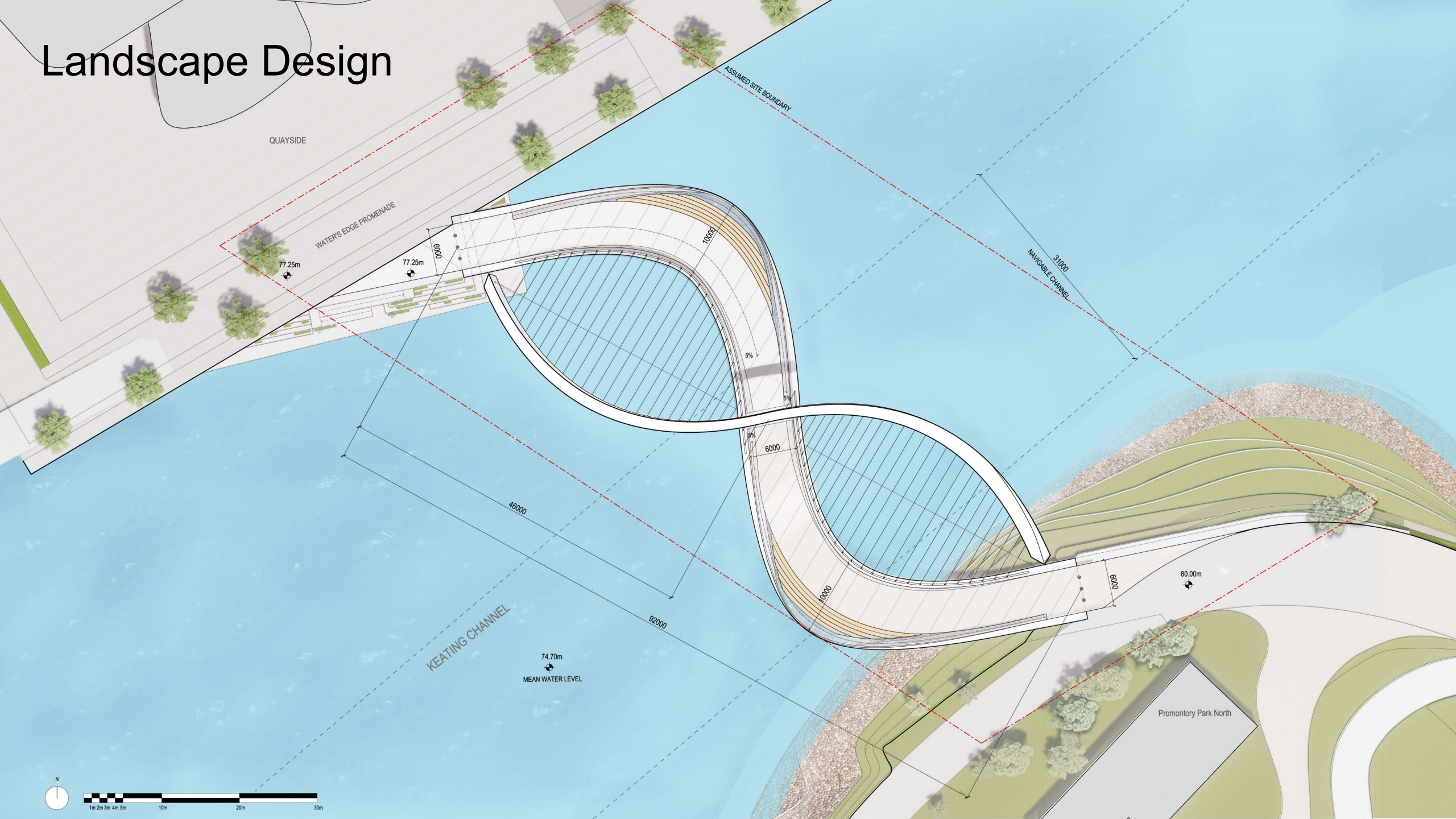


Aerial view of bridge with conceptual lighting to show indigenous lighting overlay including star constellations projected onto deck surface

