
Hello

Design Commission Briefing

Department of Community Services
Transportation Division

August 15, 2024

Multnomah County

EARTHQUAKE READY BURNSIDE BRIDGE

When we last met...

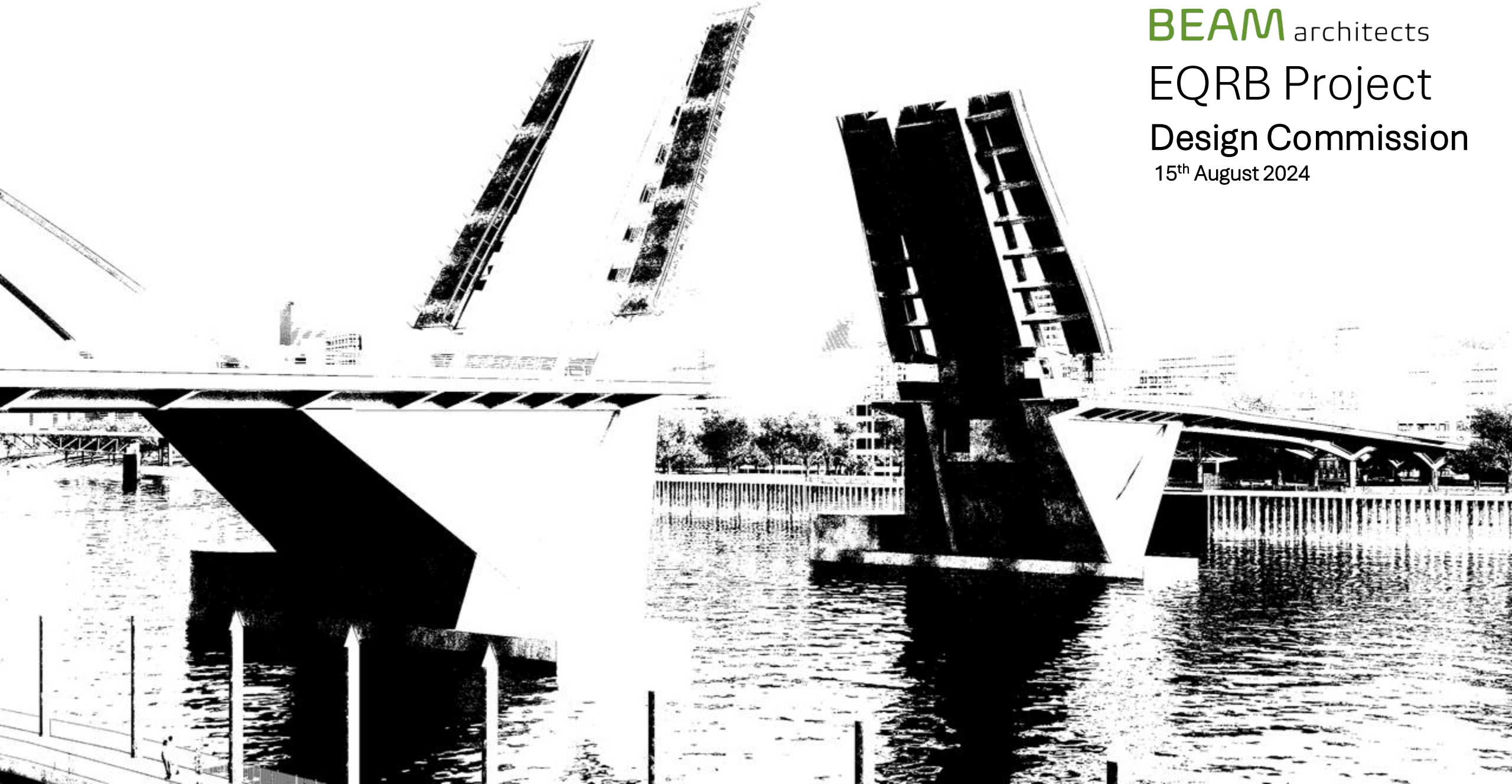
DESIGN PHASE

- June 10th, 2024 – Joint Briefing to Historic Landmark Commission/ Design Commission
  - Provided a project update
  - Reviewed range of east approach bridge types
  - Provided overview of land use application timelines

Today's Agenda

- Bridge Architectural Evaluation of East Approach Bridge Types
- Review of Public Survey Results
- Next Steps

Architectural Evaluation of Bridge Type



BEAM architects

EQRB Project

Design Commission

15th August 2024

CS1- Goalpost tower

CS2- V tower

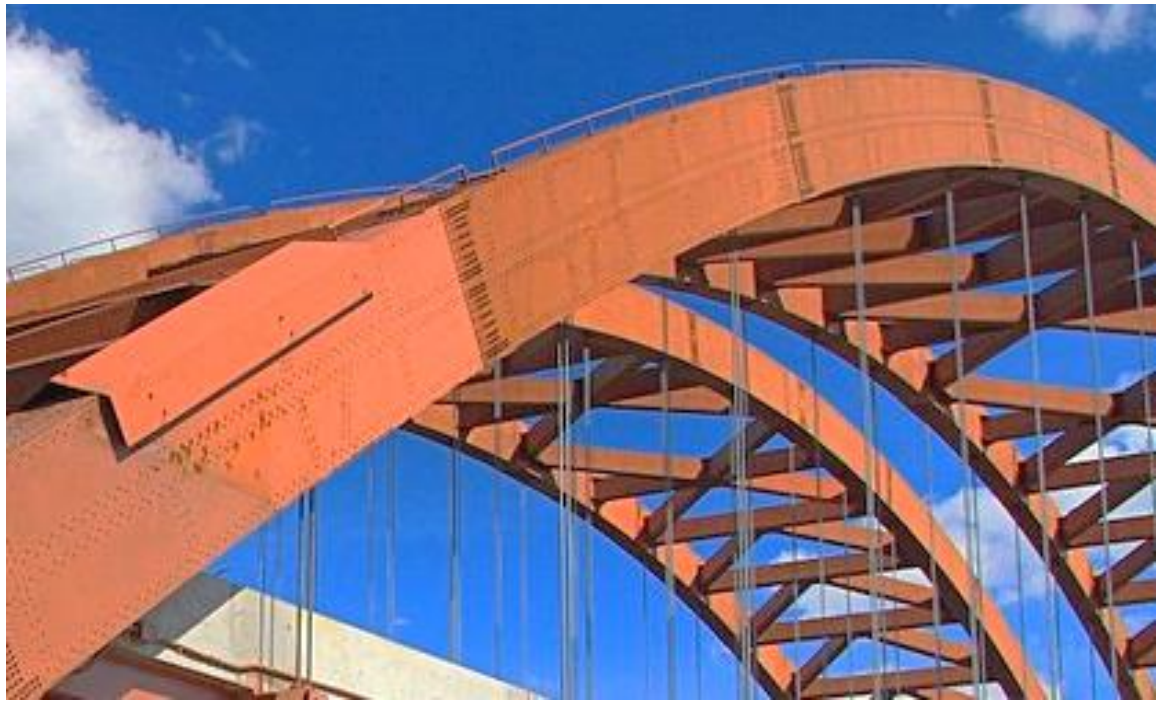
CS3- Inverted-Y tower

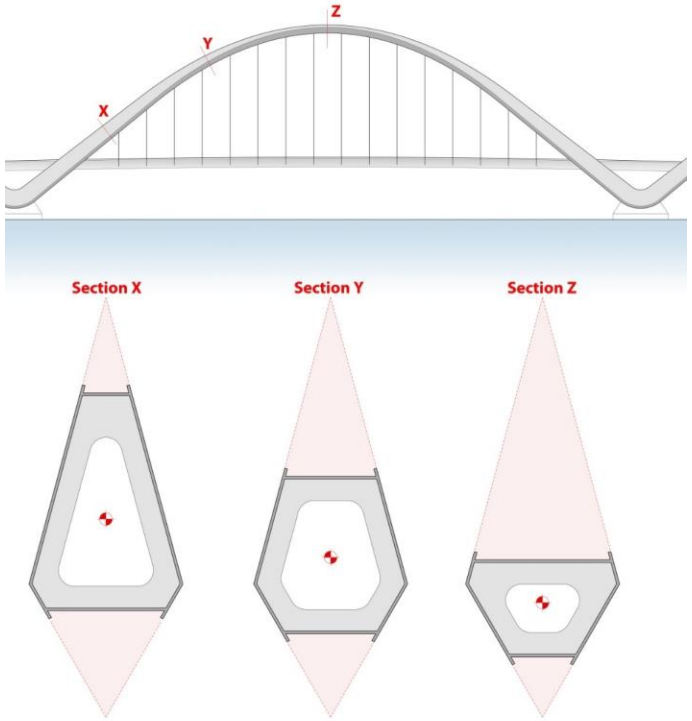
TA1-Unbraced vertical arches

TA2-Braced basket-handle arch

TA3- Braced vertical arches

Discussion - Tied Arches





Frederick Douglass Memorial Bridge Washington DC

Painted Steel, fully welded variable section 6 sided parabolic arches. Sophisticated aesthetic

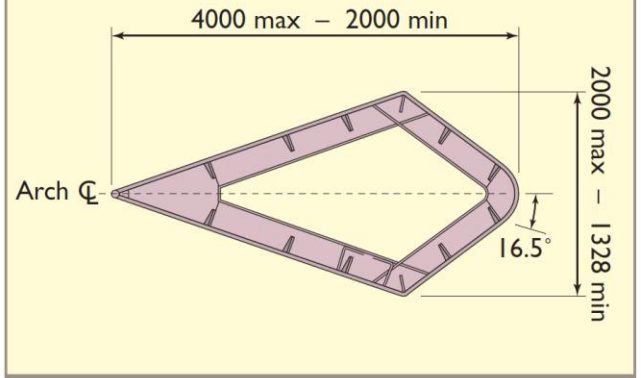


Fig. 6. Cross section of the parabolic steel arch reduces from the roots to the apex (dimensions in mm)

Gateshead Millennium Bridge Newcastle UK

Painted Steel, fully welded variable section 6 sided parabolic arches. Sophisticated aesthetic

