

BRIDGE TYPE MATRIX

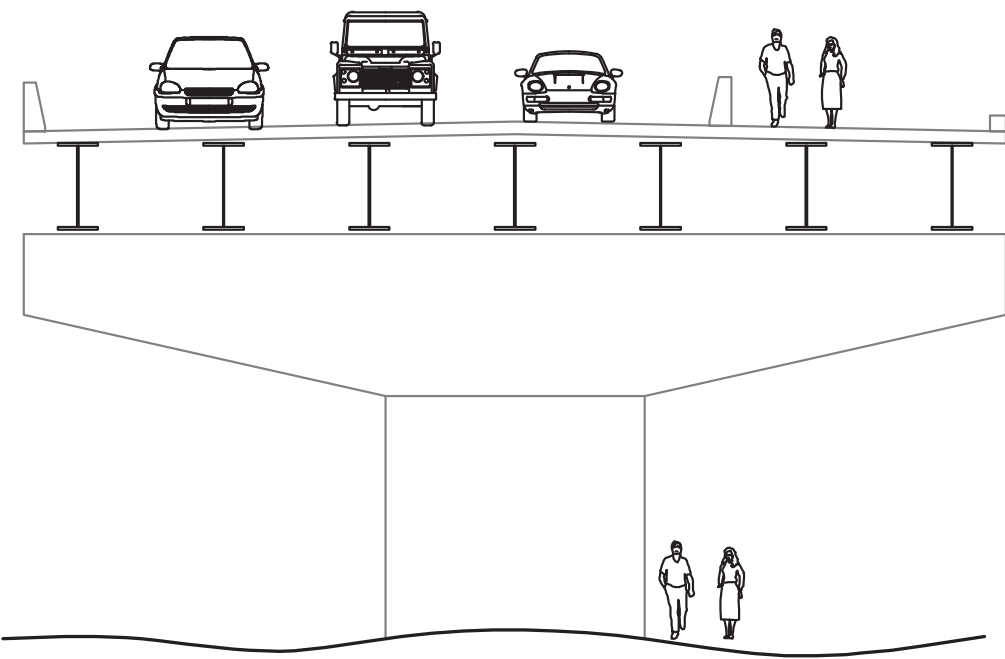
BRIDGE TYPES EVALUATED:

- Concrete Girder**
Up to 140 foot using prestressed I-beams. Only minor roadway curvature attainable.
- Steel Girder**
Up to 250 foot spans using wide flange beams. Spans can be curved.
- Steel Tub Girder**
Up to 350 foot spans using hollow steel tub beams. Spans can be curved.
- Tied Arch**
Up to 400 foot spans suspended by steel cables supported by a steel archway.
- Truss**
Up to 400 foot spans supported by a series of members arranged into triangles.
- Cable**
Up to 1200 foot spans supported by steel cables connected to towers located at each interior support.
- Segmental**
Up to 650 foot spans using hollow concrete box beams. Short segments are incrementally launched from one support. Spans can be curved.

