Agenda
Seattle Design Commission Briefing
Thursday, July 17, 2014, 1:30 to 4:30 p.m.
Seattle City Hall, Bertha Knight Landes Room, 600 4th Ave., Seattle, WA

Purpose: Review vision, goals, criteria and evaluation of Portage Bay Bridge concepts.

Time	Topic	Who
1:30 p.m.	**Review objectives and agenda** • Requested SDC action: Endorsement of vision, goals, criteria and evaluation	Andrew Glass Hastings Lyle Bicknell
1:40 p.m.	**West side design process overview** • Building from 2012 Seattle Community Design Process • Advancing conceptual design	Kerry Pihlstrom
1:45 p.m.	**Portage Bay Bridge design discussion** • Vision, goals and evaluation criteria • Design concepts and ties to vision	Kerry Pihlstrom Donald MacDonald
2:30 p.m.	**Public comment**	All
3:00 p.m.	**SDC clarifying questions**	Commissioners Project staff
3:45 p.m.	**SDC deliberation, action and next steps**	Commissioners
4:30 p.m.	**Adjourn**	All

Upcoming meetings:

- Aug. 5: SR 520 SDC Subcommittee meeting (focus on Montlake lid)
- Aug. 12: Seattle City Council Transportation Committee briefing
- Sept. 4: SDC briefing (final presentation on Montlake lid)
- Sept. 11 (tentative): Public open house
- Sept. 23: Seattle City Council Transportation Committee briefing (staff present recommendations)

Materials

- Portage Bay Bridge Design Exploration and Evaluation Criteria Matrix
- Portage Bay Bridge Vision and Goals
- Portage Bay Bridge Existing Conditions

Attendees

SR 520 Program staff

- □ Kerry Pihlstrom, WSDOT Engineering Manager
- □ Rob Berman, Westside Design Process Facilitator *(unable to attend)*
- □ Paul Bott, WSDOT Engineer
- □ Dave Edwards, WSDOT Engineer
- □ Dawn Yankauskas, WSDOT Engineer
- □ Suryata Halim, Engineer
- □ Phil Merrell, Engineer
- □ Sarah Brandt, Communications
- □ Candace Goodrich, Communications
- □ Olivia Rother, Communications

City of Seattle staff

- □ Bernard Van De Kamp, SDOT *(unable to attend)*
- □ Lyle Bicknell, Seattle DPD
- □ David Graves, Seattle Parks & Recreation

SR 520 Project design staff

- □ Elizabeth Umbanhowar, Parametrix
- □ Donald MacDonald, Bridge Architect

Seattle Design Commission

- □ Ellen Sollod, Fine Artist
- □ Osama Quotah, Architect
- □ Shannon Loew, At-Large Representative
- □ Lee Copeland, Architect
- □ Thaddeus Egging, Engineer
- □ Bernie Alonzo, Landscape Architect
- □ Martin Regge, Urban Designer
- □ Brodie Bain, Urban Planner
- □ Megan Groth, Get Engaged Representative
- □ Michael Jenkins, Director
- □ Valerie Kinast, Coordinator
- □ Nick Welch, Staff
- □ Joan Nieman, Staff

Portage Bay Bridge

Design Exploration and Evaluation Criteria Matrix

DRAFT

July 17, 2014

Criteria	Feedback*		Design Explorations**		Evaluation**	
	Seattle Design Commission	Expert Review Panel	Cable Stay	Box Girder	Cable Stay	Box Girder
Expression						
Architectural quality • appears light and graceful • acts as a connecting thread among the City's natural, urban and historic elements • fits within scale and character of Portage Bay • serves as one of a series of gateways • creates integrated architectural elements--aesthetic interest and structural logic	• is bridge **"foreground" or "background"?** • consider Portage Bay Bridge as part of a sequence of gateways, a "moment" or "passage" • fit in **Portage Bay landscape/** basin • "sleek and slender" bridge • **link lids using bridge** • refine quality and experience of understructure • consider how lighting might work with bridge	• can meet project aesthetic goals and objectives with either bridge type	• **explore tower numbers and heights** (*2012 SCDP concept*: 2 towers, *initial 2014 exploration*: single higher tower centered on bridge, *advanced 2014 concept:* 3 towers) • change angle of exterior cables • create "fan" of thinner cables	• remove arches from FEIS baseline • reduce thickness of columns • refine form of columns • explore above deck elements • facet deck edge and recess pier caps	• emphasizes **bridge structure as "moment"**, bay as background • bridge towers rise in height to **follow horizon line** • slimmer towers and angled, thinner cables improve "lightness" of structure • bridge **deck is thinner** than box girder • understructure reveals structure	• emphasizes **bridge structure as "passage"**, bay as foreground • bridge deck **follows horizon line** • major and minor elements at piers establish rhythm and awareness of experience of bridge structure • bridge **deck appears thinner** than FEIS baseline box girder • understructure hides structure
			• separate eastbound and westbound structures with gap • raise bridge profile on east end of bridge to allow for longer spans • refine deck edge treatment and reduce depth of structure • coordinate future design refinements for location and character of signage and lighting elements with bridge structures • explore potential opportunities or effects of bridge lighting		• **more consistent bridge type and appearance** for greater length of bridge compared to FEIS baseline or SCDP concept • **gap between structures increases light** below bridge and sense of "lightness" • sign structures may impact views to and on bridge • lighting changes character and visibility of bridge at night	
Community context/ public input • minimizes bridge width and thickness • preserves or improves views above and below bridge • improves safety and access at shoreline	• reduce visual clutter • **protect or improve views** above and below bridge • **minimize "flaring" of structure** at bridge ends	• reduce pier numbers and increase pier spacing (longer spans)	• reduce tower height • reorient pylons in water • address understructure	• avoid "highway" look for box girder • simplify and refine understructure	• higher structure above deck than box girder but 3 towers shorter than 2012 SCDP concept	• some minor and major elements above deck (lighting, structural rhythm)
			• **reduce "flaring" at west portal** • separate eastbound and westbound structures with gap • reduce in-water structures number and size • increase span widths		• **bridge width reduced** at west end of bridge • gap increases light below bridge deck and **visually reduces mass of structure** • **better views created under bridge** from shoreline to water and surrounding bay • shared-use path adds more width to bridge within ROW • both bridges require operational signage and lighting above the bridge deck	
Utility						
Constructability and construction duration • creates buildable design • reduces construction time • minimizes construction time and impacts • maintains access during construction	• shift west end of bridge north	• shift west end of bridge north • separate eastbound and westbound structures on box girder • **raise bridge profile** at east end of bridge to 2.6% constant grade (PA = 4.5%, 0.9%)	• cable stay FEIS baseline design has gap; updated design to consistent 19-foot gap between eastbound and westbound structures • harp (angled) cables to reduce tower heights	• separate box girder eastbound and westbound structures with consistent 19-foot gap	• requires temporary relocation of Dock 3 at Queen City Yacht Club but modified operations maintained	• maintains Queen City Yacht Club Dock 3 operations during construction
					• access for boats under bridge will allowed at times during construction • **easier constructability for both bridge types** • north shift reduces construction duration 1.5 to 2 years • bridge profile with constant grade allows construction of **longer spans** and better drainage	
Connectivity • completes regional connectivity for all modes of users from SR 202 to I-5 • accommodates differing user speeds, skills and viewpoints • is safe, intuitive, comfortable, memorable	• **provide a shared-use path** on Portage Bay Bridge regardless of bridge type	• improve bridge grade	• **locate shared-use path on south side** of bridge • provide constant grade for all users • create usable shared-use connections at both ends of bridge • avoid additional structure at connections where feasible • **coordinate future design refinements** of path connections and portals as part of bridge design		• shared-use path meets connectivity criteria with either bridge type • **constant grade safer and more accessible** for non-motorized users • non-motorized connections at west and east bridge ends are ADA accessible and provide **separated or at-grade options** to and from City of Seattle network • increased usability for watercraft under bridge at east end • transit and HOV lanes	
Sustainability						
Site conditions/ environmental • addresses poor soils • minimizes shading • enhances shorelines	• reduce environmental impacts	• separate eastbound and westbound structures with gap in box girder from baseline • reduce number of in-water structures	• gap between eastbound and westbound structures required with cable stay • tower and pier spacing increased • move west bridge towers off Roanoke	• change single box girder structure to two box girder structures separated by gap • increase pier spacing from FEIS baseline	• total in-water piers reduced **from 9 to 6** (total structures from 11 to 9) • relocated towers avoid historic slide area	• total in-water piers reduced **from 10 to 7** (total structures from 13 to 10)
			• reduce number and size of in-water structures • raise bridge profile on east end of bridge		• reduced in-water structures **lessen environmental impacts** on aquatic habitat • gap between structures allows light to reach water • raised profile on east end of bridge allows more light on water and at shoreline • more opportunity for **connecting green spaces and access at shoreline**	
Practical Solutions • meets project budget • achieves sustainability goals ▫ reduces material volumes, energy use ▫ minimizes maintenance and operations ▫ increases bridge life span and usability	• consider life-cycle costs	• meet *Practical Design* requirements	• reduce construction time (see *Constructability and construction duration*) • use lower maintenance, more durable materials • reduce materials (concrete)		• higher cost per square foot **$530-650 SF** • 60% higher carbon footprint than box girder • higher long-term maintenance costs • uses 15% more concrete, 90% more steel than box girder (rebar, structural steel: edge beam, floor beams, stays and casing in foundation)	• lower cost per square foot **$320-390 SF** • 60% lower carbon footprint than cable stay • lower long-term maintenance costs • uses 15% less concrete, 90% less steel than cable stay (rebar and steel casing in shafts)
					• **minimum 75 year design life** for both bridge types • both bridge types require regular biannual inspections	

* Includes feedback from 2012 Seattle Community Design Process and 2014 Seattle Design Commission and Constructability Expert Review Panel

** *Design explorations and evaluation build on and refine FEIS baseline, 2012 SCDP concepts and respond to additional feedback from 2014 SDC and ERP processes*

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CONCEPTUAL

DRAFT - THIS SKETCH ONLY DEPICTS THE IDEA. ENGINEERING, OPERATIONS AND ENVIRONMENTAL ANALYSIS REQUIRED.

SR 520 PROGRAM VISION – DRAFT

Our vision for the SR 520 corridor is to become a sequence of gateways for the City of Seattle by reconnecting to the Seattle vision of Nature meets City.

We intend to implement our Program in a manner that yields practical solutions and fosters sustainability practices that support regional and local connectivity, ecology and the use of low-carbon materials. Further, the design of the corridor will balance aesthetics, functionality, proportion and sense of speed along the SR 520 facility to provide a memorable experience for all users.

SUSTAINABILITY PRACTICES AND GOALS

Design of the SR 520 project in the City of Seattle will meet and augment program sustainability goals by:

- Protecting or enhancing green and open spaces and aquatic habitats
- Lessening construction impacts including duration, traffic disruption, and hauling
- Reducing material volumes and energy use compared to the baseline design
- Addressing life-cycle costs such as minimizing maintenance and operations and utilizing durable materials
- Increasing life span and usability of structures
- Employing practical design

Reduction of materials is achieved through:

- Innovative technologies such as seismic isolation bearings
- Simplifying and reducing substructure elements on bridges including increasing pier spacing, reducing depth of bridge deck, and reducing number of piers
- Maximizing efficiency and usability of open spaces

These sustainability goals can lead to a reduction in concrete that, in turn, has the potential to reduce carbon dioxide (CO2) emissions.

PORTAGE BAY BRIDGE GOALS

The Portage Bay Bridge is both a distinctive and context-sensitive element within the family of SR 520 bridges. It serves as a connecting thread, tying together the tree-covered Roanoke ridge to the west and the heart of residential, research and multimodal transportation at Montlake to the east. With the addition of a shared-use path, the Portage Bay Bridge helps to complete regional connectivity for all modes of users from SR 202 to I-5.

