

ABC Innovative Projects

Sedley Bridge					
Location	Sedley Road (CR 475W) over the Norfolk/Southern/CSX railroad tracks in Porter County near Wheeler in northern Indiana				
State	Indiana				
Owner	Porter County				
Year ABC Built	1999, Contract B-23737, Des 7917340				
State ID #	Porter 210				
NBI #	6400117				
Coordinates	Latitude:	41.503861		Longitude:	-87.157972
Contact Person	Raymond Riddell Director of Engineering Porter County Government, Indiana Phone: 219-465-3574 Email: rriddell@porterco.org				
Mobility Impact Time	ABC:			Conventional:	
Impact Category	<i>Tier 1</i>	<i>Tier 2</i>	<i>Tier 3</i>	<i>Tier 4</i>	Tier 5
					X
Primary Driver(s)	<ul style="list-style-type: none"> • reduced traffic impacts – no required falsework allowed vertical clearance to be maintained throughout construction • reduced onsite construction time • improved work-zone safety • improved site constructability – 14-inch-deep section provided greater vertical clearance over railroad tracks • improved material quality and product durability • minimized environmental impacts • reduced cost – shallow section depth allowed shorter approaches to meet railroad grade requirements 				
Description	<ul style="list-style-type: none"> • 110.5-ft-long and 39.3-ft-wide single-span precast post-tensioned through-girder bridge • Rural location • Average Daily Traffic count: 2,200 for Sedley Road (1994) • Traffic management alternative, if constructed conventionally: extended use of 3-mile detour <p>Existing Bridge: The existing one-lane nine-span timber trestle bridge was 201 ft long and 21.2 ft wide with a bridge roadway width of 14 ft. Built in 1915, the bridge had only one lane for traffic and also had a vertical clearance of only 19 ft over the railroad tracks, and required replacement.</p> <p>Replacement Bridge: This project was the first use of precast concrete through-girders in Indiana; the precast elements were post-tensioned edge girders and drop-in deck panels. The bridge has two 12-ft-wide traffic lanes, a 3-ft-wide shoulder, and a 3.83-ft-wide shoulder. The cross-section consists of two 3.08-ft-wide 6.56-ft-deep precast post-tensioned concrete box</p>				

girders spaced at 36.5 ft and connected at the bottom by twelve 34-ft-long by 8-ft-wide by average 1.14-ft-deep precast post-tensioned deck panels cast with a crown at the middle of the roadway. This cross-section maximized the vertical clearance under the bridge; the distance from the top of the deck to its lowest point was only 14 inches.

Construction Methods:

The existing bridge was closed and traffic detoured. The bridge was demolished conventionally. The new bridge substructure was comprised of 14-inch steel-encased concrete piles with MSE walls on concrete leveling pads.

First the deck panel and work platform support assemblies were installed on the girders. The girders were then erected with cranes onto the abutment bearings. Steel struts were attached at the abutments as temporary lateral supports, and the first stage of post-tensioning was done. The deck panels were erected with a crane onto temporary wooden shelves that were attached to the girder bottoms with high-strength steel bars. After all panels were placed, the closure joints between the panels and girders were grouted, and the bridge was post-tensioned transversely and longitudinally. Post-tensioning ducts and recess pockets were then grouted. Traffic barriers and microsilica overlay were installed. The temporary deck panel support assemblies were removed and the bridge was opened to traffic.

The project was let on February 23, 1999. The Notice to Proceed was given on March 29, 1999. The construction was substantially complete on March 3, 2001. The last work was on March 18, 2002. The contract allowed 140 work days; 136 work days were used.

Stakeholder Feedback:

Use of the through-girder with its shallow depth below deck resulted in significant cost savings. The north approach construction alone was reduced in length by almost a quarter mile.

High Performance Materials

Photos

[Additional photos](#)



Project Planning	<i>Decision-Making Tools</i>	<i>Site Procurement</i>	Procurement	Contracting
	•	•	• Design-bid-build	• Full lane closure
Geotechnical Solutions	<i>Foundations & Walls</i>		<i>Rapid Embankment</i>	
	•		•	
Structural Solutions	Prefabricated Bridge Elements & Systems			<i>Construction</i>
	<i>Elements</i>	<i>Systems</i>	<i>Miscellaneous</i>	•

	<ul style="list-style-type: none"> • PT concrete through-girder • MSE walls 	•	<ul style="list-style-type: none"> • CIP reinforce concrete closure joints • Grouted keys • PT ducts, grouted • Microsilica overlay
Costs	<p>The engineer's estimate for the project was \$ 2.35 million. The low bid was \$2.29 million (\$64,000 = 2.7% lower than engineer's estimate). There were six bidders.</p> <p>The overall cost was \$1 million less than the next alternative design solution.</p>		
Funding	<i>Federal only</i>	<i>State only</i>	<i>Federal and State</i>
			Other 80% Federal, 20% LPA
Incentive Program (\$)	<i>Highways for LIFE</i>	<i>IBRD</i>	<i>SHRP2</i>
			<i>Other</i>
Contract Plans	Complete Set:		ABC *: Elevation (link to pdf)
Specifications	Complete Set:	Special Provisions (link to pdf)	ABC *:
Bid Tabs	Bid Summary (link to pdf)		
Schedule	Engineer's:		Actual: Overall Project Schedule (link to pdf)
Other Related Information	'Through-Girder Bridge Offers Low Clearance,' Spring 2002 ASCENT (link to pdf)		
Photo Credits	Indiana Department of Transportation		

* Specific to the ABC used in the project.