



Urban Design and Aesthetics Working Group Mtg #7

*Attendees join meeting via
WebEx link in calendar invite*

Department of Community Services
Transportation Division

December 16, 2020

Meeting Protocols

Using WebEx participation features



*For WebEx tech support call or email Katy Segura:
(503) 423-3709
Katy.Segura@hdrinc.com*



Agenda

1. Welcome, Introductions, and Project Update
2. Type Selection Evaluation Criteria Recommendation
3. Input on Range of Bridge Types
4. Next Steps and Closing Remarks



Pre-meeting Information Packet

Content

Online UDAWG Library:

<https://multco.us/earthquake-ready-burnside-bridge/urban-design-and-aesthetics-working-group>

UDAWG Meeting #6 Materials:

- UDAWG Mtg #6 Notes
- UDAWG Mtg #7 Agenda
- UDAWG Mtg #7 Presentation
- UDAWG Type Selection Evaluation Criteria (Clean version)
- UDAWG Type Selection Evaluation Criteria (Track Changes version)



UDAWG Purpose and Outcome




Outcomes: To provide input on the following products for the CTF's consideration:

- ✓ Recommendations for visual and aesthetic evaluation criteria
- ✓ A project-specific Visual Design Guidelines (within notes and recommended evaluation criteria)
- ✓ A set of feasible bridge type options



UDAWG Meetings

General Focus

We are HERE


	UDAWG Meeting Number and Date									
	#1 (9/30)	#2 (10/14)	#3 (10/28)	#4 (11/4)	#5 (11/18)	#6 (12/2)	#7 (12/16)	#8 (3/10)	#9 (3/10)	#10 (6/2)
Character of Portland and the Burnside Bridge	████████████████████									
Visual Design Principles			████████████████████							
Visual Design Guidelines					████████████████████		-----★2			
Technical Design Criteria		████████████████████								
Menu of Bridge Types			████████████████████							
Range of Feasible Bridge Types					████████		-----★1			
Evaluation Criteria Topic(s)					████████					
Evaluation Measures					████████████████████		-----★3			
Input on CTF's Eval Criteria									████████	
Input on CTF's Rec Bridge Type										████████

Today: Info to CTF
 • Bridge Type Input
 • Type Selection Evaluation Criteria Recommendations



Project Update

Key Activities

- Community Task Force (CTF) Meetings
 - **Future: Dec 22nd (Recommendations on: (1) the Range of Bridge Types and (2) Type Selection Evaluation Topics and Criteria)**
- Working / Focus Groups
 - Bridge and Seismic Working Group Mtg #2 (Friday, Dec 18)
 - West-side connection options (ongoing)
 - Eastbank Esplanade connection options (ongoing)





GENERAL COMMENTS

Type Selection Evaluation Criteria: Your Recommendation



Type Selection Evaluation Criteria

Definitions

What are topics and criteria (interests and values) ... **Under Development (now)**

- Principles or standards by which something may be judged or decided.

What are measures (information needs) ... **TBD (Future)**

- Metrics to quantify or qualitatively assess the performance or value of something relative to a given standard or principle.



Type Selection Evaluation Criteria

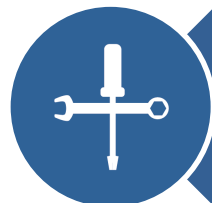
Guiding Principles

TBD (early 2021)



Measurable at the level of design and information that will be available in this step

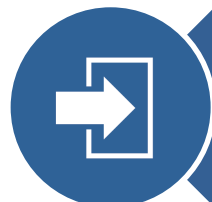
**Under Development
(Now)**



Help differentiate alternatives



Reflect input received to-date



Help inform the evaluation of options and identification of a preferred bridge basic type and form



Criteria Development

Type Selection Evaluation Topics and Criteria - Recommendation



Multnomah County is creating an earthquake-ready downtown river crossing.

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Type Selection Evaluation Criteria – UDAWG Version

1 Urban / Site Context and Experience

- On-Bridge Experience:** How well does the bridge option provide public benefits from its deck surface throughout the extent of the bridge?
 - Clear views from the bridge deck of:
 - The cityscape, including downtown and the Sound
 - Closest landscapes and nature environment (West Hills, Willamette River, Mt Hood, Mt St Helens, and open skies)
 - Adjacent bridges in the up-river and down-river directions
 - Other key viewpoints (e.g., Portland Oregon sign, Oregon Convention Center towers, Moda Center, Waterfront Park, US Bank Tower)
 - Bridge deck as an open space for public events (such as the Rose Festival Grand Floral Parade) and other gatherings
 - Create a gateway and enhanced sense of arrival to and from each side of the river
 - (Note: Likely common to all options; Not expected to be differentiating) Intuitive ability to understand wayfinding, media sign, location of overlooks and connections without excessive clutter that detracts from the bridge design
 - (Note: Likely common to all options; Not expected to be differentiating) Pedestrian and bicycle safety: light lines, noise, vibration, lighting and physical separation of modes
 - (Note: Likely common to all options; Not expected to be differentiating) Ability to provide river overlooks for users to stop and enjoy the adjacent scenery
- Below-Bridge Experience:** How well does the bridge option complement or dramatically contrast with the public space, transportation, and land uses within park and natural environments under or adjacent to the bridge?
 - Column locations that improve personal safety by providing adequate sightlines and clearances below the bridge
 - Ability to further activate and enhance the under-bridge space within Waterfront Park for community events and other activities (e.g., Portland Saturday Market, Bridgetown Nightmarket, etc), including lighting, materials, and detailing



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December 16, 2020

- Maximize the open space and vertical clearance to create an "urban roof" that enhances the under-bridge experience
- Preserve the integrity of park features such as the Japanese American Historical Place, Jantzen Plaza, Bill Naito Legacy Fountain, Better Naito Forever, Vera Katz Eastbank Esplanade, Burnside Skatepark, and Tom McCall Waterfront Park and its existing trees
- Ability to enhance the under-bridge space at Skidmore Fountain Max Station, including lighting, materials, and detailing
- Visually open connectivity with the river in the space beneath the bridge
- Urban Context with Surroundings:** How well does the bridge option's scale and form complement or dynamically contrast with the character of surrounding neighborhoods, buildings, parks, and historic districts while being distinctive?
 - Surroundings include the:
 - Old Town/Chinatown and Downtown neighborhoods, including the Skidmore / Old Town Historic District (75 ft. height limit) and the west bridgehead buildings and physical infrastructure shapes, scale, textures, and colors
 - Kerns and Buckman neighborhoods and Central Eastside Industrial District (250 ft. height limit), including the east bridgehead buildings and physical infrastructure shapes, scale, textures, and colors
 - Other bridge upriver and downriver
- (Note: Likely common to all options; Not expected to be differentiating) Pedestrian and Bicycle Connectivity: How well does the bridge ensure that safe and accessible pedestrian and bike connections will be made down to grade?
 - This considers the:
 - Americans with Disabilities Act and Universal Design concepts
 - West bridge deck to Waterfront Park, Naito Parkway, SW/NW 1st and 2nd Avenues
 - East bridge deck to surrounding local streets and pedestrian open spaces, and the Vera Katz Eastbank Esplanade



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2 Visual and Aesthetics of the Bridge

- Bridge Visual Coherence:** How well does the bridge option's composition create visual balance, unity, and flow from key viewpoints above, along, under, and away from the bridge?
 - This includes viewpoints from the:
 - Willamette River
 - Waterfront Park
 - Eastbank Esplanade
 - K-15 / I-5 users
 - Bridgehead buildings
 - High-rise buildings
 - Surrounding bridges
- Bridge Form and Style:** How well does the bridge option acknowledge the historic surroundings while presenting a visually-resistant, contemporary design aesthetic that sets the tone for future urban development and growth throughout its 100-year design life?
 - This includes the bridge's ability to:
 - Balance the qualities of openness and transparency (i.e., maintaining the missing) while conveying a sense of seismic stability and reliability
 - Ensure overall design compatibility of fixed and movable bridge spans; reflecting proportional and scale that feel harmonized amongst the various structural elements
 - Reflect the distinctive setting of each side of the river, considering buildings, parks and infrastructure
 - Reflect best practices in technologies, materials, engineering, and architectural design that represent the era in which the bridge is designed and constructed, including potentials for exposing/expressing the movable bridge mechanisms
 - Consider land and below-water conditions that require different engineering solutions for fixed and movable bridge spans
 - Honor Portland's member as a "City of Bridges" and the bridge's unique location at the center of the city quadrants
 - Provide opportunities for memorable, distinctive lighting for nighttime viewing while adhering to "dark-sky" principles
 - (Note: Likely common to all options; Not expected to be differentiating) Reflect Portland's transportation values in bicycle and pedestrian safety and accessibility



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- Bridge Appropriateness and Design Flexibility:** How well does the bridge option allow flexibility for engineering and architectural features in the Final Design phase, as well as adaptability of the bridge for future user needs?
 - This includes the bridge's potential to:
 - Express Portland values and aspirations for inclusiveness, resiliency, accessibility, creative expression, vitality, and sustainability
 - Become an identifiable beacon of safety, a landmark and destination within the city during the day and after dark
 - Ability to convey a sense of being in the center of the city, at the intersection of north and south, east and west quadrants
 - Provide tactile, human-scale features with close proximity of pedestrian views and touch, including overlooks
 - Enable a wide range of complementary secondary design features that are cohesive with the overall bridge design (e.g., sponsor's house, multi-use path connections, structural elements, overlooks, etc.)
 - Accommodate varied map control and water-level changes
 - Minimize effects on natural resources such as wildlife, fisheries, and shoreline / shallow-water habitat
 - (Note: Likely common to all options; Not expected to be differentiating) Reduce noise impacts to bridge users generated by on-bridge and adjacent freeway traffic
 - (Note: Likely common to all options; Not expected to be differentiating) Implement sustainable and equitable design principles during the Final Design phase



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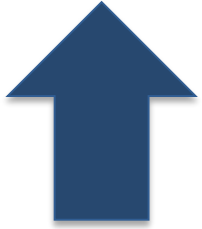


**Do you recommend the discussed
Type Selection Evaluation Criteria
to move forward to the CTF?**

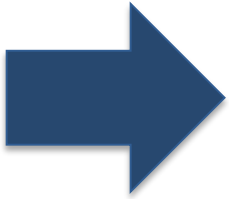


UDAWG Recommendation

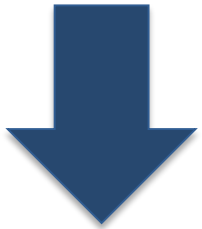
Voting Procedure



Thumb Up = Support Recommendation



Middle Thumb = I Can Live With Recommendation



Thumb Down = Do Not Support Recommendation



Range of Bridge Types:

Your Input





Bridge Composition Overview



Project Context

First Burnside Bridge – circa 1894



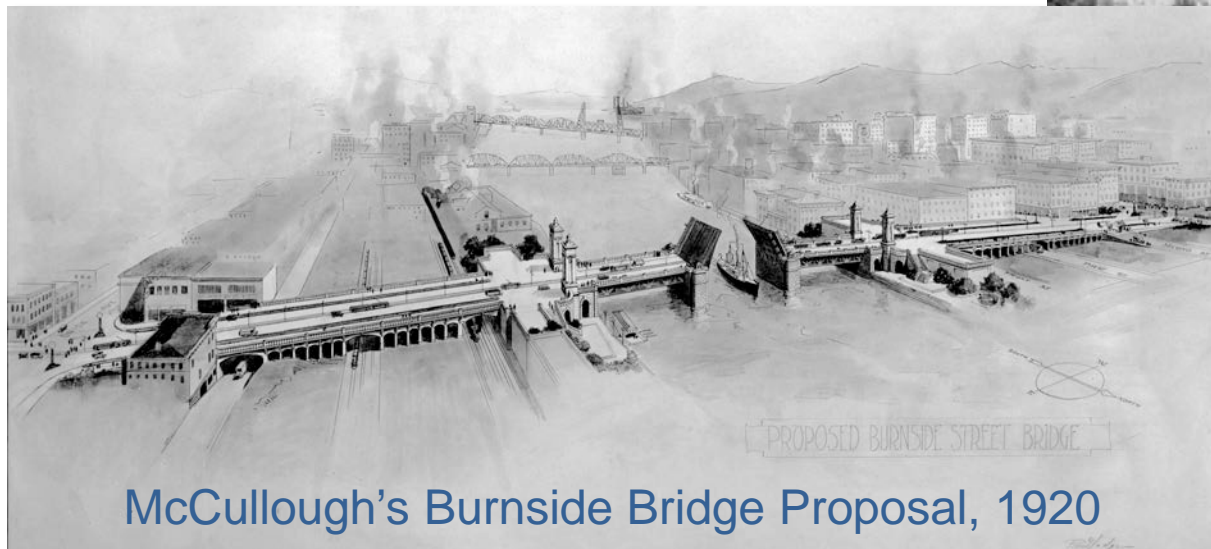
Project Context

Bridge Site Plan – Prior Visions

Edward Bennett's 1912 city plan called for a widened North Park Blocks, looking north from the intersection of Burnside Street.

Source: "How Portland almost became Paris on the Willamette: Ambitious 1912 plan envisioned Europe-inspired city with 2 million population" - Douglas Perry | The Oregonian/OregonLive Posted Jul 15, 2020

1912 Bridge Visioning



McCullough's Burnside Bridge Proposal, 1920



Existing Willamette River Bridges

Downtown Portland Area



① Fremont Bridge



② Broadway Bridge



③ Steel Bridge



④ Burnside Bridge



⑤ Morrison Bridge



⑥ Hawthorne Bridge



⑦ Marquam Bridge



⑧ Tilikum Crossing

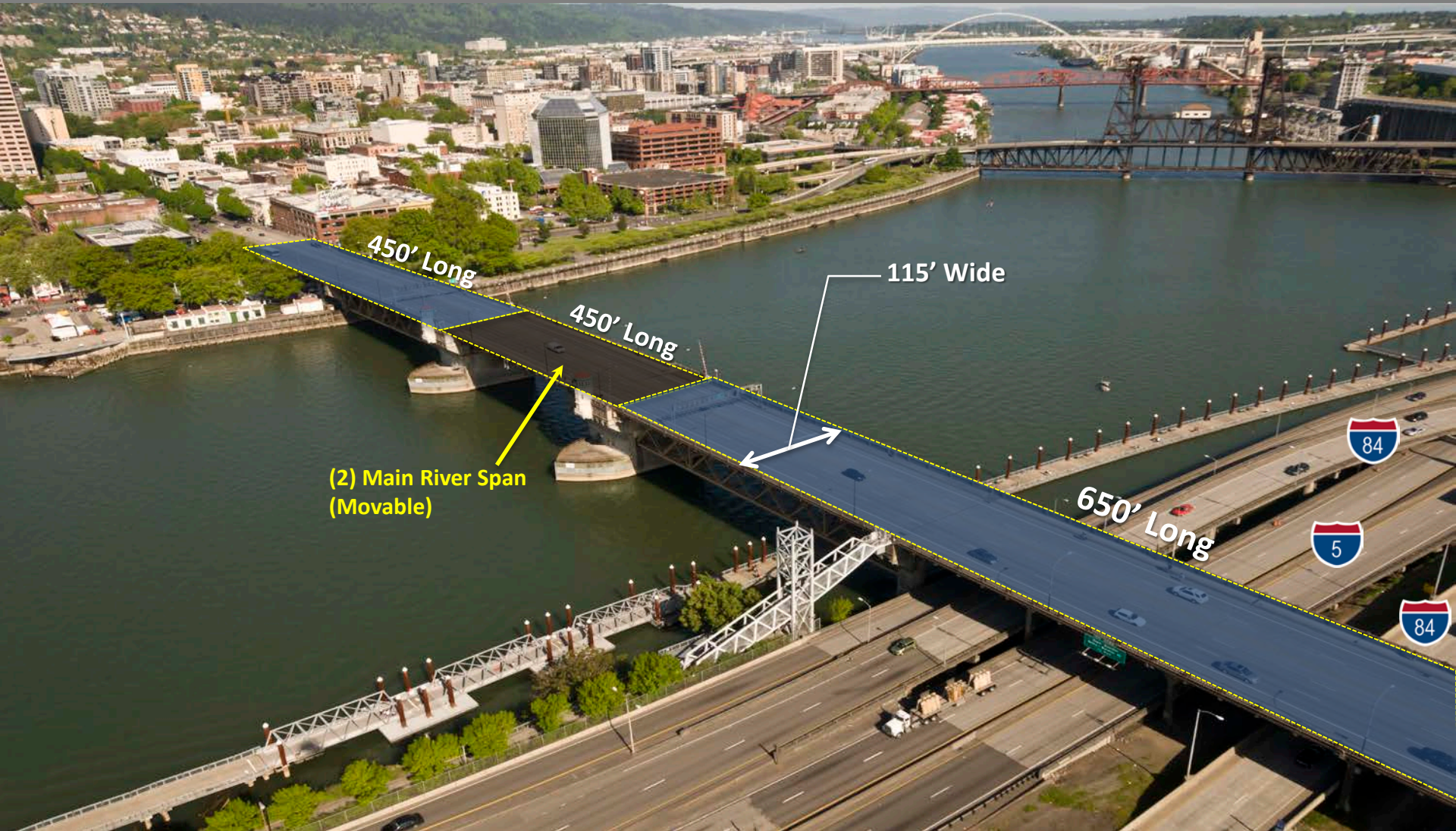


⑨ Ross Island Bridge



Long-span Alternative

“Three bridges in one”



Range of Bridge Types

Long Span

Tied Arch



Truss



Cable Stayed / Extradosed

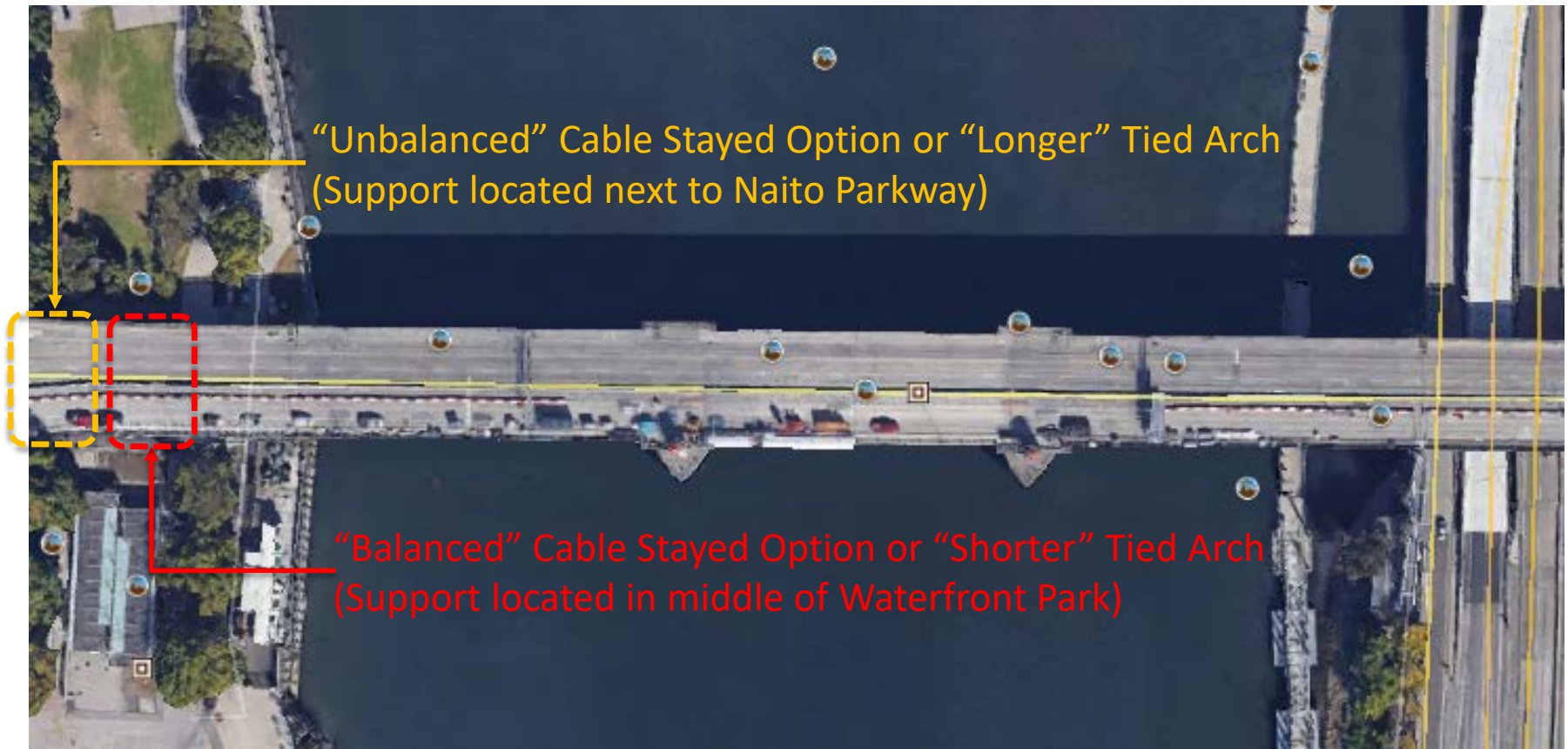


Girder (applicable to west approach only)



West Approach Support Locations

Nomenclature



Range of Bridge Types

Movable Span

Lift

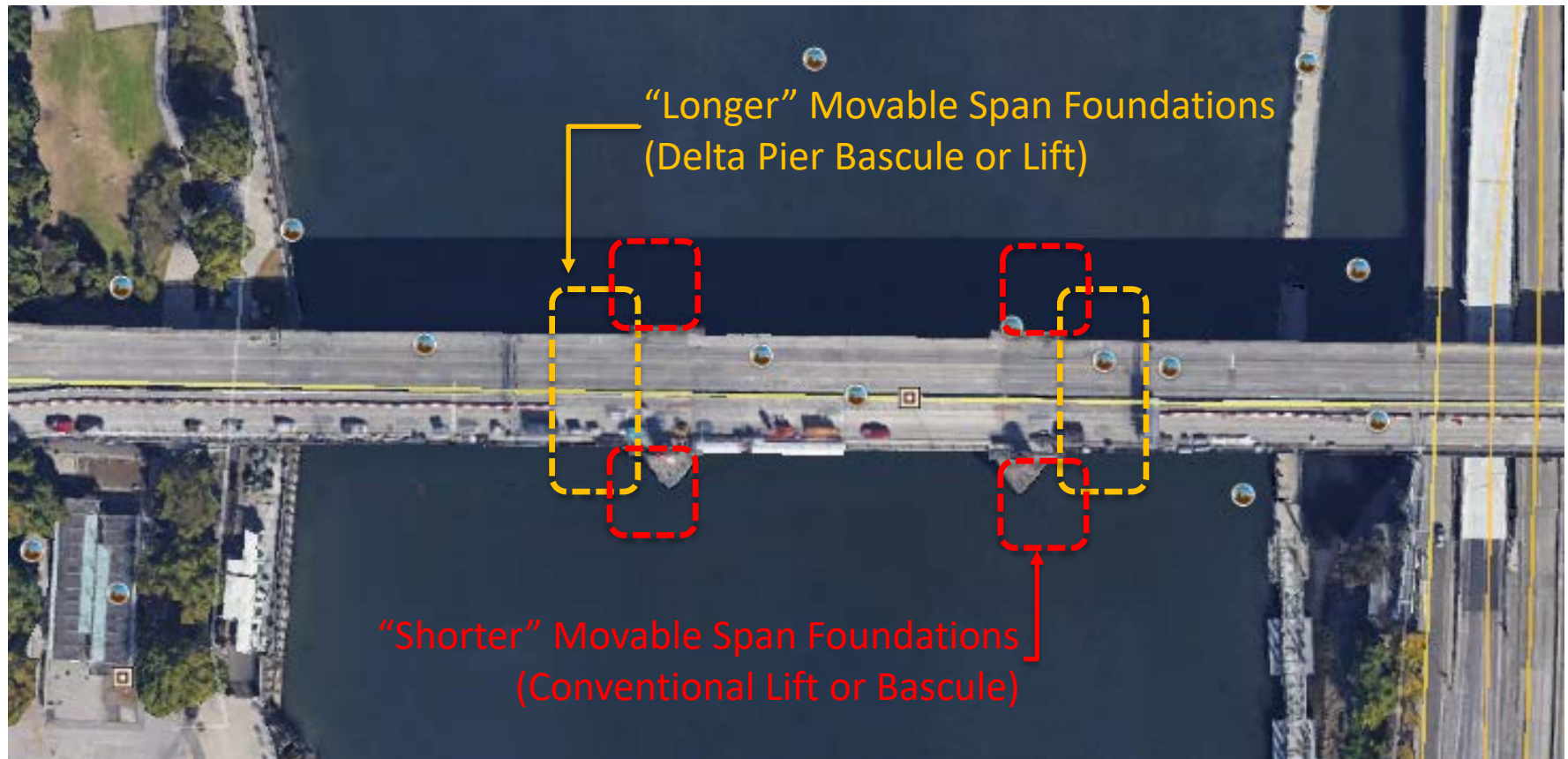


Bascule

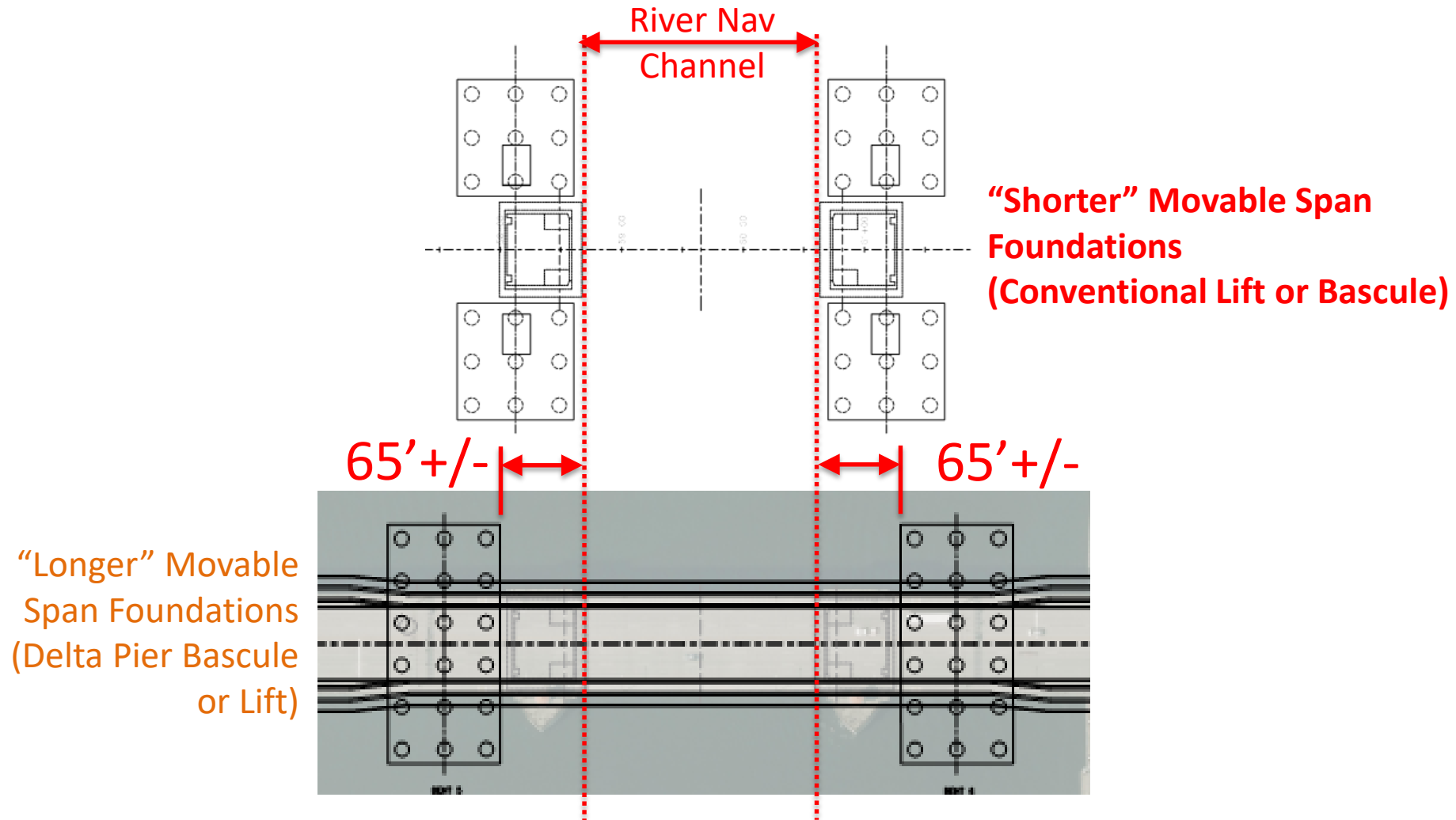


Movable Bridge Pier Locations

Nomenclature



Movable Bridge Pier Locations



Range of Bridge Types

Tied Arch

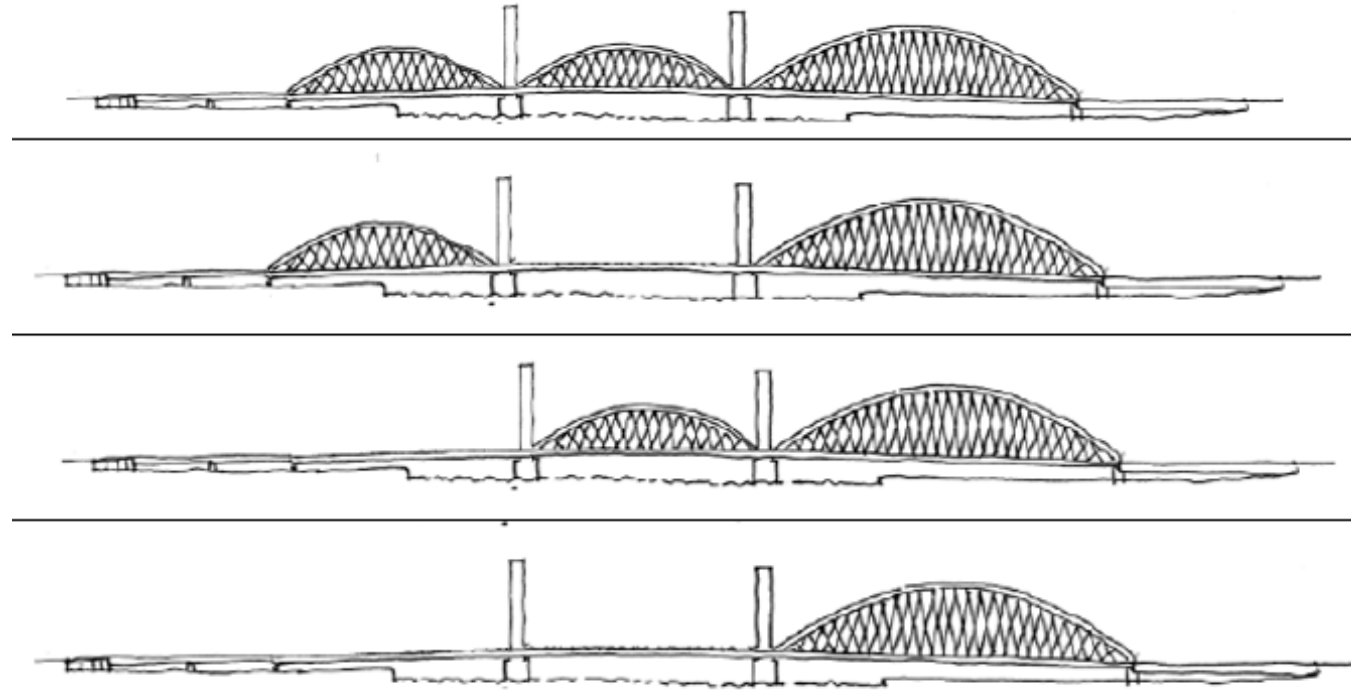


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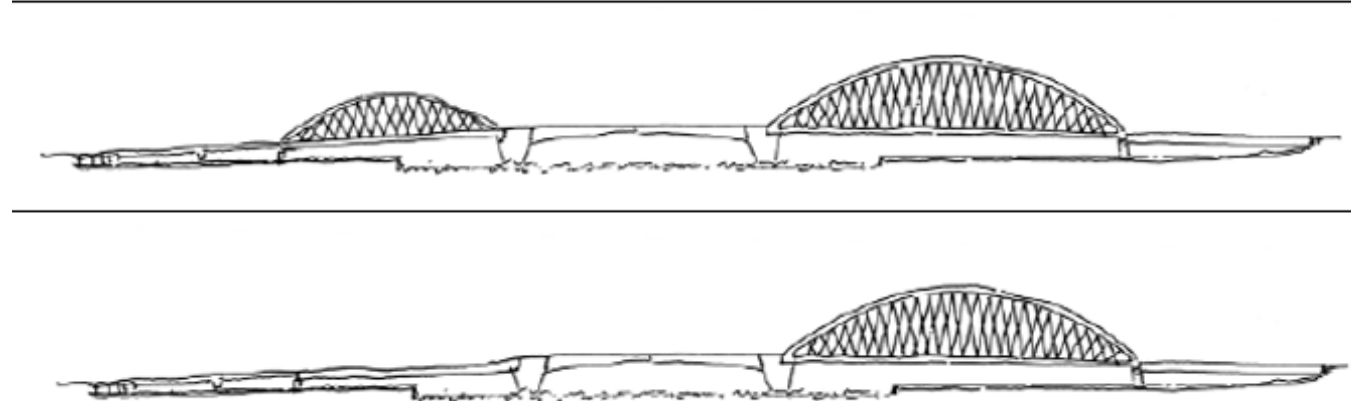
Range of Bridge Types

Tied Arch Variations

Lift Options



Bascule Options



Range of Bridge Types

Tied Arch + Bascule Variations

West span = Tied Arch



West span = Girder



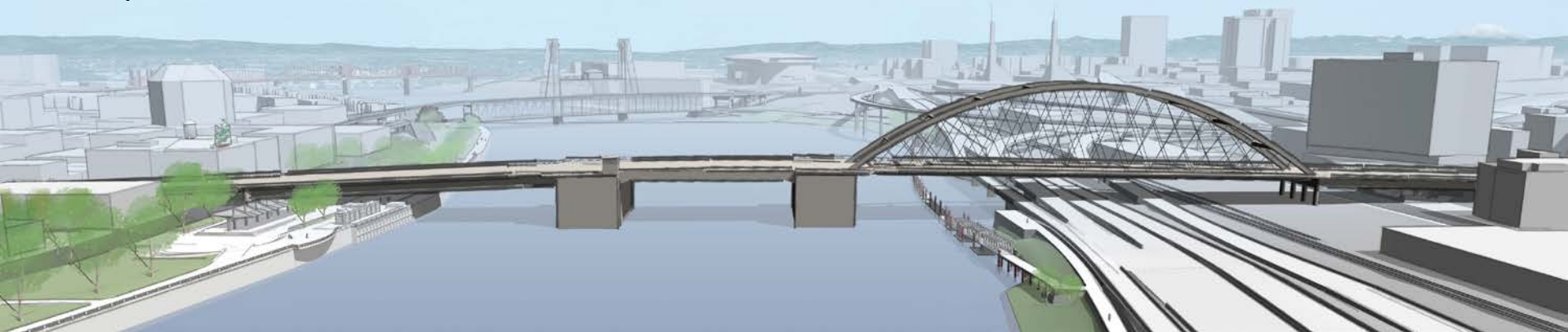
Range of Bridge Types

Tied Arch + Bascule Variations (“Short” Movable Span)

West span = Tied Arch



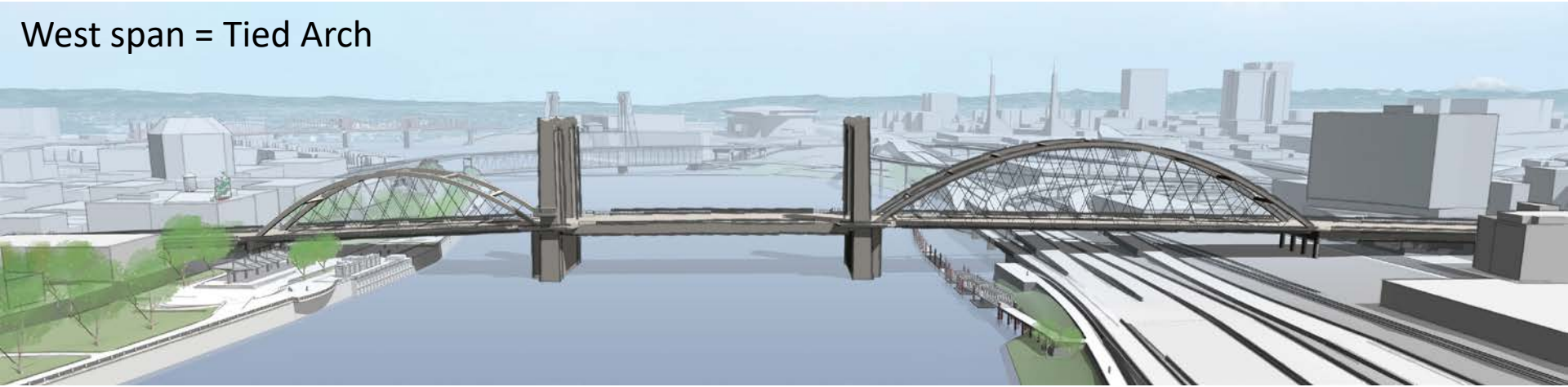
West span = Girder



Range of Bridge Types

Tied Arch + Lift Variations

West span = Tied Arch



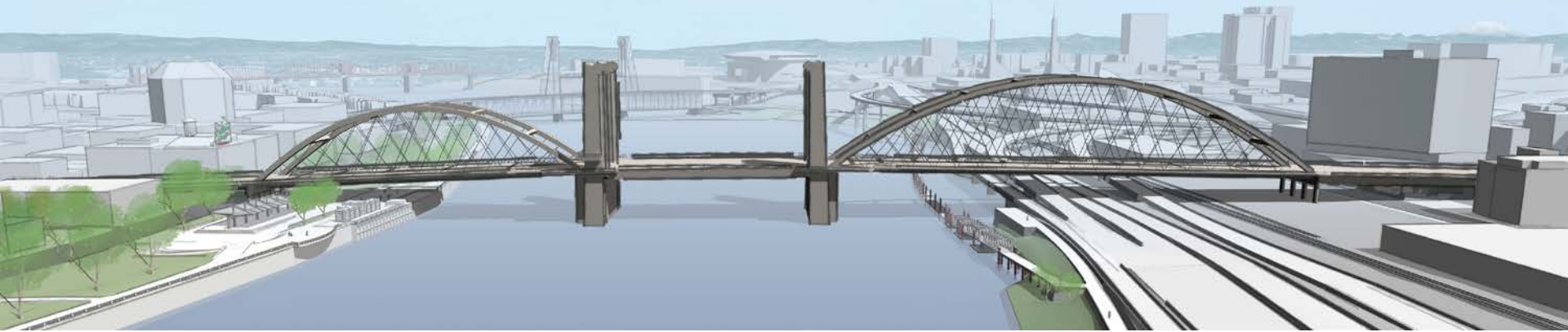
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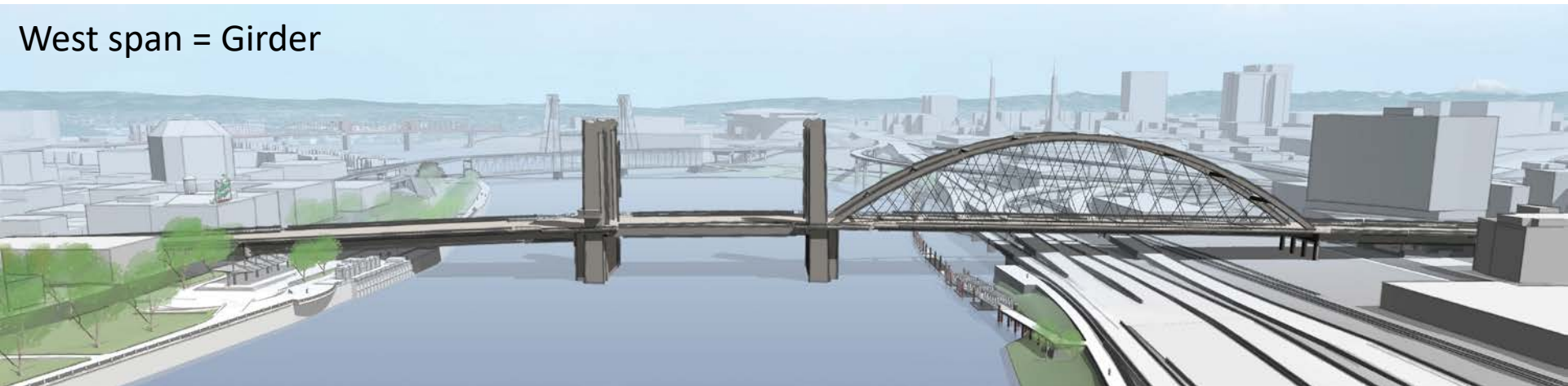
Range of Bridge Types

Tied Arch + Lift Variations (“Short” Movable Span)

West span = Tied Arch

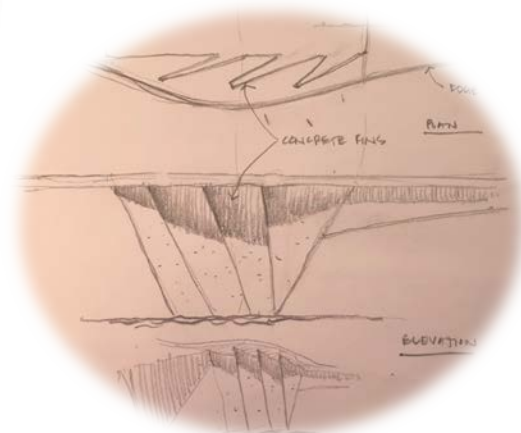
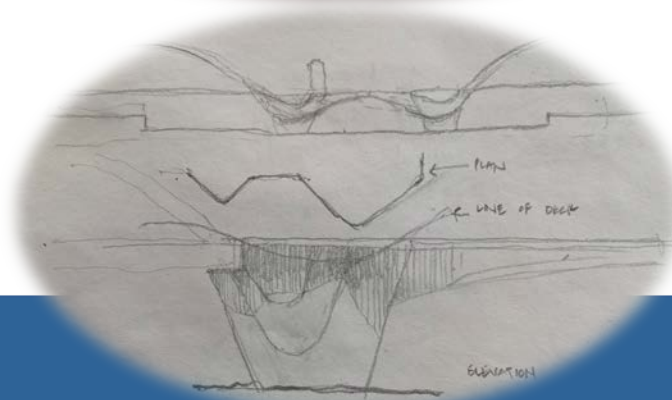
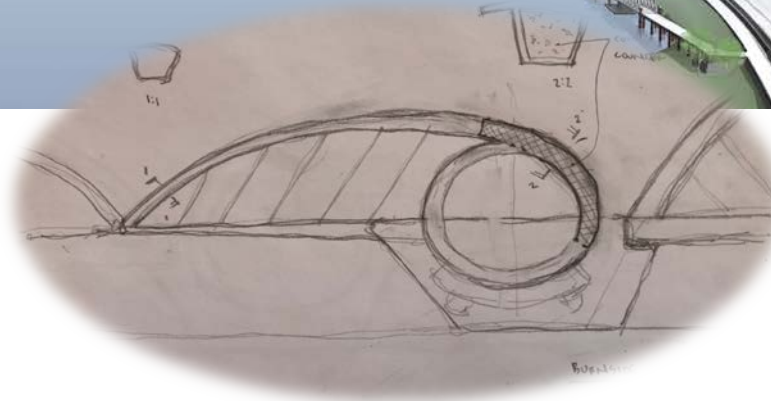


West span = Girder



Range of Bridge Types

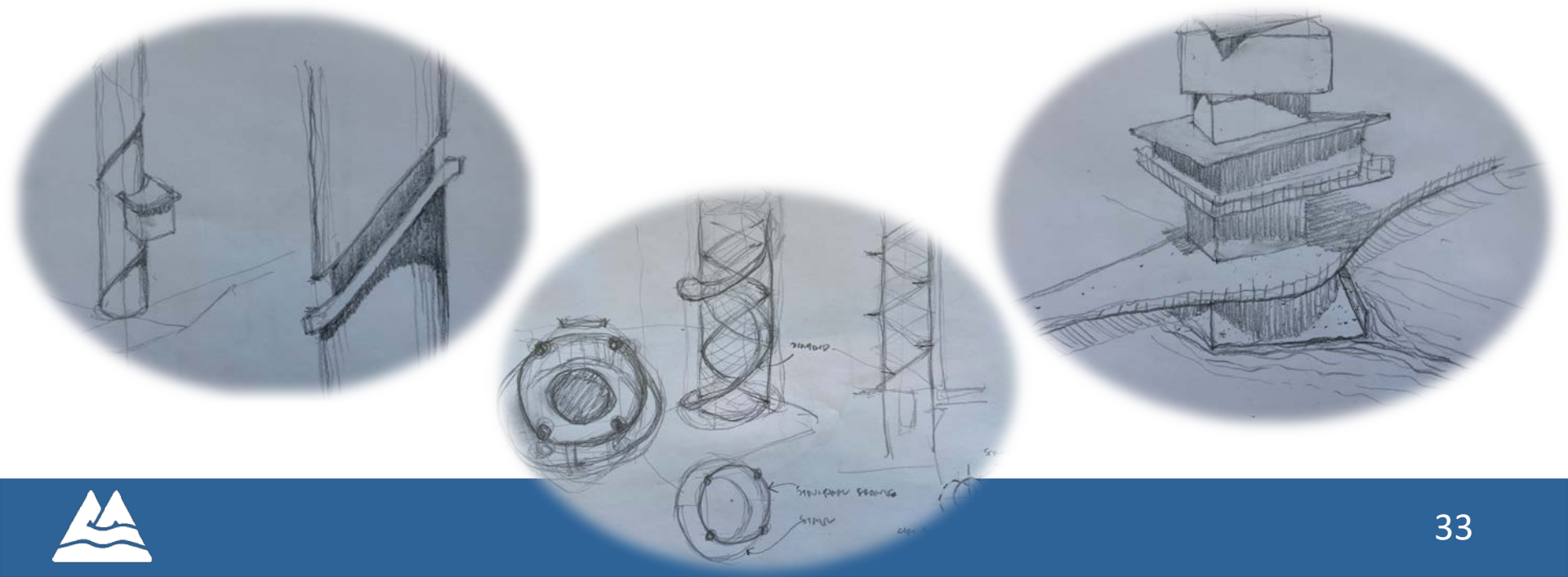
Tied Arch + Bascule: Enhancement Opportunities



Range of Bridge Types

Tied Arch + Lift: Enhancement Opportunities

West span = Tied Arch



Range of Bridge Types

Truss

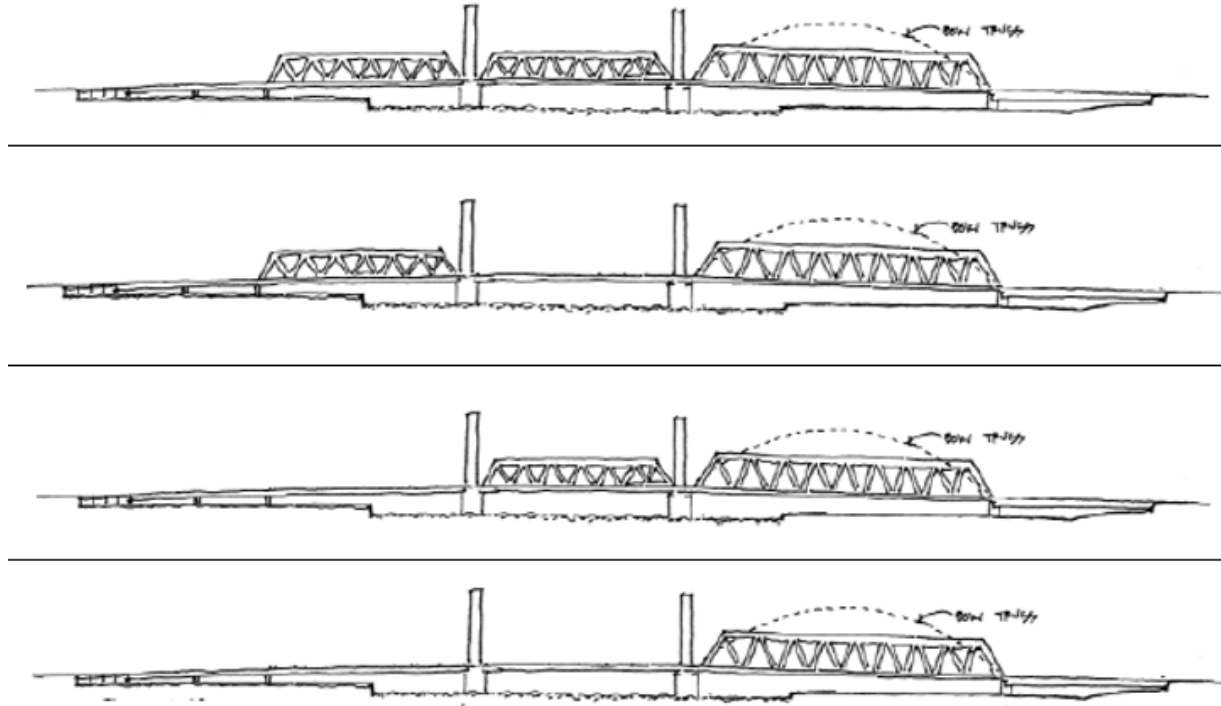


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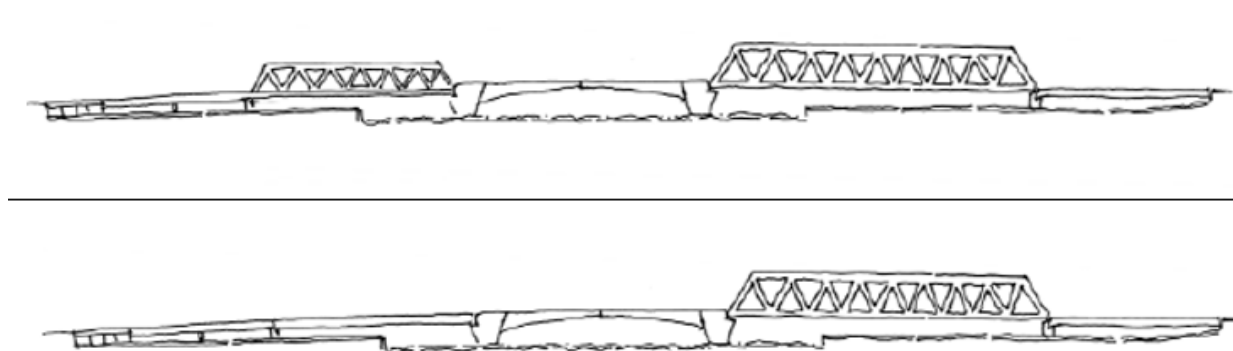
Range of Bridge Types

Truss Variations

Lift Options



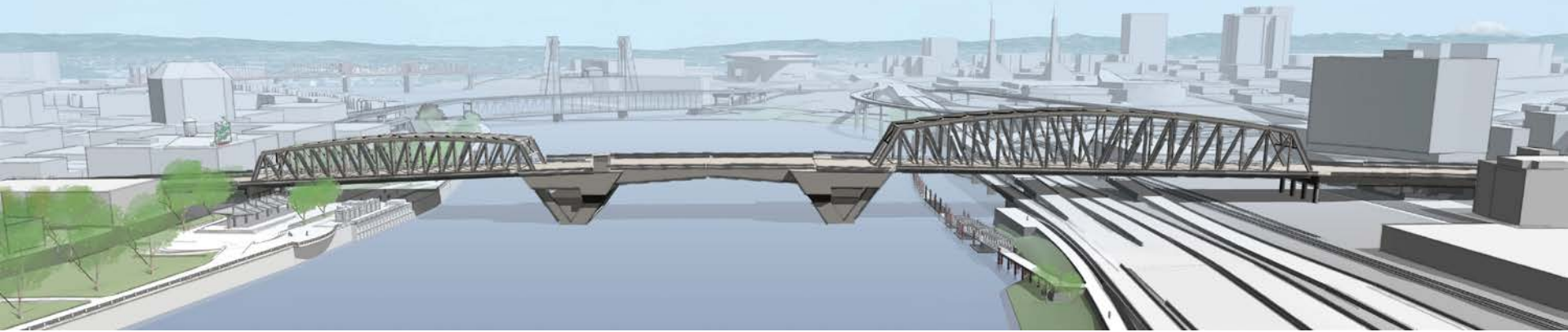
Bascule Options



Range of Bridge Types

Truss + Bascule Variations

West span = Truss



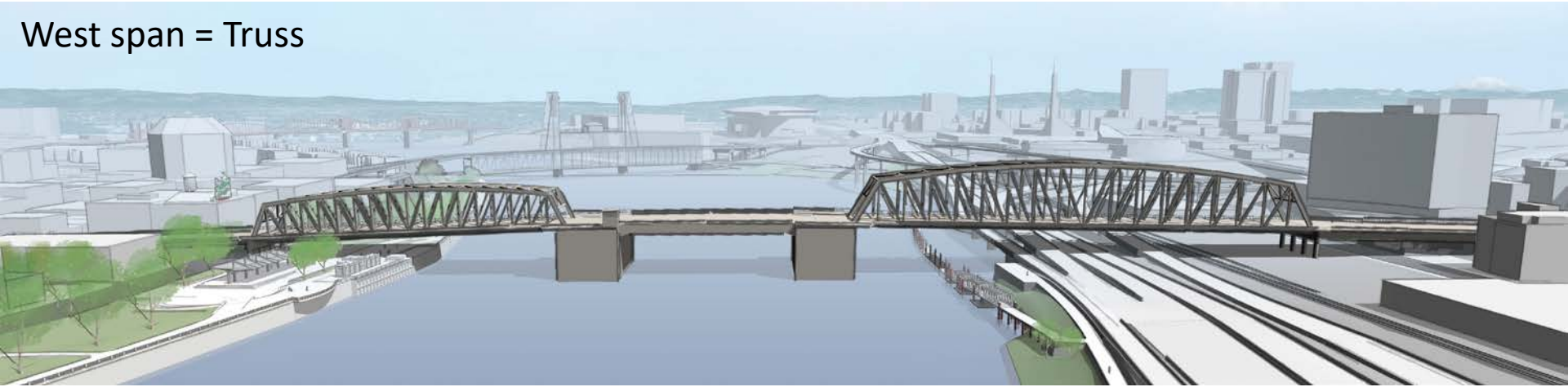
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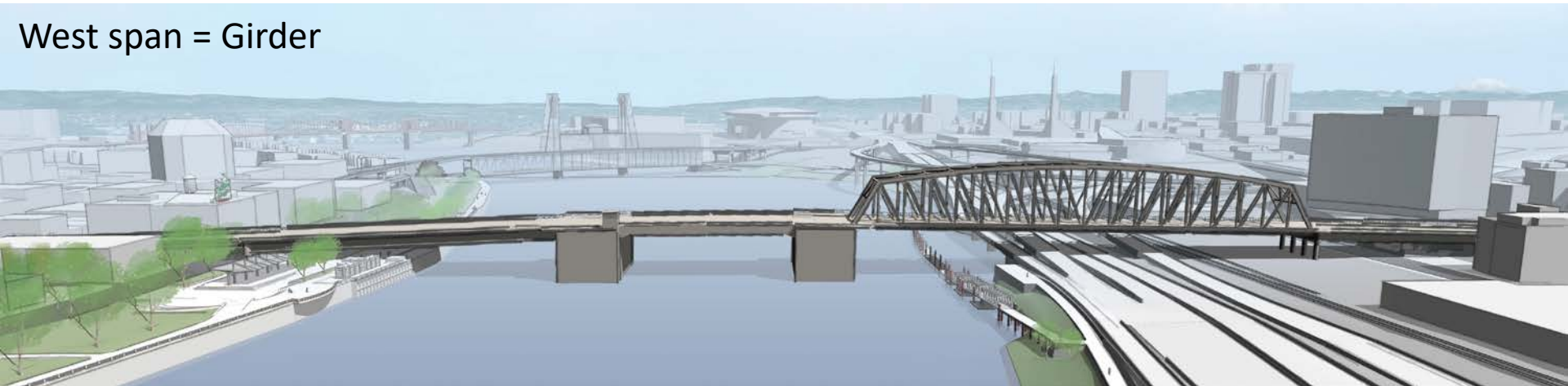
Range of Bridge Types

