



2016 – Strodes Mills Bridge

Description

Meta Fields

Abc Construction Equipment : conventional

Miscellaneous Prefabricated : CIP reinforced concrete closure joints, prefabricated railing, polyester polymer concrete overlay

Prefabricated Bridge Elements : MDcBs (Modular concrete-Decked steel Beam) - Folded Steel Plate Girder System (FSPGS)

Project Delivery : Public-Private Partnership (P3)

Longitude : -77.6759796

Latitude : 40.568409

Nbi # : 53378

State Id # : 44 4013 0050 0000

Construction Equipment : Conventional

Total Bridge Length Ft : 54

Max Span Length Ft : 50

Beam Material : Steel

Spans : One-span

Location : Rural

Owner : State

State : PA

Year Abc Built : 2016

Contacts : **Owner**: Thomas P. Macioce, P.E. Chief Bridge Engineer Pennsylvania Department of Transportation tmacioce@pa.gov 717-346-9904 **Folded Steel Plate Girders**: Thomas Stockhausen President CDR Bridge Systems LLC Thomas.Stockhausen@cdrmaguire.com 412-235-9480

Girder Fabrication: American Tank & Fabricating Company **Girder Galvanizing**: AZZ Inc.

Precast Deck Prefabrication: AC Miller Concrete Products **Contractor**: Mike Heiple P.E. Project Manager - Central Walsh Granite Joint Venture mheiple@walshgroup.com 717-773-1538 **Submitter**: Thomas Stockhausen President CDR Bridge Systems LLC thomas.stockhausen@cdrmaguire.com 412-559-4025

High Performance Material : Hot-dip galvanized steel girders for corrosion protection; 4 ksi accelerated concrete closure pours; ¾" polyester polymer concrete overlay

Stakeholder Feedback : During planning, collaboration between CDR, HDR and Walsh/Granite JV resulted in the addition of forming tabs for the concrete end diaphragm. Threaded concrete inserts

were included on the bottom of the deck panels to facilitate forming for the longitudinal closure pours. Alterations to future abutment reinforcing were noted to facilitate installation of the exterior girder elements. The change reduced installation time from 3 hours for the FSPG modular decked beam elements on the first bridge (Wrights Corners) to 2 ½ hours on this bridge.

Construction Method : The existing bridge was demolished and abutments were constructed conventionally by the contractor. Concurrently, the Folded Steel Plate Girder modular decked beam elements were fabricated off site by CDR Bridge Systems. The elements were then delivered to the construction site by truck on the day required by the [on site] contractor, who installed the four elements in 2.5 hours. Following installation, the contractor made three longitudinal closure pours and the concrete end diaphragm closure pour. Approach roadway paving completed the project. The maximum allowable bridge closure was 35 days due to the 19-mile detour length. Using the Folded Steel Plate Girder modular decked beam elements, the actual closure was 30 days. The contractor had estimated a closure of 75 days using conventional construction methods. The contractor received no incentive for the early delivery; however, an over \$15,000 per day liquidated damages provision was in place and avoided by the early completion. During the project, weekly production conference calls were held, and detailed fabrication/delivery status reports were provided.

Replacement Or New Bridge : The replacement bridge has two 12-ft-wide traffic lanes and two 4-ft-wide shoulders. The cross-section consists of four 2-ft-deep Folded Steel Plate Girder modular decked beam elements spaced at 9.5 ft with a 7.5-inch-thick precast 4,000 psi reinforced concrete deck. Decks of the two outside elements were precast complete with railing. Integral abutments were used.

Existing Bridge Description : The existing single-span steel I-beam bridge was 33-ft long and 27-ft wide with spread footing on soil. It had two 12-ft-wide traffic lanes. Built in 1951, the bridge was deteriorated and required replacement.

Traffic Management : Extended use of 19-mile detour

Average Daily Traffic At Time Of Construction : 1226

Dimensions : 50-ft-long and 31.5-ft-wide single-span Folded Steel Plate Girder bridge; 15° skew

Primary Drivers :

- Reduced traffic impacts - from detour
- Reduced onsite construction time

Impact Category : Tier 4 (within 1 month)

Mobility Impact Time : Actual closure was 30 days, compared to the contractor's estimate of 75 days using conventional construction.

Project Location : State Route 4013 over Strodes Run near the city of Lewistown

Project Summary : Used Folded Steel Plate Girder modular decked beam elements