


ABC Innovative Projects

I-10 Bridge over Lake Pontchartrain (original Twin Spans)					
Location	on I-10 over Lake Pontchartrain in southern Louisiana between the cities of New Orleans and Slidell				
State	Louisiana				
Owner	State				
Year ABC Built	2002				
State ID #					
NBI #					
Coordinates	Latitude:		Longitude:		
Contact Person	Artur D'Andrea, P.E. Assistant Bridge Engineer Louisiana Department of Transportation and Development Phone: 225-379-1319 Email: Arthur.DAndrea@la.gov				
Mobility Impact Time	ABC: less than 24 hours		Conventional:		
Impact Category	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5
	X				
Primary Driver(s)	<ul style="list-style-type: none"> • reduced traffic impacts – prefabrication enabled LaDOTD to minimize closure of I-10, the main artery into New Orleans and the Gulf coast • reduced onsite construction time • minimized environmental impacts • improved constructability – prefabrication enabled the contractor to complete the work on the span in less than 24 hours 				
Description	<ul style="list-style-type: none"> • 65-ft-long and 45.5-ft-wide prestressed concrete girder bridge span; 300-ton self-weight • Urban location • Average Daily Traffic count: 48,000 • Traffic management alternative, if constructed conventionally: the designated alternate detour for westbound traffic to New Orleans was approximately 100 miles <p>Existing Bridge: The replacement span was part of the original two-lane westbound I-10 Twin Spans that consisted of 433 spans that were each 65 ft long with a typical 8.5-ft vertical clearance above lake level. Completed in 1965, the bridge cross-section consisted of six AASHTO Type III girders at 7.58-ft-spacing, with a 7.5-inch-thick composite concrete deck. The Louisiana Department of Transportation and Development (LaDOTD) removed and replaced existing Span #232L as part of a project that included construction of several emergency crossovers between existing twin spans, realignment of nine existing spans, and replacement of end spans and approach slabs. The replacement span consisted of girders and deck identical to the damaged span.</p> <p>The original Twin Spans were damaged during Hurricane Katrina in 2005 and required significant repair. Because the bridge was vulnerable to storm surge due in large part to its low clearance, the LaDOTD built new higher and wider Twin Spans which opened in 2009-2010. The original Twin Spans were closed to traffic in 2010.</p>				

	<p>Construction Methods: Prior to beginning the span removal, the replacement span complete with diaphragms, deck, and railing was required to be on a nearby barge ready for lifting into place. The new span was prefabricated on a barge on the north shore of Lake Pontchartrain and then moved to the bridge site.</p> <p>The contract required the damaged span to be removed with no debris from the span removal allowed to fall into Lake Pontchartrain. The contractor removed the damaged span and erected the new span with a barge-mounted crane. The closure joints at the ends of the span were then cast.</p> <p>The contract required that all work to complete the removal and replacement of the span be accomplished on a Saturday within 24 consecutive hours. The contract included an incentive of \$5,000 for every hour the westbound bridge was closed less than 24 hours, up to a maximum of \$20,000. It also included a disincentive of \$5,000 for every hour greater than 24 hours the westbound bridge remained closed to traffic, with no maximum. The contractor completed the work on the span in less than 24 hours and earned the maximum \$20,000 incentive award.</p>			
High Performance Materials	<ul style="list-style-type: none"> • 			
Photos				
Project Planning	<i>Decision-Making Tools</i> <ul style="list-style-type: none"> • 	<i>Site Procurement</i> <ul style="list-style-type: none"> • 	<i>Procurement</i> <ul style="list-style-type: none"> • Design-bid-build 	<i>Contracting</i> <ul style="list-style-type: none"> • Full lane closure • Incentive / disincentive clauses
Geotechnical Solutions	<i>Foundations & Walls</i> <ul style="list-style-type: none"> • 		<i>Rapid Embankment</i> <ul style="list-style-type: none"> • 	
Structural Solutions	<i>Prefabricated Bridge Elements & Systems</i>			<i>Construction</i> <ul style="list-style-type: none"> •
	<i>Elements</i> <ul style="list-style-type: none"> • 	<i>Systems</i> <ul style="list-style-type: none"> • Full-width decked beam unit (FDcBc) 	<i>Miscellaneous</i> <ul style="list-style-type: none"> • CIP reinforced concrete closure joints 	
Costs	<p>The engineer's estimate for this project was \$3.42 million. The low bid was \$3.50 million (\$81,000 = 2.4% higher than engineer's estimate). There were two bidders. The cost per square foot of bridge was about \$130 compared to about \$70 for conventional construction in this region in 2002. This cost is based on comparison for the single span removal and replacement; no user cost is included in the conventional construction cost number.</p> <p>The single-span removal and replacement cost about 11% of the total project cost under this contract.</p>			
Funding	<i>Federal only</i>	<i>State only</i>	<i>Federal and State</i> X	<i>Other</i>

Incentive Program (\$)	<i>Highways for LIFE</i>	<i>IBRD</i>	<i>SHRP2</i>	<i>Other</i>
Contract Plans	Complete Set:		ABC *: Superstructure Plans (link to pdf)	
Specifications	Complete Set:		ABC *: Special Provisions (link to pdf)	
Bid Tabs	Not available.			
Schedule	Engineer's:	Not available.	Actual:	
Other Related Information	June 2004 AASHTO TIG / FHWA Prefabricated Bridges 2004: Good Business – Best Practice (link to pdf)			
Photo Credits	Louisiana Department of Transportation and Development (LaDOTD)			

* Specific to the ABC used in the project.