

Brent Spence Bridge Replacement/Rehabilitation Project

PID No. 75119
HAM-71/75-0.00/0.22
KYTC Project Item No. 6-17



Welcome

**Please Sign In - Verify Name,
Address, Phone and E-Mail**

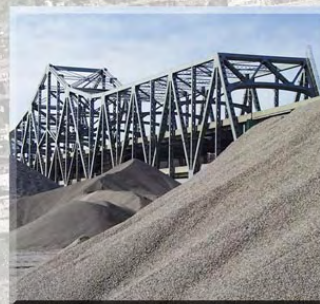
Brent Spence Bridge

Replacement/Rehabilitation Project

PID No. 75119
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KYTC Project Item No. 6-17



Project Aesthetics Committee Meeting #4 • January 29, 2010



PB PARSONS BRINCKERHOFF In Association with:
100 ROSALES + PARTNERS

Agenda



- **Meeting Purpose / Goals**
- **Project Update**
- **Role of Project Aesthetic Committee (PAC)**
- **Bridge Type Selection – Key Design Criteria**
- **Preliminary Bridge Concepts – Presentation**
- **Preliminary Bridge Concepts – Evaluation**

Goals for Meeting



- **Update on the Project**
- **Key Visual and Aesthetic Criteria**
 - Verification of New Bridge Key Criteria
 - Additional Criteria
- **Solicit Feedback on Bridge Concepts**
 - Develop Pros and Cons for Evaluation of Bridge Concepts to aid in the Selection of Six Bridge Type Alternatives



Project Overview



- **Work being Performed**
 - Refine Design Plans for Preferred Alternatives
 - Perform Environmental Field Studies and Refine Impacts based on refined engineering work
 - **Perform Main River Bridge Structure Type Study**
 - Draft Aesthetic Design Guidelines Document
- **Assessment of Feasible Alternatives Report**
 - Recommend Preferred Roadway Alternative
 - **Selection of Three Bridge Alternatives**
- **NEPA Document**
 - Environmental Elements
 - Finalize Environmental Document



Bridge Type Selection Process

STEP 1 DEVELOP 18 PRELIMINARY BRIDGE CONCEPTS

Develop Concepts

- Identify Key Visual and Aesthetic Criteria
- Develop Preliminary Bridge Concepts

PAC Meeting
to Identify Key
Criteria

Develop
Preliminary
Concepts

Meeting with
ODOT &
KYTC

18 Preliminary
Bridge
Concepts

STEP 2 DEVELOP 6 BRIDGE TYPE ALTERNATIVES

Develop Bridge Type Alternatives

- Perform Conceptual Engineering Analysis
- Prepare Renderings and Computer Visualizations

PAC Meeting
for Input on
Bridge Type
Alternatives

Perform
Preliminary
Analysis on
Bridge Type
Alternatives

Meeting with
ODOT &
KYTC

6 Bridge Type
Alternatives

STEP 3 DEVELOP FINAL 3 BRIDGE ALTERNATIVES

Refine Final Bridge Alternatives

- Perform Preliminary Design
- Prepare Final Renderings and Computer Visualizations

PAC Meeting
for Input on
Final
Alternatives

Refine Final
Alternatives

Meeting with
ODOT &
KYTC

PAC and
Public
Meetings

Final 3 Bridge
Alternatives

New River Bridge River Zone Context



Truss
(Brent Spence Bridge)

Truss & Truss
(C&O Railroad Bridge &
Clay Wade Bailey Bridge)

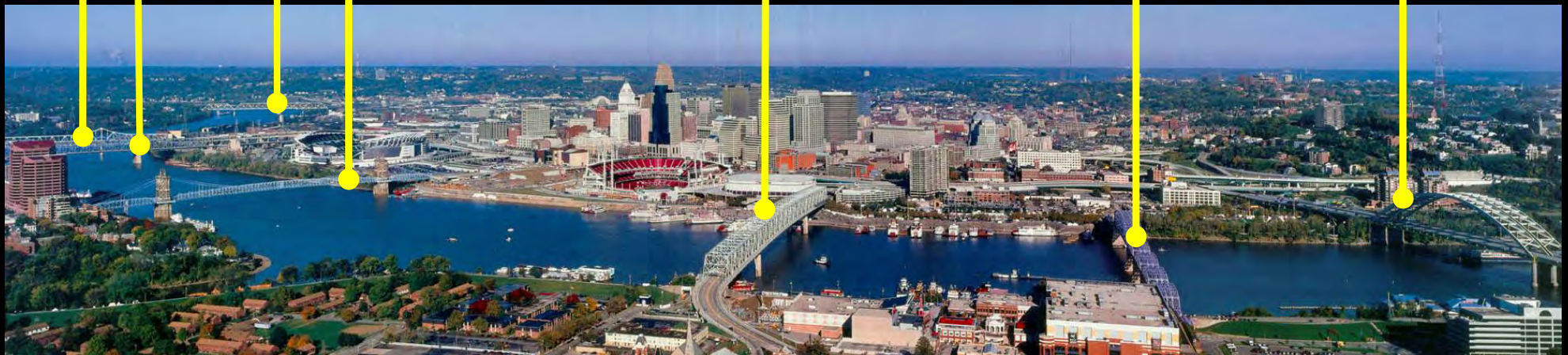
Truss
(Cincinnati Southern Bridge)

Suspension
(John A. Roebling Bridge)

Truss
(Taylor-Southgate Bridge)

Truss
(Newport Southbank Bridge,
formerly L&N Bridge)

Arch
(Daniel Carter
Beard Bridge)



Bridge Type Selection Key Design Criteria



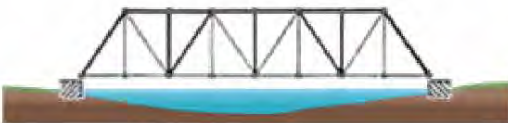
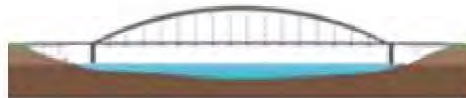
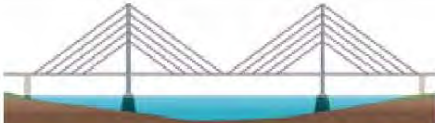
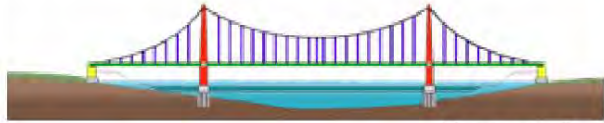
- **Construction Cost**
- **Constructability**
- **Maintenance and Durability**
- **Major Rehabilitation Feasibility**
- **Aesthetics**



Bridge Type Selection

Key Design Criteria



Bridge Type	Criteria				
	Construction Cost	Constructability	Maintenance and Durability	Major Rehabilitation Feasibility	Aesthetics
 <p>Truss</p>	Cost will be roughly the same as for an arch or cable-stayed bridge.	Construction will be complicated and slowed by the requirement to maintain river traffic.	Items included in M&D will be: 1. Standard Inspections 2. Overlay Replacement 3. Painting of Steel	Items included in rehab will be: 1. Deck Replacement 2. Future Widening 3. Member Repair/ Replacement	
 <p>Arch</p>	Cost will be roughly the same as for a truss or cable-stayed bridge.	Construction will be complicated and slowed by the requirement to maintain river traffic.	Items included in M&D will be: 1. Standard Inspections 2. Overlay Replacement 3. Painting of Steel	Items included in rehab will be: 1. Deck Replacement 2. Future Widening 3. Hanger Replacement	
 <p>Cable-Stayed</p>	Cost will be roughly the same as for an arch or truss bridge.	Cantilever construction of the superstructure will minimize interference to river traffic.	Items included in M&D will be: 1. High-tech Inspections 2. Overlay Replacement 3. Painting of Steel	Items included in rehab will be: 1. Deck Replacement 2. Future Widening 3. Stay Cable Replacement	
 <p>Suspension</p>	Cost will be significantly higher than for other bridge types.	Construction will be complicated.	Items included in M&D will be: 1. High-tech Inspections 2. Overlay Replacement 3. Painting of Steel	Items included in rehab will be: 1. Deck Replacement 2. Future Widening 3. Suspension Cable and Hanger Replacement	

Bridge Type Selection Aesthetic Criteria Table



Key Visual and Aesthetic Criteria					Other Criteria			
Visually Attractive	Visible from Eastern Vantages	Views of Surrounding Context	Distinctive Character/Landmark	Relates Visually to Existing BSB	Construction Cost	Constructability	Maintenance and Durability	Major Rehabilitation Feasibility
Truss Concepts								
1					Yellow	Green	Yellow	Yellow
2					Green	Yellow	Yellow	Yellow
Arch Concepts								
3					Green	Green	Yellow	Yellow
4					Green	Yellow	Yellow	Yellow
5					Green	Yellow	Yellow	Yellow
Cable-Stayed Concepts								
6					Green	Green	Yellow	Yellow
7					Green	Green	Yellow	Yellow
8					Green	Green	Yellow	Yellow
9					Yellow	Yellow	Yellow	Yellow
10					Yellow	Yellow	Yellow	Yellow
11					Green	Green	Yellow	Yellow
12					Yellow	Yellow	Yellow	Yellow

Bridge Type Selection

Key Visual and Aesthetic Criteria

Key Criteria:

1. The new bridge should be visually attractive.
2. The new bridge needs to be visible looking “through” the existing bridge (from the east).
3. As much as possible, crossing the new bridge should allow views of the surrounding context (unlike existing bridge).
4. The new bridge should have distinctive characteristics that identify it as a local landmark.
5. The new bridge should have a visual relationship with the existing bridge.

Additional Criteria:

- The new bridge colors, textures, landscaping, etc. need to be aesthetically pleasing.
- The existing bridge needs to be maintained / repainted to blend in with the new bridge.

Bridge Type Selection Aesthetic Elements - Fixed



Double Deck Bridge:

- Constructed on west side of existing Brent Spence Bridge.

Bridge Lighting:

- Necessary roadway and navigation channel lighting.
- Lighting will be provided on the lower deck.



Bridge Type Selection Aesthetic Elements - Variable



Bridge Type:

- Truss, Arch, or Cable-Stayed

Bridge Treatments:

- Shape
- Pattern
- Color
- Texture
- Lighting
- Landscaping

Bridge Components:



Bridge Type Selection Constraints

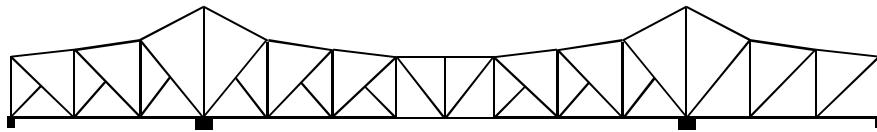


Bridge Type Selection

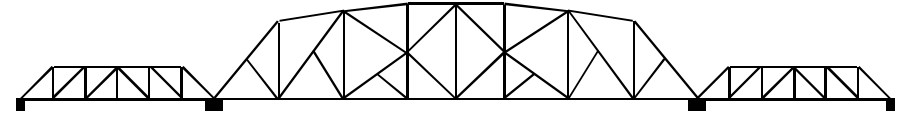
Variable Components: Truss



Truss Support Type

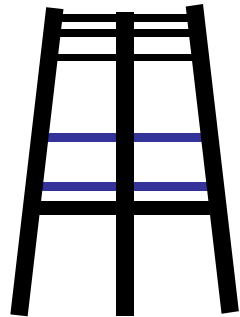


Cantilever

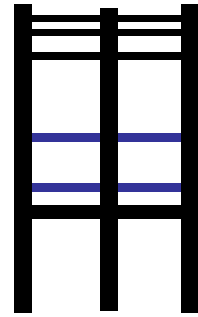


Simply Supported

Truss Inclination

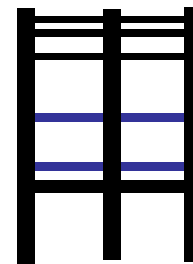


Inclined Trusses

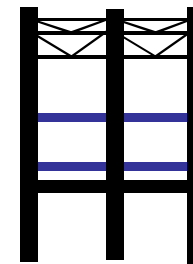


Vertical Trusses

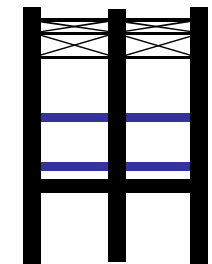
Top Bracing



Strut



K-Brace



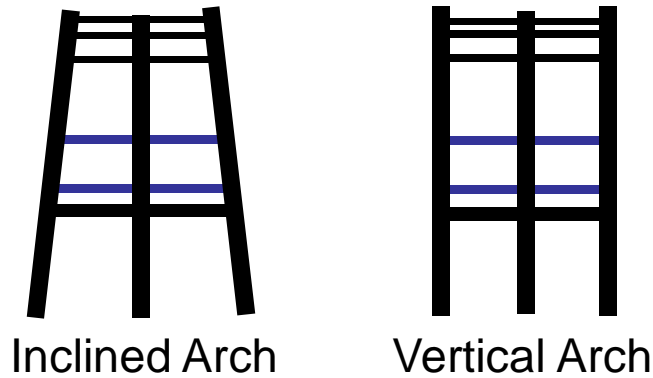
Cross
Braced

Bridge Type Selection

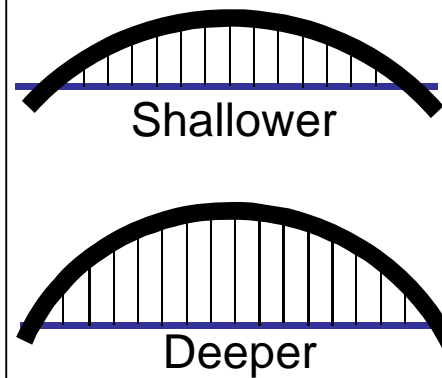
Variable Components: Arch



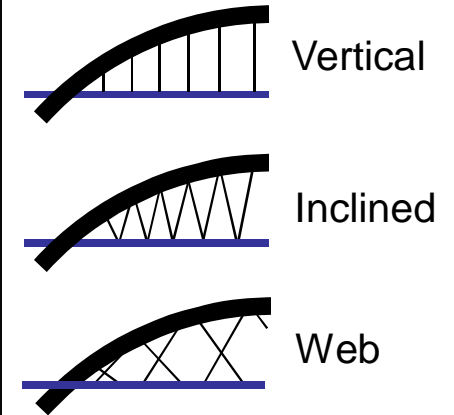
Arch Inclination



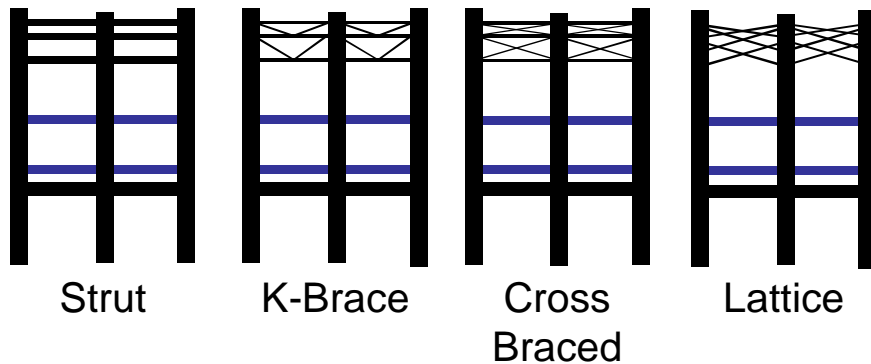
Depth of Arch



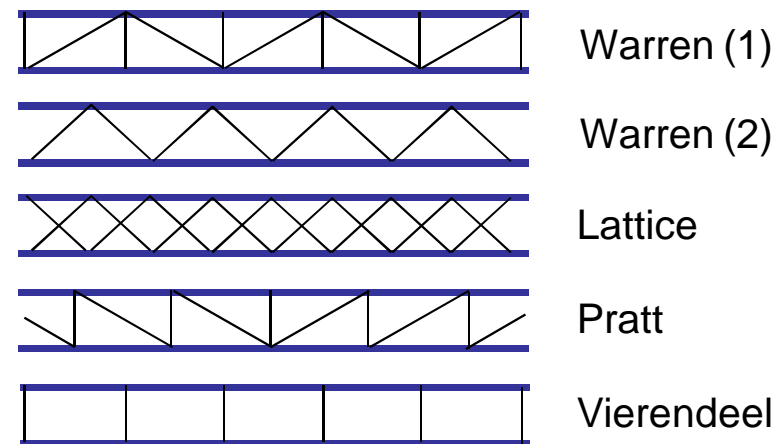
Hanger Arrangement



Top Bracing



Deck Truss Type

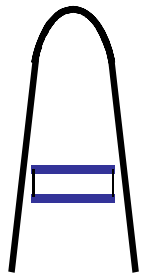


Bridge Type Selection

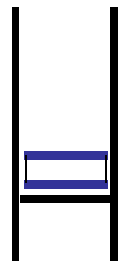
Variable Components: Cable-Stayed



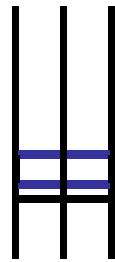
Tower Shape and Number of Legs



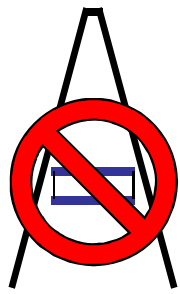
Inclined Leg/
Arch Tower



Vertical Leg
2 leg option



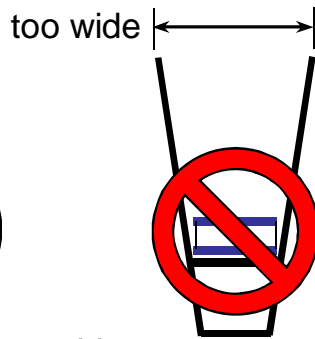
Vertical Leg
3 leg option



to wide
A-Tower

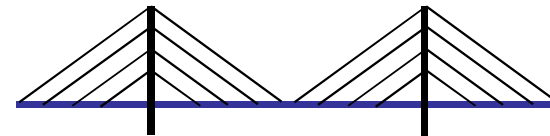


to wide
Diamond
Tower

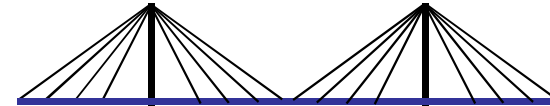


to wide
V-Tower

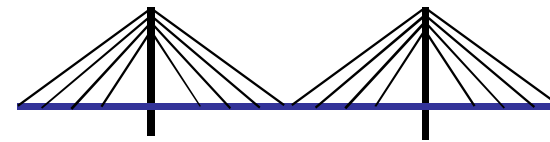
Stay Cable Arrangement



Harp



Fan



Semi Fan

Deck Truss Type



Warren (1)



