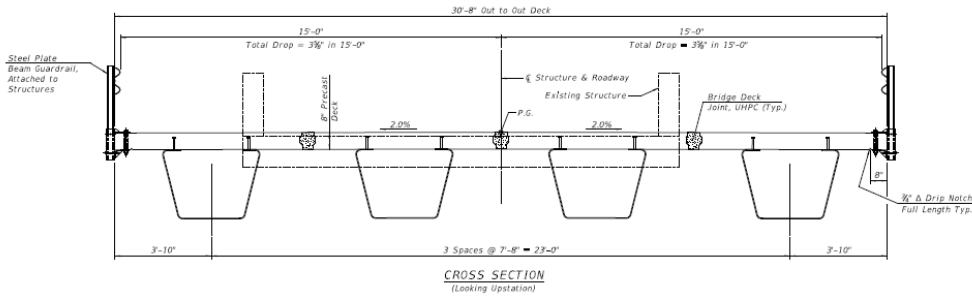


Notes:
See Sheet 5 of 15 for superstructure details, Bill of Material, Section A-A and Section B-B.



Peoria County Looks to Steel for Innovative Bridge Replacement Project

Topics: [Case Study](#), [Innovation](#), [Press Brake & Folded Plate](#)

Peoria, Illinois Assistant County Engineer Jeff Gilles thought it was time for a change. Faced with a backlog of short span bridges to replace and limited funding, he was ready to try an innovative modular approach endorsed by Brian Keierleber, P.E., Buchanan County Engineer in neighboring Iowa, who was enthused about a [steel press brake tub girder bridge](#) (PBTG) he had installed.



The Amish Sawmill Bridge (Buchanan County, Iowa) was constructed in 2015 using press-brake tub girders.

Gilles and a colleague toured the Buchanan County project site and after hearing his positive report, Peoria County pursued funding approval from the Township Road Commissioner and the Illinois Department of Transportation to construct the first PBTG bridge in Illinois. After receiving the go-ahead, he began looking for the right project in **Peoria County**, and found it with the Evans Mill Road Bridge.



The Evans Mill Road Bridge is located in Peoria County, Illinois. The bridge was structurally deficient and in need of replacement.

Ready for a Replacement

The 26-foot-long Evans Mill Road Bridge is a reinforced concrete slab structure with a 17-foot-wide deck situated over Hickory Run Creek. Located in a rural area, the bridge cannot handle the loads of the farm equipment used by many of its residents, nor can it be widened or reinforced to meet the community's needs.



The Evans Mill Road Bridge is a reinforced concrete slab structure with a 35.4 sufficiency rating out of a possible 100.

The bridge has significant other issues such as exposed rebar, a cracked south abutment, some missing pieces, and a 35.4 sufficiency rating out of a possible 100. It has a legal load restriction of 80,000 pounds; any trucks exceeding that weight cannot use this bridge.



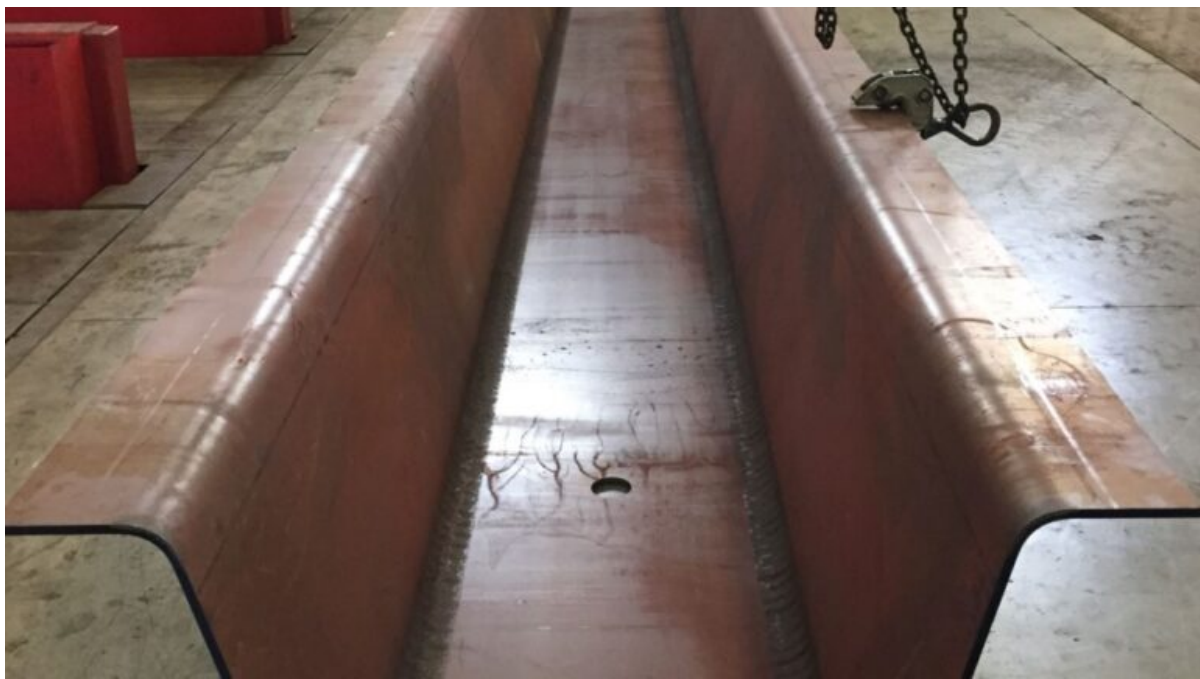
The structure has an ADT rating of 200 cars per day; 12 percent is truck traffic.