Truss + Bascule Variations (“Short” Movable Span)

West span = Truss



West span = Girder



Range of Feasible Bridge Types

Truss + Lift Variations

West span = Truss



West span = Girder



Range of Feasible Bridge Types

Truss + Lift Variations (“Short” Movable Span)

West span = Truss



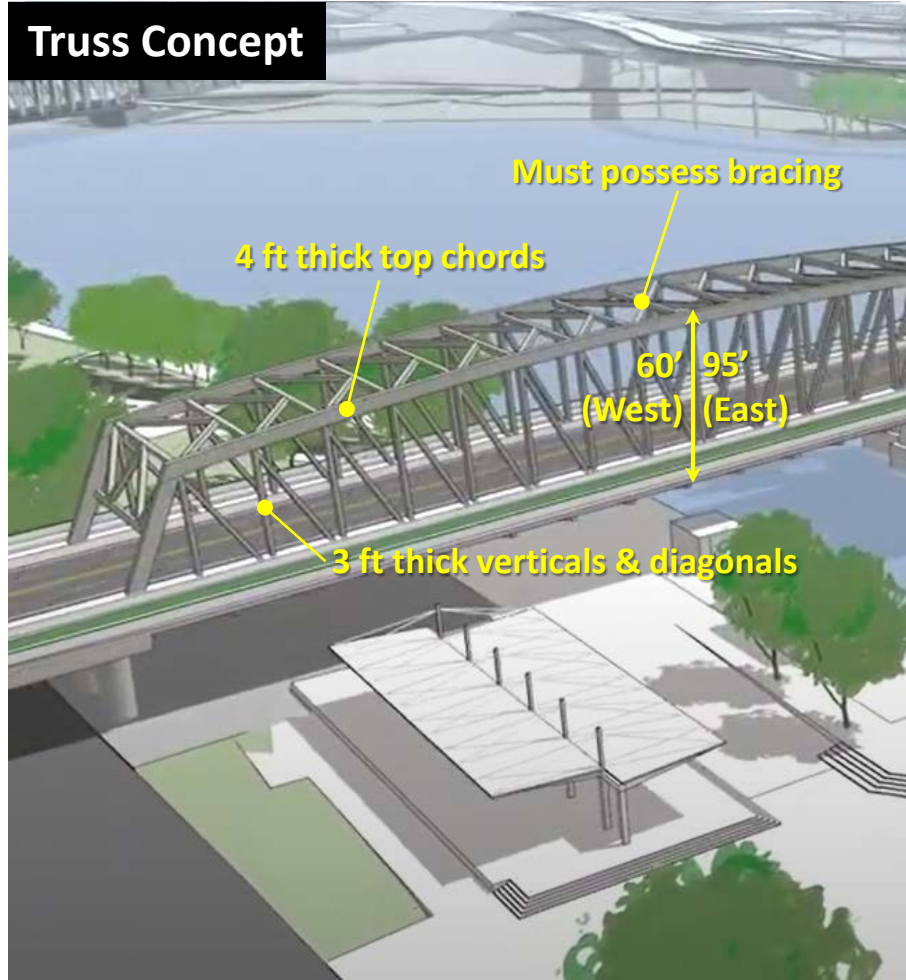
West span = Girder



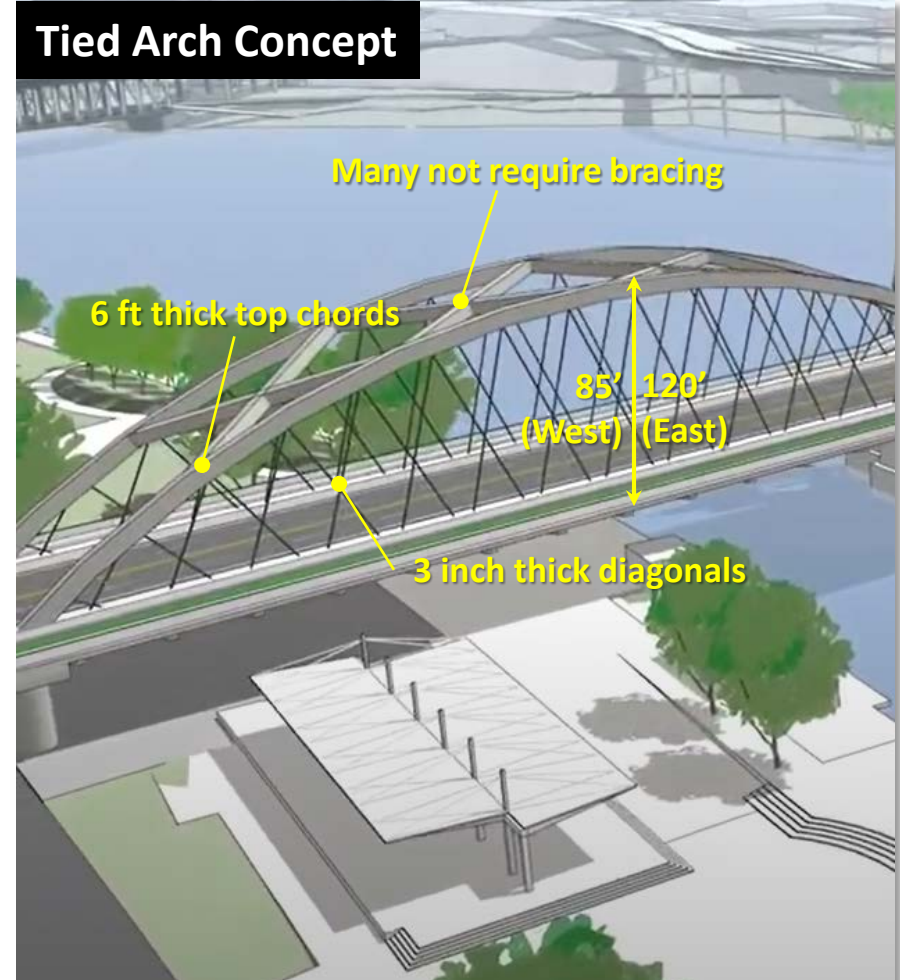
Range of Bridge Types

Truss comparison with Tied Arch

Truss Concept



Tied Arch Concept



Range of Bridge Types

Cable Stayed / Extradosed

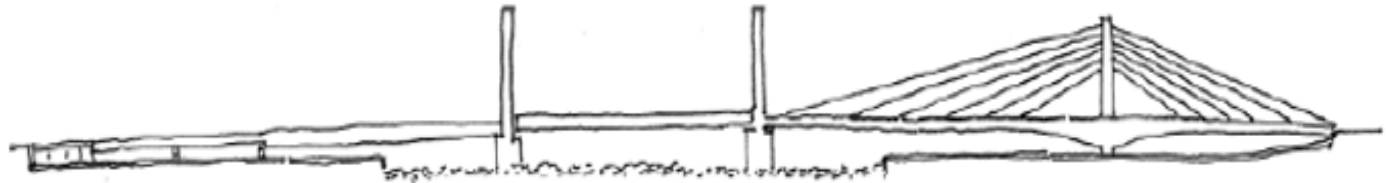
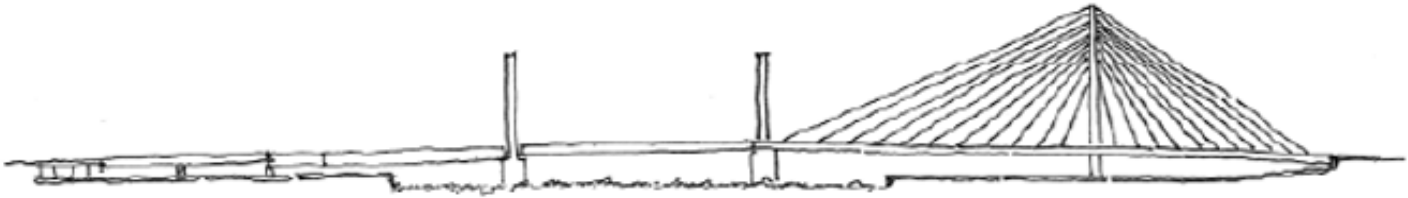
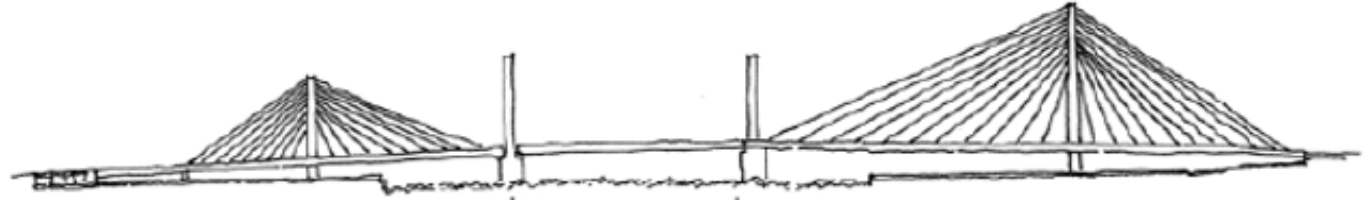


(Example concept image.)

Range of Bridge Types

Cable Stayed / Extradosed + Lift Variations

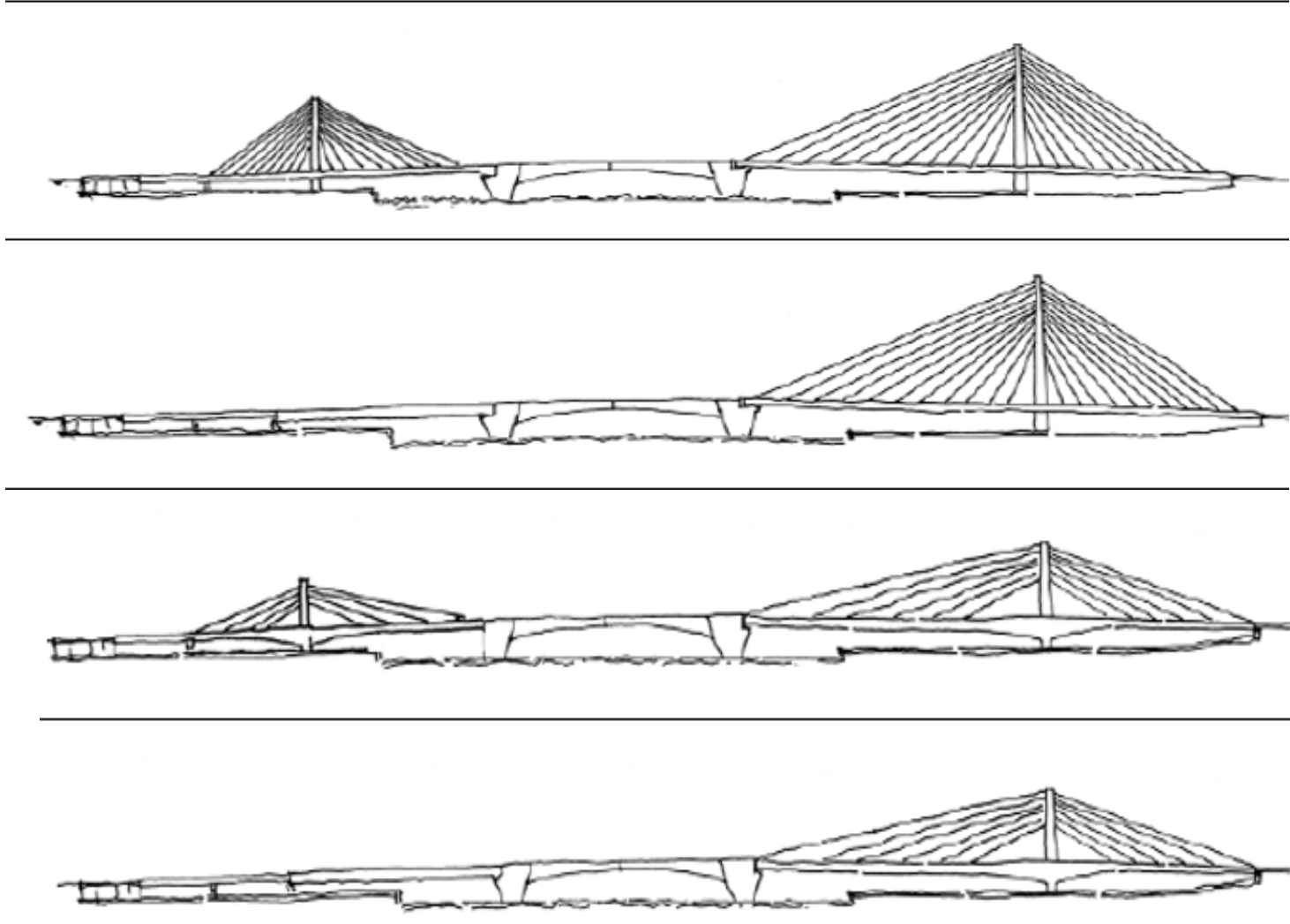
Lift
Options



Range of Bridge Types

Cable Stayed / Extradosed + Bascule Variations

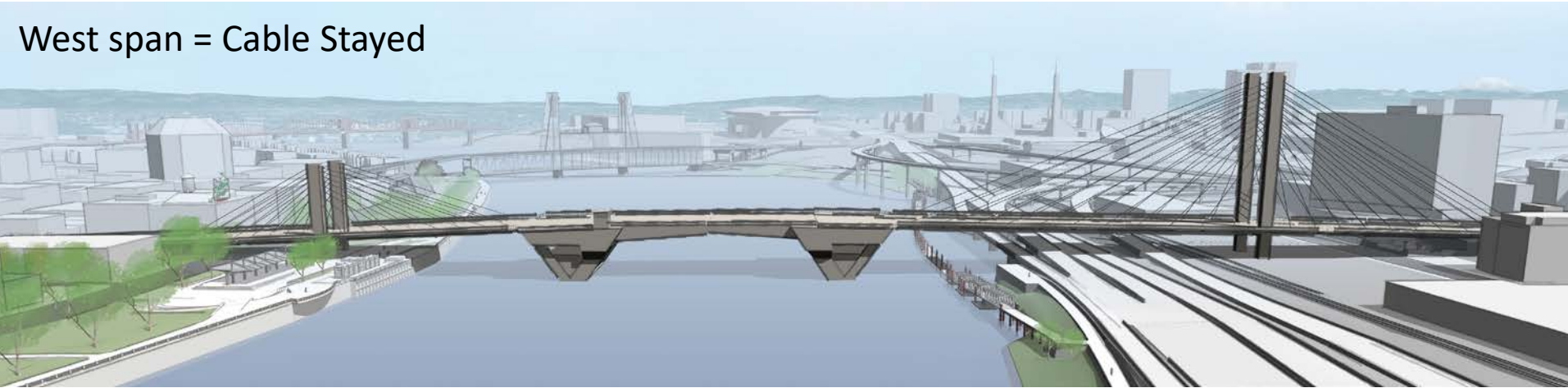
**Bascule
Options**



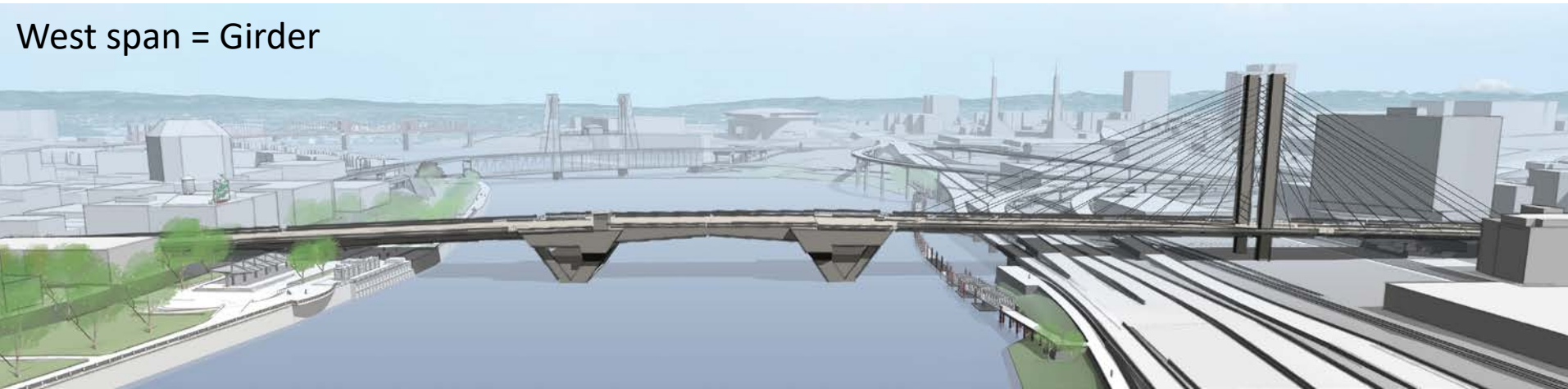
Range of Bridge Types

Cable Stayed / Extradosed – Bascule Variations

West span = Cable Stayed



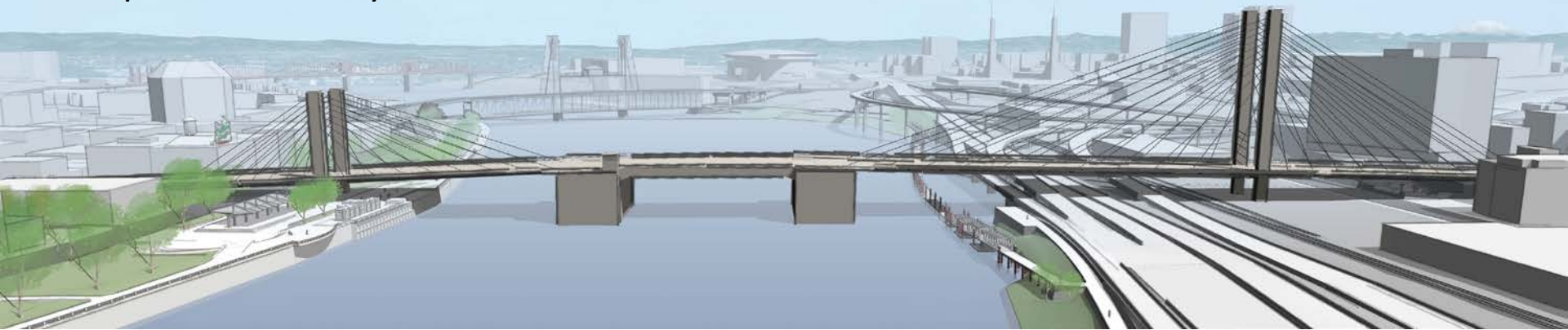
West span = Girder



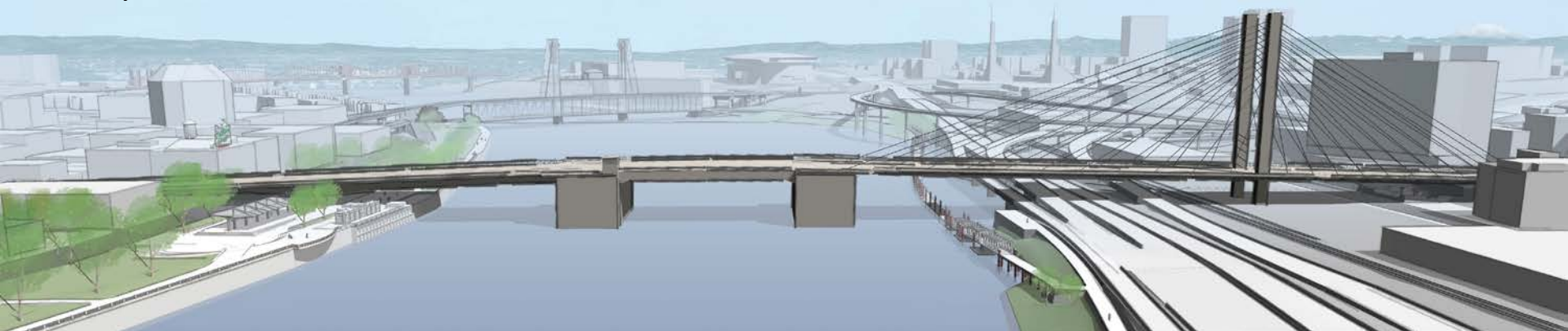
Range of Bridge Types

Cable Stayed / Extradosed – Bascule Variations (“Short” Movable Span)

West span = Cable Stayed



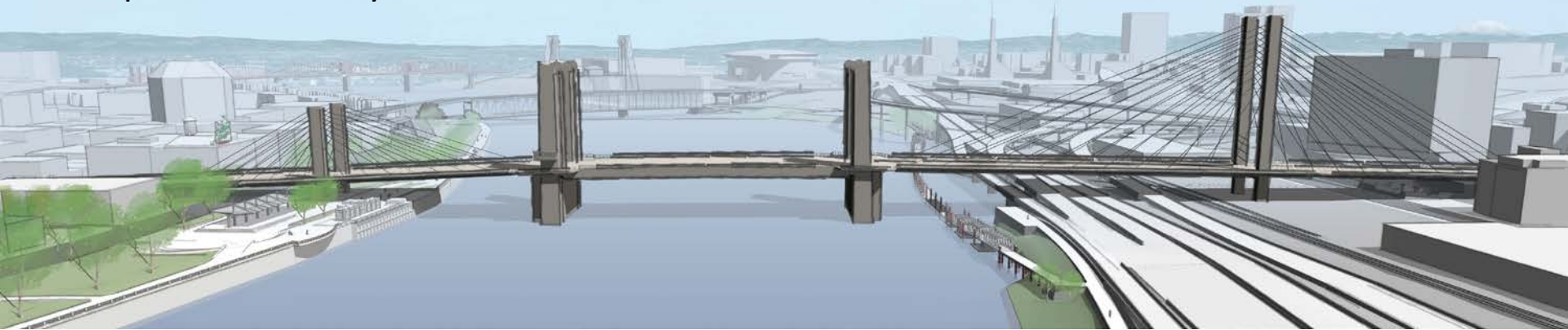
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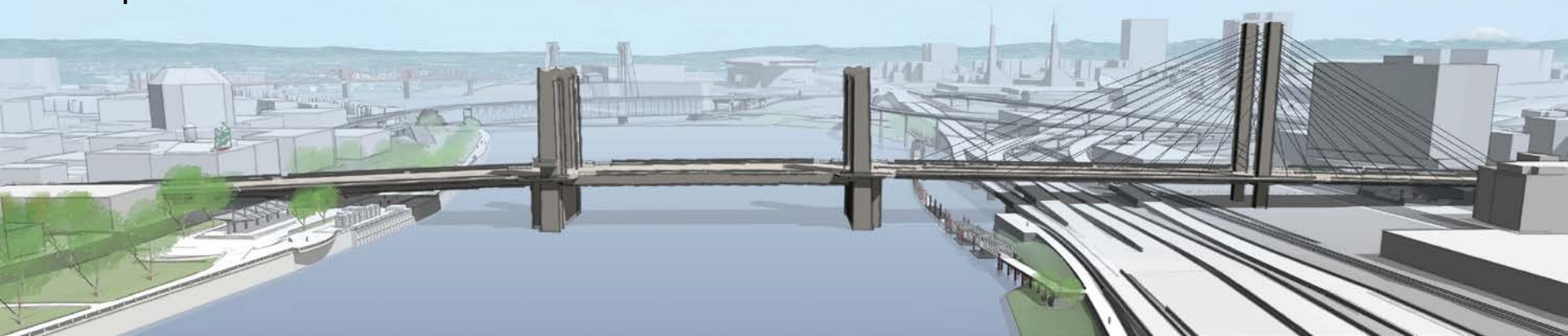
Range of Bridge Types

“Balanced” Cable Stayed / Extradosed – Lift Variations

West span = Cable Stayed

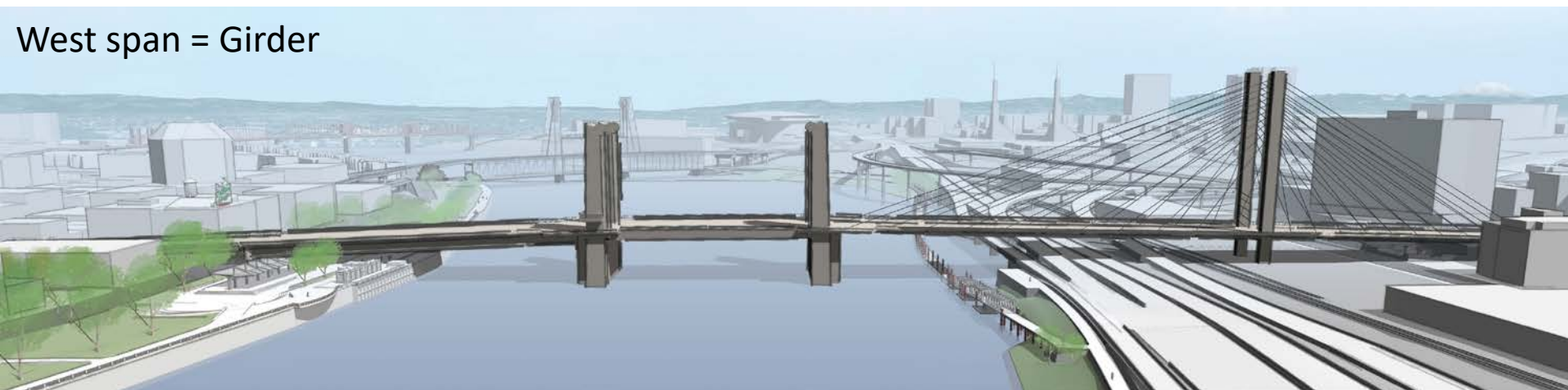
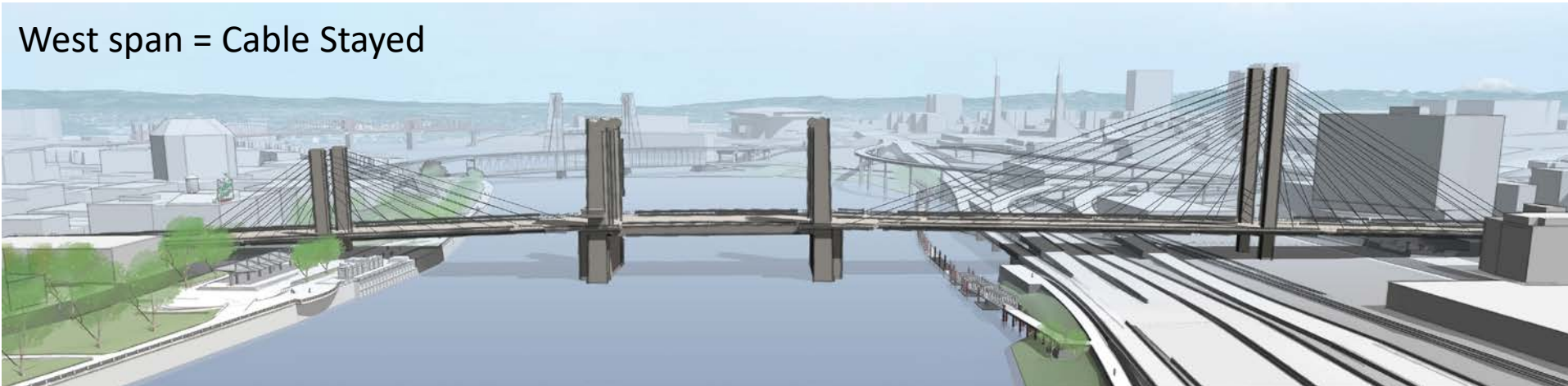


West span = Girder



Range of Bridge Types

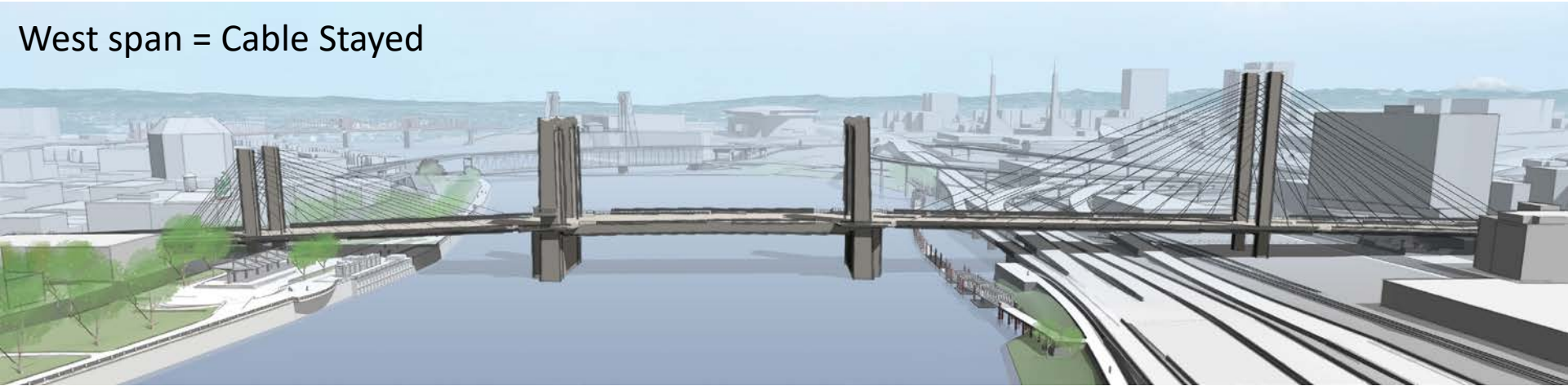
“Balanced” Cable Stayed / Extradosed – Lift Variations (Short Movable Span)



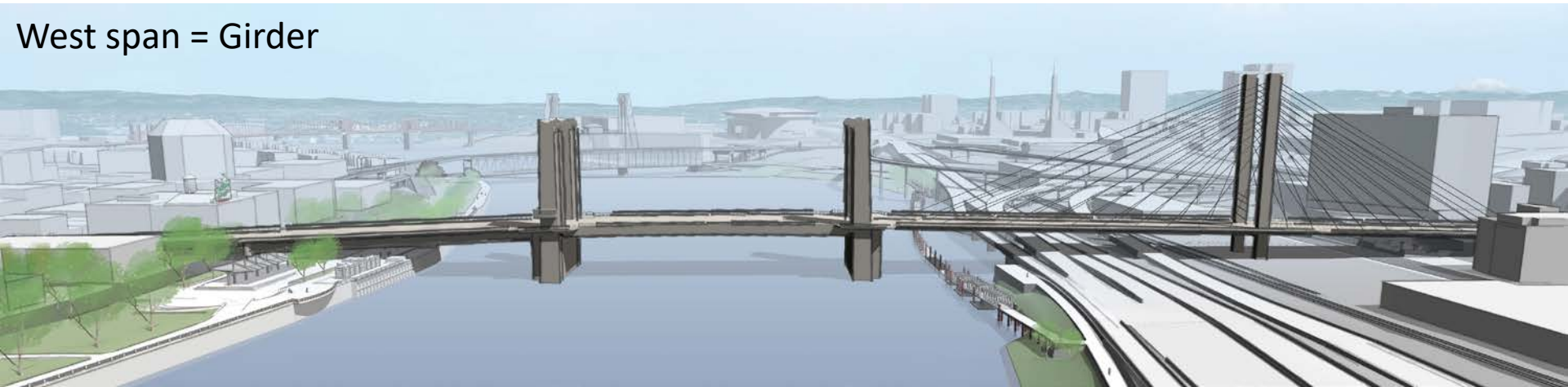
Range of Bridge Types

“Unbalanced” Cable Stayed / Extradosed – Lift Variations

West span = Cable Stayed



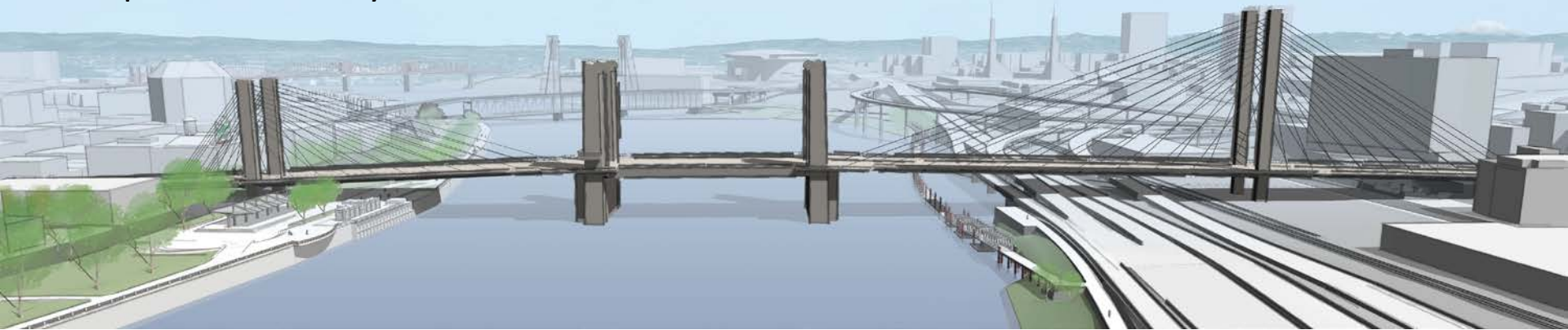
West span = Girder



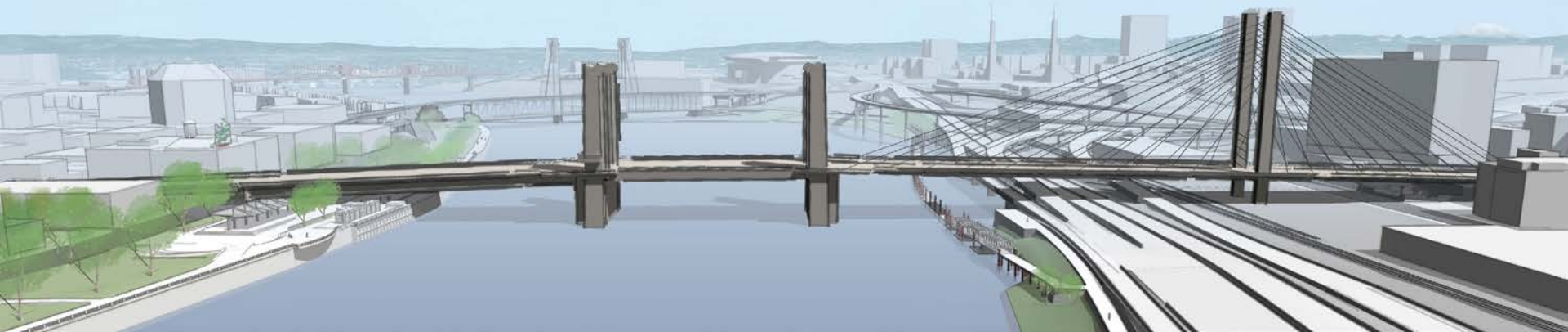
Range of Bridge Types

“Unbalanced” Cable Stayed / Extradosed – Lift Variations (“Short” Movable Span)

West span = Cable Stayed



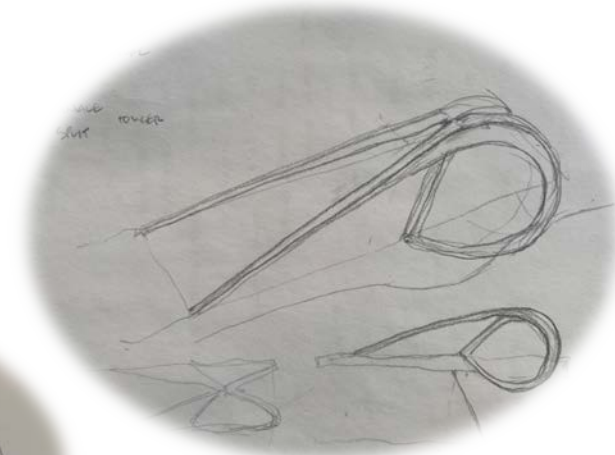
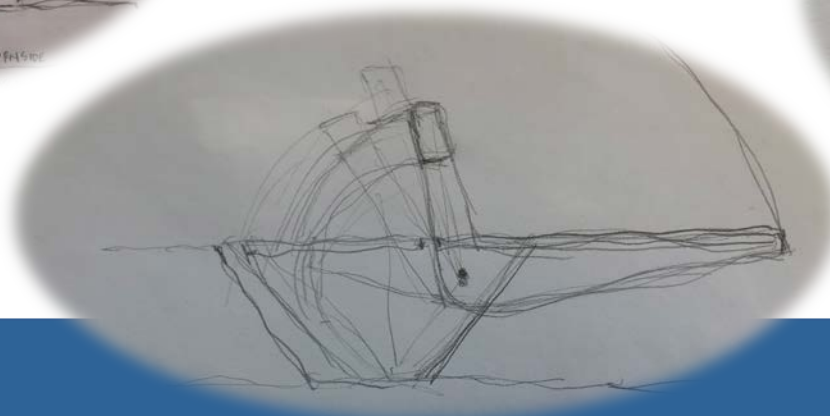
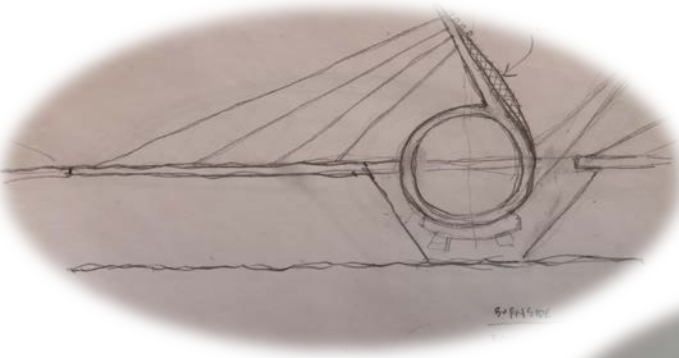
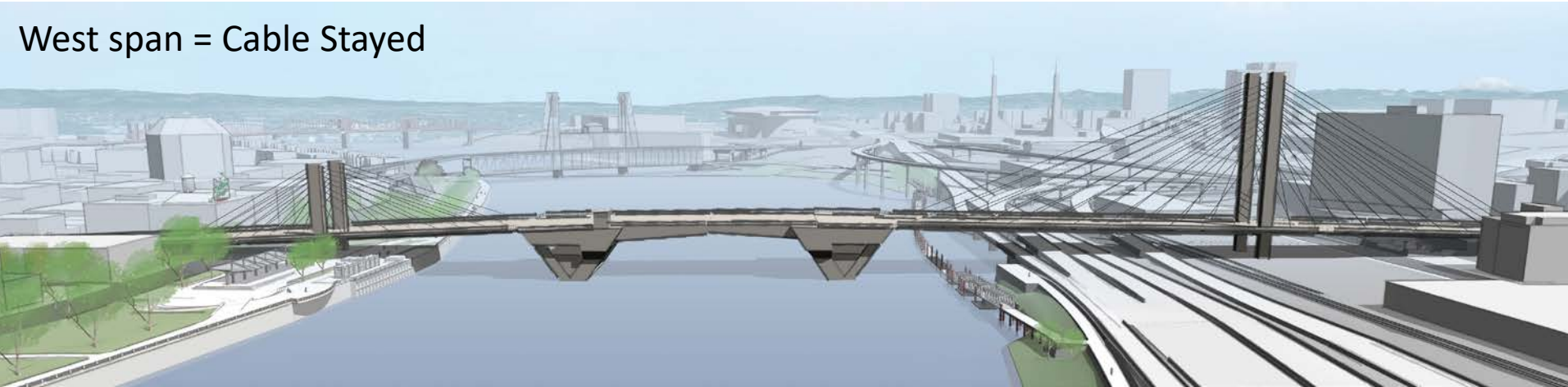
West span = Girder (Same as previous graphic)



Range of Bridge Types

Cable Stayed / Extradosed – Bascule: Enhancement Opportunities

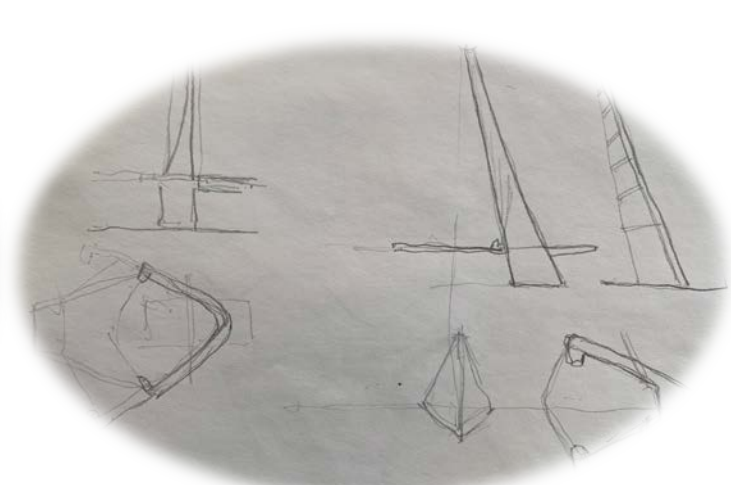
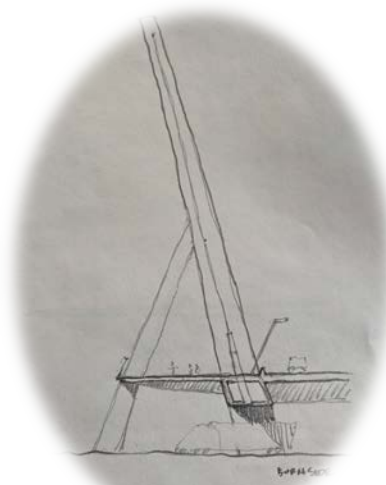
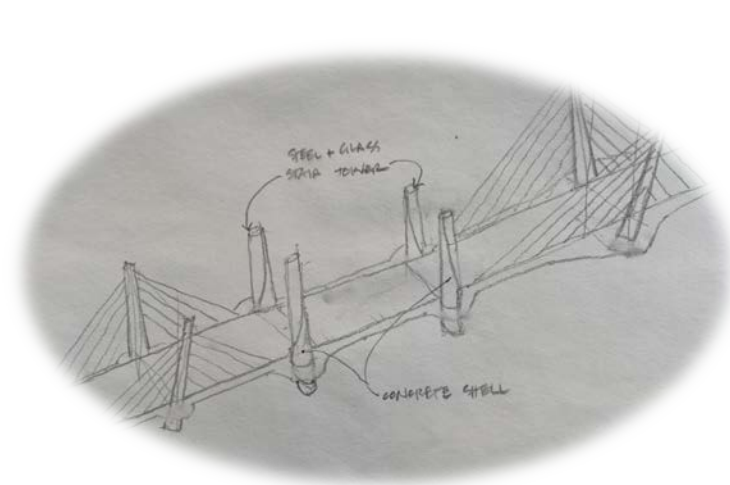
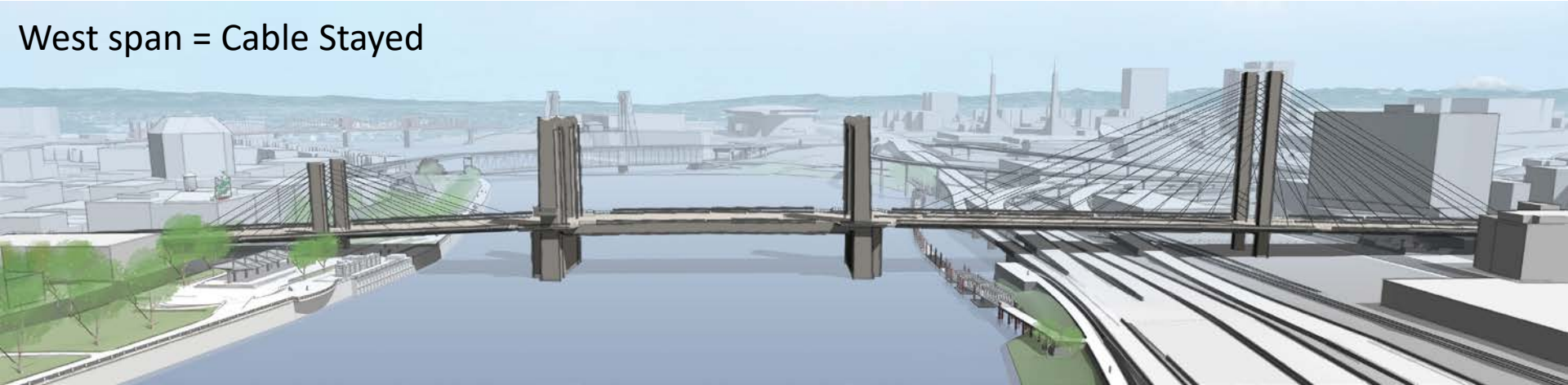
West span = Cable Stayed



Range of Bridge Types

“Balanced” Cable Stayed / Extradosed: Enhancement Opportunities

West span = Cable Stayed

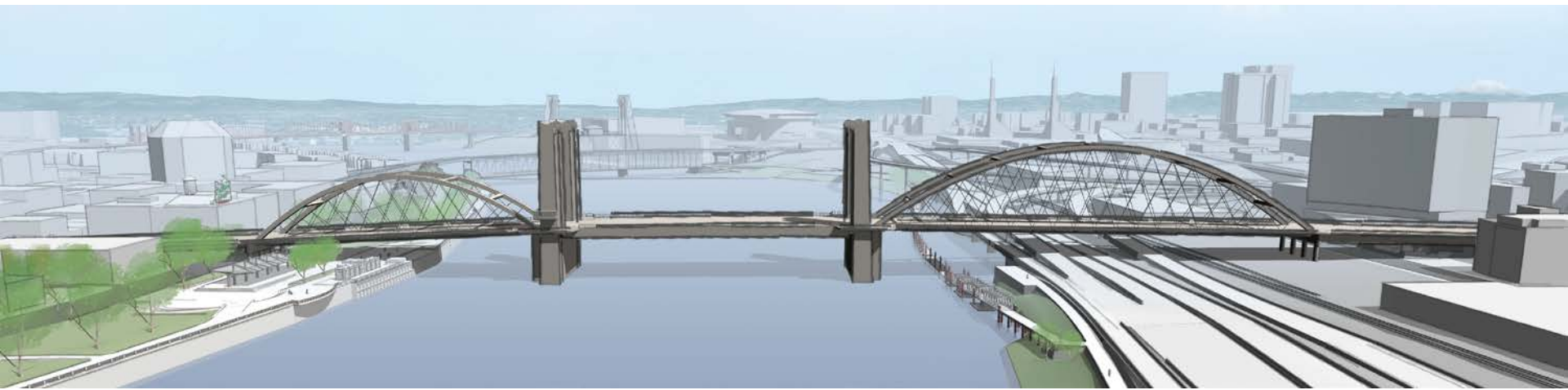


Compositions Profile (Long Movable Span)



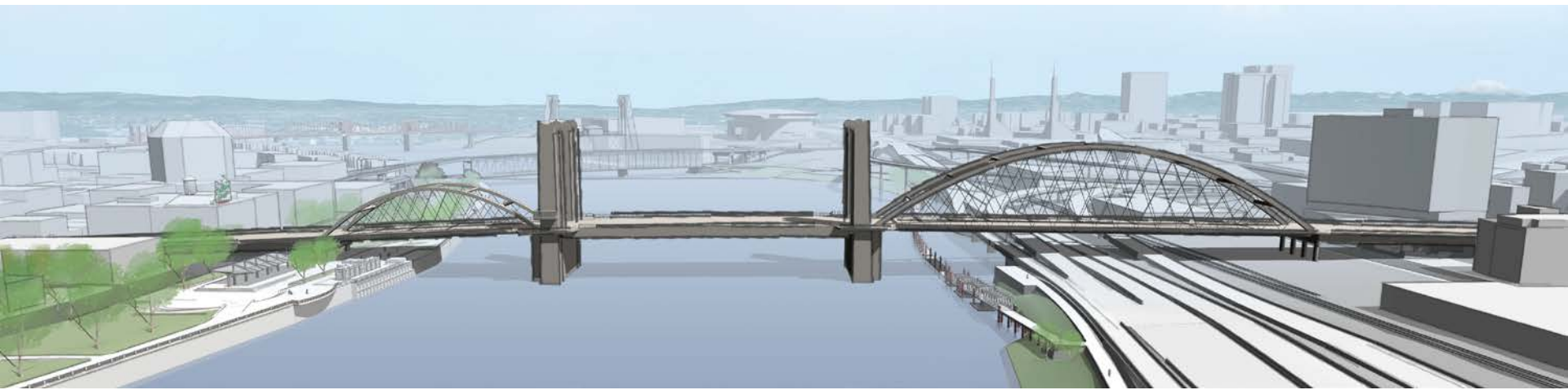
Bridge Composition

Long Arch – Long movable – Tied Arch



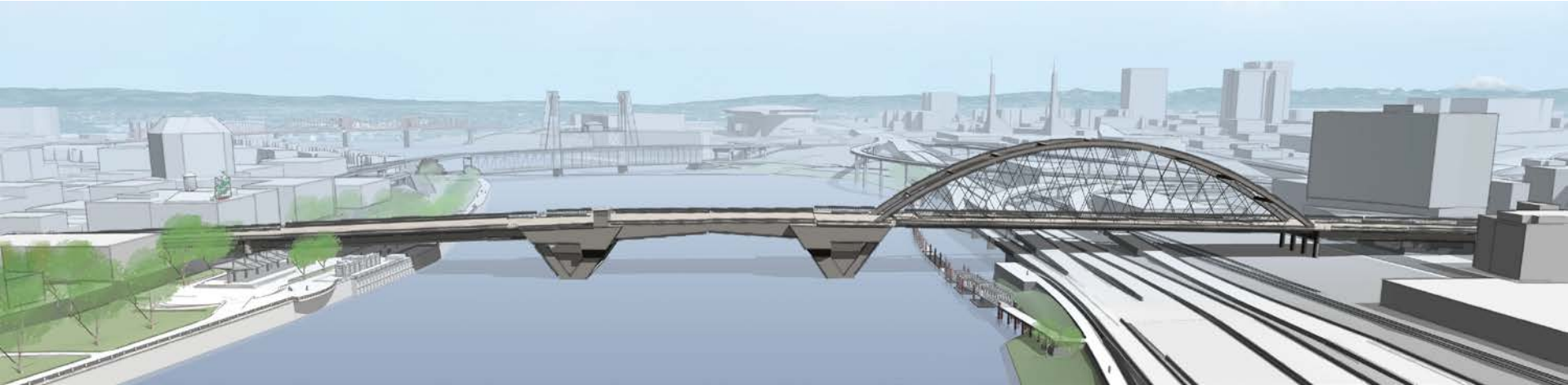
Bridge Composition

Short Arch – Long movable – Tied Arch



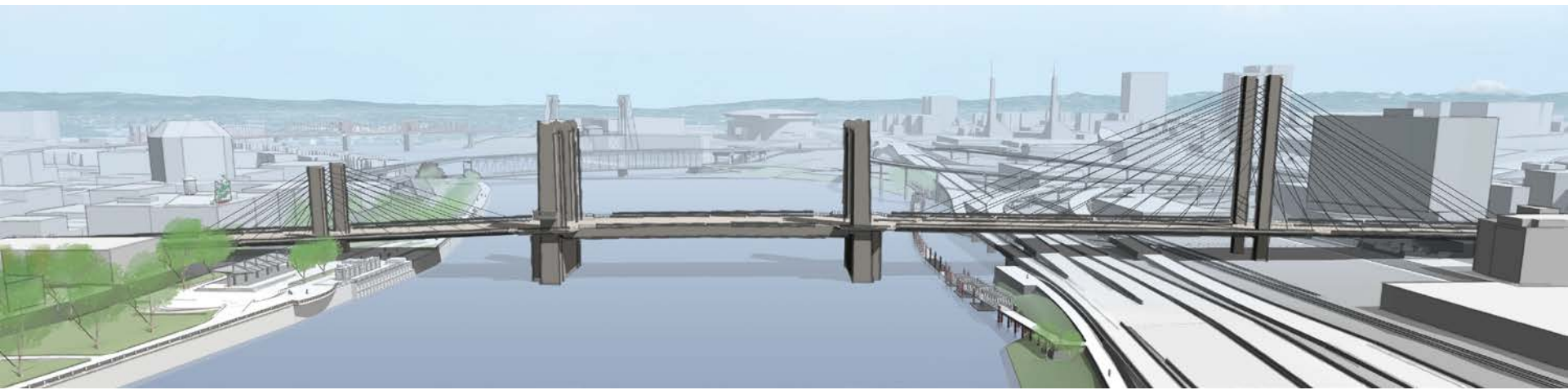
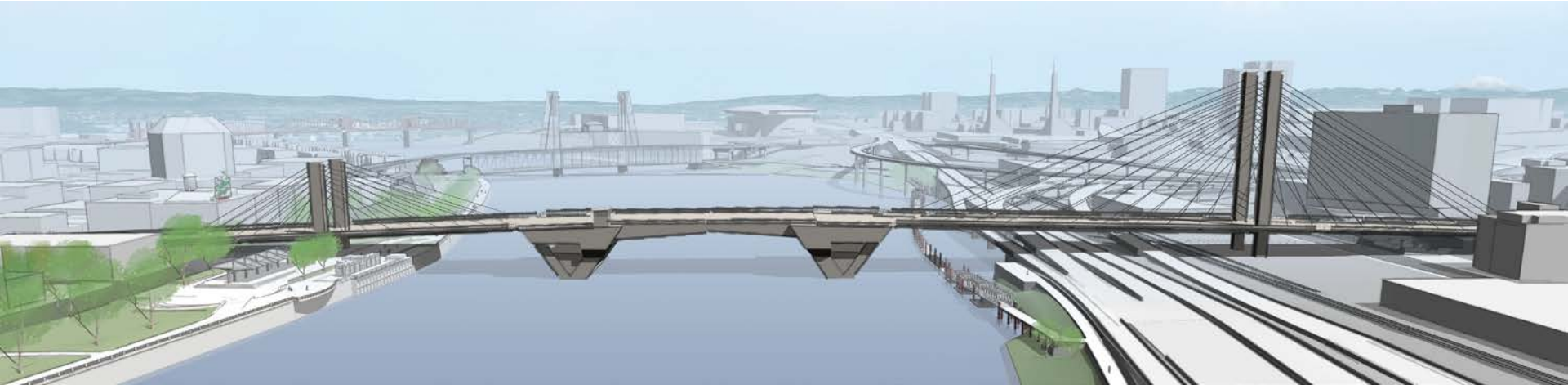
Bridge Composition