Warren (2)



Lattice



Pratt

Bridge Type Selection Lower Deck Lighting



Un-Lighted



Lighted

Preliminary Bridge Concepts



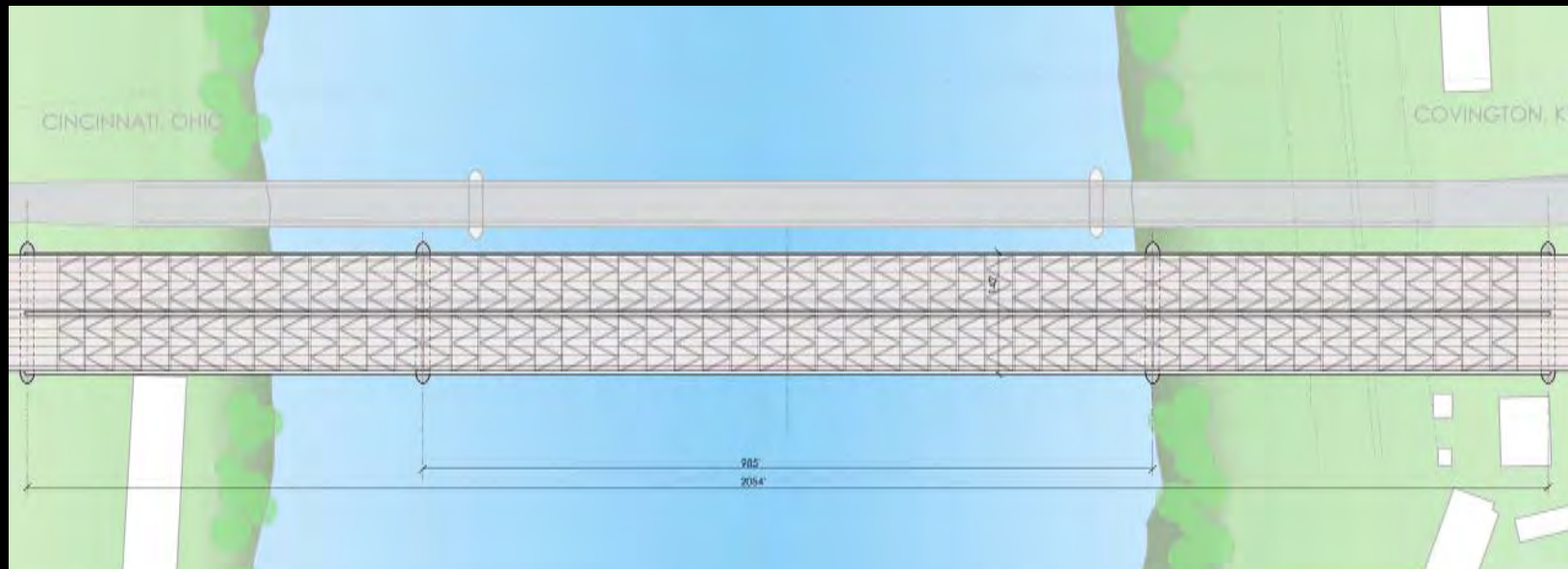
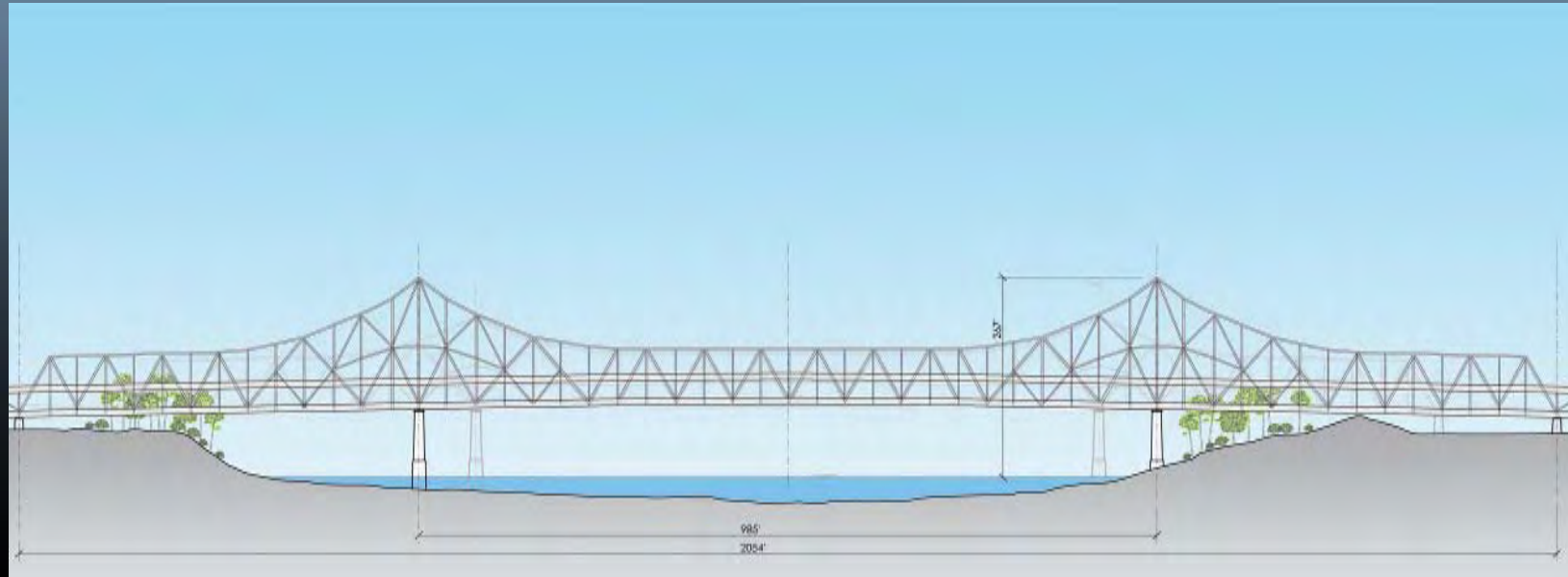
Step 1: Development of Preliminary Bridge Concepts



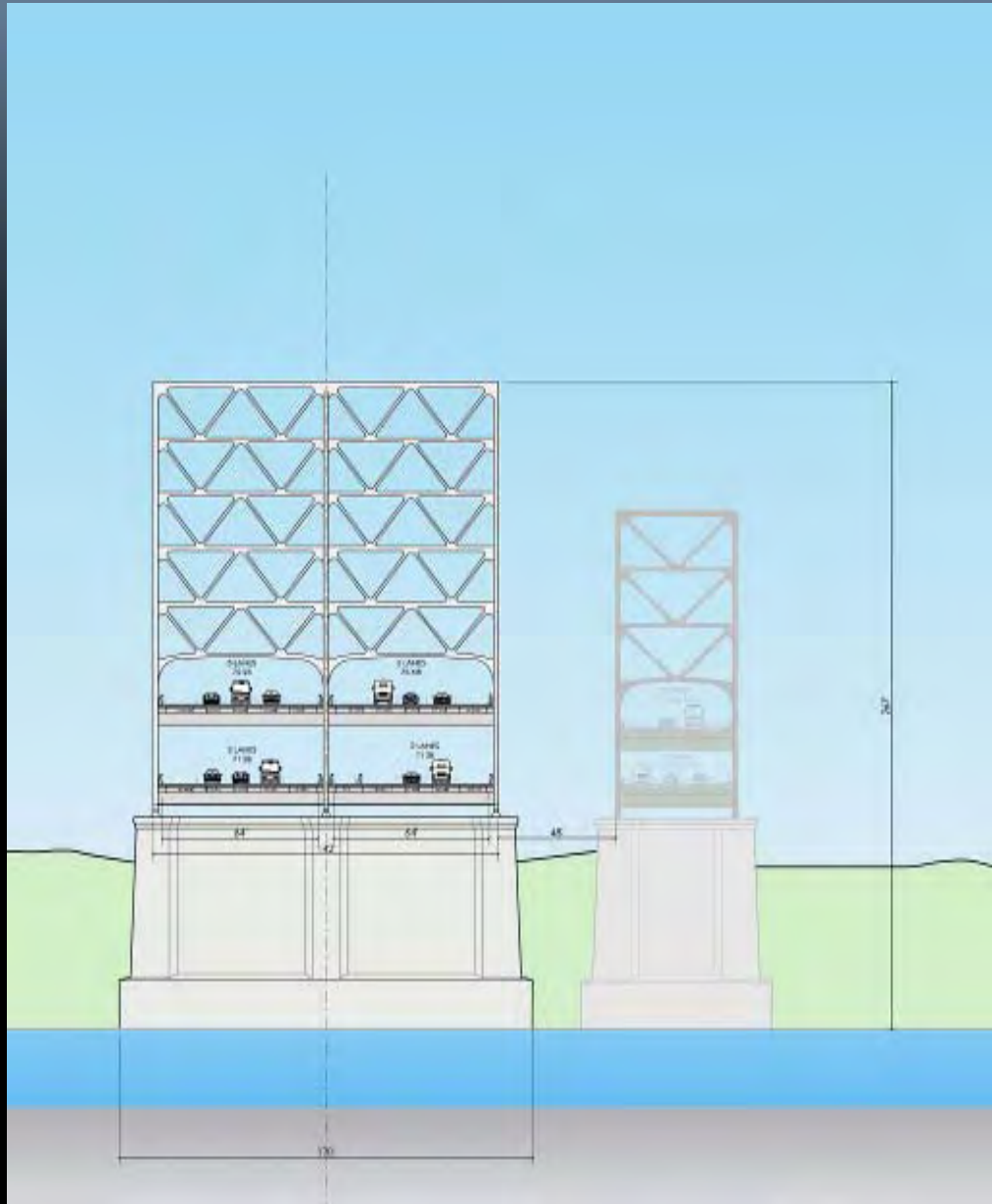
Bridge Type Selection Concept 1



Bridge Type Selection Concept 1



Bridge Type Selection Concept 1



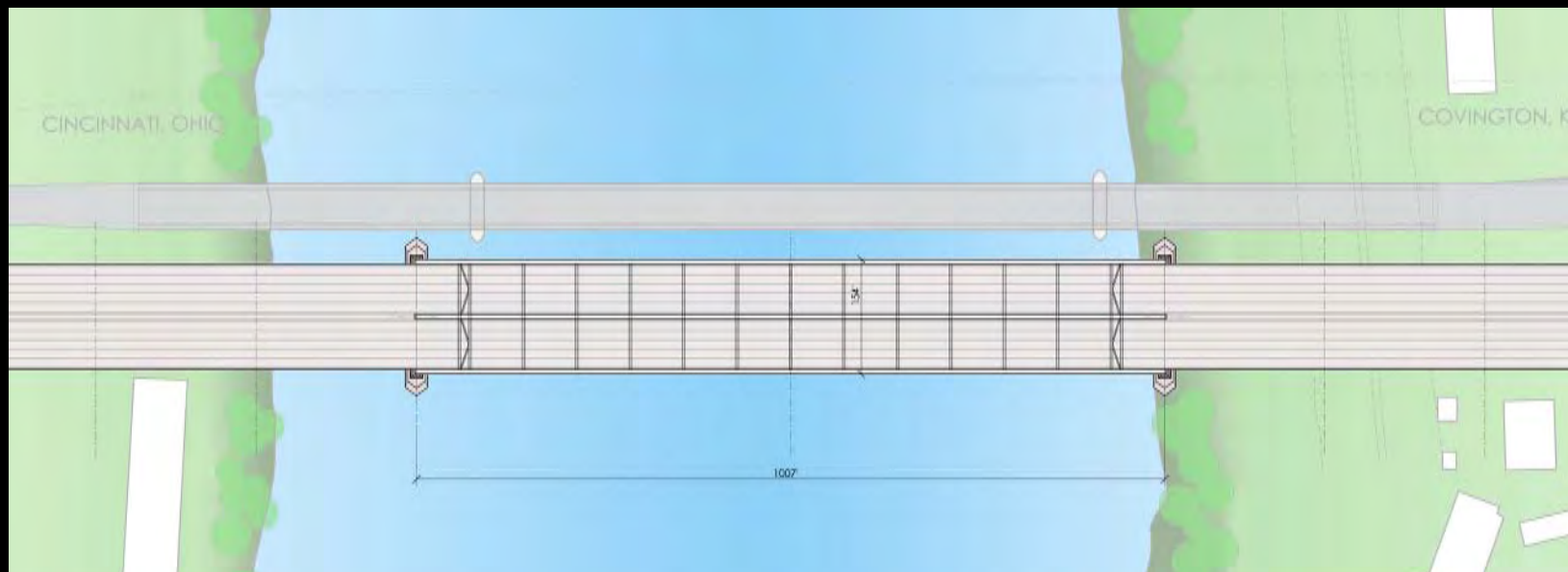
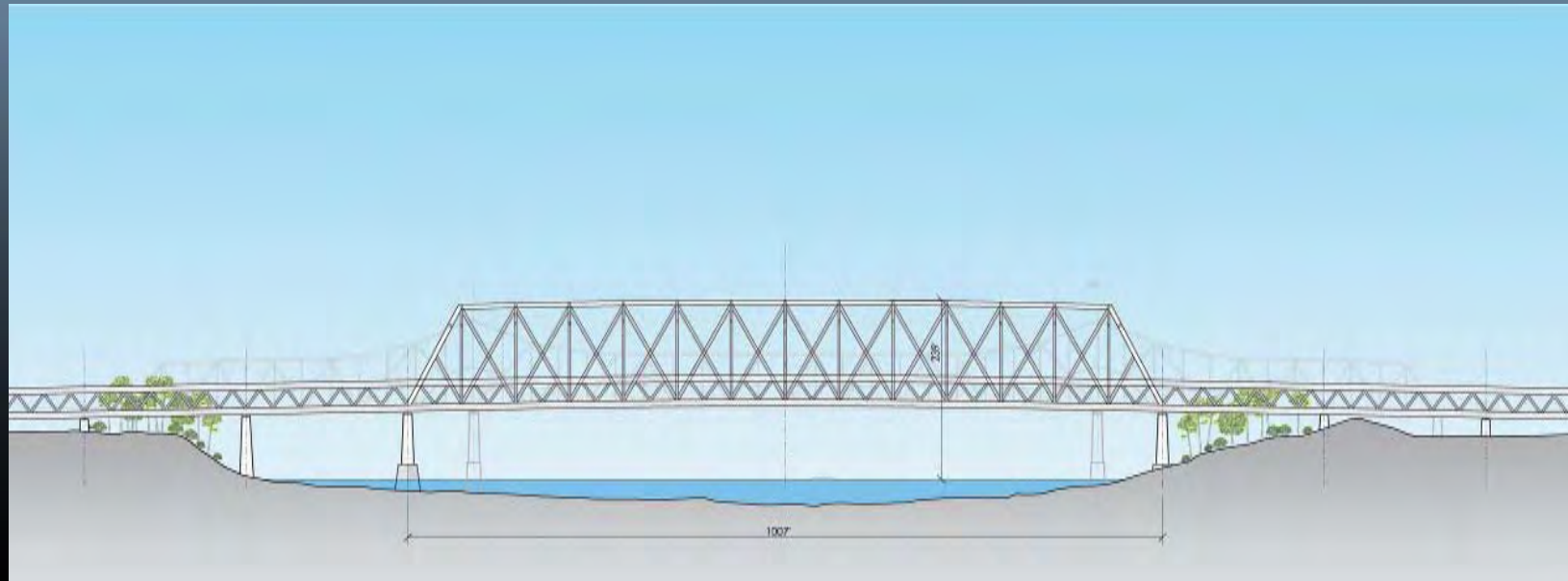
Bridge Type Selection Concept 1