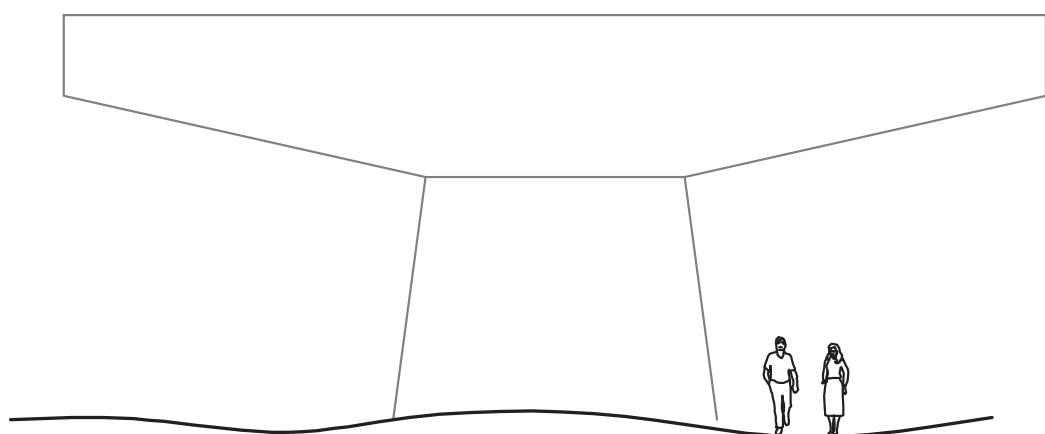
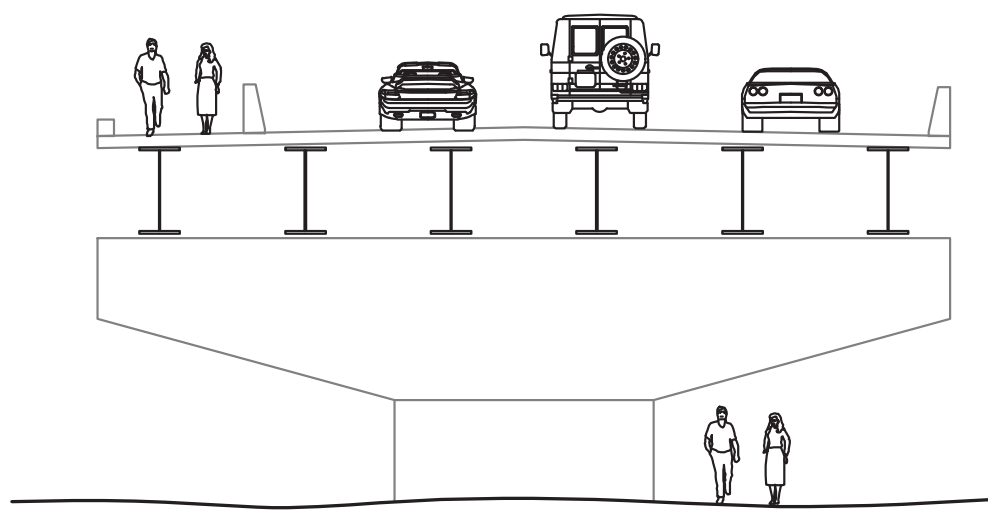
Bridge Type	Max Span (ft)	Example Photo	Price \$/Sqft	Bridge Aesthetics	Environmental	Constructability	Costs	Maintenance	Totals
				- = Poor + = Good	- = More Impacts + = Fewer Impacts	- = Unique + = More Typical	- = High + = Low	- = More Often + = Less Often	
Concrete Girder (Simple)	140	 <i>I-29 Exit 130, Brookings, SD</i>	350-400	-	-	+	+	+	+++
Steel Girder (Continuous)	250	 <i>Kanawha River Bridge, Putnam County, West Virginia (564ft main span)</i>	350-400	-	+	+	+	+	+++++
Steel Tub Girder (Continuous)	350	 <i>Lafayette, Minneapolis, MN (360' Span)</i>	400-550	-	-	+	+	+	+++
Tied Arch	400	 <i>Lower Don Bridge, Toronto, ON</i>	800	+	+	-	-	-	++
Truss	400	 <i>Liberty Bridge, Pittsburgh, PA</i>	800	+	-	-	-	-	+
Cable Bridge	1200	 <i>St. Croix River Crossing, Stillwater, MN</i>	1200	+	+	-	-	-	++
Segmental Bridge	650	 <i>Marc Basnight Bridge, Outer Banks, North Carolina</i>	700	+	-	+	-	+	+++