Long Girder – Long movable – Tied Arch



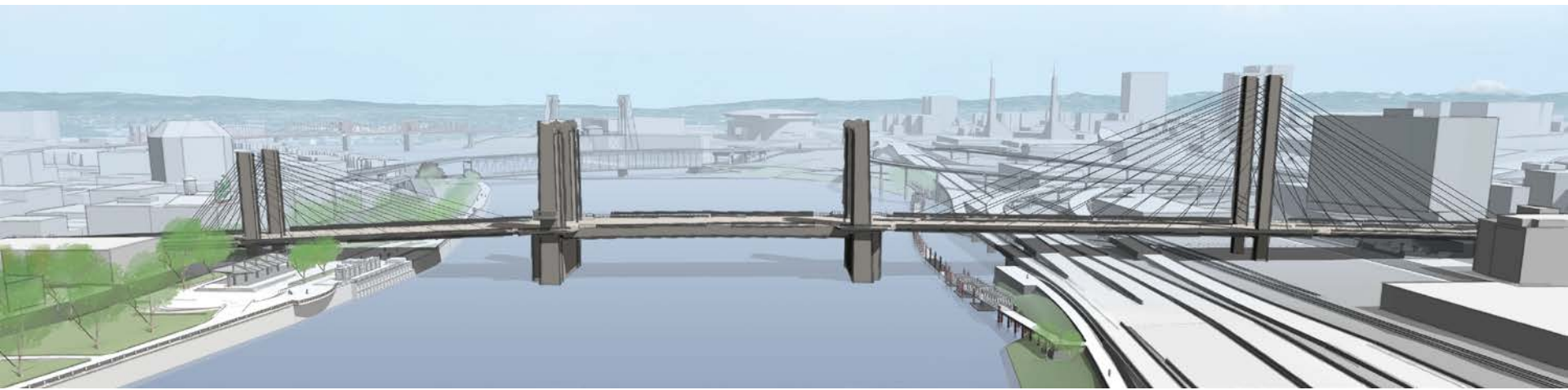
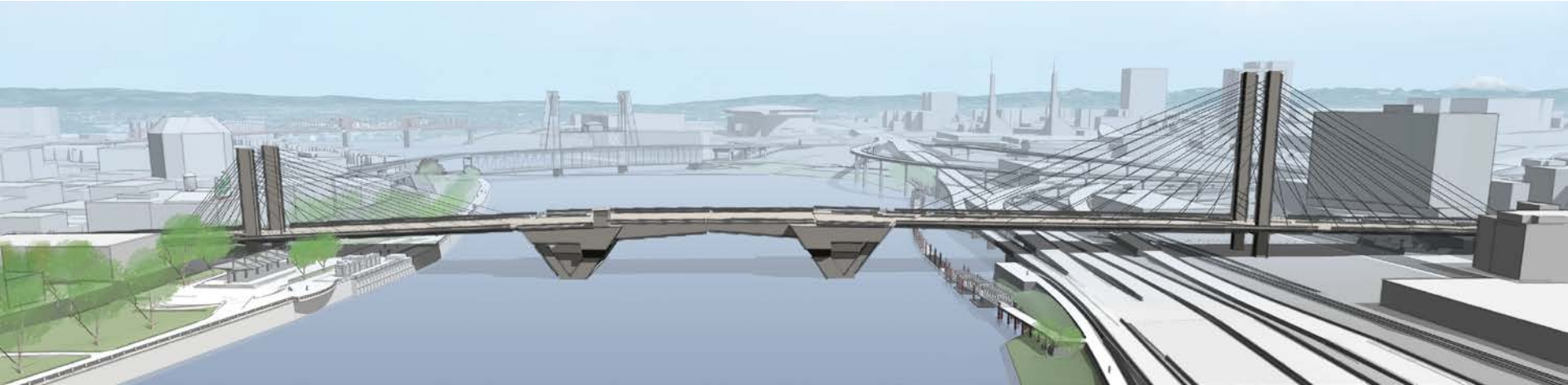
Bridge Composition

Balanced Cable Stay – Long movable – Cable Stay



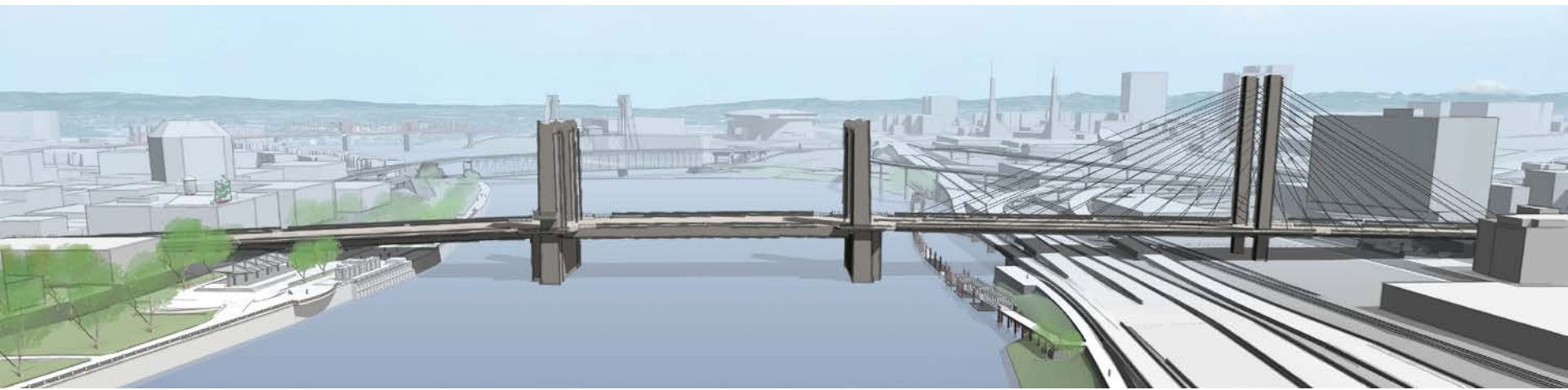
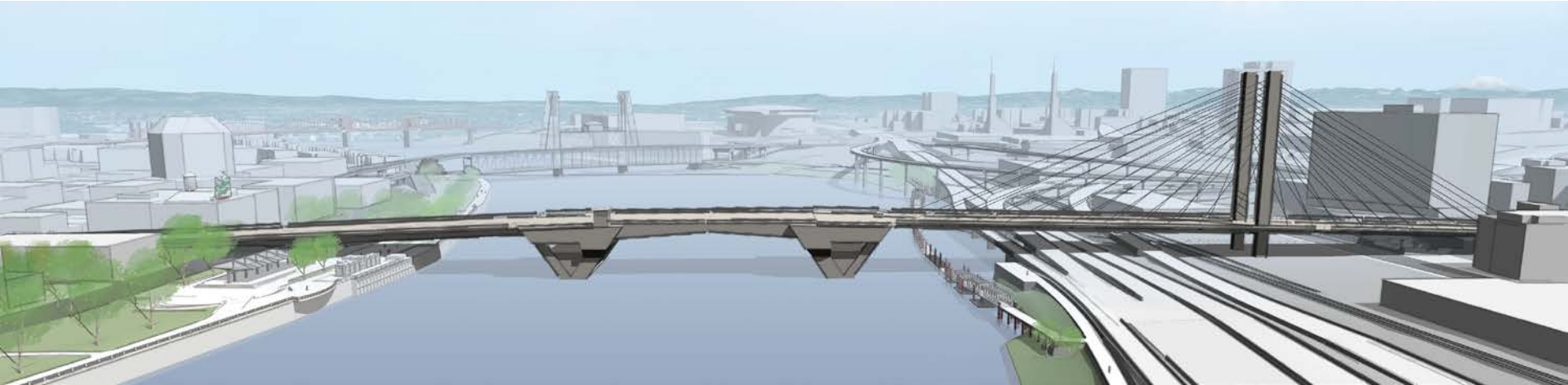
Bridge Composition

Unbalanced Cable Stay – Long movable – Cable Stay



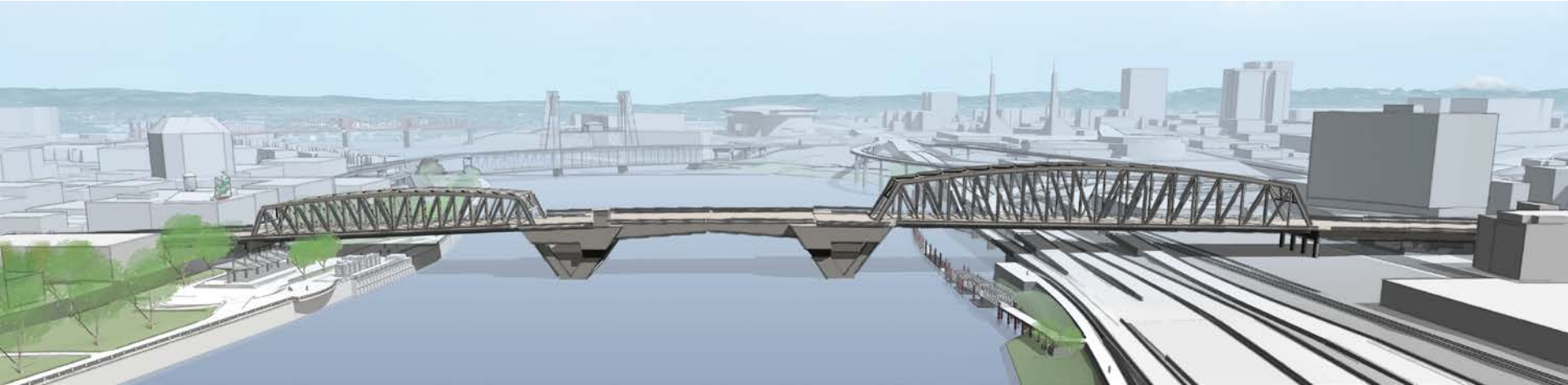
Bridge Composition

Long Girder – Long movable – Cable Stay



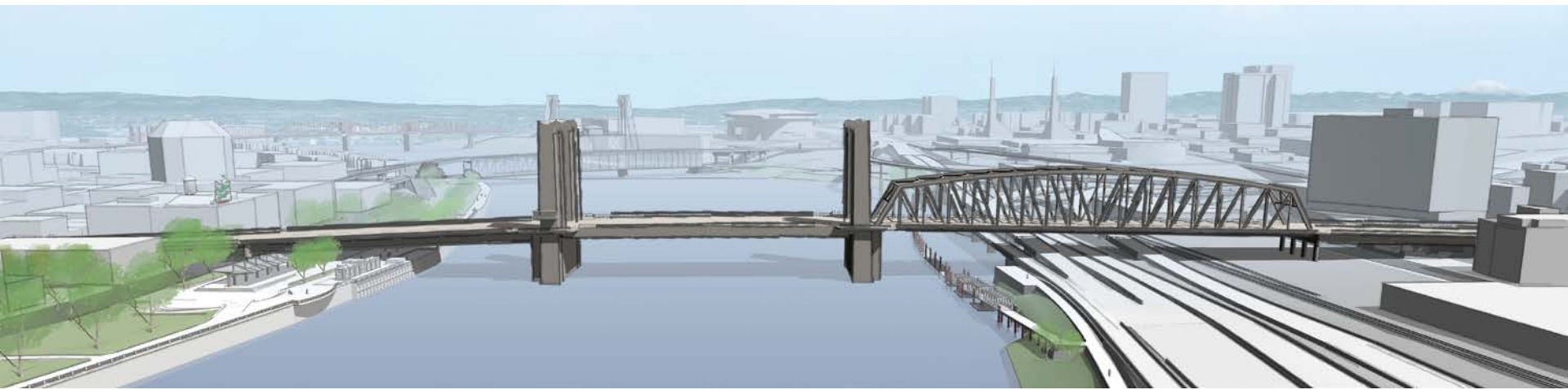
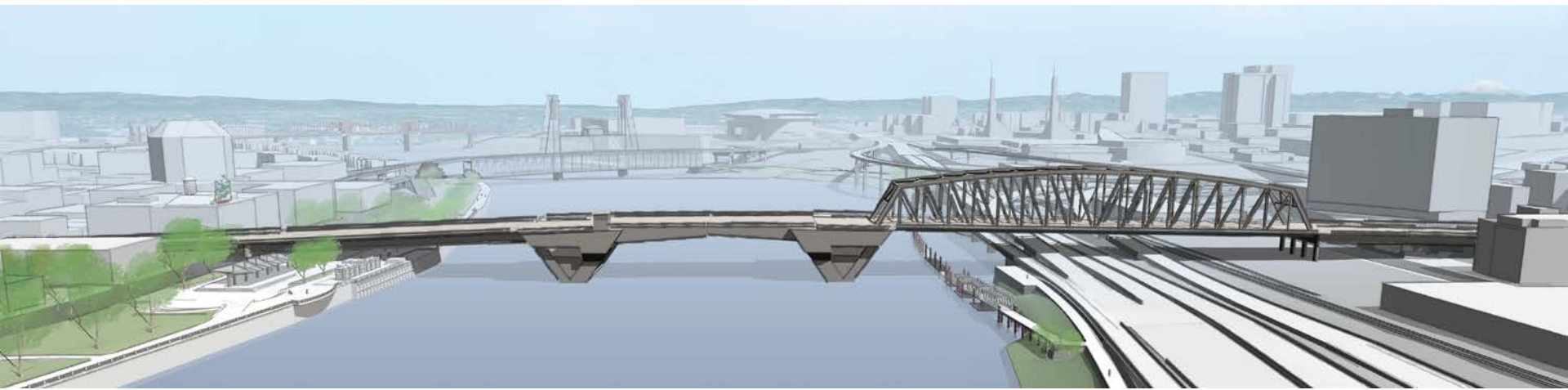
Bridge Composition

Truss – Long movable – Truss



Bridge Composition

Long Girder – Long movable – Truss

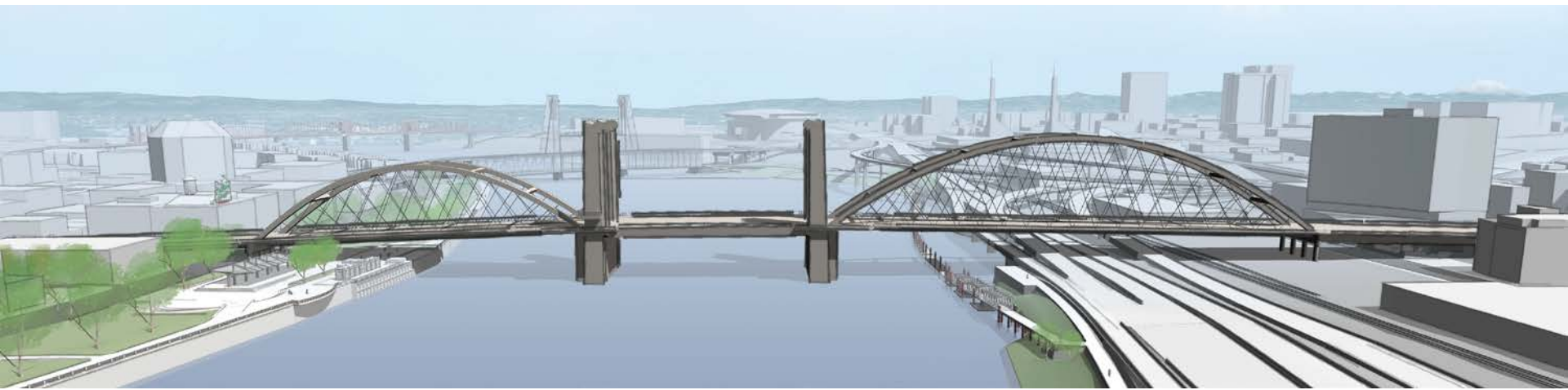
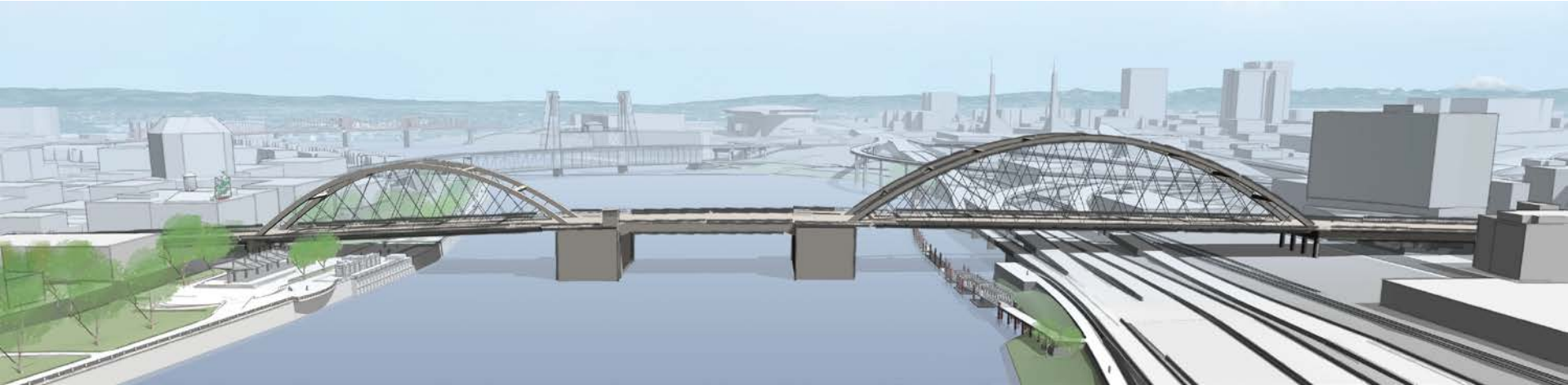


Compositions Profile (Short Movable Span)



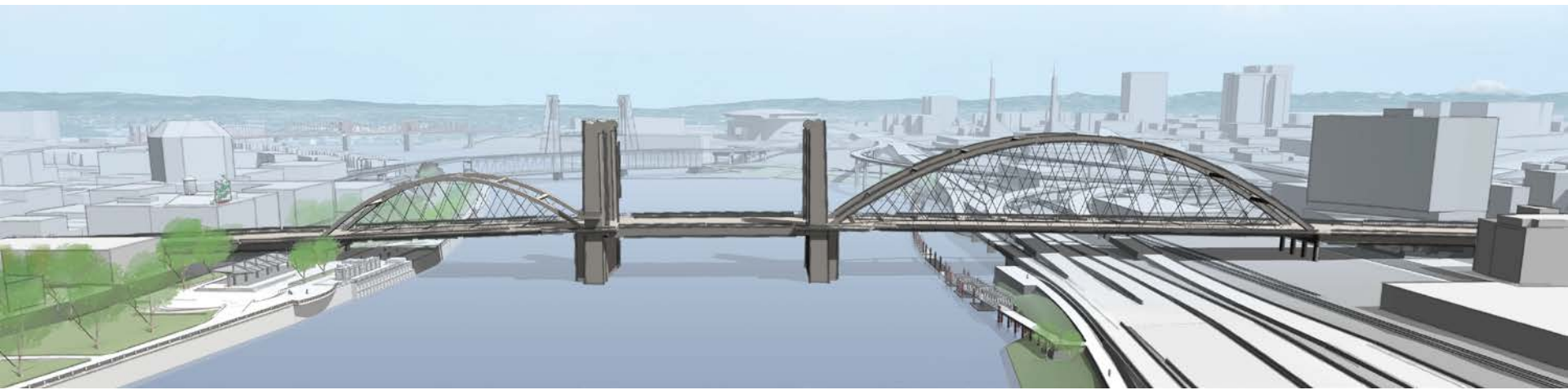
Bridge Composition

Long Arch – Short movable – Tied Arch



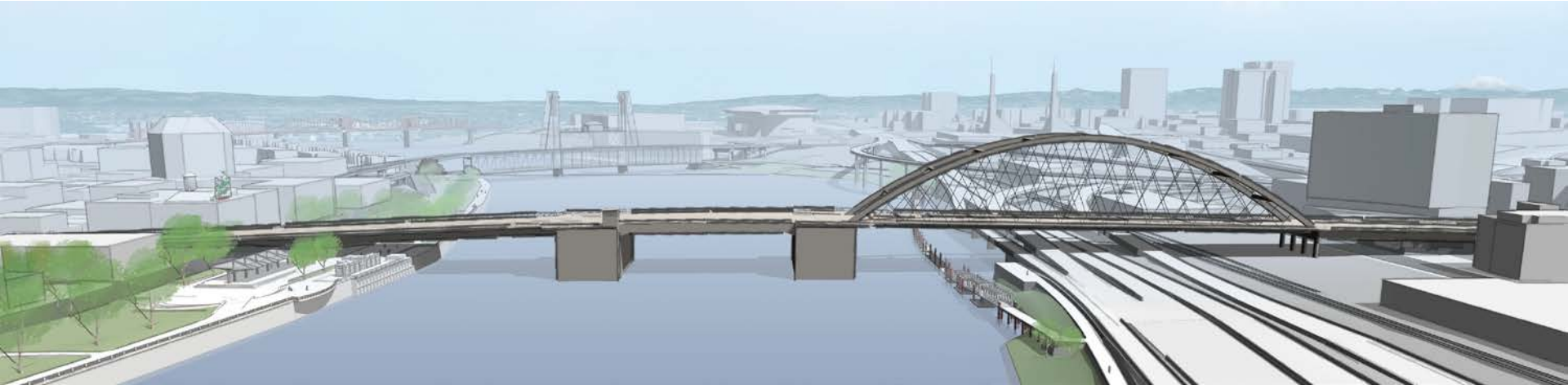
Bridge Composition

Short Arch – Short movable – Tied Arch



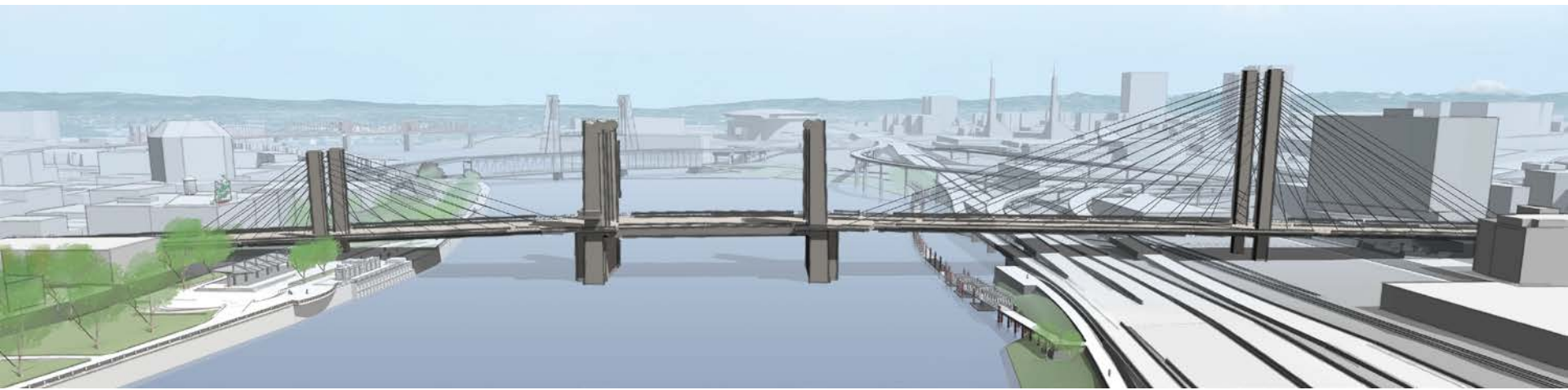
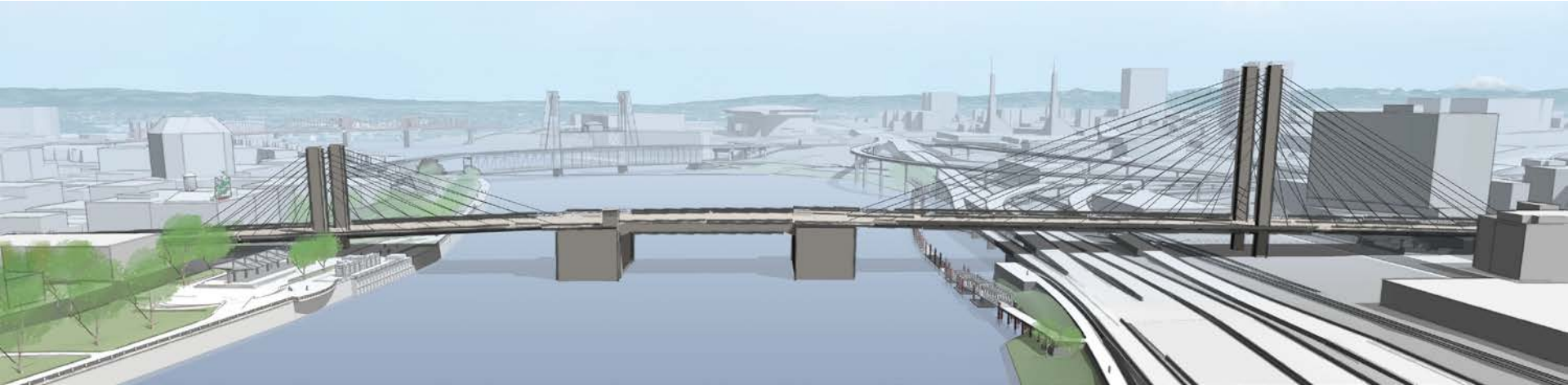
Bridge Composition

Long Girder – Short movable – Tied Arch



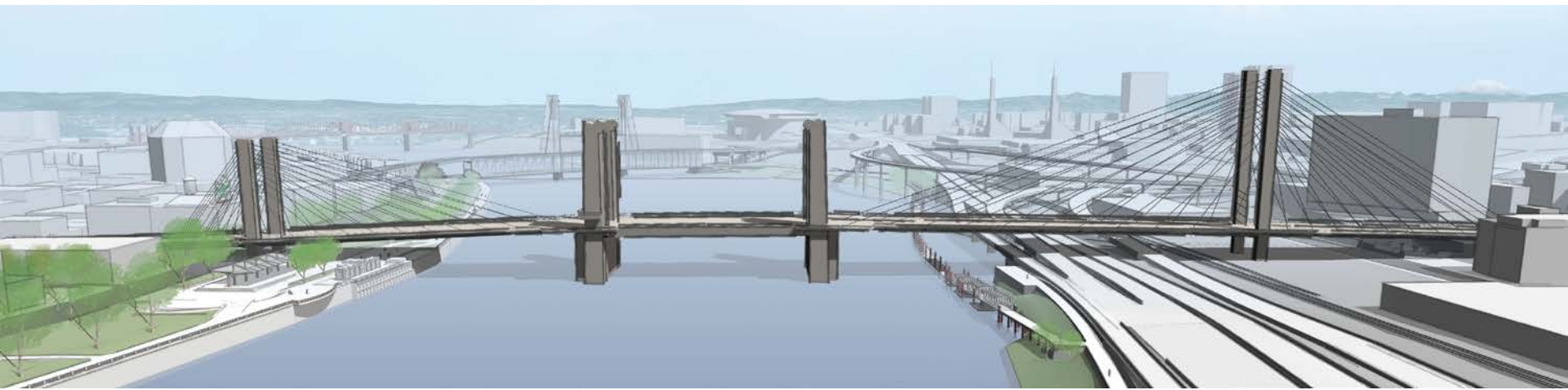
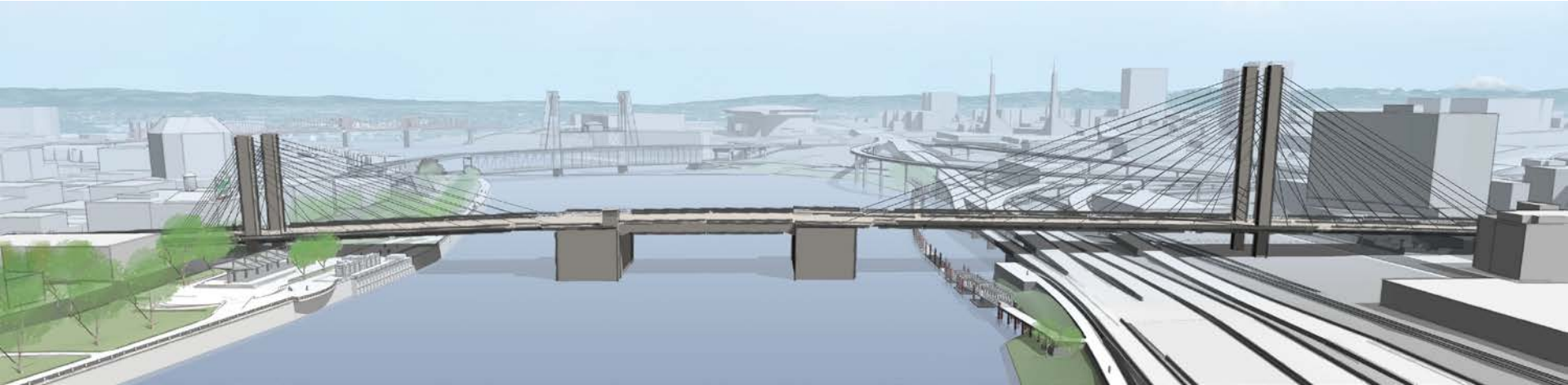
Bridge Composition

Balanced Cable Stay – Short movable – Cable Stay



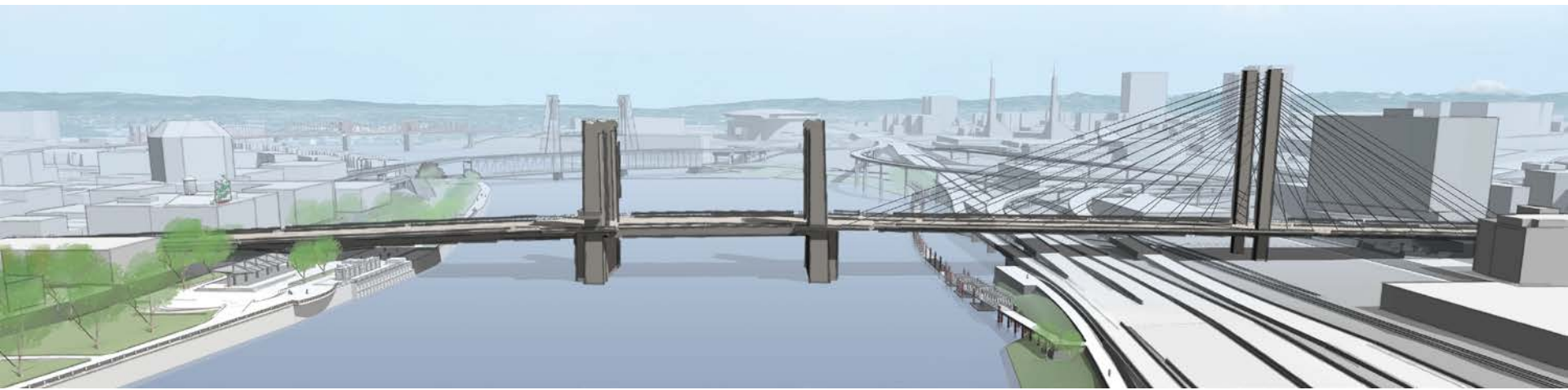
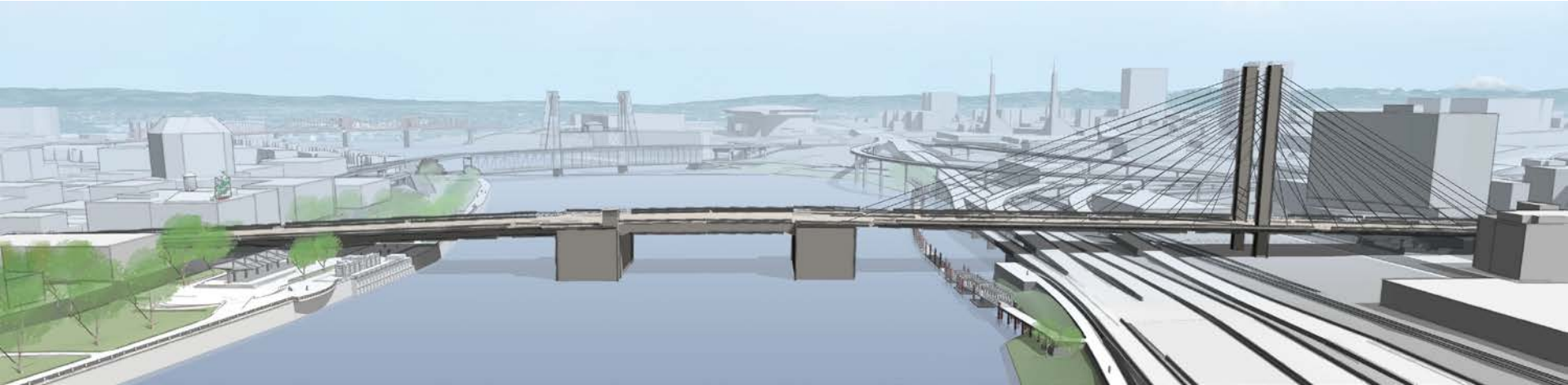
Bridge Composition

Unbalanced Cable Stay – Short movable – Cable Stay



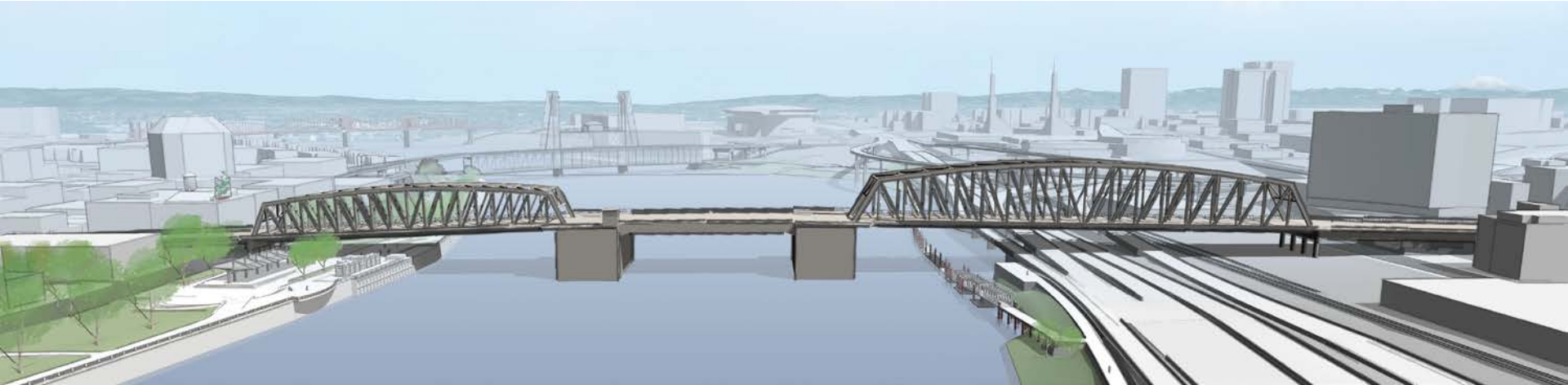
Bridge Composition

Long Girder – Short movable – Cable Stay



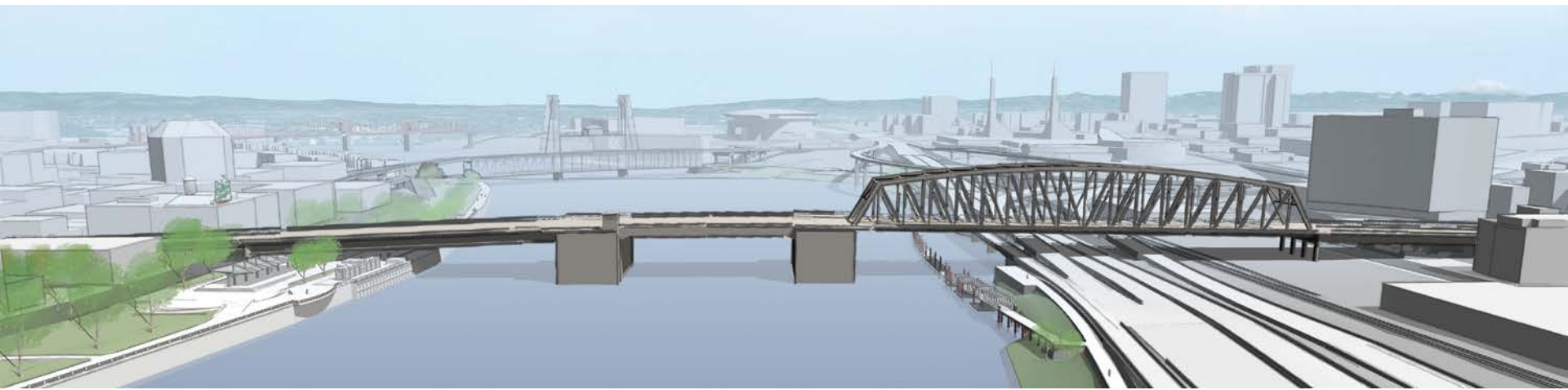
Bridge Composition

Truss – Short movable – Truss



Bridge Composition

Long Girder – Short movable – Truss



Compositions Views from SW Aerial (Long Movable Span)