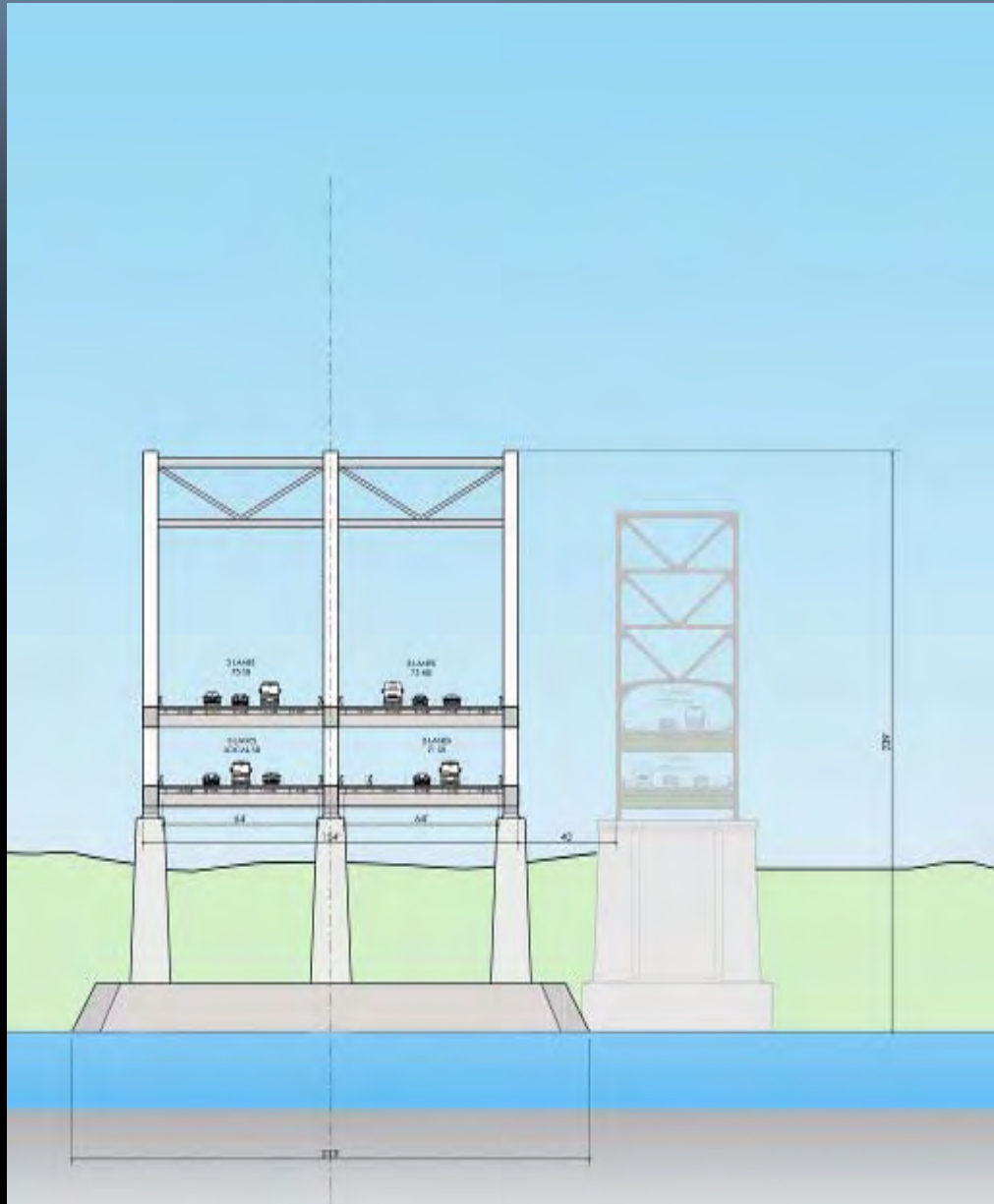
Bridge Type Selection Concept 2



Bridge Type Selection Concept 2



Bridge Type Selection Concept 2



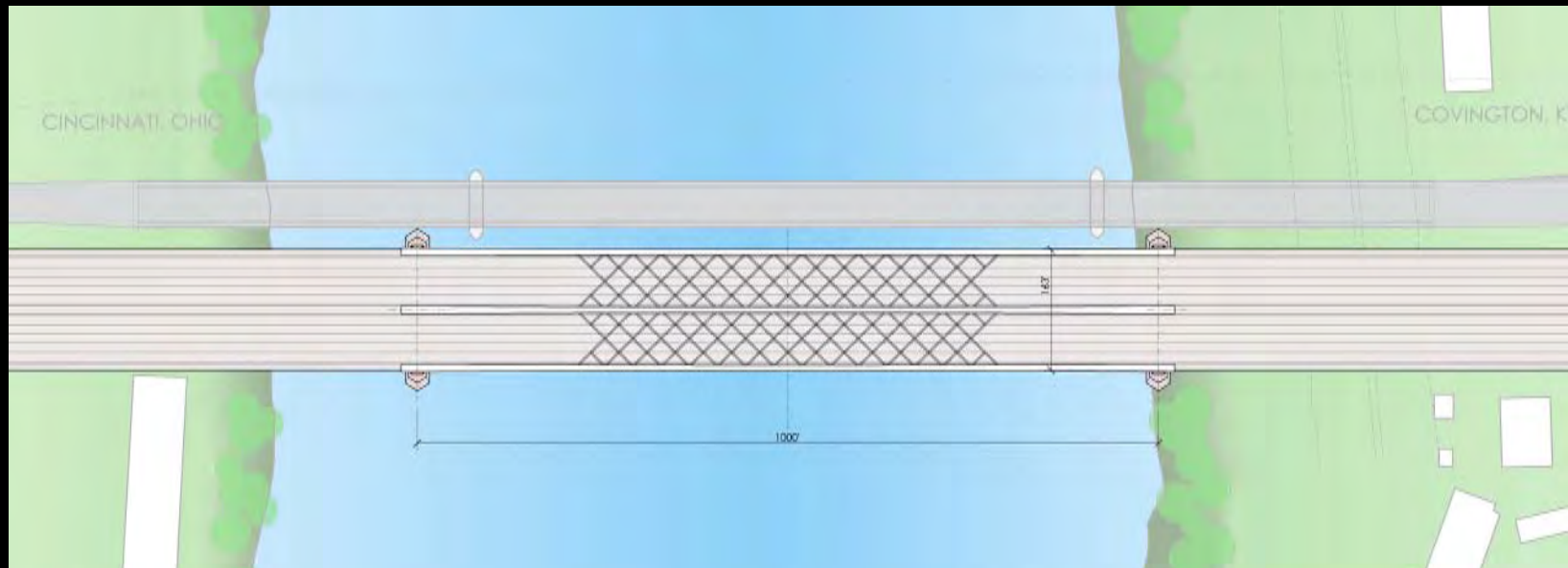
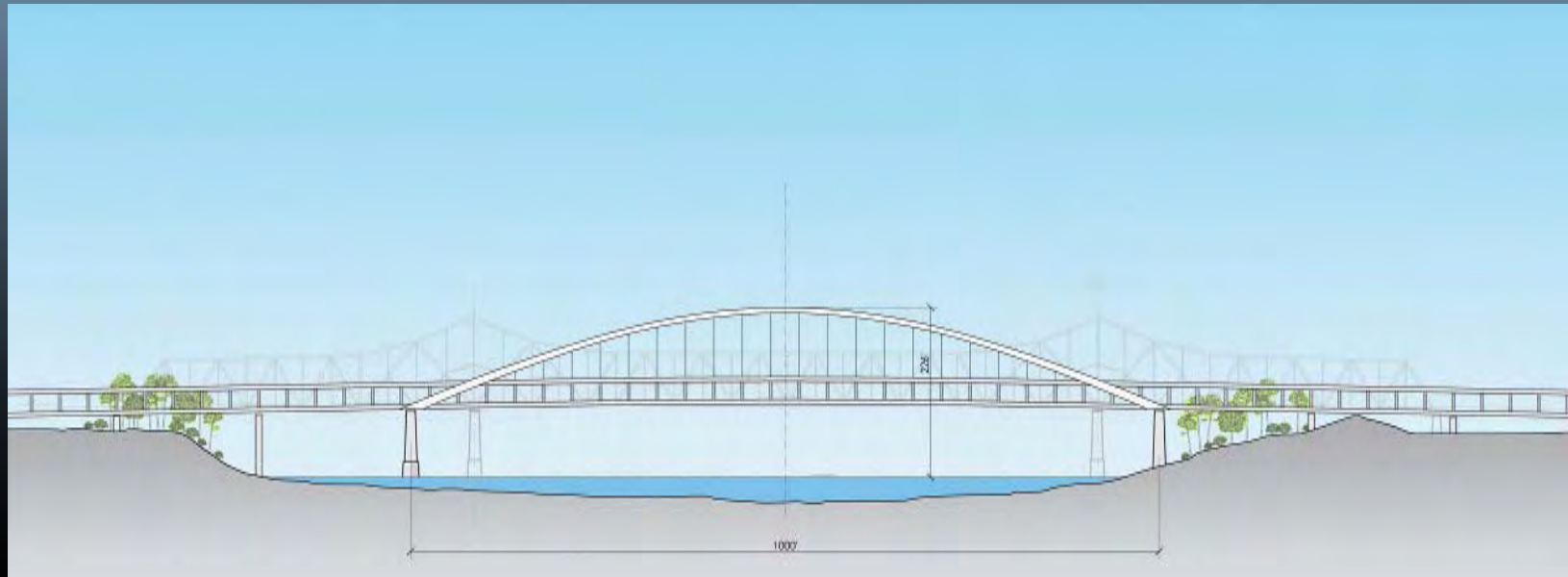
Bridge Type Selection Concept 2