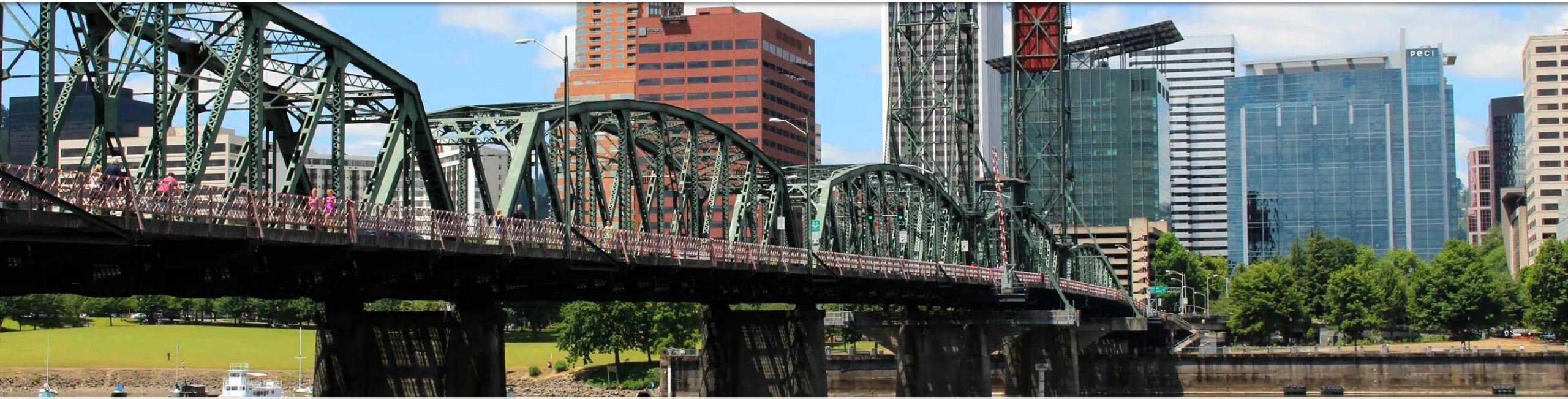
Likely EQRB scenario- Weathering steel, bolted/spliced constant section 4 sided box girders- Industrial aesthetic

VERTICAL UNBRACED ARCHES

VERTICAL BRACED ARCHES

VERTICAL K-BRACED ARCHES

BRACED BASKET HANDLE ARCHES



Portland has several early 20th C bridges with an ‘industrial aesthetic’ – the new Burnside should be more sophisticated for the 21st C

Vertical Unbraced Arches

Basket-handle arch

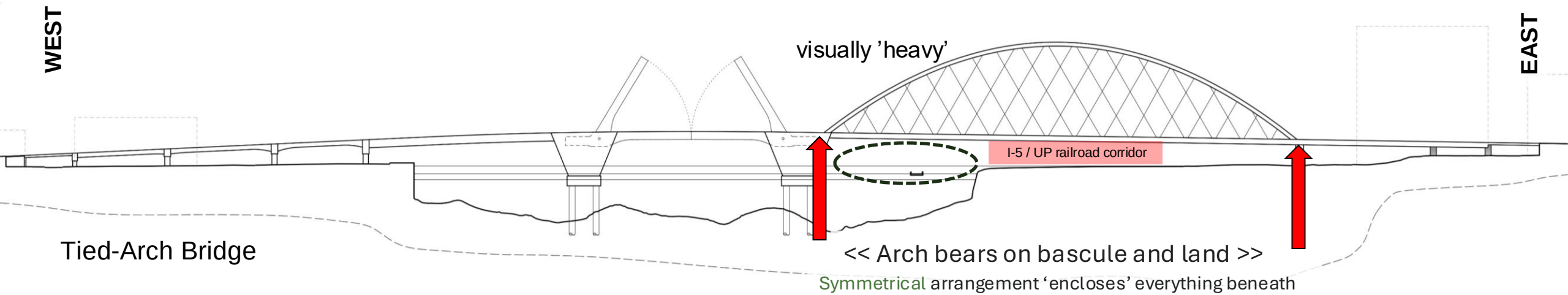
Braced basket- handle arch

Vertical Braced Arches – *it's all about the bracing*...

Box girders or open girders: internal access requirements and structural feasibility

Girder types and bracing types -aesthetic differences.

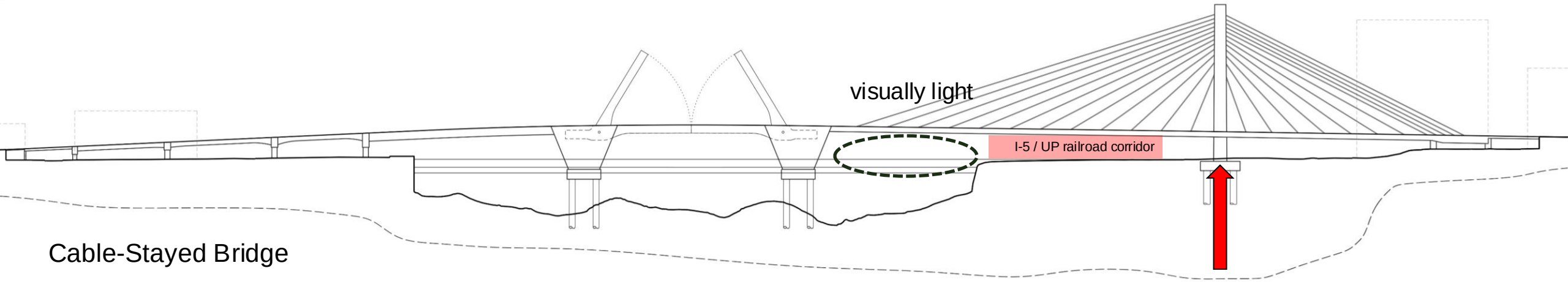
VISUAL RESPONSE TO PROGRAM: The east span bridge is a highway/railroad crossing, but also must span to the east in-river pier



Tied-Arch Bridge

<< Arch bears on bascule and land >>

Symmetrical arrangement 'encloses' everything beneath

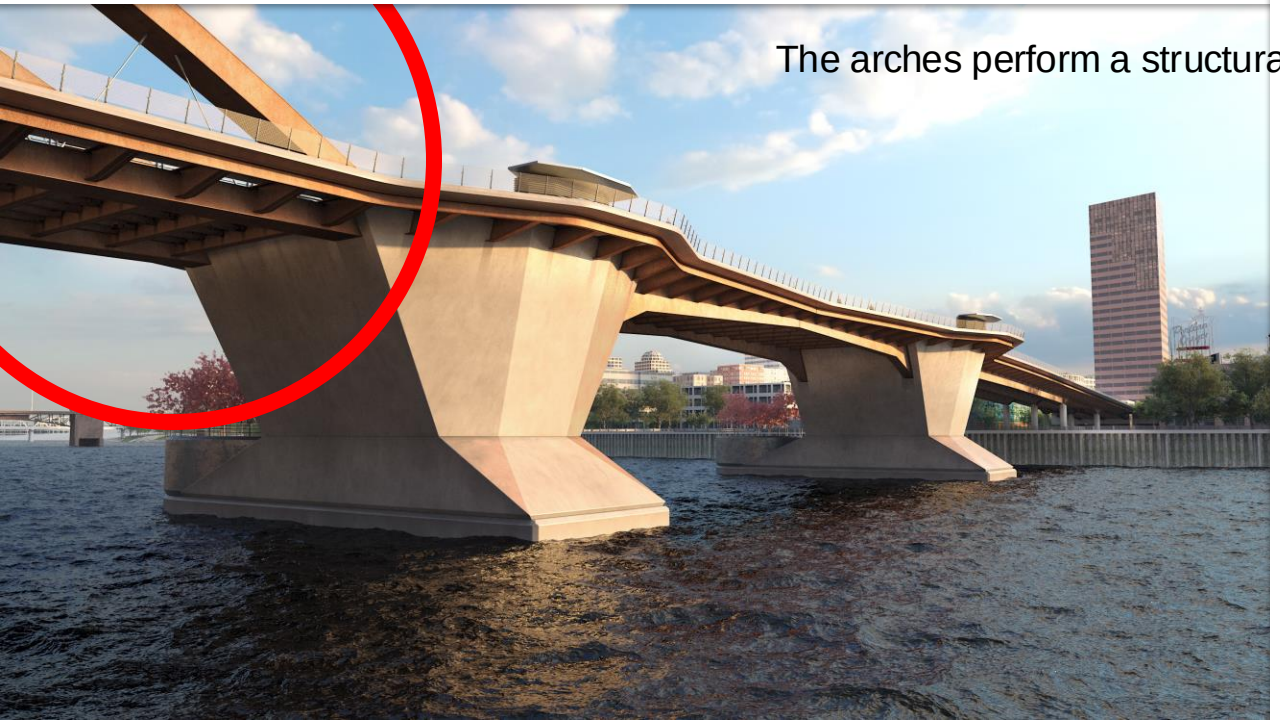


Cable-Stayed Bridge

Tower founds on land only

Asymmetrical arrangement has a more easy-going visual relationship with what is below

View north on CL of river orthogonal to bridge



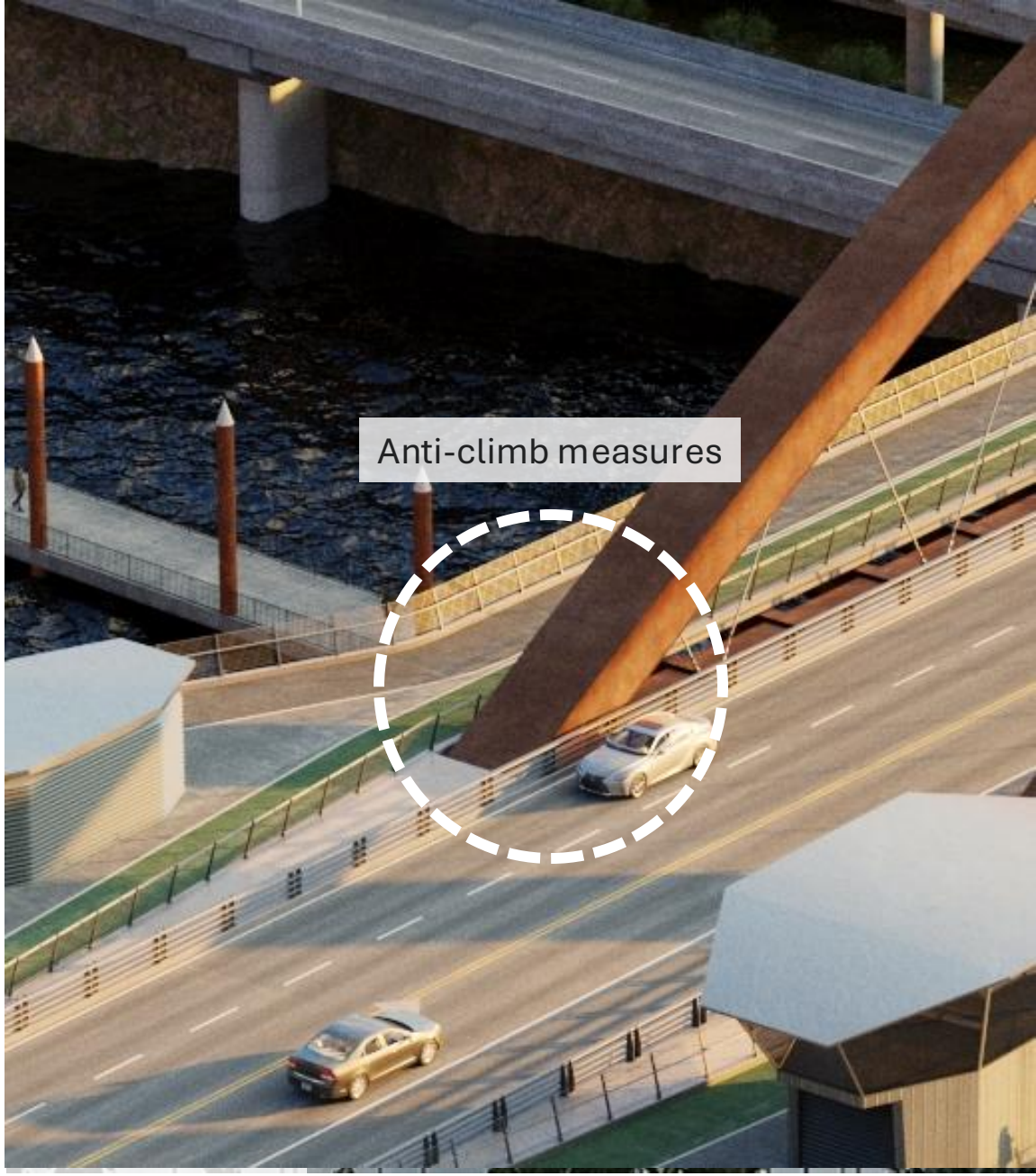
The arches perform a structural photobomb on the river!

