2004 â?? Lewis and Clark Bridge

Description

Meta Fields

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Project Location :

on State Route 433 across the Columbia River between Longview, Washington and Rainier, Oregon

Mobility Impact Time : ABC: 124 night closures plus 3 weekend closures, with no impact to rush-hour traffic; Conventional: lane-by-lane deck replacement over 4 years, full closure for several months, or full closure every weekend for 6 months
Impact Category : Tier 2 (within 3 days)
Dimensions : 5,478-ft long and 34.17-ft wide 34-span bridge that includes 3 deck-truss spans (168 ft - 337 ft - 337 ft), 3 through-truss spans (760 ft - 1200 ft - 760 ft), and approach spans
Average Daily Traffic At Time Of Construction : 20000
Traffic Management : Traffic management alternative, if constructed conventionally: extended use of a 40-mile detour west to the town of Cathlamet that included a ferry ride, or an 80-mile detour south to Portland
Existing Bridge Description : The bridge is jointly owned by the Washington State Department of Transportation (WSDOT) and the Oregon Department of Transportation. Built in 1929, the steel through-truss bridge was designed by the famed engineer Joseph B. Strauss and is listed in the National Register of Historic Places. It has two 12-ft-wide traffic lanes and two 5-ft-wide shoulders. Built in 1929, the bridge deck was deteriorated and required replacement.
Construction Method : In the contract plans, WSDOT had designed prefabricated full-width full-depth deck panels and a placement procedure to accommodate the required rapid construction schedule. A contractor partnered with an SPMT supplier in the development of his bid, assuming a revised placement procedure that used SPMTs in combination with a specially-designed steel truss frame for lifting and transporting. Their bid was considerably lower than the other bidders. The contractor was awarded the contract, and WSDOT accepted their proposed system.The bridge was closed on Sunday through Thursday nights from 9:30 pm to 5:30 am. The SPMTs with truss frame moved a new panel to the top of the bridge, lifted the old panel out, and then lowered the new panel into place before taking the old panel off the bridge. Each panel movement took an average 6.5 hours. A helicopter with landing pad was provided on the south side of the river for emergency crossings during the closures.Of the total bridge length, 3,900 ft of the deck was replaced with 103 prefabricated deck panels that were 36 ft wide and 20 ft to 45 ft long (20 at 45 ft, 45 at 40 ft, 20 at 35 ft, 14 at 30 ft, and 4 at 20 ft). The lightweight concrete panels were 6 inches thick plus 1.25-inch-thick microsilica modified overlay and traffic railing. Each panel was supported on two longitudinal steel stringers with intermediate transverse stringers and had a maximum panel weight of 96 tons. The full-width panels were not post-tensioned; the transverse joints had a backer rod and silicone sealant. The new deck eliminated the existing 3-ft-wide raised sidewalks, providing 5-ft shoulders at road level for bicyclists and pedestrians as well as additional room for traffic to maneuver around disabled vehicles. The bridge also used prefabricated widening sections supported by a single longitudinal steel girder. In addition, the project included precast approach slabs.WSDOT utilized an â??Aâ?• + â??Bâ?• + â??Câ?• bidding method to determine the lowest responsible bidder, where â??Aâ?• equals the bid items, â??Bâ?• equals the total number of bridge closures established by the bidder to complete the work times the Total Bridge Rental Closure Cost of $8,000, and â??Câ?• equals the total number of single lane closures established by the bidder to complete the work times the Bridge Single Lane Rental Cost of $2,000. The â??Bâ?• and â??Câ?• parts of the bid were only used to determine the lowest responsible bidder, not to determine final payment to the contractor.The contract included several incentives for early completion. If the contractor finished all work requiring Weekend or Total Bridge Closures by April 30, 2004, he would receive $100,000. This was specified as a neutral cost to WSDOT because the helicopter contract ended then and renewal would have cost $100,000. In addition, for each Weekend Bridge Closure less than 4, the contractor would receive $55,000. For each Total Bridge Closure less than the number bid in the contract, the contractor would receive $4,000. For each Single Lane Closure less than the number bid in the contract, the contractor would receive $1,000.The contract also included liquidated damages for not meeting the time constraints for accelerated construction. This included a penalty of $16,000 per Total Bridge Closure more than the number that was bid, and a

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