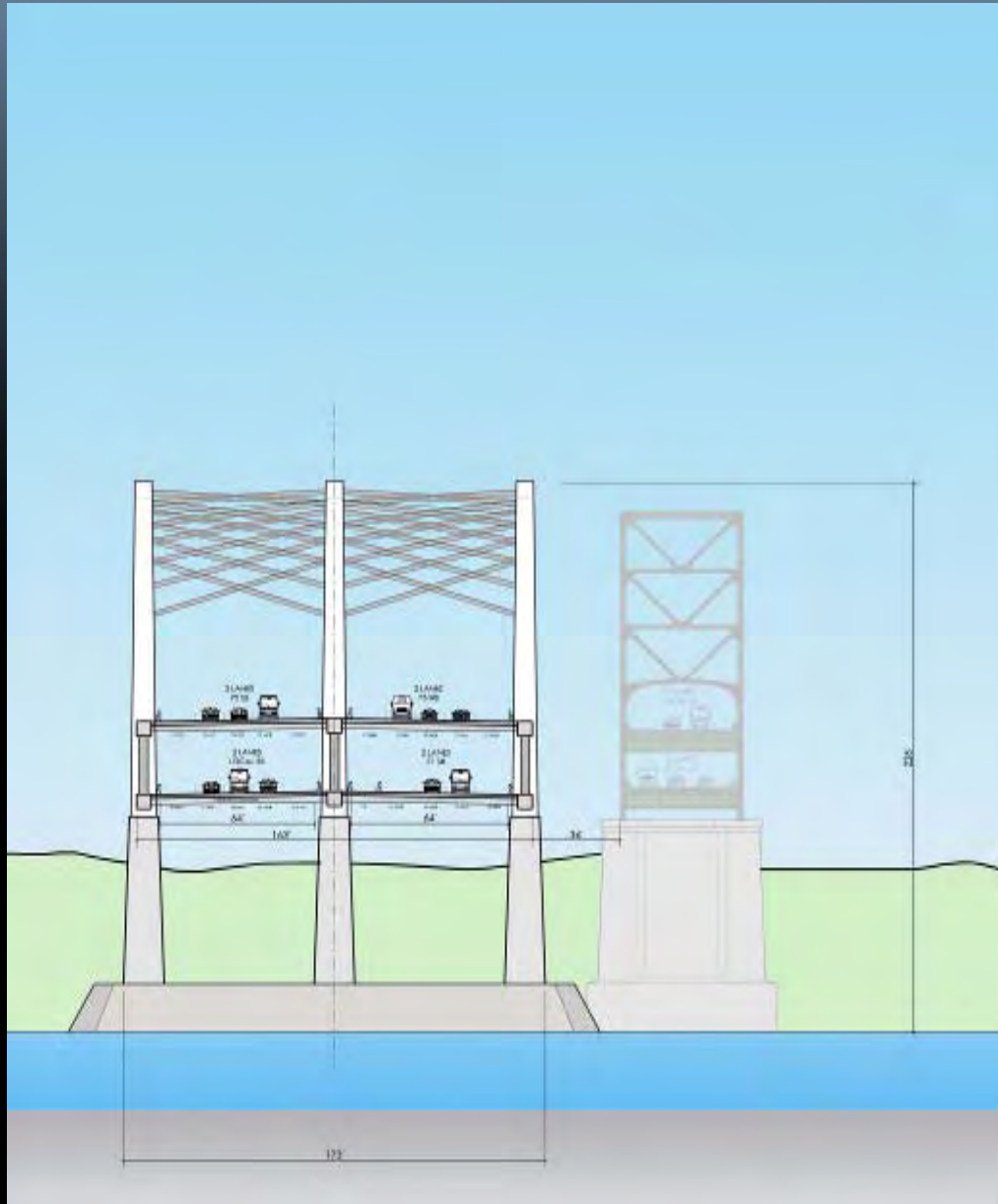
Bridge Type Selection Concept 3



Bridge Type Selection Concept 3



Bridge Type Selection Concept 3



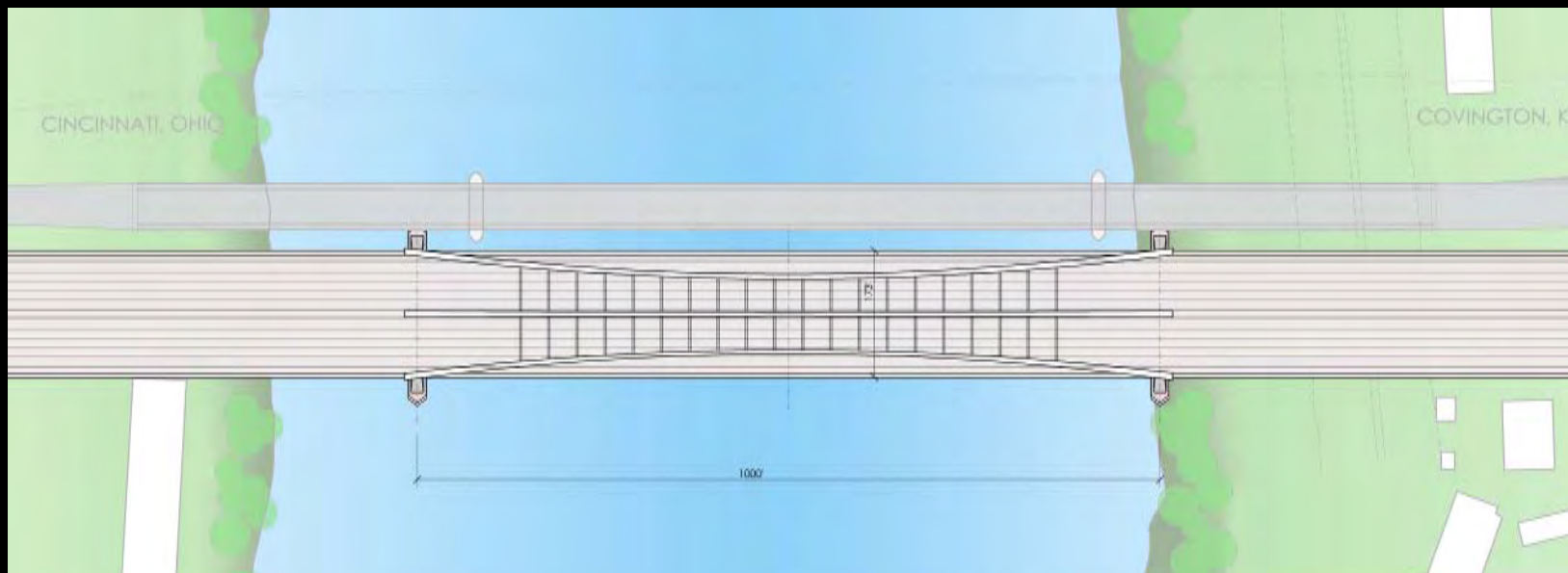
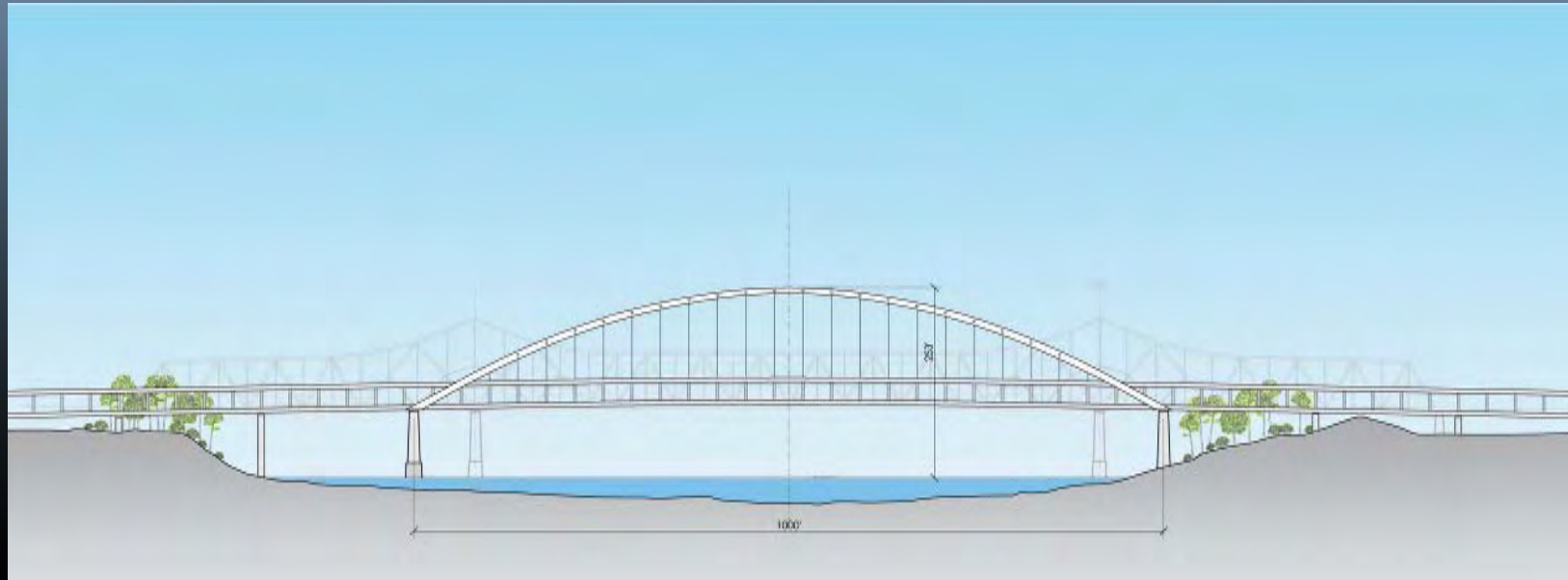
Bridge Type Selection Concept 3



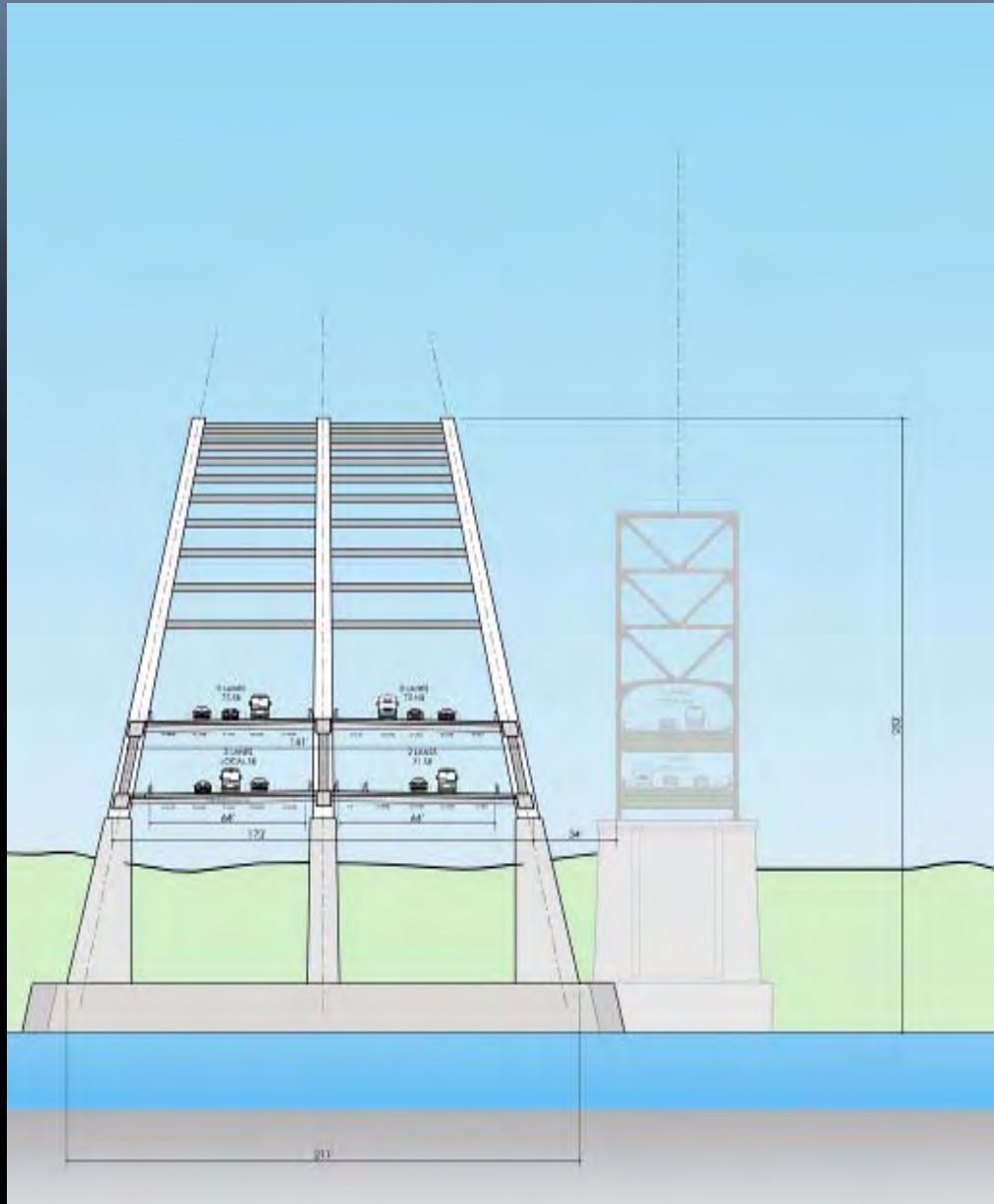
Bridge Type Selection Concept 4



Bridge Type Selection Concept 4



Bridge Type Selection Concept 4



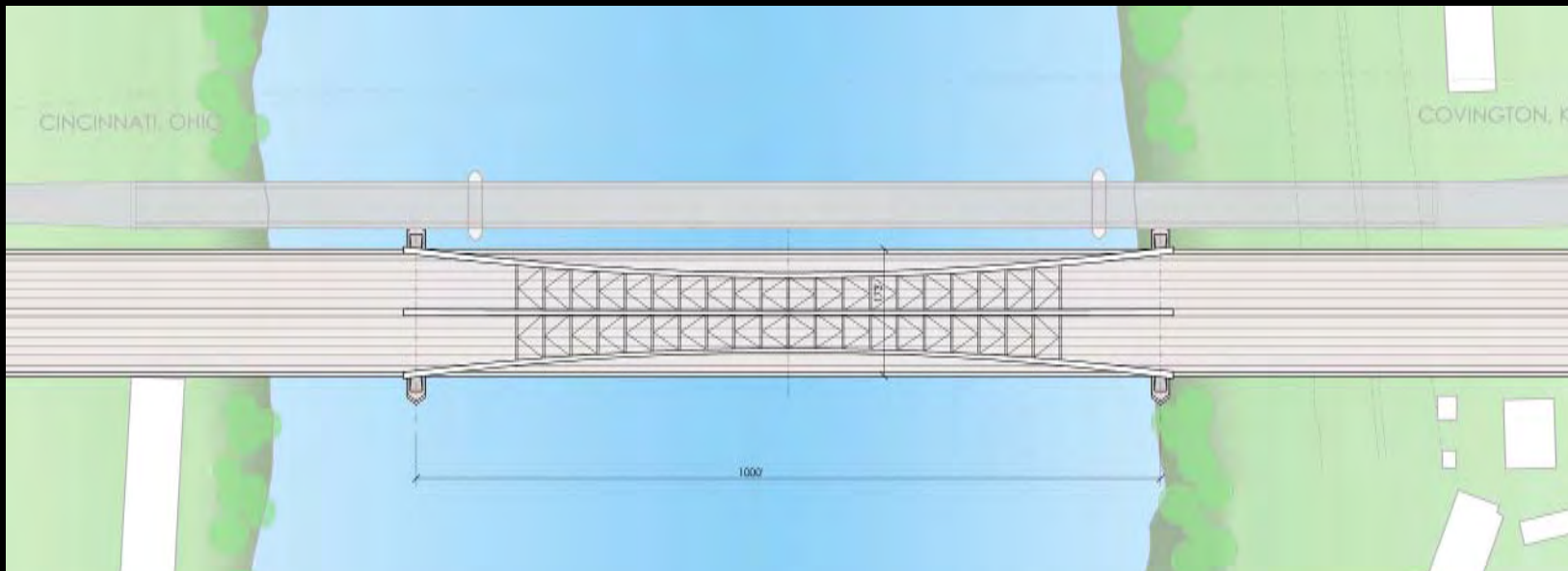
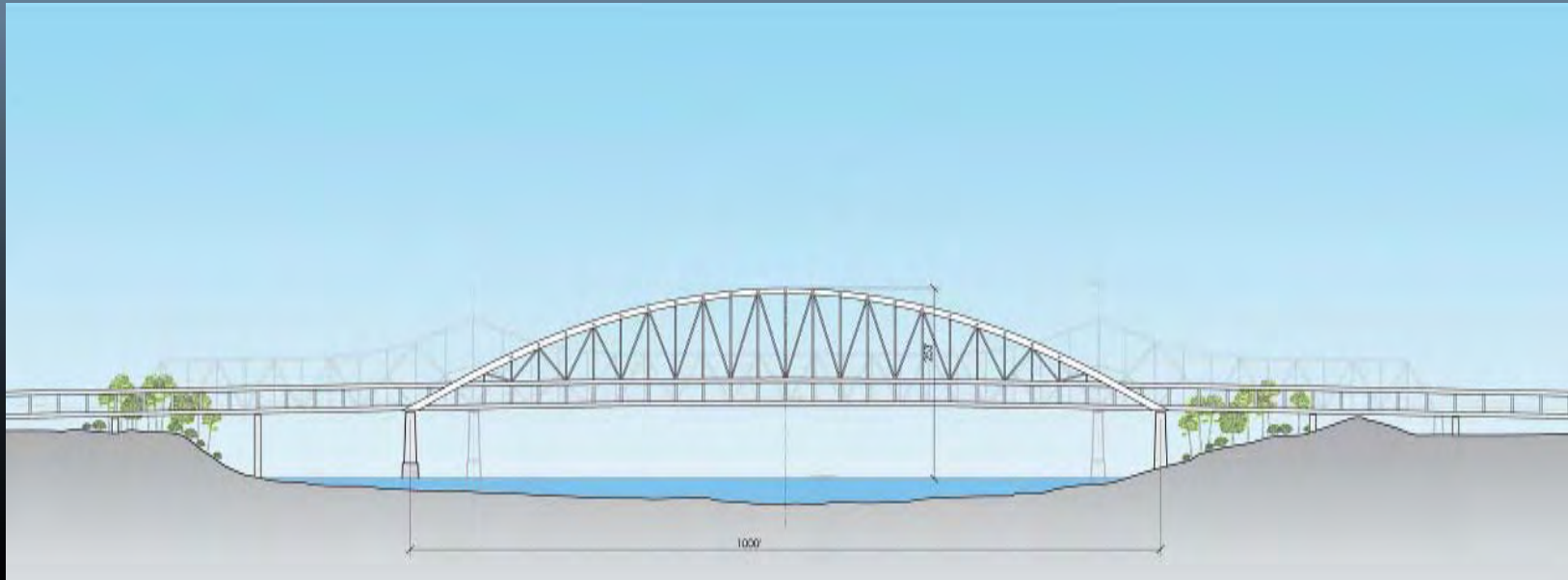
Bridge Type Selection Concept 4