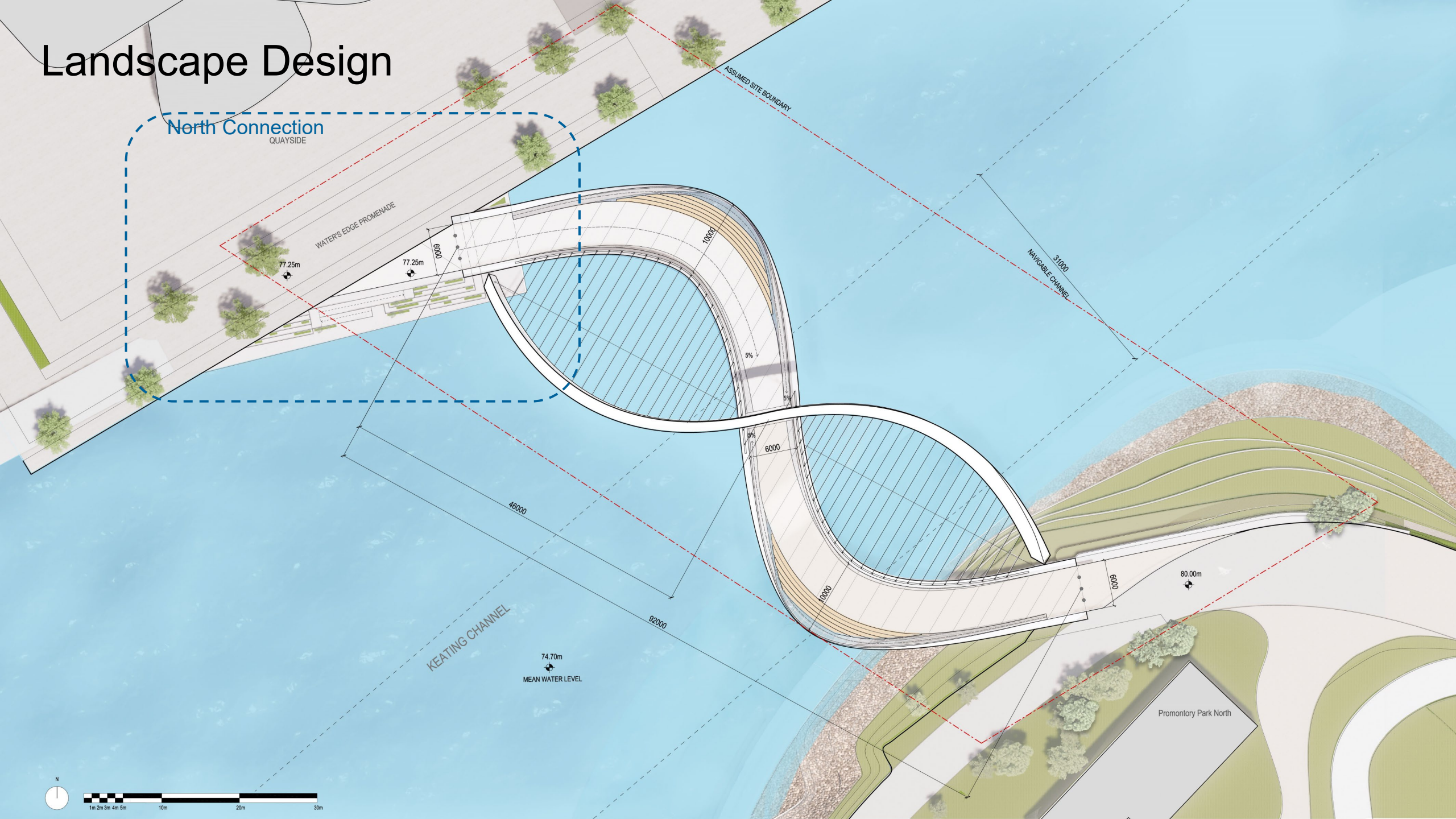


Night View of Keating Bridge from South
with Feature Lighting Concept

Landscape Design



Landscape Design



Landscape Design – North Connection



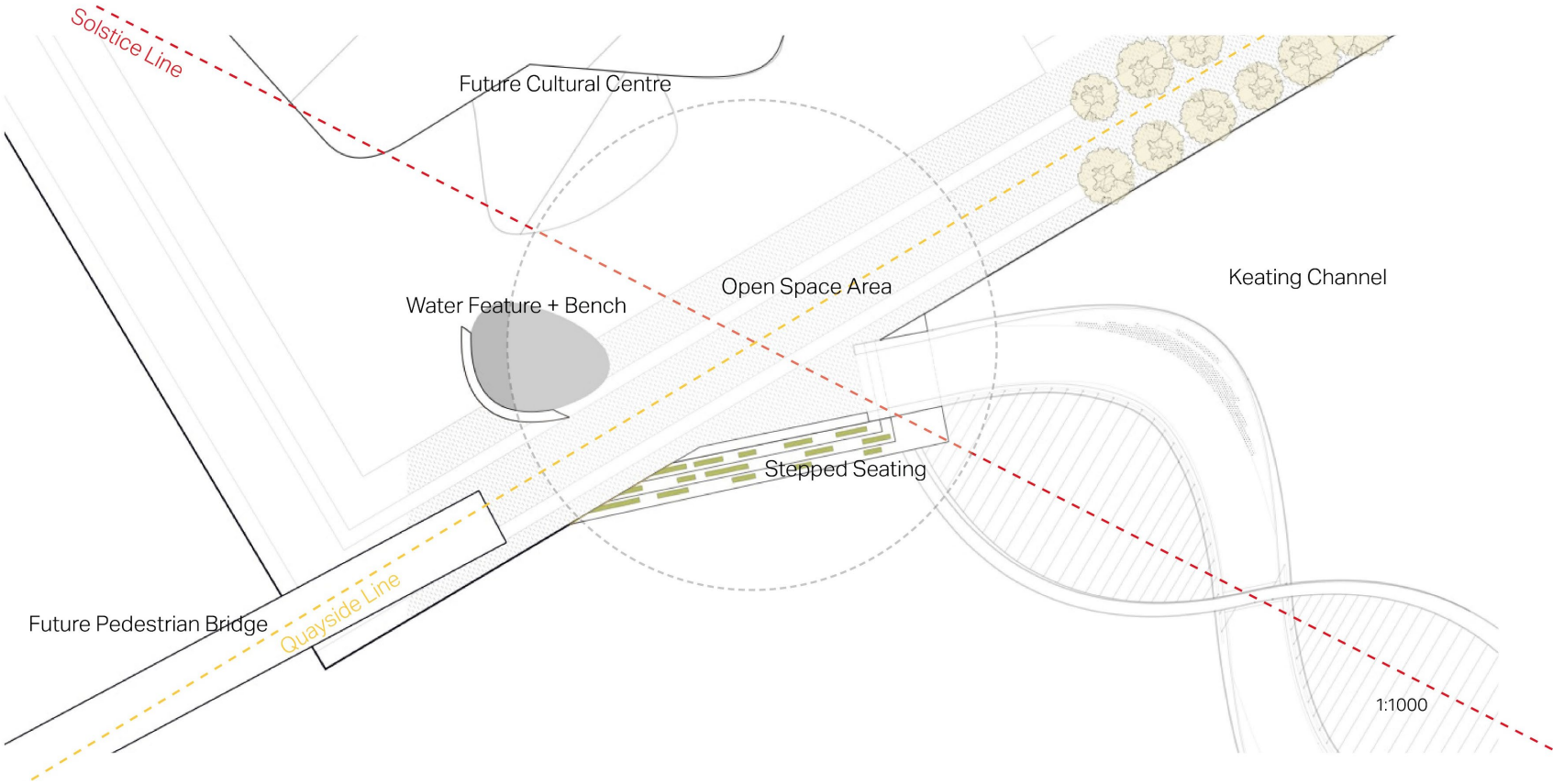
Stepped Seating | Nathan Philipps Square - PLANT Architect Inc.



