



2017 â?? Bridge NB-355 at Milepost A-57.66

Description

Meta Fields

Project Summary : Complete replacement of PA Turnpike northeast extension bridges (NB and SB) over Crackersport Road. Existing three-span rolled steel multi-beam bridges replaced with 118-ft single-span steel plate girder bridges. Substructure built under existing superstructure using conventional construction techniques EXCEPT used low-clearance drill to install micropiles. Superstructure build on temporary supports on east and west side of existing using conventional construction techniques. During one 55-hour closure of the PA Turnpike, the existing bridge was demolished, the new bridges were slid into position, bridge backfilled, and roadway restoration completed.

Project Location : PA Turnpike (I-476) Northeast Extension over Crackersport Road (MP A-57.66), South Whitehall Township, Lehigh County

Mobility Impact Time : (1) ABC: 55 hours for PA Turnpike; 10 months for Crackersport Rd.; (2) Conventional: 24 months for PA Turnpike and Crackersport Rd.

Impact Category : Tier 2 (within 3 days)

Dimensions : 118-ft-long and 75-ft-wide 1-span steel girder bridge; no skew

Average Daily Traffic At Time Of Construction : 30000

Traffic Management : widen new structure to maintain 4 lanes of traffic (stage construction)

Existing Bridge Description :

The existing 3-span rolled steel multi-beam bridge was 131-ft long and 63-ft wide with abutments and two piers on pile substructure. It had four 12-ft-wide traffic lanes and two 3-ft-wide shoulders. Built in 1954, the bridge was deteriorated and required replacement.

Replacement Or New Bridge : The placement bridge has four 12-ft-wide traffic lanes and two 10-ft-wide shoulders. The cross-section consists of 10 Grade 50 steel beams with 63-inch-deep web, 7/8-inch x 18-inch top flange and 1-1/8-inch x 18-inch bottom flange. Beams are spaced at 8 ft with an 8-inch-thick cast-in-place 4000 psi reinforced concrete deck. The cast-in-place concrete abutments are founded on micropiles.

Construction Method : *Crackersport Road (under I-476) was closed for the duration of construction.* The new abutments were constructed in front of the existing abutments. The 7500 LF of micropiles required a "cut down" drill rig to accommodate the 17-ft max clearance (micropiles installed in 5-ft lengths). The new superstructure is actually two separate bridges with a "gap" between the median glare screen. These were constructed on temporary falsework on the east and west side of the bridge using conventional construction techniques. Temporary steel bents supported the new superstructure adjacent to the existing superstructure. Hillman rollers and center-hole jacks, pumps, etc., were used for moving the bridge laterally into position. A maximum 55-hour closure (9 p.m. Friday through 4 a.m. Monday) of the Pennsylvania Turnpike Northeast Extension was allowed for demolition of the existing superstructure and piers, the slide of the new bridges onto the new abutments, completion of tie-in work, and re-establishing MPT measures. The Turnpike would assess road user costs in the amount of \$20,000 for each hour Northbound remained closed to traffic and \$35,000 for each hour Southbound remained closed to traffic after 4:00 a.m. on the Monday following the weekend closure. The contractor could also have been assessed a lane rental fee of \$9,000 for each lane closure required, if work needed to continue past 4:00 a.m. The project was completed 3 hours early. Conventional construction would have required widening of the new structure to accommodate the minimum four lanes of traffic that the Turnpike requires, including during construction.

High Performance Material : AAA Accelerated Concrete was specified for closure pours for the weekend. The Contractor indicated that this material, as specified, was not available in this area. Work-arounds were devised "precast transitions in lieu of CIP, closure angles at backfill with pourback to occur later, and standard aggregate bridge backfill with additional depth asphalt.

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Costs : The low bid was \$8.4 million. Funding Source (Other) = PA Turnpike Commission

Funding Source : Other

Contract Plans : 1

Construction Schedule : 1

Foundations & Walls : micropiles

Year Ahs Built : 2017