GRAFFITI REMOVAL

LIGHTING (ABSORBENCY)

CLIMBING RISK

(Weathering Steel) Arches- peripheral issues



(Weathering Steel) Arches- peripheral issues

TA1-Unbraced vertical arches

- Clean aesthetic
- Twin entity
- No bracing
- Most costly of arches
- Largest arch section (widest)

order of preference (arches only)>>>>> 2

TA2-Braced basket-handle arch

- Less clean aesthetic
- Single entity
- Bracing (alas)
- Less Typical Form than TA3
- Slimmer arch section

order of preference (arches only)>>>>> 2

TA3- Braced vertical arches

- Railroad aesthetic
- Confused Identity
- Bracing
- ‘Typical’ form (Fremont/Wapato)
- Slimmer arch section

order of preference (arches only)>>>>> 5

Do people inherently ‘prefer’ arches
(even if it’s not the best solution), and why?

Arches are generally perceived as:

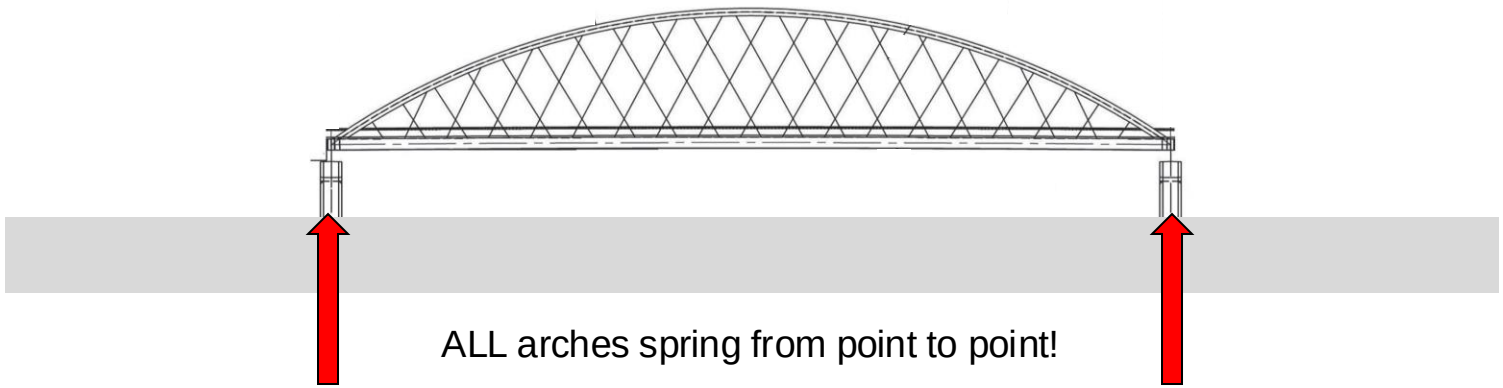
- Anthropomorphic (i.e. curved!)
- Familiar (ergo least challenging)
- Recognizable (common but not distinctive)
- ‘Historic’ (but not in respect to context)

But it’s not always the right answer

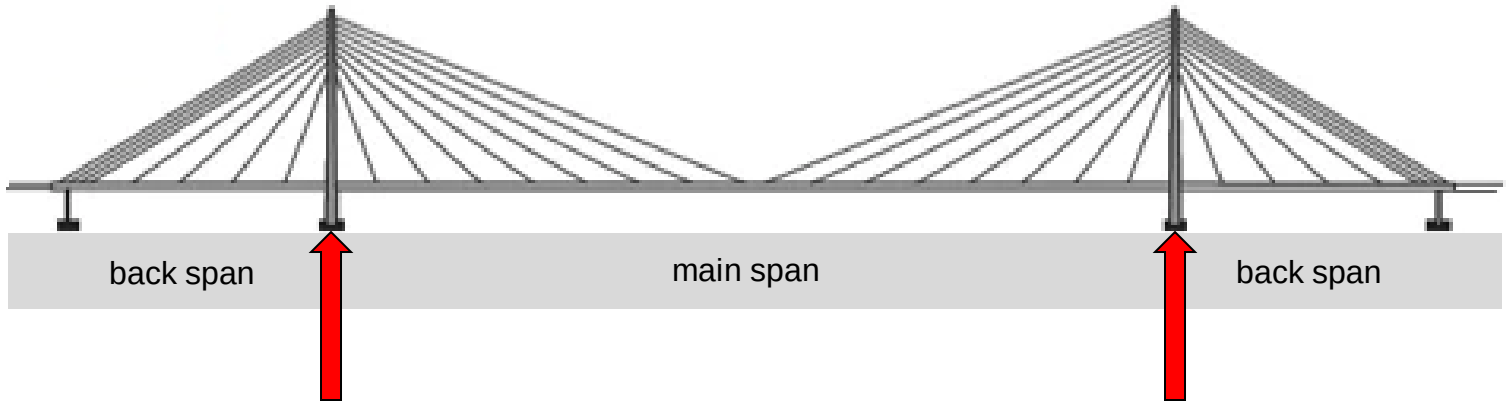
a TA east span would be visually **typical**
(All arches comprise 2 springing points and an arc)

a CSB east span would be visually **atypical**
(All arches comprise 2 springing points and an arc)

Typical
(common)

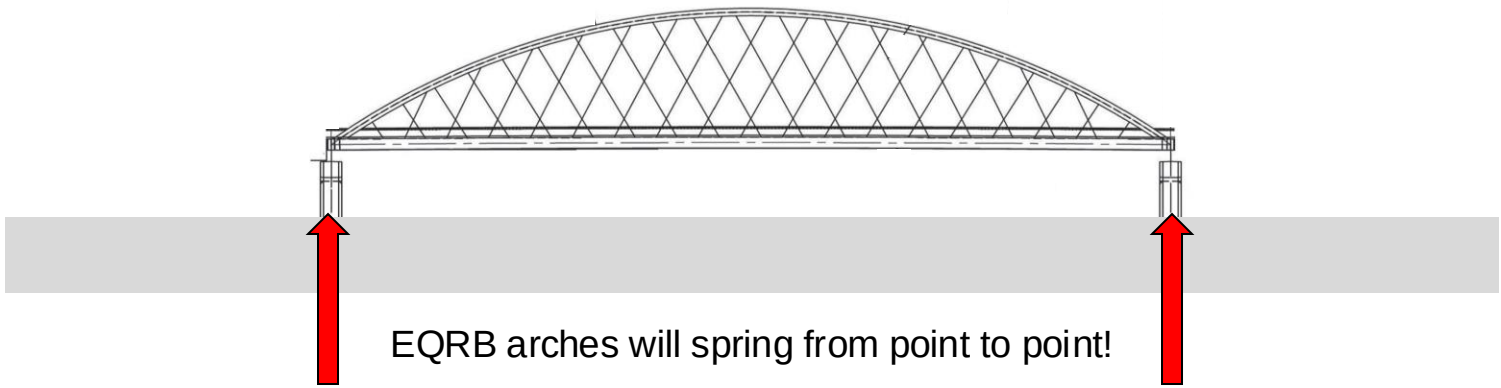


Typical
(common)

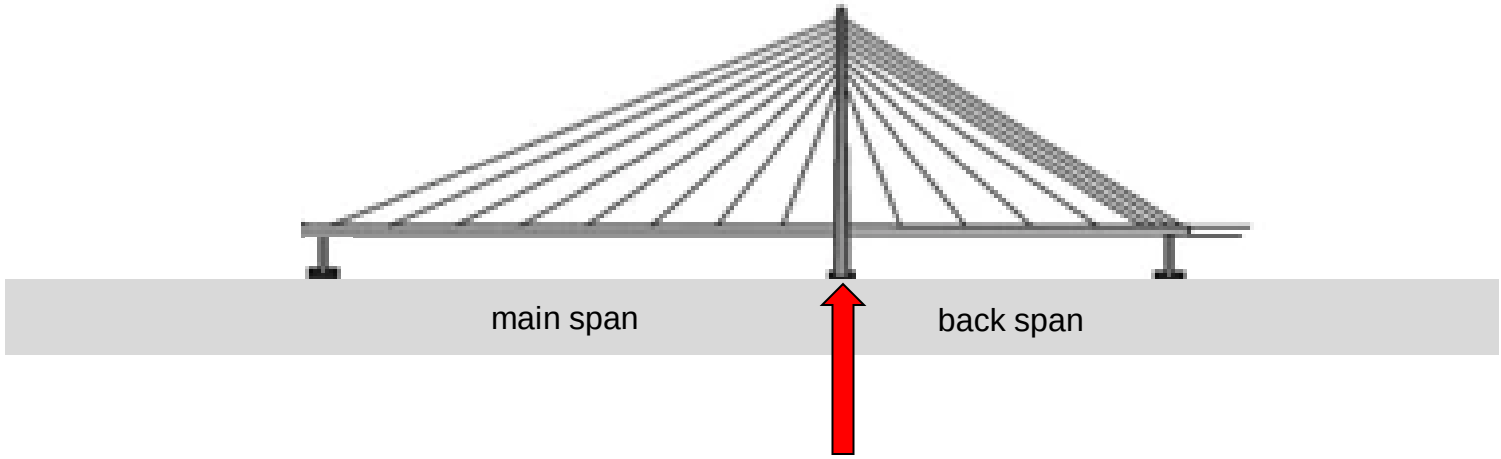


Most CSBs have 2 towers and a central main span

Typical
(common)