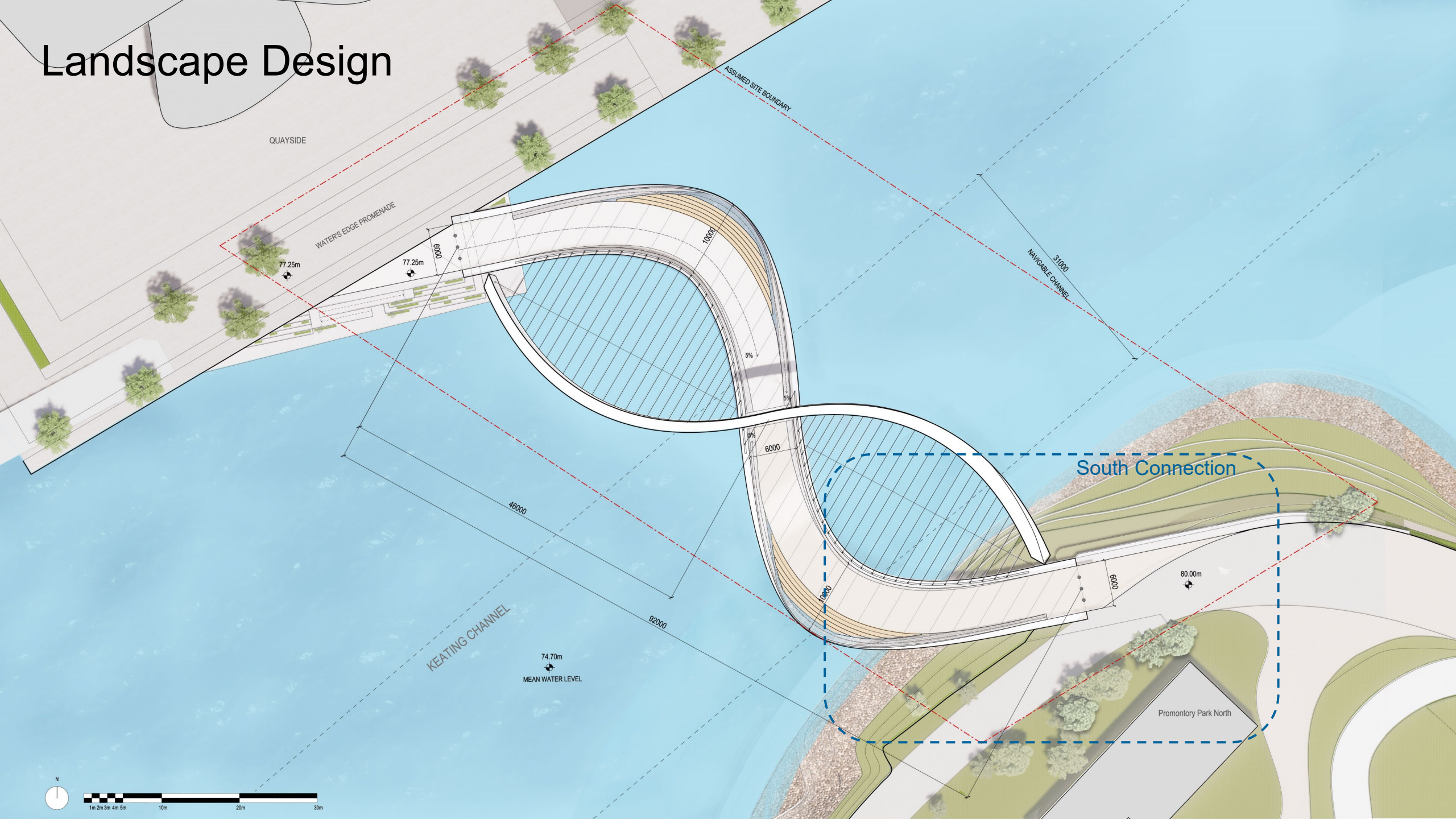
Water Feature + Bench | Gallery of Freedom Square - 501 Architects



Raingarden Plantings | Edinburgh Gardens Raingarden - GHD Pty Ltd