Bridge Composition

Existing Bridge



Bridge Composition

Long Tied Arch – Long Bascule – Tied Arch



Bridge Composition

Long Tied Arch – Long Vertical Lift – Tied Arch



Bridge Composition

Short Tied Arch – Long Bascule – Tied Arch



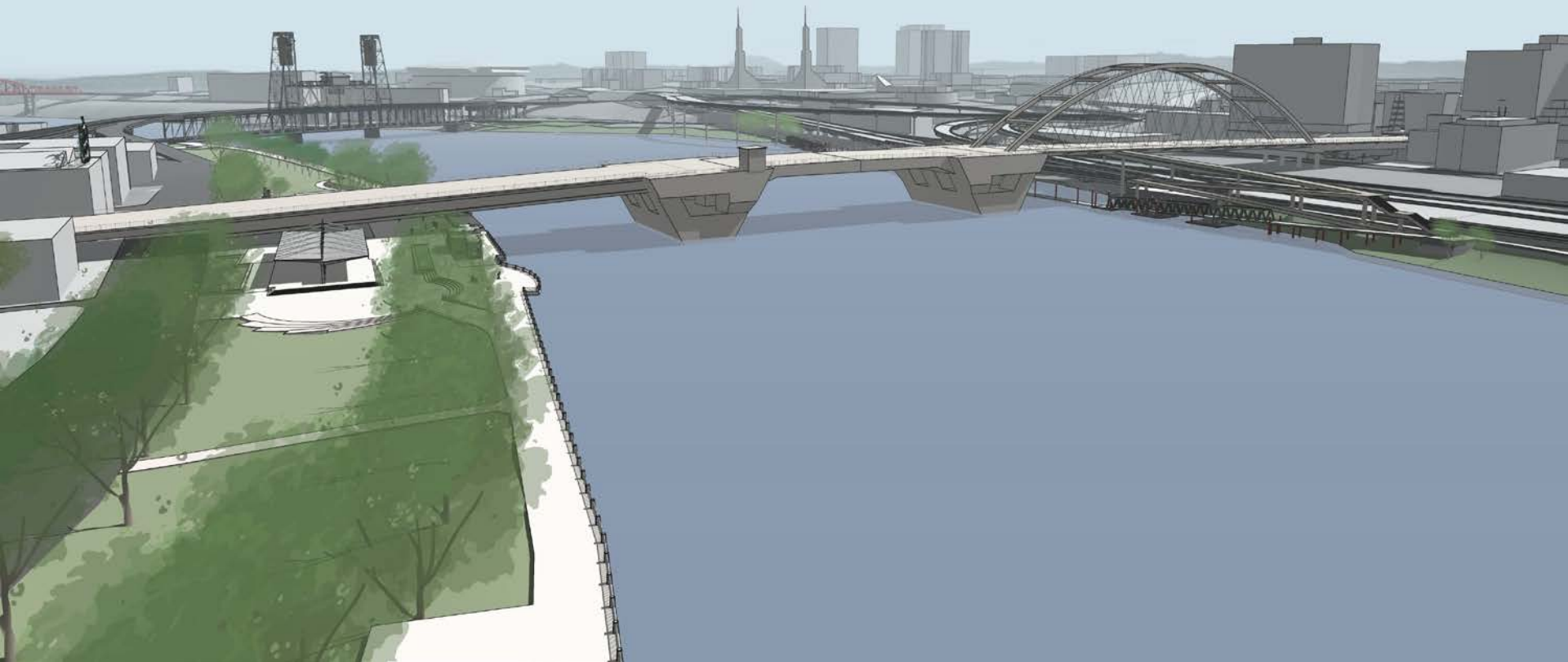
Bridge Composition

Short Tied Arch – Long Vertical Lift – Tied Arch



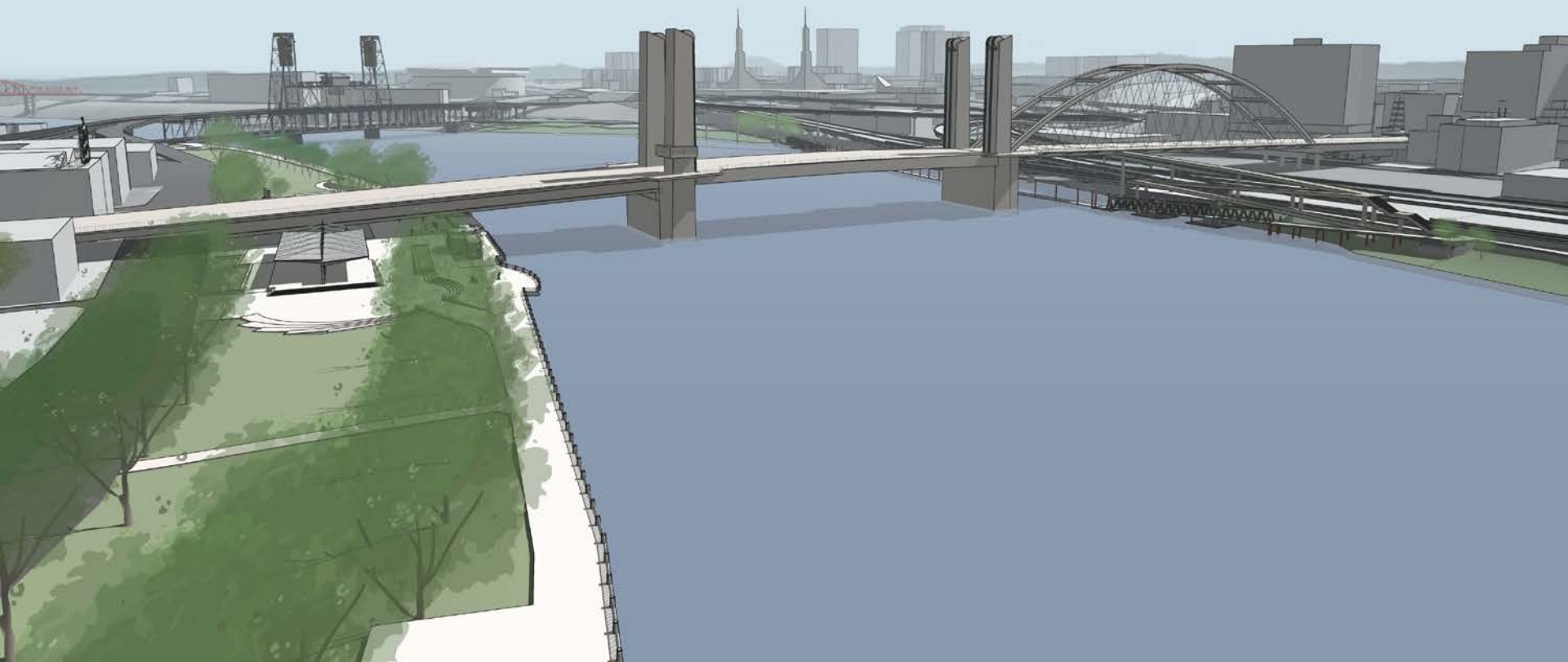
Bridge Composition

Long Girder – Long Bascule – Tied Arch



Bridge Composition

Long Girder – Long Vertical Lift – Tied Arch



Bridge Composition

Short Girder – Long Bascule – Tied Arch



Bridge Composition

Short Girder – Long Vertical Lift – Tied Arch



Bridge Composition

Balanced Cable Stayed – Long Bascule – Cable Stayed



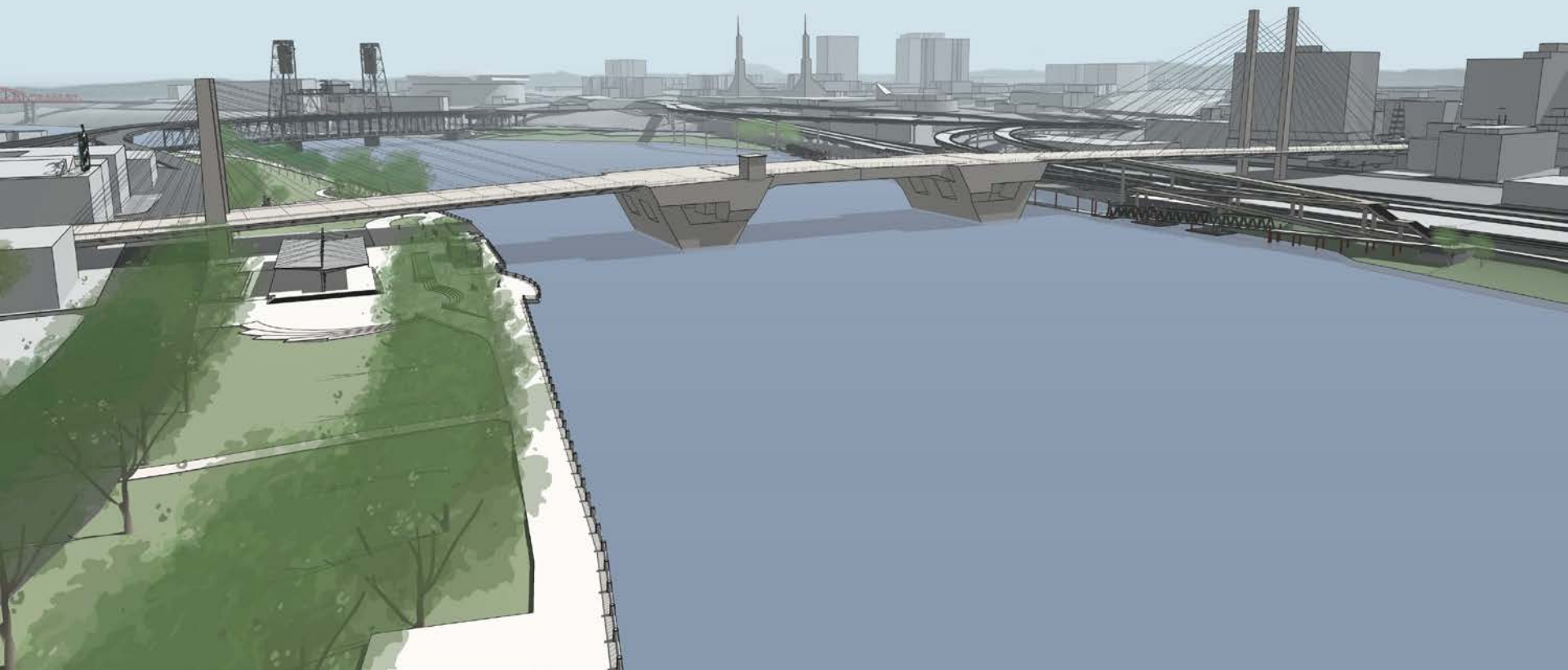
Bridge Composition

Balanced Cable Stayed – Long Vertical Lift – Cable Stayed



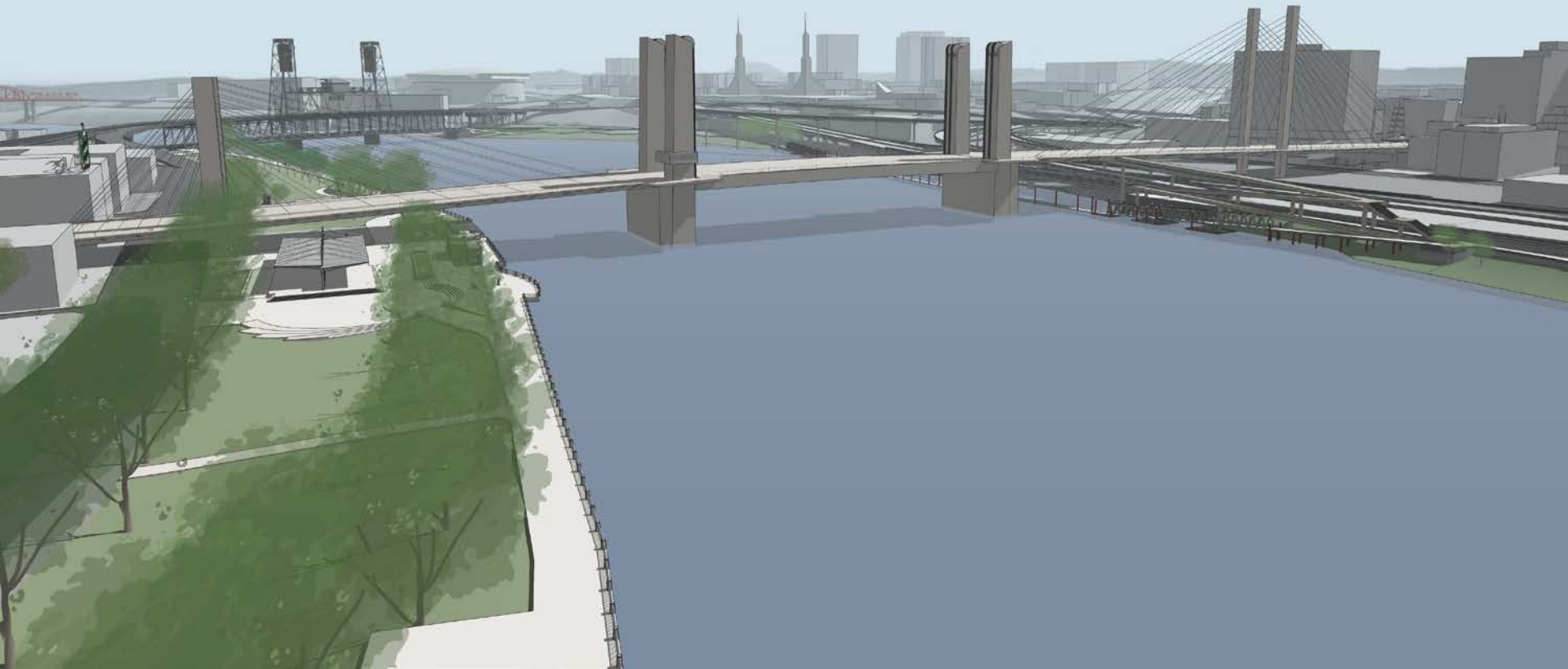
Bridge Composition

Unbalanced Cable Stayed – Long Bascule – Cable Stayed



Bridge Composition

Unbalanced Cable Stayed – Long Vertical Lift – Cable Stayed



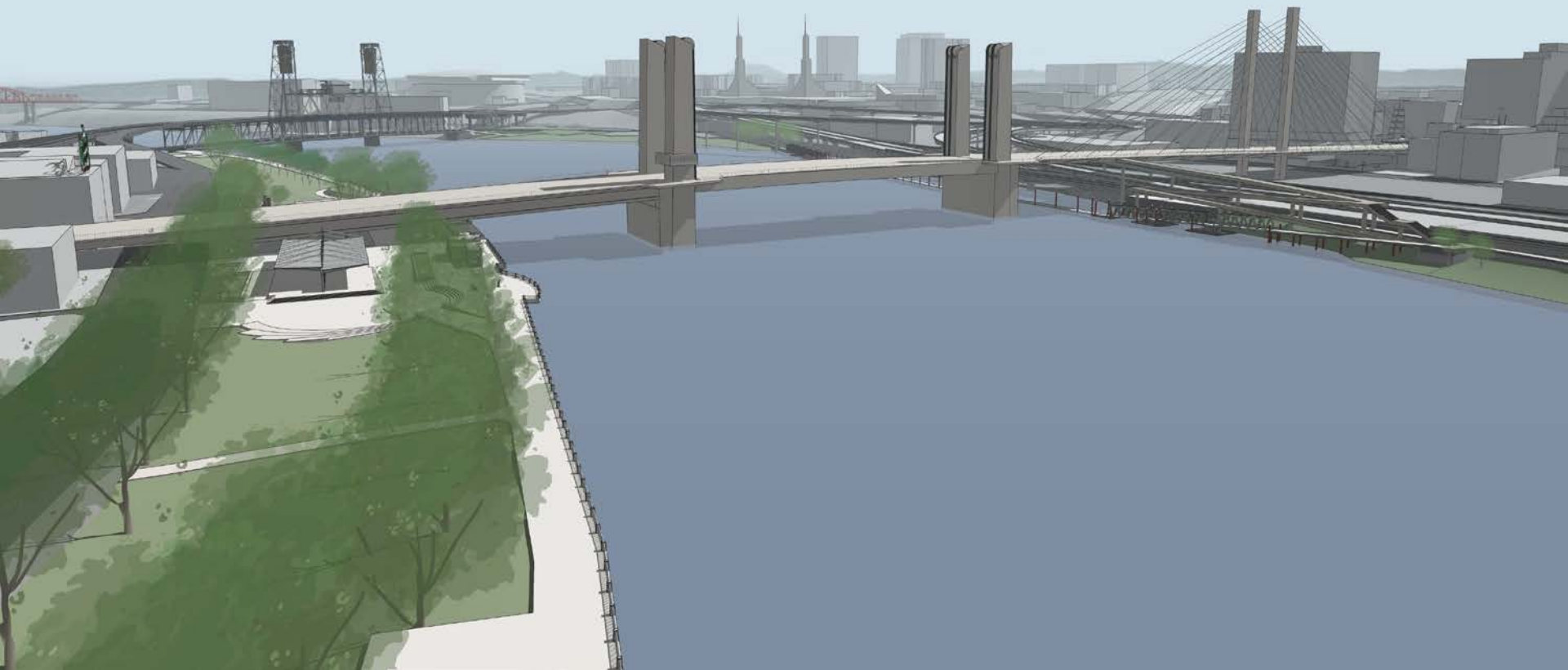
Bridge Composition

Long Girder – Long Bascule – Cable Stayed



Bridge Composition

Long Girder – Long Vertical Lift – Cable Stayed



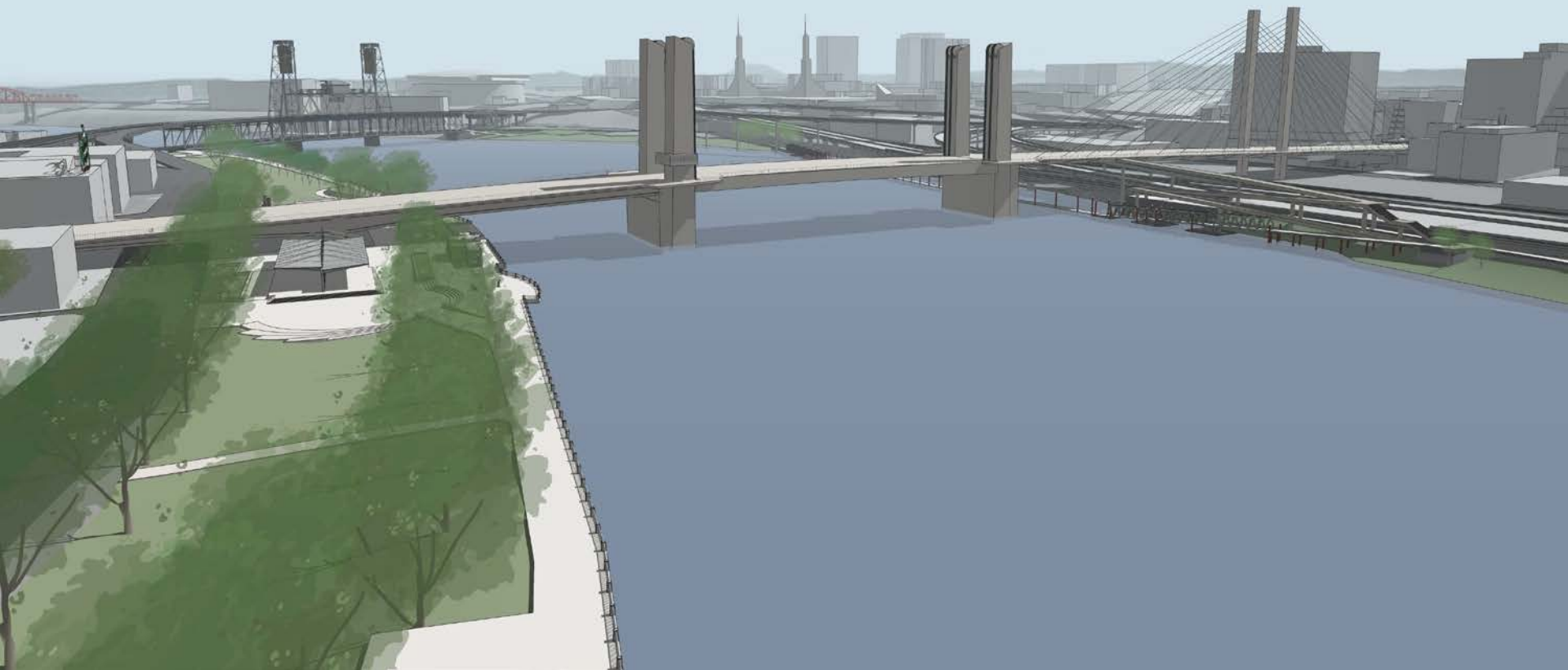
Bridge Composition

Short Girder – Long Bascule – Cable Stayed



Bridge Composition

Short Girder – Long Vertical Lift – Cable Stayed



Bridge Composition

Truss – Long Bascule – Truss



Bridge Composition

Truss – Long Vertical Lift – Truss



Bridge Composition

Long Girder – Long Bascule – Truss



Bridge Composition

Long Girder – Long Vertical Lift – Truss

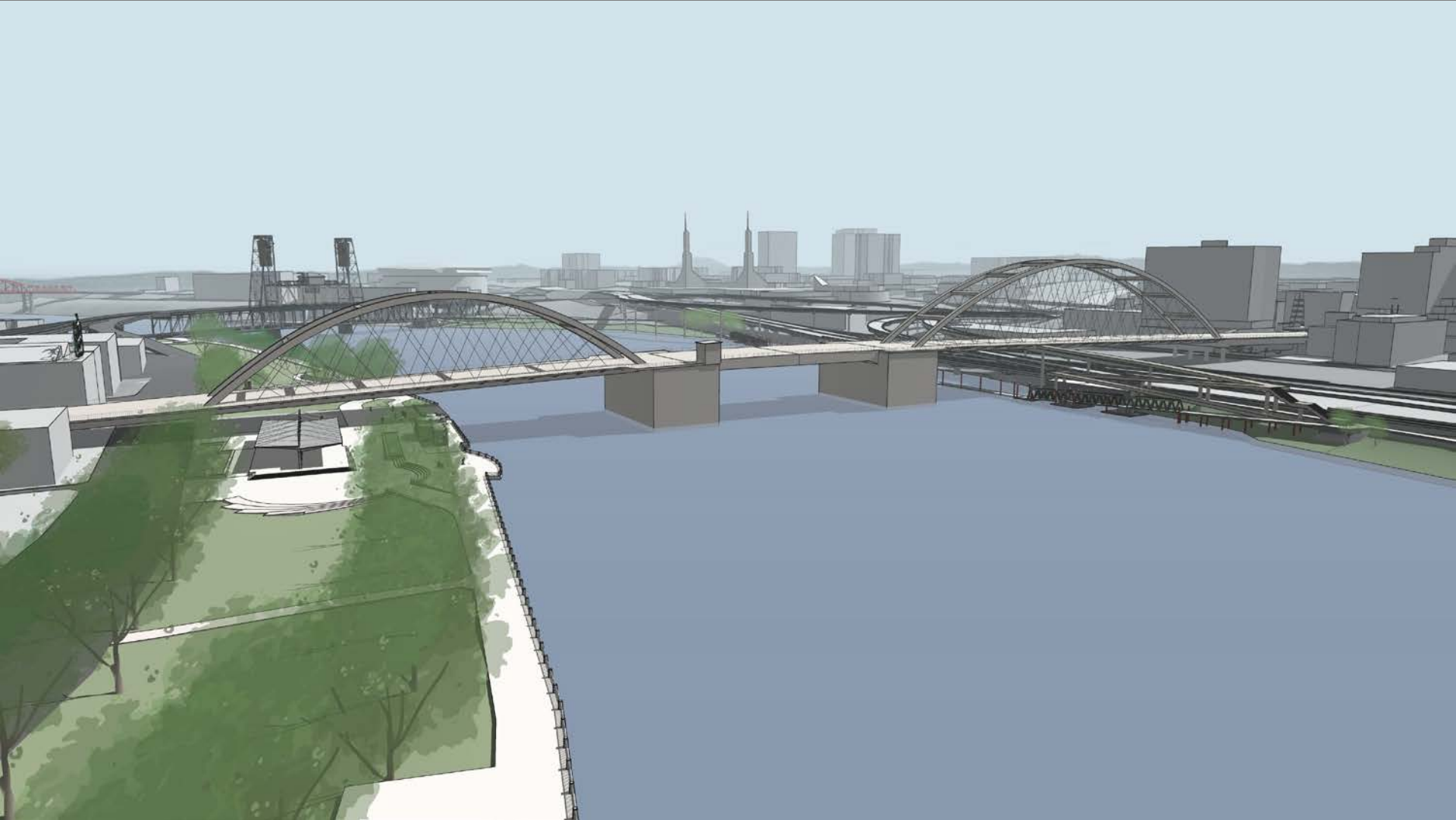


Compositions Views from SW Aerial (Short Movable Span)



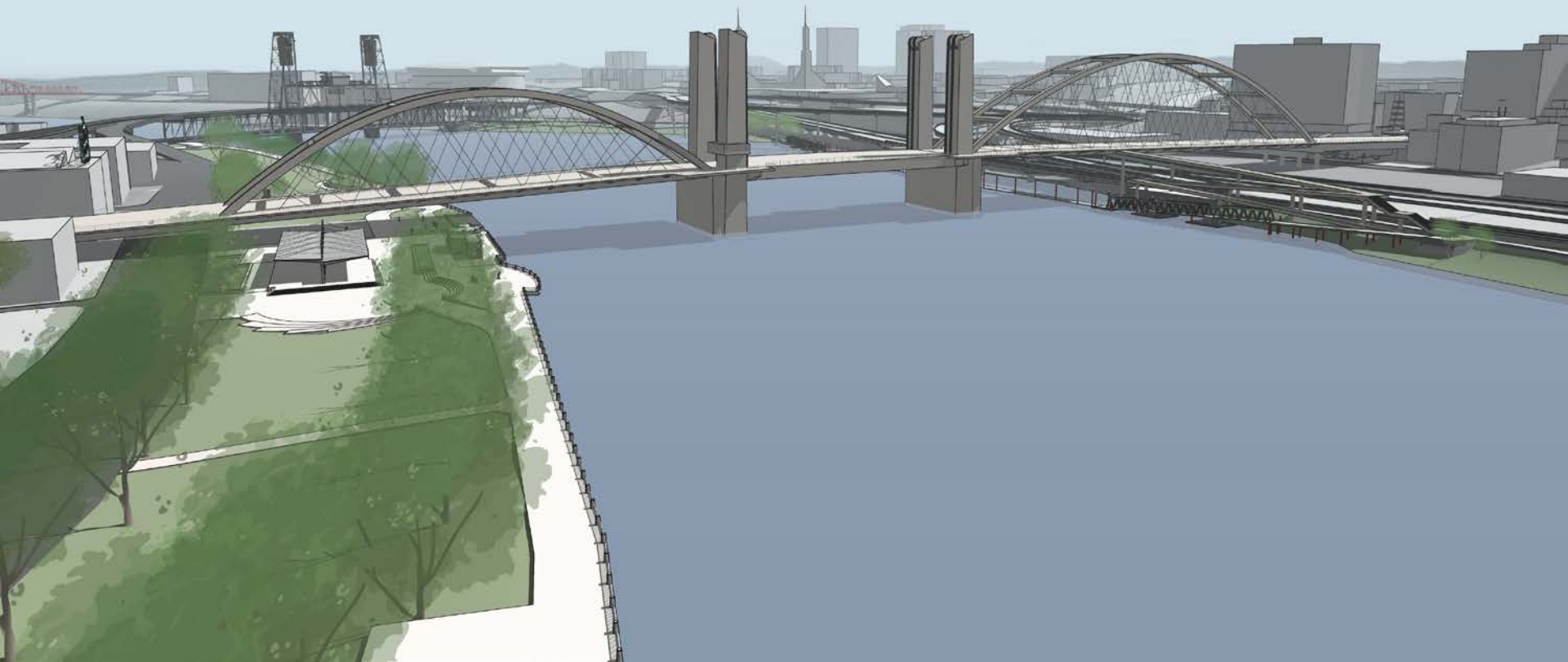
Bridge Composition

Long Tied Arch – Short Bascule – Tied Arch



Bridge Composition

Long Tied Arch – Short Vertical Lift – Tied Arch



Bridge Composition

Short Tied Arch – Short Bascule – Tied Arch



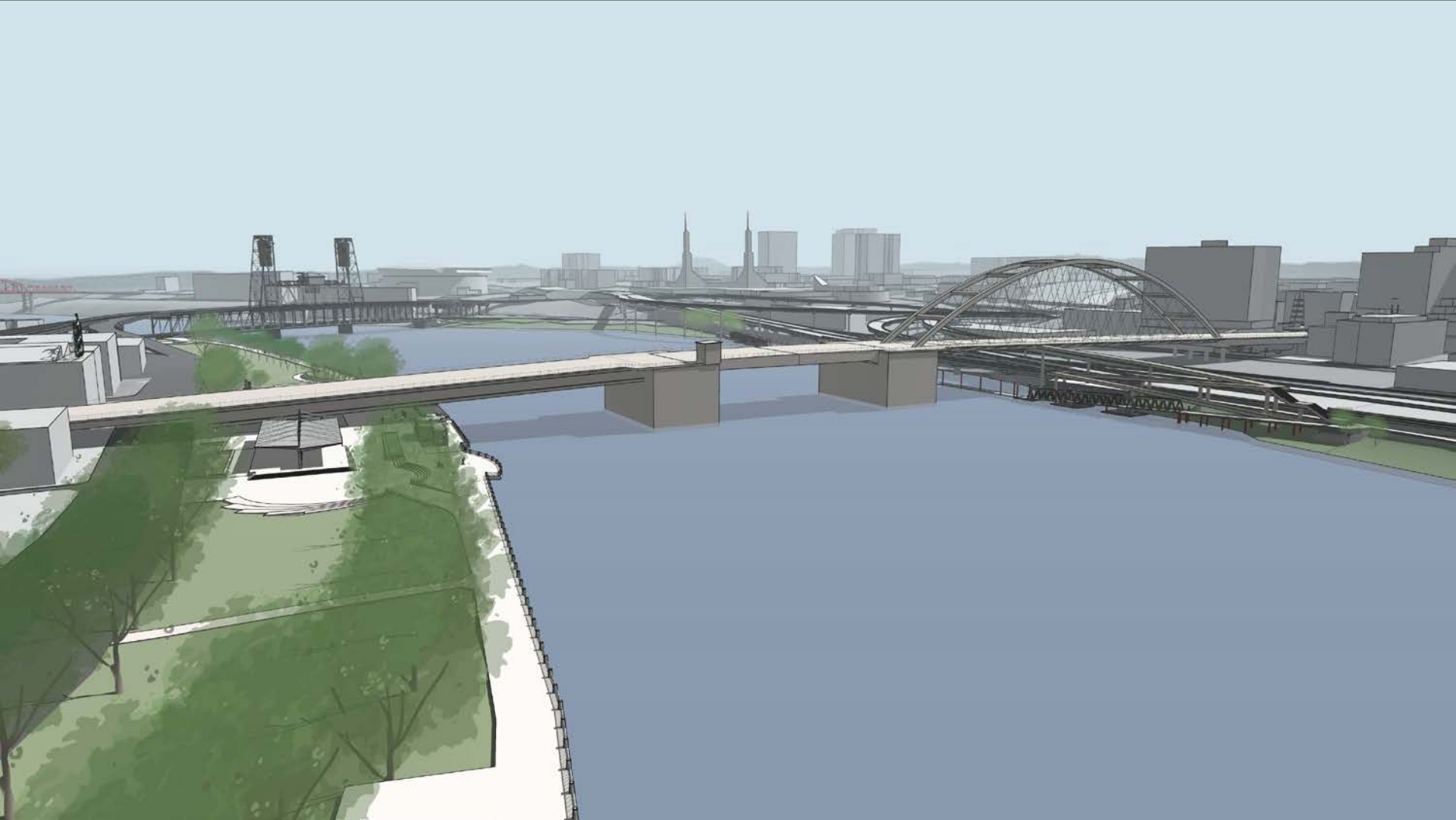
Bridge Composition

Short Tied Arch – Short Vertical Lift – Tied Arch



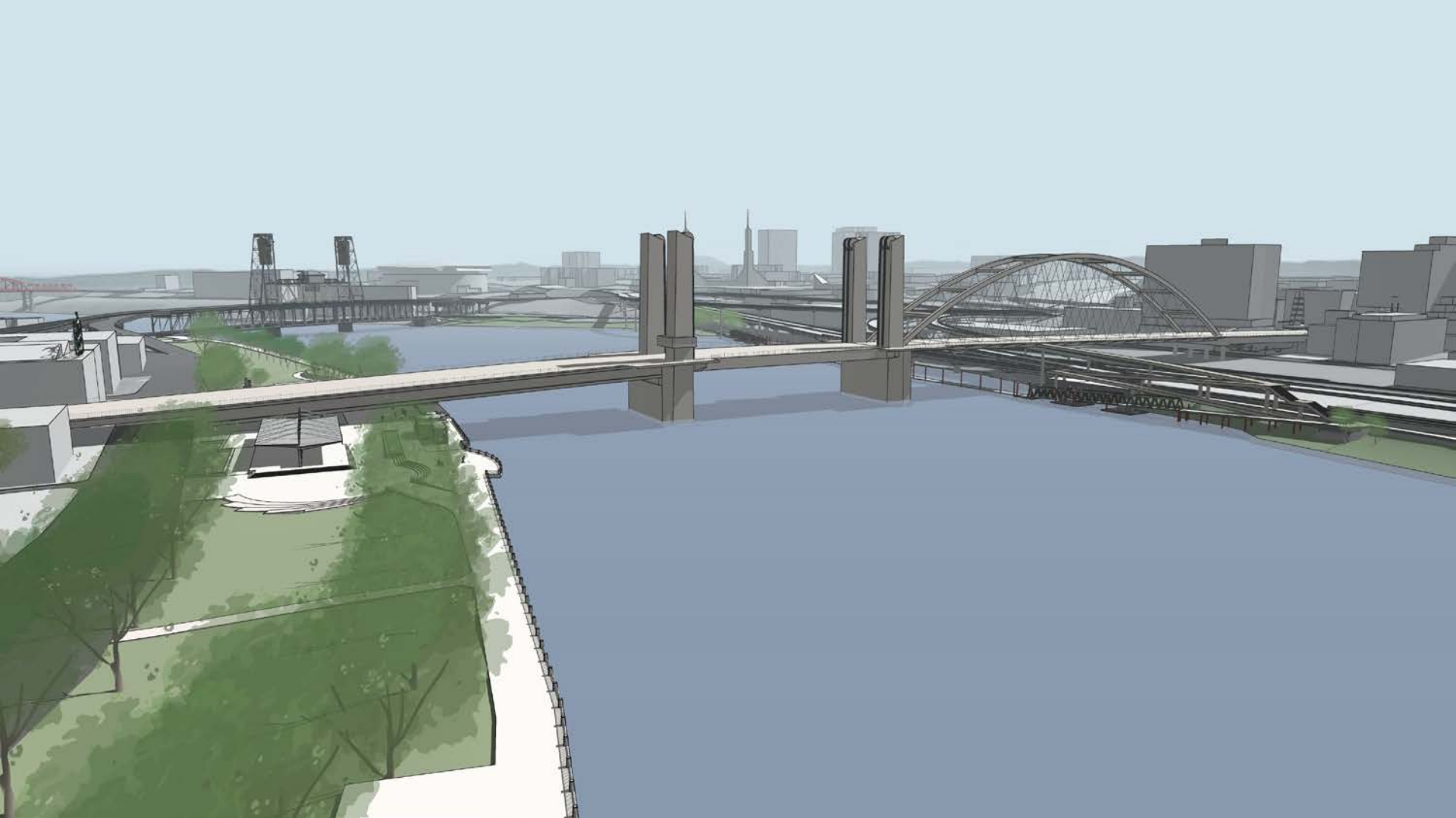
Bridge Composition

Long Girder – Short Bascule – Tied Arch



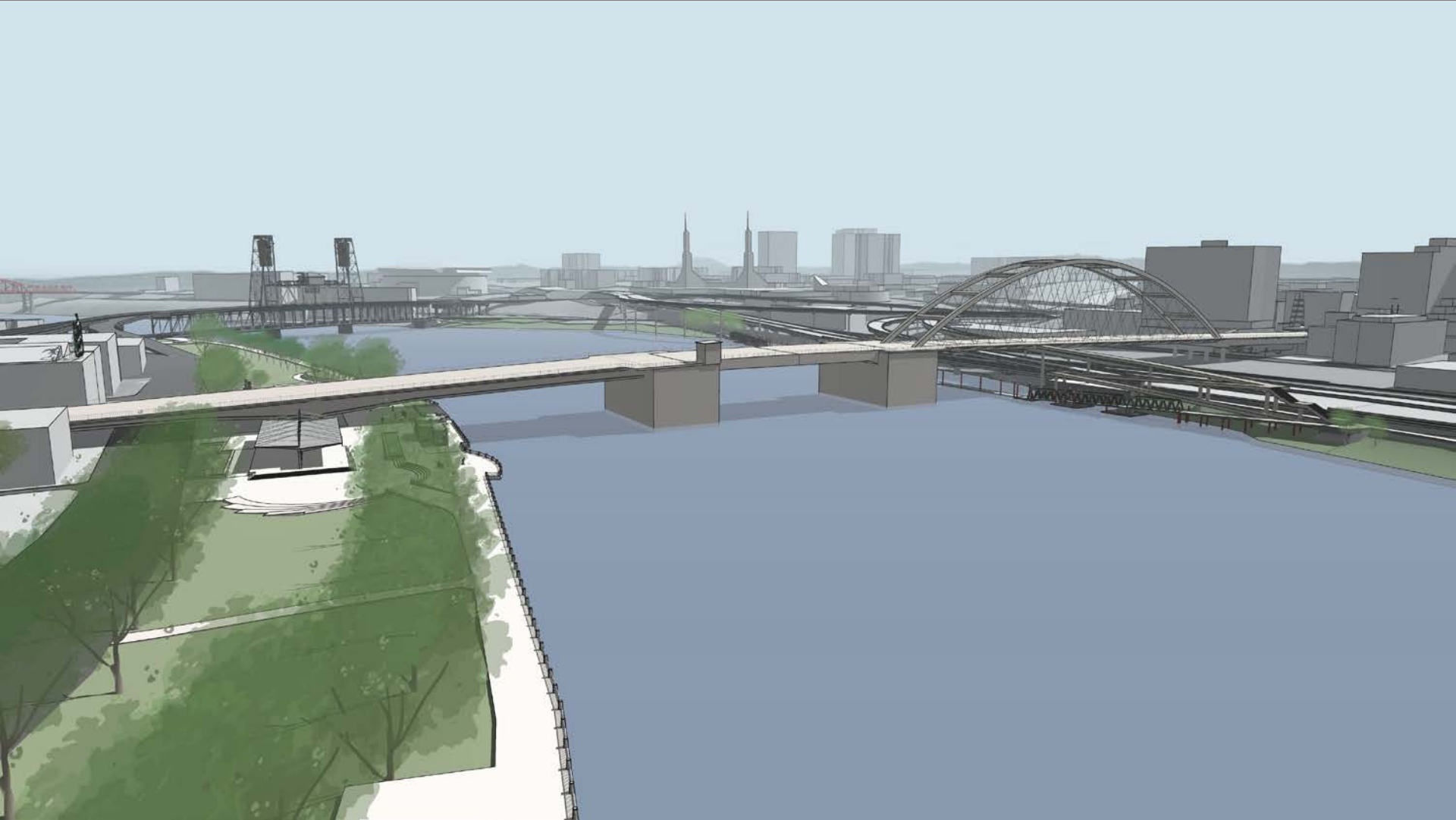
Bridge Composition

Long Girder – Short Vertical Lift – Tied Arch



Bridge Composition

Short Girder – Short Bascule – Tied Arch



Bridge Composition

Short Girder – Short Vertical Lift – Tied Arch



Bridge Composition

Balanced Cable Stay – Short Bascule – Cable Stay



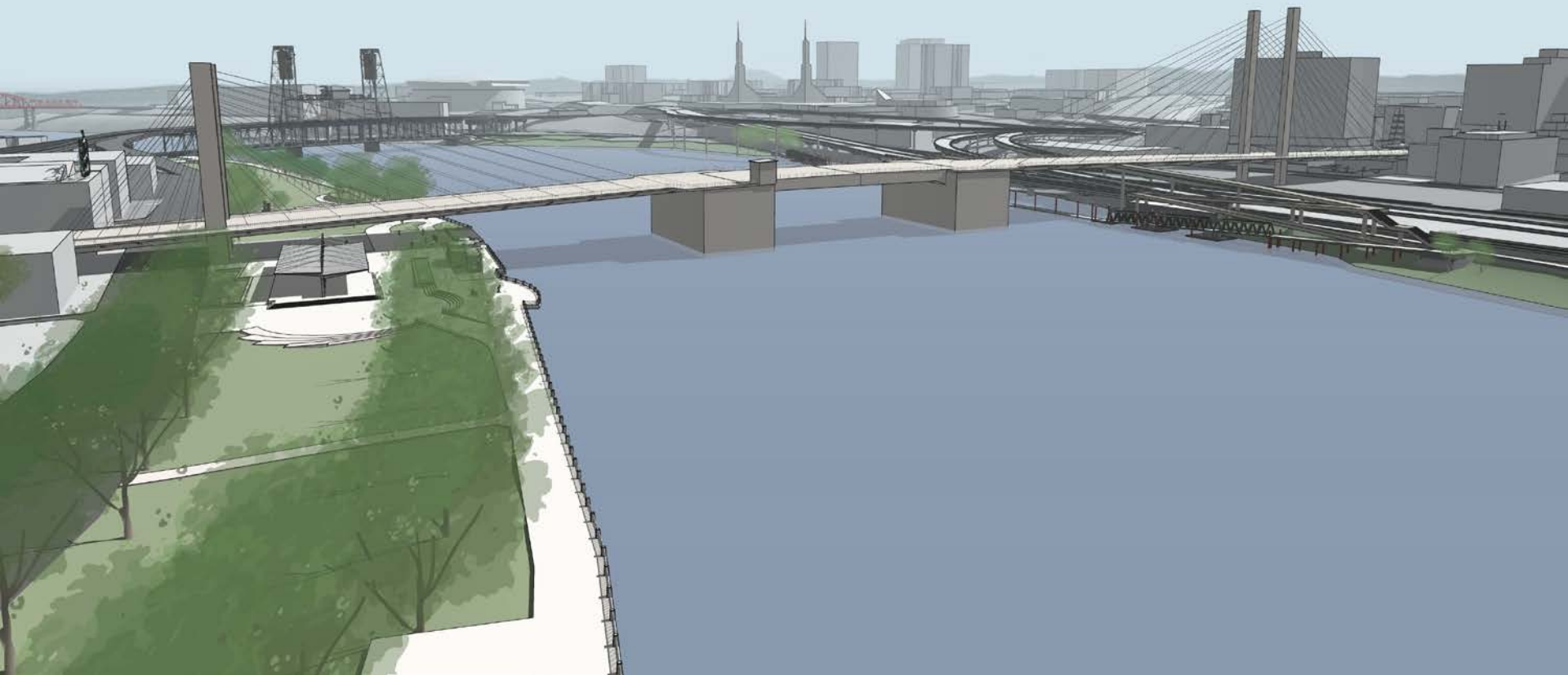
Bridge Composition

Balanced Cable Stay – Short Vertical Lift – Cable Stay



Bridge Composition

Unbalanced Cable Stay – Short Bascule – Cable Stay



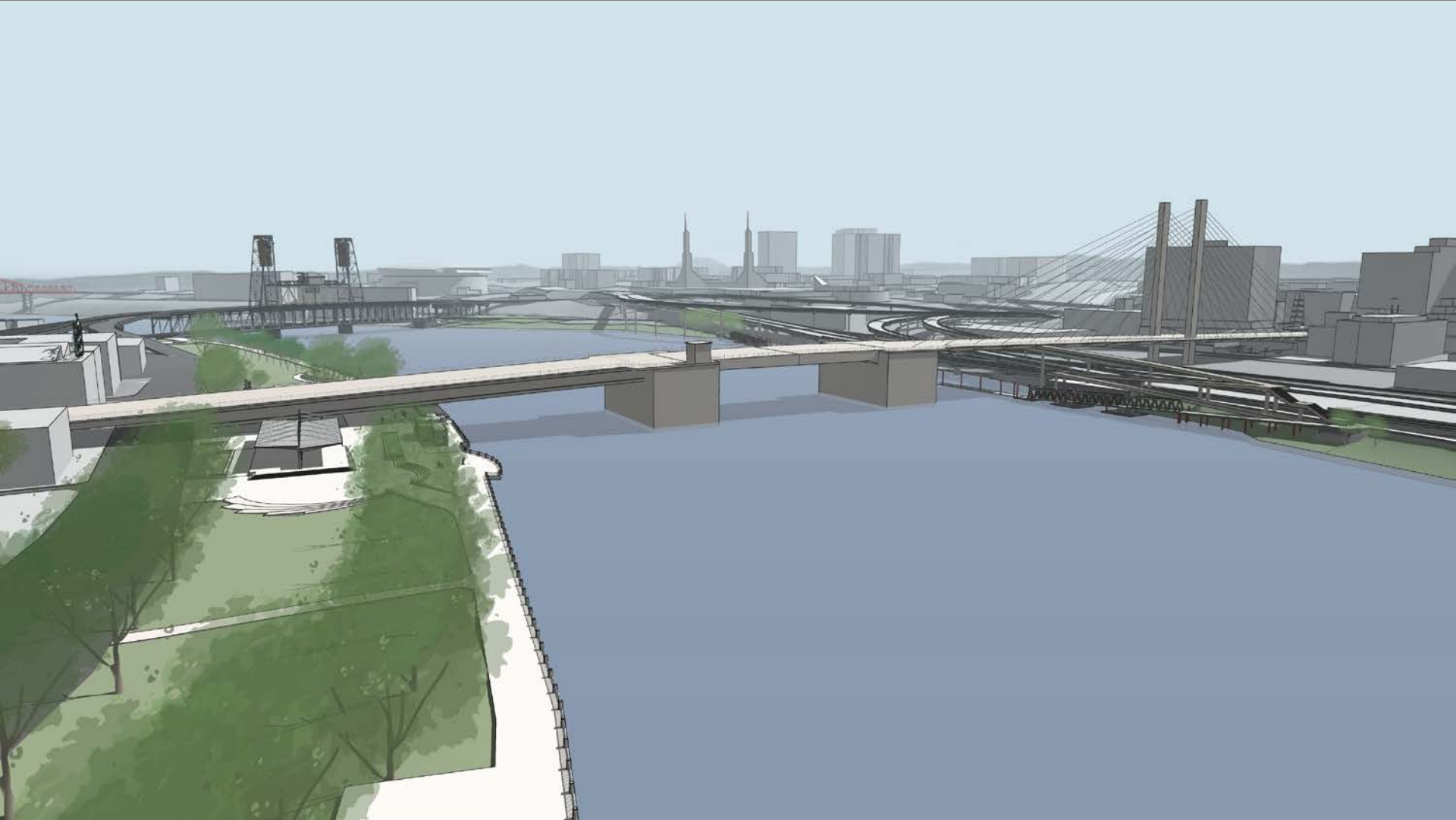
Bridge Composition

Unbalanced Cable Stay – Short Vertical Lift – Cable Stay



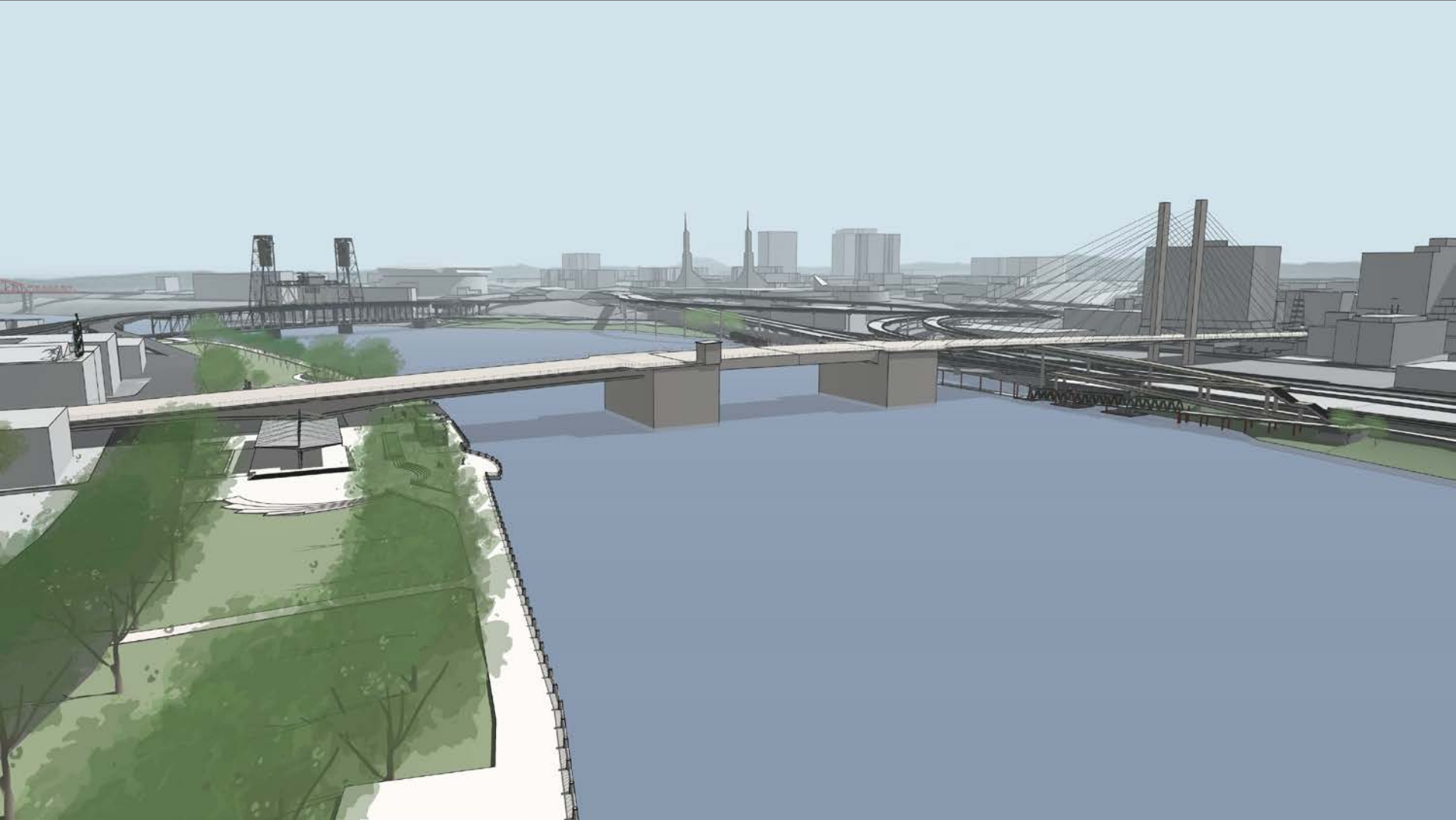
Bridge Composition

Long Girder – Short Bascule – Cable Stay



Bridge Composition

Short Girder – Short Bascule – Cable Stay



Bridge Composition

Truss – Short Bascule – Truss



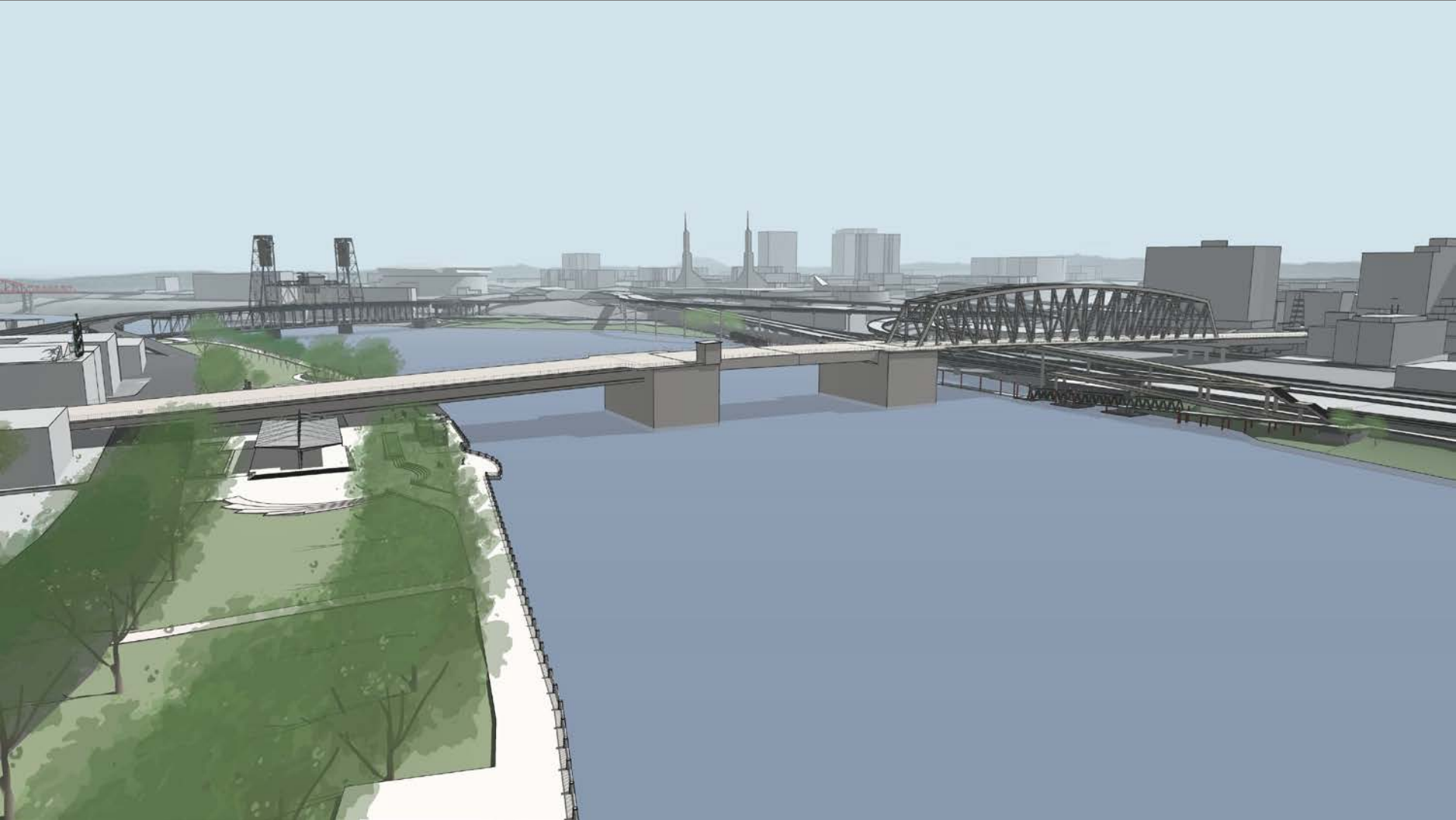
Bridge Composition

Truss – Short Vertical Lift – Truss



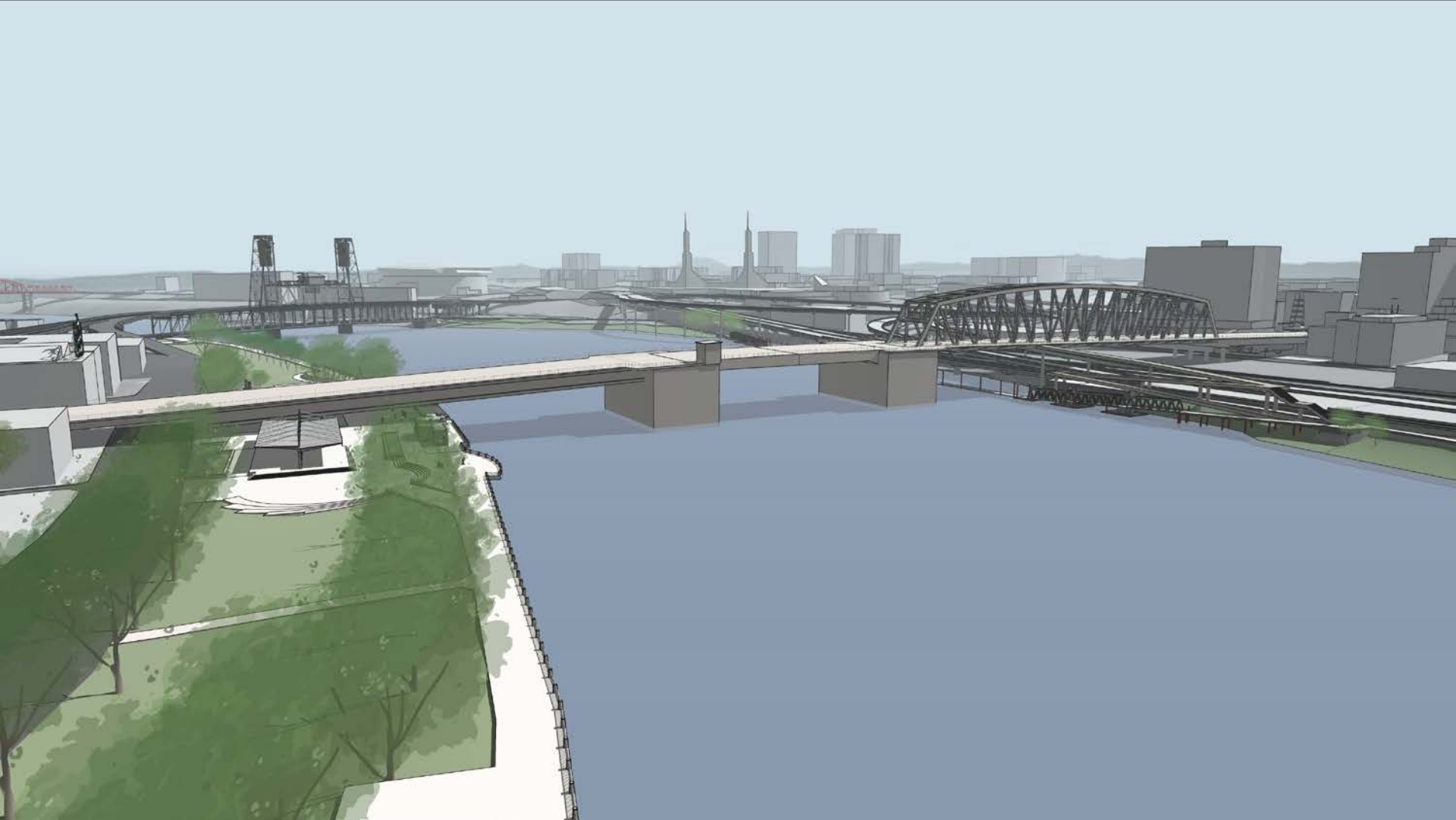
Bridge Composition

Long Girder – Short Bascule – Truss



Bridge Composition

Short Girder – Short Bascule – Truss



Compositions View from SW Isometric (Long Movable Span)



Bridge Composition

Long Tied Arch – Long Bascule – Tied Arch



Bridge Composition

Long Tied Arch – Long Vertical Lift – Tied Arch



Bridge Composition

Short Tied Arch – Long Bascule – Tied Arch



Bridge Composition

Short Tied Arch – Long Vertical Lift – Tied Arch



Bridge Composition

Long Girder – Long Bascule – Tied Arch



Bridge Composition

Short Girder – Long Bascule – Tied Arch



Bridge Composition

Balanced Cable Stayed – Long Bascule – Cable Stayed



Bridge Composition

Balanced Cable Stayed – Long Vertical Lift – Cable Stayed



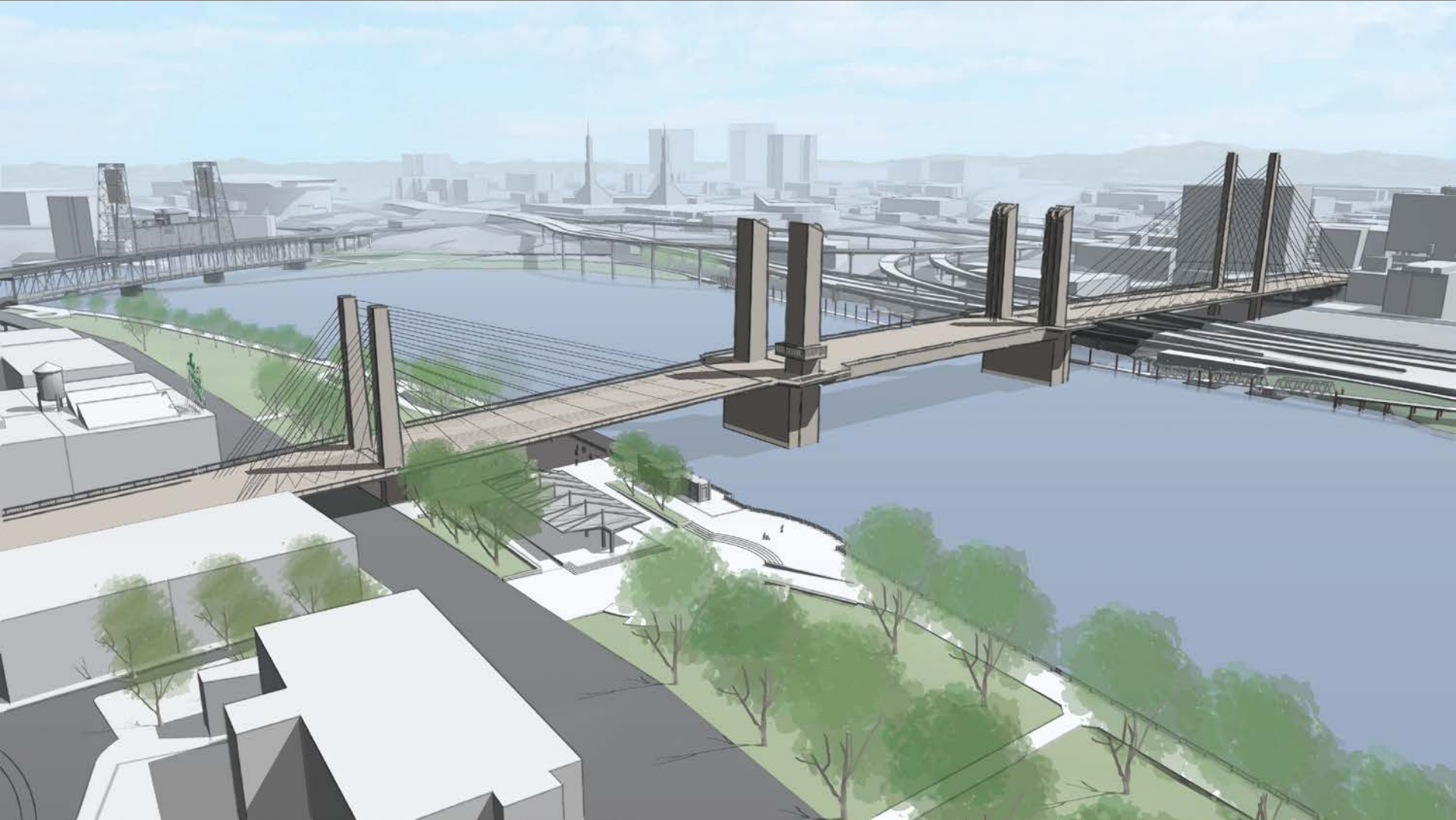
Bridge Composition

Unbalanced Cable Stayed – Long Bascule – Cable Stayed



Bridge Composition

Unbalanced Cable Stayed – Long Vertical Lift – Cable Stayed



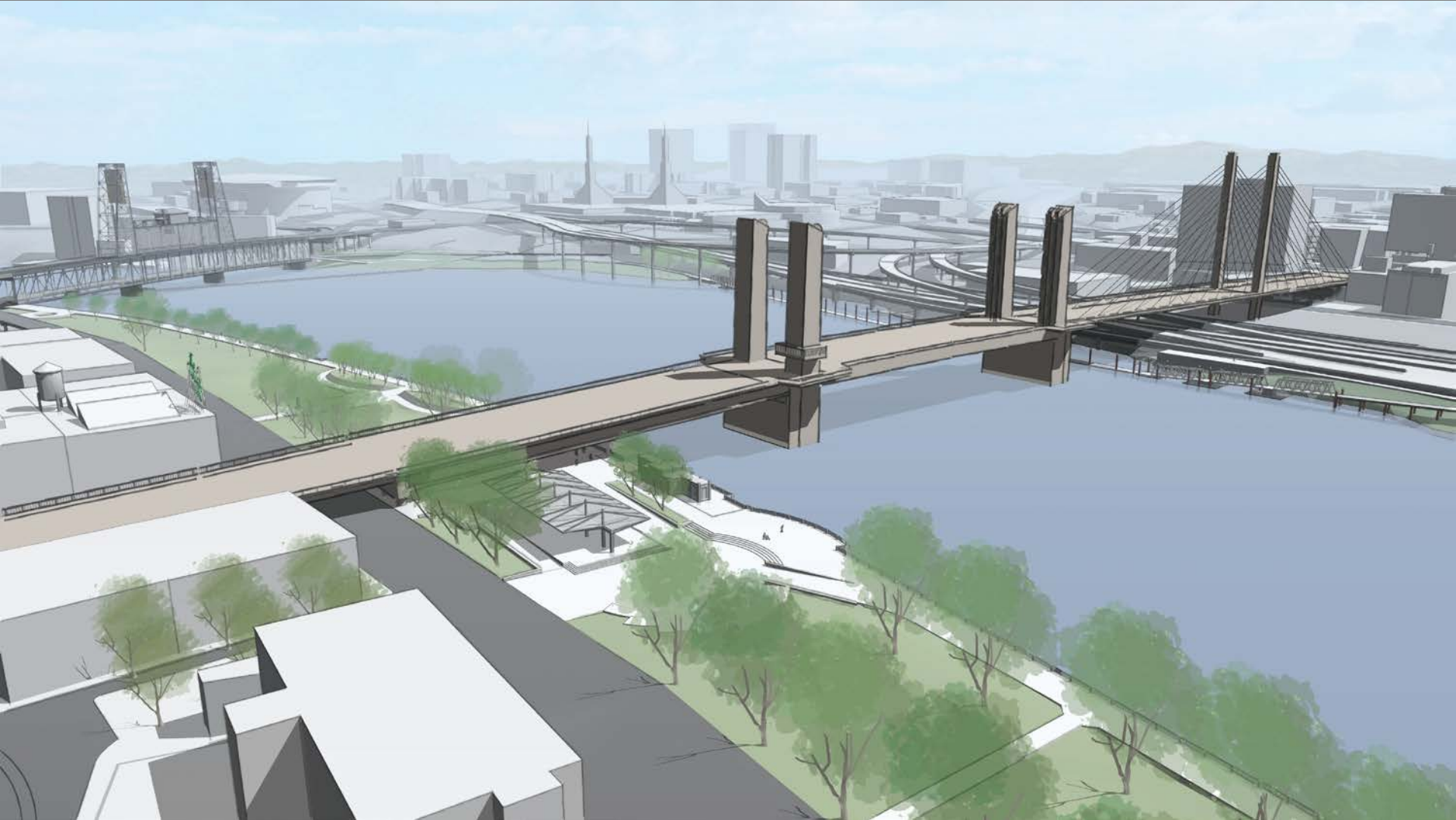
Bridge Composition

Long Girder – Long Bascule – Cable Stayed



Bridge Composition

Long Girder – Long Vertical Lift – Cable Stayed



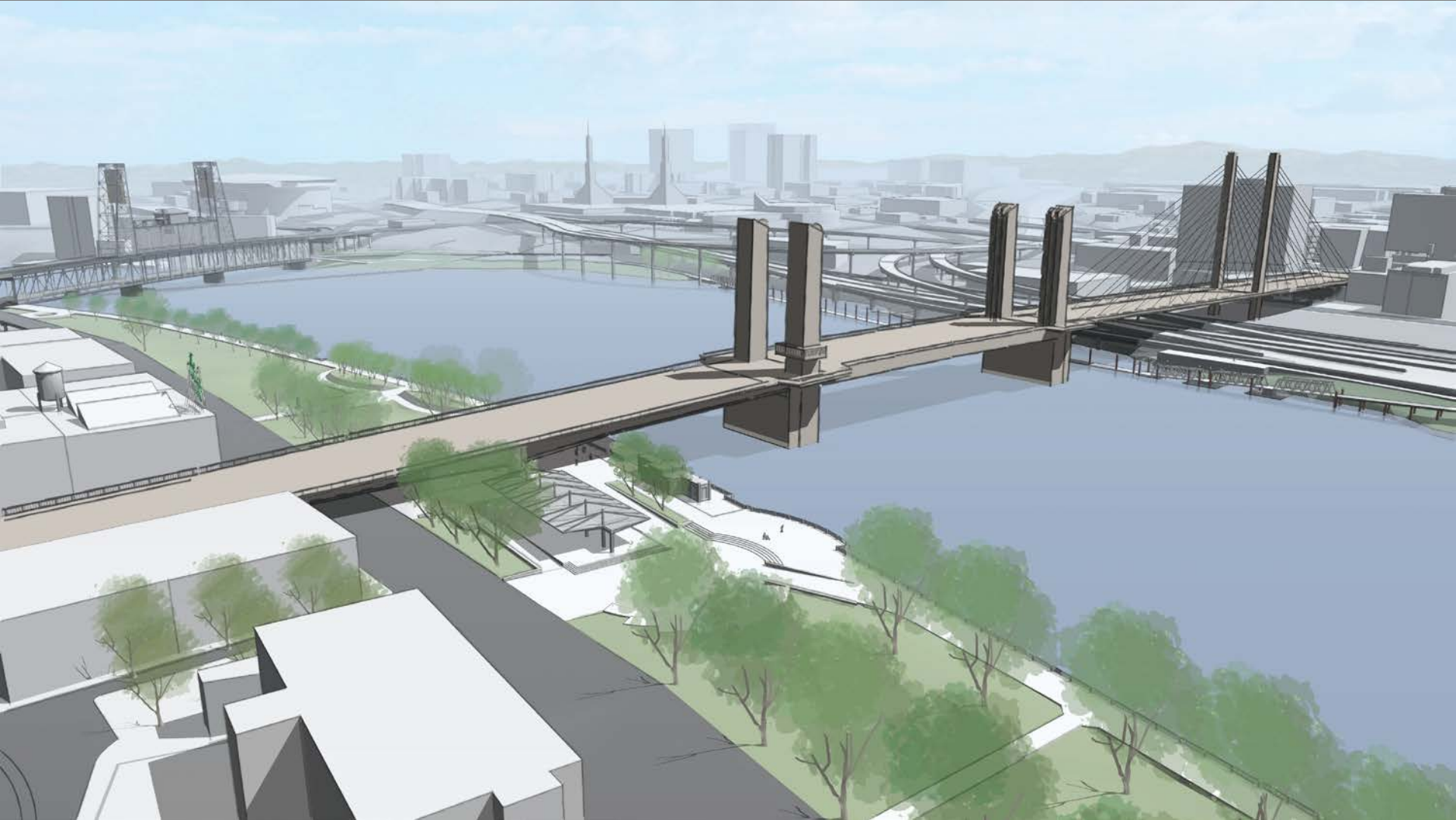
Bridge Composition

Short Girder – Long Bascule – Cable Stayed



Bridge Composition

Short Girder – Long Vertical Lift – Cable Stayed



Bridge Composition

Truss – Long Bascule – Truss



Bridge Composition

Truss – Long Vertical Lift – Truss



Bridge Composition

Long Girder – Long Bascule – Truss



Bridge Composition

Long Girder – Long Vertical Lift – Truss



Compositions View from SW Isometric (Short Movable Span)



