

ABC Innovative Projects

I-70 / Lake St. Louis Boulevard Bridge					
Location	Over I-70 in St. Charles County, about 3.4 miles east of Route 61				
State	Missouri				
Owner	State				
Year ABC Built	2003				
State ID #	A7043				
Federal ID #	I-70-4(148)				
Coordinates	Latitude:	38.803982	Longitude:	-90.770738	
Contact Person	Dennis Heckman, P.E. State Bridge Engineer Missouri Department of Transportation Phone: 573-751-4676 Email: dennis.heckman@modot.mo.gov				
Mobility Impact Time	ABC:	three months	Conventional:	6-9 months of construction with major interstate traffic impacts	
Impact Category	<i>Tier 1</i>	<i>Tier 2</i>	<i>Tier 3</i>	Tier 4	<i>Tier 5</i>
				X	
Benefits	reduced traffic impacts, improved work-zone safety, improved site constructability				
Description	<ul style="list-style-type: none"> • 134-ft long and 84-ft wide two-span (67 ft - 67 ft) adjacent box beam bridge • Urban location • Average Daily Traffic count: not available • Traffic management alternative, if constructed conventionally: extended detour <p>Existing Bridge: The existing two-lane, four-span (50 ft - 59 ft - 58 ft - 50 ft) continuous concrete voided slab bridge was 217-ft-long and 31-ft-wide. Built in 1964, it needed to be widened to reduce congestion.</p> <p>Replacement Bridge: The replacement bridge has four 12-ft-wide traffic lanes, two 10.67-ft-wide shoulders on each side, and a 12-ft-wide turn lane in the center. The cross-section consists of 21 four-ft-wide and 27-inch-deep pretensioned adjacent box beams with 5.5-inch-thick cast-in-place concrete composite deck.</p> <p>Construction Methods: MODOT accepted a contractor's value-engineering proposal to rebuild the bridge using prefabrication instead of widening the existing structure. The new bridge used pretensioned adjacent box beams and MSE wall abutments with steel H-piles. The prefabrication allowed a design with two spans rather than the existing four spans.</p> <p>Stakeholder Feedback: Although costs increased, the contractor's proposal offered both short- and long-term benefits. The new design had fewer spans, improving the geometrics of the interchange and increasing its safety and efficiency. Fewer spans also result in lower maintenance costs. By eliminating the need for formwork, which was required for widening the existing bridge in place but would have reduced clearance on IH70, the value-</p>				

	<p>engineering proposal using prefabrication improved work zone safety by reducing the amount of time workers had to operate in low-clearance conditions. With prefabrication facilitating faster construction, bridge users were spared several months of inconvenience, and IH70 users were spared a period of reduced vertical clearance. Motorist safety increased because falsework towers were not needed in the outside shoulders. In addition, the new structure is more aesthetically appealing.</p> <p>2011 Update: MoDOT is seeing an accelerated rate of deterioration at the ends of the adjacent box beams at the intermediate bent. They believe it is due to some ponding on the deck above, which has had extensive cracking.</p>			
High Performance Materials	<ul style="list-style-type: none"> • none 			
Photos	Not available.			
Project Planning	<i>Decision-Making Tools</i>	<i>Site Procurement</i>	Project Delivery	Contracting
	•	•	• Design-bid-build	• VE
Geotechnical Solutions	<i>Foundations & Walls</i>		<i>Rapid Embankment</i>	
	•		•	
Structural Solutions	Prefabricated Bridge Elements & Systems			<i>Construction</i>
	Elements	<i>Systems</i>	Miscellaneous	•
	<ul style="list-style-type: none"> • Adjacent box beams • MSE walls 	•	• Grouted keys	
Costs	Not available.			
Funding	<i>Federal only</i>	<i>State only</i>	<i>Federal and State</i>	<i>Other</i>
Incentive Program (\$)	<i>Highways for LIFE</i>	<i>IBRD</i>	<i>SHRP2</i>	<i>Other</i>
Contract Plans	Complete Set:	Contract Plans [link to pdf]	ABC *:	
Specifications	Complete Set:	Not available.	ABC *:	Not available.
Bid Tabs	Not available.			
Schedule	Engineer's:	Not available.	Actual:	Not available.
Other Related Information				
Photo Credits	Missouri Department of Transportation			

* Specific to the ABC used in the project.