2003 â?? I-70 / Lake St. Louis Boulevard Bridge

Description

Meta Fields

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Project Summary : replacement with precast pretensioned concrete adjacent box beams and MSE wall abutments with steel H-piles
Project Location : over I-70 approximately 3.4 miles east of Route 61
Mobility Impact Time :

- ABC: three months
- Conventional: 6-9 months of construction with major interstate traffic impacts

Impact Category : Tier 5 (within 3 months)
Dimensions : 134-ft long and 84-ft wide two-span (67 ft - 67 ft) pretensioned concrete adjacent box beam bridge
Traffic Management : extended use of detour
Existing Bridge Description : 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.
Replacement Or New 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.
Construction Method : 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. 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.
Stakeholder Feedback : Although costs increased, the contractorâ??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-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.
Contacts : Owner: Bryan A. Hartnagel, P.E., Ph.D. State Bridge Engineer Missouri Department of Transportation Email: Bryan.Hartnagel@modot.mo.gov Phone: 573-751-4676
Costs : Not available.
Funding Source : Other
Contract Plans : 1
Year Abc Built : 2003
State : MO
Owner : State
Location : Urban
Spans : Two-span
Beam Material : Concrete
Max Span Length Ft : 67
Total Bridge Length Ft : 134
Construction Equipment : Conventional
State Id # : A7043
Nbi # : I-70-4(148)
Latitude : 38.803982
Longitude : -90.770738

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