The bridge will:

- Appear light and graceful and fit within the scale and character of Portage Bay
- Enhance the blue-green network by acting as a connecting thread among the City's natural, urban and historic elements
- Act as one of a series of gateways within the SR 520 corridor experience
- Have integral architectural elements with aesthetic interest and structural logic
- Follow the horizon line in a logical and compelling fashion
- Accommodate differing user speeds, skills and viewpoints
- Improve views and access from the water and surrounding shorelines
- Allow natural light to reach the water and land by separating the eastbound and westbound lanes
- Enhance recreational activities on the water by raising the profile and allowing unrestricted water craft passage

Portage Bay Bridge - Existing Conditions

Aerial View

*Locations (orange arrows) correspond to viewpoints in 7/17/14 SR 520 Program, Portage Bay Bridge Design presentation.

City of Seattle

WELCOME!

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Why are we here?

- In 2014, the State Legislature directed WSDOT and the City of Seattle to work together to advance design recommendations on key elements of the SR 520 corridor in Seattle.
- Based off the program vision and 2012 feedback heard through the Seattle Community Design Process (SCDP), a team of professional designers refined two Portage Bay Bridge "types," a cable stay and box girder. The design team developed goals to inform design concepts for the two bridge types and a suite of design criteria to evaluate the concepts.
- Today, WSDOT and the City of Seattle are hosting a public forum to provide a review of the Portage Bay Bridge concepts to be discussed at today's Seattle Design Commission meeting. Ask questions of WSDOT and City staff and review our design boards and materials to:
  - Affirm your feedback
  - Review what we heard in the 2012 SCDP to inform our work moving forward
  - Preview the latest Portage Bay Bridge concepts
- You may also wish to provide a comment to the Seattle Design Commission about whether today's designs reflect the major themes of public feedback heard to date.

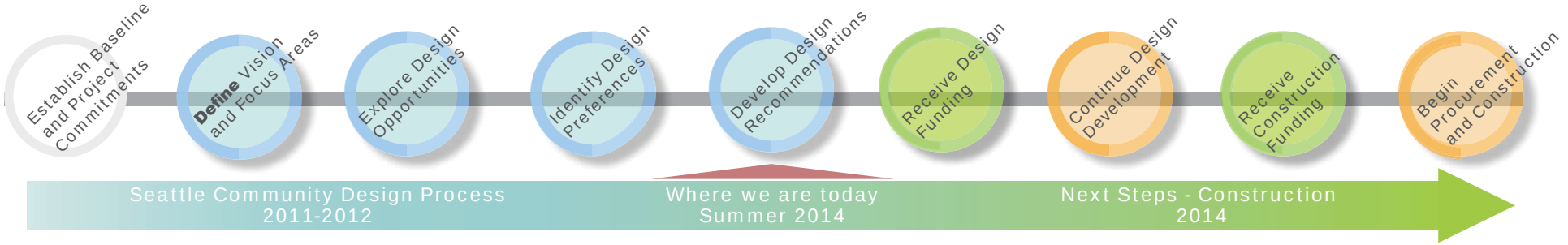
What's next?

- On Aug. 12, WSDOT and the City will brief the Seattle City Council Transportation Committee on progress to date.
- On Sept. 4, the design team will present to the Seattle Design Commission about refinements to the Montlake lid.
- In September, WSDOT and the City will co-host a public meeting to share process recommendations and hear public feedback.
- On Sept. 23, WSDOT and city staff will present design recommendations to Seattle City Council Transportation Committee.

For more information

- **Visit our website:** www.wsdot.wa.gov/projects/SR520bridge
- **Email:** SR520bridge@wsdot.wa.gov

Design process to date



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2011-2012 SEATTLE COMMUNITY DESIGN PROCESS: PORTAGE BAY BRIDGE AREA DESIGN PREFERENCES

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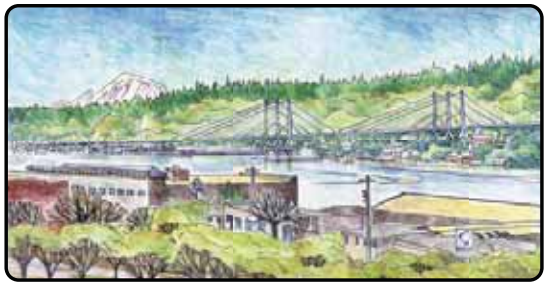

Cable stay concept (July 2012)

Box girder concept (July 2012)

Design preferences based on community input, which identified two potential bridge type options for Portage Bay Bridge - cable stay and box girder (July 2012) (Box girder option shown in plan view above)

2011-2012 SEATTLE COMMUNITY DESIGN PROCESS: PORTAGE BAY BRIDGE AREA PUBLIC FEEDBACK

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6 Bridge alignment

Support to shift bridge alignment to the north on the west end of the bridge for shorter construction duration.

(Approximately 141 of 345 individual comments support this preference.)

- Of the remaining 345 comments, 87 indicated they were neutral or had no preference towards an alignment shift and 34 were specifically opposed to this preference.

7 Bridge type

Support to proceed with further technical analysis and refinement of box girder and cable stay bridge concepts. Explore ways to integrate the structure with the surrounding neighborhoods.

(Approximately 175 of 366 individual comments support this preference.)

- Public requested more information on the bridge concepts, including possible variations, overall footprint, visual aesthetics above and below the bridge deck, and cost for each concept.
- 7a No clear consensus on a preferred bridge type.
  - » Box girder concept.
    (Approximately 308 comments in support and 98 comments against.)
  - » Cable-stayed concept
    (Approximately 340 comments in support and 106 comments against.)

8 Bicycle and pedestrian connections

Support to include a 14-foot wide regional shared-use path on the Portage Bay Bridge.

(Approximately 1,298 of 1,339 individual comments support this preference.)

Seattle Community Design Process - What We Heard

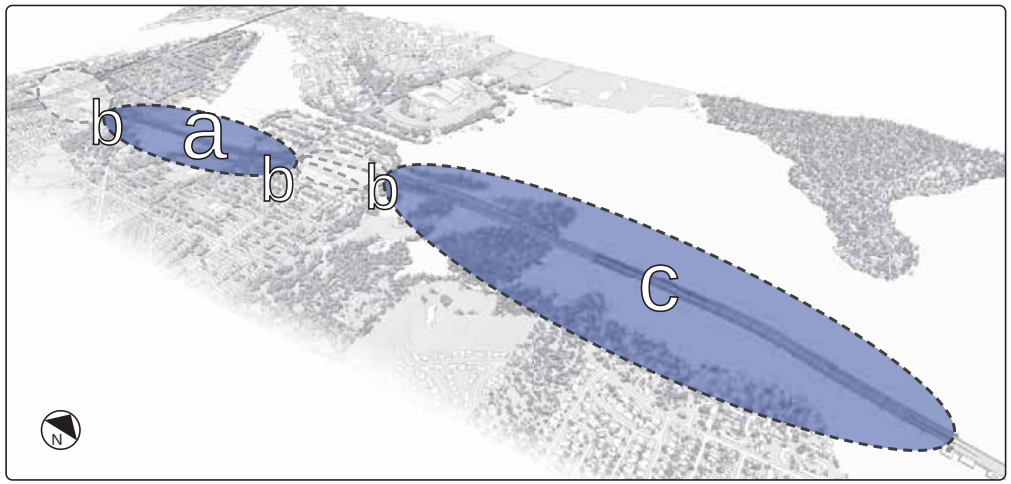
Feedback from May 2012 Public Session on Portage Bay Bridge and West Approach Bridge

Overview

The May 2012 public session was the fifth public session hosted by WSDOT during the Seattle Community Design Process. Approximately 140 people attended the event, and approximately 265 individual written comments were received in addition to many interactive conversations between members of the public and SR 520 project staff.

Public comments were diverse. Feedback was split in some areas, while clearer themes were apparent in other areas. Overall, comments were constructive and will help inform designs for the area.

Below is a summary of the general themes of public feedback. This summary is meant to capture the larger themes of the public's feedback and is not inclusive of all the individual comments received.



a Portage Bay Bridge

General

- Concern about the width of the bridge, and potential visual, noise, and pollution impacts to the adjacent neighborhoods
- Neighborhood request for a four-lane bridge with a bicycle and pedestrian path and no planted median

Bridge location

- Support for alignment shift north at the west end of the bridge

Box girder concept

- There was support for a box girder bridge. People believe this option is desirable for various reasons, including:
  - It places most of the structure below the bridge deck, allowing for better views above the deck
  - The design seems "clean", "simple", and "cost-saving"
- Reasons that people do not prefer the box girder option include:
  - It appears "massive, "boring", and "cheap"

Extradosed concept

- Overall, project staff heard the least amount of feedback regarding the extradosed option
- People believe this option is desirable because:
  - It is a compromise between options that provided an iconic structure but without as much visual impact as the cable stay
- Reasons that people do not prefer the extradosed include:
  - The towers would obstruct views from the nearby neighborhoods

Cable stay concept

- Request to explore variations of the concept including the number of towers, and width and location of cable towers
- There was the most positive feedback for the cable stay option. People believe this option is desirable for various reasons, including:
  - It has a lighter structure with fewer in-water columns
  - It is distinctive, yet fits into the context of the surrounding landscape
  - It seems to have a smaller carbon footprint and requires less concrete
- Reasons that people do not prefer the cable stay option include:
  - The towers would obstruct views from the nearby neighborhoods
  - It creates "too much bridge" for the size and context of Portage Bay

b Underbridge Areas

- Support of activation of underbridge areas for safety with paths, trails or other program elements
- Request to maintain and enhance connections from Delmar Drive to Boyer Avenue
- Concern for views at underbridge areas and desire to make area attractive, light, good sightlines, and enhance appearance of underside of bridge

c West Approach Bridge

- Preserve views to mountains and other natural elements from West Approach Bridge
- Desire for simple and clean design elements
- Architectural elements such as sentinels should not be included

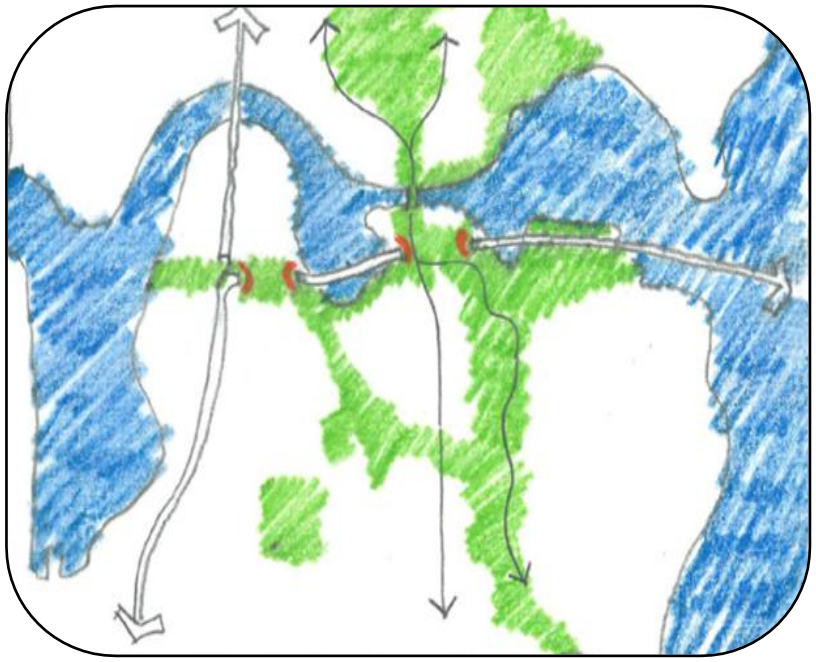
d Bicycle and Pedestrian Connectivity

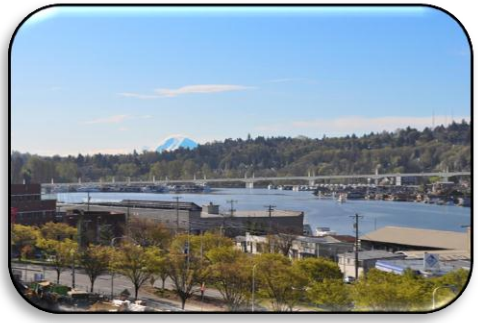
- Support for continuing the SR 520 regional trail across Portage Bay Bridge
- Focus on safe, direct, separate routes for bicyclists and pedestrians
- Desire for the completion of pedestrian connections, including a boardwalk and trail, per the Montlake Playfield master plan