Landscape Design



Landscape Design – South Connection



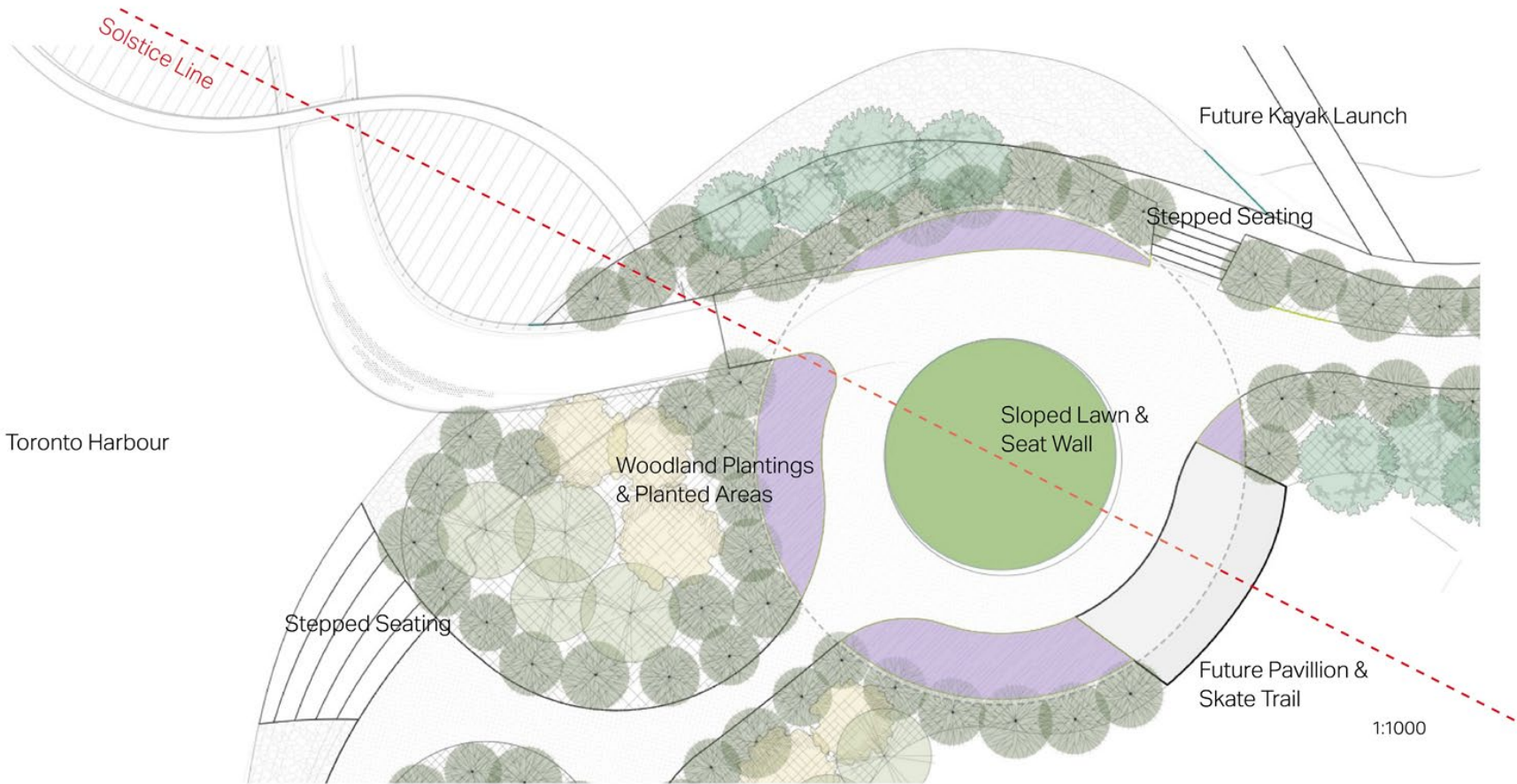
Woodland Plantings & Planted Areas |
Dorpsweide - Atelier Loos van Vliet