Atypical
(uncommon)

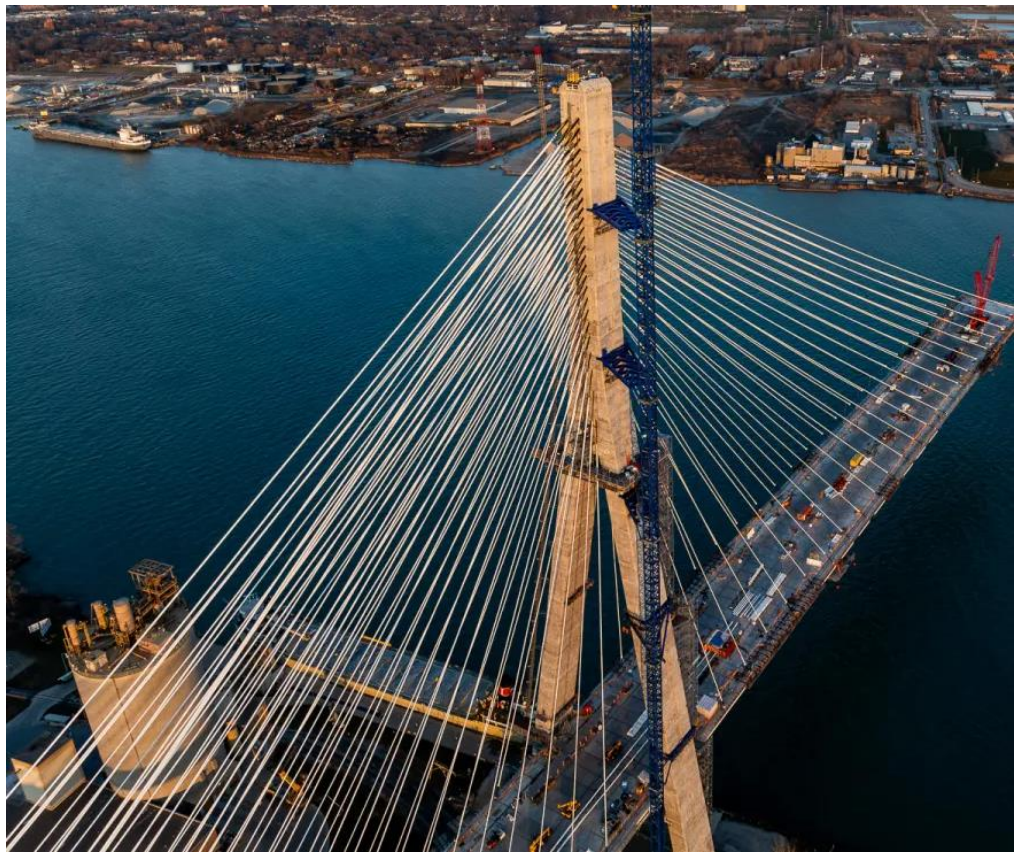


EQRB CSB will have 1 tower and an offset main span

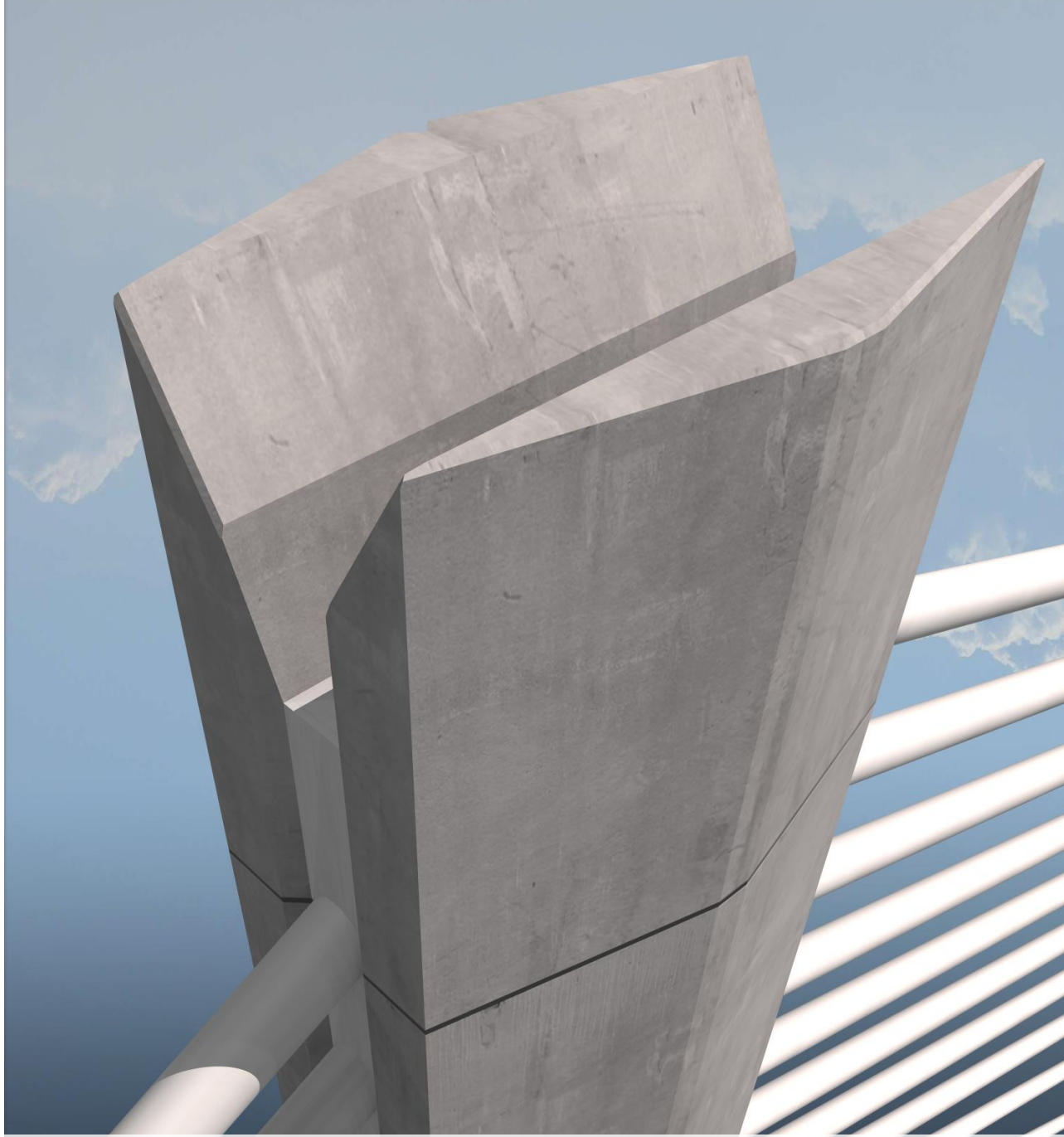
EQRB TA- Typical (common) form

EQRB CSB - Atypical (rare) form

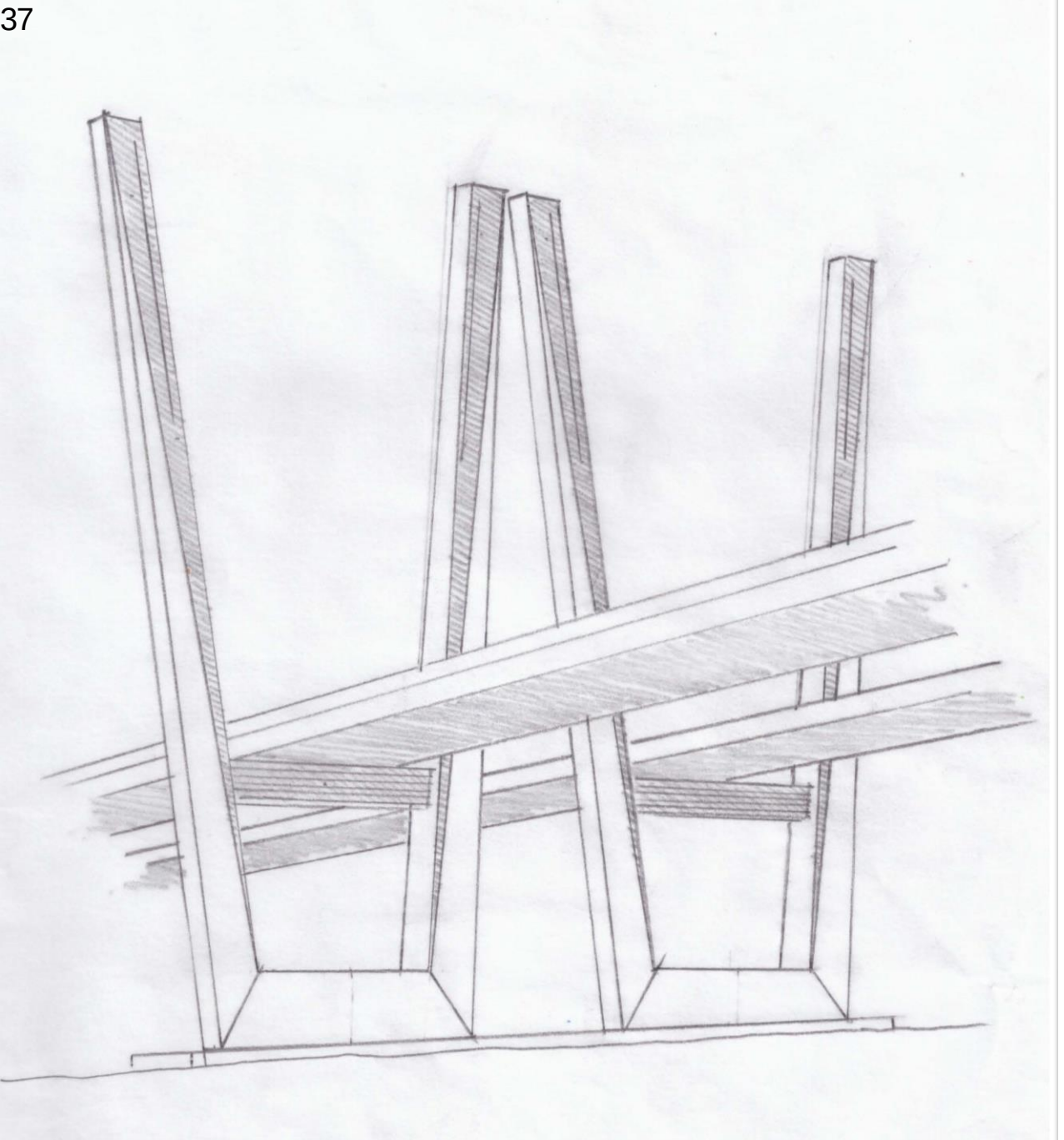
Discussion - Cable Stayed Bridges



Component shaping – the simpler the form the more the necessity



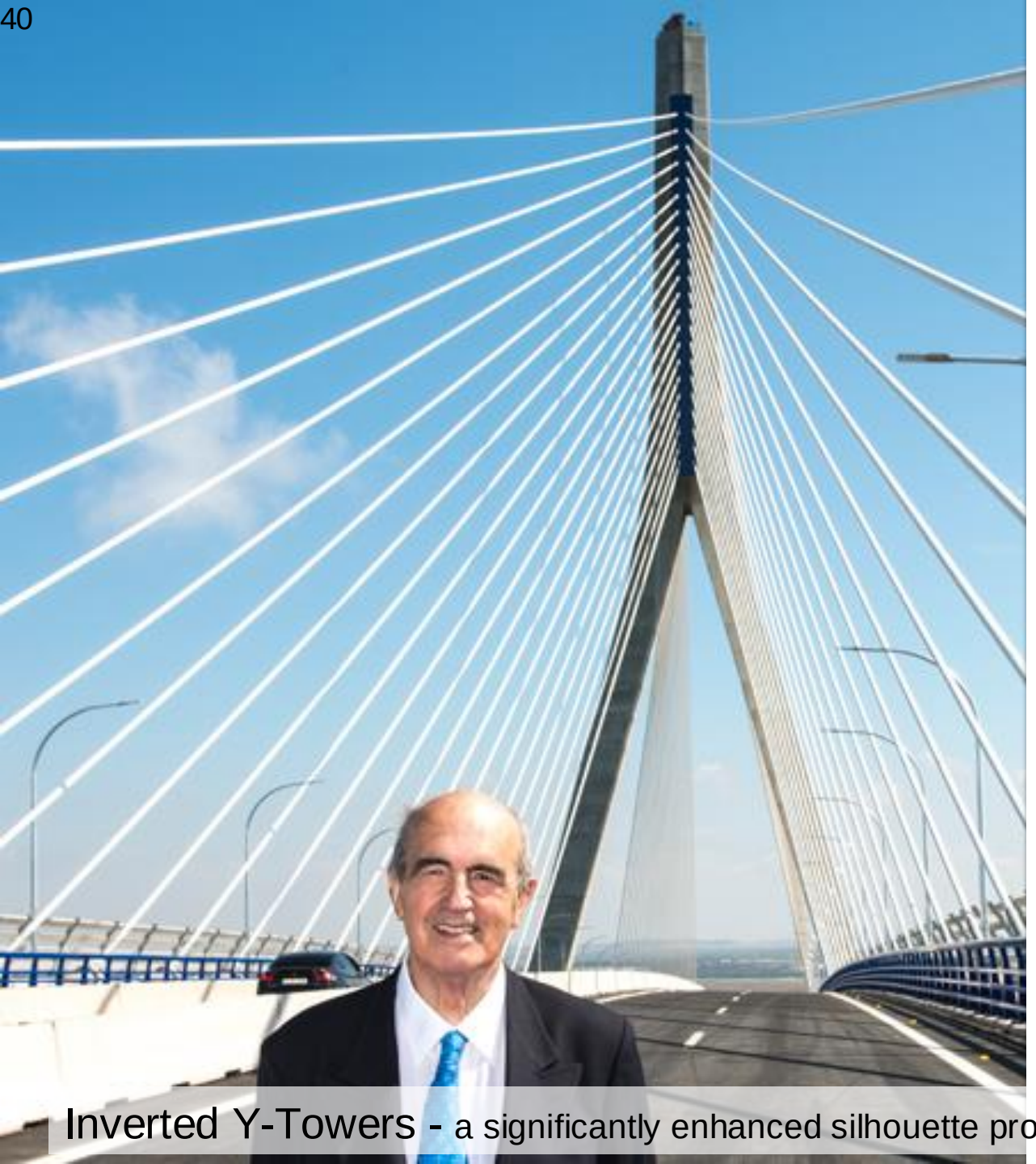
Component shaping – facetted forms make a significant difference to the perceived slenderness



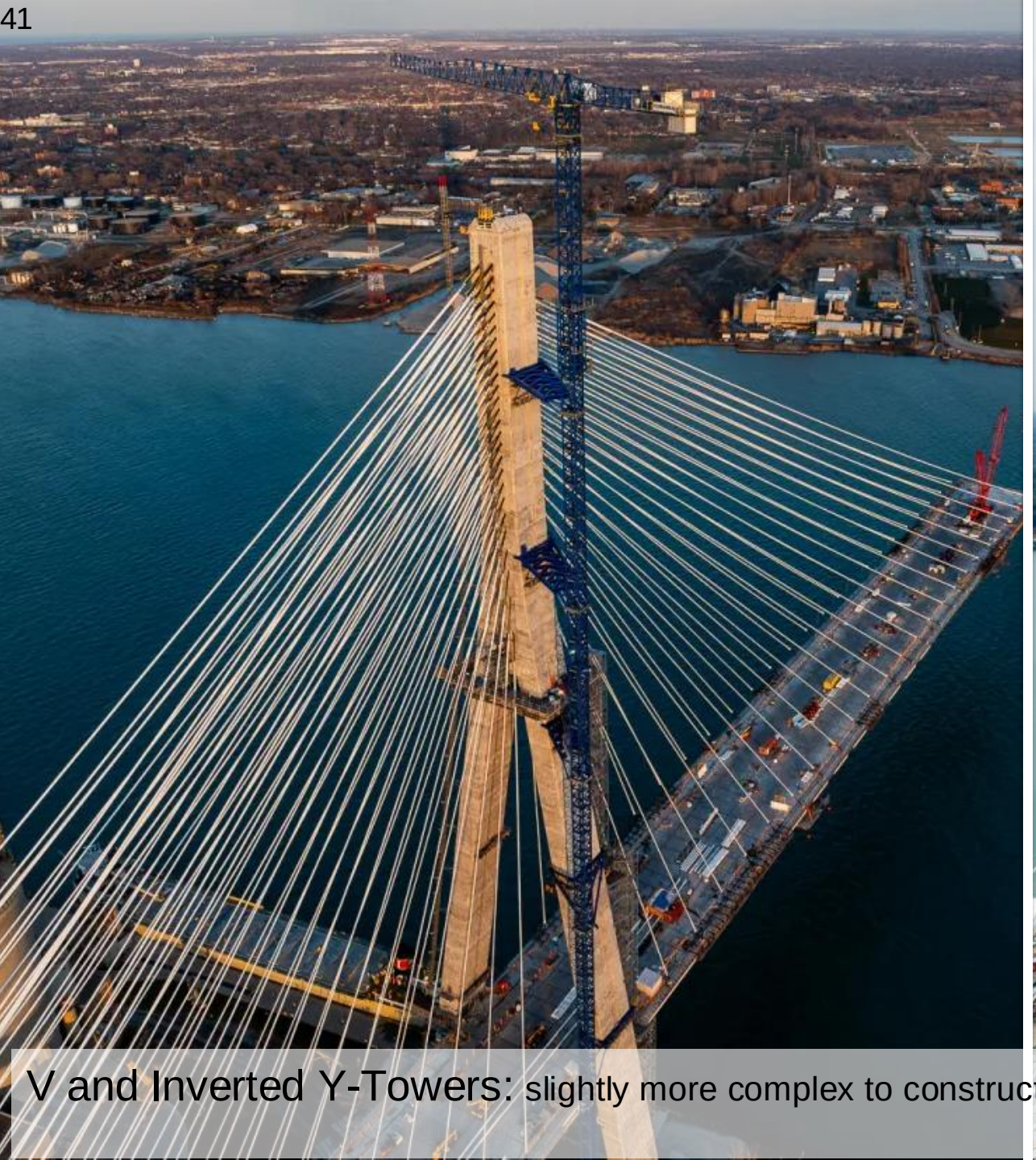
Component shaping – vertical tapering (migrating seams) make a significant difference to the visual form

Goalposts - increasingly common CSB type most requiring (but infrequently benefitting) from tower shape enhancement

V-Towers - an enhanced silhouette profile over goalposts but a less urban response



Inverted Y-Towers - a significantly enhanced silhouette profile with opportunities for economic tower shaping