SR 520 Program

Portage Bay Bridge Design

July 17, 2014





Julie Meredith
SR 520 Program Director

Lynn Peterson
Secretary of Transportation

SR 520 Seattle Design Commission Subcommittee
SR 520 Program Office
July 17, 2014

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Seattle Community Design Process - 2012

Portage Bay Bridge - What We Heard

General:

- Concern about the bridge width, and potential visual, noise, and pollution impacts
- Support for alignment shift north at the west end of the bridge
- Support for continuing the SR 520 regional trail across Portage Bay Bridge
- Support for safe and direct bicycle/pedestrian connections
- No clear consensus on preferred bridge type

Box girder concept:

- Desirable because it is "clean", "simple", "cost-saving", and provides better views above the deck

Cable stay concept:

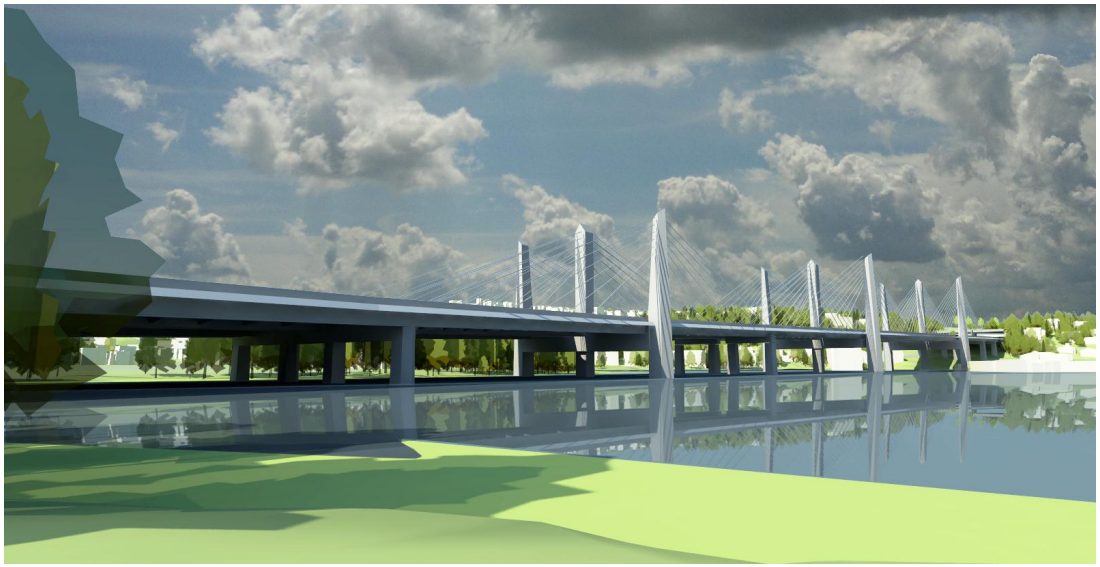
- Desirable because it has a lighter structure with fewer in-water columns and it is distinctive

Portage Bay Bridge Goals and Aesthetic Criteria

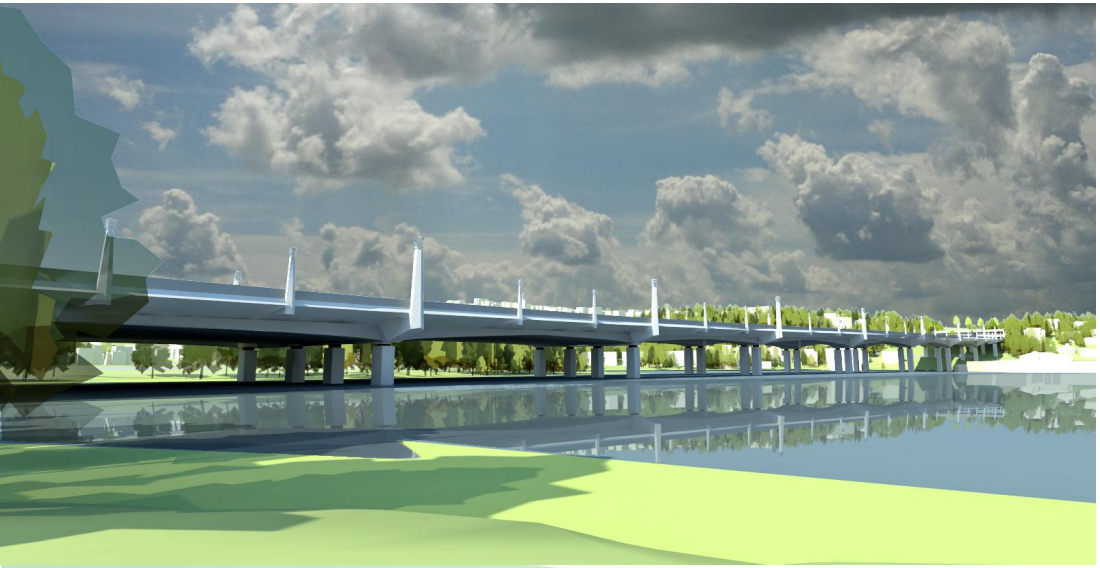
The bridge will:

- Appear light and graceful and fit within the scale and character of Portage Bay
- Enhance the blue-green network by acting as a connecting thread among the City's natural, urban and historic elements
- Act as one of a series of gateways within the SR 520 corridor experience
- Have integral architectural elements with aesthetic interest and structural logic
- Follow the horizon line in a logical and compelling fashion
- Accommodate differing user speeds, skills and viewpoints
- Improve views and access from the water and surrounding shorelines
- Allow natural light to reach the water and land by separating the eastbound and westbound lanes

Portage Bay Bridge Vision



Cable stay



Box girder

The Portage Bay Bridge is both a distinctive and context-sensitive element within the family of SR 520 bridges. It serves as a connecting thread, tying together the tree-covered Roanoke ridge to the west and the heart of residential, research and multimodal transportation at Montlake to the east. With the addition of shared-use path, the Portage Bay Bridge helps to complete regional connectivity for all modes of users from SR 202 to I-5.

Existing Conditions

University Bridge (View Looking Southeast)

Elevation Approx. +90’

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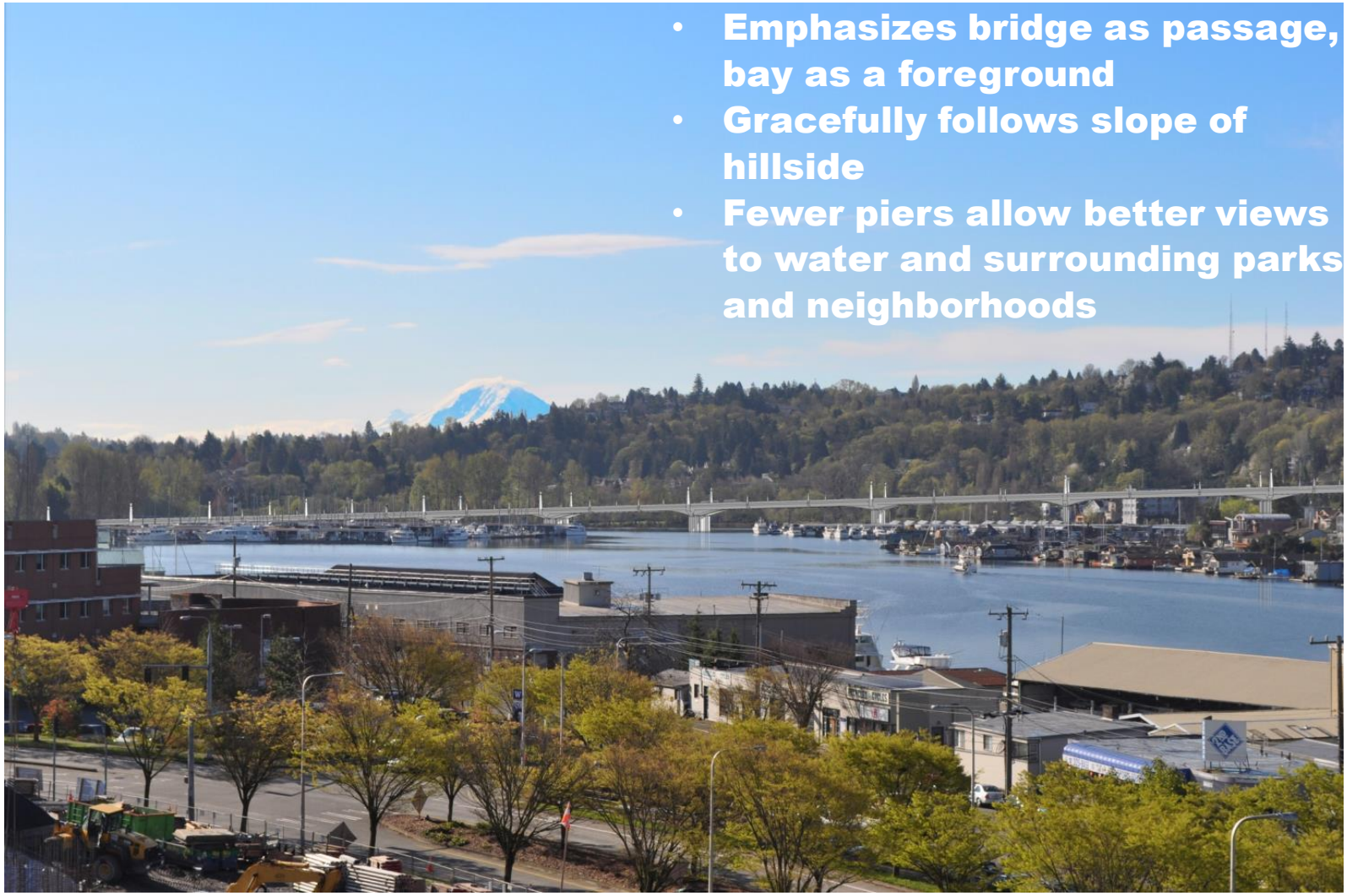
City of Seattle

Box Girder

University Bridge (View Looking Southeast)

Elevation Approx. +90’