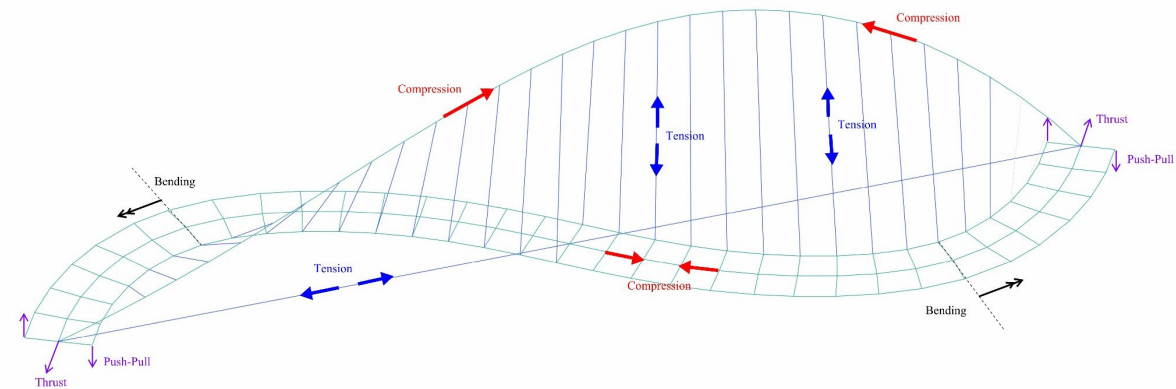
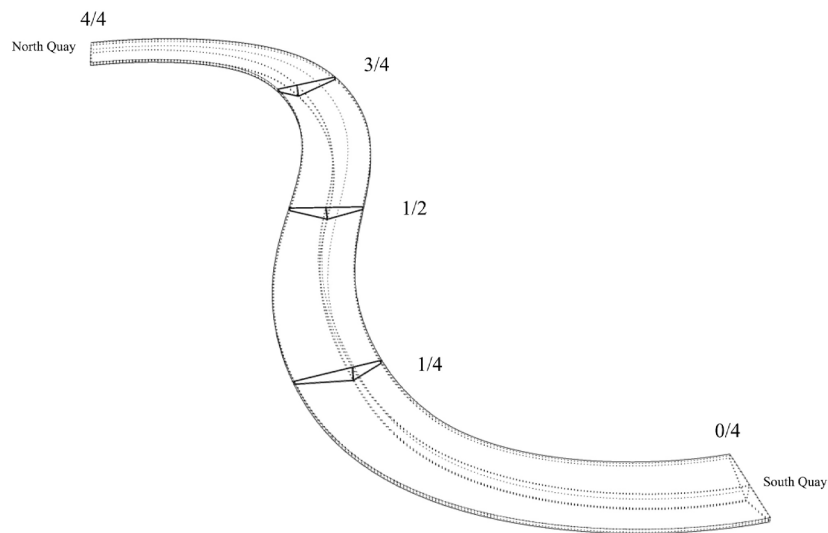
Sloped Lawn & Seat Wall | Buckingham Browne
and Nichols - Stephen Stimson Associates