Bridge Composition

Long Tied Arch – Short Bascule – Tied Arch



Bridge Composition

Long Tied Arch – Short Vertical Lift – Tied Arch



Bridge Composition

Short Tied Arch – Short Bascule – Tied Arch



Bridge Composition

Short Tied Arch – Short Vertical Lift – Tied Arch



Bridge Composition

Long Girder – Short Bascule – Tied Arch



Bridge Composition

Long Girder – Short Vertical Lift – Tied Arch



Bridge Composition

Short Girder – Short Bascule – Tied Arch



Bridge Composition

Short Girder – Short Vertical Lift – Tied Arch



Bridge Composition

Balanced Cable Stay – Short Bascule – Cable Stay



Bridge Composition

Balanced Cable Stay – Short Vertical Lift – Cable Stay



Bridge Composition

Unbalanced Cable Stay – Short Bascule – Cable Stay



Bridge Composition

Unbalanced Cable Stay – Short Vertical Lift – Cable Stay



Bridge Composition

Long Girder – Short Bascule – Cable Stay



Bridge Composition

Short Girder – Short Bascule – Cable Stay



Bridge Composition

Truss – Short Bascule – Truss



Bridge Composition

Truss – Short Vertical Lift – Truss



Bridge Composition

Long Girder – Short Bascule – Truss



Bridge Composition

Long Girder – Short Vertical Lift – Truss



Compositions: View from Waterfront Park (Long Movable Span)