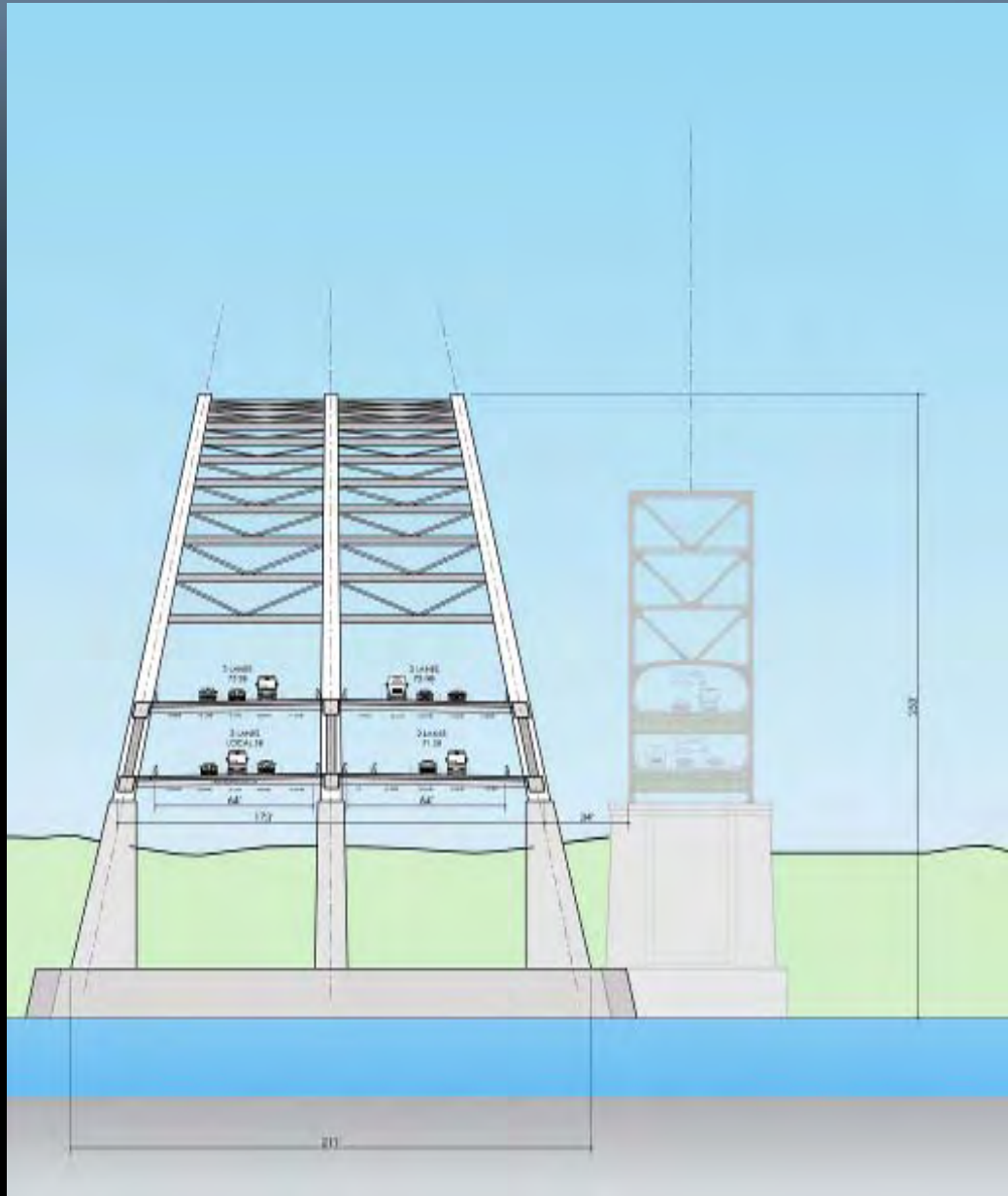
Bridge Type Selection Concept 5



Bridge Type Selection Concept 5



Bridge Type Selection Concept 5



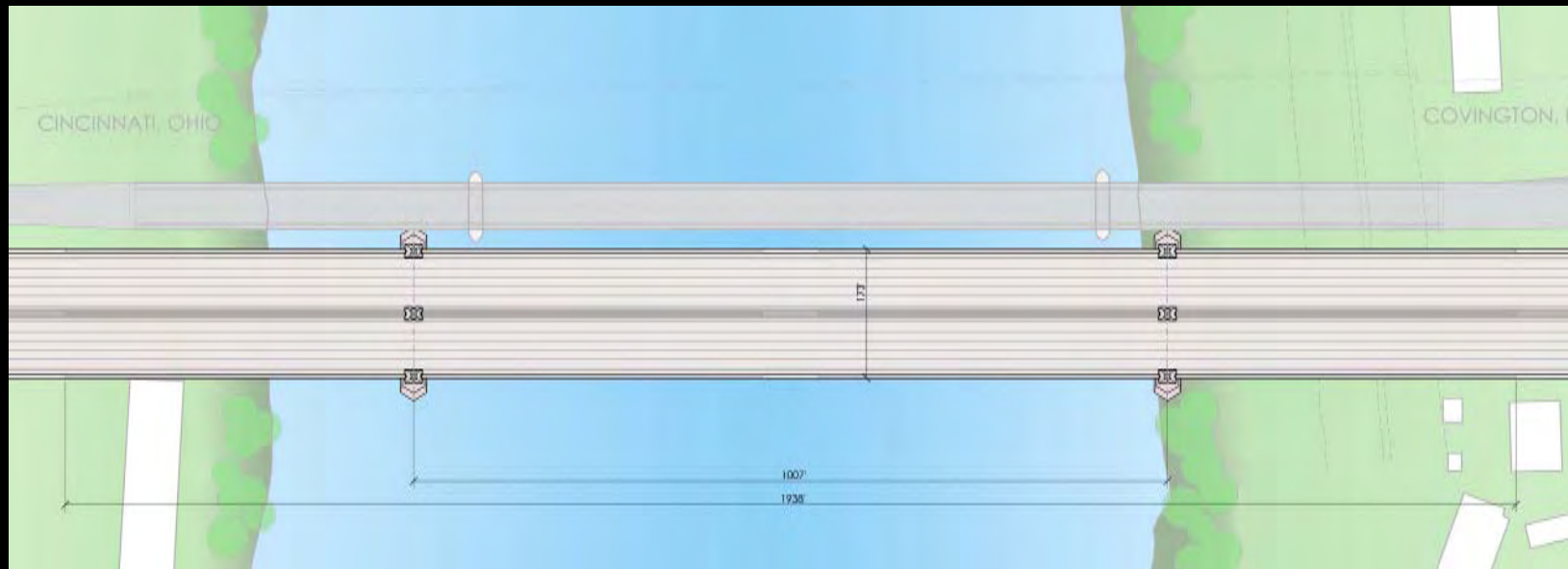
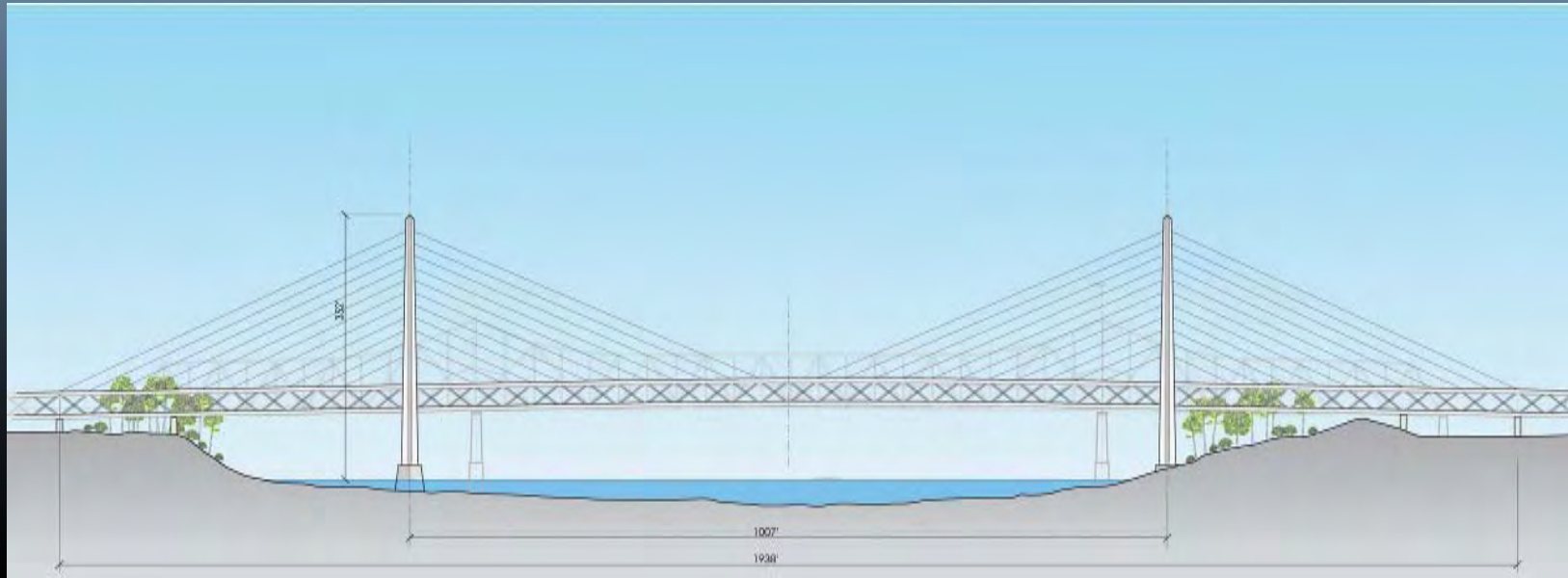
Bridge Type Selection Concept 5



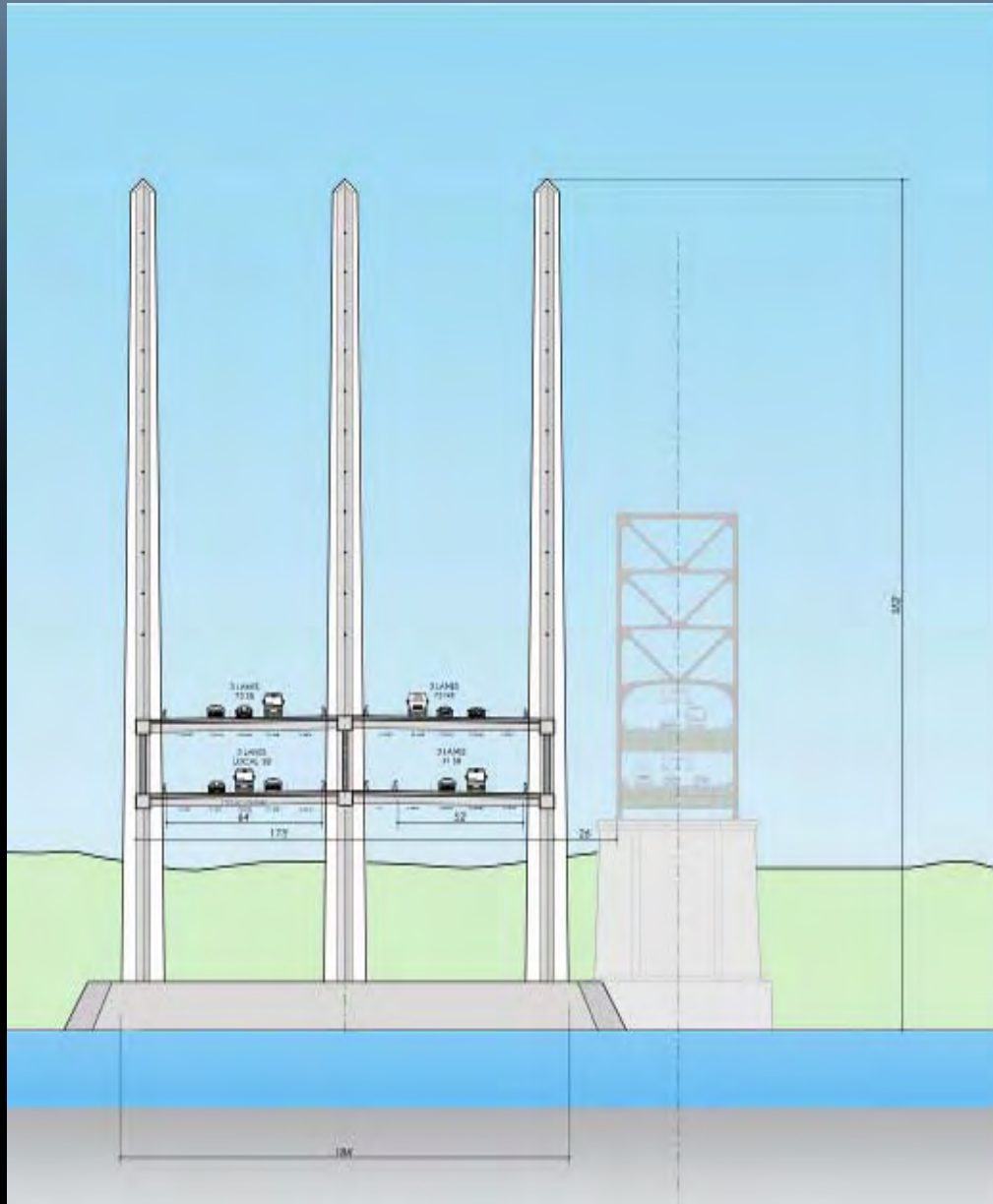
Bridge Type Selection Concept 6



Bridge Type Selection Concept 6



Bridge Type Selection Concept 6



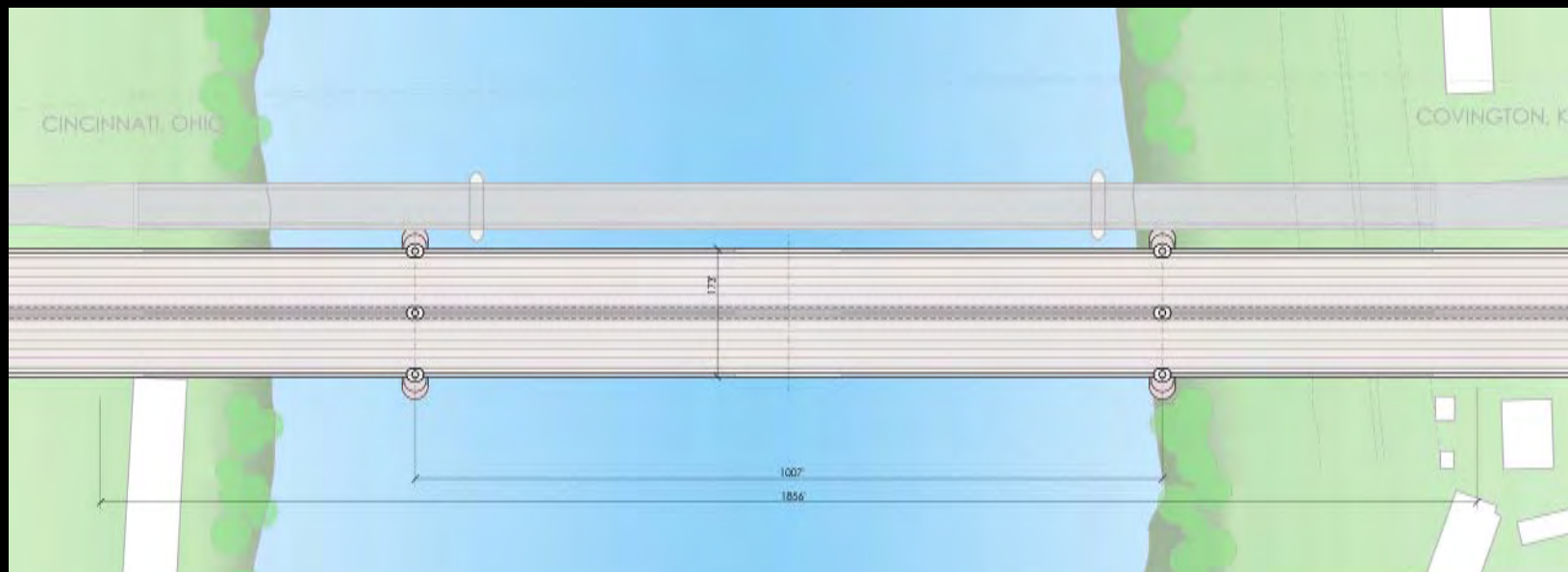
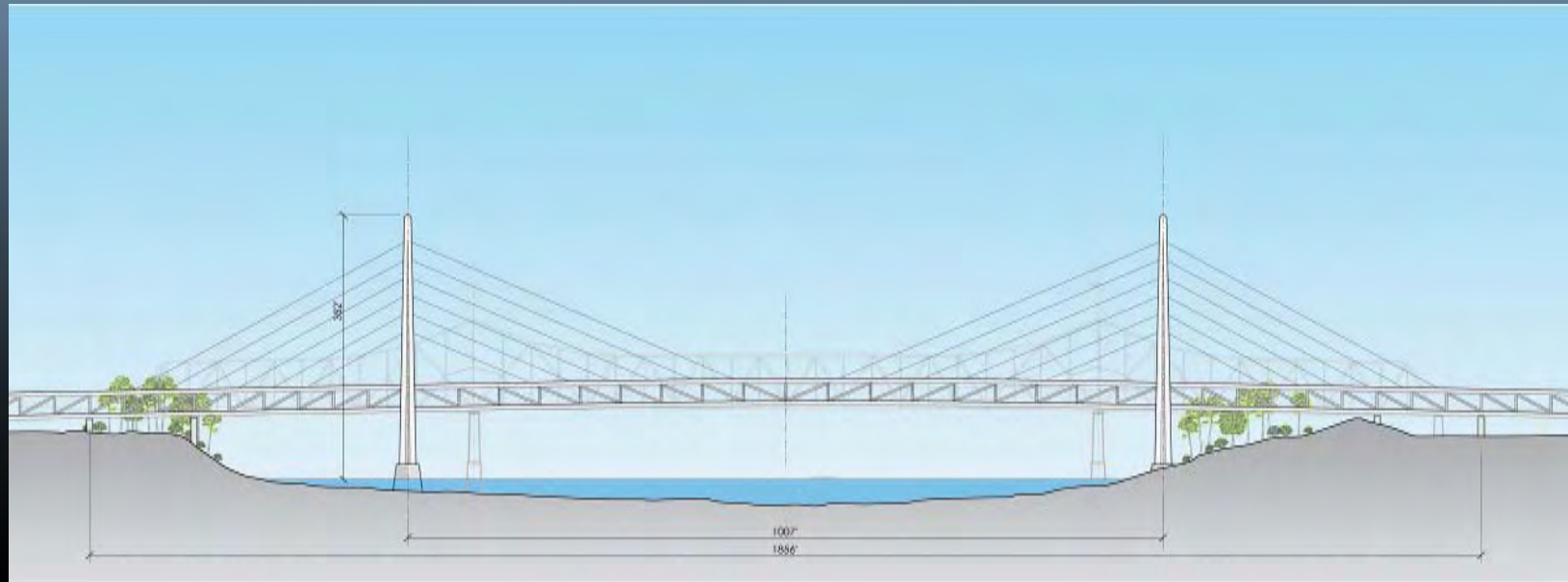
Bridge Type Selection Concept 6



