



2011 I-20 / LA 3249 (Well Road) Bridge

Description

Meta Fields

Project Summary : This bridge was replaced using self-propelled modular transporters (SPMTs), with the substructure strengthened/rehabilitated under the existing bridge before traffic was detoured and bridge closed. SPMTs were used to both remove the existing spans and install the new spans.

Project Location : LA 3249 (Well Road), a rural major collector, over I-20 in northern Louisiana

Mobility Impact Time :

- ABC: weekend closure
- Conventional: one year

Impact Category : Tier 2 (within 3 days)

Dimensions : 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

Average Daily Traffic At Time Of Construction : 41300

Traffic Management : extended use of on- and off-ramps

Existing Bridge Description : 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 Or New Bridge : 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 Method : 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 (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.

High Performance Material : Polymer concrete approach slab nosing was used at the abutment joints.

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Costs : ~~The engineer's estimate for the project was \$5.95 million. The low bid was \$3.17 million (\$780,000 = 20% lower than engineer's estimate). There were five bidders. The cost per square~~

