

Cannelville Road Bridge Project Raises the Bar for Future Short Span Design and Construction

Project Overview

The new Cannelville Road Bridge in Muskingum County, Ohio is the first of its kind in the state. Located southeast of the village of Roseville, Ohio, the new vehicular bridge utilizes an innovative press-brake-formed steel tub girder (PBTG) system. It was completed ahead of schedule in just 26 days, and is expected to have a service life of more than 100 years.

The PBTG system consists of modular shallow trapezoidal boxes fabricated from cold-bent structural steel plate. For the Cannelville Road Bridge project, after the plate was formed, a thin lightweight SPS (Sandwich Plate System) deck was bolted to the girder in the fabrication shop and guardrails were added, making it a modular unit that could be quickly assembled at the bridge site.

Project Details

The bridge was delivered to the project site on two trucks in prefabricated half-width modules. Each module weighed approximately 31 tons. The modules were erected and positioned on their abutments in just 22 minutes.



The modules were bolted together in one day. A waterproof membrane and asphalt wearing course were subsequently applied. The bridge deck was metallized with zinc on all surfaces to provide additional corrosion protection from the low pH levels of the stream. Other superstructure components were

hot-dipped galvanized to prevent corrosion from road chemicals.

The PBTG system was chosen for this project because it was an ideal structure for the design challenges of this particular area, which has steep ravines and low-lying areas. The stream fills up and drains quickly after stormy weather, transporting large debris such as root balls and tree limbs. Other design options would have allowed the debris to collect underneath the bridge and cause damage. But with the smooth tub girders of the new bridge, debris easily flows under it.



The new bridge was financed in part with research funding from the Federal Highway Administration (FHWA) due to the integrated PBTG/SPS deck demonstrating Accelerated Bridge Construction. It was constructed by a local crew in just 26 days, ahead of schedule. The work included removal of the existing bridge and abutments and the construction of new foundations, abutments and superstructure. The new bridge is longer than the previous structure at 52 feet, 6 inches; is 24 feet wide; and is designed to remain elastic under a TL-2 crash event. It was opened to service on May 27, 2017.

Doug Davis, P.E., P.S., Muskingum County Engineer, oversaw all aspects of the construction and installation of the new bridge and is ready to construct more of them.

Multiple decking solutions can be used with the PBTG structure. The Cannelville Road Bridge is the second PBTG structure to be completed in the United States, and the first to use the SPS deck. The first PBTG structure was the Amish Sawmill Bridge in Buchanan County, Iowa, which utilized a cast-in-place deck and was opened to service in January 2016. Precast decks are also a very good option.

Cannelville Road Bridge Project Highlights

- The fabrication process took place offsite, saving 3-4 months of construction time.
- Both PBTG/SPS modules were erected and set on the abutments in just 22 minutes.
- Each PBTG module with the SPS deck and TL-2 crash barriers weighed only 31 tons.
- The project was completed ahead of schedule. Only 26 days were required to complete the project, including demolition of the original bridge and abutments and the addition of new abutments and superstructure.
- The new bridge was set in place by an Ohio crew and is expected to have a service life of more than 100 years.
- This project opens the door for future PBTG projects in Muskingum County as well as additional counties and states.



Cannelville Road Bridge Project Team

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