Stepped Seating | Calgary Bow RiverWalk
- Stantec / Moriyama Teshima Planners

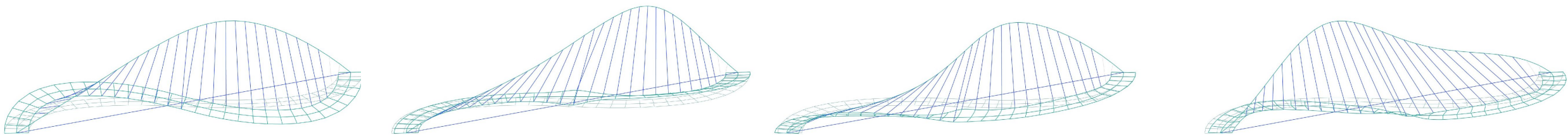


Structural Engineering

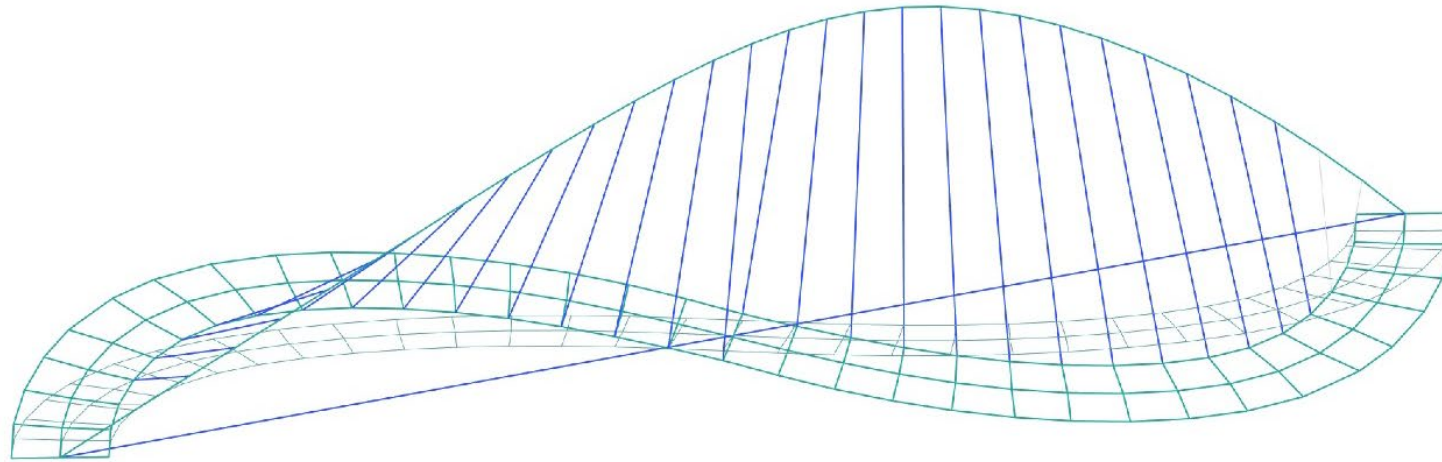