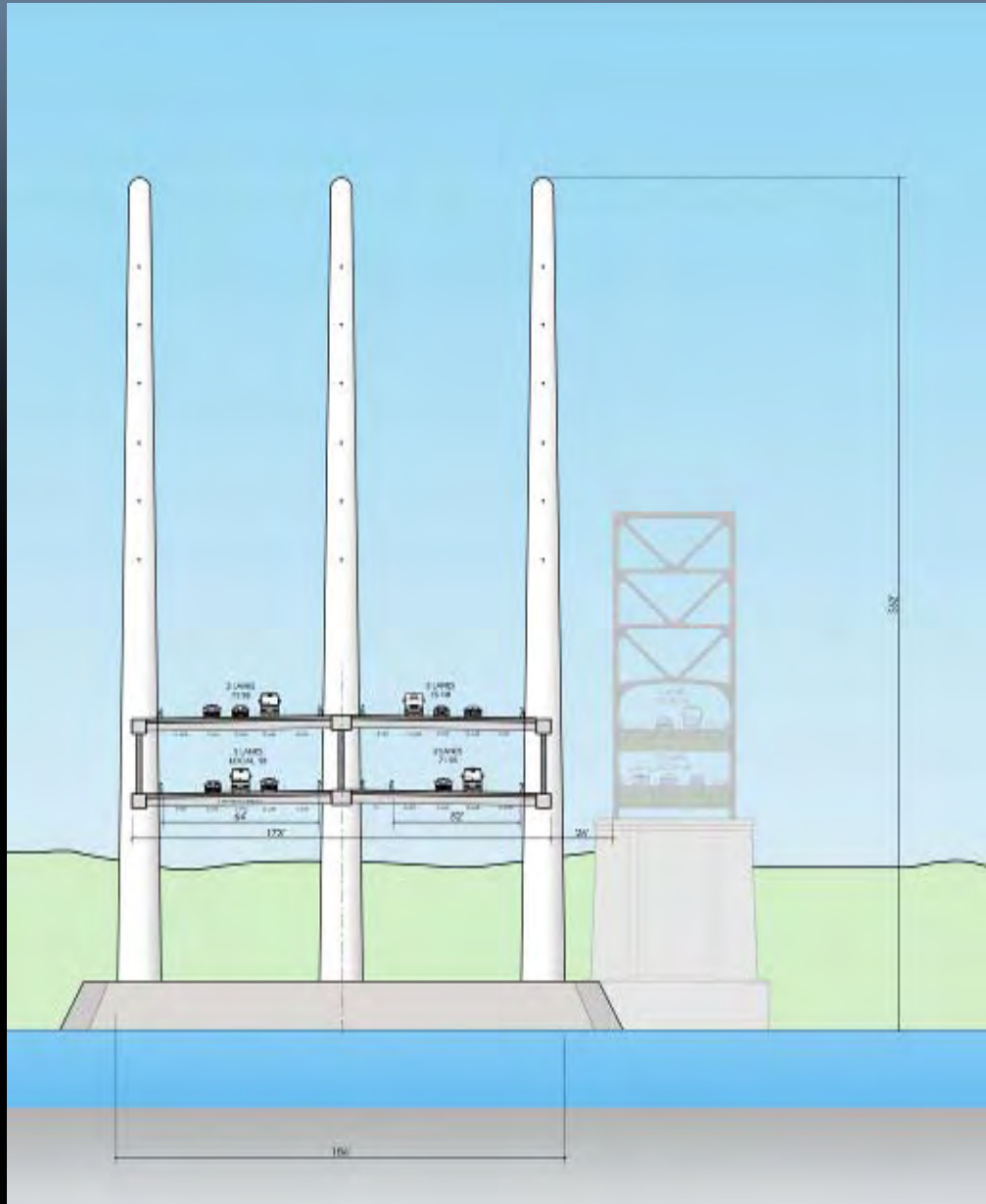
Bridge Type Selection Concept 7



Bridge Type Selection Concept 7



Bridge Type Selection Concept 7



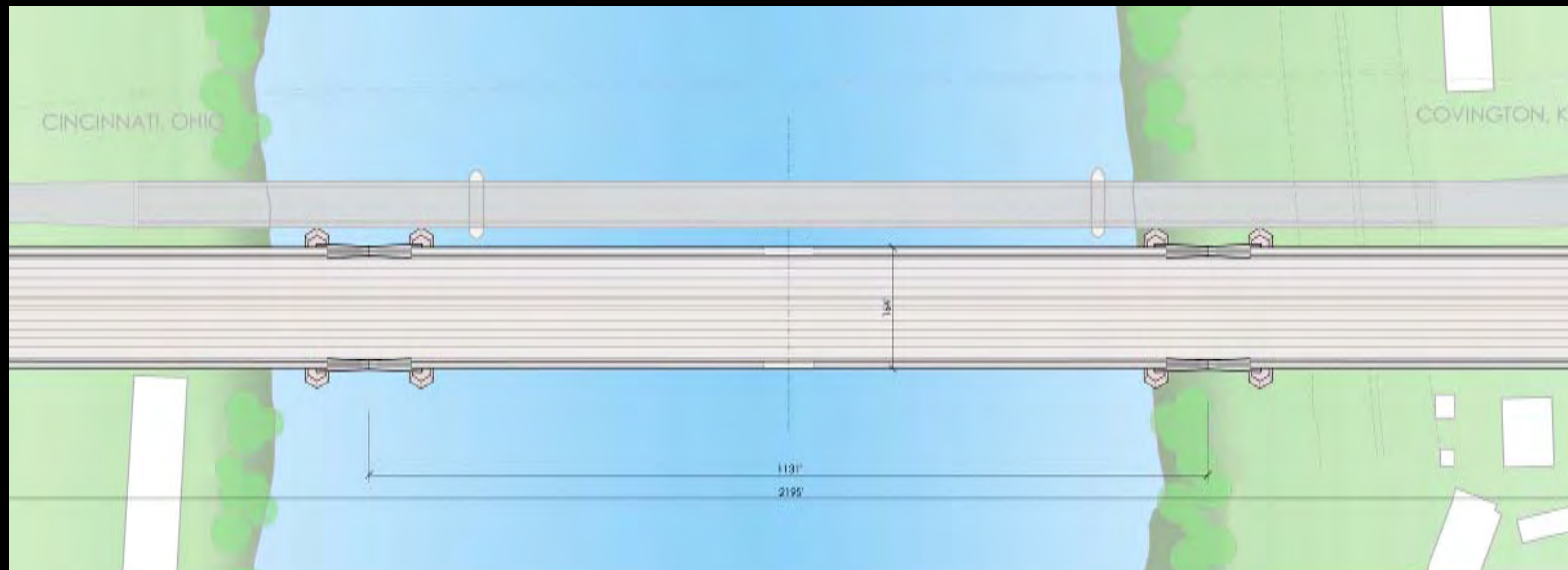
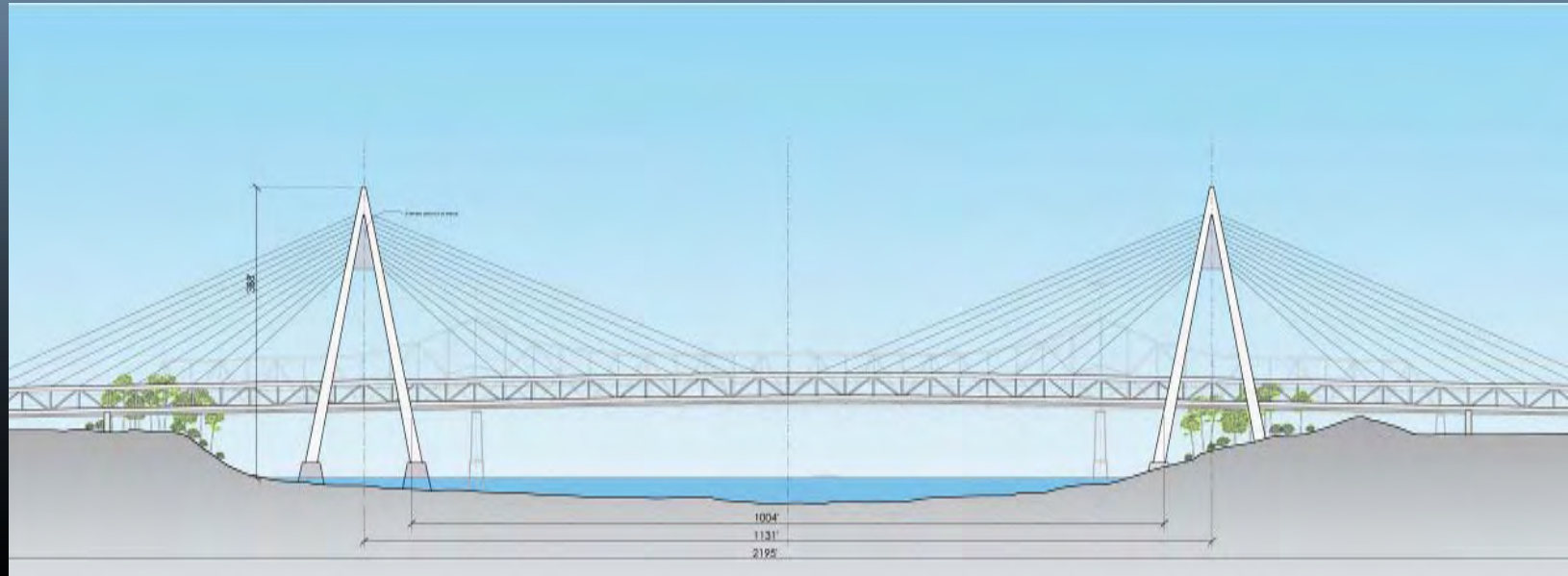
Bridge Type Selection Concept 7



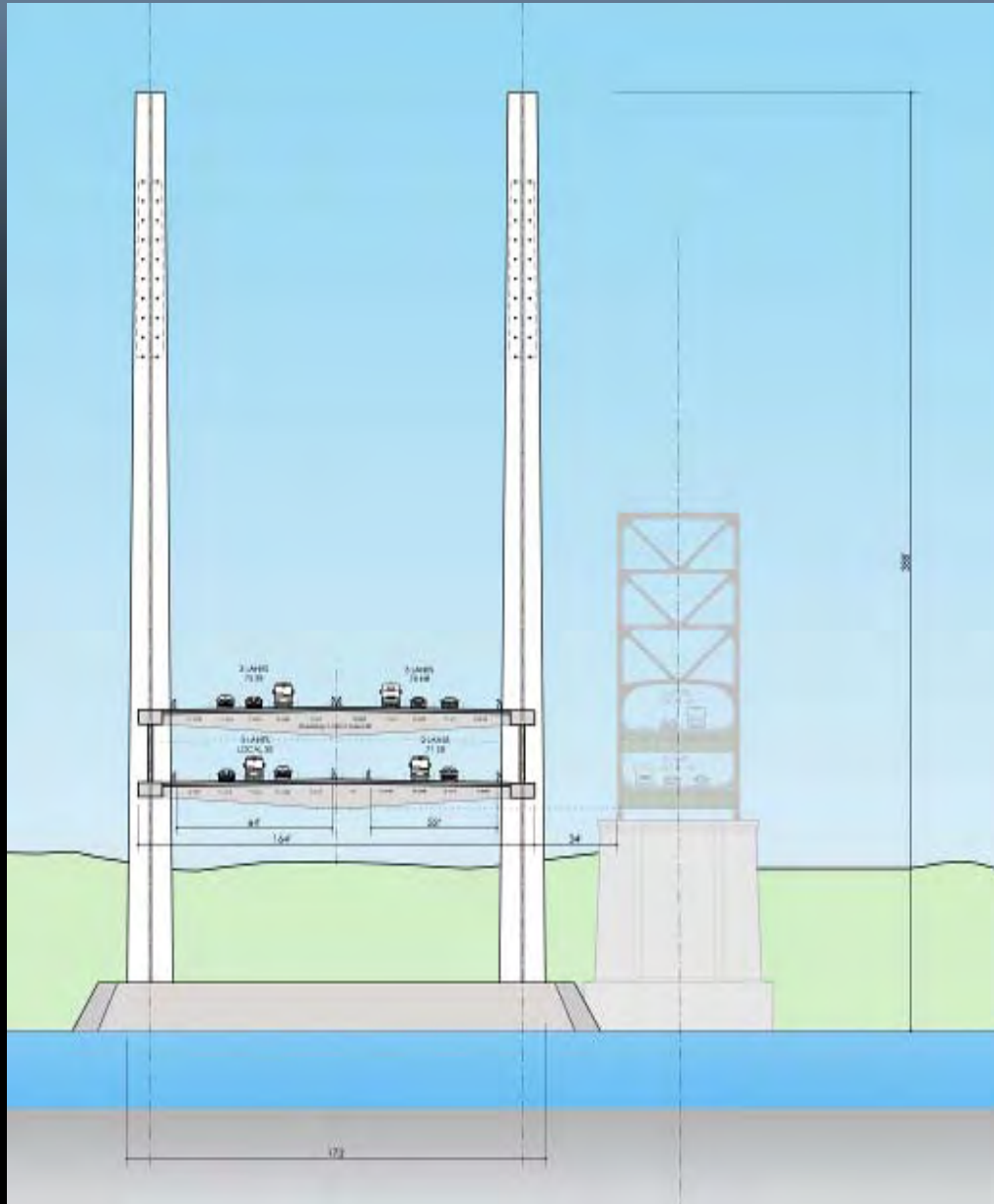
Bridge Type Selection Concept 8



Bridge Type Selection Concept 8



Bridge Type Selection Concept 8



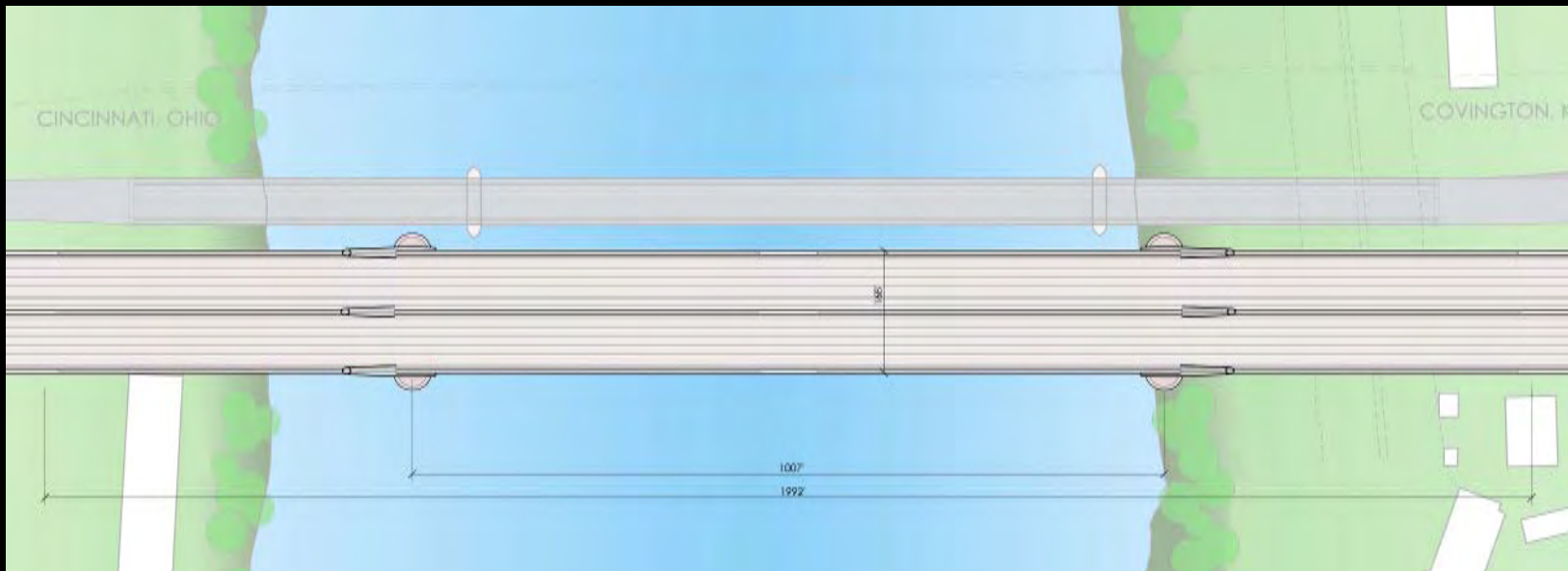
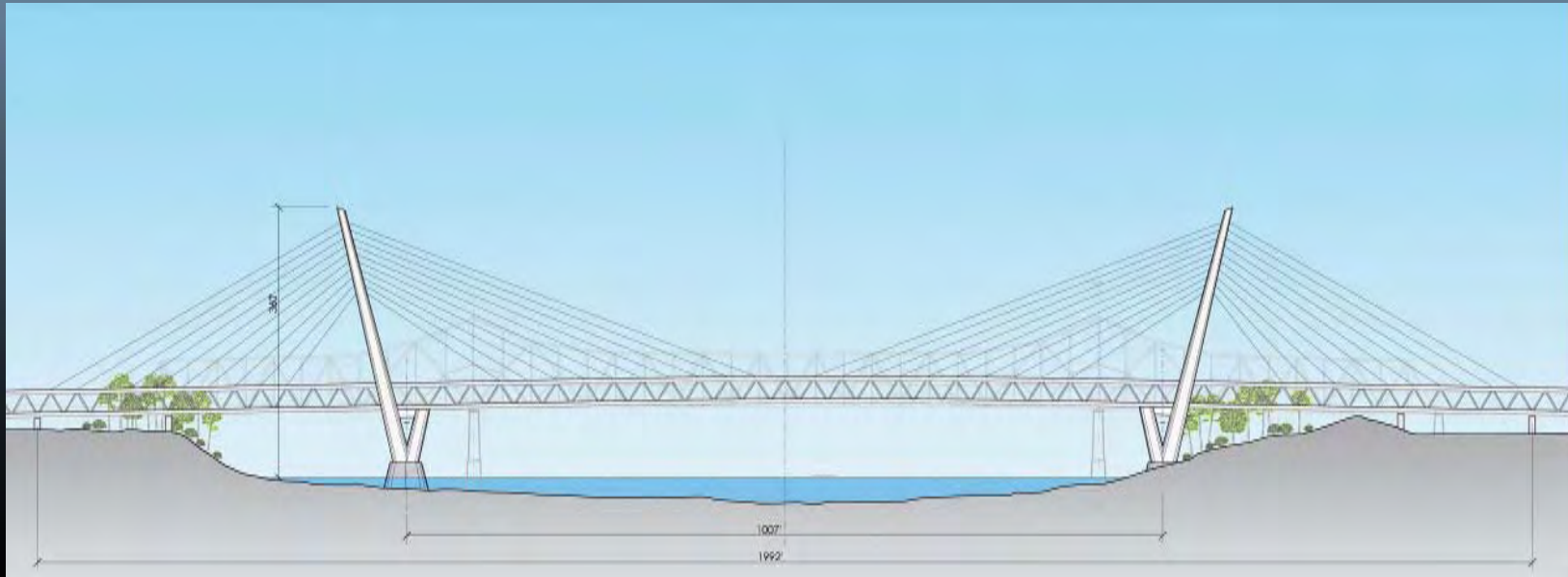
Bridge Type Selection Concept 8