V and Inverted Y-Towers: slightly more complex to construct inclined structure relative to vertical but adds 120 years of significant value!

CS1- Goalpost tower

- Clean aesthetic
- Twin Form
- Needs tower shaping
- (not novel in Portland (Tilikum)
- Boring

order of preference (arches only)>>>>> 5

CS2- V tower

- Enhanced aesthetic
- Twin Form
- Needs tower shaping
- novel in Portland
- Not an urban form

order of preference (arches only)>>>>> 3

CS3- Inverted-Y tower

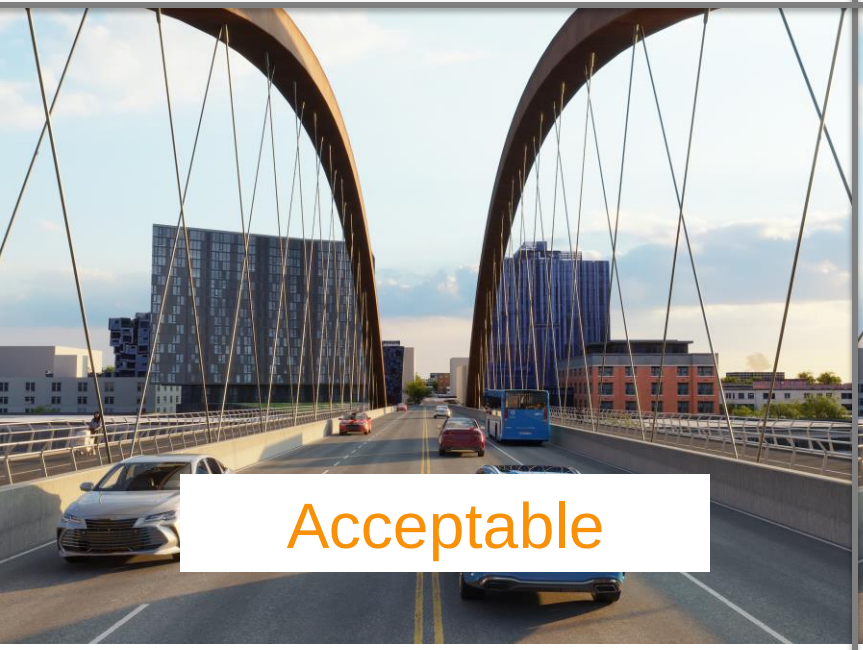
- Memorable aesthetic
- Single Entity
- Not reliant on tower shaping
- novel in Portland
- Urban and dynamic

order of preference (arches only)>>>>> 1

CS1- Goalpost tower

CS2- V tower

CS3- Inverted-Y tower



TA1-Unbraced vertical arches

TA2-Braced basket-handle arch

TA3- Braced vertical arches

BEAM Architects East Span Bridge Type Preference:

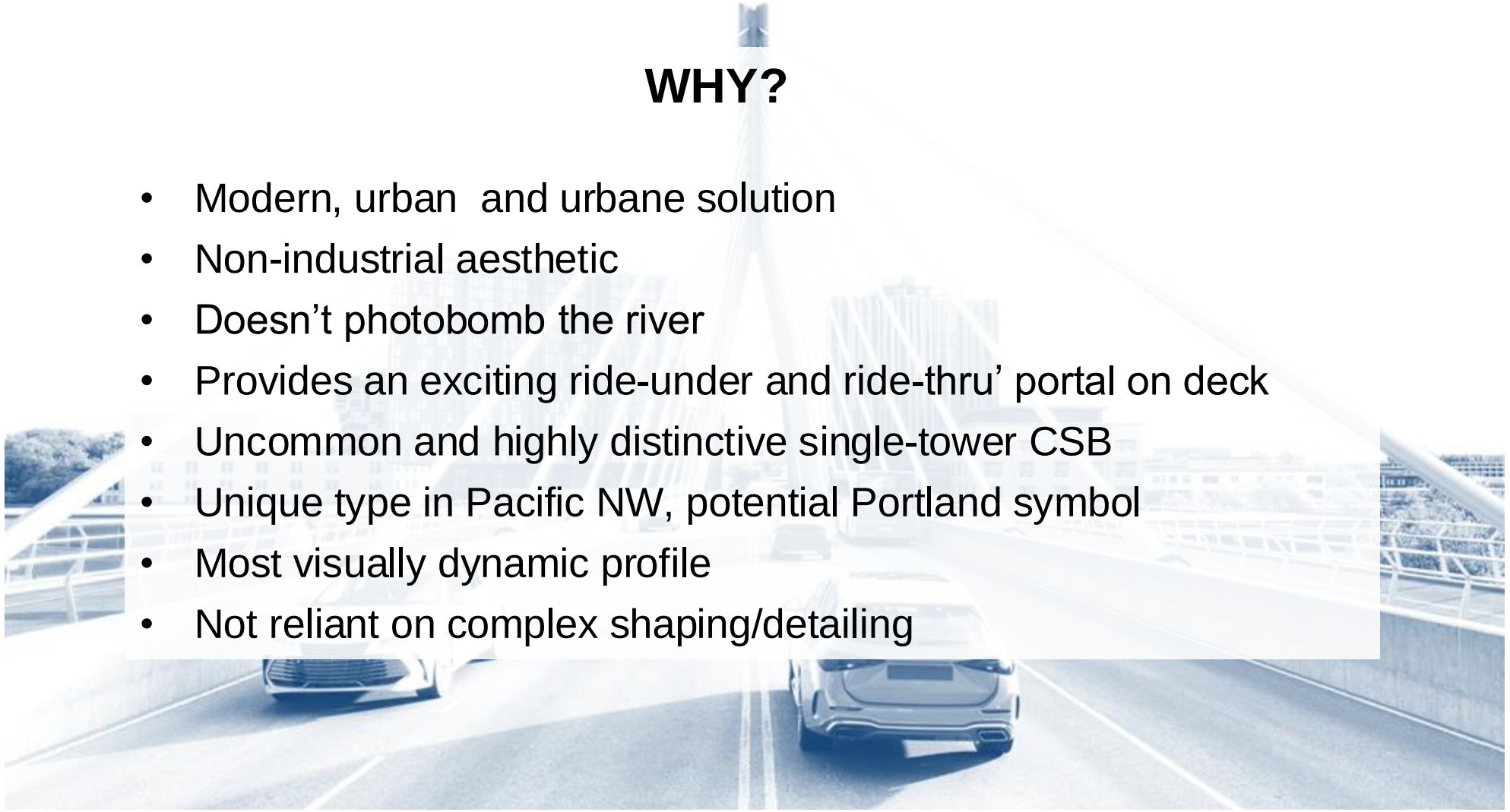
Inverted-Y Cable Stayed Bridge

BEAM Architects East Span Bridge Type Preference:

Inverted-Y Cable Stayed Bridge

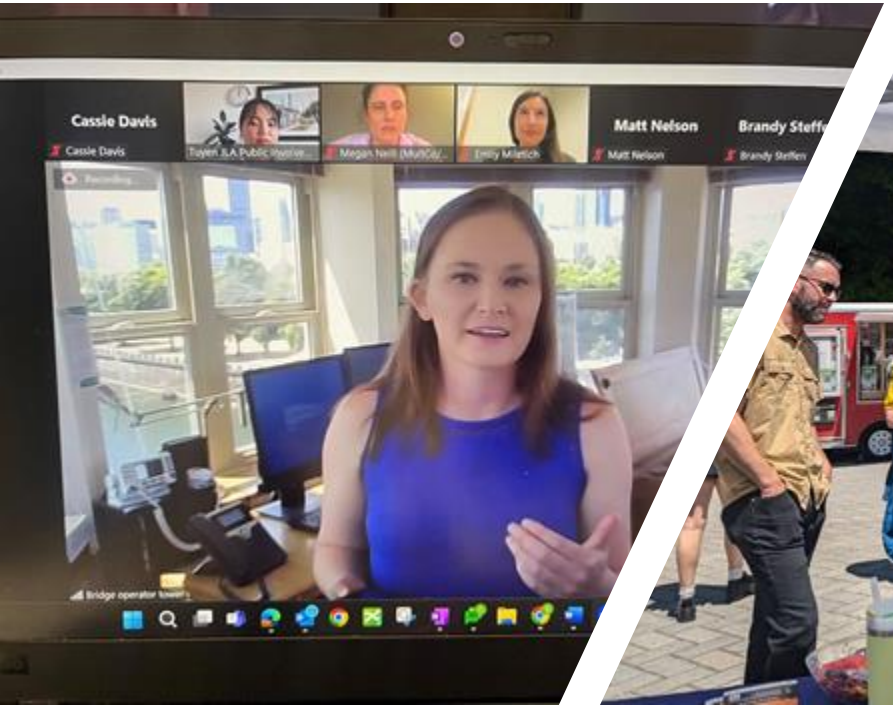
WHY?

- Modern, urban and urbane solution
- Non-industrial aesthetic
- Doesn’t photobomb the river
- Provides an exciting ride-under and ride-thru’ portal on deck
- Uncommon and highly distinctive single-tower CSB
- Unique type in Pacific NW, potential Portland symbol
- Most visually dynamic profile
- Not reliant on complex shaping/detailing



Review of Public Survey Results


Tied Arch


Cassie Davis
Matt Nelson

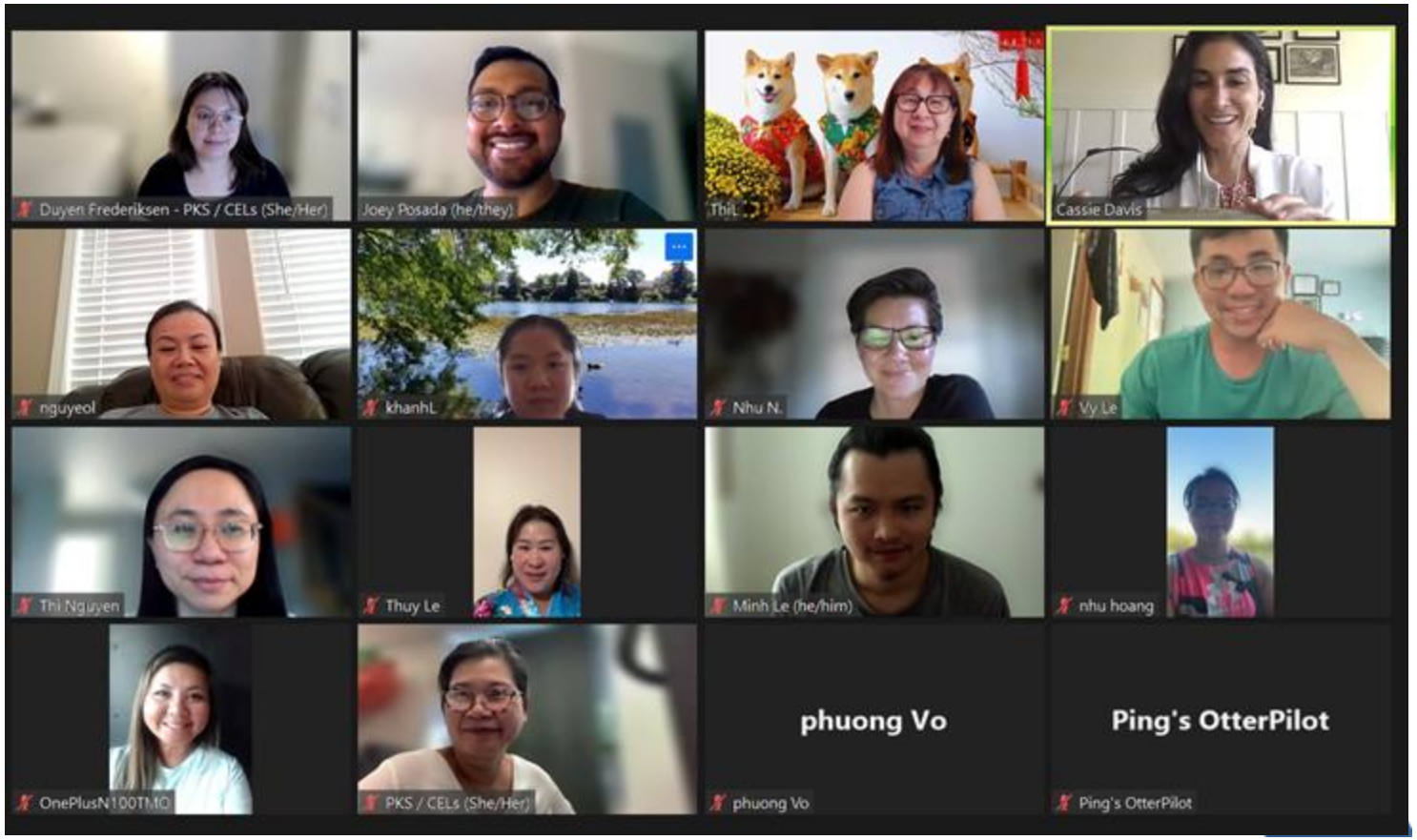
By the Numbers

119K+	Survey views
19K+	Survey responses
20	Briefings
19	DEI organizations reached
50+	Breakfast on the Bridge attendees
90+	OMSI panel attendees
2	Webinars
7	Translations of the online open house & survey
26	News releases, newsletters & news articles
111K+	Facebook reach
8	Videos and animations

