ABC Innovative Projects

Fremont Bridge					
Location	I-405 / US 30 over the Willamette River in the city of Portland in Multnomah County				
State	Oregon				
Owner	State				
Year ABC Built	1973				
State ID #	02529				
NBI #	02529				
Coordinates	***Latitude:*** Restricted		***Longitude:*** Restricted		
Contact Person	Bruce V. Johnson, P.E. State Bridge Engineer Oregon Department of Transportation Phone: 503-986-3344 Email: bruce.v.johnson@odot.state.or.us				
Mobility Impact Time	***ABC:***		***Conventional:***		
Impact Category	*Tier 1*	*Tier 2*	*Tier 3*	*Tier 4*	***Tier 5***
					X
Primary Driver(s)	• reduced onsite construction time • improved site constructability • minimized environmental impacts • reduced traffic impacts – least impact on navigational traffic • reduced life-cycle cost – least cost to build • improved work-zone safety – reduced worker exposure over waterway				
Description	• 2,152-ft-long, three-span continuous, semi-through steel tied arch main structure (451.83 ft side deck arch span – 1,255 ft drop-in tied arch center span (ABC) – 451.83 ft side deck arch span); 6,000-ton drop-in tied arch raised 175 ft into place • Urban location • Average Daily Traffic count: not available • Traffic management alternative, if constructed conventionally: not available ***New Bridge:*** The bridge has an upper and lower deck, each carrying four 12-ft-wide traffic lanes and two 10-ft-wide shoulders. The cross-section consists of a steel tied arch welded box girder supporting an orthotropic steel upper deck and a concrete lower deck system. The concrete piers were on concrete footings founded on deep foundations. ***Construction Methods:*** The arch span was built in California and floated 1.7 miles downstream of the bridge site at Swan Island, where it was assembled. It was then floated on barges to the bridge site and lifted into position using strand jacks. This construction method was selected to minimize cost and the impact on navigation. ***Stakeholder Feedback*:** This is a proven and common construction method for prefabricated long-span bridges over navigable waterways. Floating a fully erected span accelerates the construction				

<table>
<tr><td></td><td colspan="5">schedule and reduces the workers' exposure over the waterway, thus increases workers' safety. It also reduces the window time of the river closure and impact to shipping traffic.</td></tr>
<tr><td>High Performance Materials</td><td colspan="5">•</td></tr>
<tr><td>Photos

Additional photos</td><td colspan="5">    </td></tr>
<tr><td rowspan="2">Project Planning</td><td>Decision-Making Tools</td><td>Site Procurement</td><td colspan="2">Procurement</td><td>Contracting</td></tr>
<tr><td>• State Process</td><td>•</td><td colspan="2">• Design-bid-build</td><td>• Full lane closure</td></tr>
<tr><td rowspan="2">Geotechnical Solutions</td><td colspan="3">Foundations & Walls</td><td colspan="2">Rapid Embankment</td></tr>
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<tr><td rowspan="2">Structural Solutions</td><td colspan="3">Prefabricated Bridge Elements & Systems</td><td colspan="2">Construction</td></tr>
<tr><td>Elements</td><td>Systems</td><td>Miscellaneous</td><td colspan="2">• Strand jacks
• Float in</td></tr>
<tr><td></td><td>• Orthotropic deck</td><td>• Arch span with deck</td><td>•</td><td colspan="2"></td></tr>
<tr><td>Costs</td><td colspan="5">Insufficient records to reconstruct exact cost information. Published record listed $82 million as the total cost, but the main structure alone is about half that amount. In 1973, the bridge cost per sq ft was under $140.</td></tr>
<tr><td rowspan="2">Funding</td><td>Federal only</td><td>State only</td><td colspan="2">Federal and State</td><td>Other</td></tr>
<tr><td></td><td></td><td colspan="2">X</td><td></td></tr>
<tr><td rowspan="2">Incentive Program ($)</td><td>Highways for LIFE</td><td>IBRD</td><td colspan="2">SHRP2</td><td>Other</td></tr>
<tr><td></td><td></td><td colspan="2"></td><td></td></tr>
<tr><td>Contract Plans</td><td colspan="2">Complete Set: Not available.</td><td colspan="3">ABC *:</td></tr>
<tr><td>Specifications</td><td colspan="2">Complete Set: Not available.</td><td colspan="3">ABC *:</td></tr>
<tr><td>Bid Tabs</td><td colspan="5">Not available.</td></tr>
<tr><td>Schedule</td><td colspan="3">Engineer's: Not available.</td><td colspan="2">Actual:</td></tr>
<tr><td>Other Related Information</td><td colspan="5">ODOT Bridge Engineering Website [http://www.oregon.gov/ODOT/HWY/BRIDGE/]</td></tr>
<tr><td>Photo Credits</td><td colspan="5">Oregon Department of Transportation</td></tr>
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* Specific to the ABC used in the project.