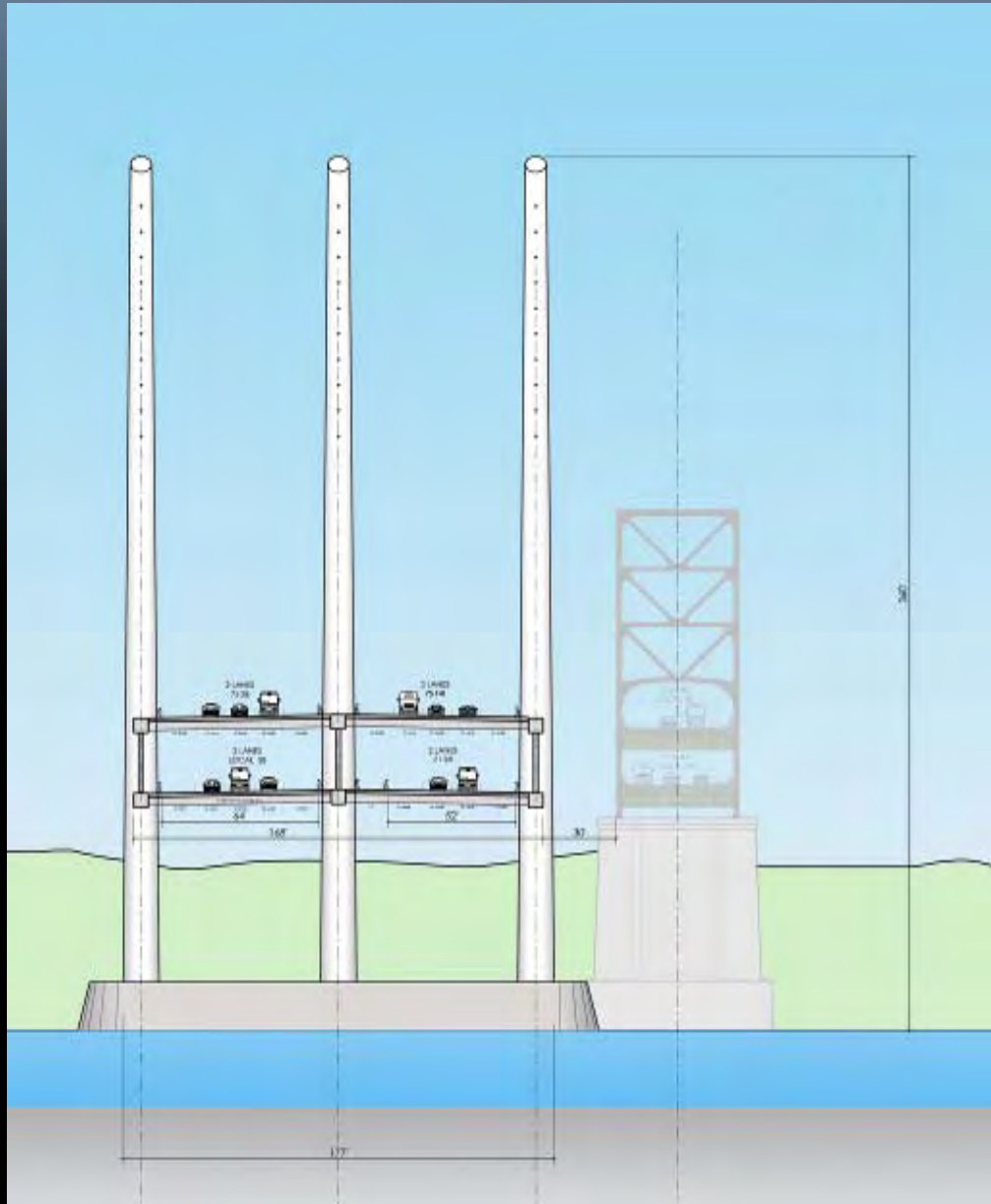
Bridge Type Selection Concept 9



Bridge Type Selection Concept 9



Bridge Type Selection Concept 9



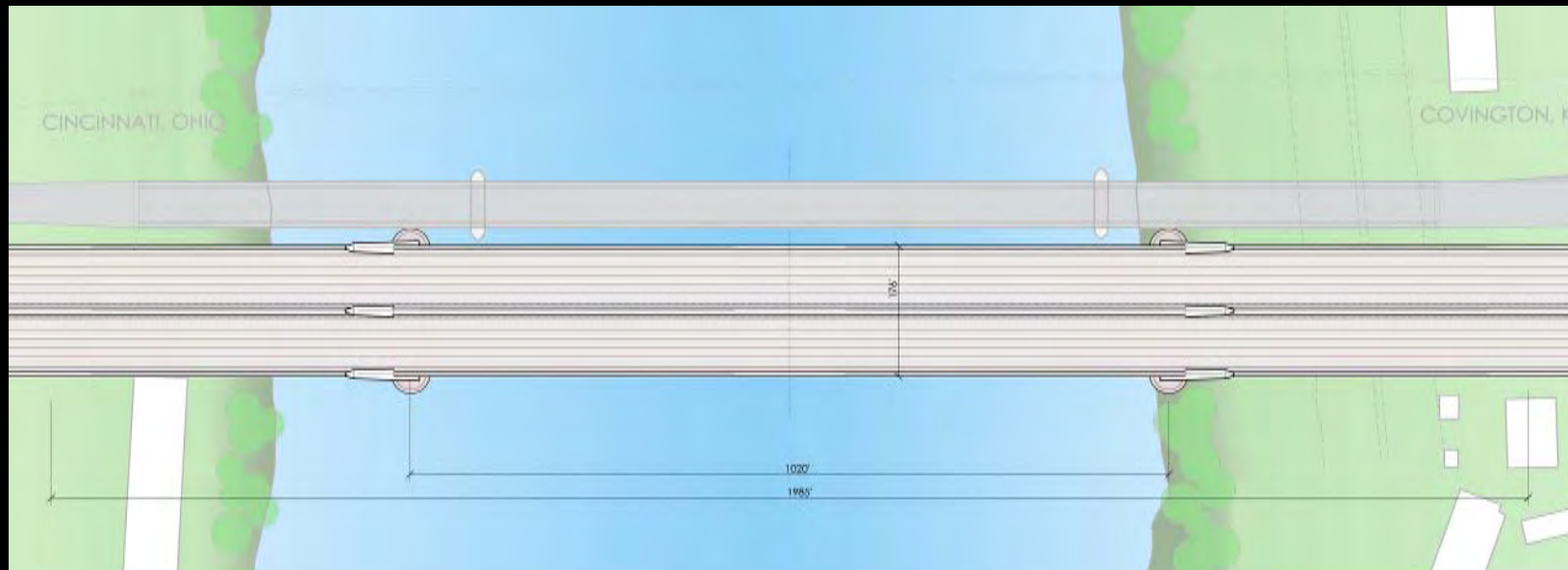
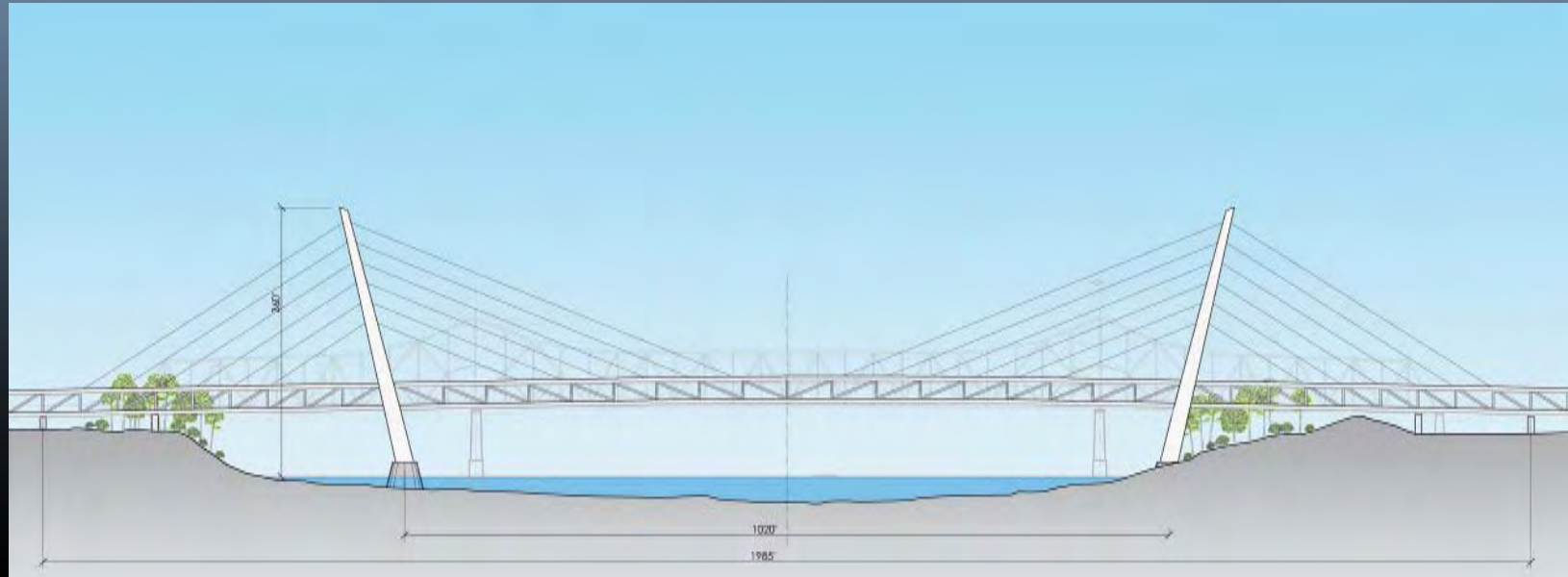
Bridge Type Selection Concept 9