BRIDGE SUBSTRUCTURES

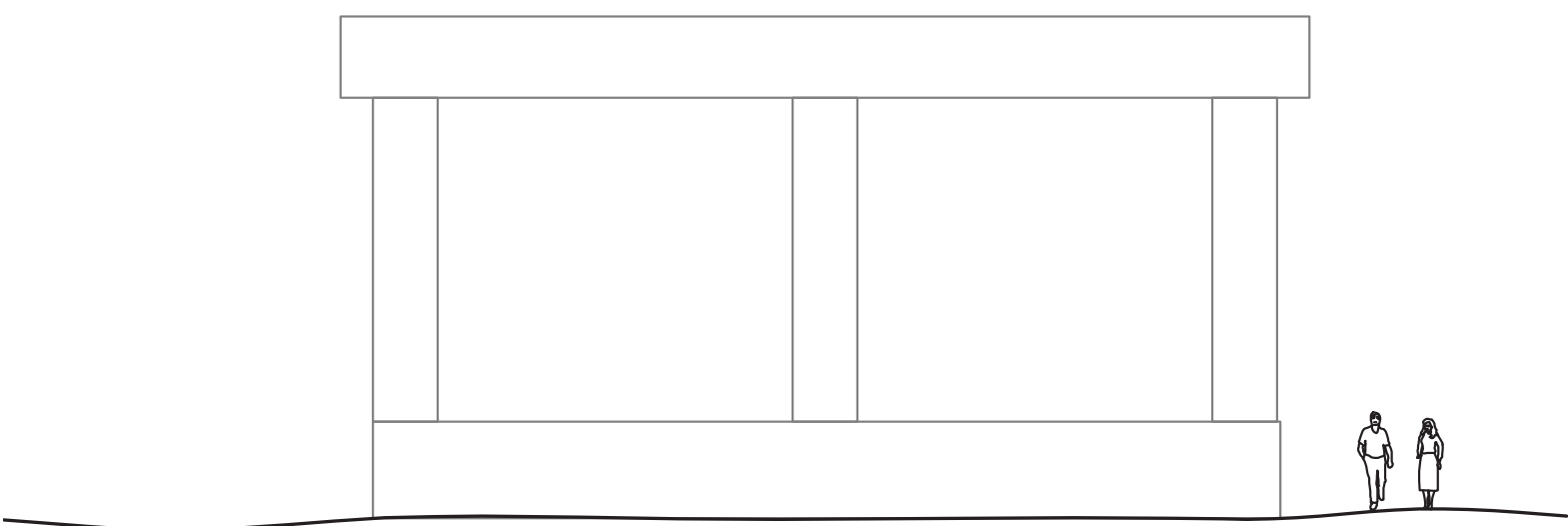
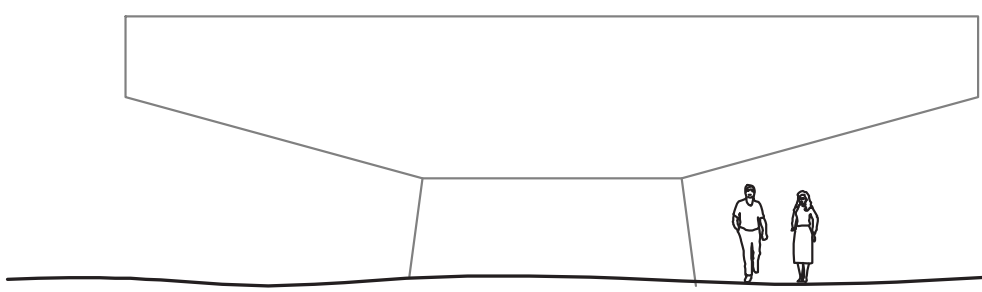
TYPICAL PIER TYPES



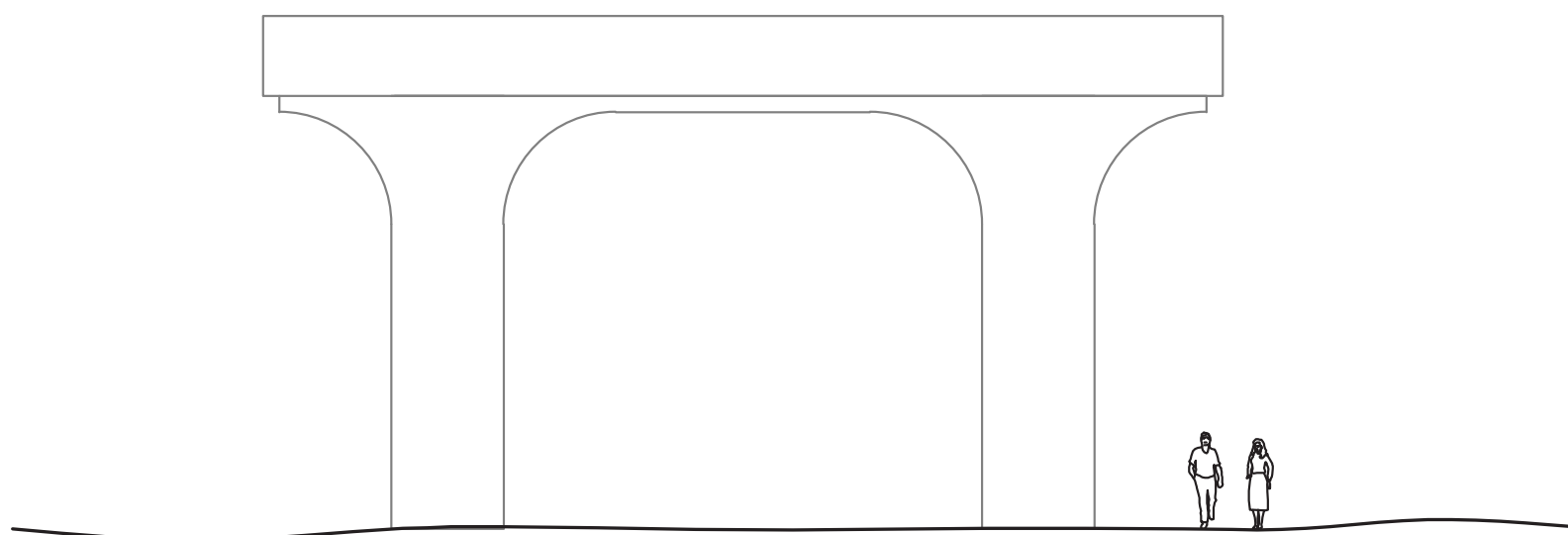
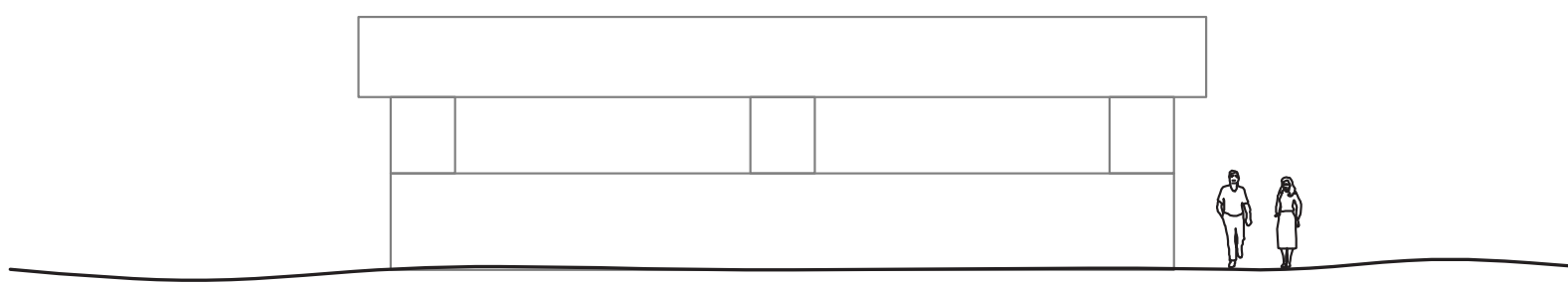
Hammerhead