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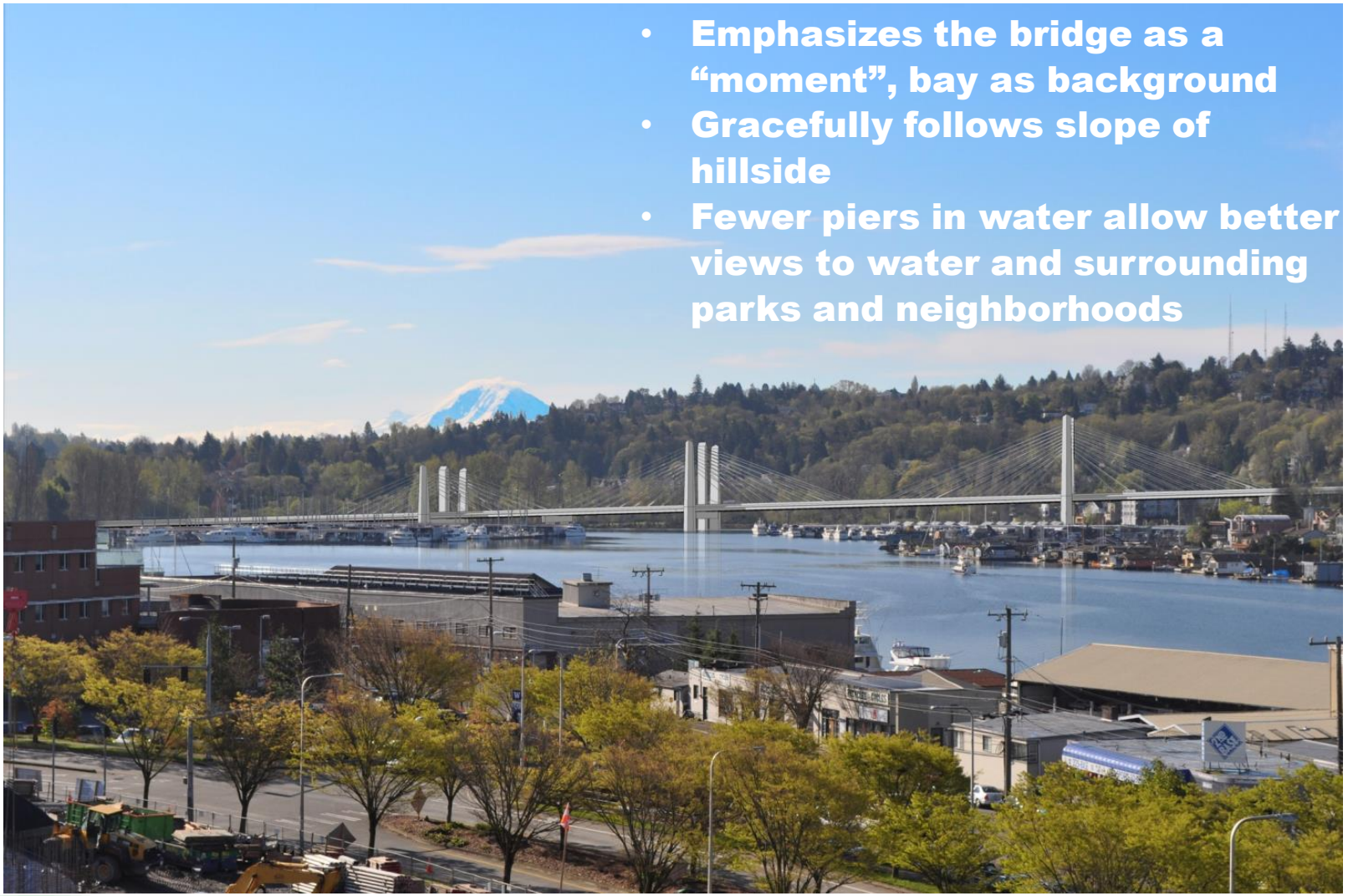
City of Seattle

Cable Stay

University Bridge (View Looking Southeast)

Elevation Approx. +90’



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Existing Conditions

West Montlake Park (View Looking Southwest)

Elevation Approx. +25’

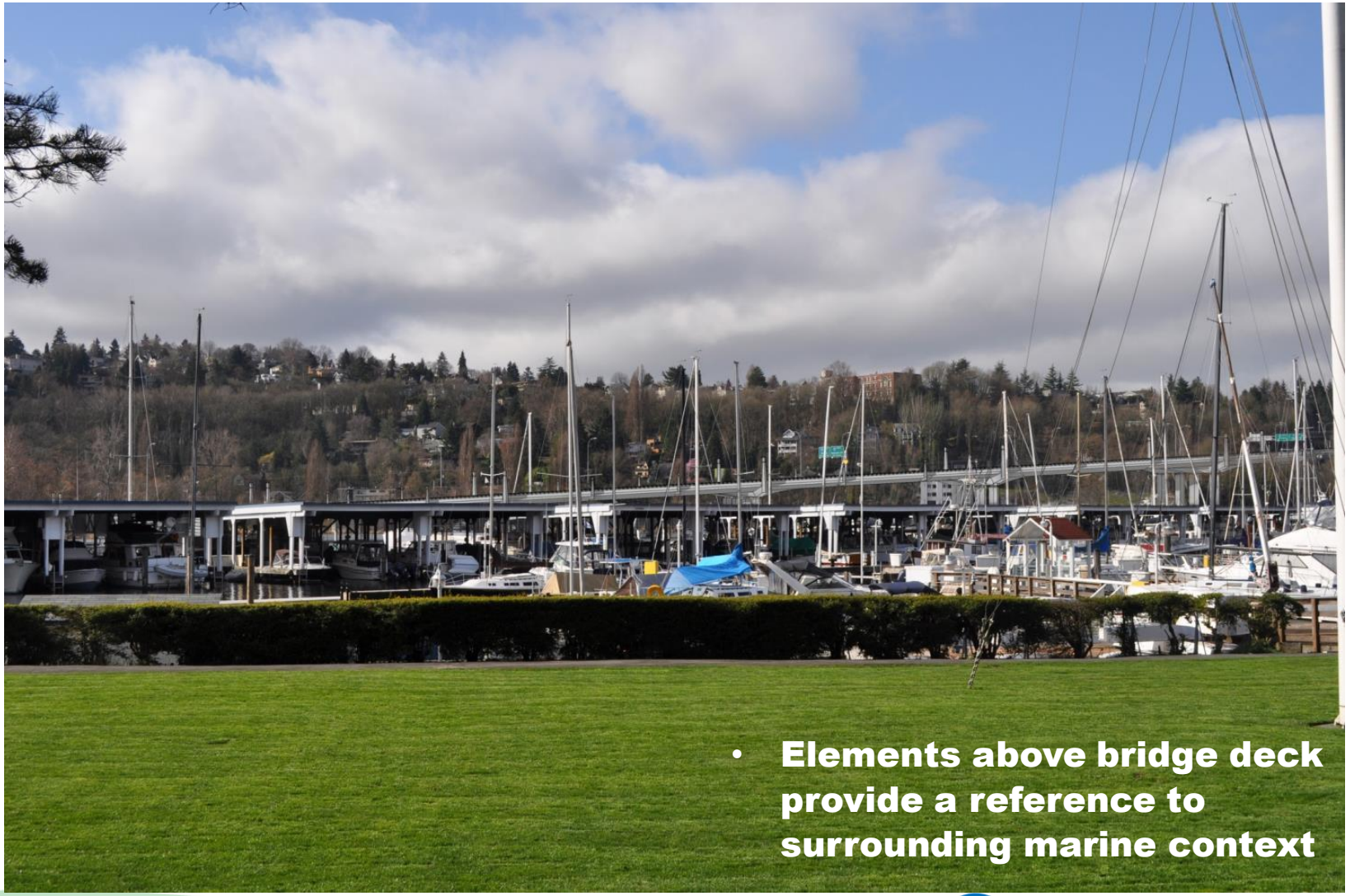
Washington State Department of Transportation

City of Seattle

Box Girder

West Montlake Park (View Looking Southwest)

Elevation Approx. +25’



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Cable Stay

West Montlake Park (View Looking Southwest)

Elevation Approx. +25’

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Existing Conditions

Montlake Playfield (View Looking Northwest)

Elevation Approx. +22’

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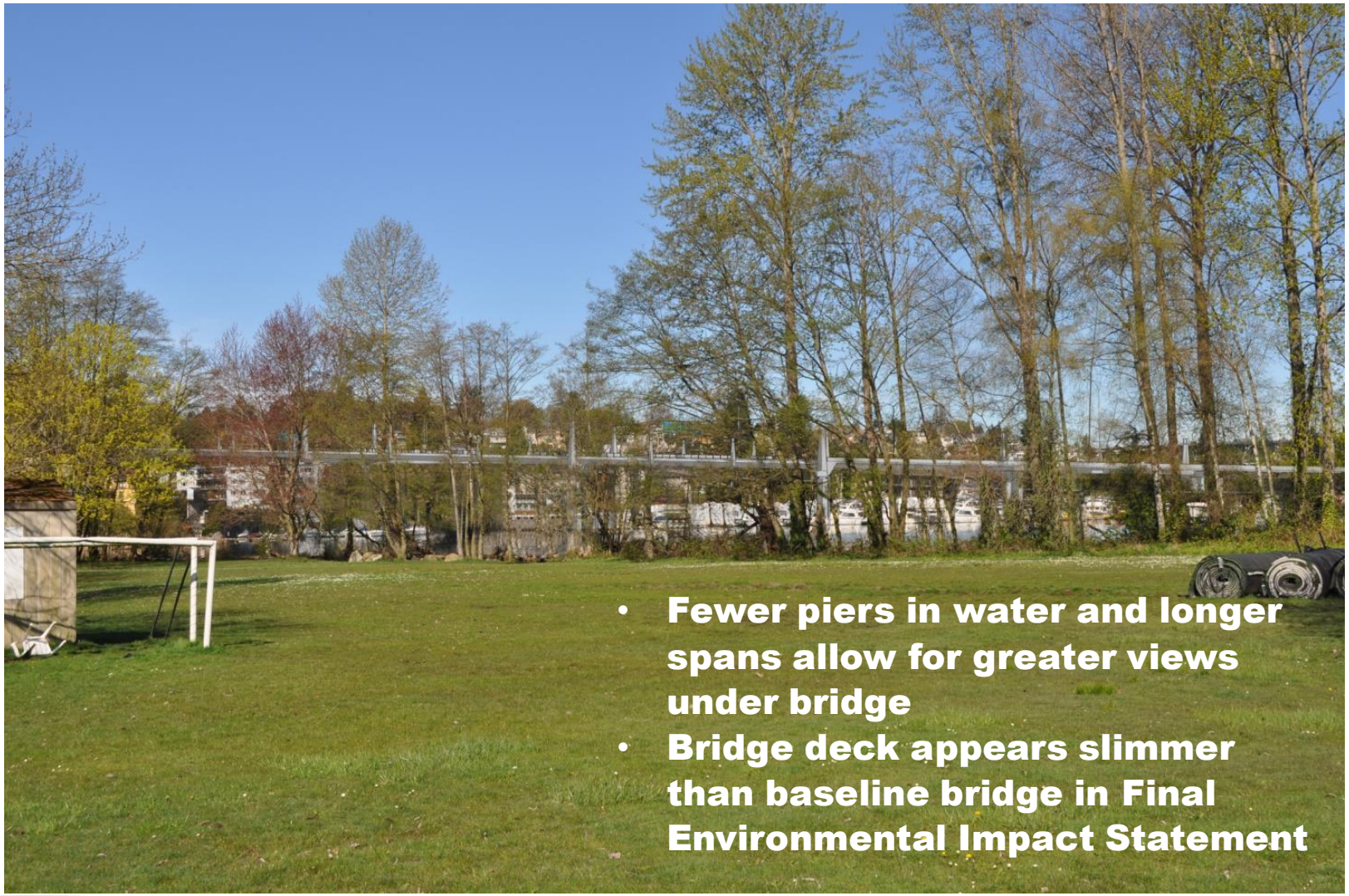
City of Seattle

Box Girder

Montlake Playfield (View Looking Northwest)

Elevation Approx. +22’



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Cable Stay

Montlake Playfield (View Looking Northwest)

Elevation Approx. +22’