The structure has an Average Daily Traffic (ADT) rating of 200 cars per day; 12 percent is truck traffic. It is obvious that the Evans Mill Road Bridge has outlived its usefulness and is ready for replacement.

PBTG: Innovative and Cost-Effective

Steel press brake tub girders provide an economical alternative for simple and short span bridge construction. They provide a long service life (100 years or more), require little maintenance, and are designed for accelerated project delivery.

The girders consist of modular galvanized shallow trapezoidal boxes fabricated from cold-bent structural steel plate. A concrete deck or other deck option such as a [steel sandwich plate system \(SPS\)](#) is placed on the girder, and the modular unit can be transported by truck to the project site.



Press-brake tub girders consists of modular galvanized shallow trapezoidal boxes fabricated from cold-bent structural steel plate.

The PBTG system utilizes standard plate widths (based on availability) and is optimized to achieve maximum structural capacity, with most of the steel in the bottom flange and increased torsional stiffness. It is a closed system, since the girder is closed at the bottom, and is versatile for multiple-deck options. PBTG bridges are “open source,” meaning the design is open to all manufacturers for fabrication. Installation can be completed in just one or two days.

PBTG bridges provide a [sustainable bridge replacement solution](#), an increasingly important requirement for replacing and constructing new structures. Since PBTG bridges are prefabricated, they cut down on construction time while reducing detour time, emissions from cars, and delays for drivers.



The press-brake tub girder modules for the Cannelville Road Bridge (Muskingum County, Ohio) were erected and positioned on their abutments in just 22 minutes.

Since steel is recyclable and can be reused over and over without losing its strength, the beams can be repurposed at the end of the bridge's very long service life. Due to the light weight of steel, cost savings can be achieved by using smaller abutments, local crews, and lighter construction equipment.

Scope of Project

Illinois is a native habitat for [Indiana bats](#) and long-eared bats, and to protect them, on-site tree removal began in March 2021 and was completed by the first of April. The abutments will be totally removed. Concrete stub abutments will be drilled, and precast backwall will be added to the abutments.

The new Evans Mill Road Bridge will be 71 feet long, with approach work to be completed 150 feet north and south of the bridge ([view plans](#)). It will utilize a precast concrete deck and be tied together with Ultra-High-Performance Concrete (UHPC). [Valmont Structures](#) is the fabricator. [White Construction](#) in Springfield, Illinois is the general contractor.

Additional highlights of the project include:

- the 71' span PBTG's accommodated for a severe 40 degree skew of the supporting abutments.

- the shallow 33" PBTG's allowed consultant to address hydraulic requirements.

- the shallow 33" PBTG's accommodated for the sag vertical curve profile of the roadway and reduced adjacent roadway replacement.



Valmont Structures fabricated the press-brake tub girders for the Orr Road Bridge (Midland County, Michigan) that consists of a precast concrete deck on galvanized steel tub girders.

Construction is expected to begin in mid-May 2021. The bridge beams for the superstructure are expected at the beginning of August. The bridge is anticipated to open to service in October 2021.

The project is being funded in the amount of \$480,000 with state and local funding approved by the Township Road Commissioner, and the project is being overseen by Assistant County Engineer Jeff Gilles. Peoria County oversees 180 Township and County Bridges. Sixty percent of those are deck beam and 40 percent are steel girder structures.

This will be the first PBTG bridge constructed in Illinois. PBTG bridges are currently in service in Alabama, Iowa, Louisiana (mid-2021), Ohio, Michigan, Minnesota, New Mexico (mid-2021), Pennsylvania, Oregon, Texas, and West Virginia.

This blog will be updated with new information and images as they become available. Stay tuned!