Hammerhead with sloped Column

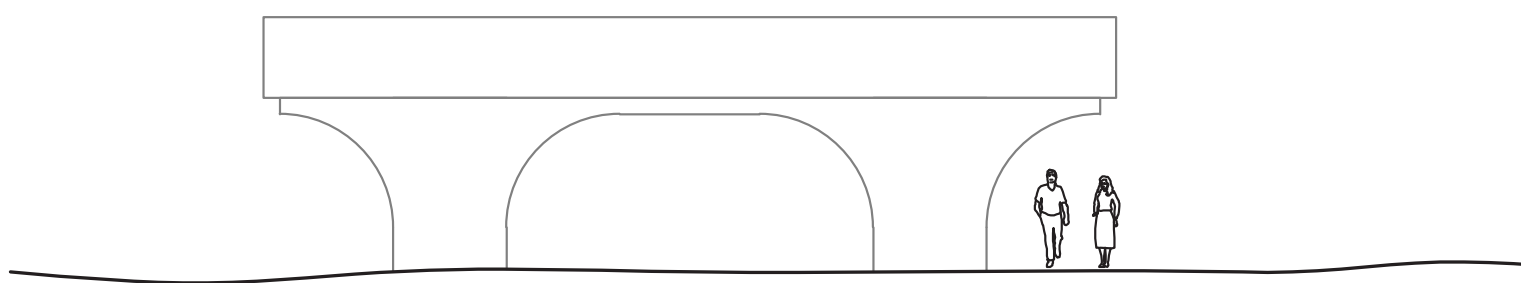


Multi Column



ELEVATION
(Showing Tall Piers)

Two Column



ELEVATION
(Showing Short Piers)

DESIGN OBJECTIVES

- Utilize traditional materials in unique ways
- Achieve structural requirements
- Blend with downtown theme

EXISTING PIERS



BRIDGE ENHANCEMENT ELEMENTS



HISTORICAL BRIDGE ELEMENTS

Tying new construction into the historic theme of downtown with simple elements such as railings, shapes, and lighting.



TEXTURES

Different texture types are attainable by use of concrete form liners.



BRIDGE PIER ENHANCEMENTS

The use of different shapes, form liners, and colors can enhance overall appearances.



BRIDGE FACIA TREATMENTS

The use of facia panels and faux arches can achieve an historic look with minimal cost.



BRIDGE ENHANCEMENT ELEMENTS



RAILINGS

The use of different materials, shapes, and colors can greatly enhance the pedestrian experience. Low maintenance and high durability are design objectives.



LIGHTING

Lighting can add character and enhance appearances and safety during nighttime hours. Reliability and ease of maintenance are design objectives.



PLACEMAKING OPPORTUNITIES

Enhancing the spaces below the structures can bring new life to the downtown community, while enhancing site security.