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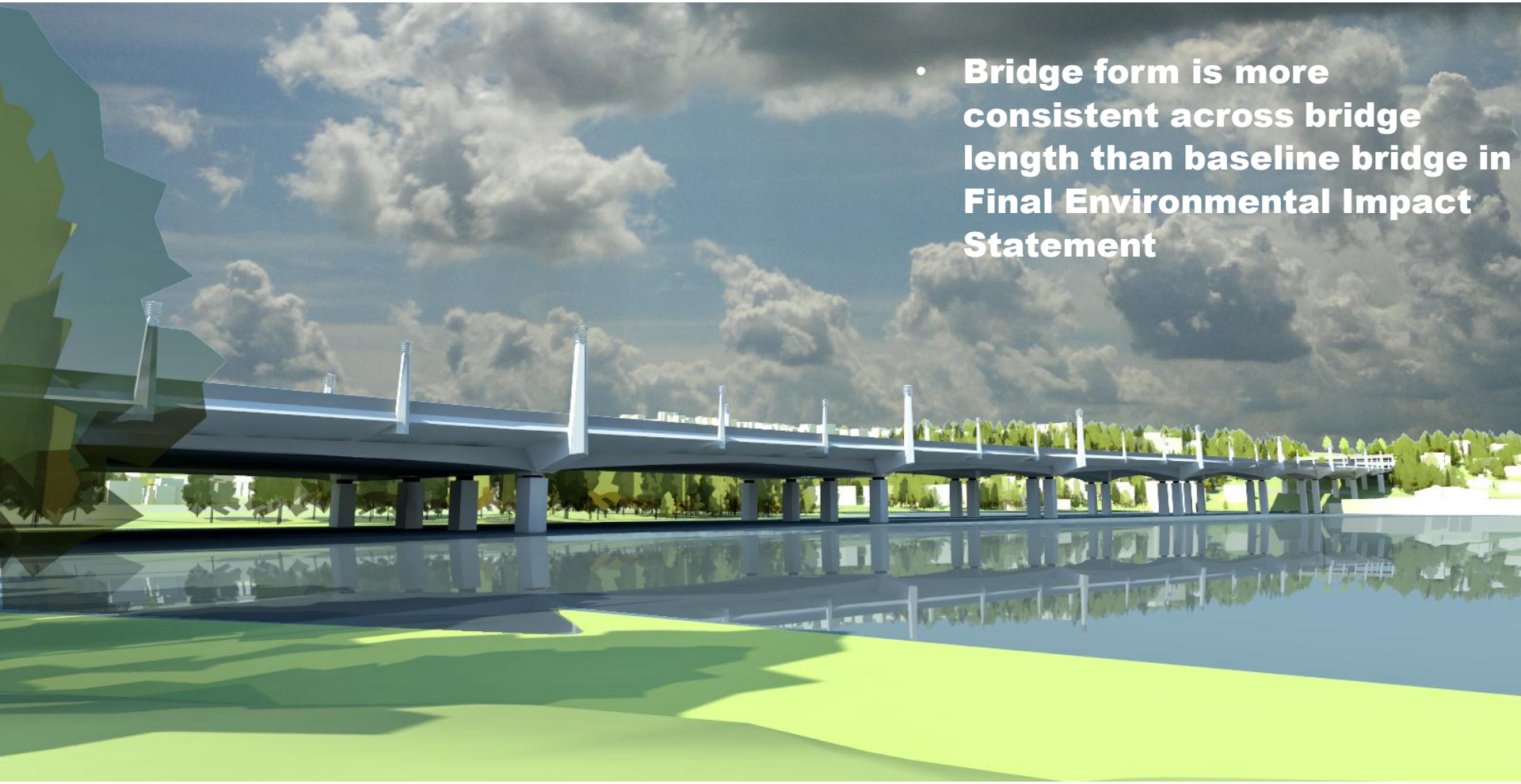
Box Girder

Shoreline at Seattle Yacht Club (View Looking Southwest)



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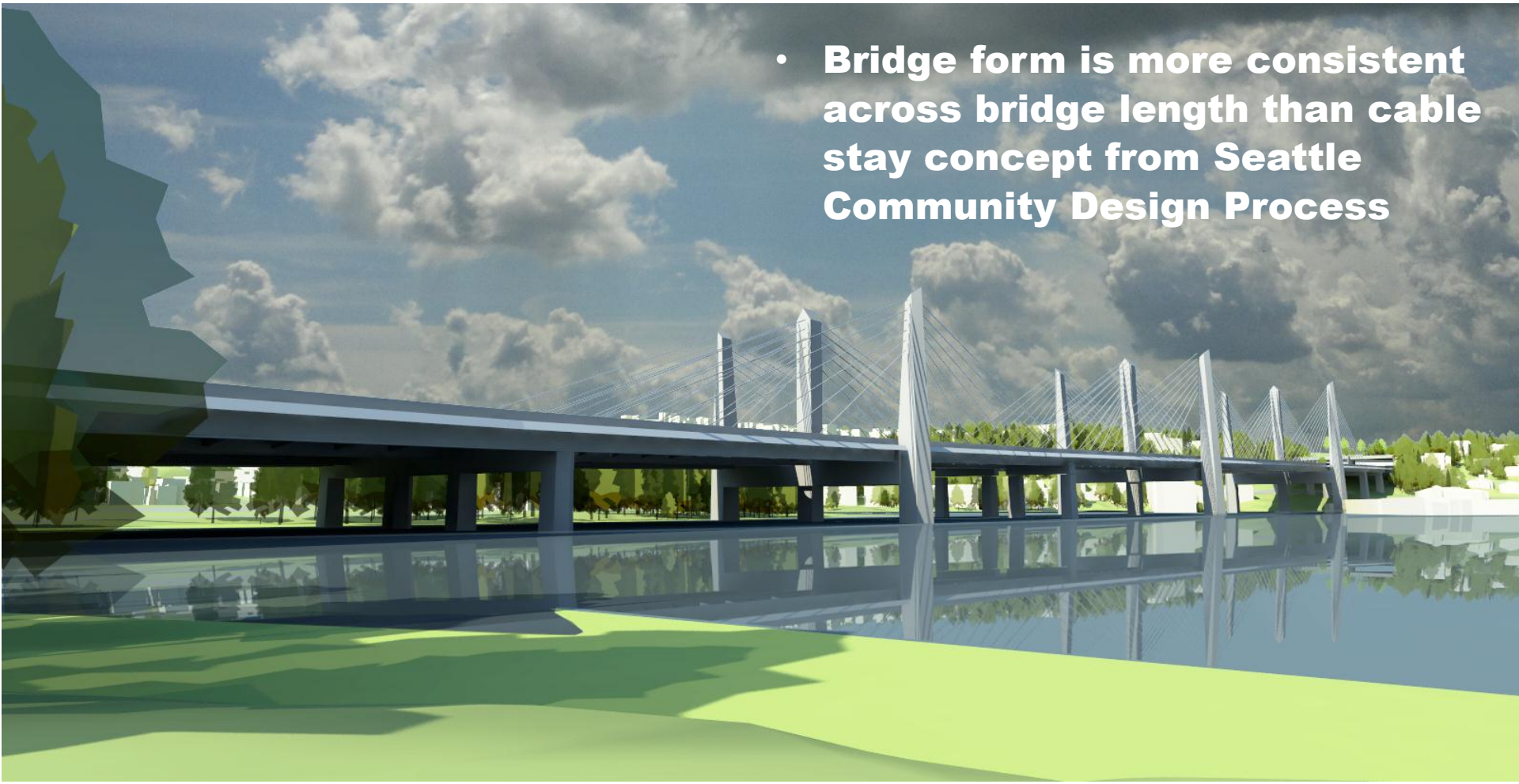
Cable Stay

Shoreline at Seattle Yacht Club (View Looking Southwest)



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Existing Conditions

10th and Delmar Lid (View Looking East)

Elevation Approx. 150’

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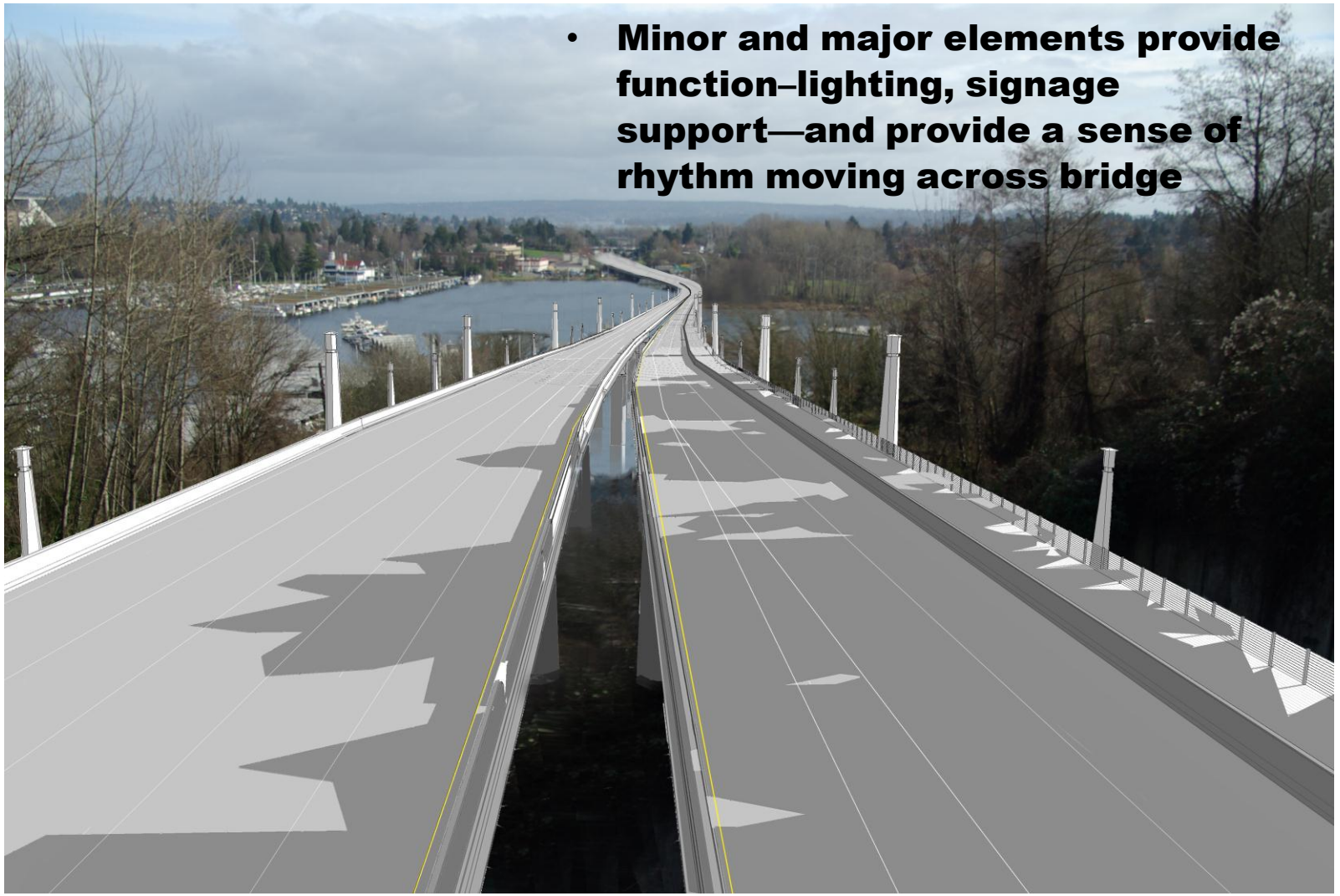
Box Girder

10th and Delmar Lid (View Looking East)

Elevation Approx. 150’



- Minor and major elements provide function–lighting, signage support—and provide a sense of rhythm moving across bridge