Load path diagram of the funicular arch and the deck

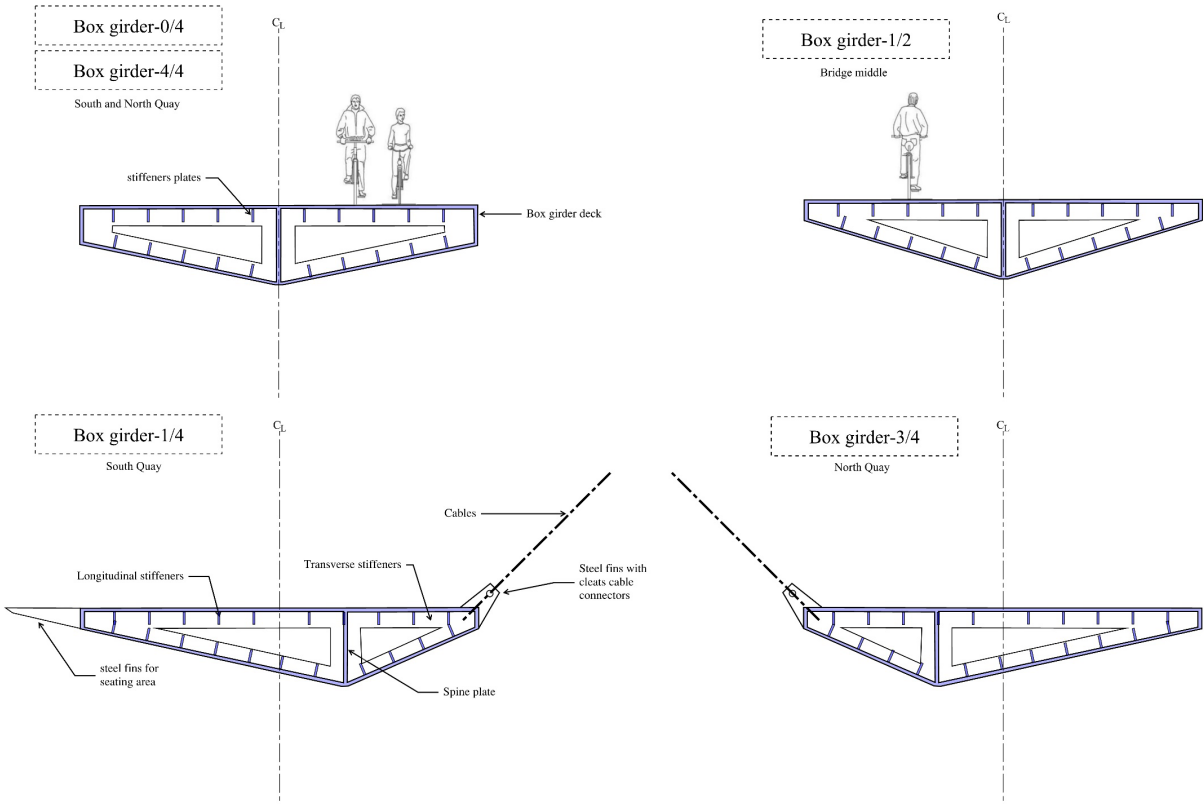
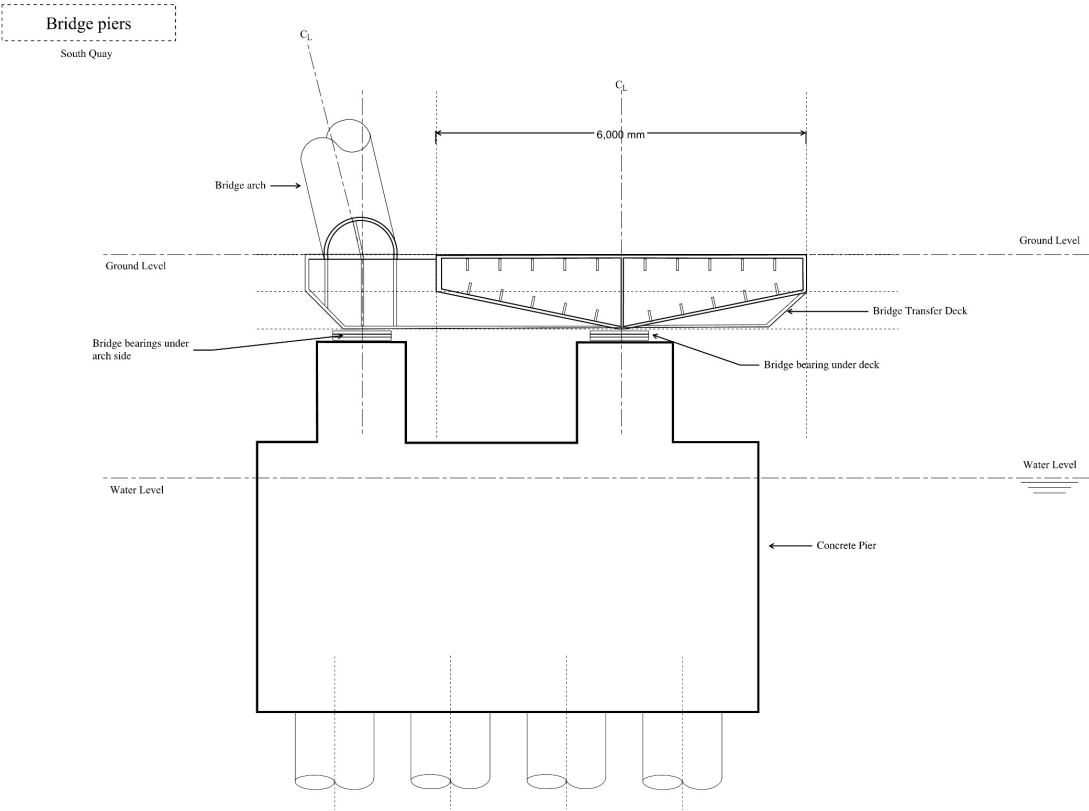
Modal shapes of the bridge