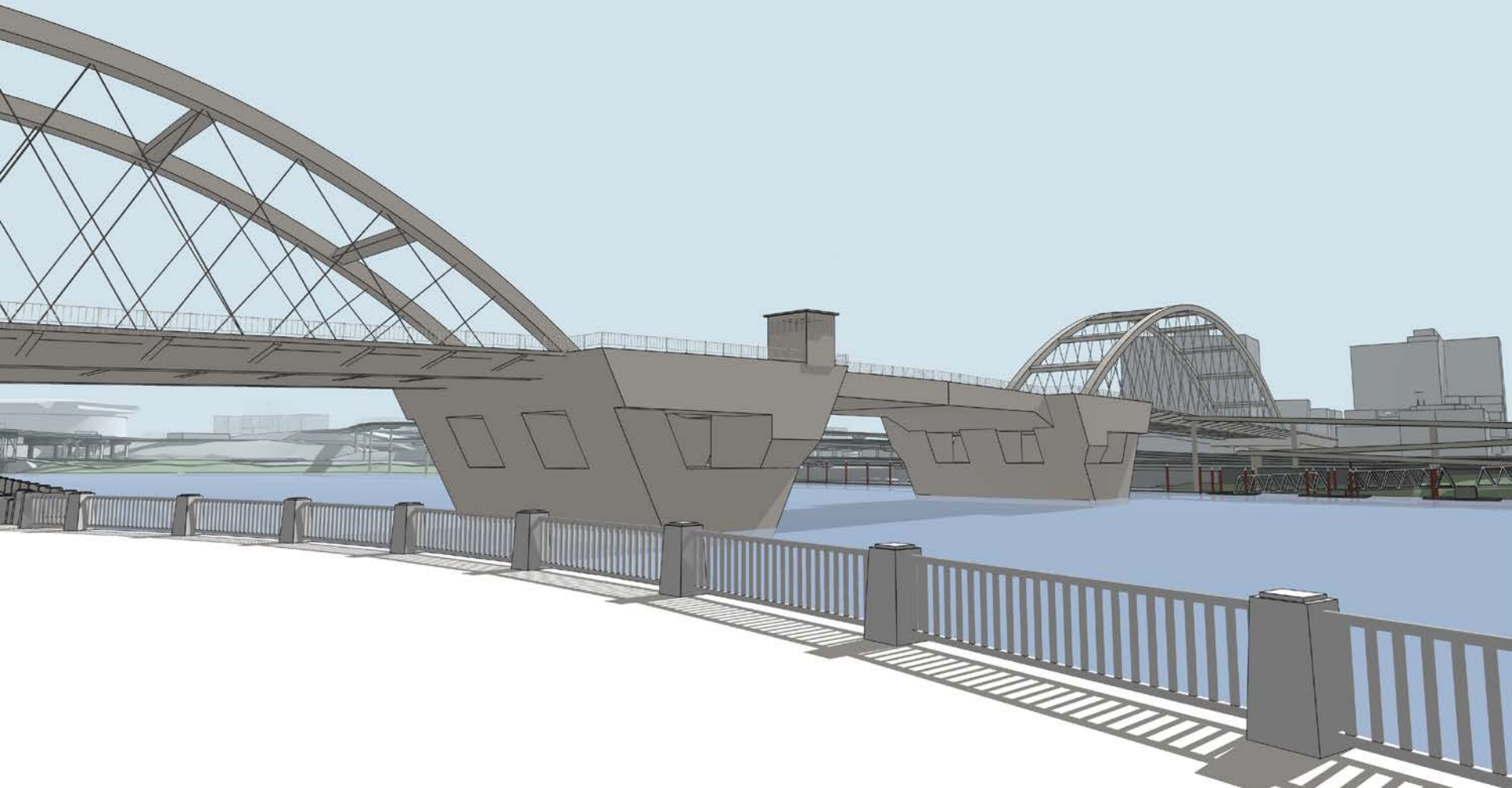
Bridge Composition

Existing Bridge



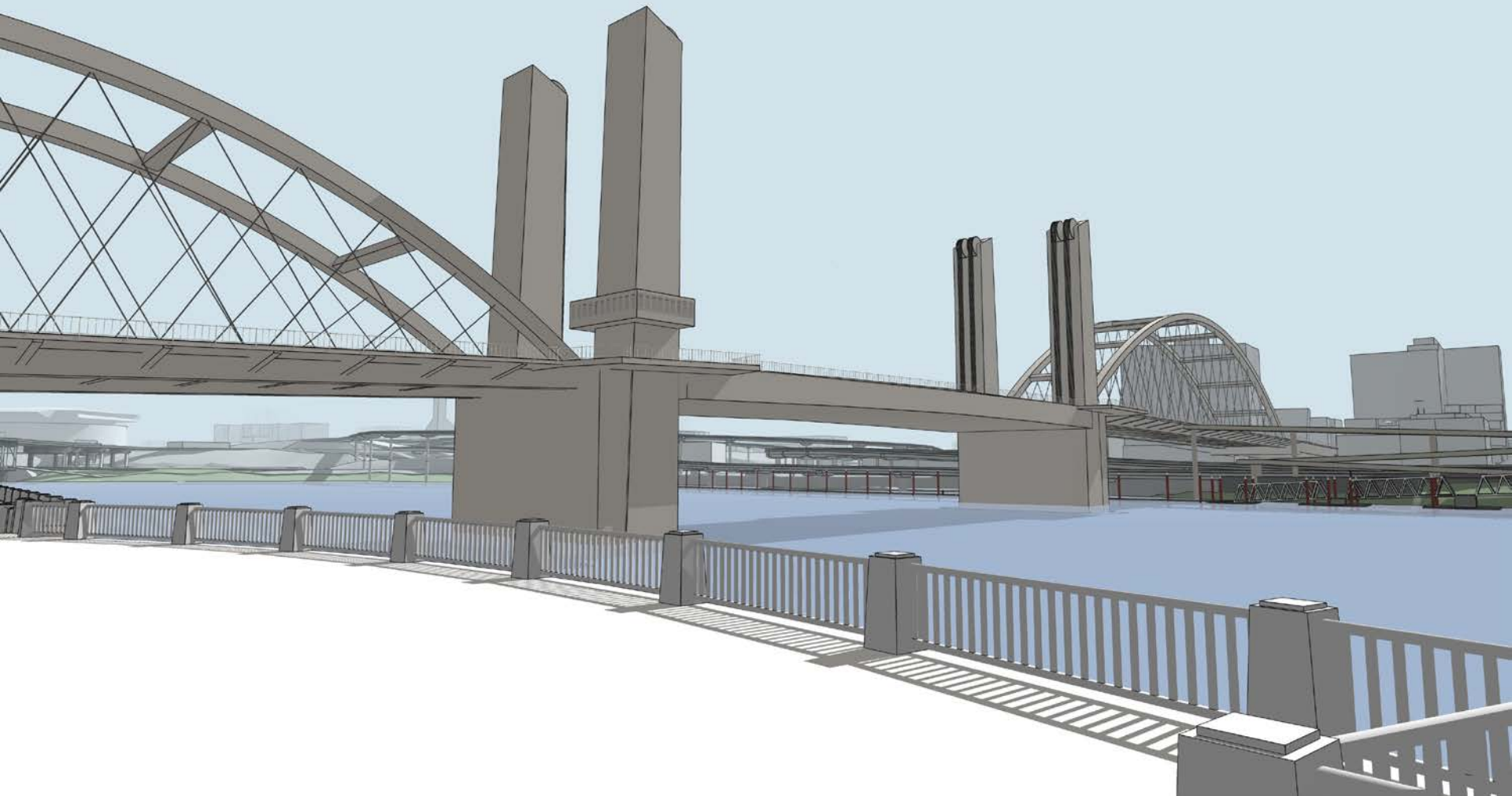
Bridge Composition

Long Tied Arch – Long Bascule – Tied Arch



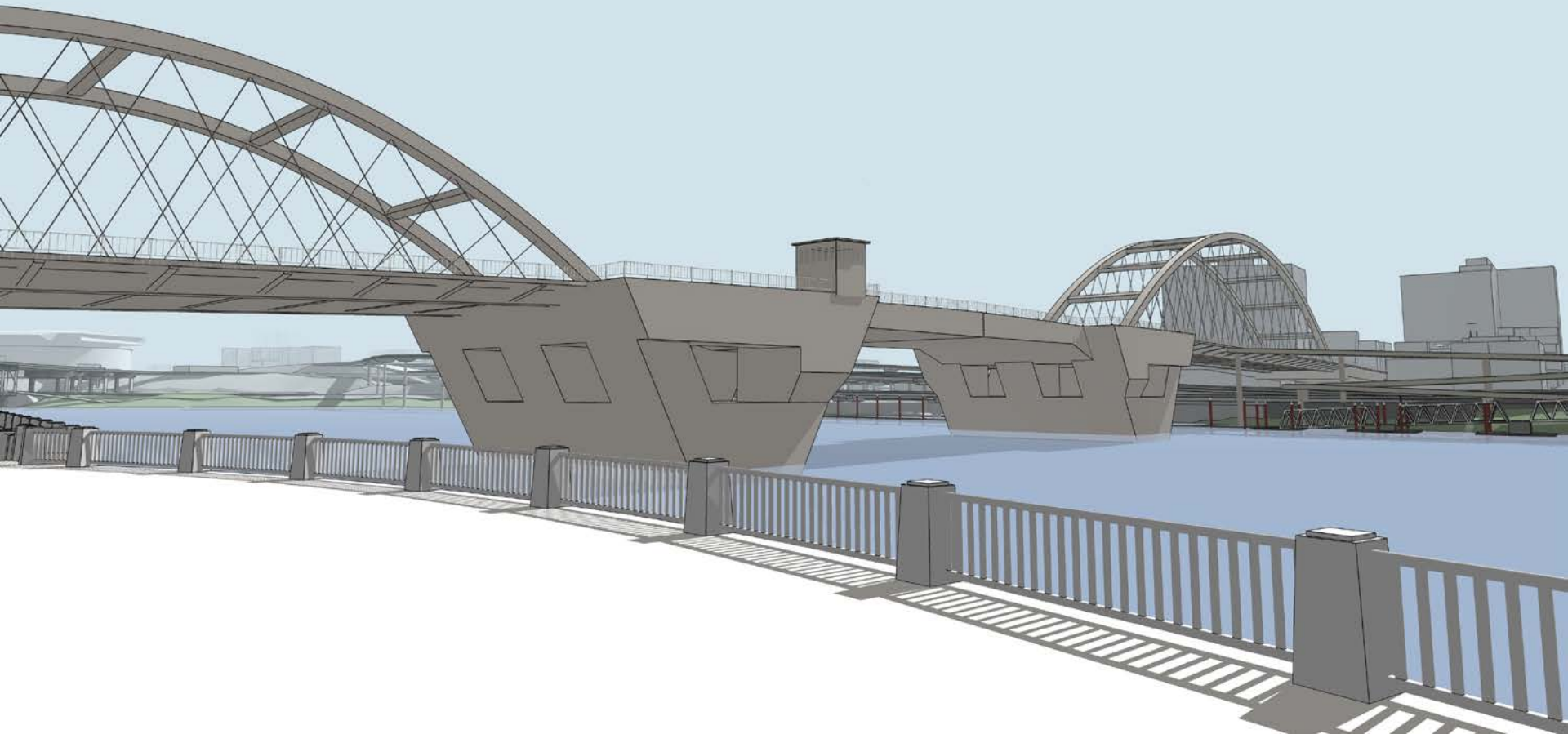
Bridge Composition

Long Tied Arch – Long Vertical Lift – Tied Arch



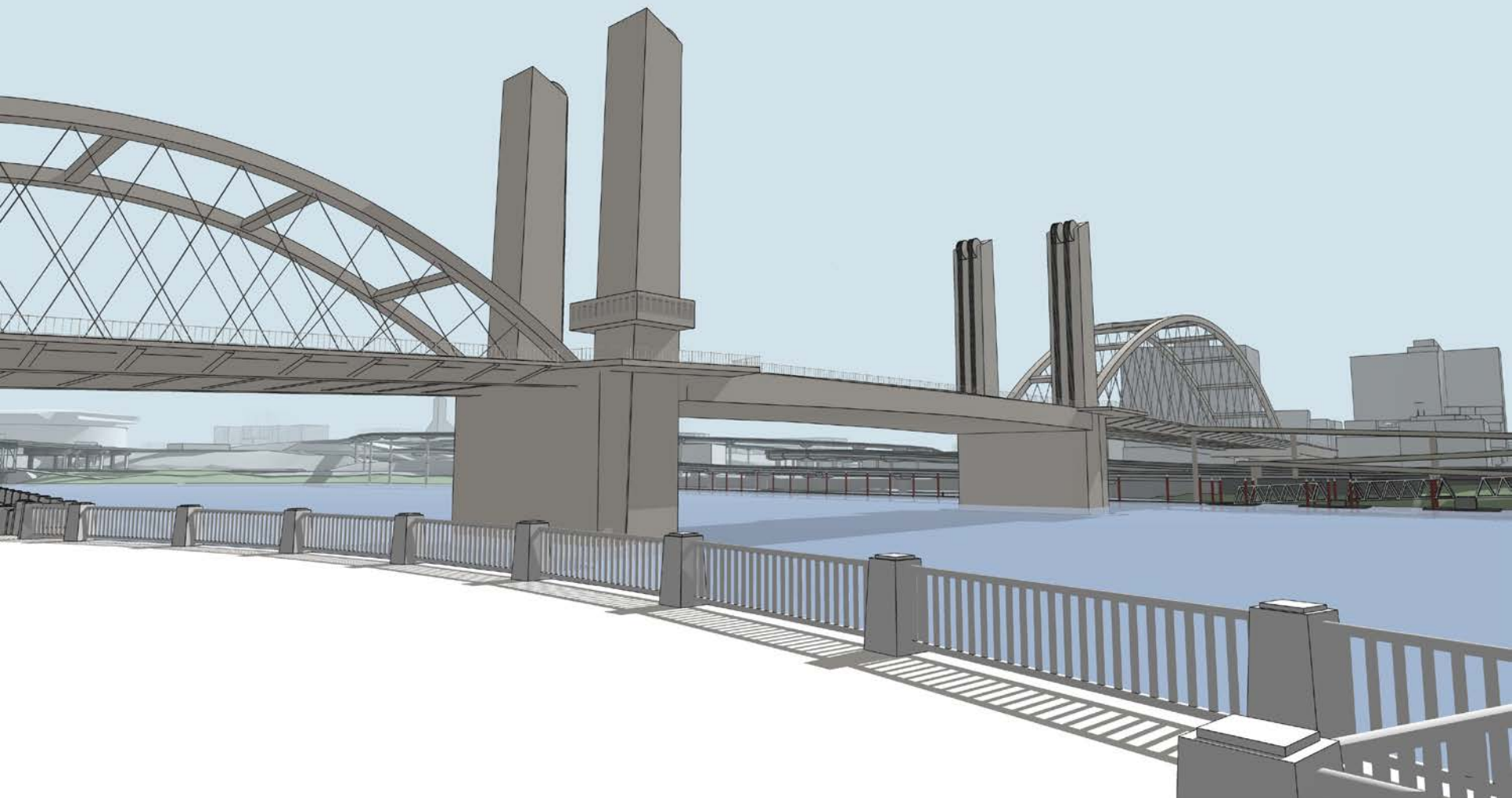
Bridge Composition

Short Tied Arch – Long Bascule – Tied Arch



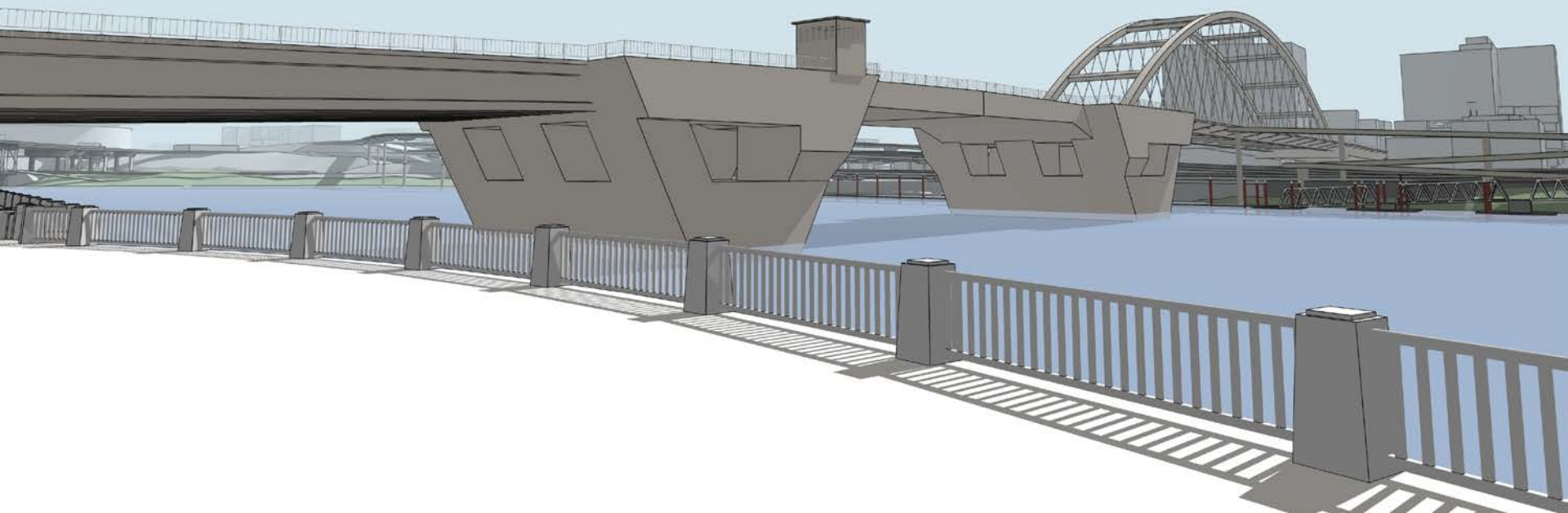
Bridge Composition

Short Tied Arch – Long Vertical Lift – Tied Arch



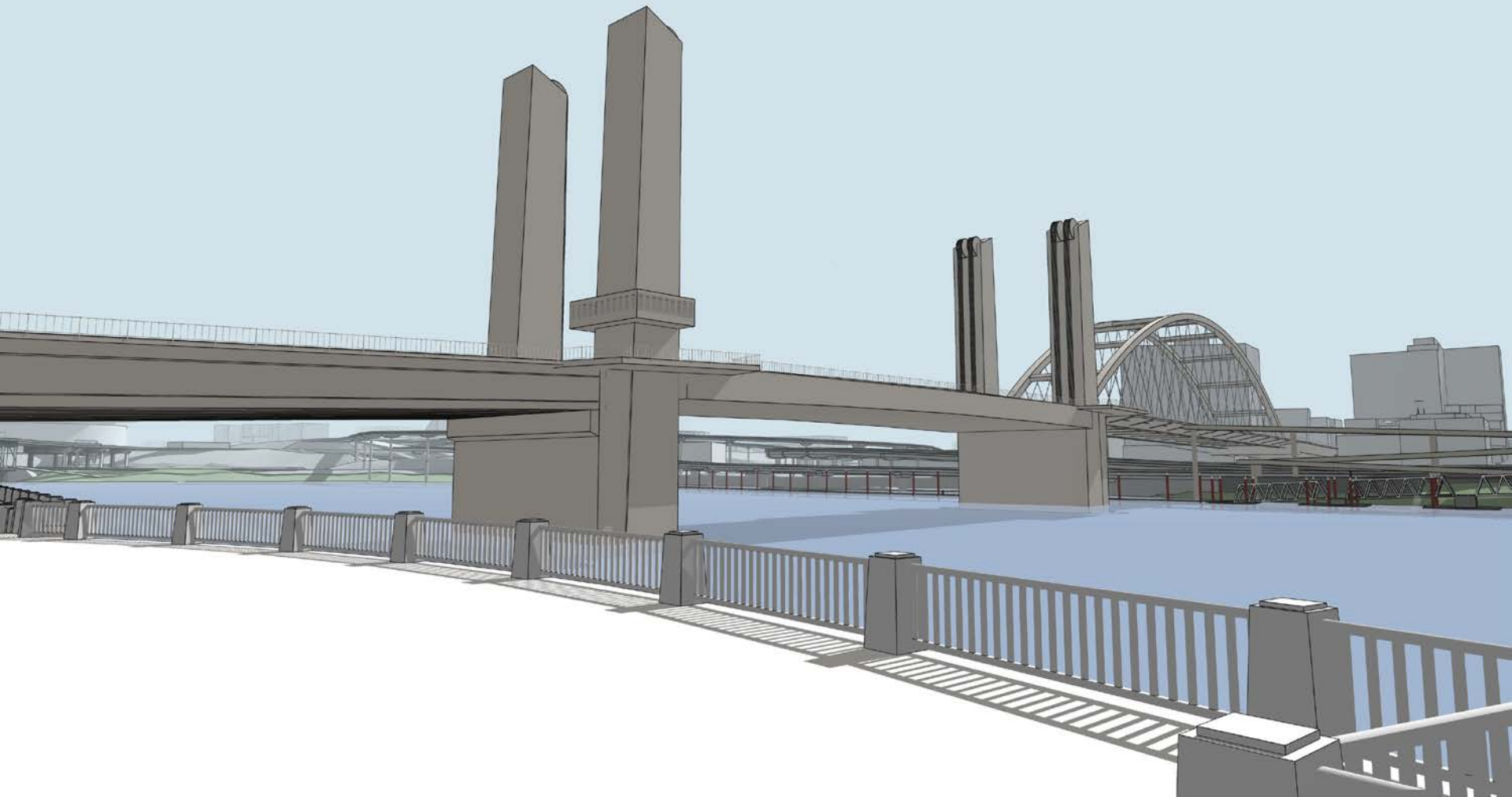
Bridge Composition

Long Girder – Long Bascule – Arch



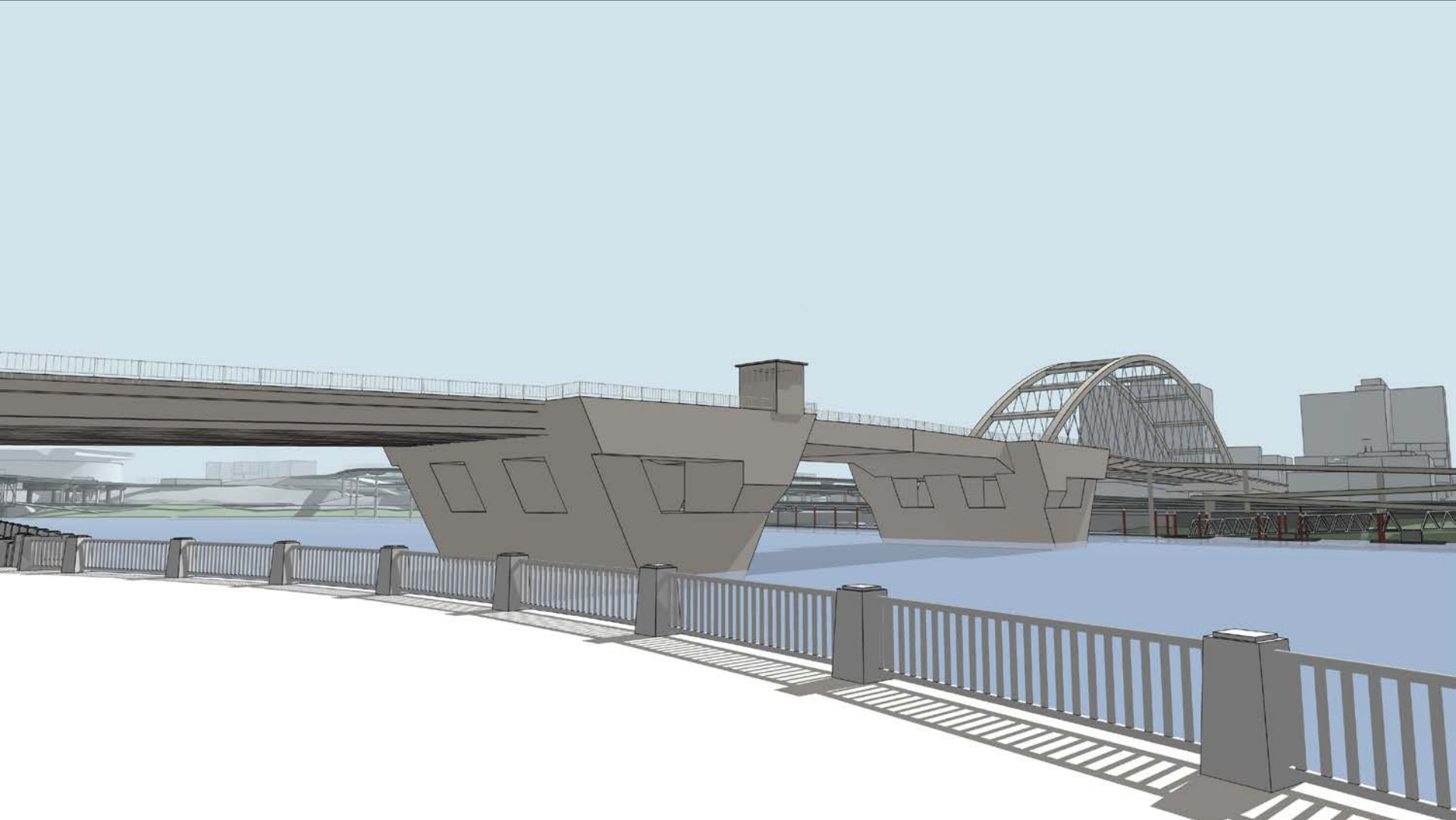
Bridge Composition

Long Girder – Long Vertical Lift – Arch



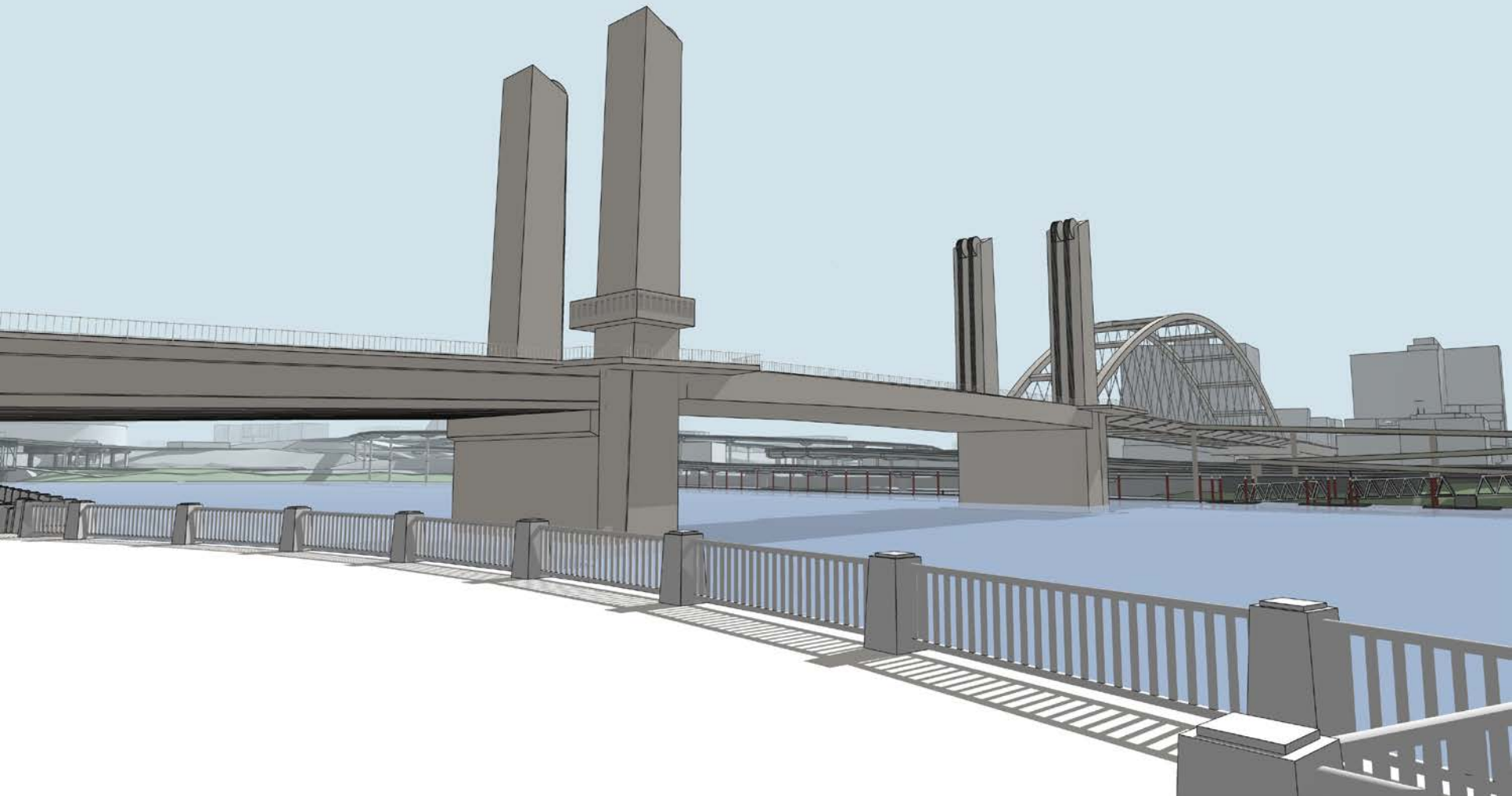
Bridge Composition

Short Girder – Long Bascule – Arch



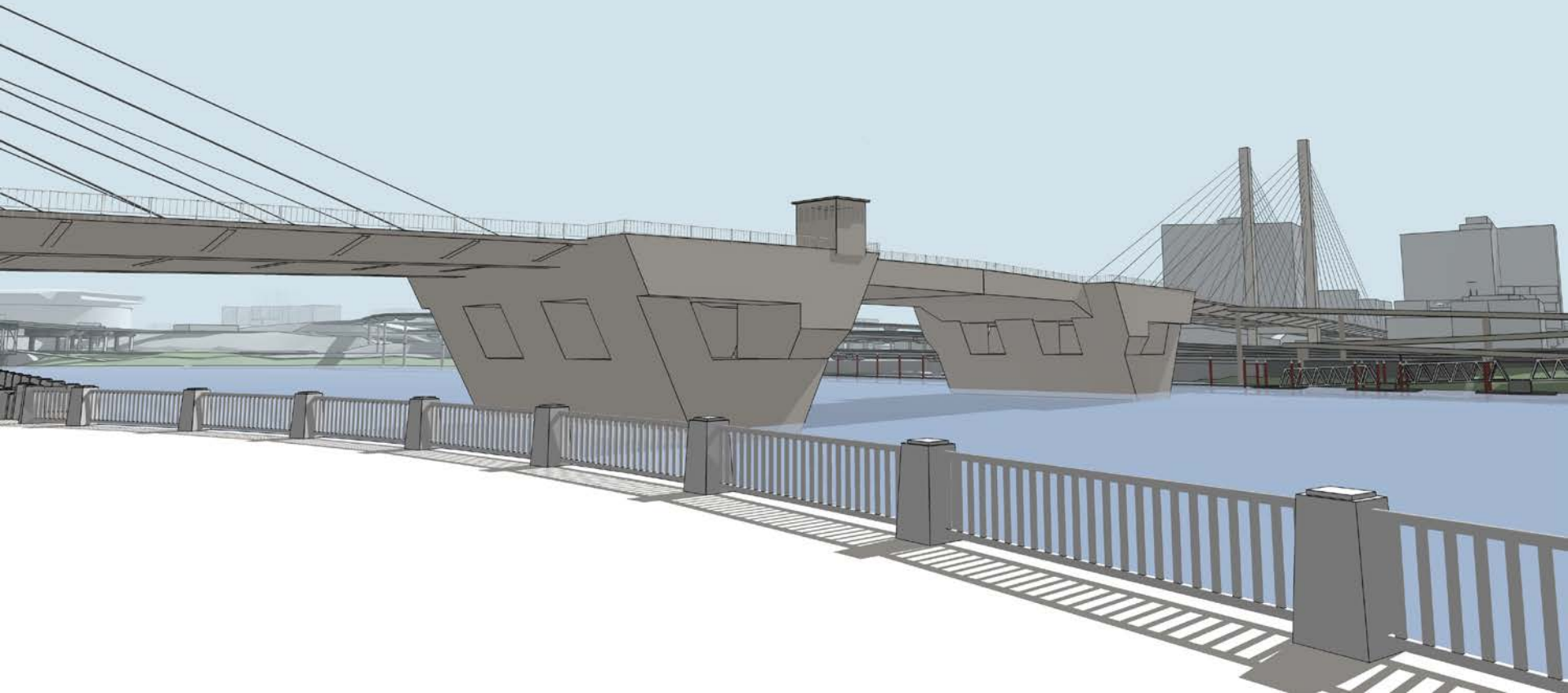
Bridge Composition

Short Girder – Vertical Lift – Arch



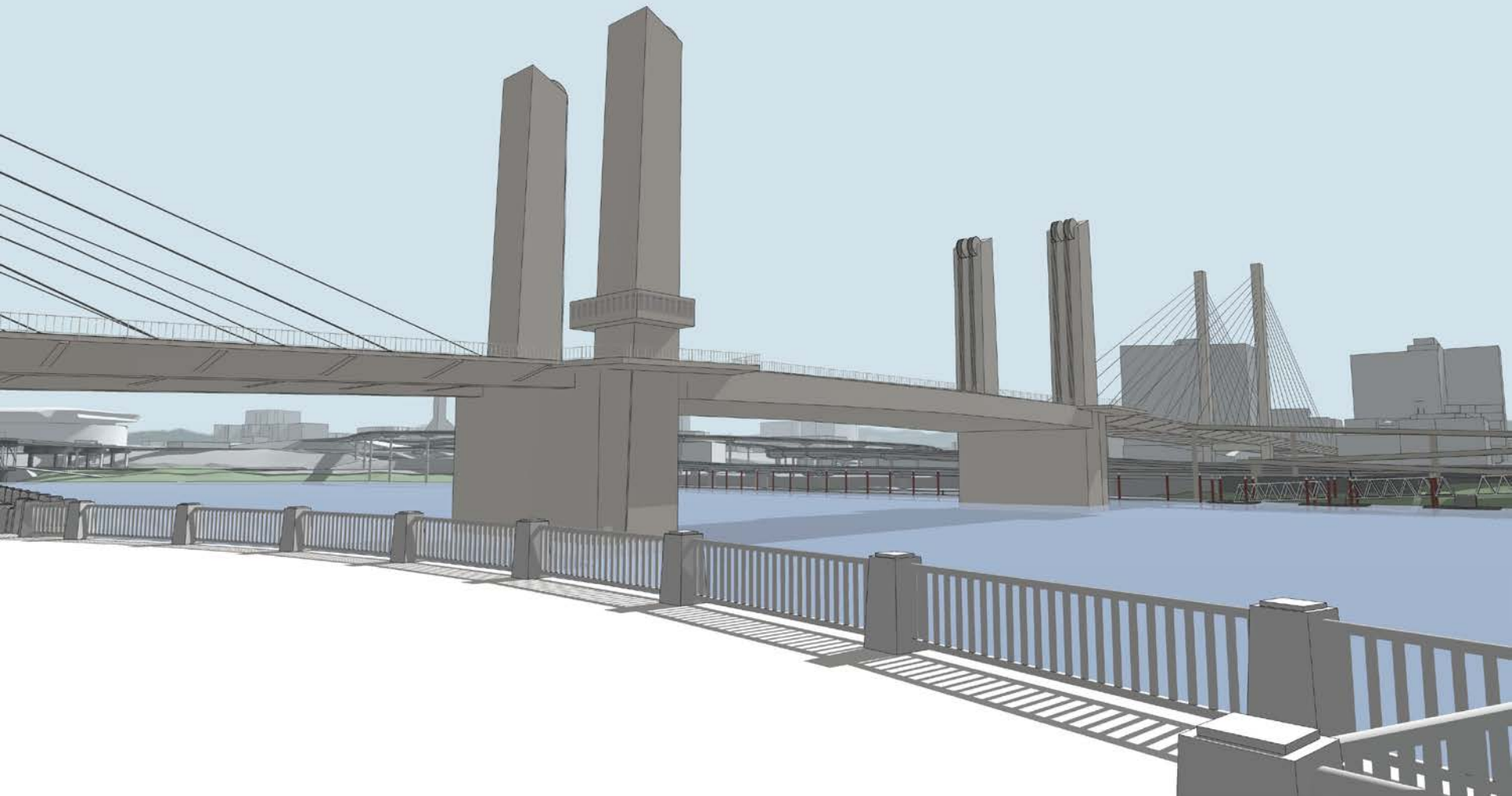
Bridge Composition

Balanced Cable Stayed – Bascule – Cable Stayed



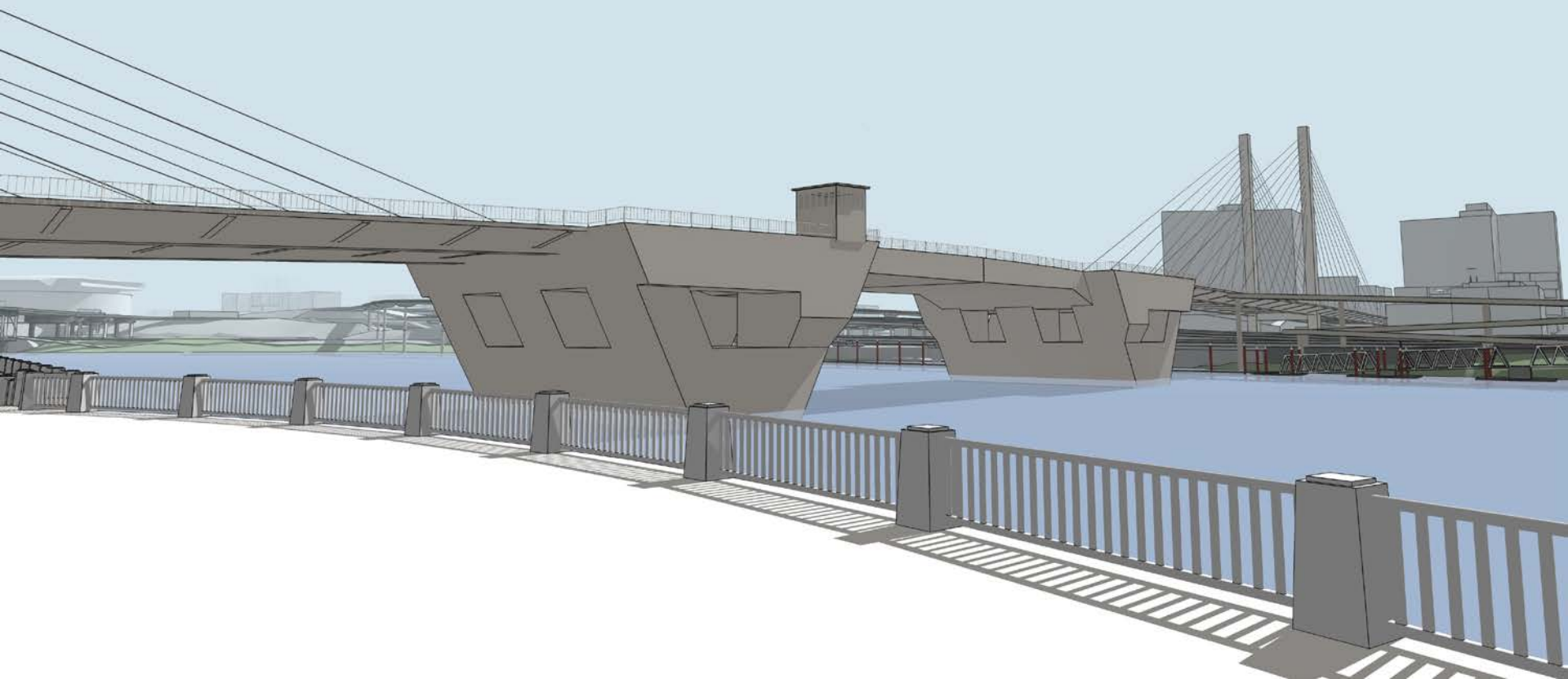
Bridge Composition

Balanced Cable Stayed – Vertical Lift – Cable Stayed



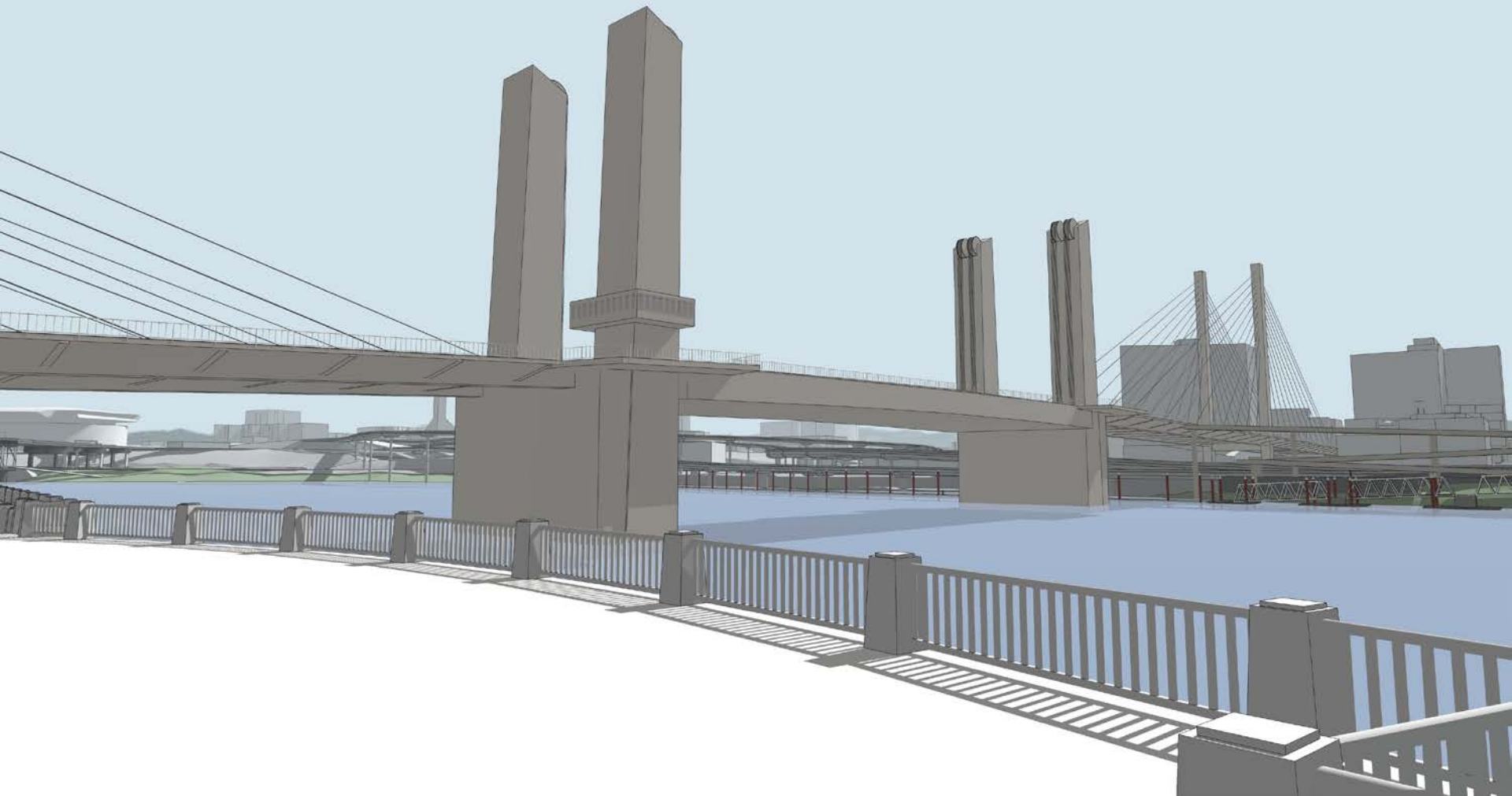
Bridge Composition

Unbalanced Cable Stayed – Bascule – Cable Stayed



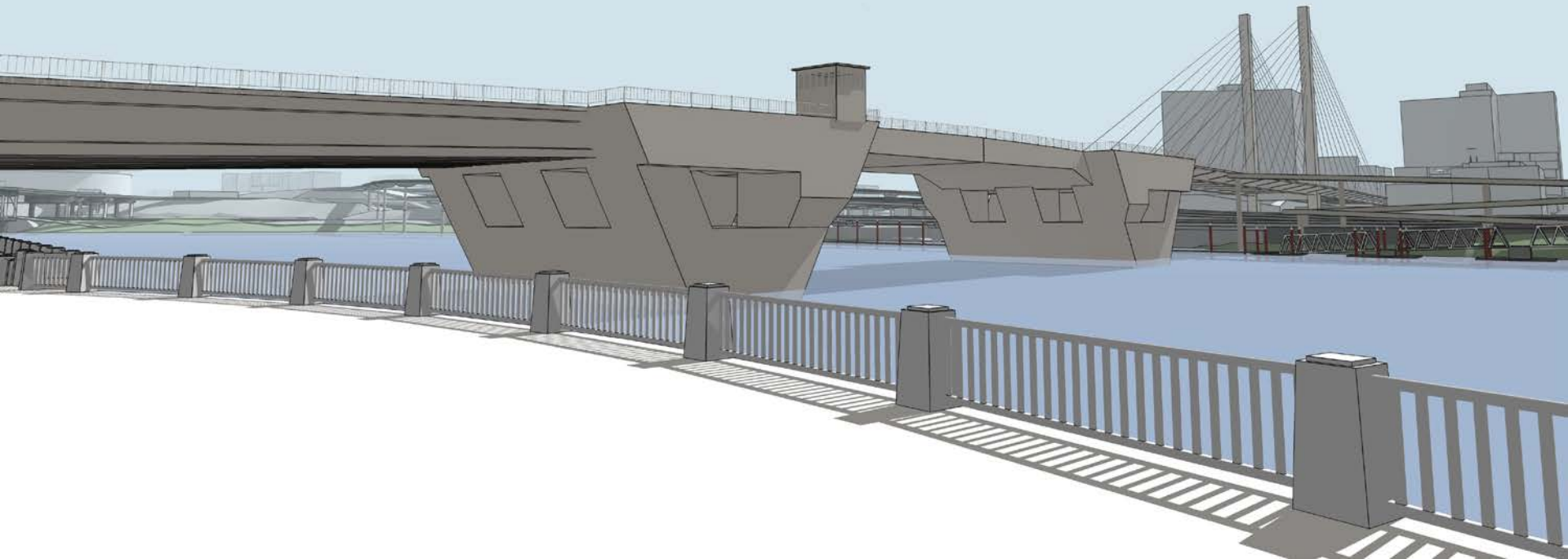
Bridge Composition

Unbalanced Cable Stayed – Vertical Lift – Cable Stayed



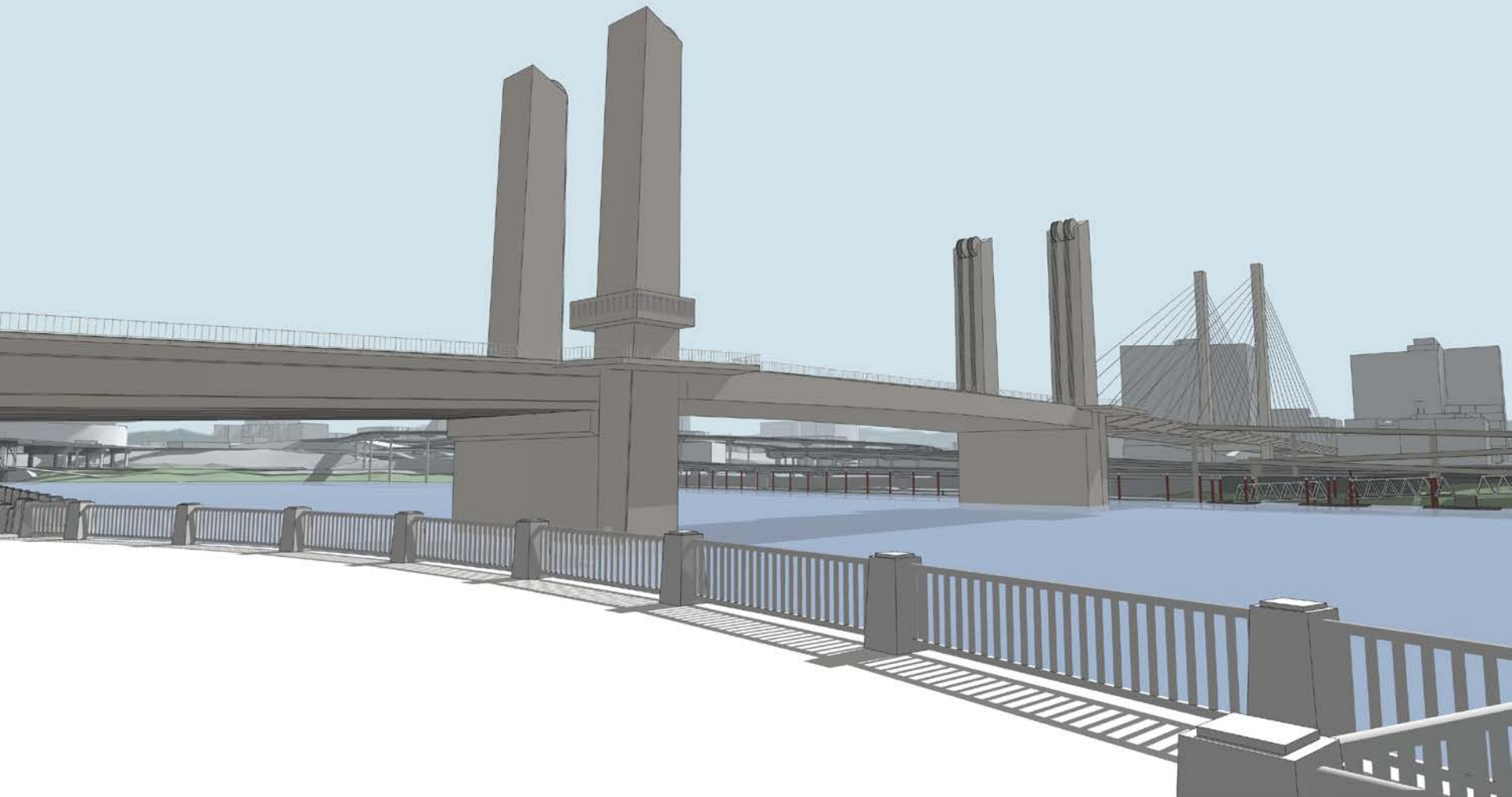
Bridge Composition

Long Girder – Bascule – Cable Stayed



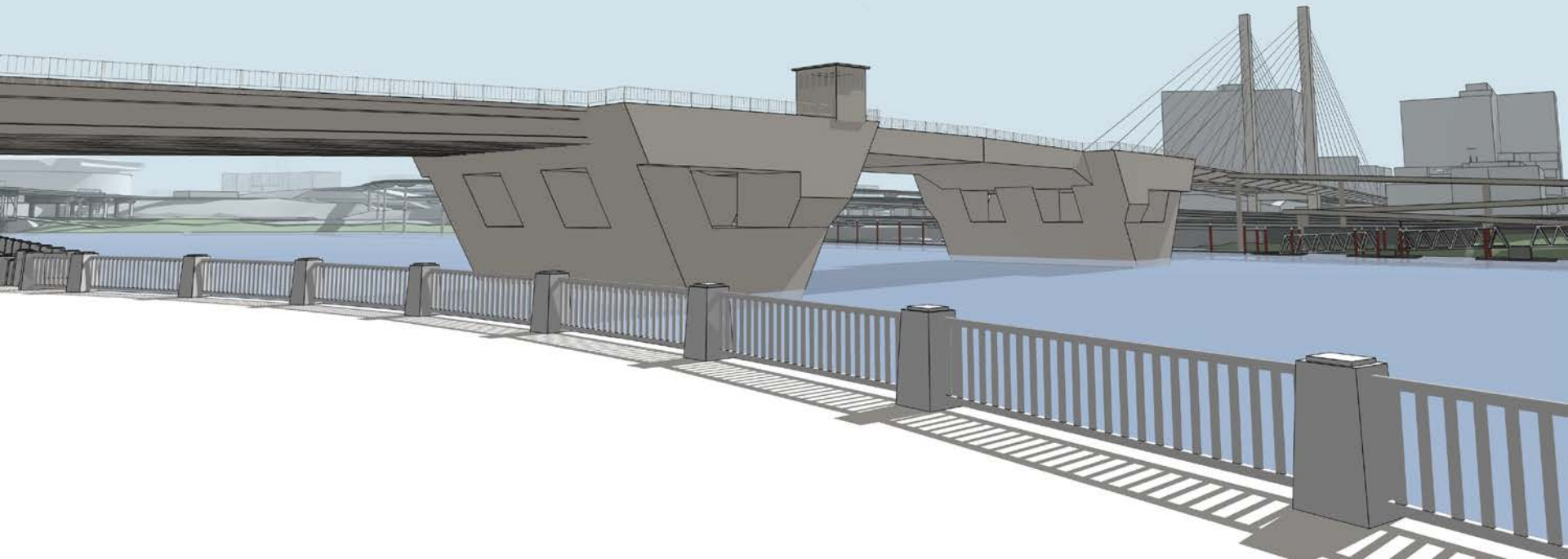
Bridge Composition

Long Girder – Vertical Lift – Cable Stayed



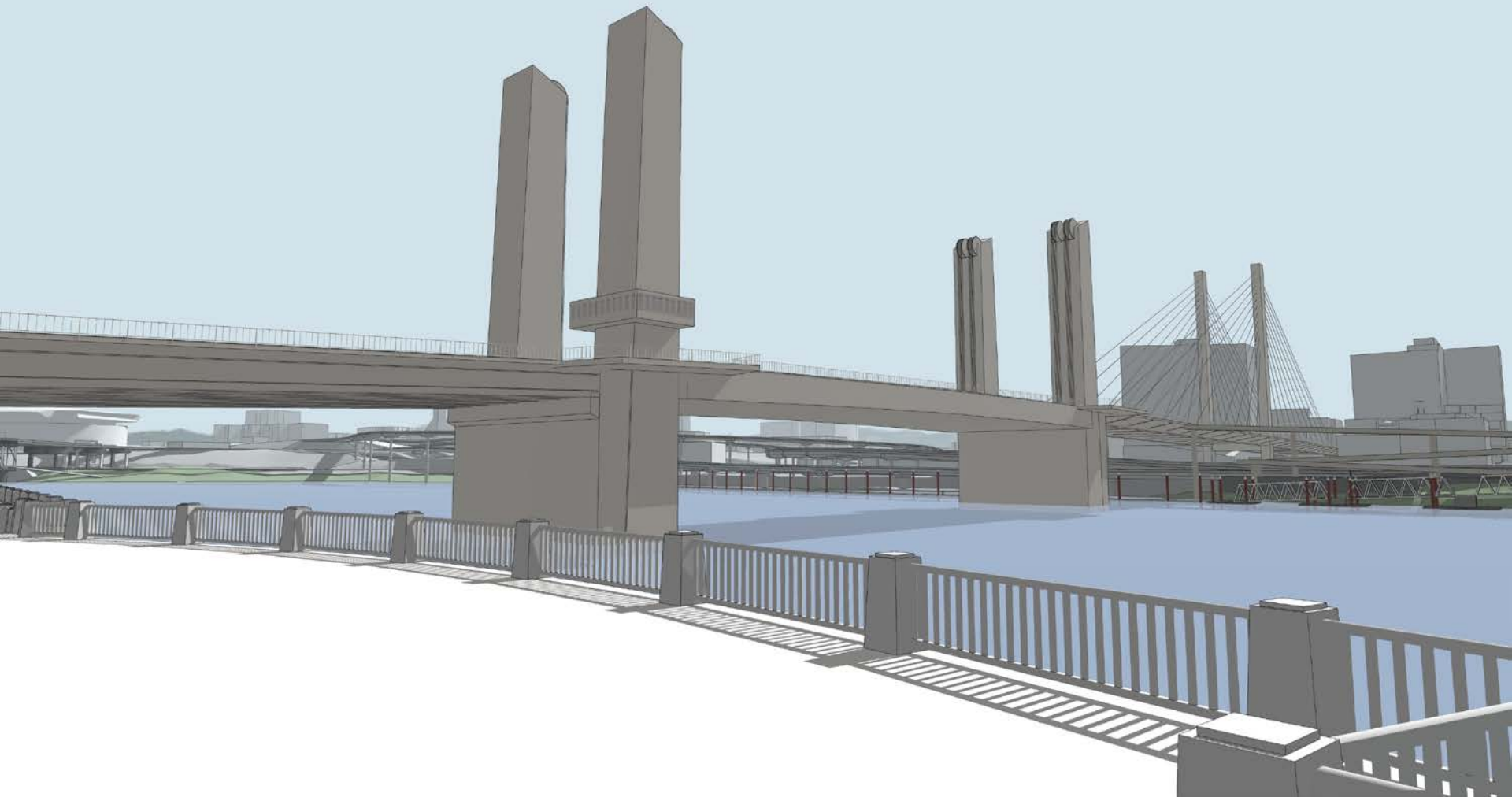
Bridge Composition

Short Girder – Bascule – Cable Stayed



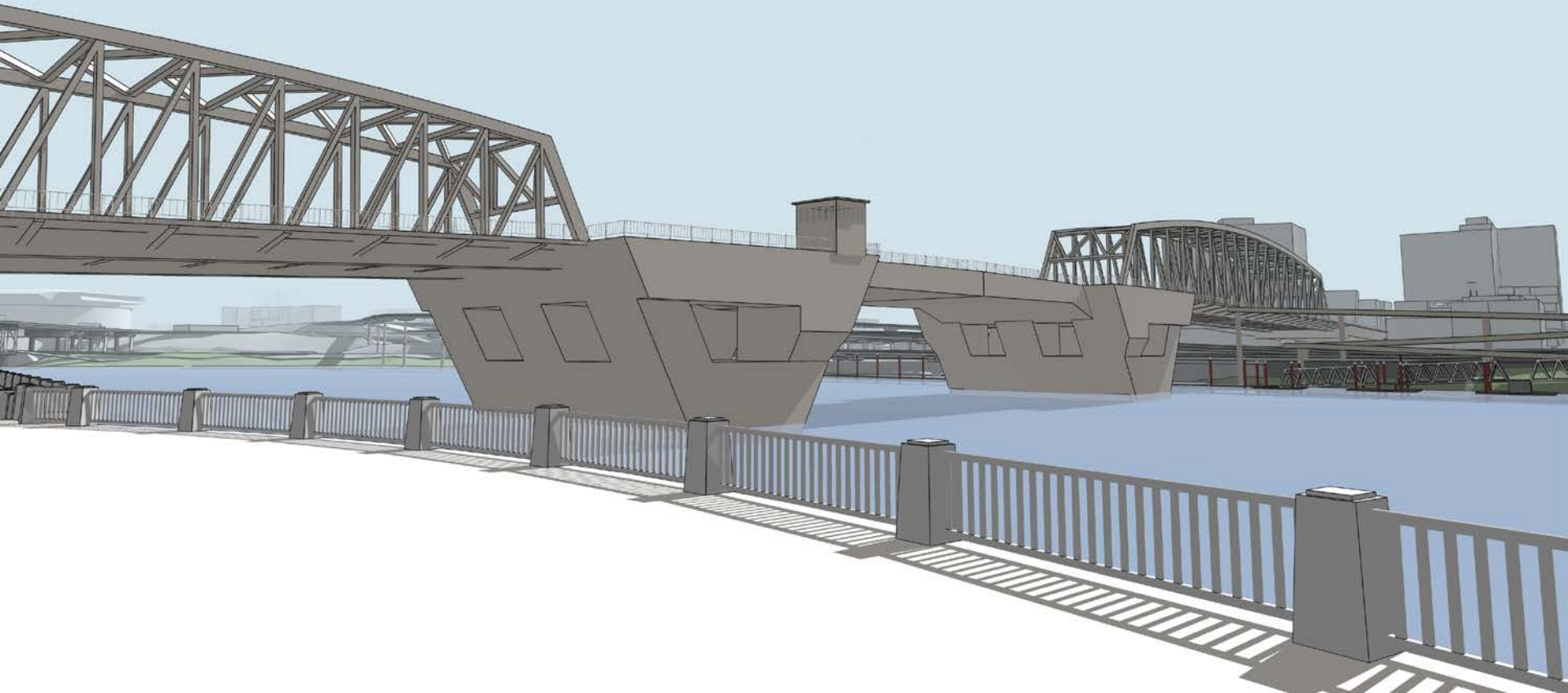
Bridge Composition

Short Girder – Vertical Lift – Cable Stayed



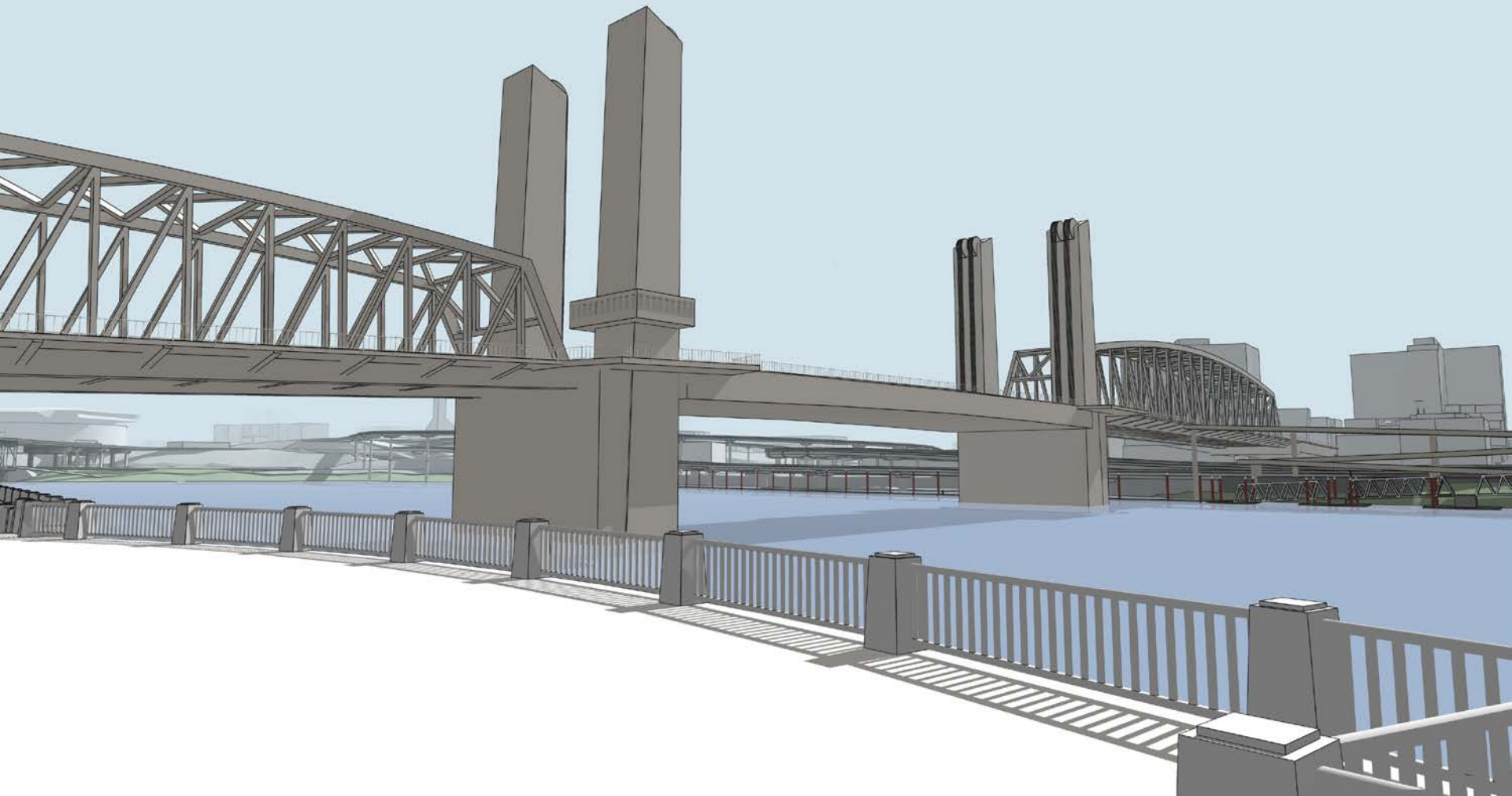
Bridge Composition

Truss – Long Bascule – Truss



Bridge Composition

Truss – Long Vertical Lift – Truss



Compositions Views from Waterfront Park (Short Movable Span)



Bridge Composition

Long Tied Arch – Short Bascule – Tied Arch



Bridge Composition

Long Tied Arch – Short Vertical Lift – Tied Arch



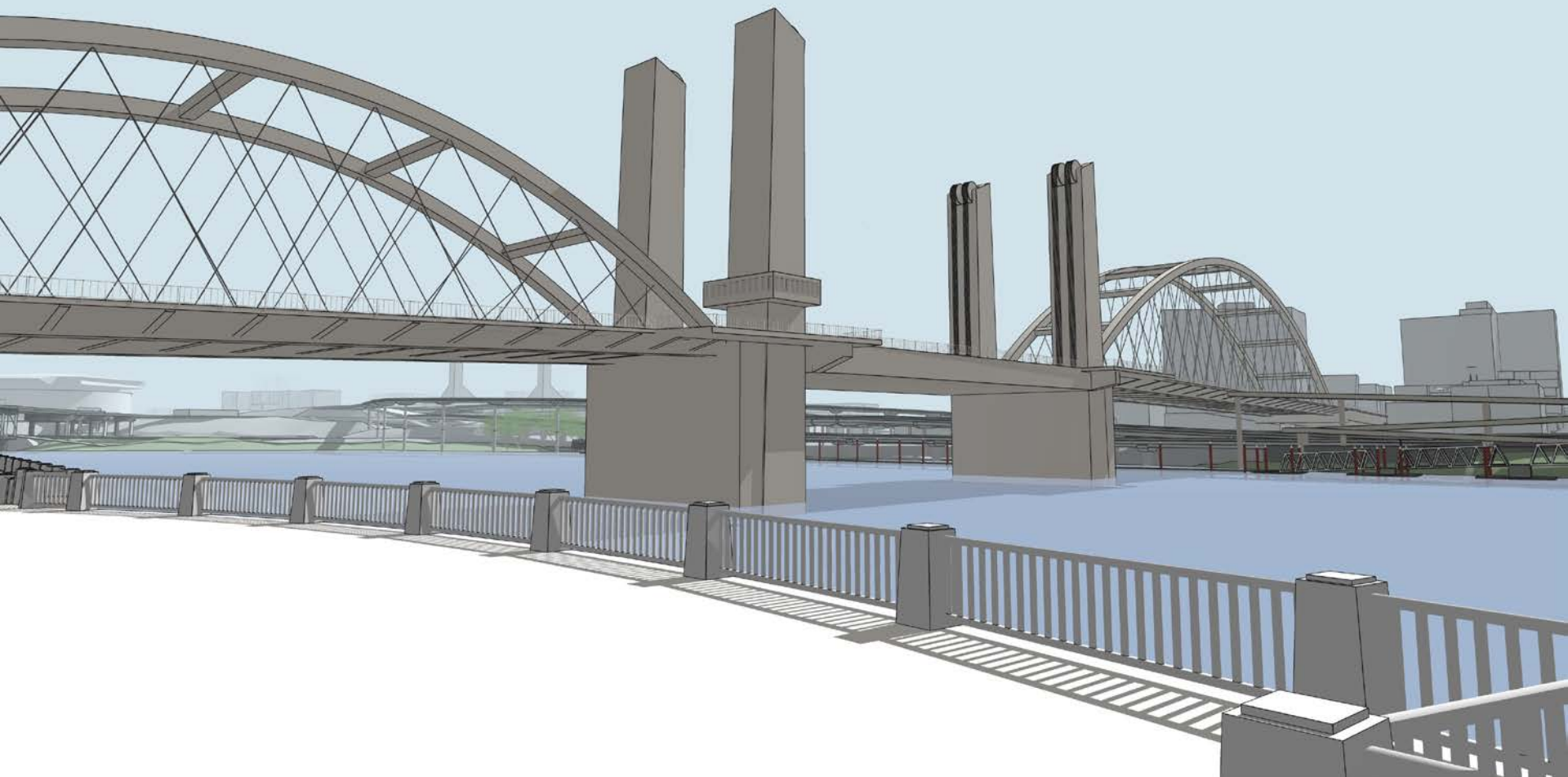
Bridge Composition

Short Tied Arch – Short Bascule – Tied Arch



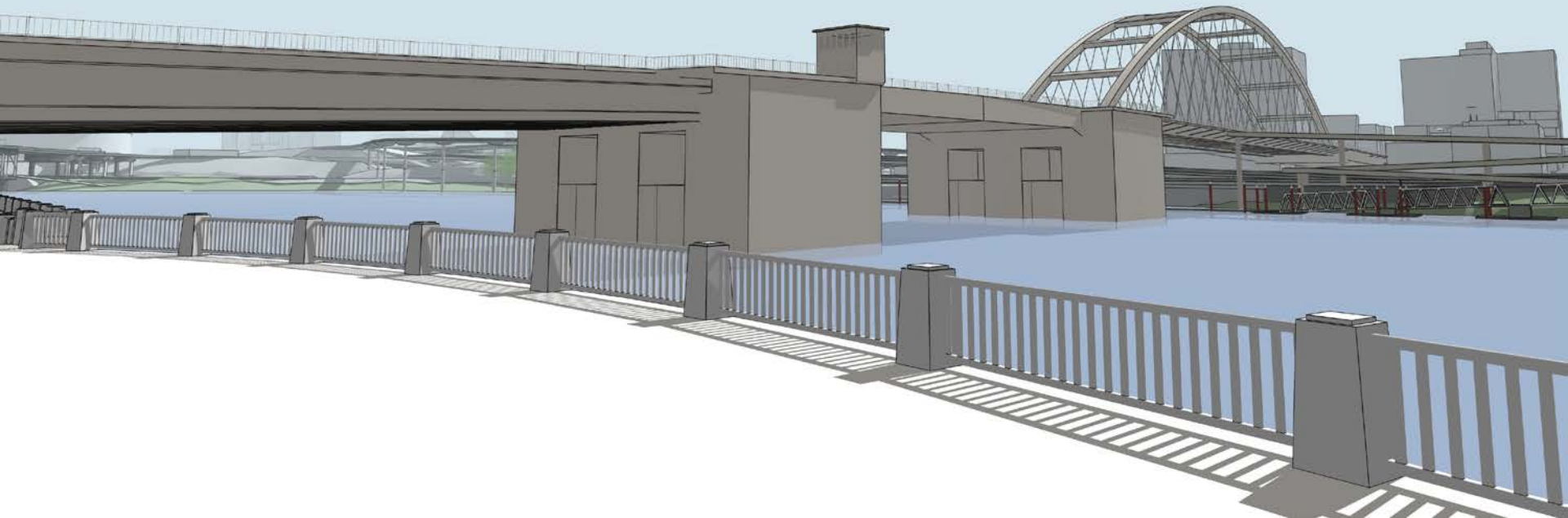
Bridge Composition

Short Tied Arch – Short Vertical Lift – Tied Arch



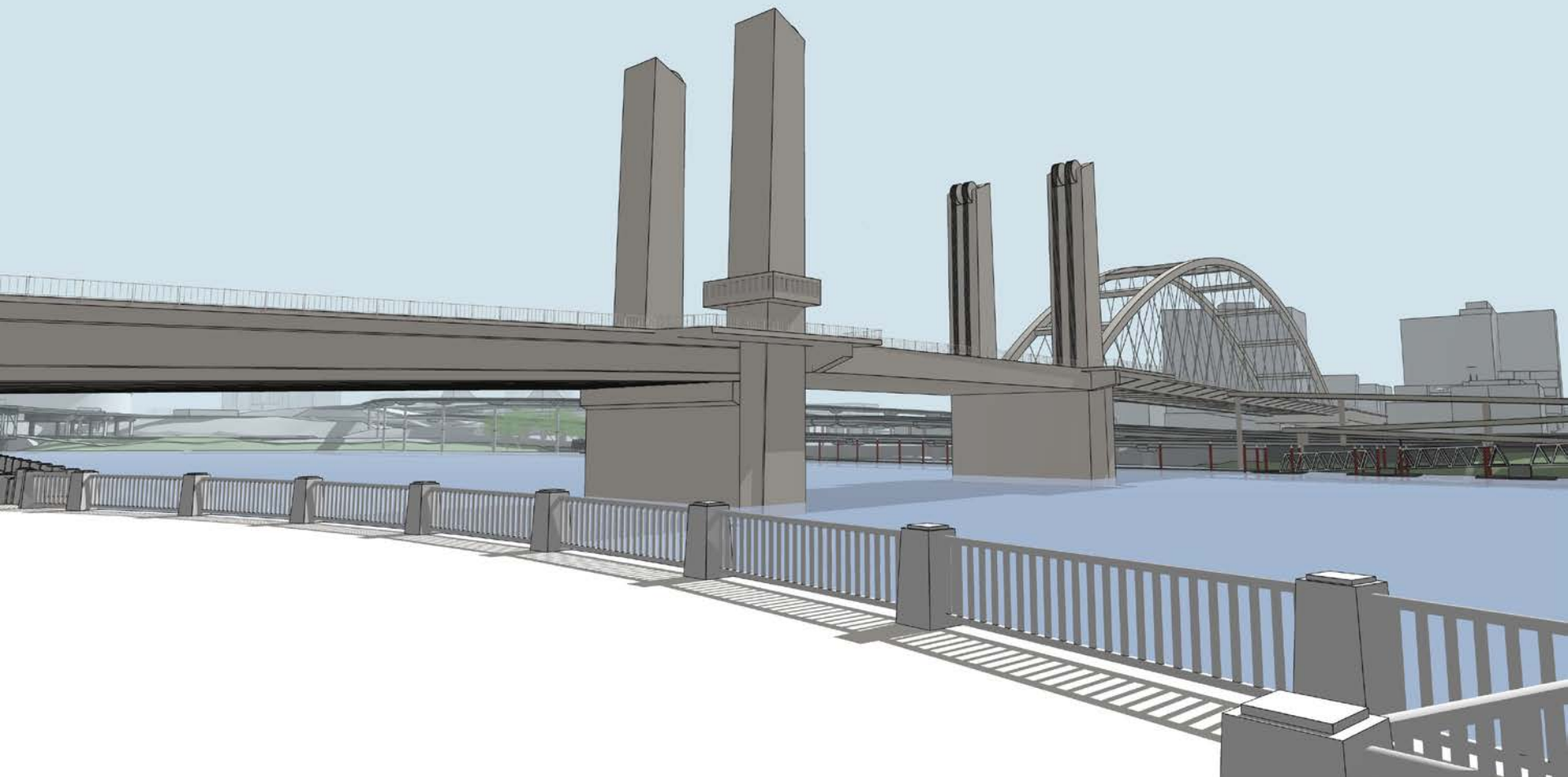
Bridge Composition

Long Girder – Short Bascule – Tied Arch



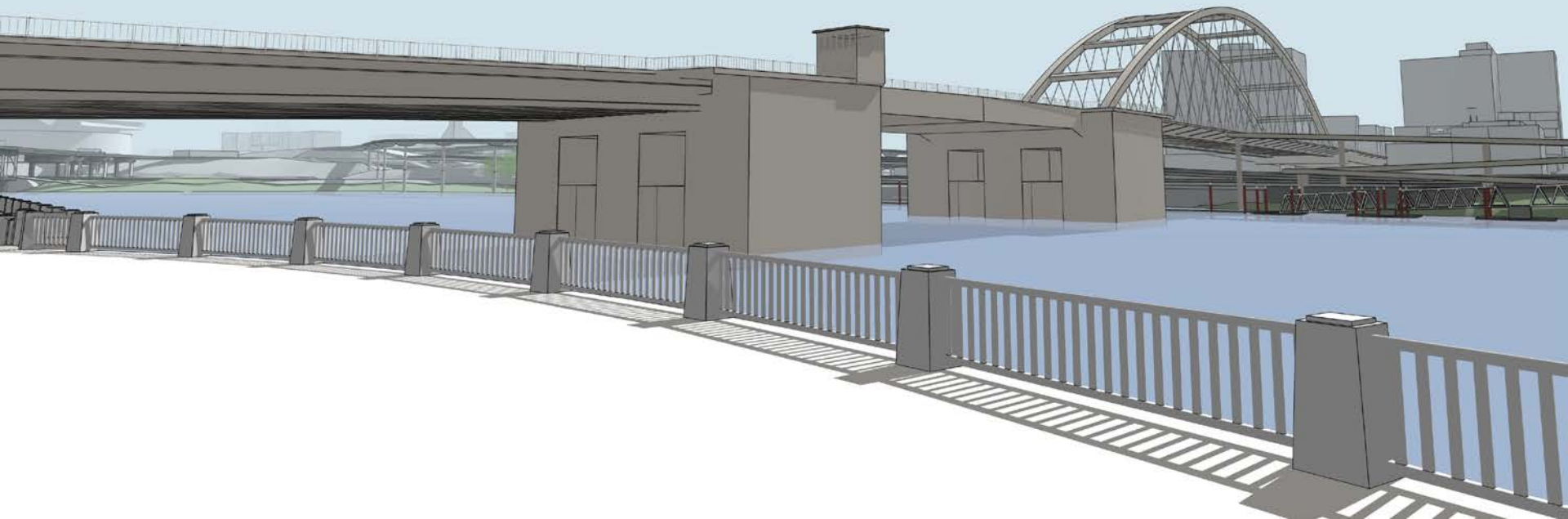
Bridge Composition

Long Girder – Short Vertical Lift – Tied Arch



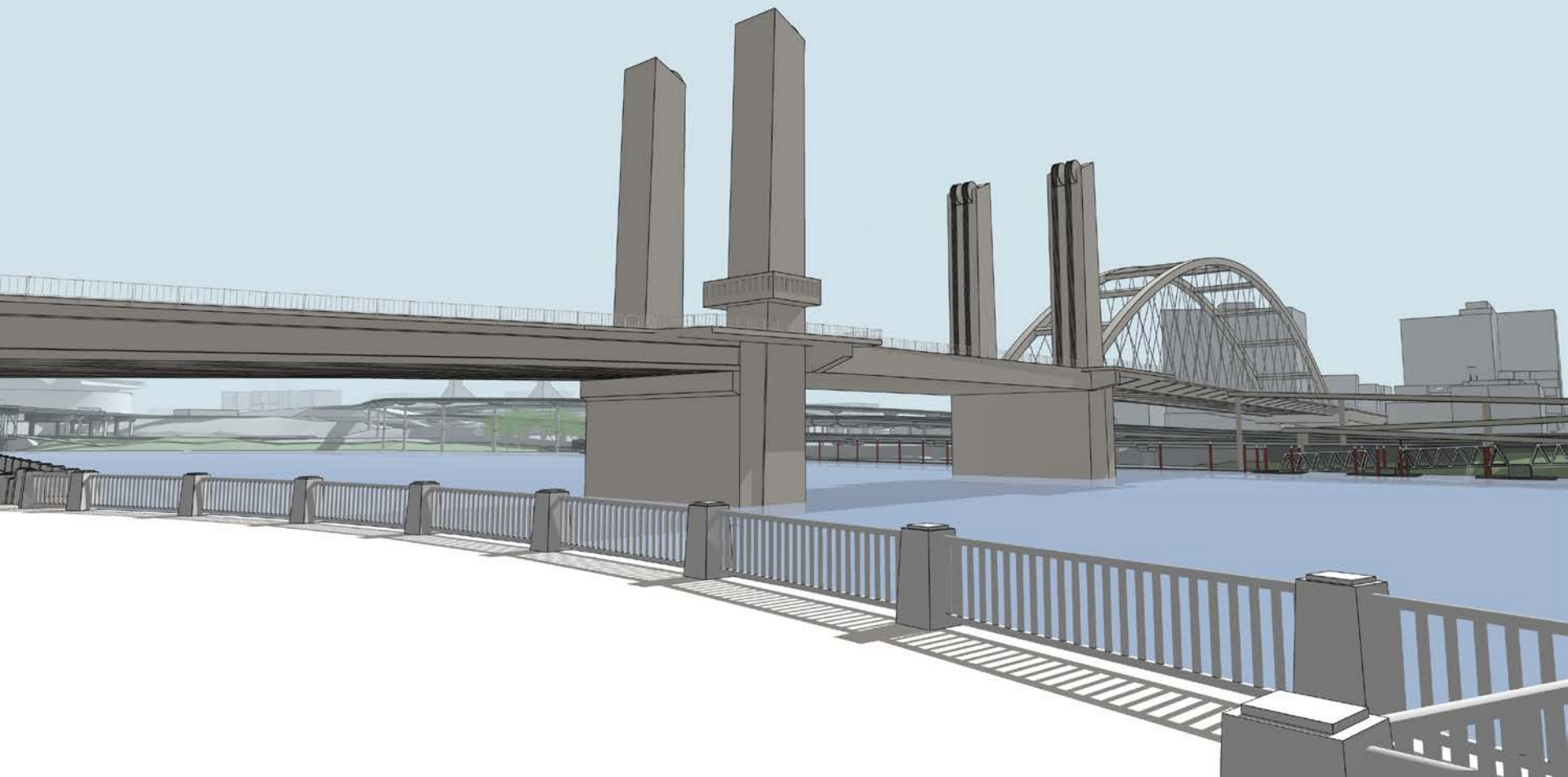
Bridge Composition

Short Girder – Short Bascule – Tied Arch



Bridge Composition

Short Girder – Short Vertical Lift – Tied Arch



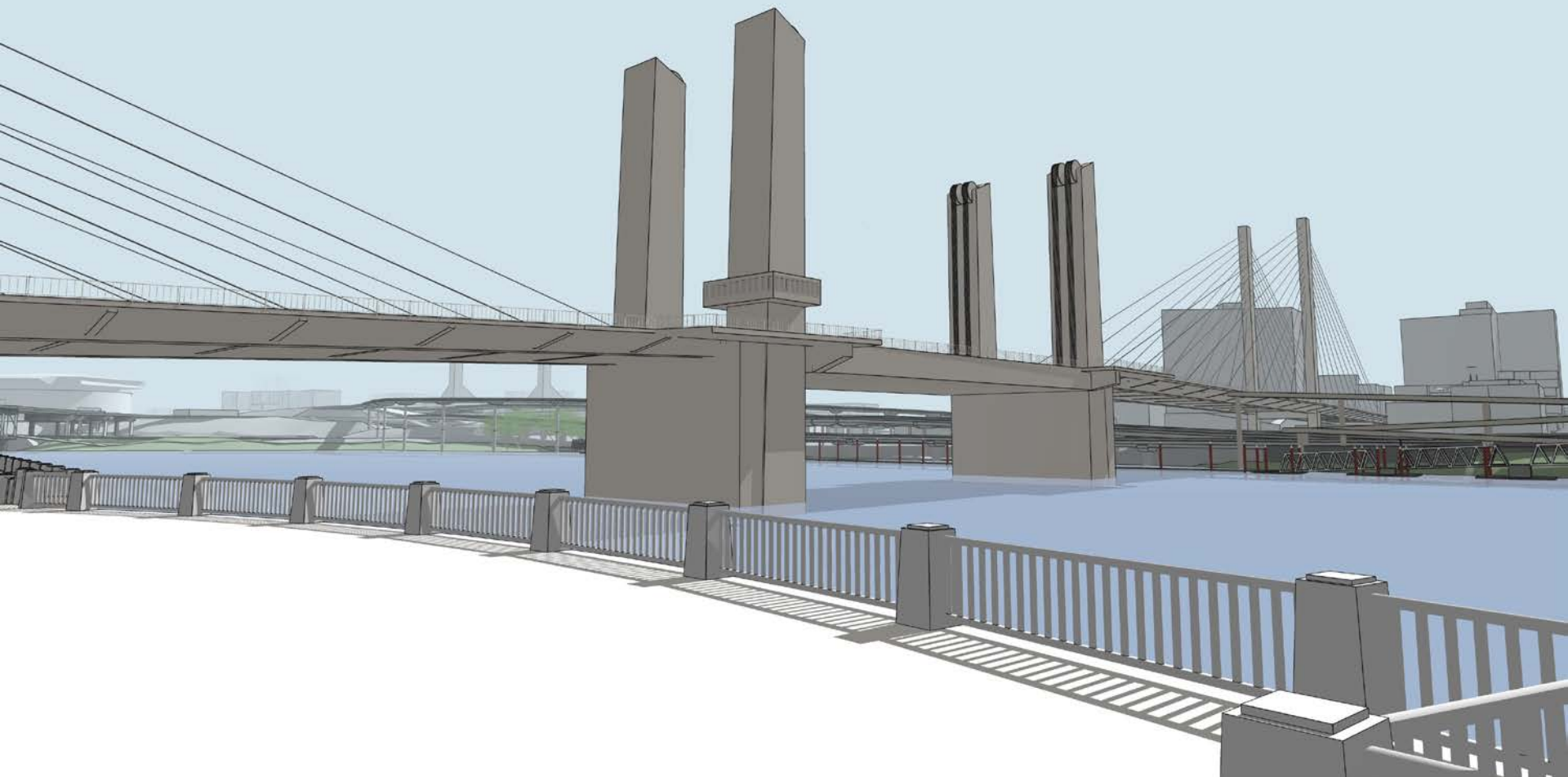
Bridge Composition

Balanced Cable Stay – Short Bascule – Cable Stay



Bridge Composition

Balanced Cable Stay – Short Vertical Lift – Cable Stay



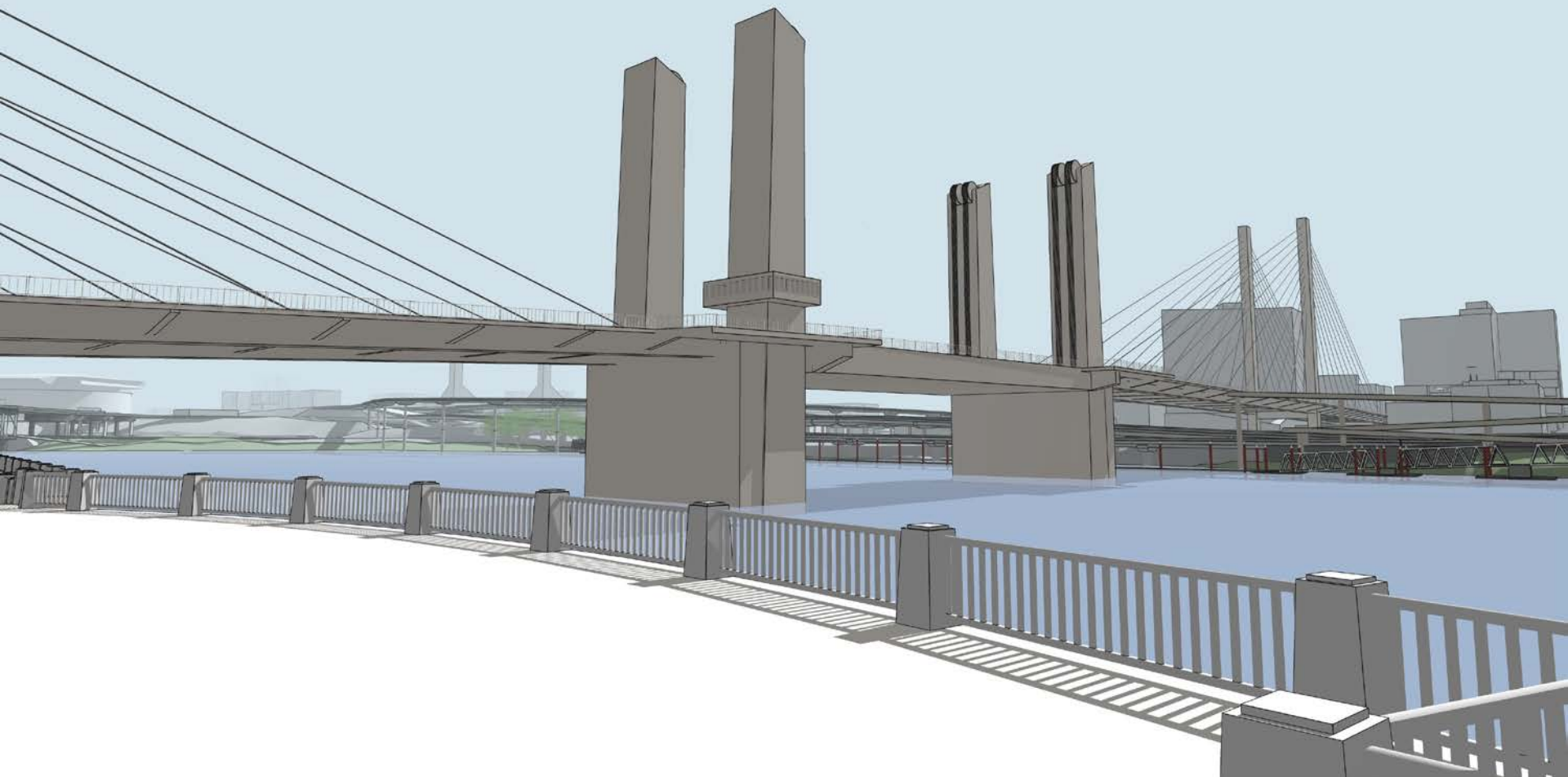
Bridge Composition

Unbalanced Cable Stay – Short Bascule – Cable Stay



Bridge Composition

Unbalanced Cable Stay – Short Vertical Lift – Cable Stay



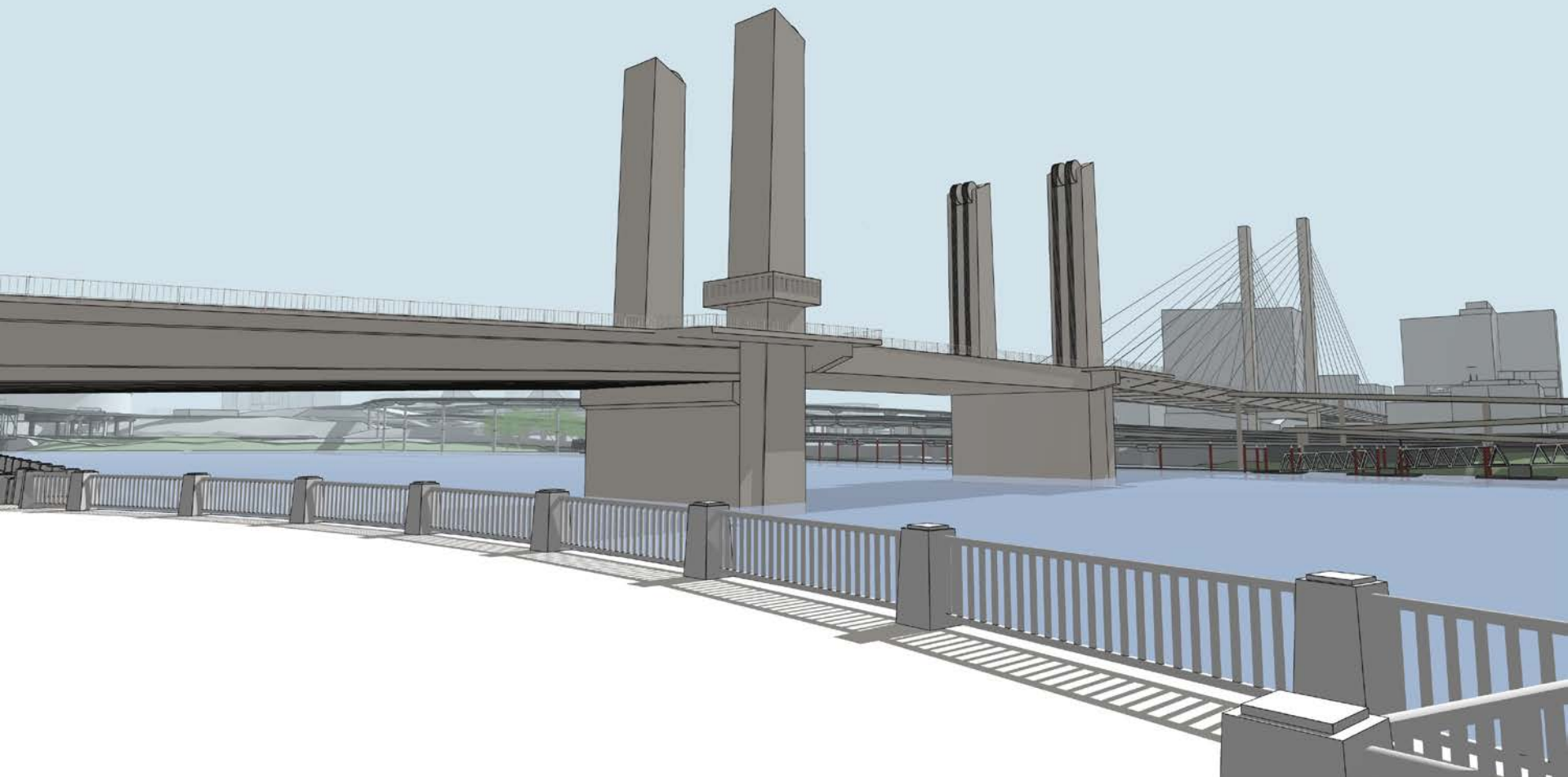
Bridge Composition

Long Girder – Short Bascule – Cable Stay



Bridge Composition

Long Girder – Short Vertical Lift – Cable Stay



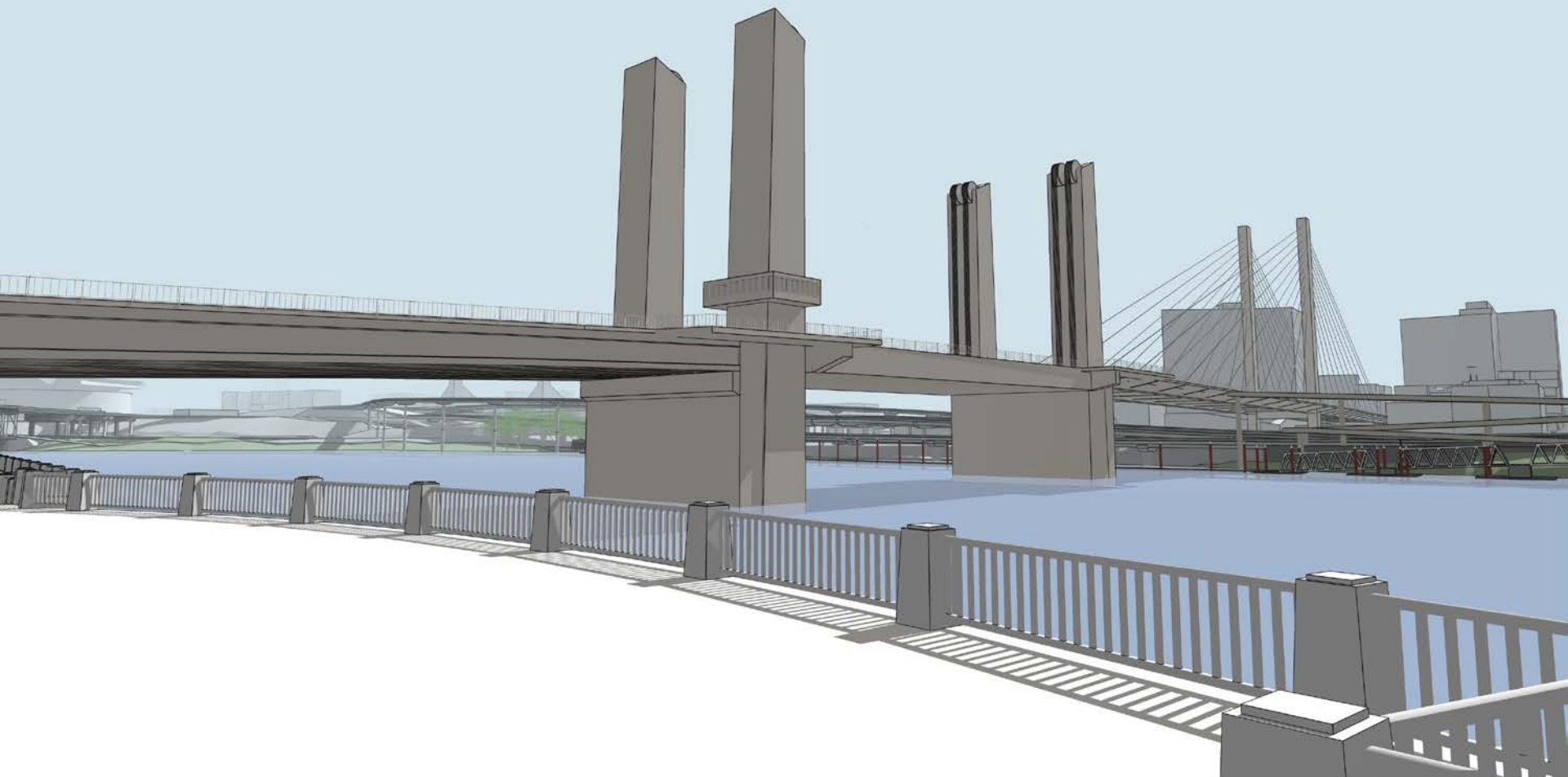
Bridge Composition

Short Girder – Short Bascule – Cable Stay



Bridge Composition

Short Girder – Short Vertical Lift – Cable Stay



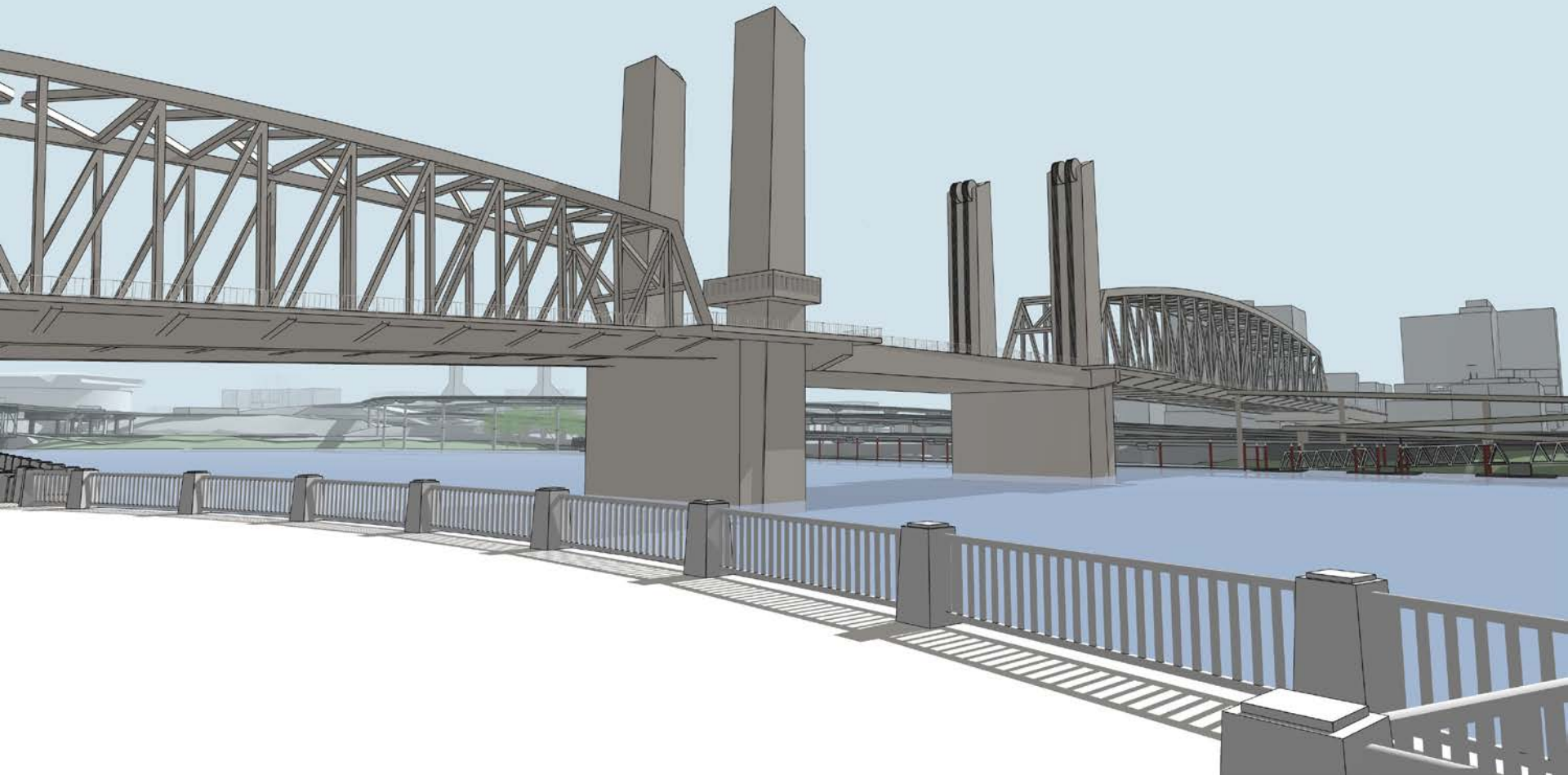
Bridge Composition

Truss – Short Bascule – Truss



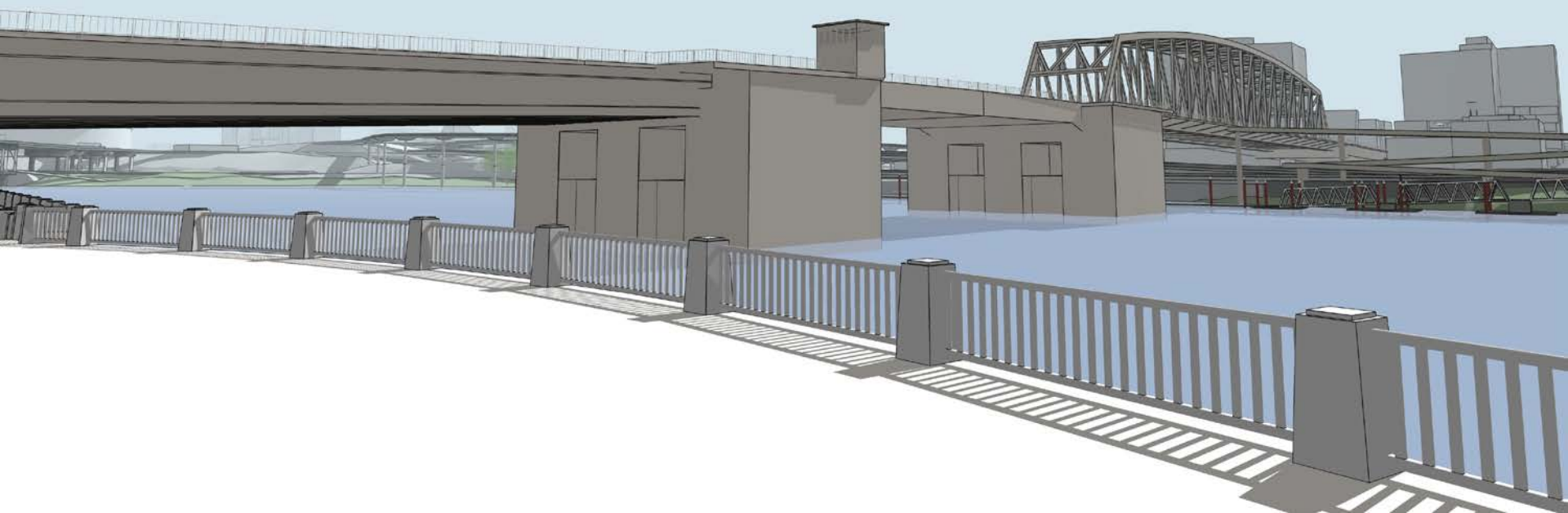
Bridge Composition

Truss – Short Vertical Lift – Truss



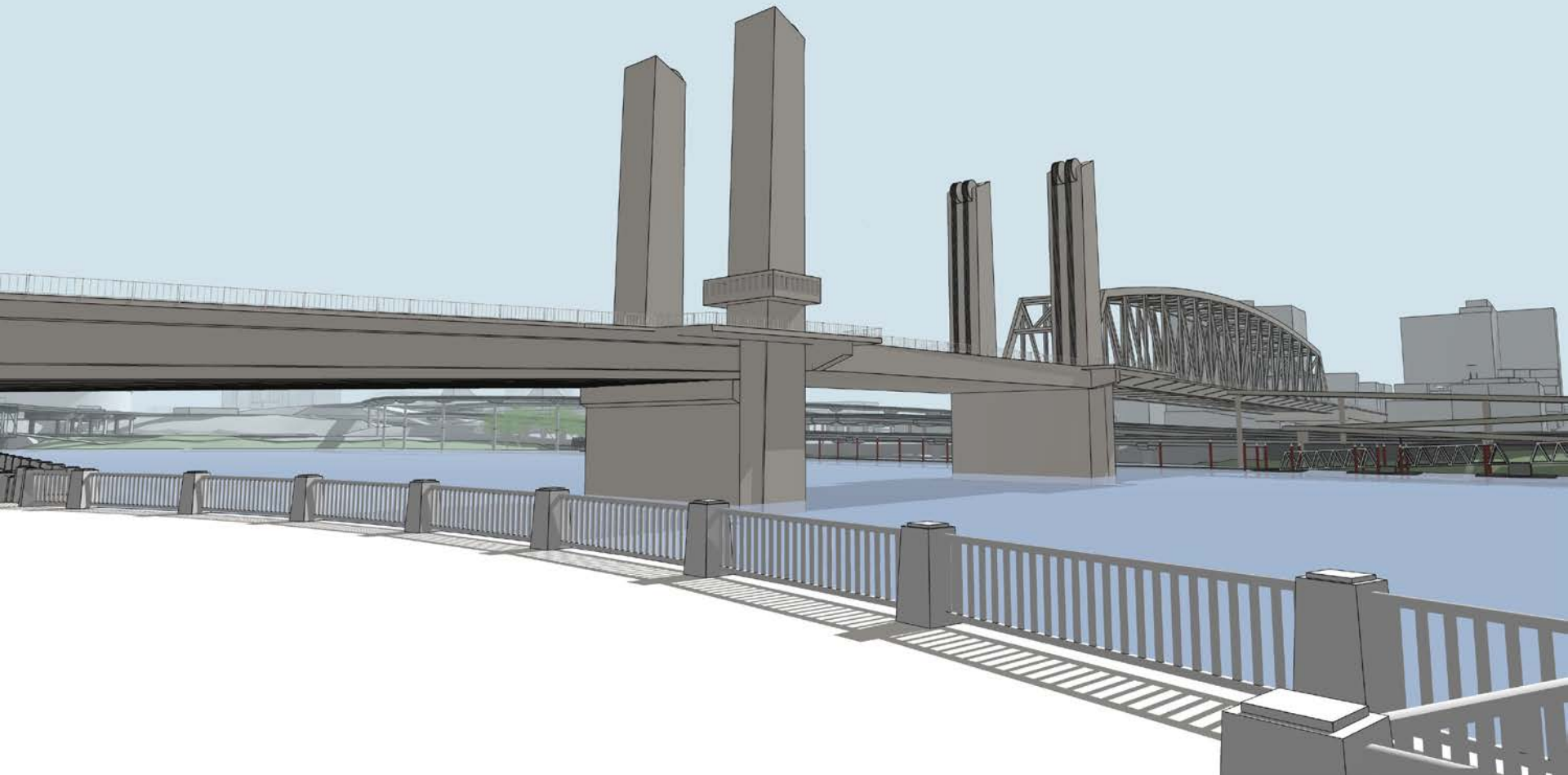
Bridge Composition

Long Girder – Short Bascule – Truss



Bridge Composition

Long Girder – Short Vertical Lift – Truss



Compositions Views from Eastbank Esplanade (Long Movable Span)