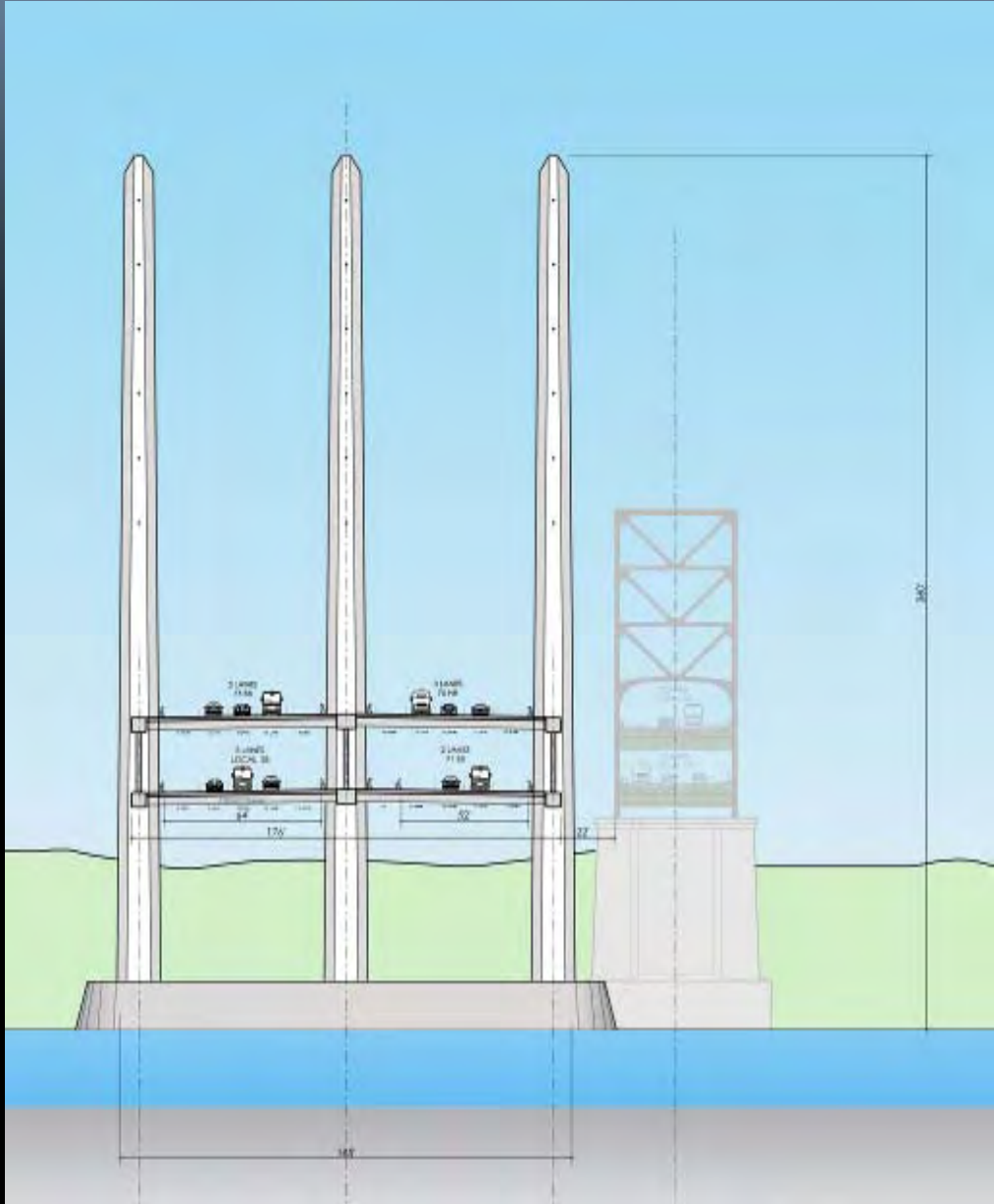
Bridge Type Selection Concept 10



Bridge Type Selection Concept 10



Bridge Type Selection Concept 10



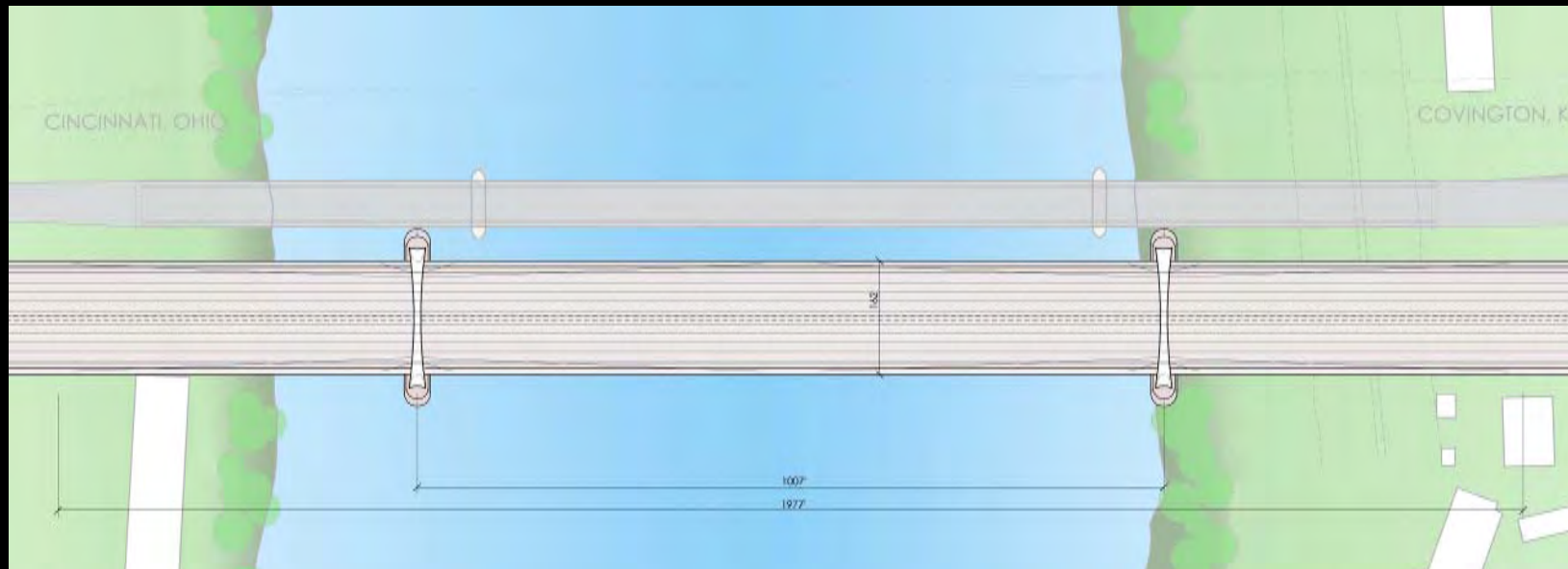
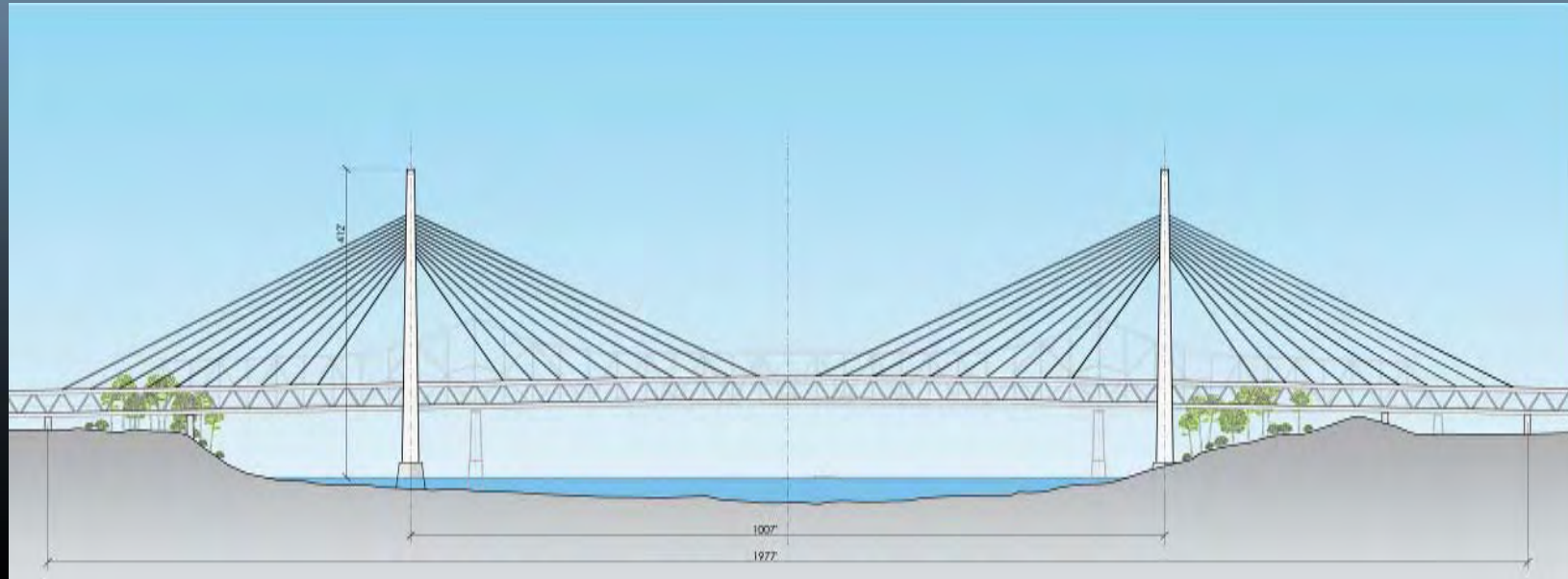
Bridge Type Selection Concept 10



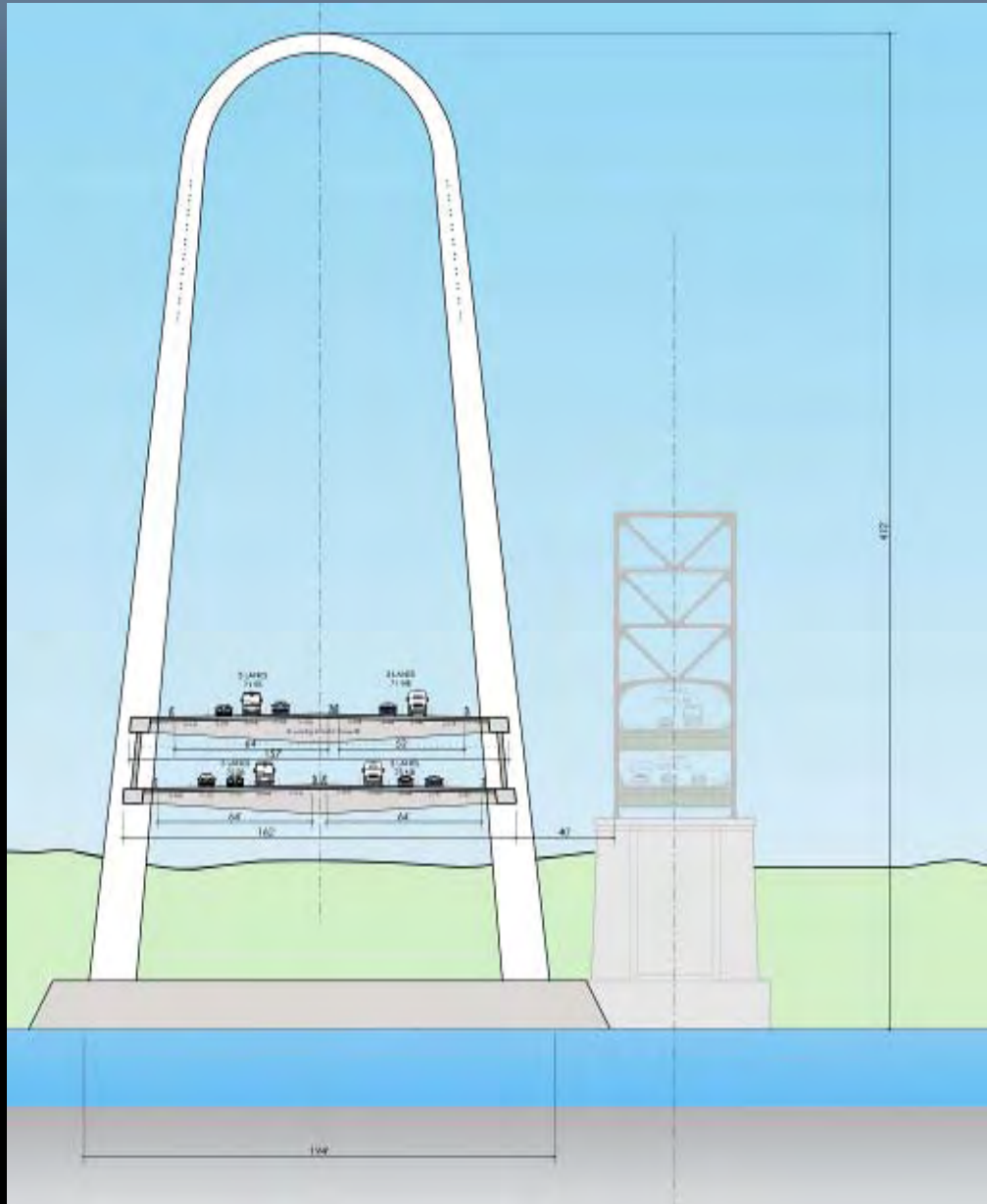
Bridge Type Selection Concept 11



Bridge Type Selection Concept 11



Bridge Type Selection Concept 11



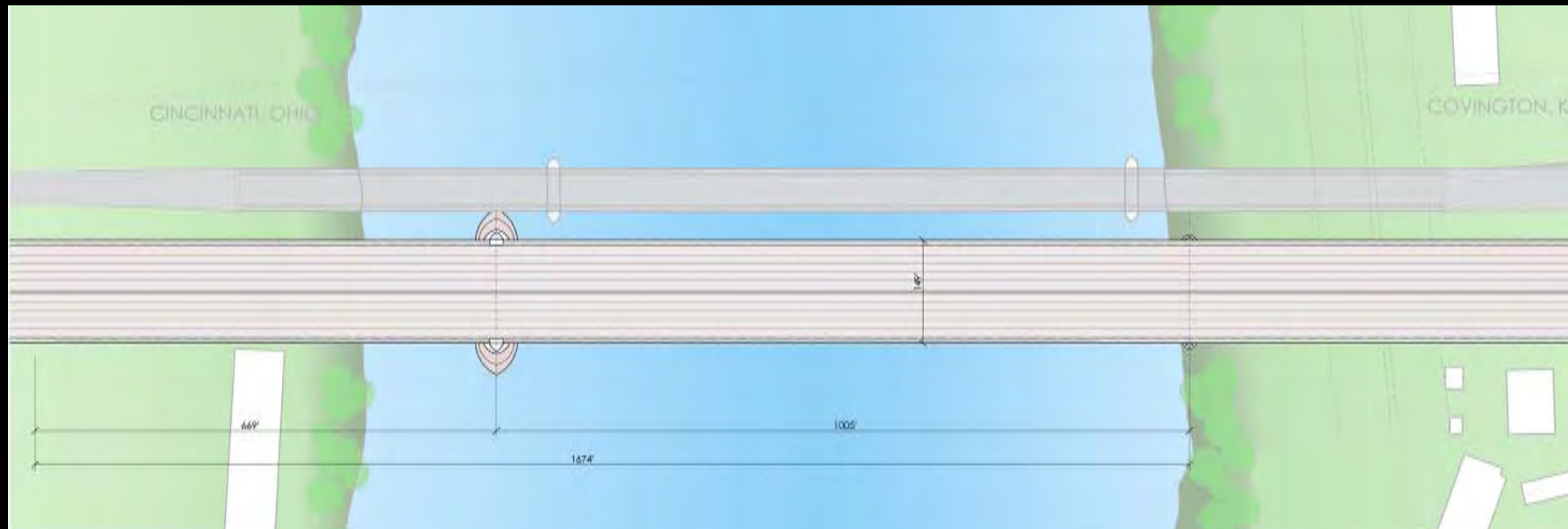
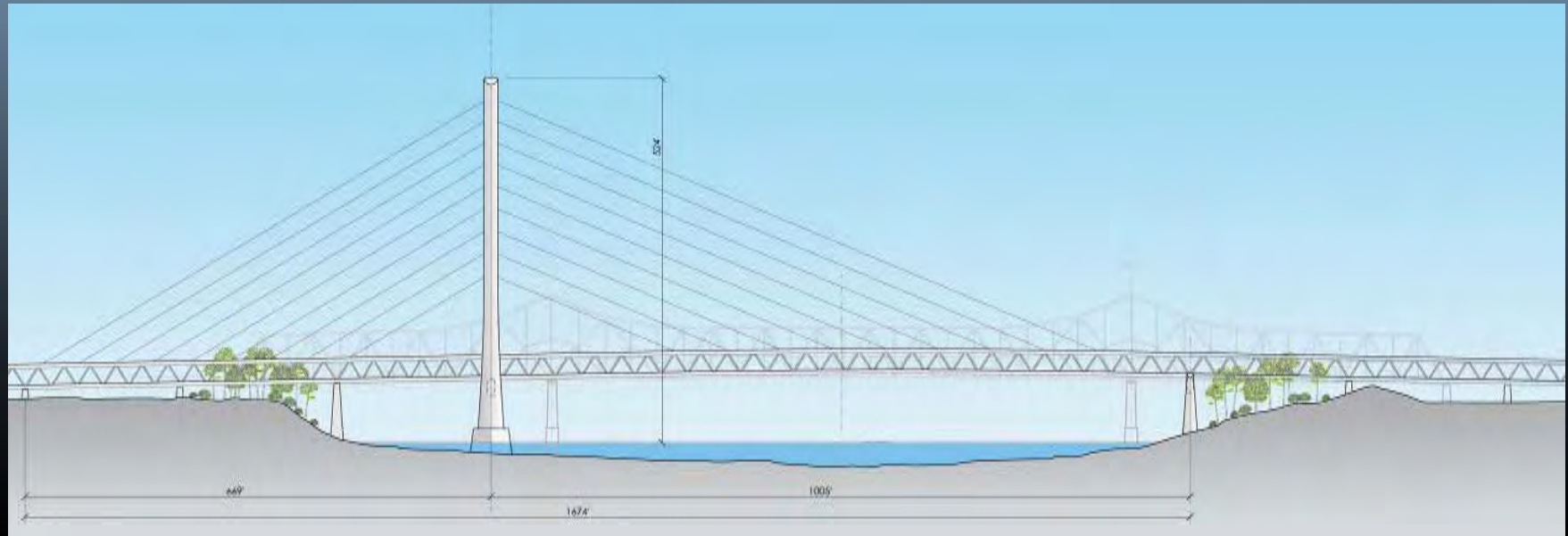
Bridge Type Selection Concept 11



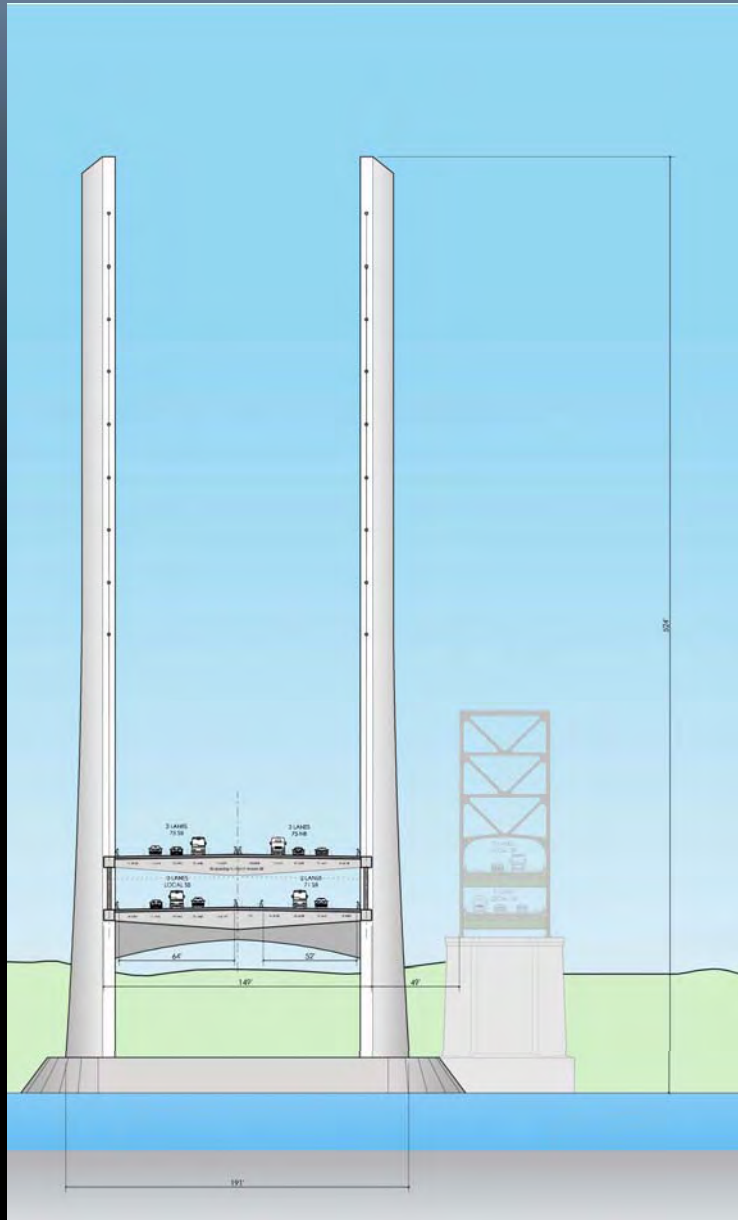
Bridge Type Selection Concept 12



Bridge Type Selection Concept 12



Bridge Type Selection Concept 12



Bridge Type Selection Concept 12



Bridge Type Selection Aesthetic Criteria Table



Key Visual and Aesthetic Criteria					Other Criteria			
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Truss Concepts								
1					Yellow	Green	Yellow	Yellow
2					Green	Yellow	Yellow	Yellow
Arch Concepts								
3					Green	Green	Yellow	Yellow
4					Green	Yellow	Yellow	Yellow
5					Green	Yellow	Yellow	Yellow
Cable-Stayed Concepts								
6					Green	Green	Yellow	Yellow
7					Green	Green	Yellow	Yellow
8					Green	Green	Yellow	Yellow
9					Yellow	Yellow	Yellow	Yellow
10					Yellow	Yellow	Yellow	Yellow
11					Green	Green	Yellow	Yellow
12					Yellow	Yellow	Yellow	Yellow

Bridge Type Selection (BTS) Process Key Dates

- **First PAC BTS Meeting – September 25, 2009**
 - Identify Key Aesthetic Criteria for Development of 18 Preliminary Bridge Concepts
- **Second PAC BTS Meeting – January 29, 2010**
 - Input on Selection of 6 Bridge Type Alternatives
 - **Feedback due by February 5, 2010**
 - **6 Bridge Type Alternatives Selection February 19, 2010**
- **Third PAC BTS Meeting – April 15, 2010**
 - Input on Selection of Final 3 Bridge Alternatives
- **Fourth PAC BTS Meeting – November 2010**
 - Presentation of Final 3 Bridge Alternatives

Feedback



- **Feedback Options**

- Project Website
- Fax
- US Mail

- **Feedback due by February 5, 2010**



Thank You