Community Engagement Liaisons Program

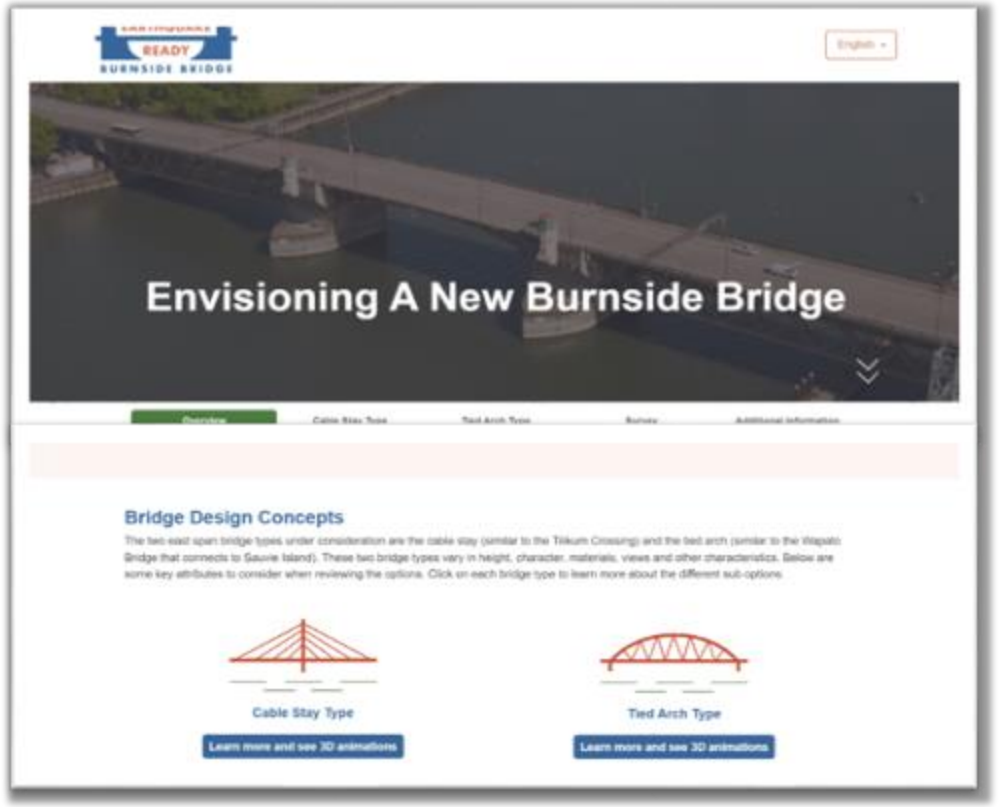
CEL's engaged their communities, conducted focus groups and translated materials. CEL Program includes the following community groups:

- Arabic
- Black / African American
- Chinese
- Japanese
- Native American
- Russian
- Ukrainian
- Somali
- Spanish
- Vietnamese



Overall Survey Stats

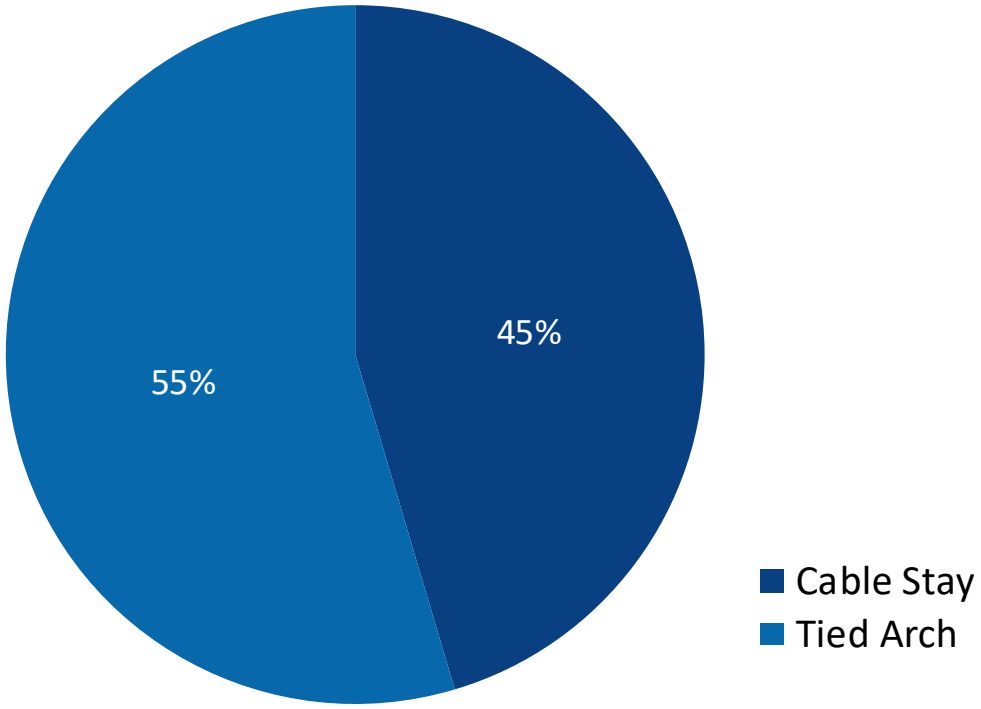
- **SURVEY DATES:** July 1 through July 31
- **TOTAL SITE VIEWS:** 119,781 views
- **TOTAL SURVEYS SUBMITTED:** 19,411
- **TOTAL IN-LANGUAGE SURVEYS SUBMITTED:** 337
- **TOTAL MULTNOMAH COUNTY RESPONDENTS:** 73%



Survey Results For Each Bridge Type

Respondents were asked to review information through the online open house before taking the survey.

After reviewing the information on the two east span bridge types, which bridge type do you feel would be the best option for our city?"

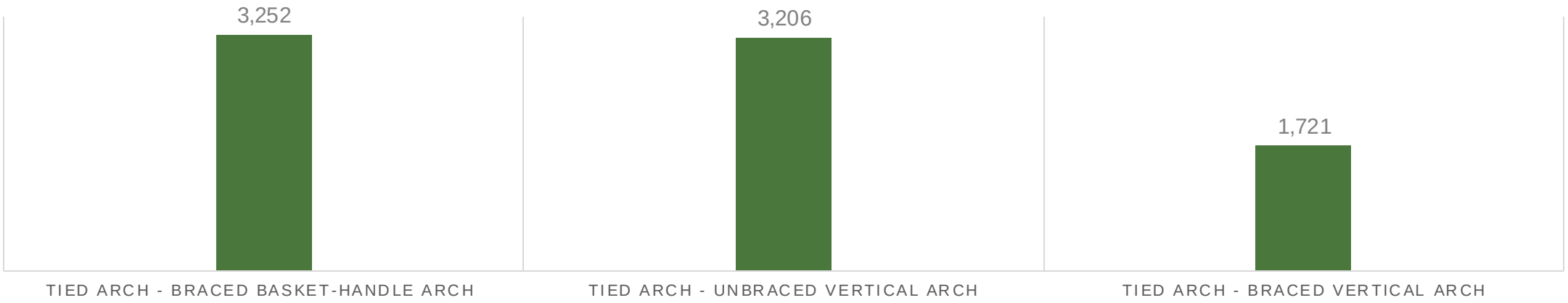


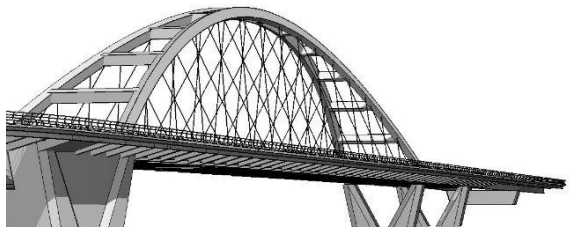
	Count	Percent
Tied Arch	10,494	54.6%
Cable Stay	8,740	45.4%

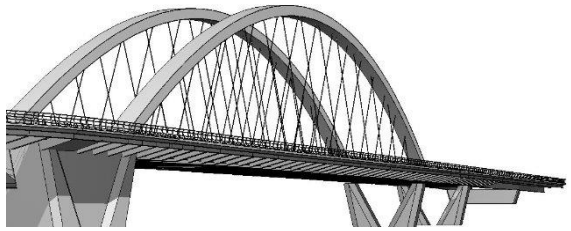
More than 80% of survey respondents chose to only provide comments about their preferred bridge types

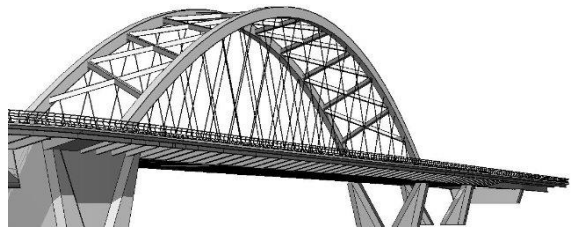
Survey – Tied Arch #1 Rankings

For those that chose **tied arch as their preferred option**, below are the number of first choice selections for each sub option.