[Download Bridge Plans](#)

Evans Mill Road Bridge Project Team

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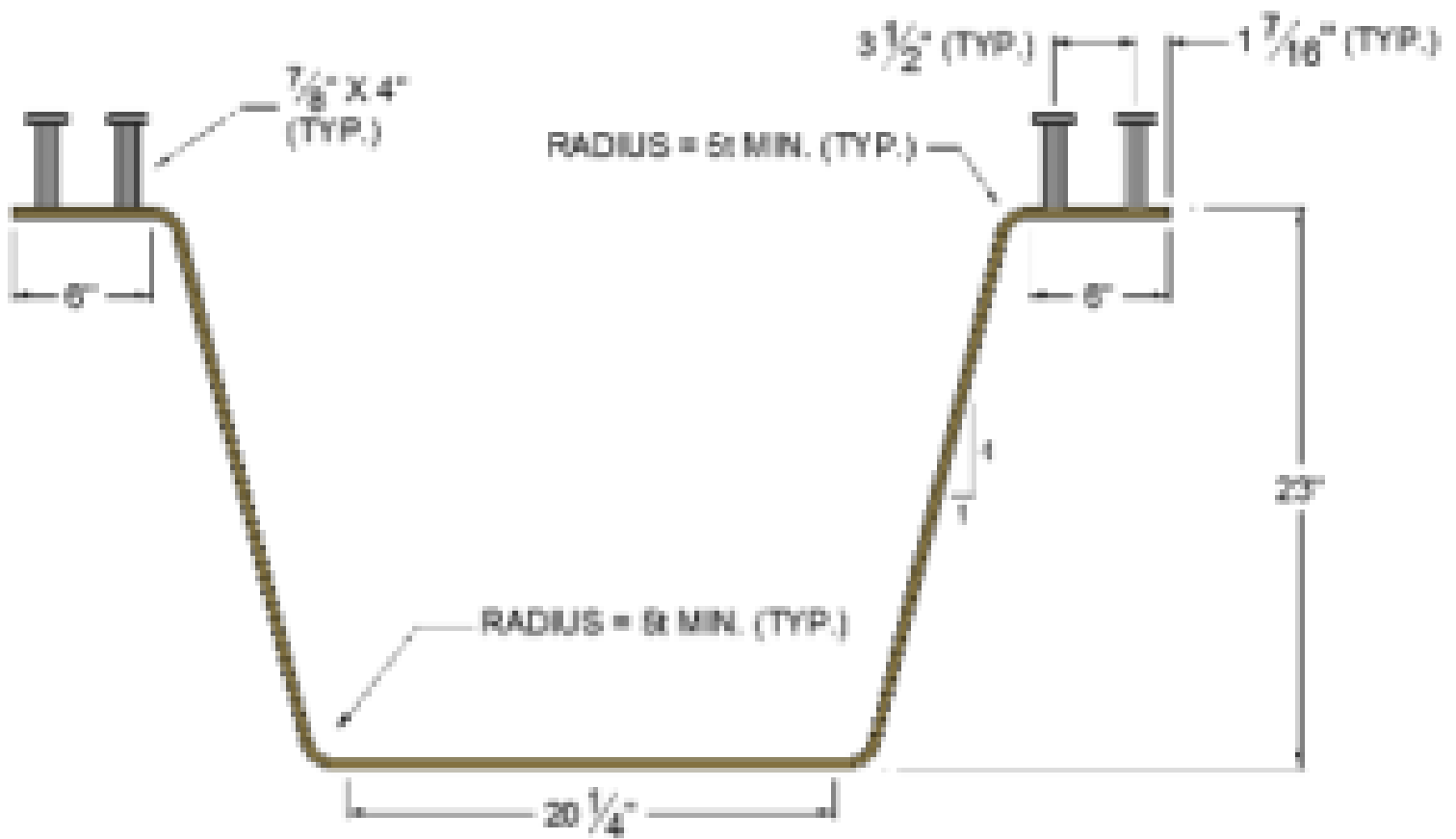
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What are Press Brake Tub Girders?

Press-brake-formed tub girder (PBTG) is a new technology for short span bridge applications. It consists of modular galvanized shallow trapezoidal boxes fabricated from cold-bent structural steel plate ([watch fabrication video](#)). A concrete deck is recommended to be precast on the girder and the modular unit can be shipped by truck to the bridge site.



The system utilizes standard plate widths (based on availability) and is optimized to achieve maximum structural capacity, with most of the steel in the bottom flange and increased torsional stiffness. It is a closed system, since the girder is closed at the bottom. It is versatile for multiple-deck options.

The system utilizes Accelerated Bridge Construction practices, since it:

- Can be installed in one or two days
- Is modular, allowing the use of a precast deck
- Is cost-effective—as much as 1/3 less than a standard concrete girder structure
- Is simple to fabricate, requiring very little welding.

