

ABSTRACT

FIELD PERFORMANCE ASSESSMENT OF PRESS-BRAKE-FORMED STEEL TUB GIRDER SUPERSTRUCTURES

The Short Span Steel Bridge Alliance (SSSBA) is a group of bridge and culvert industry leaders (including steel manufacturers, fabricators, service centers, coaters, researchers, and representatives of related associations and government organizations) who have joined together to provide educational information on the design and construction of short span steel bridges in installations up to 140 feet in length. One concept developed by the SSSBA, shallow press-brake-formed steel tub girders, has emerged as a particularly advantageous solution for using steel in the short span bridge market.

After several years of lab testing at West Virginia University, members of the SSSBA collaborated with County Engineer Brian Keierleber, P.E., to arrange the construction of the Amish Sawmill Bridge in Buchanan County, Iowa. The Amish Sawmill Bridge is the first bridge designed, constructed, and opened to traffic using the press-brake-formed steel tub girder concept. Upon the completion of this bridge, researchers from West Virginia University and Marshall University traveled to Iowa to perform a live load field test.

This report presents the results and assessment from experimental and analytical testing of the Amish Sawmill Bridge. Furthermore, an overview of both the experimental and analytical testing programs is provided. This report also compares live load distribution factors (LLDFs) calculated using AASHTO specifications to the LLDFs calculated from experimental and analytical testing results. Based on testing results, shallow press-brake-formed steel tub girders are both a practical and economic solution for using steel in the short span bridge market. The tub girders not only exhibit excellent performance in the field, but can also be utilized with various deck designs to create a modular unit that greatly reduces construction time. With Accelerated Bridge Construction (ABC) becoming more popular and necessary in the bridge construction industry, shallow press-brake-formed steel tub girders are a proven solution for short span bridge applications.

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