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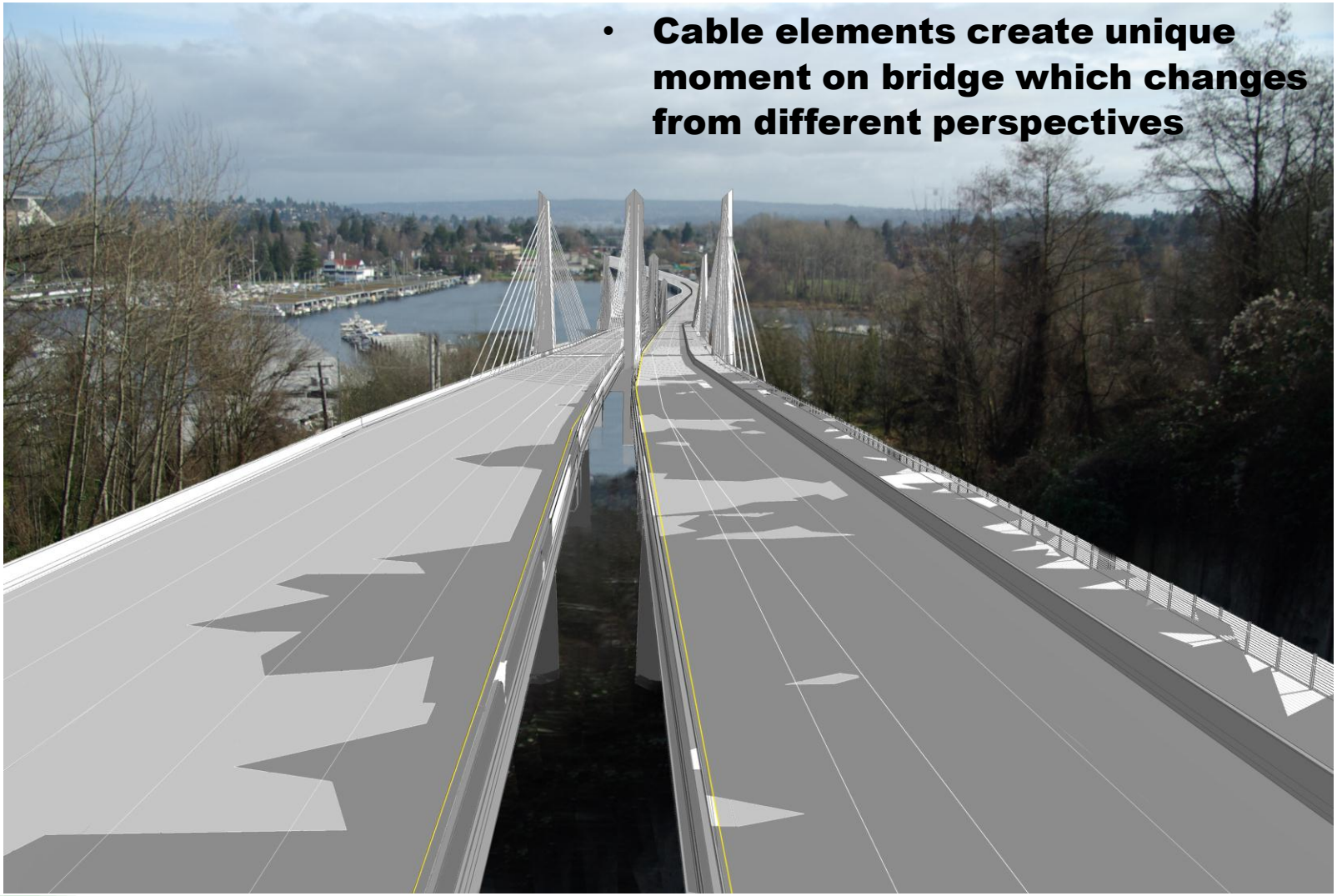
Cable Stay

10th and Delmar Lid (View Looking East)

Elevation Approx. 150’



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Box Girder

Boyer Ave. E. at Queen City Yacht Club (View Looking East)

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City of Seattle

Cable Stay

Boyer Ave. E. at Queen City Yacht Club (View Looking East)

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City of Seattle

Box Girder

Under Bridge (View Looking West)

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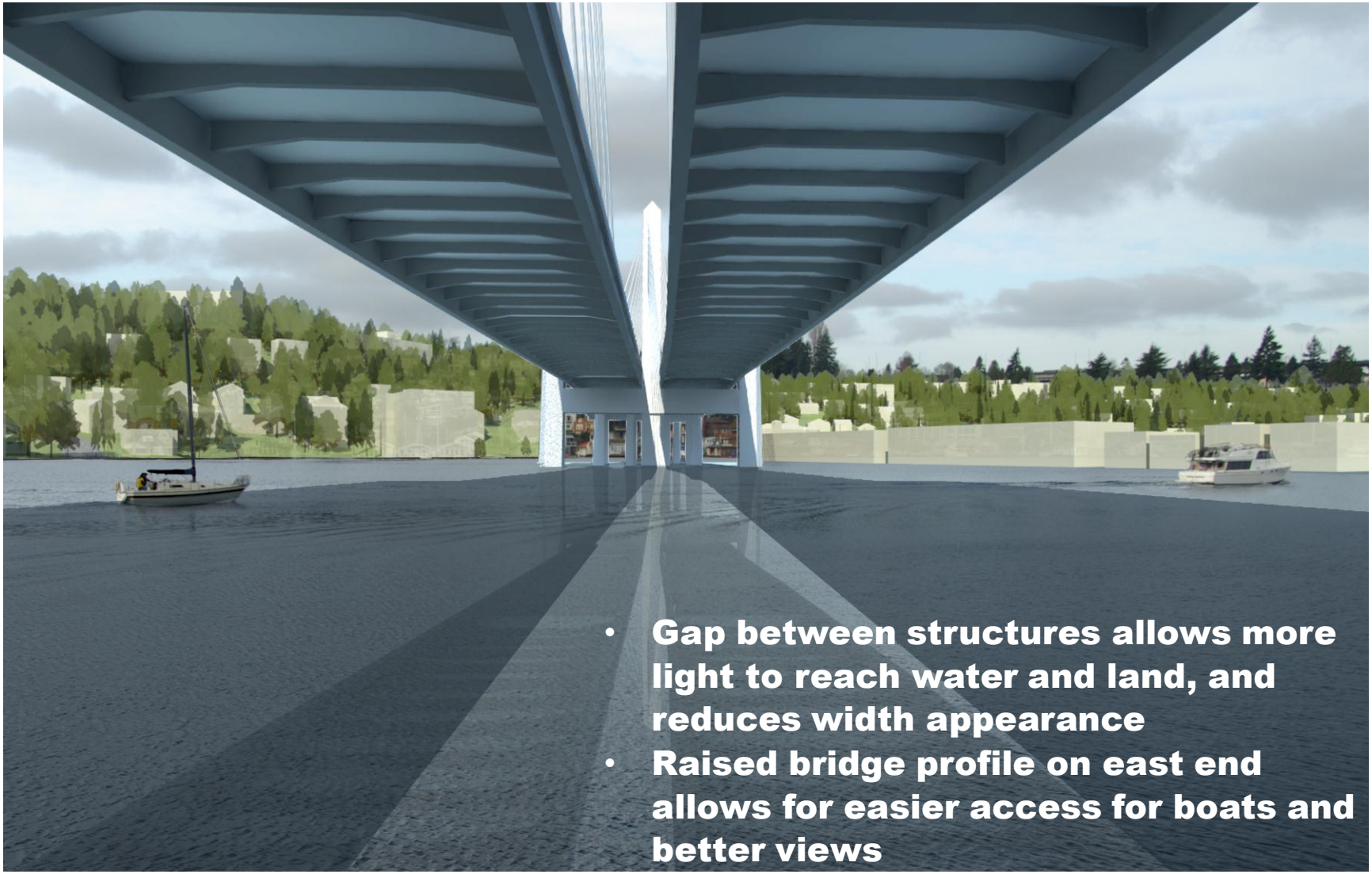
City of Seattle

Cable Stay

Under Bridge (View Looking West)



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Box Girder

Shared-Use Path (View Looking West)

- Shared-use path provides local and regional connectivity for all users
- Raised bridge profile on east end improves access for all users
- Path provides views
- Bridge elements help scale experience and add visual interest

Washington State Department of Transportation

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Cable Stay

Shared-Use Path (View Looking West)

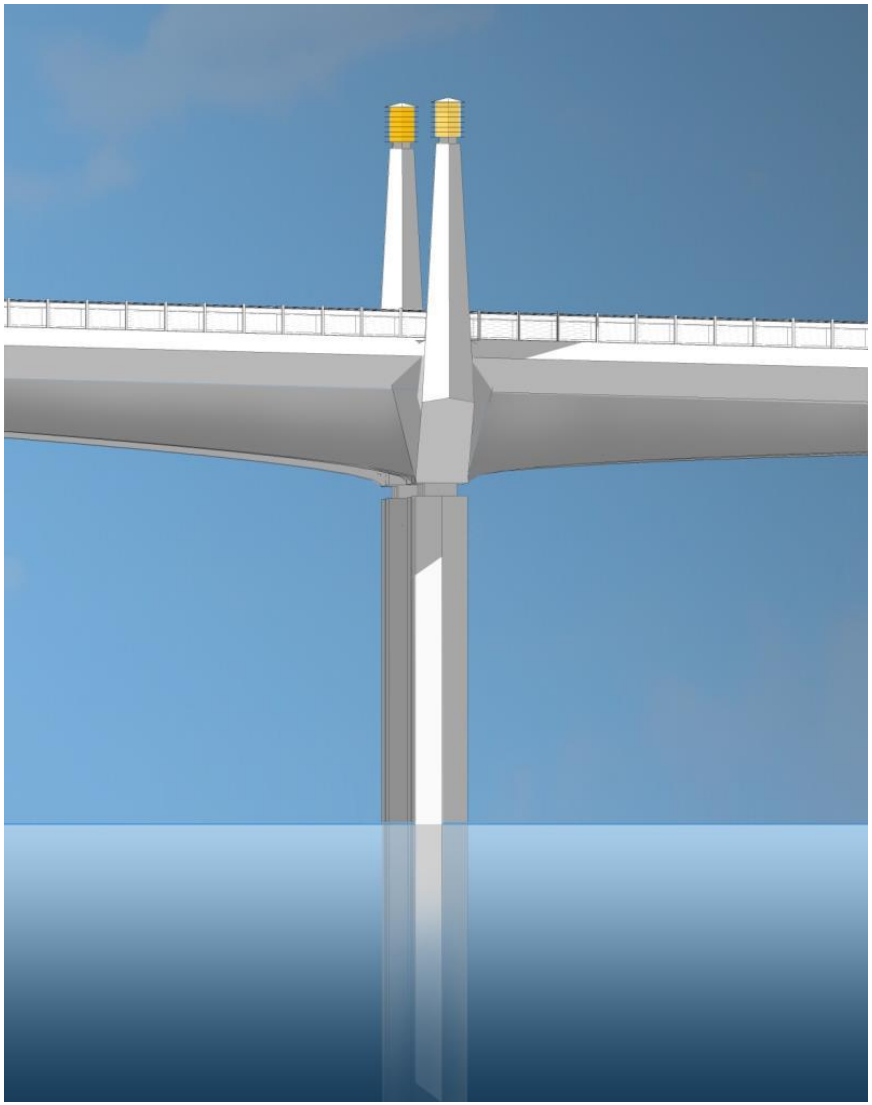
- Shared-use path provides local and regional connectivity for all users
- Raised bridge profile on east end improves access for all users
- Path provides views
- Bridge elements help scale experience and add visual interest

Washington State Department of Transportation

City of Seattle

Box Girder

Pier Study



- **Faceting of bridge piers, cap ends and major and minor elements add visual interest and create illusion of slimmer structure**
- **Minor and major elements are aligned with piers and underscore bridge structure and rhythm**

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Tower Study

- Faceting of bridge towers, cap ends and major and minor elements add visual interest and create illusion of slimmer structure
- Towers are slimmer

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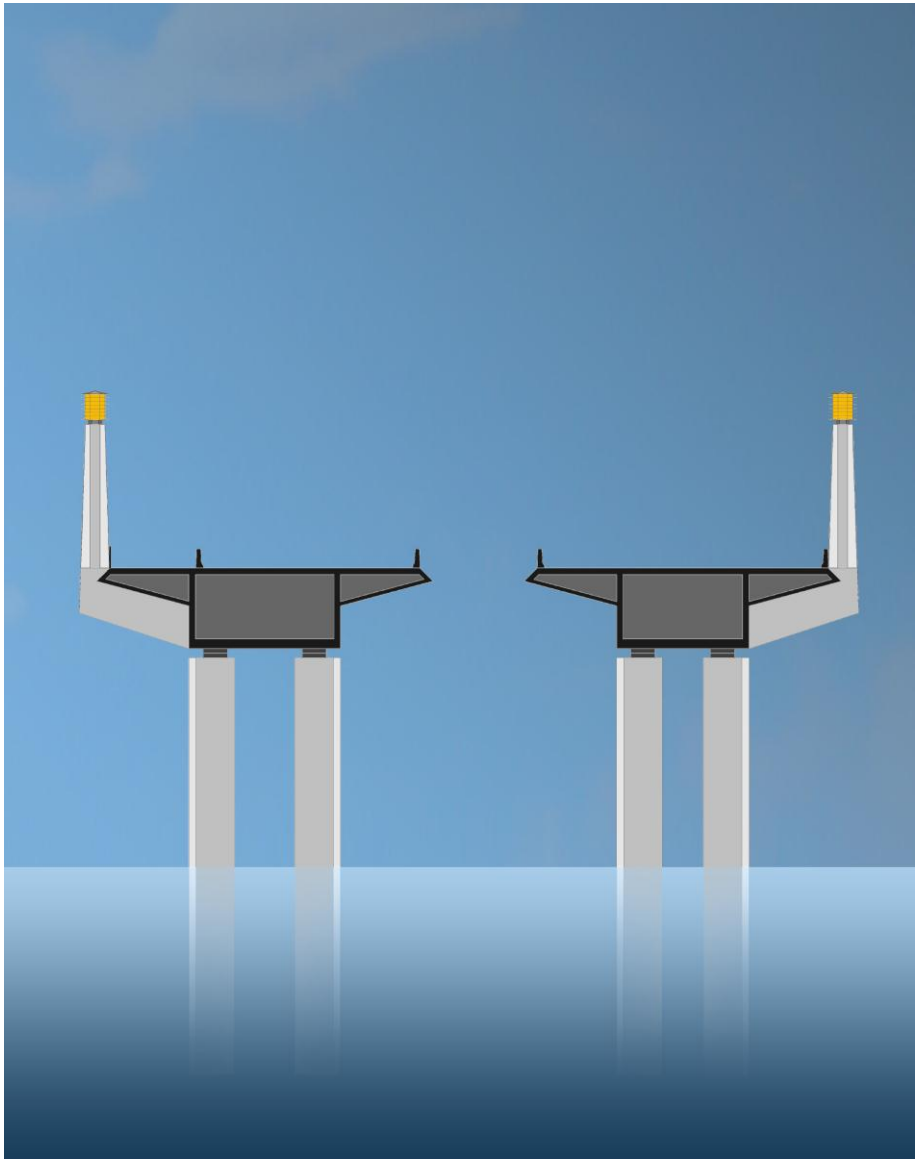
City of Seattle