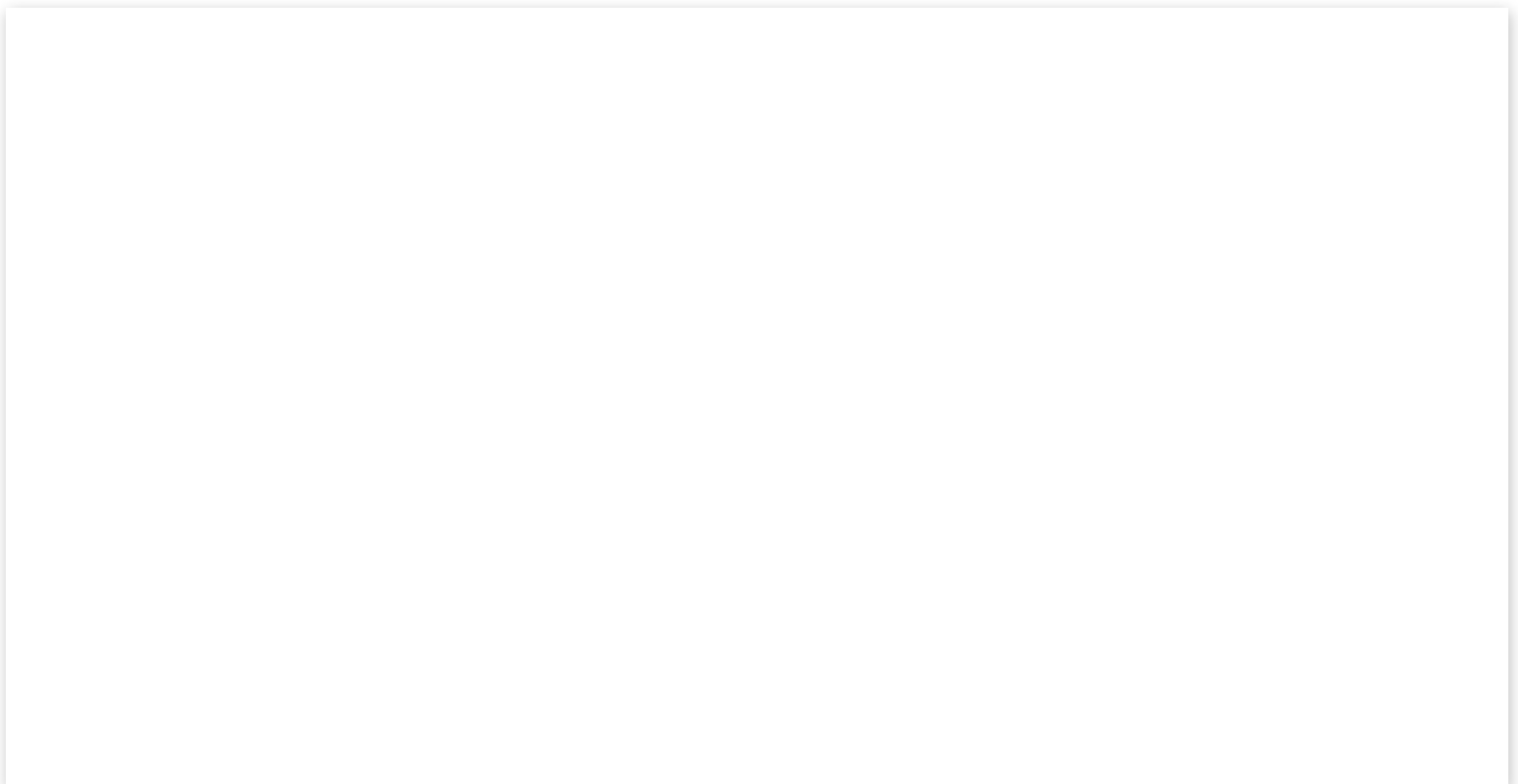


The Short Span Steel Bridge Alliance has developed standardized plans using standard plate sizes (60", 72", 84", 96", 108", 120"). The designs were developed to achieve maximum structural capacity and are available in [eSPAN140](#).

The press-brake-formed tub girder system is open source.

[Learn more about press brake tub girders](#)→

Related Resources: Press Brake Tub Girders



Video

Video: Options for Short Span Steel Bridge Solutions

This video provides a summary of economical short span steel bridge solutions to consider for various lengths of crossings.

SSSBA Topic-Based Video Series



News

Steel Press-Brake Formed Tub Girder System Selected for 2021 AASHTO Innovation Initiative Focus Technology

All will invest resources to accelerate the adoption of PBTG.

News

Press Brake Tub Girders Accelerate U.S Infrastructure Rebuilding

Forming process is a viable, efficient, economical solution to replacing aging bridges

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