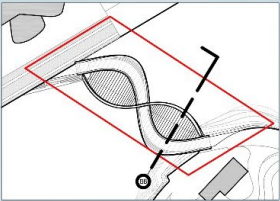
Structural Engineering



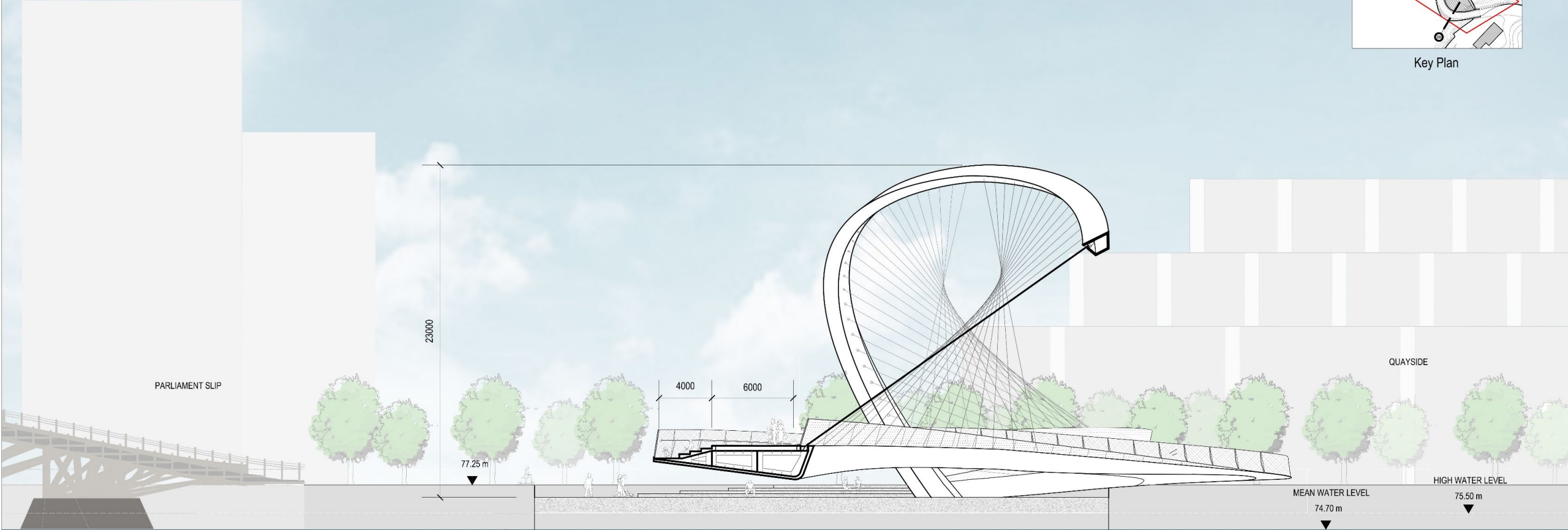
Structural Engineering



Transverse Section



Key Plan





Proposed bridge from west with view down Keating Channel, complimenting the family of bridges

5. Closing Remarks

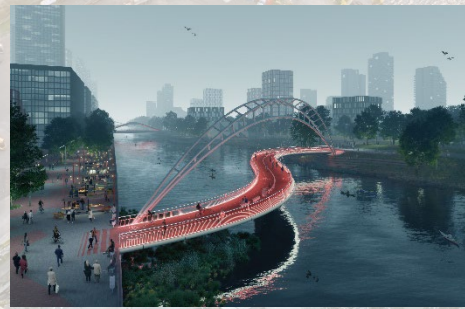
- Tell us what you think. Take our online Survey! waterfronttoronto.ca/kcpb-shortlist-materials
- The survey will close on October 5th.
- Questions can be sent to info@waterfronttoronto.ca.
- The winning team will be announced later this fall.
- Stay tuned to Waterfront Toronto's website and social channels for updates.



Maamawi-Bridge
Entuitive



Nda-Nwendaaganag
EXP Services



The Salmon Run
Henning Larson



The Harbour Eye
RJC Engineers



Equinox Bridge
Zeidler

Thank you.

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