Bridge Composition

Existing Bridge



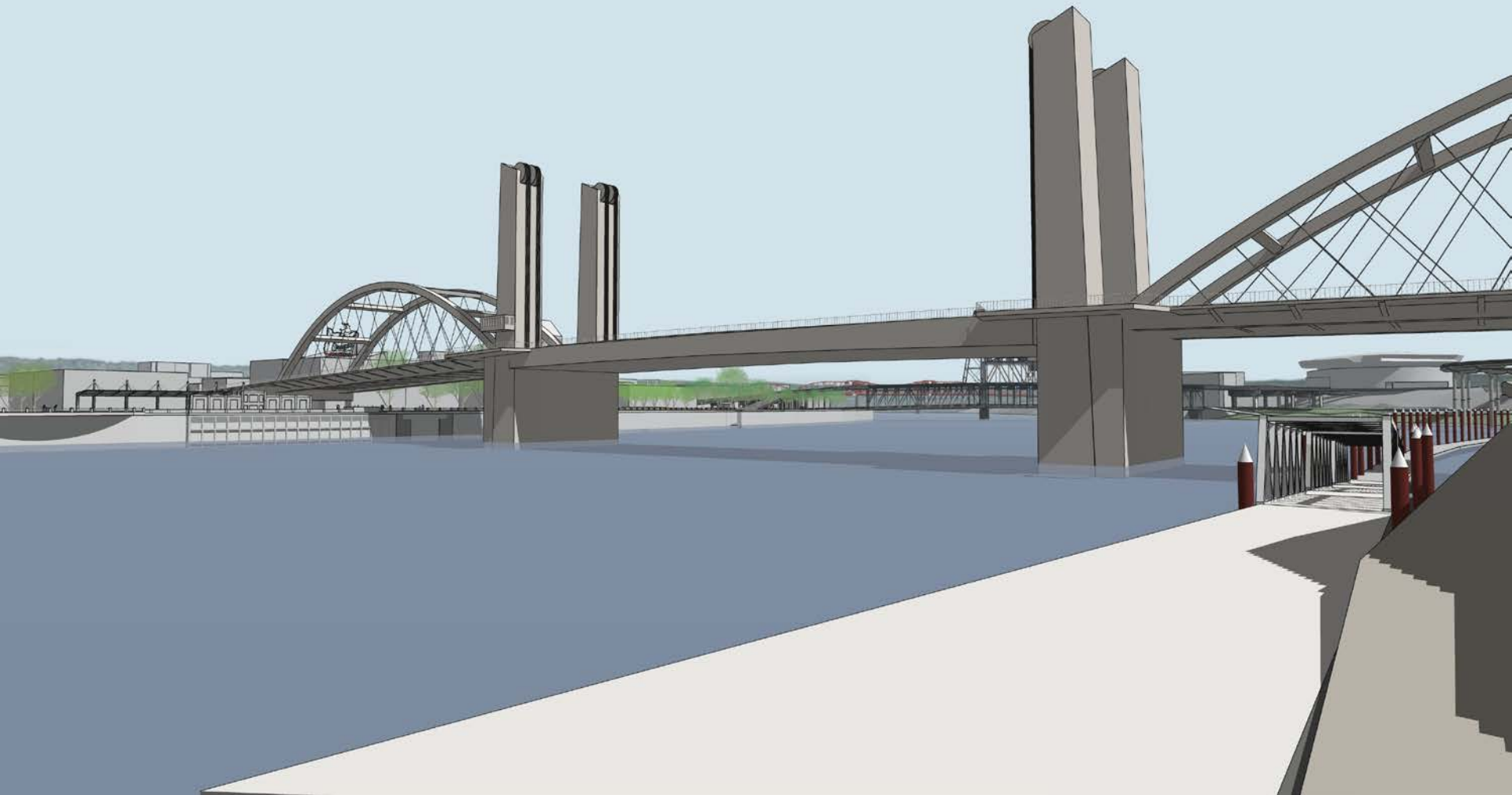
Bridge Composition

Long Tied Arch – Long Bascule – Tied Arch



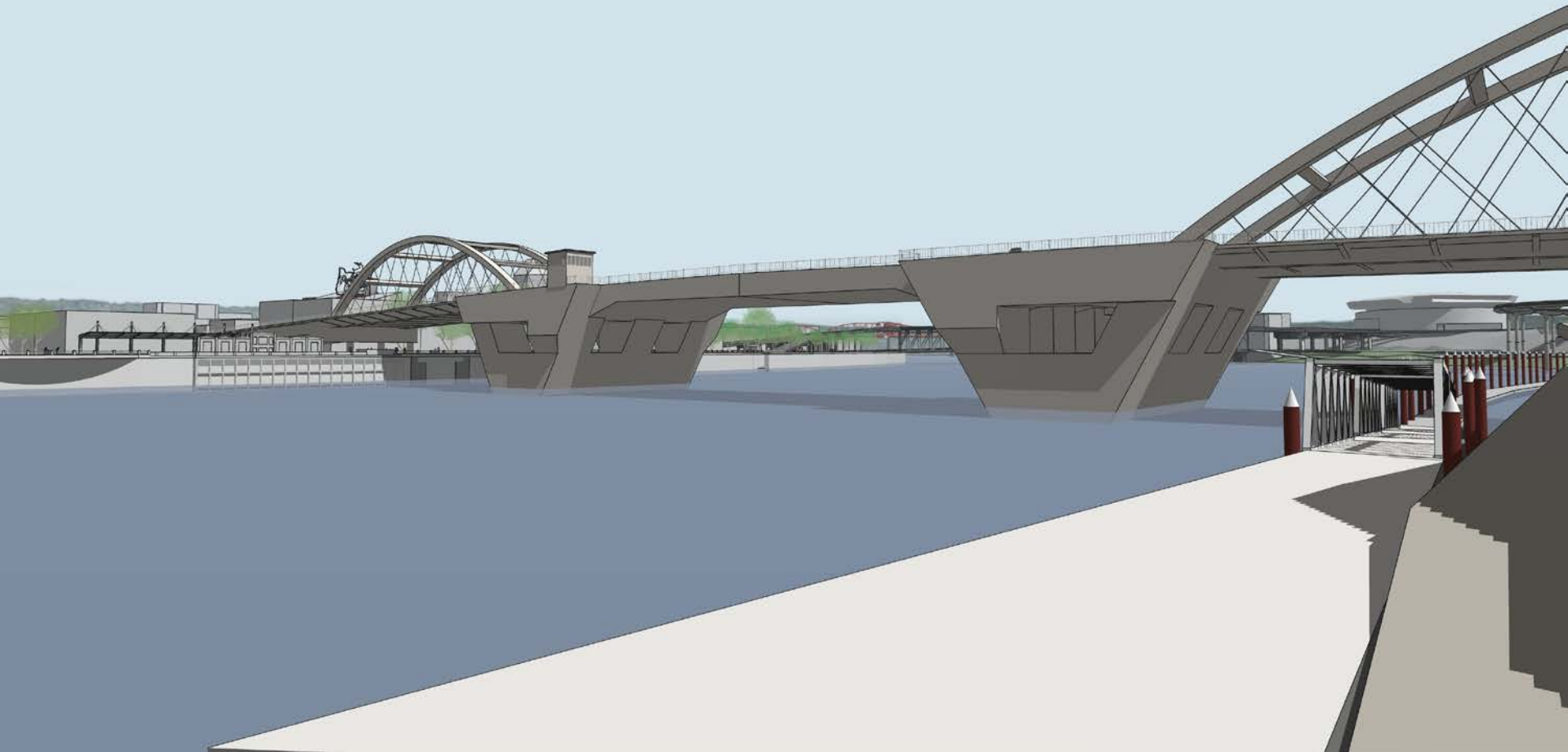
Bridge Composition

Long Tied Arch – Long Vertical Lift – Tied Arch



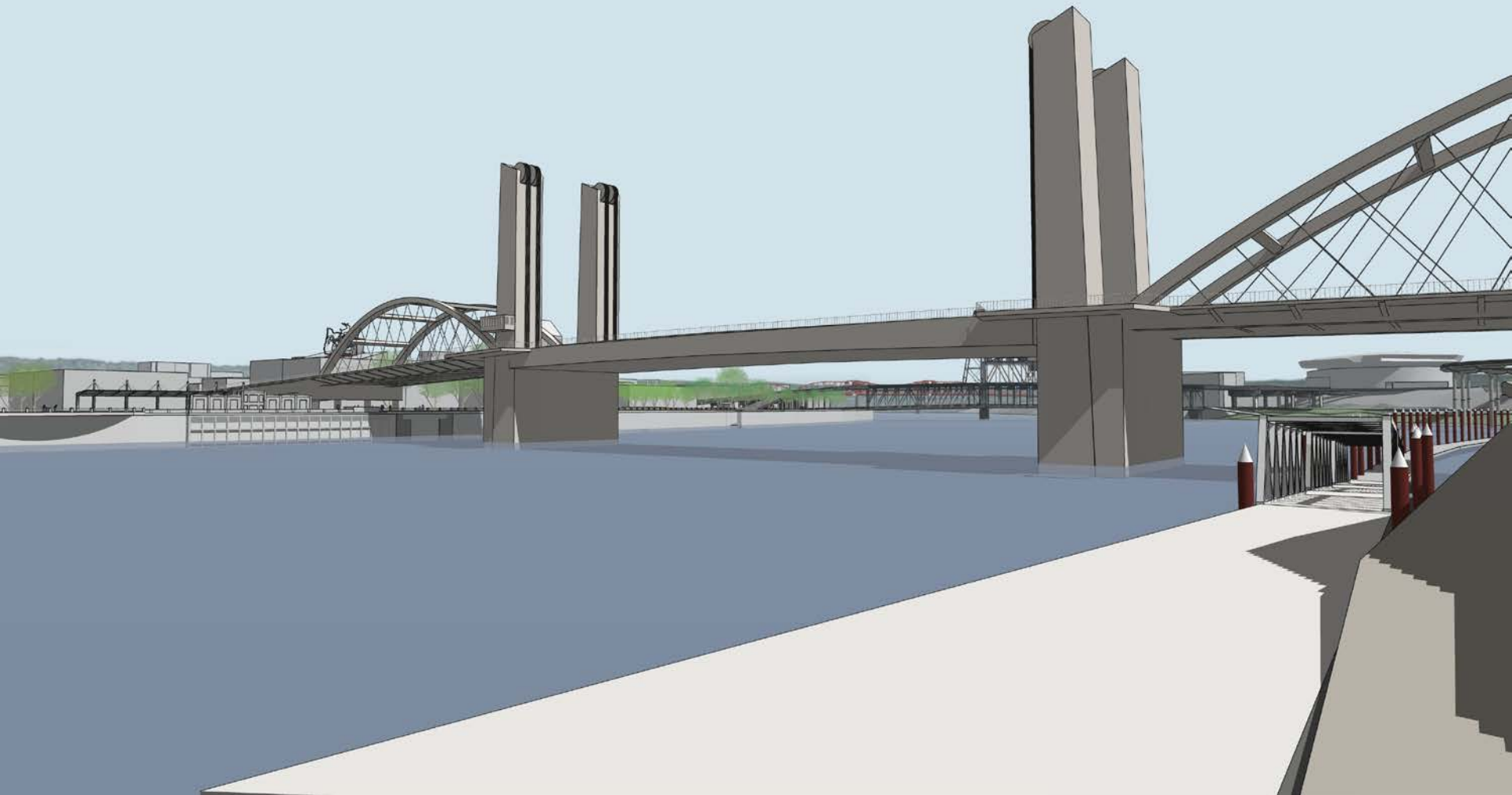
Bridge Composition

Short Tied Arch – Long Bascule – Tied Arch



Bridge Composition

Short Tied Arch – Long Vertical Lift – Tied Arch



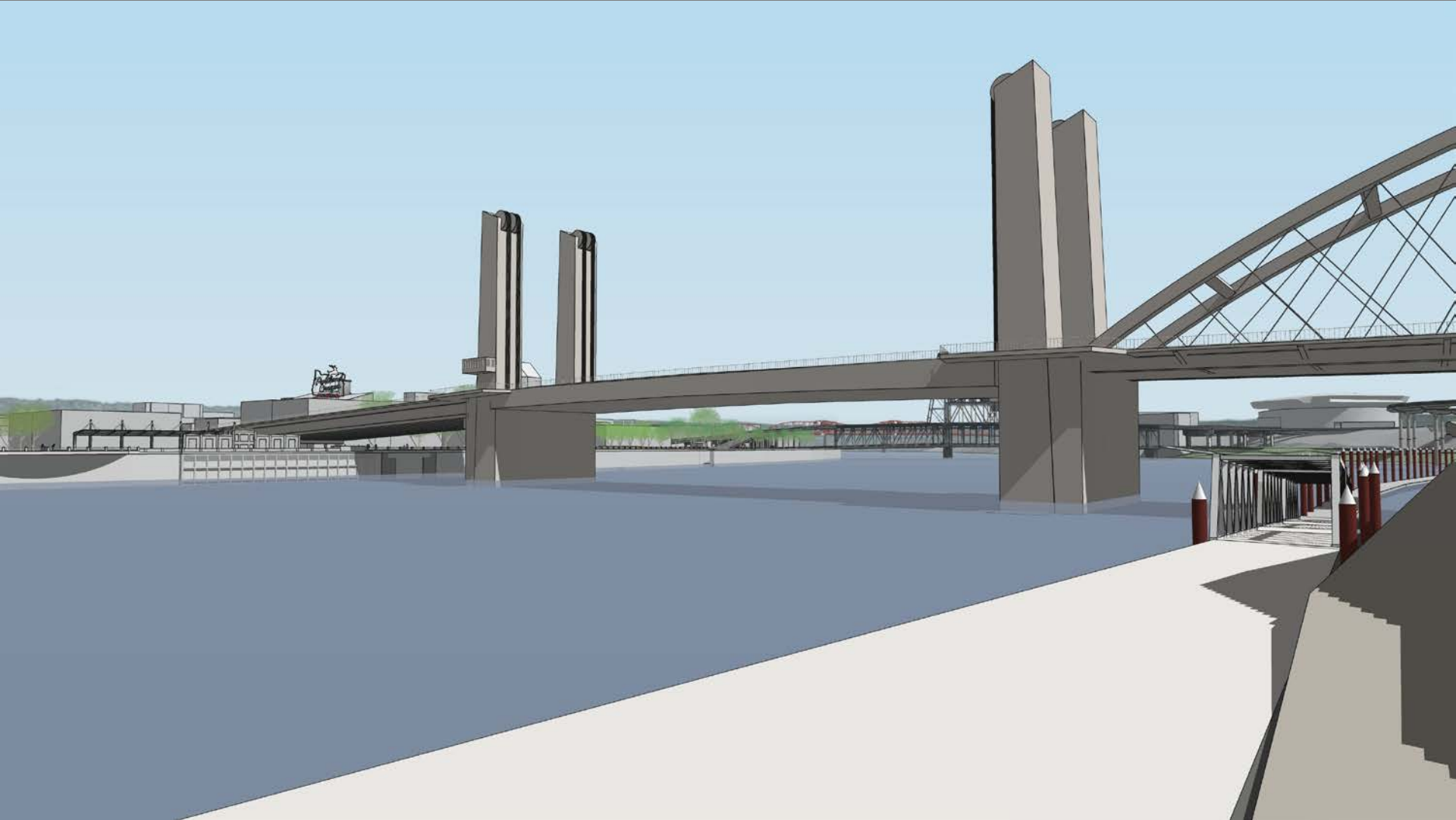
Bridge Composition

Long Girder – Long Bascule – Tied Arch



Bridge Composition

Long Girder – Long Vertical Lift – Tied Arch



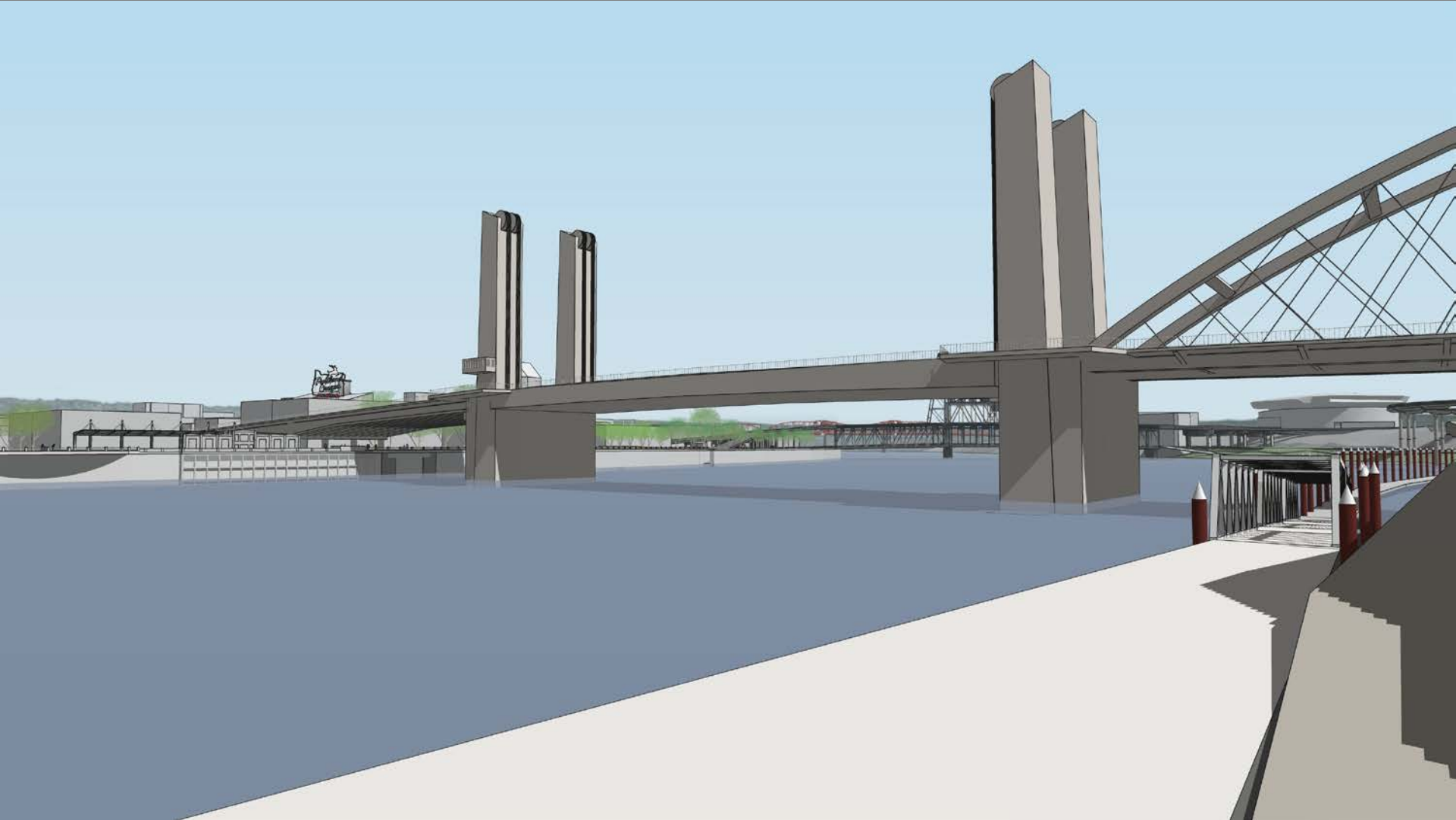
Bridge Composition

Short Girder – Long Bascule – Tied Arch



Bridge Composition

Short Girder – Long Vertical Lift – Tied Arch



Bridge Composition

Balanced Cable Stayed – Long Bascule – Cable Stayed



Bridge Composition

Balanced Cable Stayed – Long Vertical Lift – Cable Stayed



Bridge Composition

Unbalanced Cable Stayed – Long Bascule – Cable Stayed



Bridge Composition

Unbalanced Cable Stayed – Long Vertical Lift – Cable Stayed



Bridge Composition

Long Girder – Long Bascule – Cable Stayed



Bridge Composition

Long Girder – Long Vertical Lift – Cable Stayed



Bridge Composition

Short Girder – Long Bascule – Cable Stayed



Bridge Composition

Short Girder – Long Vertical Lift – Cable Stayed



Compositions

View from Eastbank Esplanade (Short Movable Span)