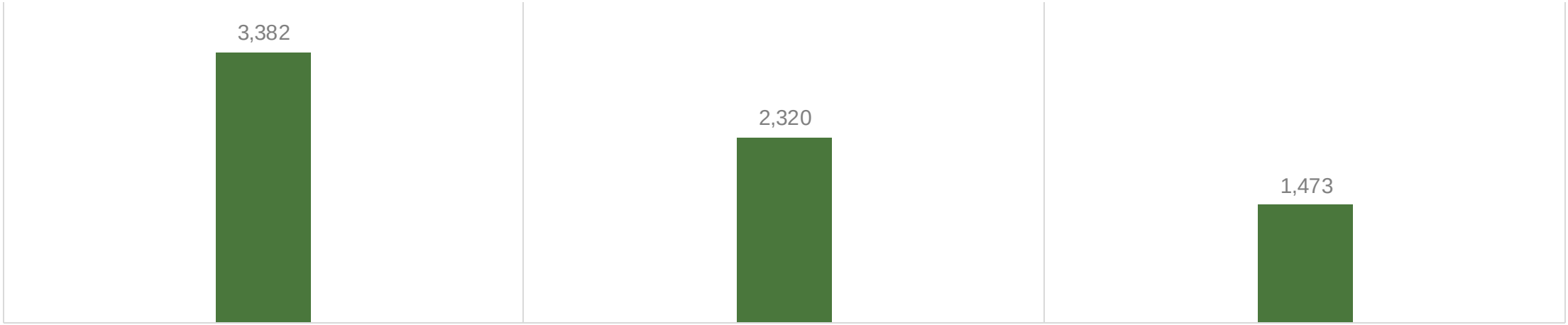


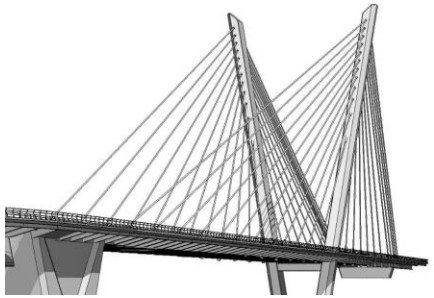


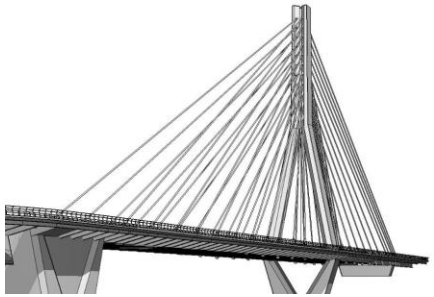


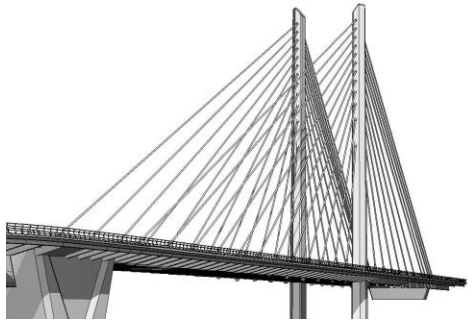
Survey – Cable Stay #1 Rankings

For those that chose **cable stay as their preferred option**, below are the number of first choice selections for each sub option.



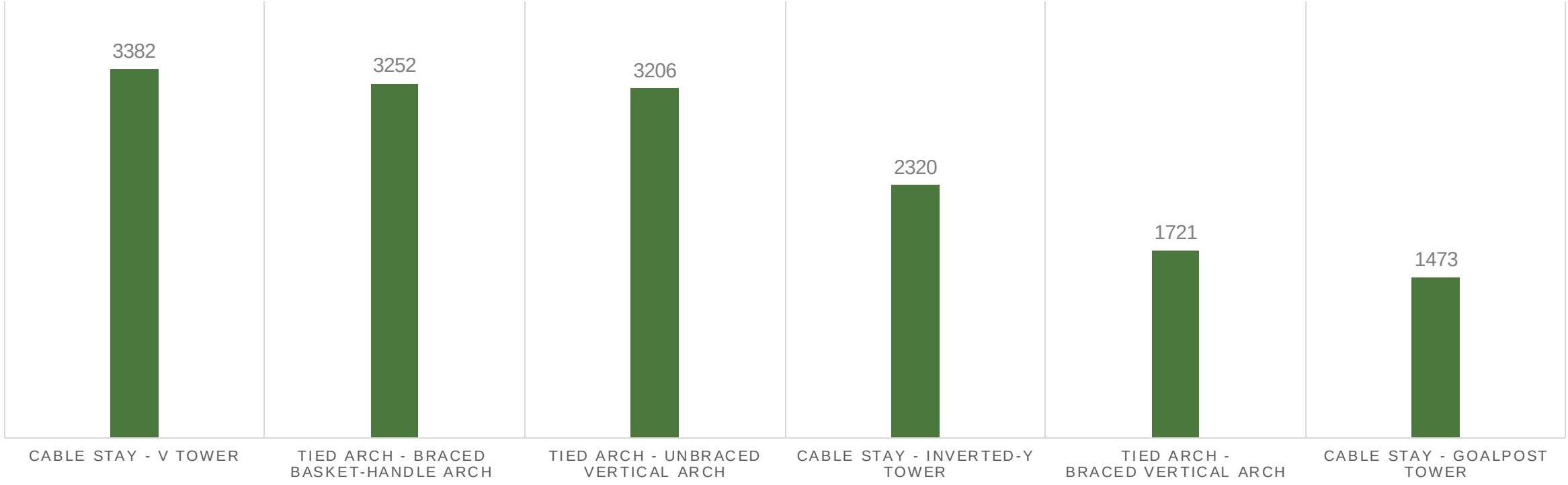






Survey – Preferred Overall Rankings

Ranking of sub options that were selected as the respondents #1 pick for their **preferred bridge type**



Next Steps

Next Steps

Bridge Type Decision

- August 15th, 2024 - Community Design Advisory Group Recommendation on Bridge Type
- September 2024 – County Board Decision on Bridge Type

Future Potential Briefings

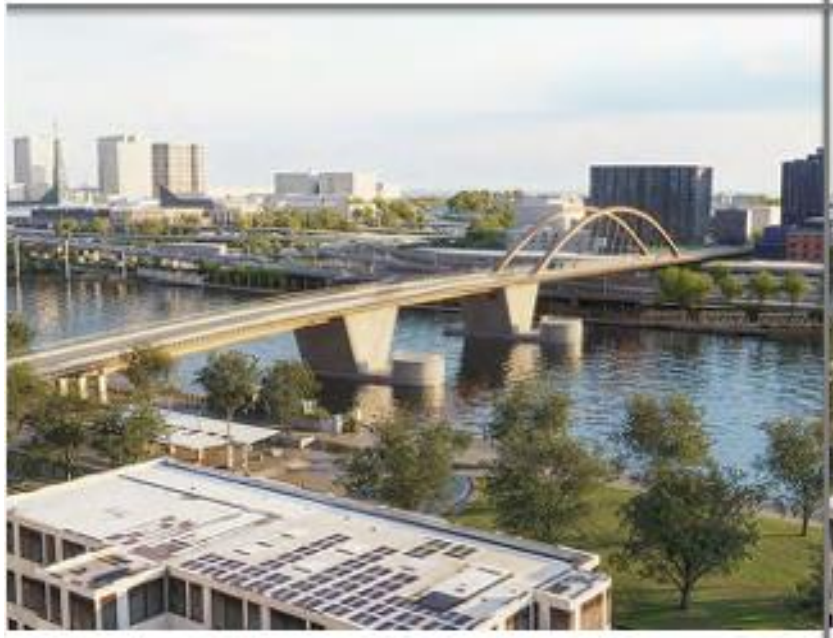
- Winter 2024 – Status update on design development

Questions / Discussion

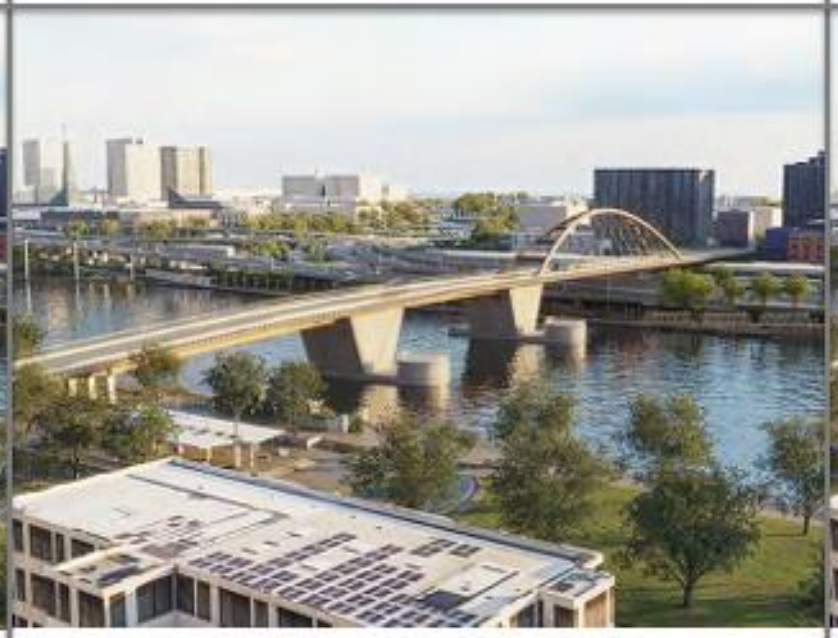
CS1- Goalpost tower

CS2- V tower

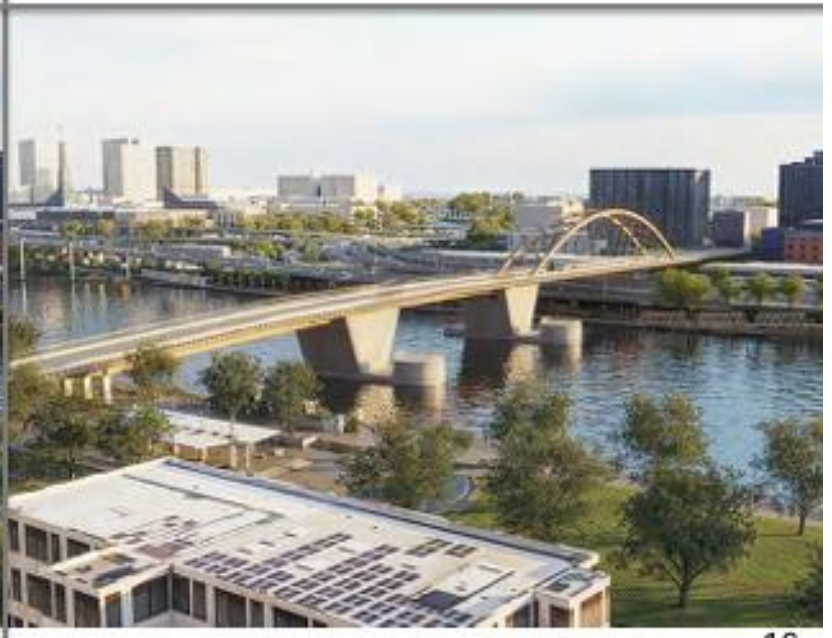
CS3- Inverted-Y tower



TA1-Unbraced vertical arches



TA2-Braced basket-handle arch



TA3- Braced vertical arches


Thank you