Oldcastle Infrastructure™
A CRH COMPANY

Precast Concrete Bridge Components used for Replacement of Deep Creek Canyon Bridges Using Accelerated Bridge Construction

MONTANA DEPARTMENT OF TRANSPORTATION

Deep Creek Canyon Weekend Bridge Replacement

Broadwater County, Montana

The Montana Department of Transportation's $2.75 million, Deep Creek Canyon Weekend Bridge Replacement project required reconstruction of three of eight deteriorating timber bridges built in the 1930s. The new Deep Creek bridges are located in Deep Creek Canyon between Townsend and White Sulphur Springs, MT.

To replace the three bridges, MDT and Morrison-Maierle Engineers selected Accelerated Bridge Construction {ABC) techniques to significantly accelerate the bridge reconstruction process. ABC entails prefabricating as many bridge components as possible to minimize road closures and traffic disruptions, promote traffic and worker safety, and improve the overall quality and durability of the bridges.

Morrison-Maierle and its partners designed the bridge foundation and the superstructure system as a complete, modular concrete system. The ABC system, consisted of precast concrete bridge superstructure and substructure elements, ensuring the bridges could be built during the weekend closures.

DESIGN & CONSTRUCTION TEAM

General Contractor
Dick Anderson Construction, Great Falls, Mont.

Owner
State of Montana

Precast Manufacturing Plant
Oldcastle Precast
Spokane, Wash.

Oldcastle Infrastructure assembling precast concrete elements for one of the bridges, at the precasting plant, and checking for precise precast component fit, prior to shipment.

Built over three weekends, the new single-span, 54-foot- long, 31-foot 8-in. wide modular bridges were constructed in less than 60 hours per bridge. As a result, the MDT bridge construction project came in under budget, opened ahead of schedule, and did not interrupt the public's traffic patterns.

PRODUCTS SUPPLIED

(15) 53-ft-6.5-in.-long by 2-ft-3-in.-deep by 6-ft-4-in.-wide prestressed concrete tri-deck beams with the curbs and end diaphragms cast on.

(6) 40-ft-3-in.-long by 3-ft-wide by 4-ft-tall, precast concrete grade beam abutments

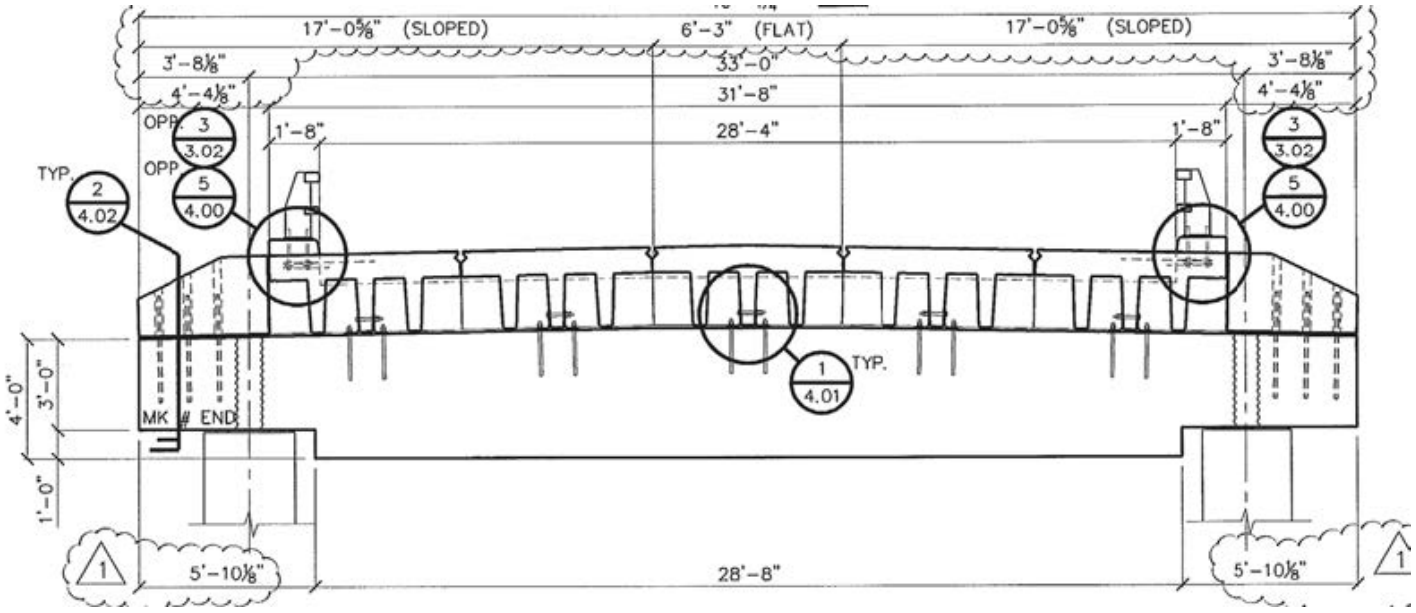
(12) 4-ft-4-in.-long by 2-ft-7-in.-tall by 1-ft-8-in.-thick precast concrete wingwalls

USE OF PRODUCTS

Construction of three single-span, 54-ft-long, 31-ft 8-in.-wide, modular bridges. Oldcastle Infrastructure assembling precast concrete elements for one of the bridges, at the precasting plant, and checking for precise precast component fit, prior to shipment.

INNOVATION

Complete, modular precast concrete bridge system. Superstructure and substructure elements consisting of three stem units with integral deck {tri-deck), grade beam abutments, and wingwalls were chosen to overcome the site and time problems at the bridge locations.



The top flange of the tri-deck beams were designed to be the riding surface of the bridge deck.

This selection provided a high quality, durable precast concrete approach to an interesting construction challenge -- limitations of working on a congested site, tight construction schedule, and production within exacting tolerances of large precast components for field assembly-- shows an excellent use of how precast concrete construction can accelerate a construction schedule and easilyovercome demanding challenges of a project that other methods could not have achieved.

AWARDS

Regional award in the 2015 America's Transportation Awards, "Best Use of Innovation, WASHTO Region; 2015 Project of the Year by the Rocky Mountain Chapter of the American Public Works Association; 2015 Engineering Excellence Award, Structural Systems Category, by the American Council of Engineering Companies of Montana.

About Oldcastle Infrastructure

Oldcastle Infrastructure, A CRH Company, is the leading provider of building materials, products and services for infrastructure projects to several market sectors nationwide, including: Building Structures, Communications, Energy, Transportation and Water.

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