Bridge Composition

Existing



Bridge Composition

Long Tied Arch – Short Bascule – Tied Arch



Bridge Composition

Long Tied Arch – Short Vertical Lift – Tied Arch



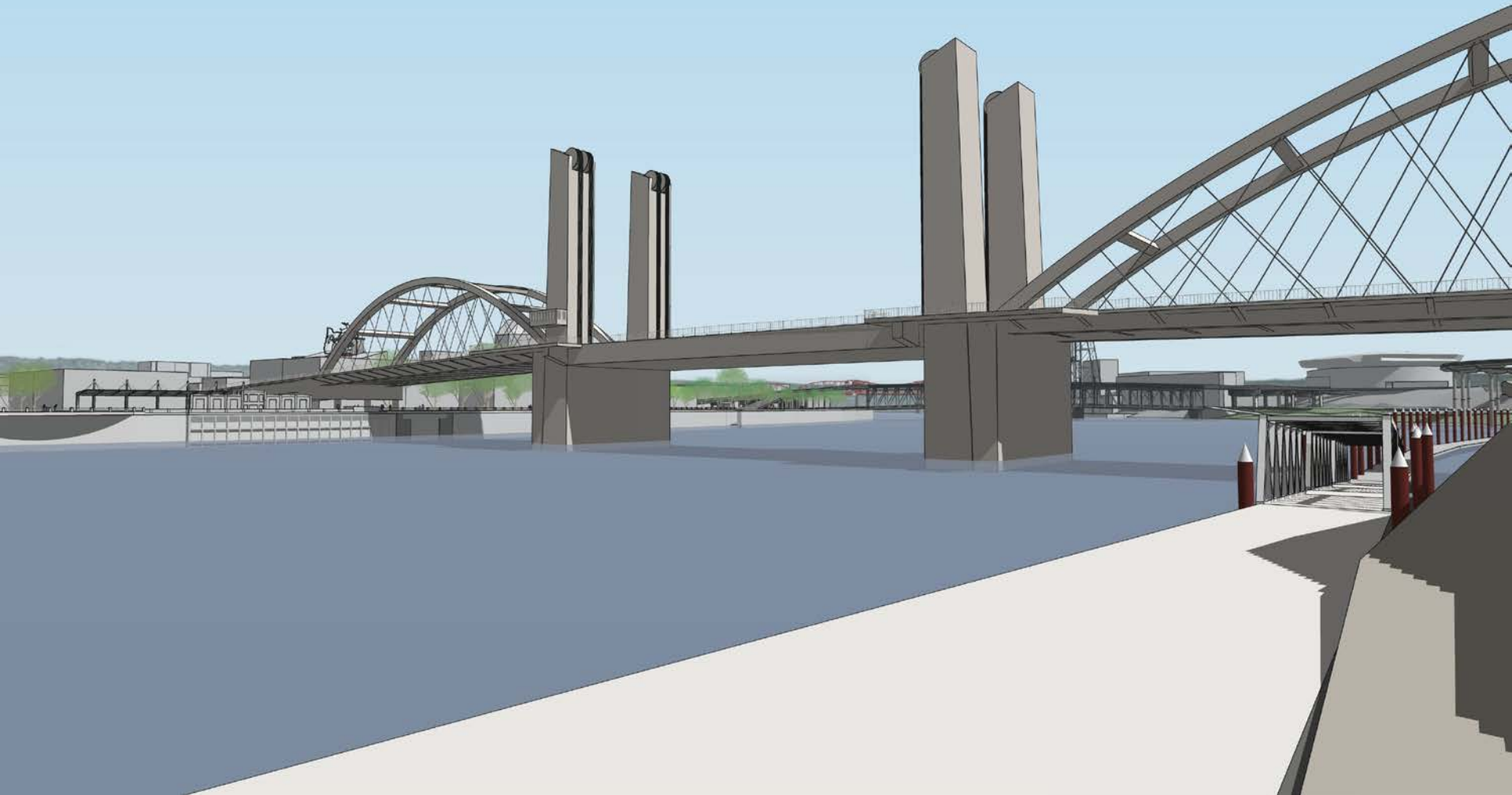
Bridge Composition

Short Tied Arch – Short Bascule – Tied Arch



Bridge Composition

Short Tied Arch – Short Vertical Lift – Tied Arch



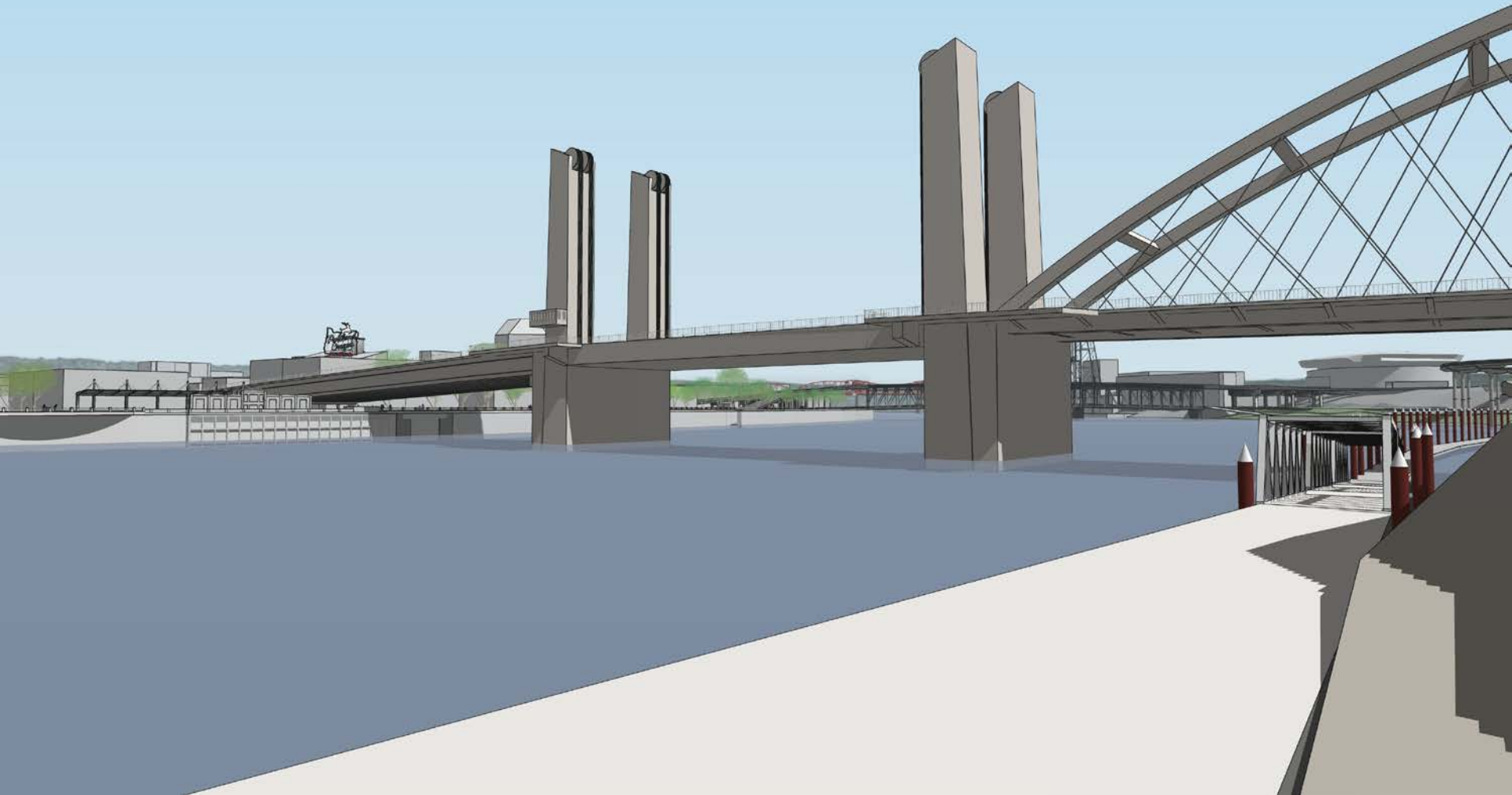
Bridge Composition

Long Girder – Short Bascule – Tied Arch



Bridge Composition

Long Girder – Short Vertical Lift – Tied Arch



Bridge Composition

Short Girder – Short Bascule – Tied Arch



Bridge Composition

Short Girder – Short Vertical Lift – Tied Arch



Bridge Composition

Balanced Cable Stay – Short Bascule – Cable Stay



Bridge Composition

Balanced Cable Stay – Short Vertical Lift – Cable Stay



Bridge Composition

Unbalanced Cable Stay – Short Bascule – Cable Stay



Bridge Composition

Unbalanced Cable Stay – Short Vertical Lift – Cable Stay



Bridge Composition

Long Girder – Short Bascule – Cable Stay



Bridge Composition

Long Girder – Short Vertical Lift – Cable Stay



Bridge Composition

Short Girder – Short Bascule – Cable Stay



Bridge Composition

Short Girder – Short Vertical Lift – Cable Stay



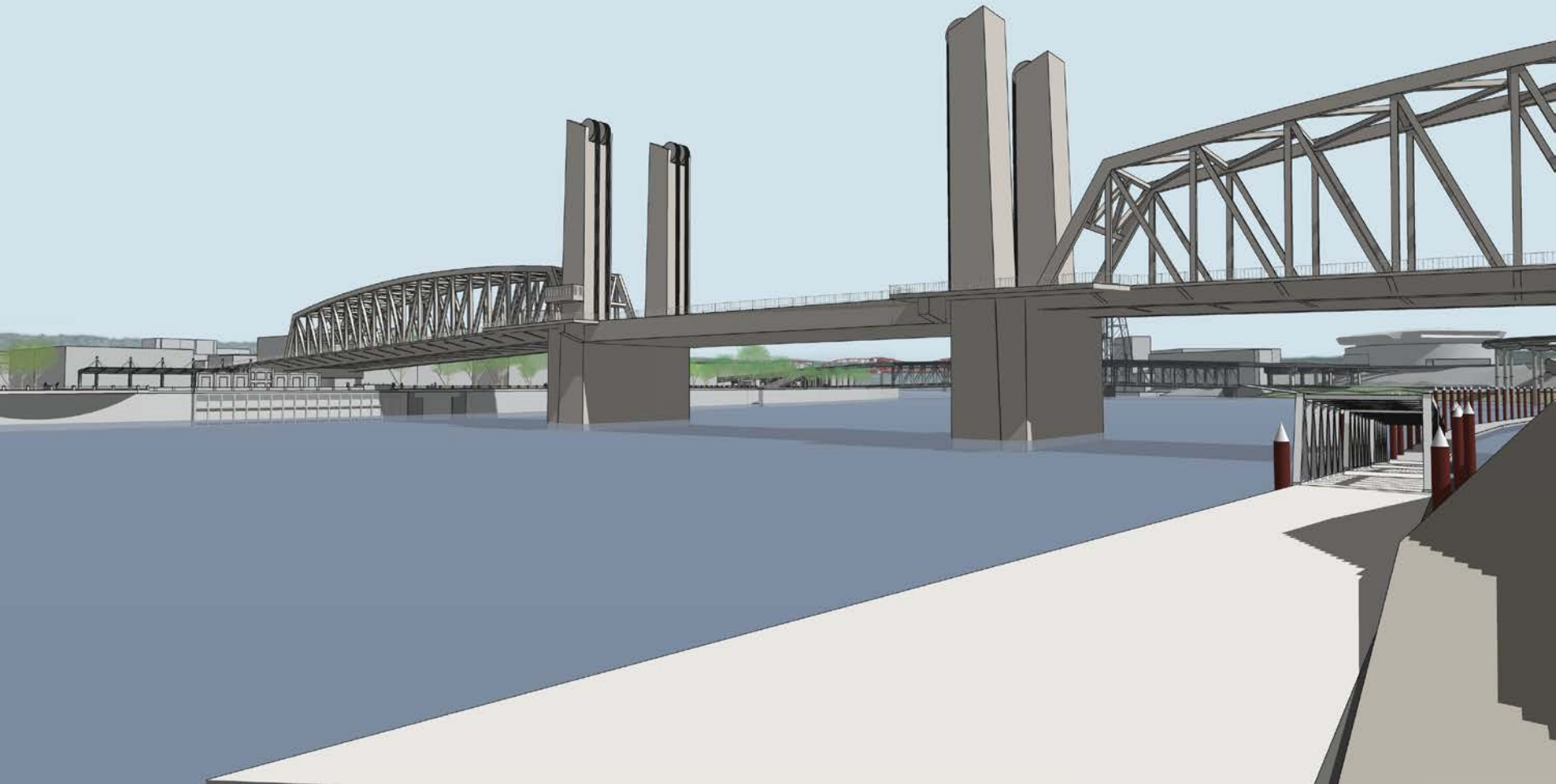
Bridge Composition

Truss – Short Bascule – Truss



Bridge Composition

Truss – Short Vertical Lift – Truss



Bridge Composition

Long Girder – Short Bascule – Truss



Bridge Composition

Long Girder – Short Vertical Lift – Truss

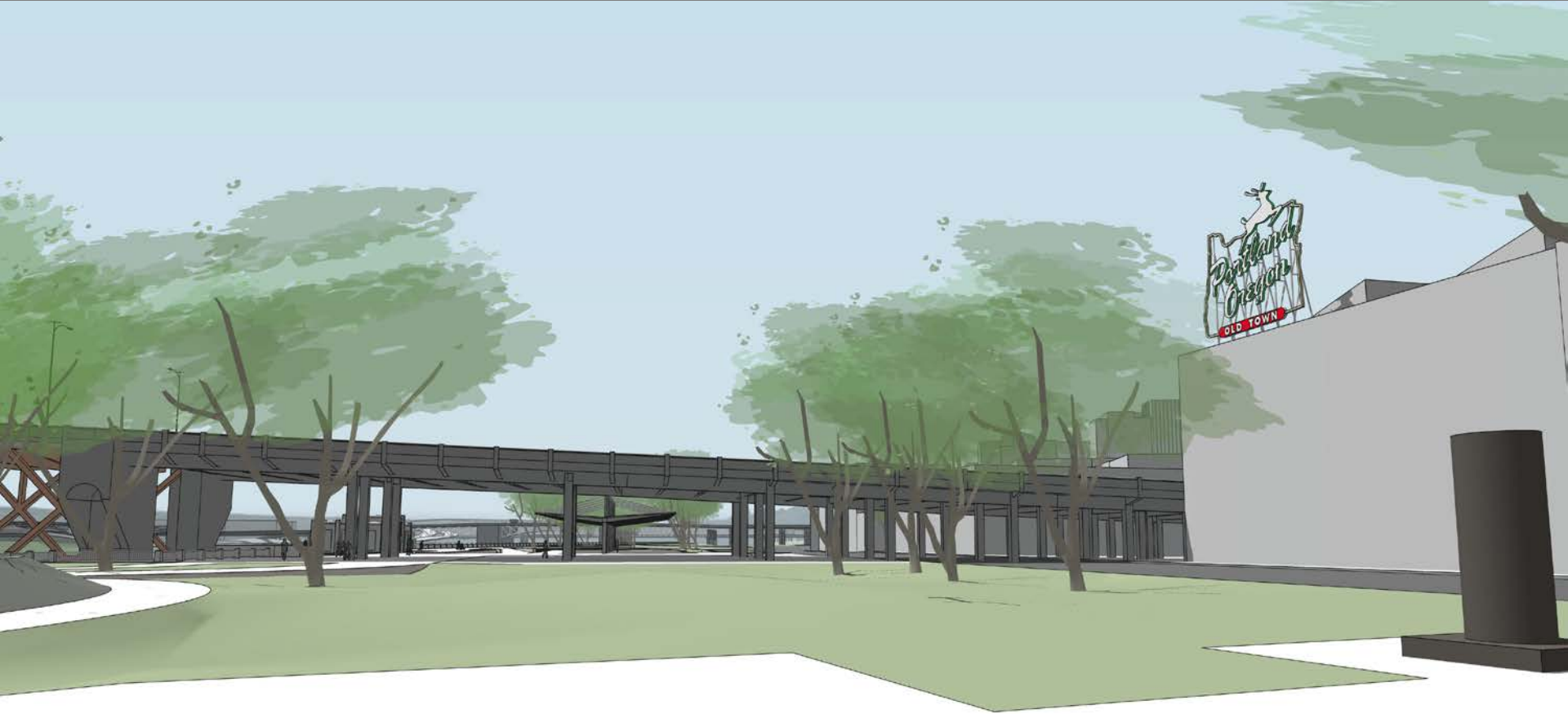


Compositions Views from Japanese American Historical Plaza



Bridge Composition

Existing Bridge



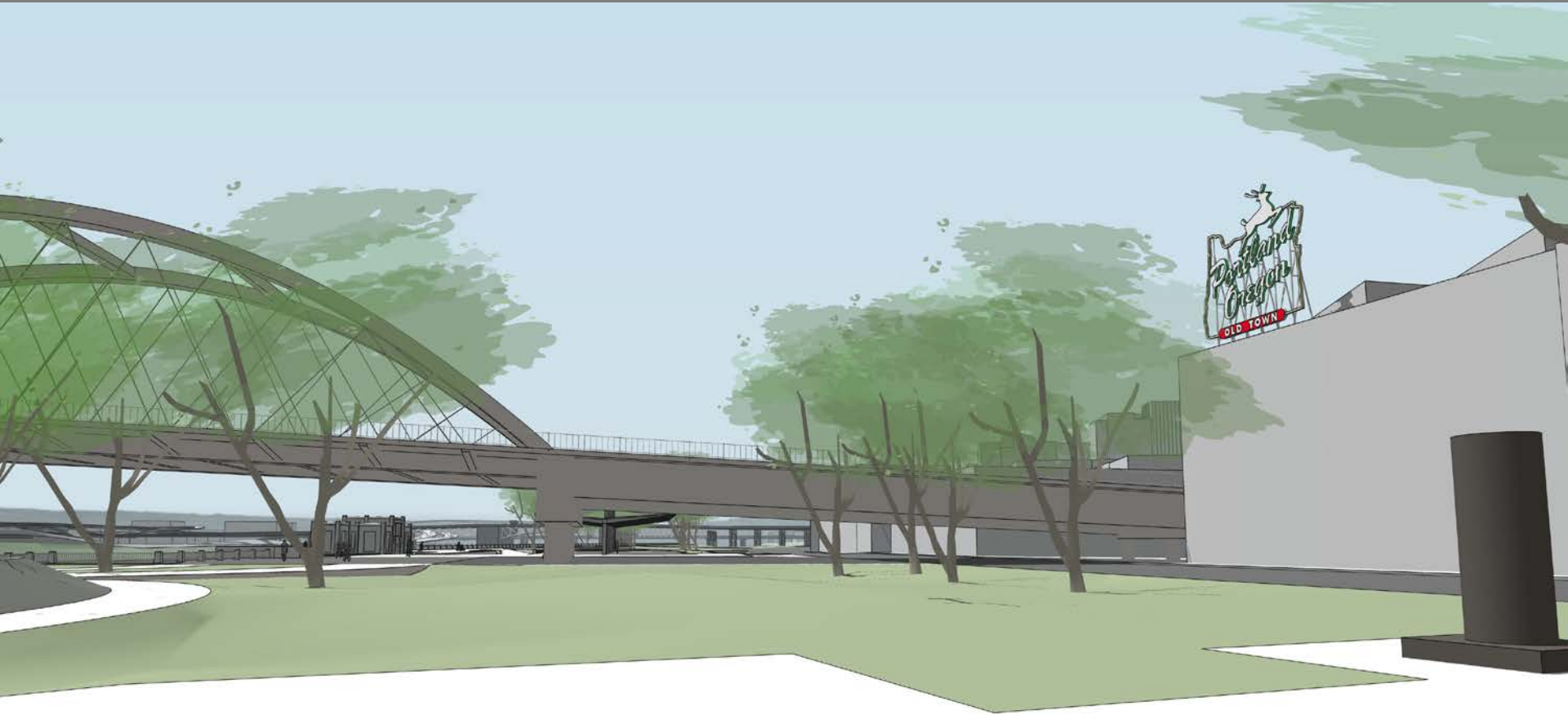
Bridge Composition

Long Tied Arch



Bridge Composition

Short Tied Arch



Bridge Composition

Balanced Cable Stay



Bridge Composition

Unbalanced Cable Stay



Bridge Composition

Truss



Bridge Composition

Long Girder



Bridge Composition

Short Girder

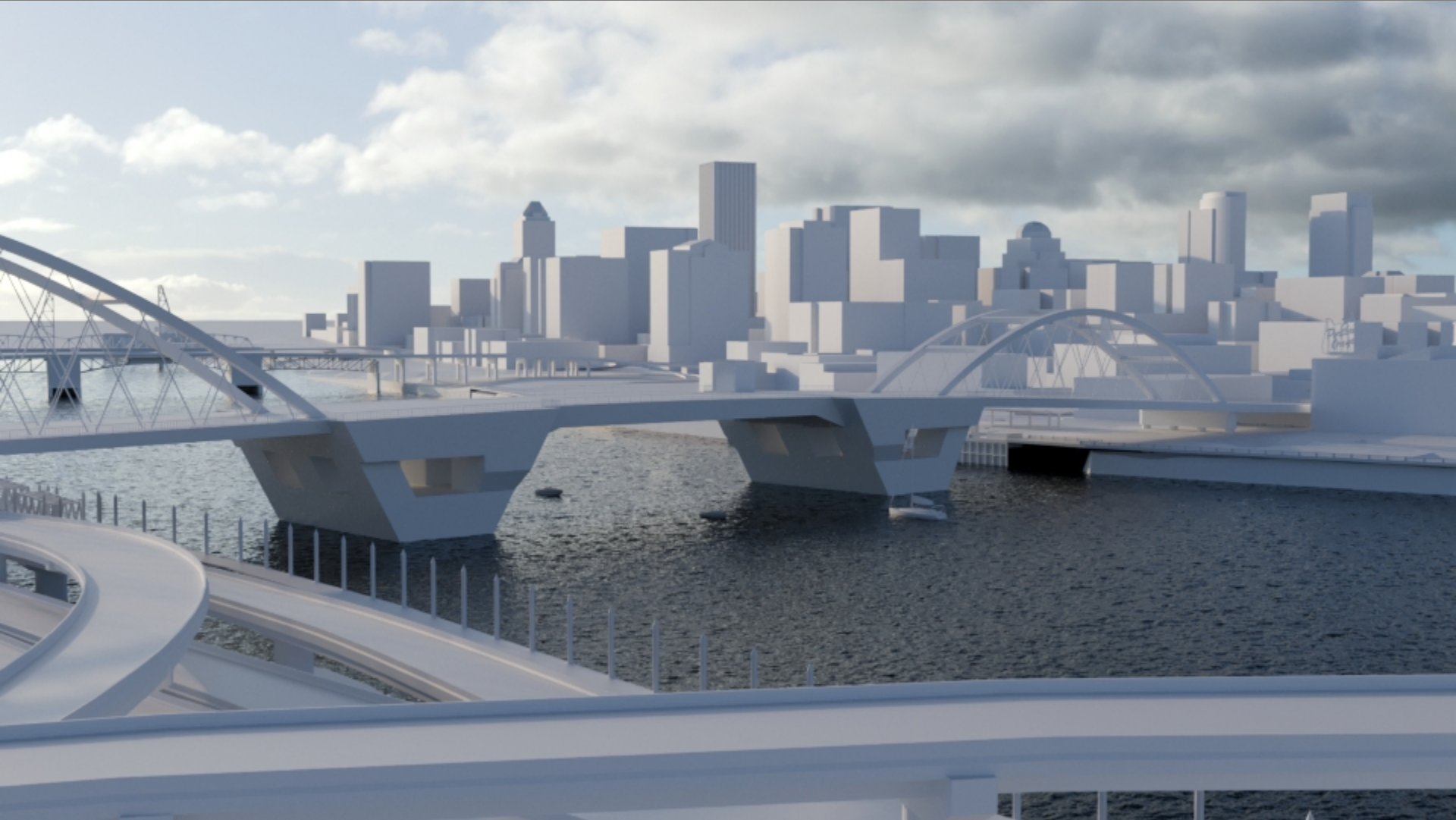


Select Refined Compositions



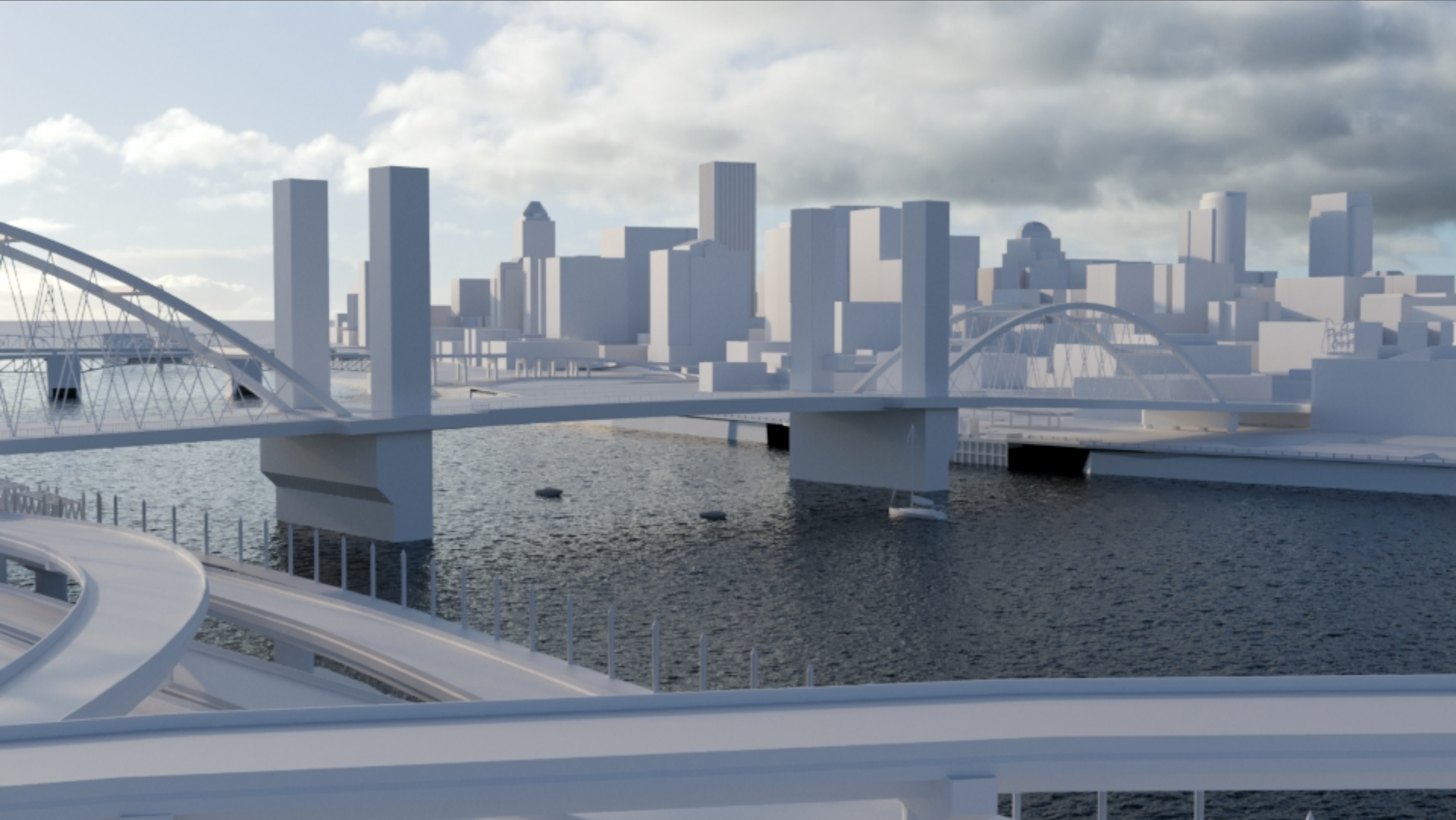
Bridge Composition

Long Bascule – Long Arch



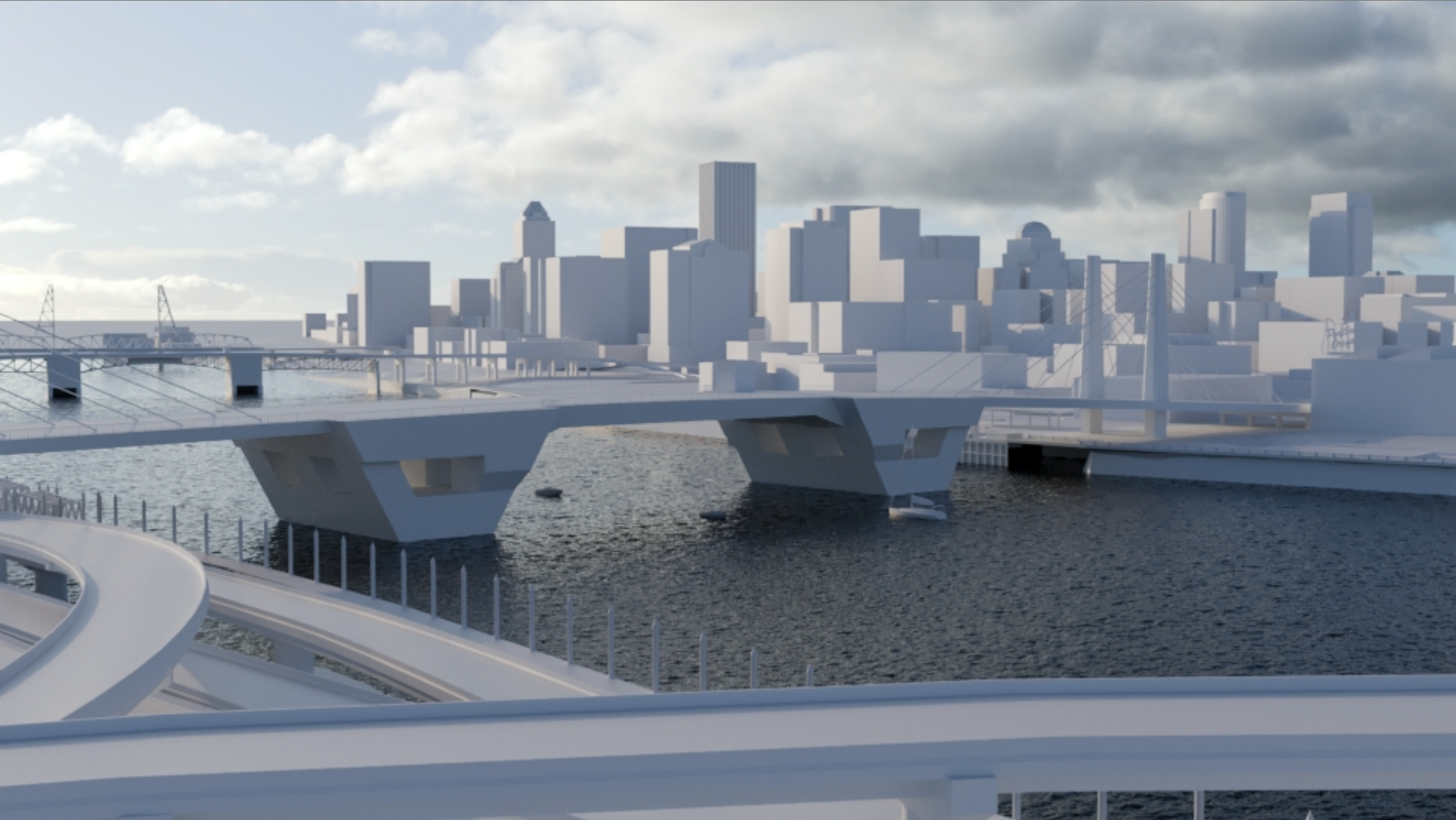
Bridge Composition

Long Vertical Lift – Long Arch



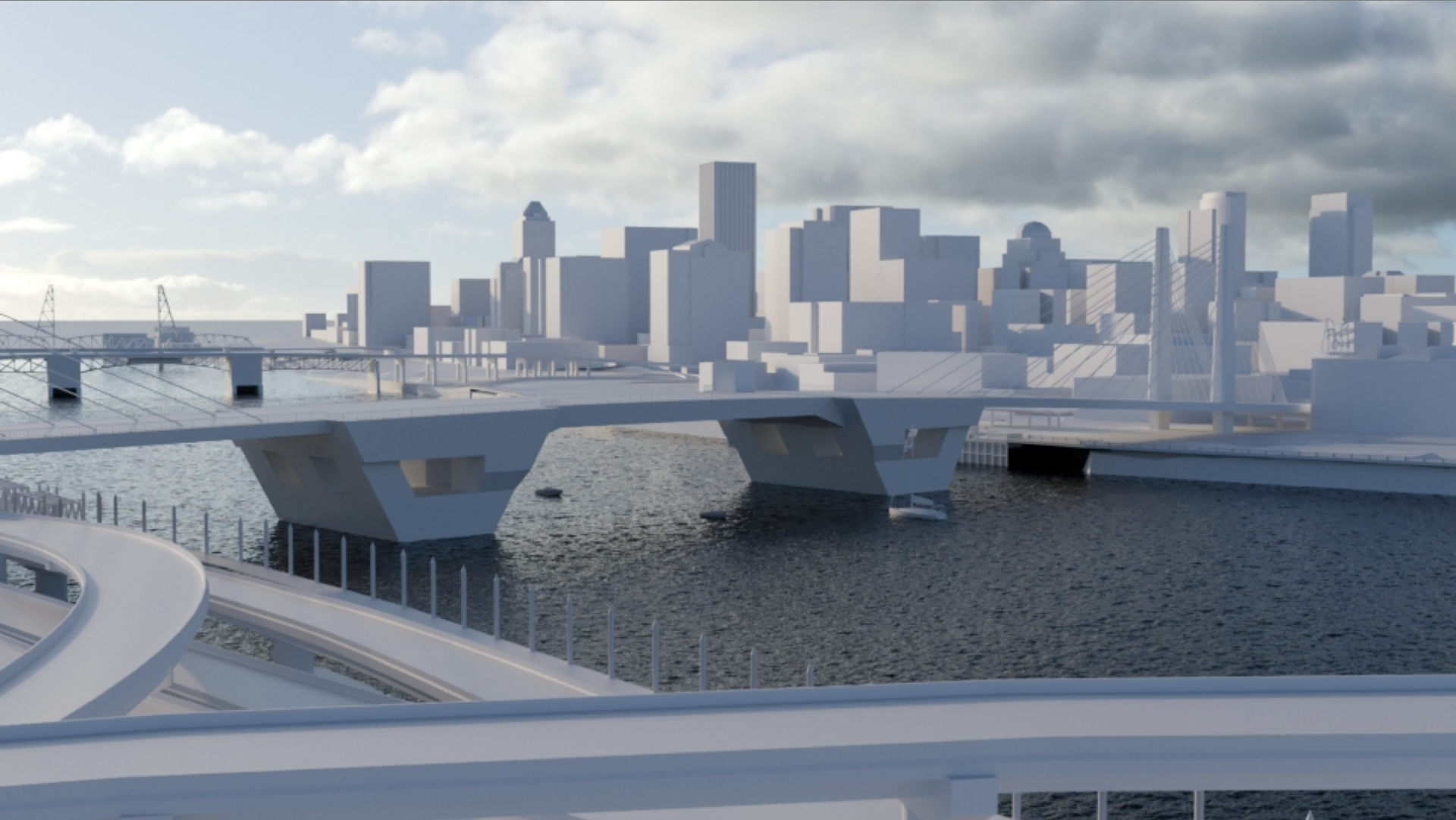
Bridge Composition

Long Bascule – Balanced Cable Stay



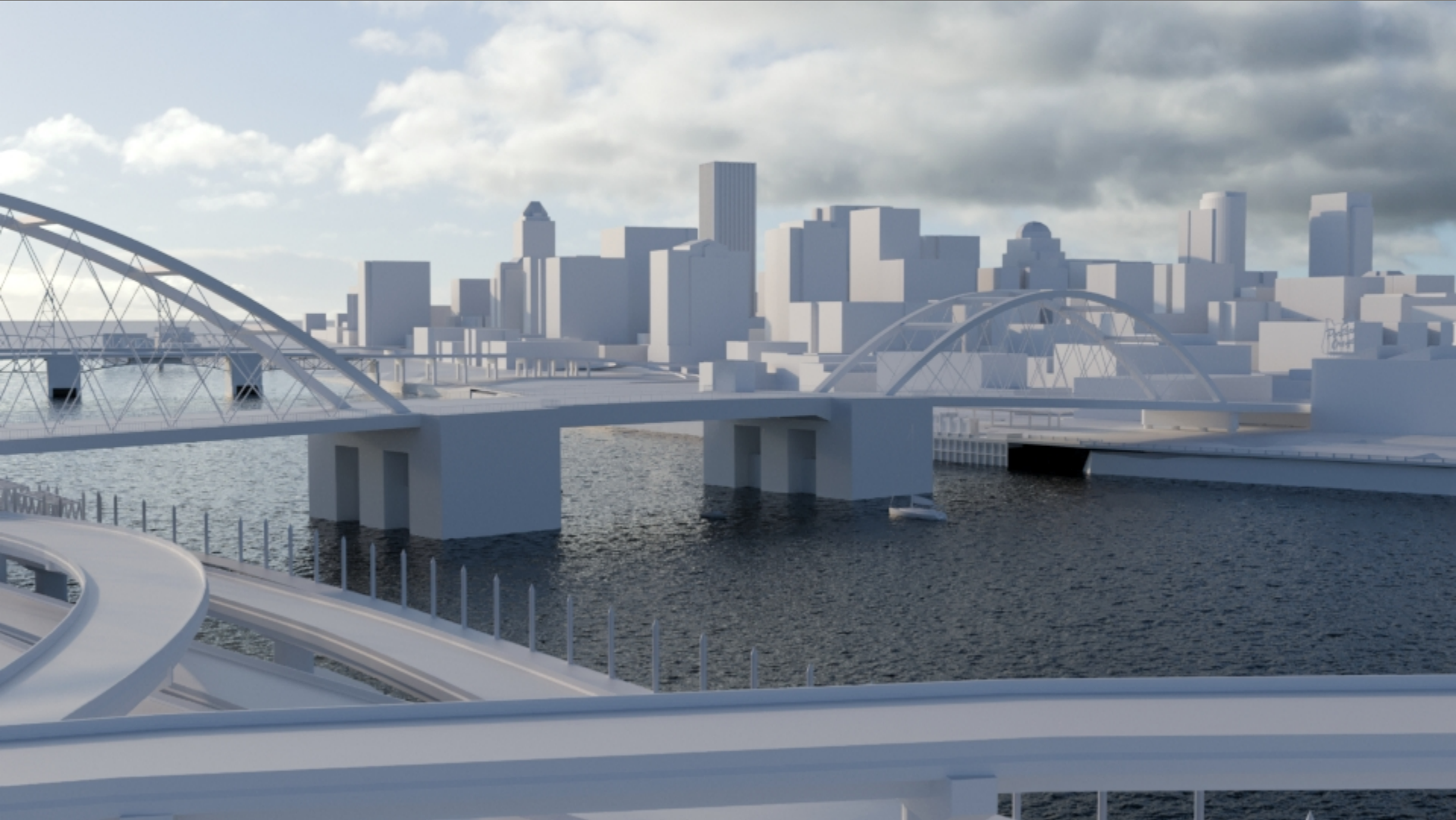
Bridge Composition

Long Bascule – Unbalanced Cable Stay



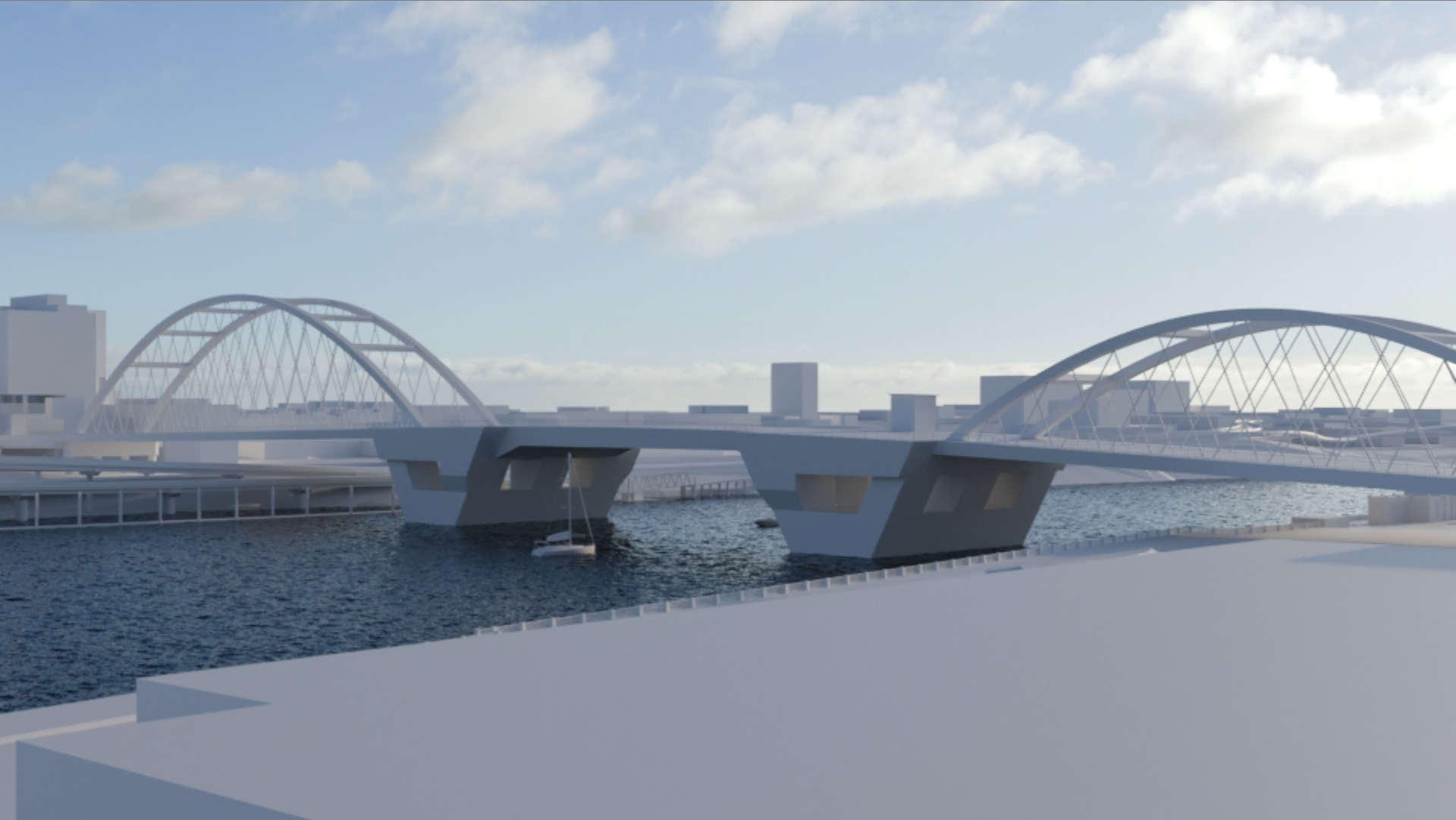
Bridge Composition

Short Bascule – Long Arch



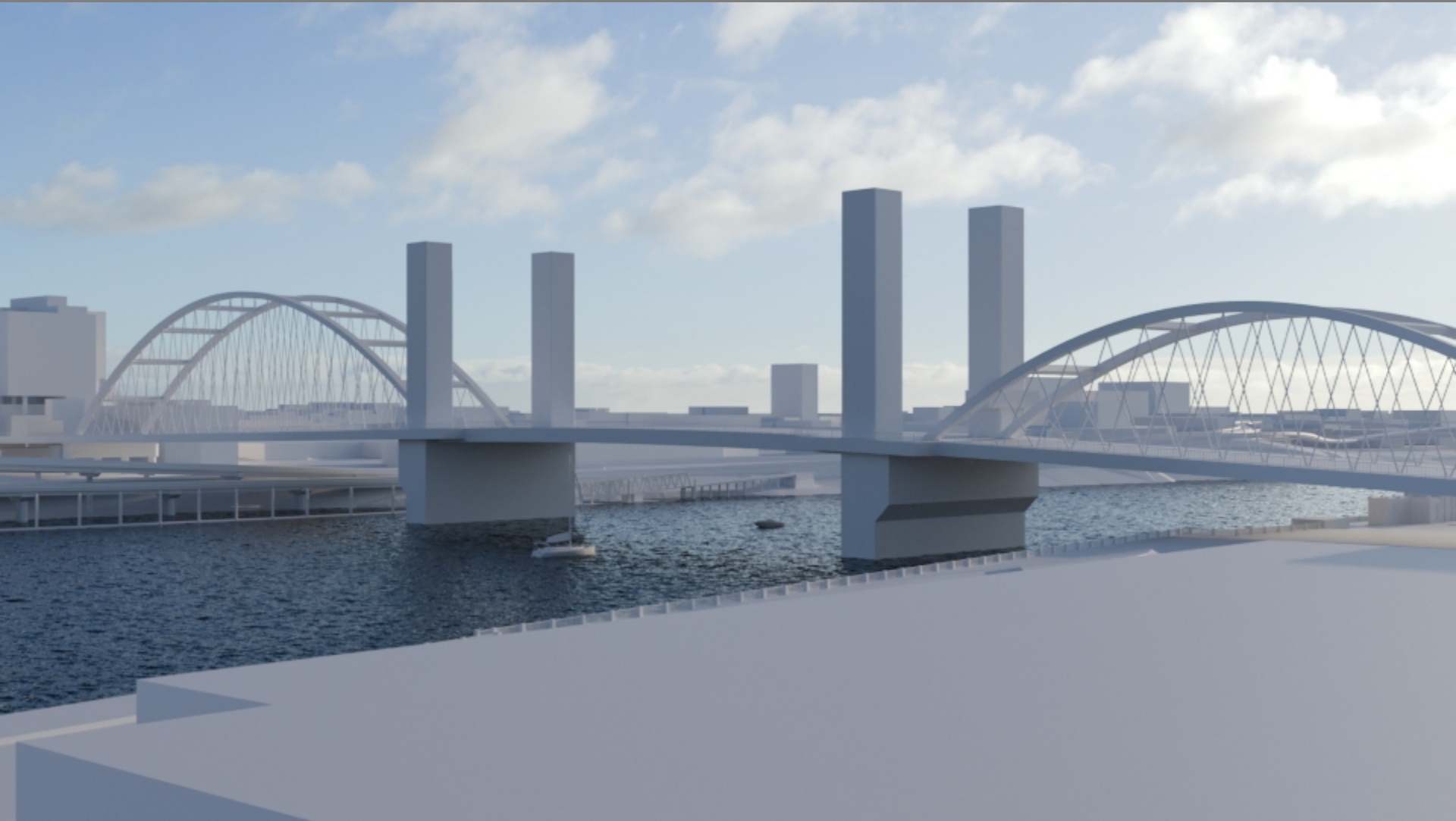
Bridge Composition

Long Bascule – Long Arch



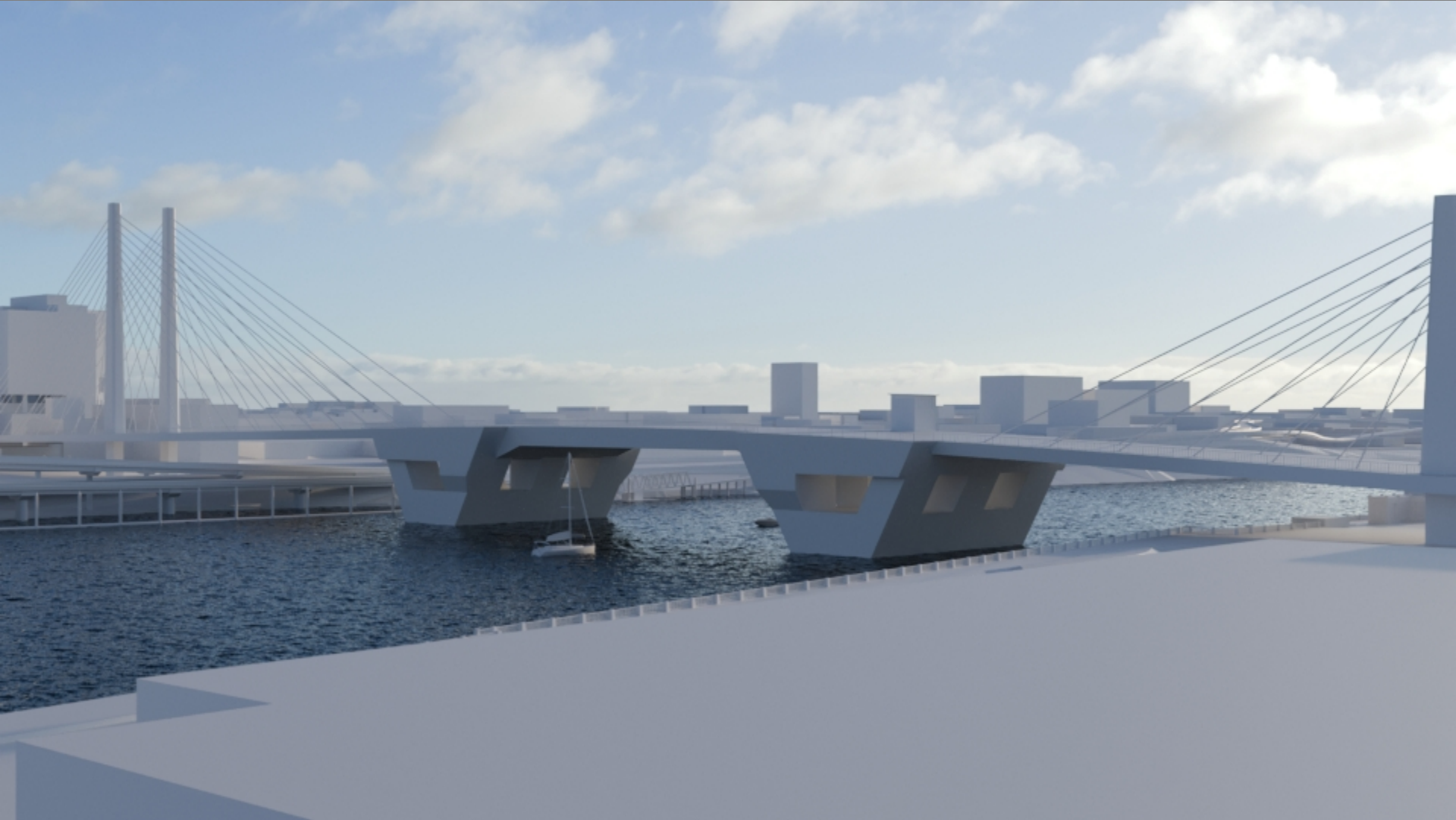
Bridge Composition

Long Vertical Lift – Long Arch



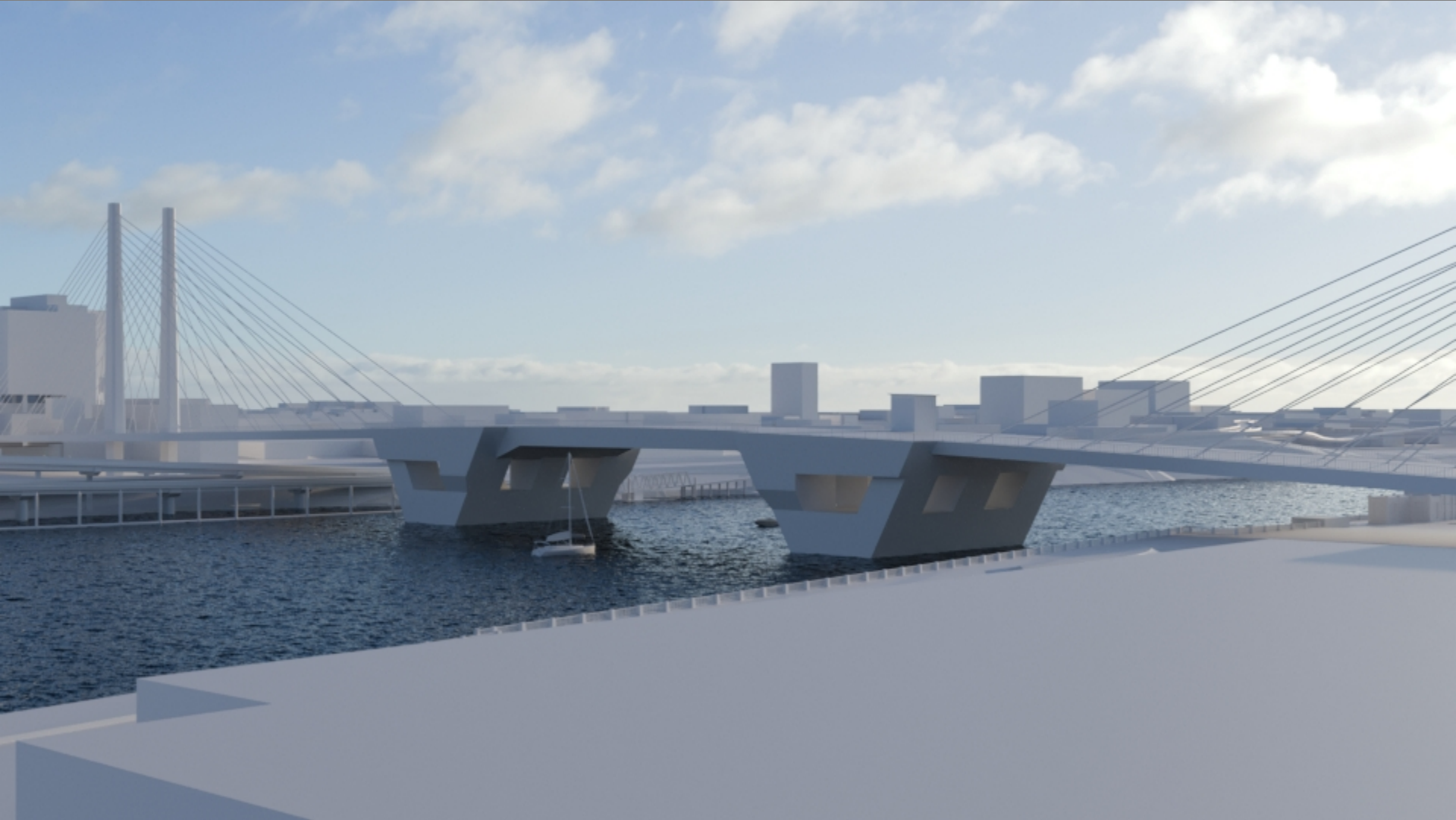
Bridge Composition

Long Bascule – Balanced Cable Stay



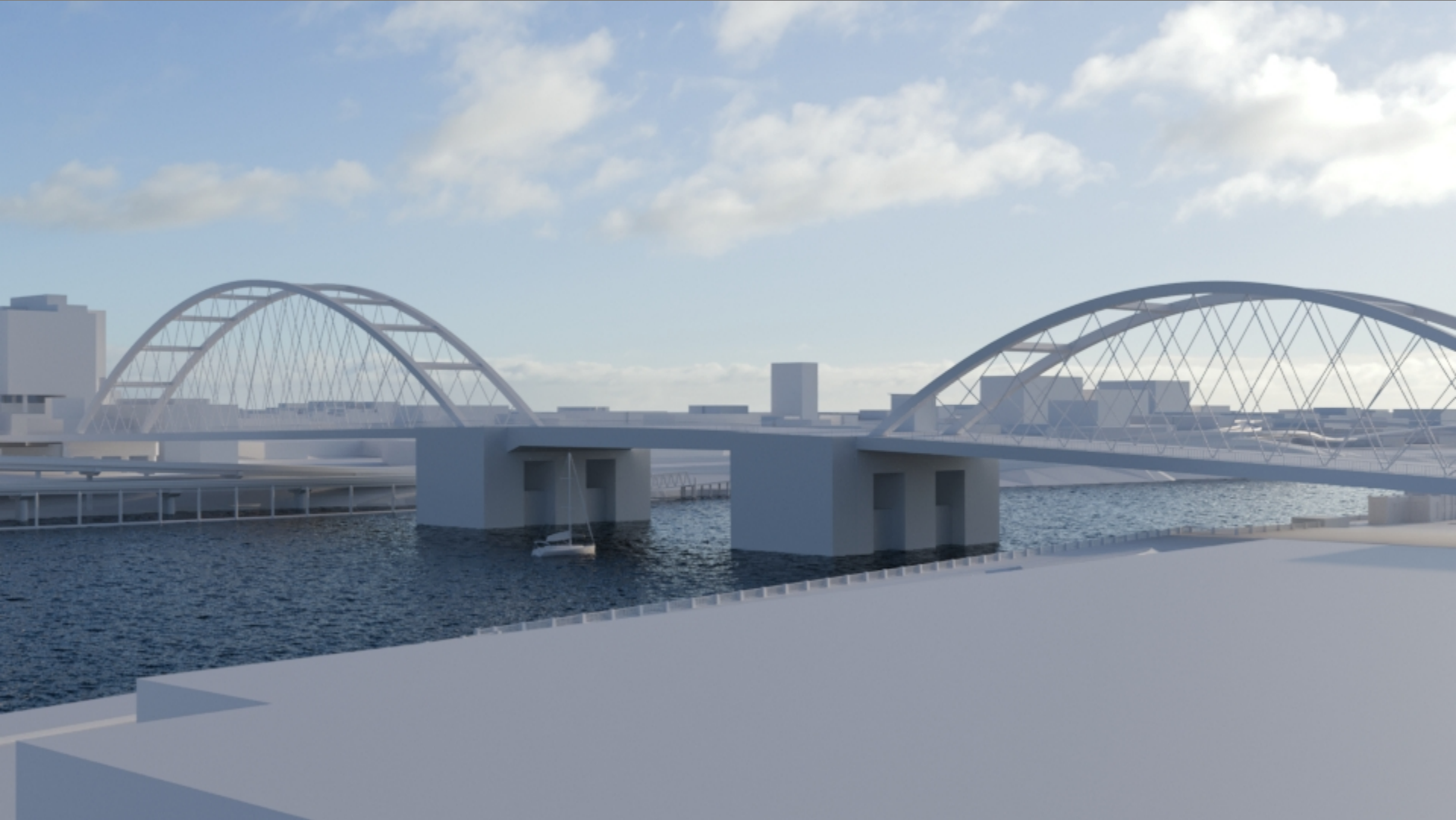
Bridge Composition

Long Bascule – Unbalanced Cable Stay



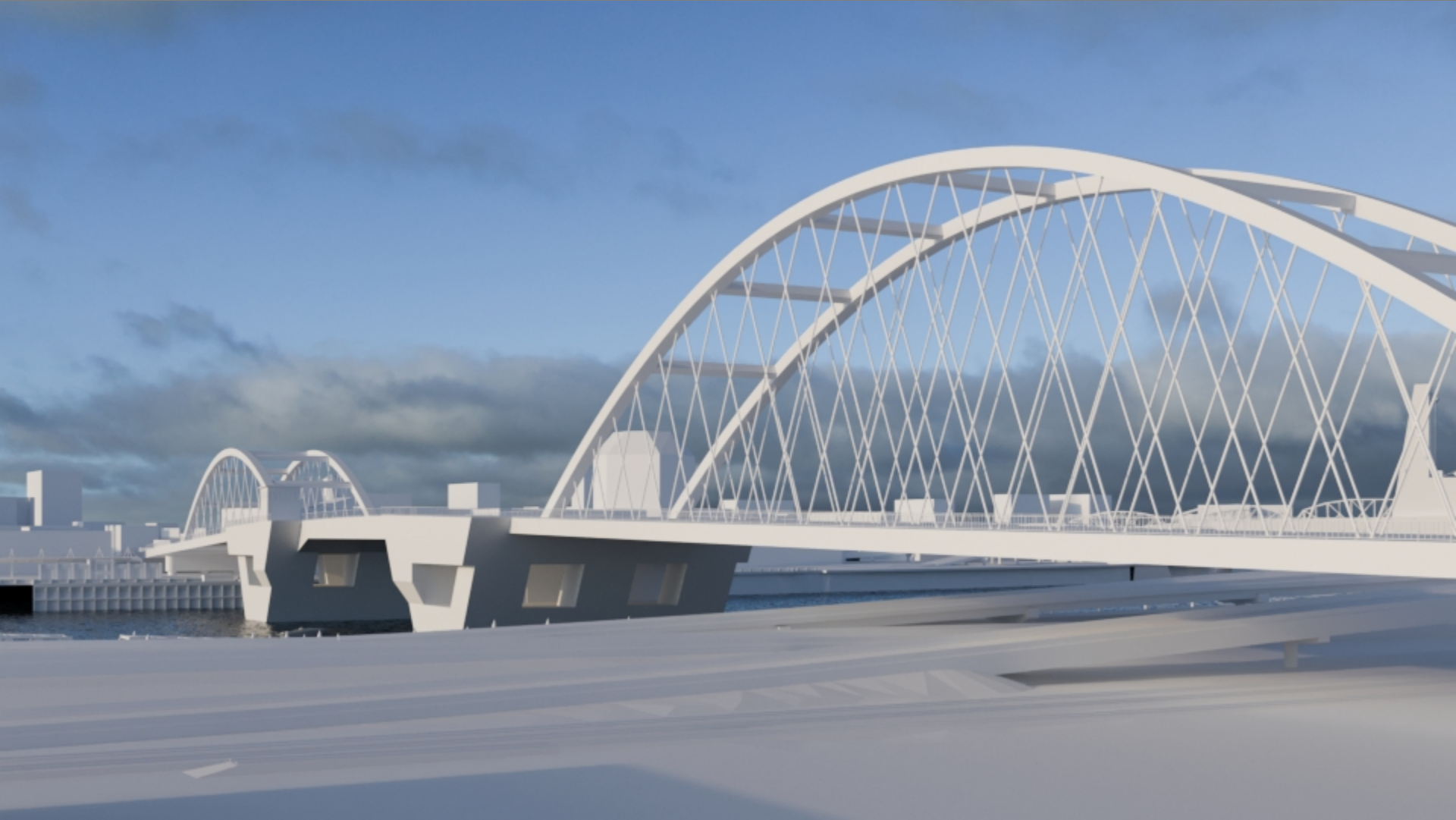
Bridge Composition

Short Bascule – Long Arch



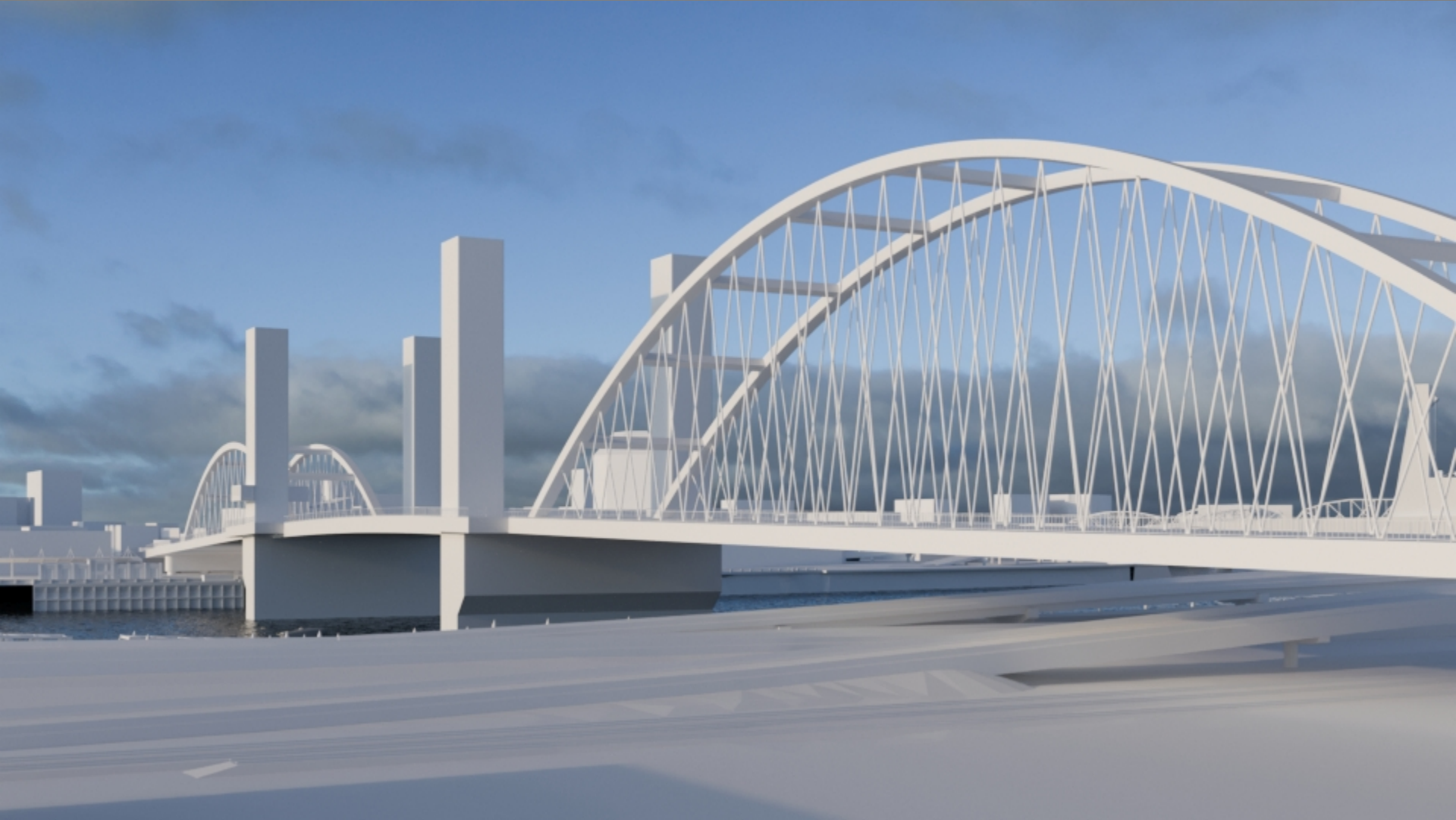
Bridge Composition

Long Bascule – Long Arch



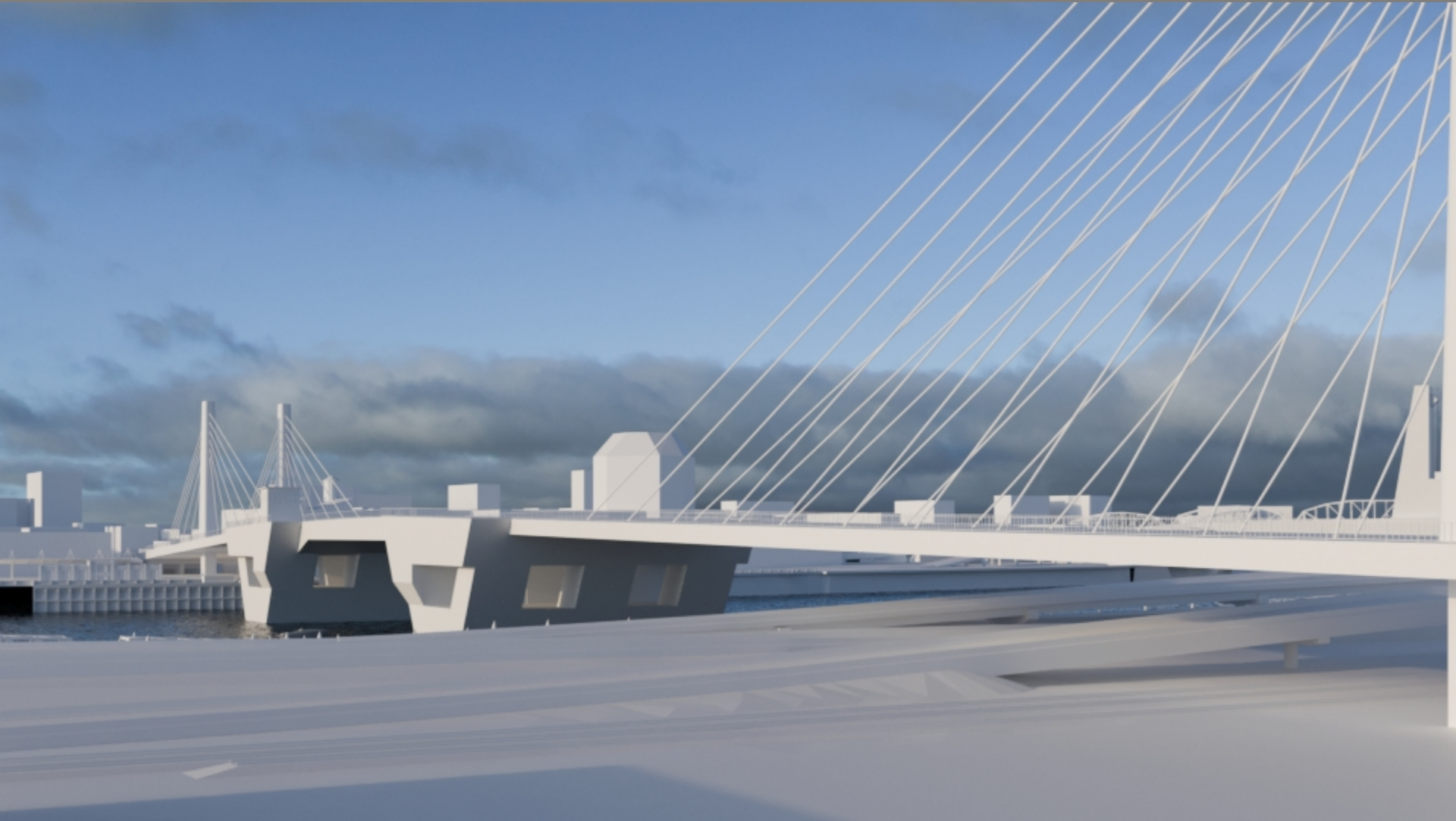
Bridge Composition

Long Vertical Lift – Long Vertical Lift



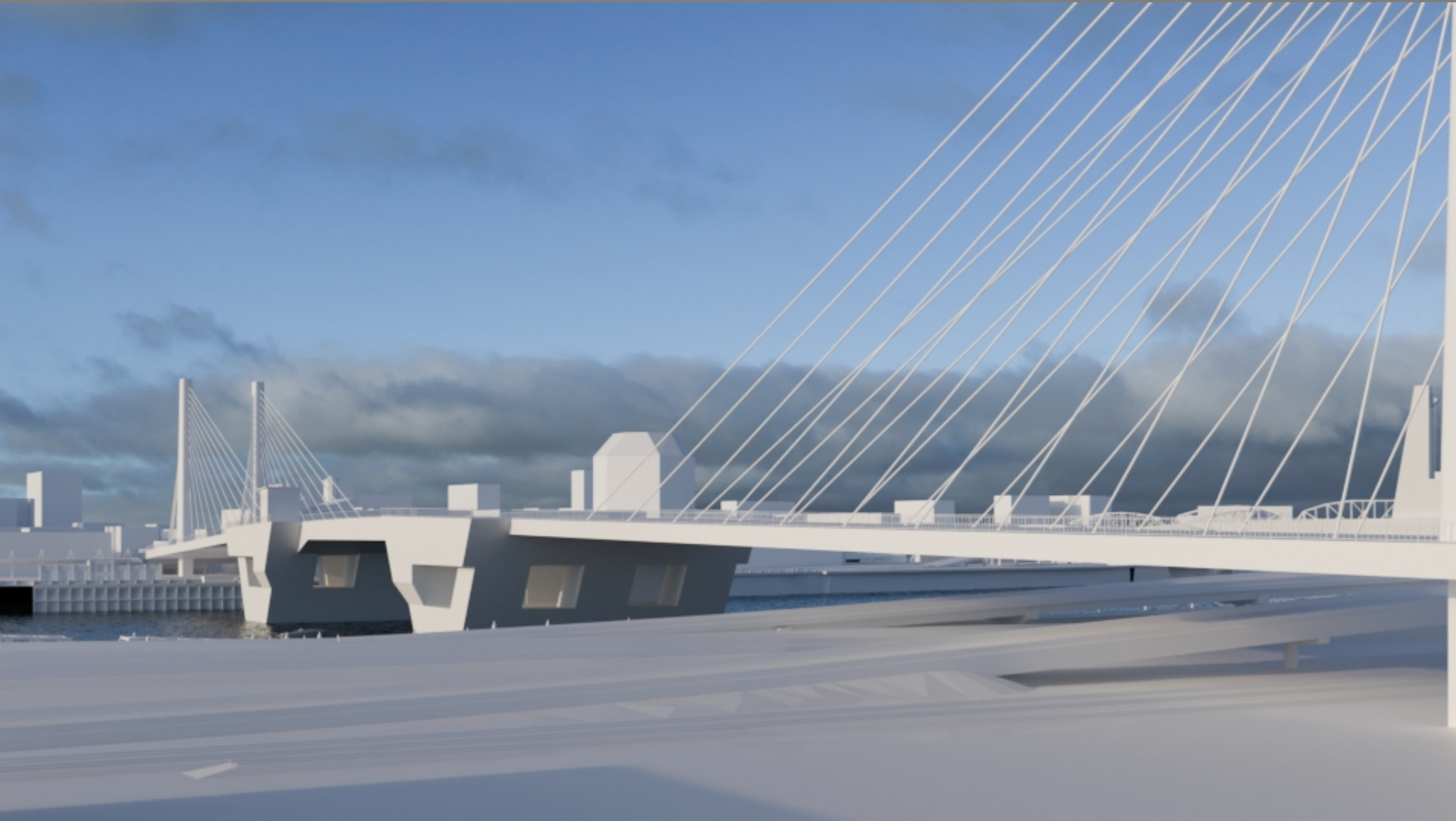
Bridge Composition

Long Bascule – Balanced Cable Stay



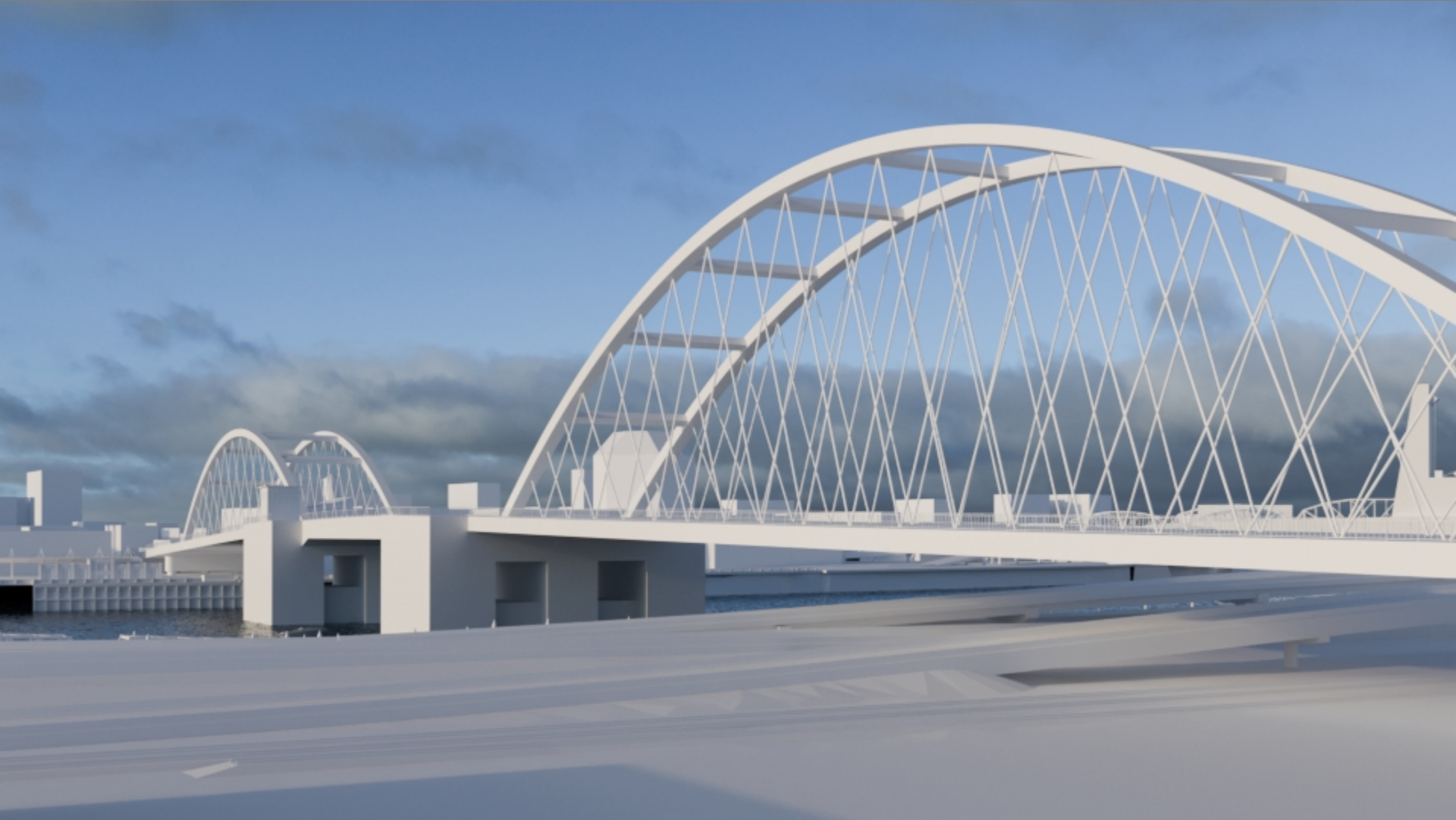
Bridge Composition

Long Bascule – Unbalanced Cable Stay



Bridge Composition

Short Bascule – Long Arch



Bridge Composition

Long Bascule – Long Arch



Bridge Composition

Long Vertical Lift – Long Arch



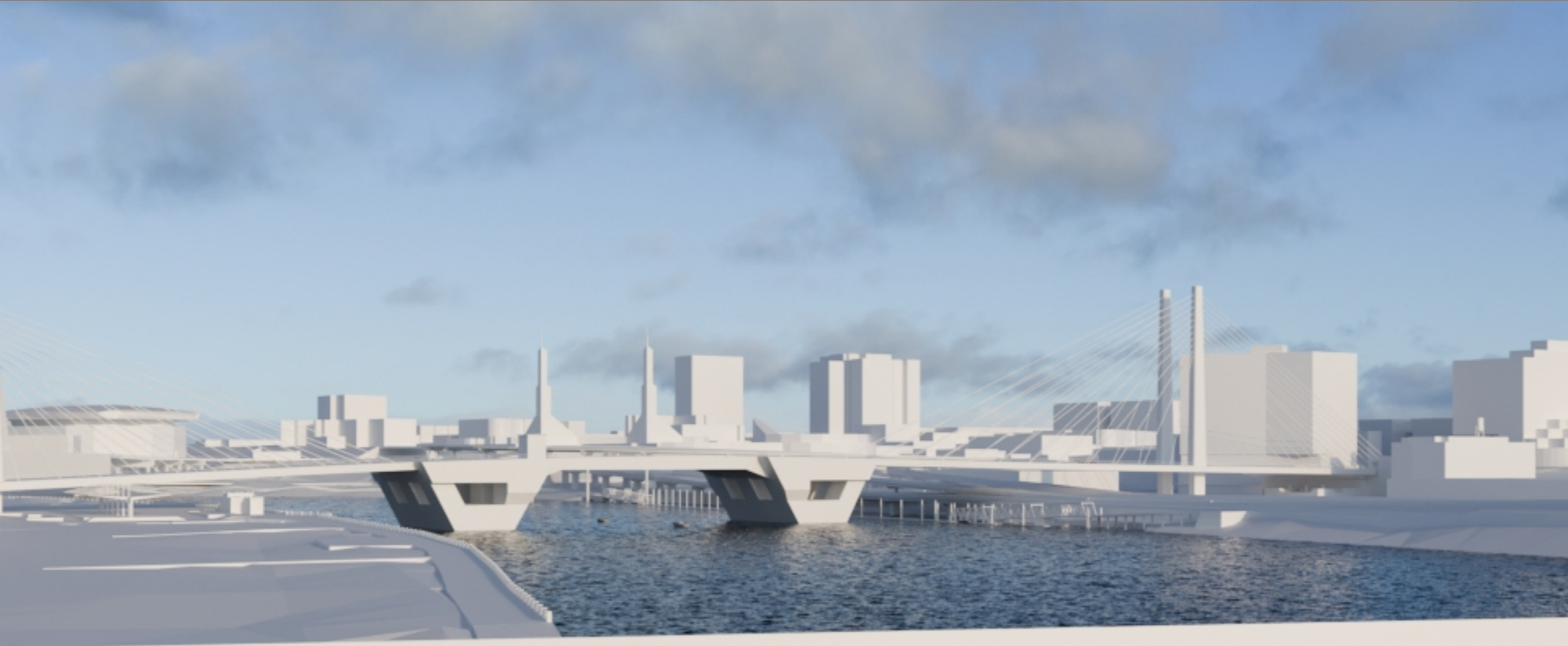
Bridge Composition

Long Bascule – Balanced Cable Stay



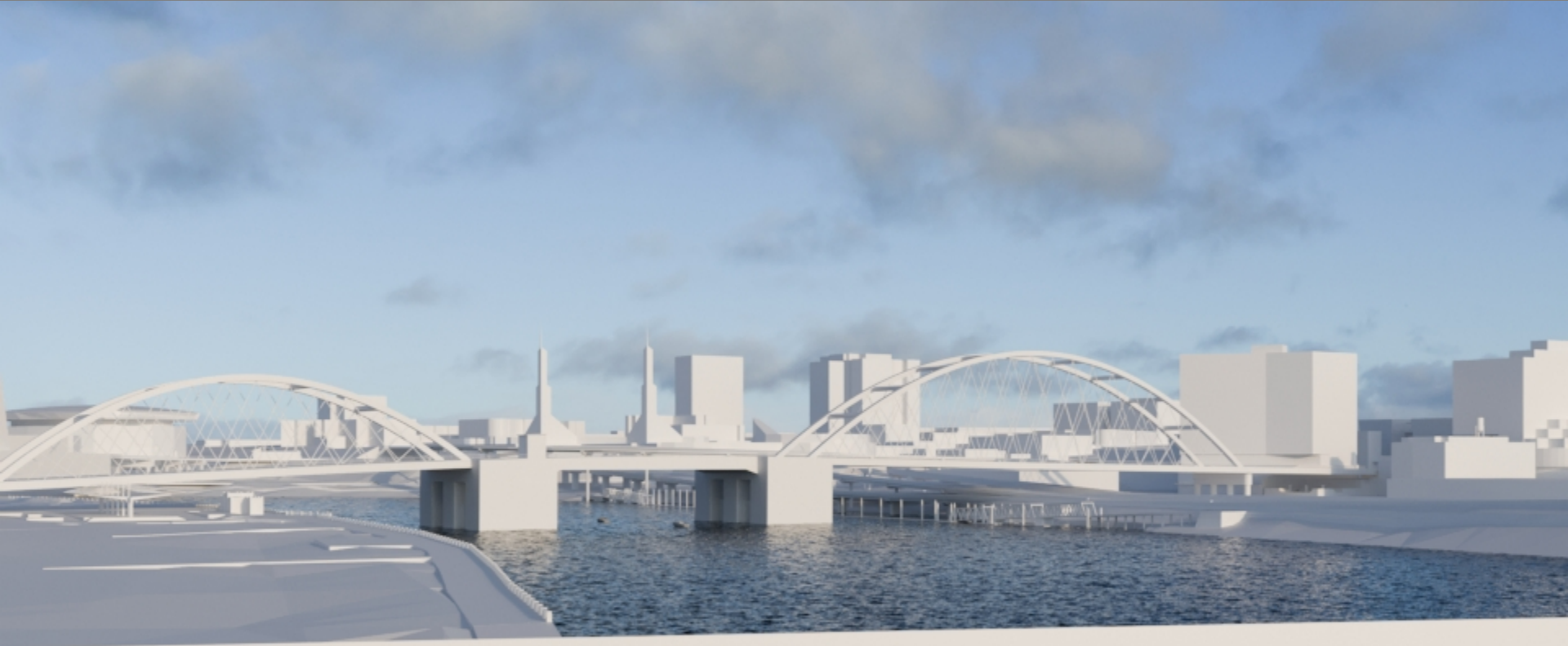
Bridge Composition

Long Bascule – Unbalanced Cable Stay



Bridge Composition

Short Bascule – Long Arch





WHEW...
Input to CTF



Proposed Meeting Sequence

Proposed Meeting Dates and Durations:

- Mtg #8 (2 hrs) – late January, 2021
 - Key Topics: TBD
- Mtg #9 (2 hrs) – Wed 3/10/21
- Mtg #10 (2 hrs) – Wed 6/2/21



Thank you!

