ABC Innovative Projects

I-20 / LA 3249 (Well Road) Bridge						
Location	LA 3249 (Well Road), a rural major collector, over I-20 in Ouachita Parish in northern Louisiana					
State	Louisiana					
Owner	State					
Year ABC Built	2011					
State ID #	025510					
NBI #	053704510613171					
Coordinates	***Latitude:*** 32.510944			***Longitude:*** -92.191944		
Contact Person	Mark D. Bucci, P.E. Bridge Design Manager Bridge & Structural Design Section Louisiana Department of Transportation and Development Phone: 225-379-1076 Email: mark.bucci@la.gov					
Mobility Impact Time	***ABC:*** weekend closure			***Conventional:*** one year		
Impact Category	*Tier 1*	***Tier 2***	*Tier 3*	*Tier 4*	*Tier 5*	
		X				
Primary Driver(s)	reduced traffic impacts, improved work-zone safety, reduced onsite construction time, improved site constructability, improved material quality and product durability					
Description	• 260-ft long and 30.5-ft wide four-span (50 ft - 85 ft - 70 ft - 55 ft) composite steel girder bridge; superstructure roll-in; 215-ton maximum span self-weight • Rural location • Average Daily Traffic count: 41,300 for I-20 (2009); 21,000 for LA 3249 (2009) • Traffic management alternative, if constructed conventionally: extended use of on- and off-ramps ***Existing Bridge:*** Built in 1963, the existing 260-ft-long, 33.5-ft-wide, two-lane non-composite steel girder bridge superstructure was deteriorated and required replacement. ***Replacement Superstructure:*** The replacement superstructure has two 12-ft-wide traffic lanes and 2-ft outside offsets. The cross-section consists of four weathering steel rolled W-shape girders spaced at 8.67 ft and ranging from 2.5 ft to 3 ft in depth, with a 7.5-inch-thick cast-in-place composite deck. ***Construction Methods:*** The superstructure spans were constructed conventionally, complete with traffic railing, on temporary steel pipe trestle supports in a staging area within the interchange. Prior to bridge closure, the existing substructure was strengthened by adding spread footings between existing pile footings at interior supports and adding abutment extensions on columns/drilled shafts at the ends of the existing abutments. The bridge and I-20 were closed on a Friday at 7 pm, and traffic detoured using the bridge on- and off-ramps. A total of four sets of self-propelled modular transporters					

<table>
<tr><td></td><td>(SPMTs) were used on the job. Two sets of SPMTs were used to individually remove two of the existing spans, and the existing abutments and interior piers were repaired as needed. The second two sets of SPMTs were then used to individually install the first two replacement spans. The process was repeated for the remaining two existing and replacement spans. Polymer concrete was placed at the abutment backwalls, and preformed silicone joint seals were installed. Standard strip seals were installed at the interior span joints. No deck overlay was applied to the bridge. The bridge was opened on Sunday evening, 10 hours ahead of the scheduled 3-day closure.

A note was included in the contract plans that stated the movement method shown in the plans was for illustrative purposes only, in order to establish feasibility. The plans did not specifically require the use of SPMTs. However, the contractor was required to select an accelerated construction method and submit an installation/movement plan for LaDOTD review and approval. The awarded contractor bid a 56-hr closure over a weekend and chose to use SPMTs to remove and replace the superstructure.

The contract included a lane rental fee of $5,000 per lane per hour up to a maximum of four hours per lane per day if the bridge was opened late. A fee was to be assessed at a rate of $20,000 per lane per day for any closure extending beyond four hours until the next required opening period.

The contractor was required to submit and follow a Critical Path Method (CPM) Construction Schedule for this job so that all activities could be followed and the progress of each activity could be readily measured. This ensured that the project stayed on schedule and within the contract time.

Stakeholder Feedback:
In order to keep the project on schedule, it is important to stress that the contractor should submit and obtain approval of the temporary staging and movement plans as soon as possible. The LaDOTD received positive feedback from all stakeholders, including the contractor, project engineer, and the general public.</td></tr>
<tr><td>High Performance Materials</td><td>• Polymer concrete approach slab nosing was used at the abutment joints.</td></tr>
<tr><td>Photos

Additional photos</td><td>    </td></tr>
<tr><td>Project Planning</td><td><table>
<tr><td>Decision-Making Tools</td><td>Site Procurement</td><td>Project Delivery</td><td>Contracting</td></tr>
<tr><td>•</td><td>•</td><td>• Design-bid-build</td><td>• A+B bidding
• Full lane closure
• Lane rental</td></tr>
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<tr><td colspan="2">Foundations & Walls</td><td>Rapid Embankment</td></tr>
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<tr><td>Structural Solutions</td><td><table>
<tr><td colspan="3">Prefabricated Bridge Elements & Systems</td><td>Construction</td></tr>
<tr><td>Elements</td><td>Systems</td><td>Miscellaneous</td><td rowspan="2">• SPMTs</td></tr>
<tr><td>•</td><td>• Full-width beam span with deck</td><td>•</td></tr>
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<tr><td>Costs</td><td>The engineer’s estimate for the project was $3.95 million. The low bid was $3.17 million</td></tr>
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	($780,000 = 20% lower than engineer's estimate). There were five bidders. The cost per square foot of bridge was $250 compared to $150 for conventional construction in this region in 2011.			
Funding	*Federal only*	***State only***	*Federal and State*	*Other*
		X		
Incentive Program ($)	*Highways for LIFE*	*IBRD*	*SHRP2*	*Other*
Contract Plans	**Complete Set:**	Bridge Plans (link to pdf)	**ABC *:**	
Specifications	**Complete Set:**	Proposal (link to pdf)	**ABC *:**	
Bid Tabs	Bid Tabs (link to pdf)			
Schedule	**Engineer's:**	295 days (versus 212 actual days)	**Actual:**	CPM Construction Schedule Baseline (link to pdf)
Other Related Information	Project Presentation (link to pdf) Construction Video (link to video folder)			
Photo Credits	Louisiana Department of Transportation and Development (LaDOTD)			

* Specific to the ABC used in the project.