Box Girder

Cross Section View



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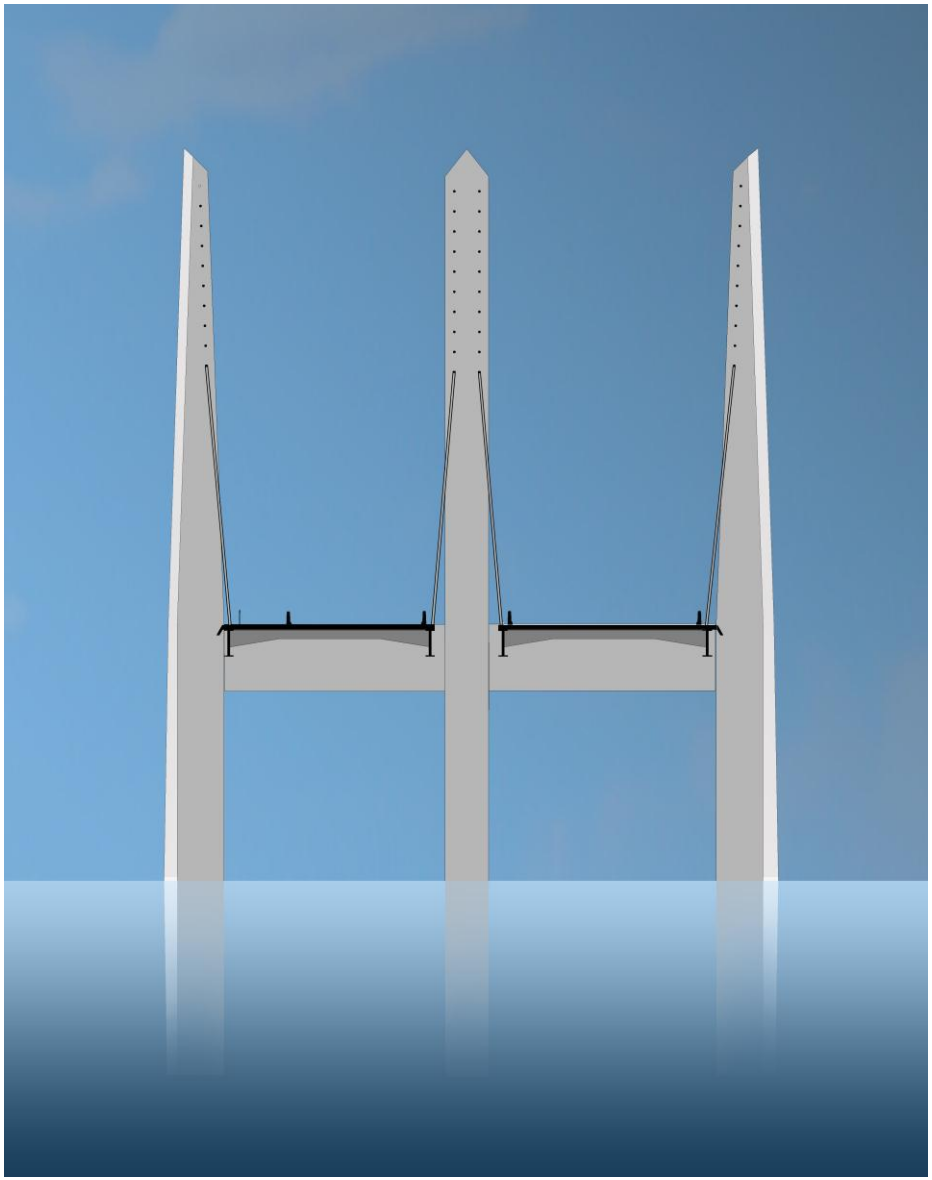
DRAFT CONCEPT, FOR INTERNAL DISCUSSION

Cable Stay

Cross Section View



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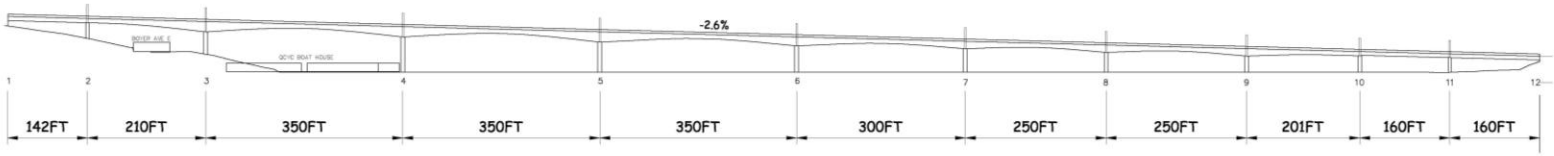
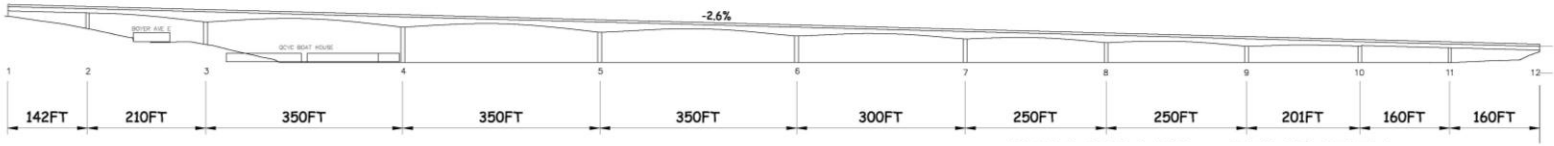
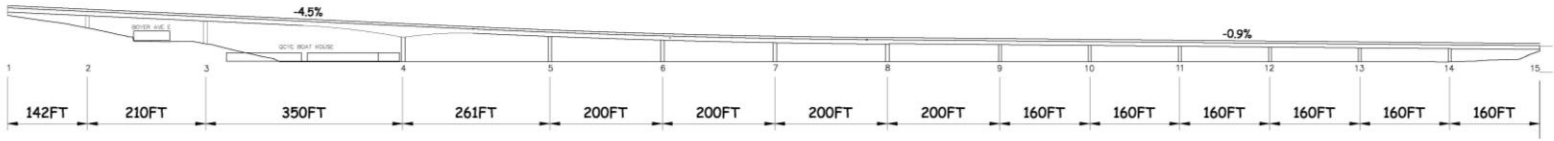
Elevation and Profile



July 8, 2014



June 17, 2014



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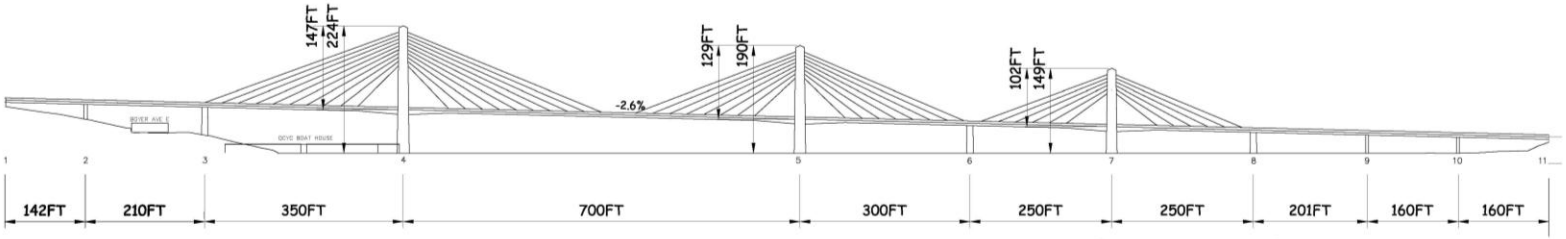
Cable Stay

Elevation and Profile



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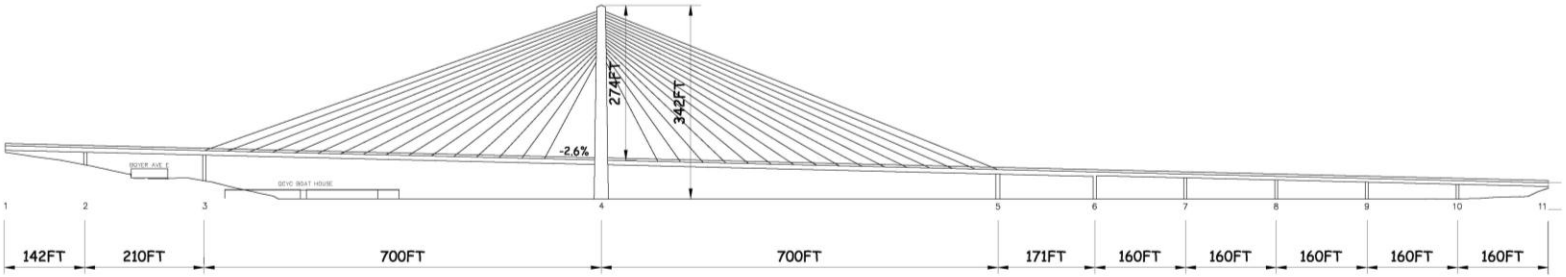

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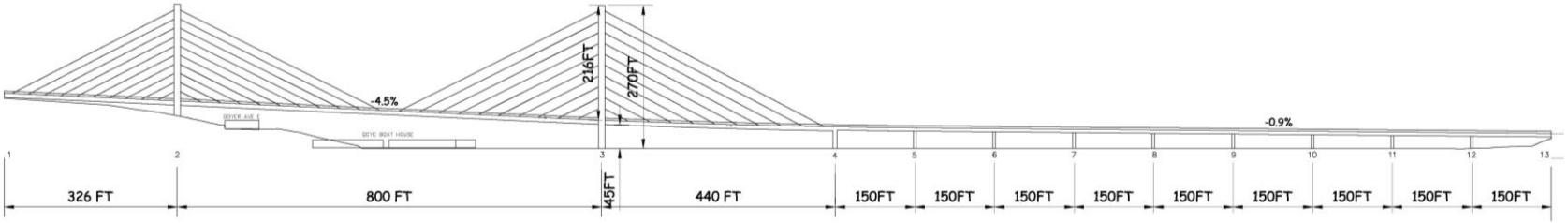

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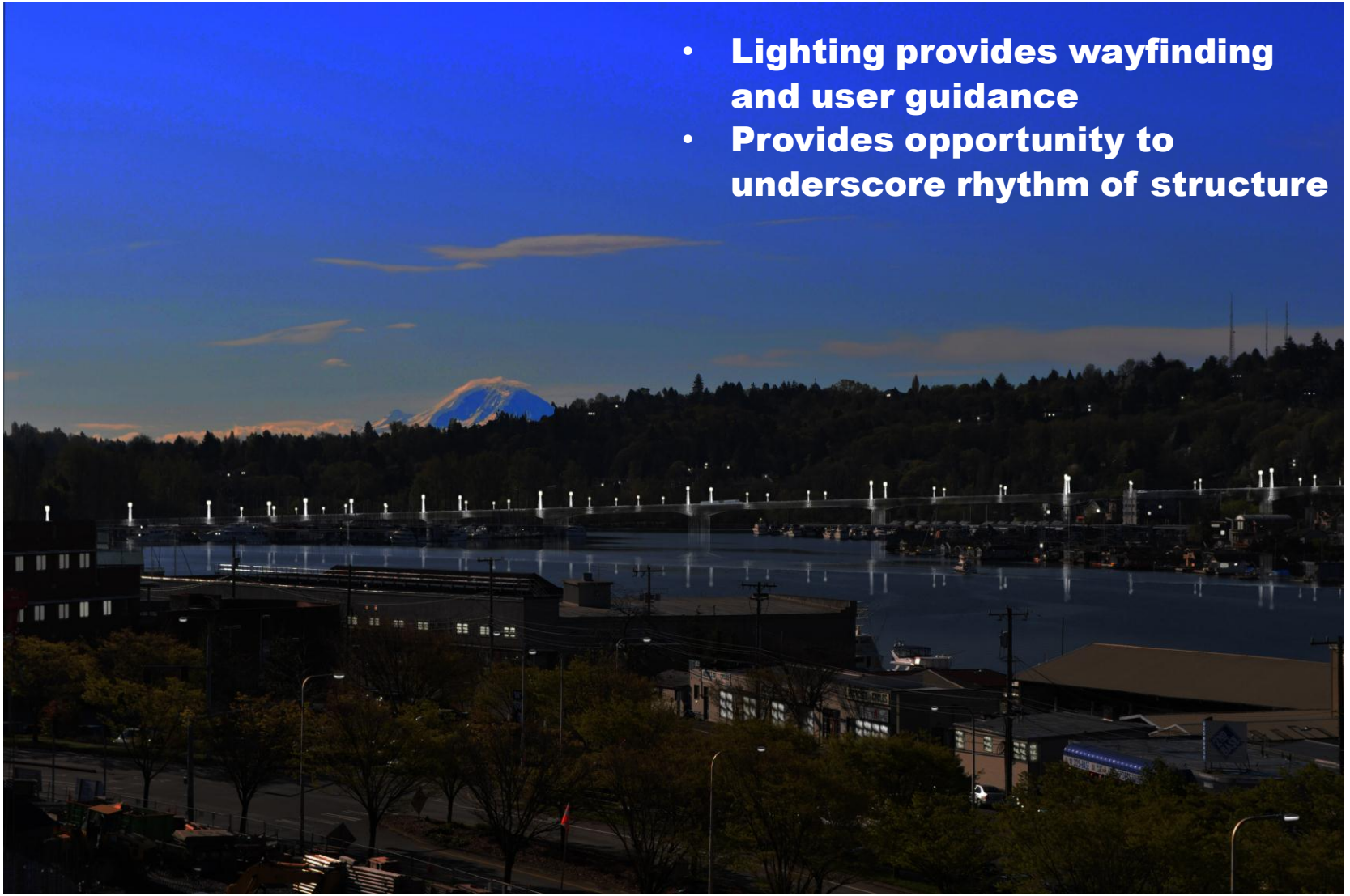
DRAFT CONCEPT, FOR INTERNAL DISCUSSION

Box Girder

Light Study – University Bridge (View Looking Southeast)



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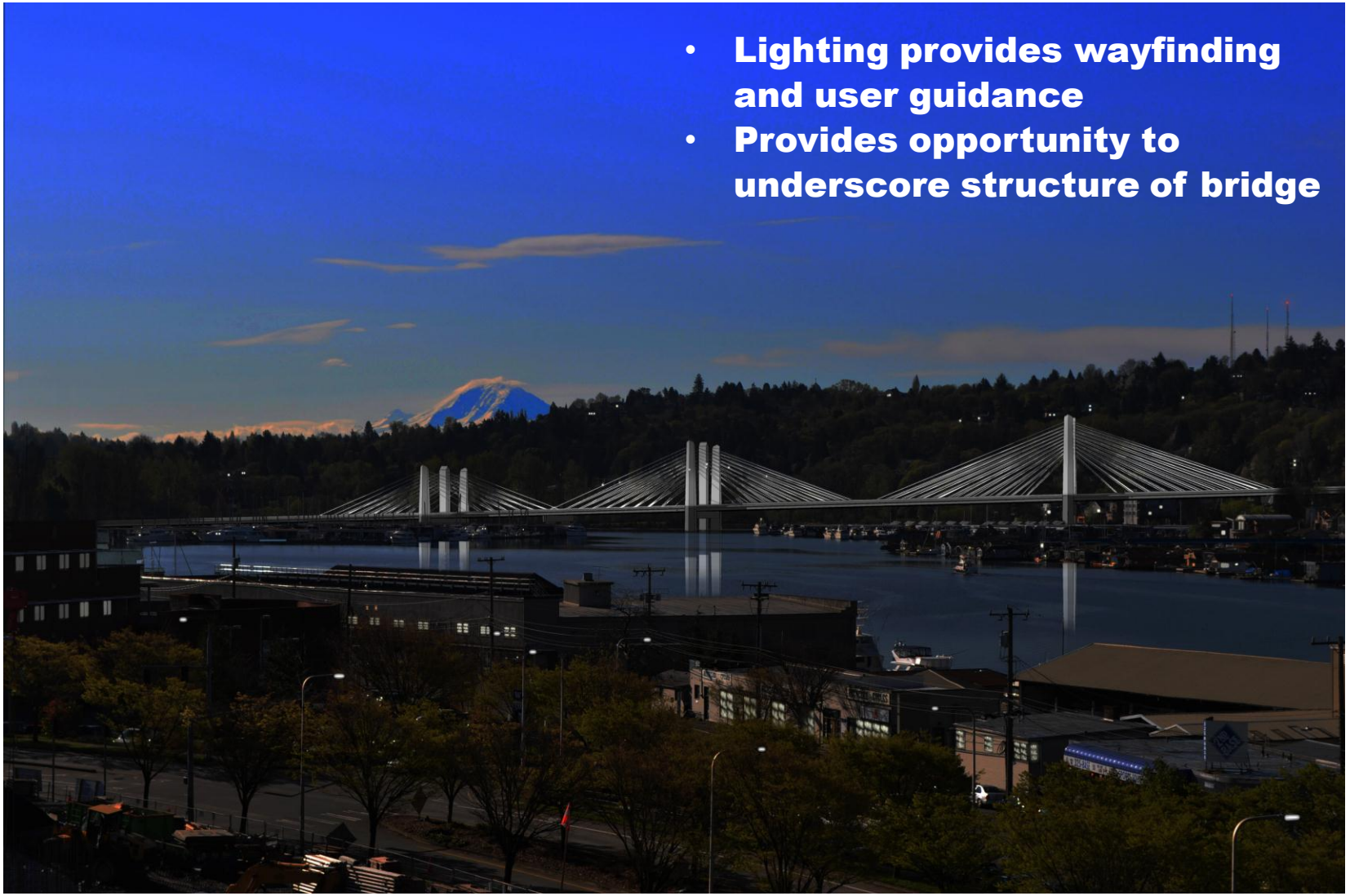
Cable Stay

Light Study – University Bridge (View Looking Southeast)



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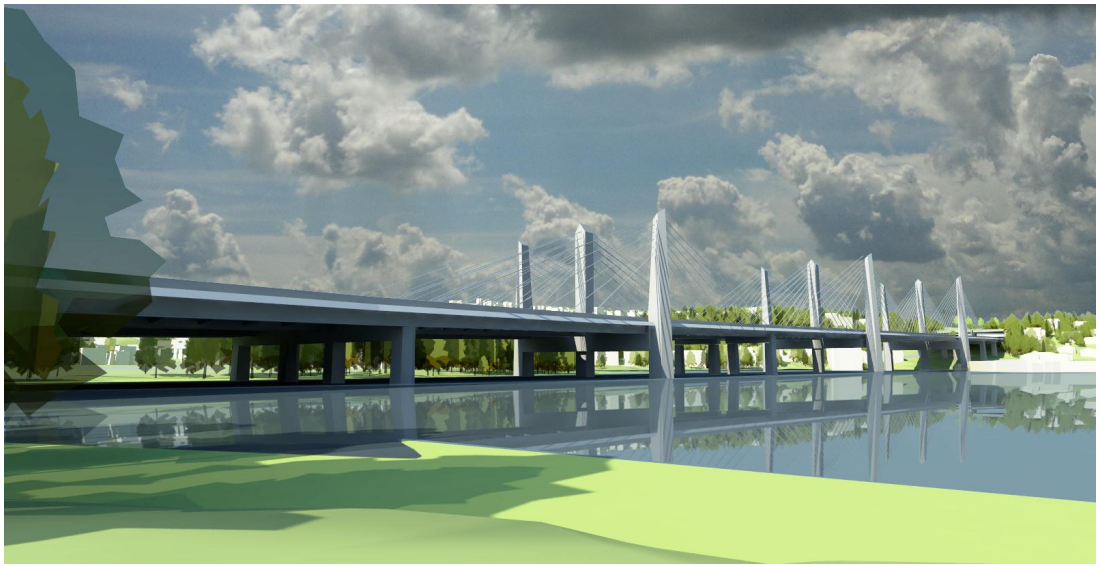
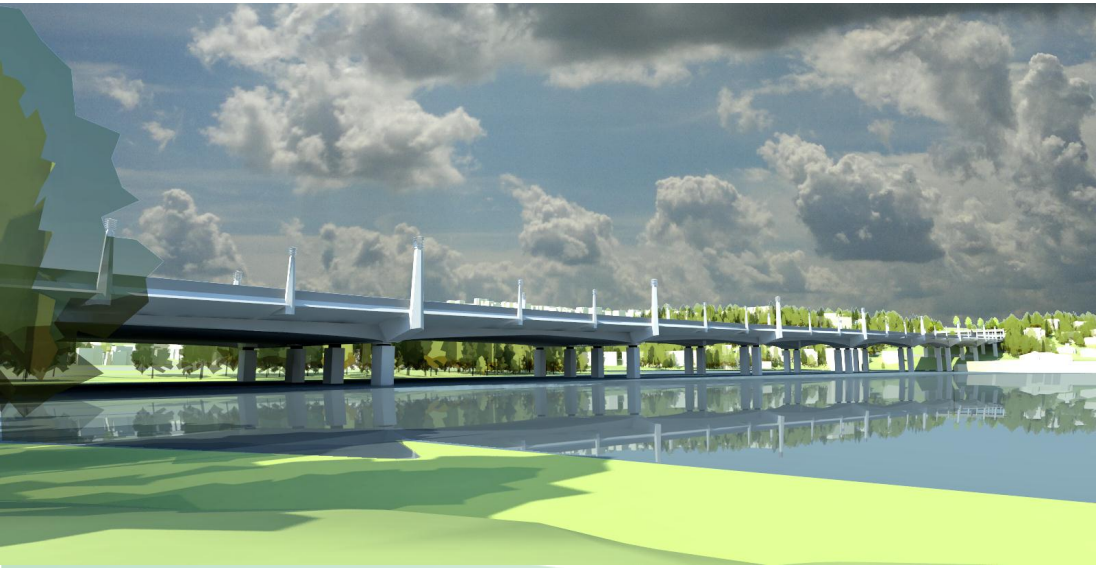
Portage Bay Bridge Vision



Cable stay



Box girder

The Portage Bay Bridge is both a distinctive and context-sensitive element within the family of SR 520 bridges. It serves as a connecting thread, tying together the tree-covered Roanoke ridge to the west and the heart of residential, research and multimodal transportation at Montlake to the east. With the addition of shared-use path, the Portage Bay Bridge helps to complete regional connectivity for all modes of users from SR 202 to I-5.