

# A victory over paint for galvanizing

## Ohio county chooses hot-dip galvanizing for four bridges

By ROBERTA DUNLAP  
Ohio Department  
of Transportation

Paint removal and painting on-site structures have become major headaches for county engineers and all those responsible for bridge maintenance.

Federal Environmental Protection Agency regulations for removal and field application of paint will be-

come even more stringent in the future, say Ohio Department of Transportation experts in hazardous waste.

John Smolen, county engineer in Ashtabula County, a largely rural area of northeastern Ohio, has eliminated the paint problem by designing and constructing steel bridges that are entirely hot-dip galvanized.

County construction crews completed work on the first of these bridges, a Warren pony truss, in May. The structure is 108 feet long, 24 feet wide and carries Montgomery Road over the Grand River in the southern part of the county.

A second, smaller, galvanized bridge will be completed by county workers early this summer. Two more are scheduled for construction this year.

Smolen designed all four bridges on a computer-aided design system. Use of the system allowed

Smolen to plot on paper the designs for the 20 different variations of gusset plates used on the Montgomery Road bridge and their bolt hole locations. The plans could then be cut out with scissors and used as templates.

The bridge was assembled to assure proper fit, then was disassembled and sent to Young Galvanizing Inc., Pulaski, Pa., for coating. After they were galvanized, the components were returned to the construction site.

Galvanizing provides the bridge steel with two facets of corrosion protection that isn't achieved with a paint system: barrier and cathodic protection. This is accomplished by dipping the steel into a molten zinc bath which creates a metallurgical bond between

the zinc and the steel.

Smolen said that choosing galvanizing for the entire structure of a bridge was a natural progression of past successful experiences in utilizing galvanized bridge components such as floor systems and truss members.

For galvanizing purposes, the truss had to be disassembled into pieces less than 60 feet long.

The truss splice joints were bolted at locations where disassembly was necessary. All other splice joints were welded. ASTM A325 high-strength bolts were used to attain friction-type connections. All bolts had to be torqued to 550 foot-pounds to meet specifications.

The bridge is fabricated from hot-rolled steel and the zinc coating exceeds ASTM specifications.



WORKERS ARE SCHEDULED to build three more galvanized steel bridges like the Montgomery Road bridge in Ashtabula County, Ohio, by the end of 1991.

The Montgomery Road project was 54-percent-funded by state money and the balance was provided by the county.

The second galvanized bridge designed by Smolen and built by Ashtabula County is a 40-foot span galvanized steel beam superstructure on galvanized steel abutments. Each abutment was constructed of seven H10 57-pound piles concreted into drilled shafts.

The bridge carries Weaver Road over Ashtabula Creek in the northeastern part of the county and replaces a steel truss that had a 40 percent load reduction.

Smolen has completed designs for two more galvanized bridges and expects to begin construction this summer. Both bridges will be built on Beckwith Road in eastern Ashtabula County.

One of these bridges is an 84-foot-span truss type that will replace an 80-year-old steel truss with a 4-ton weight limit. The new trusses utilized wide-flange steel

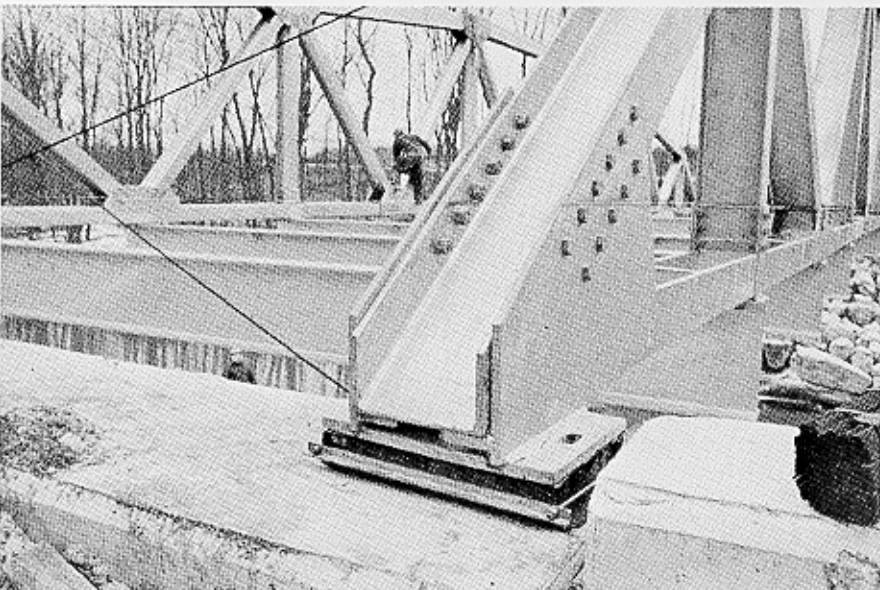
members for the top chords and web members. The bottom chords are twin steel angles.

The trusses will be entirely welded except for two bolted splices to accommodate shipment and galvanizing.

The second bridge, also on Beckwith Road, will be a 60-foot-span steel beam. Galvanized members of this bridge include seven W30 132-pound steel stringers with

W24 62-pound diaphragms and beams with end plates drilled for bolt holes. Both bridges are designed for HS-25-44 loading.

Ashtabula County is just one of thousands of counties throughout the country that require bridge rehabilitation and new bridge construction. It is important that county engineers specify the most cost-effective and minimal maintenance corrosion system available. ■



BRIDGE JOINTS were disassembled in order to break down the structure into pieces less than 60 feet long so the components could be shipped to a galvanizer for coating.



HOT-DIPPED GALVANIZING of the steel used on the Montgomery Road bridge offers both barrier and cathodic corrosion protection that county officials felt would not have been achievable by painting the steel structure.

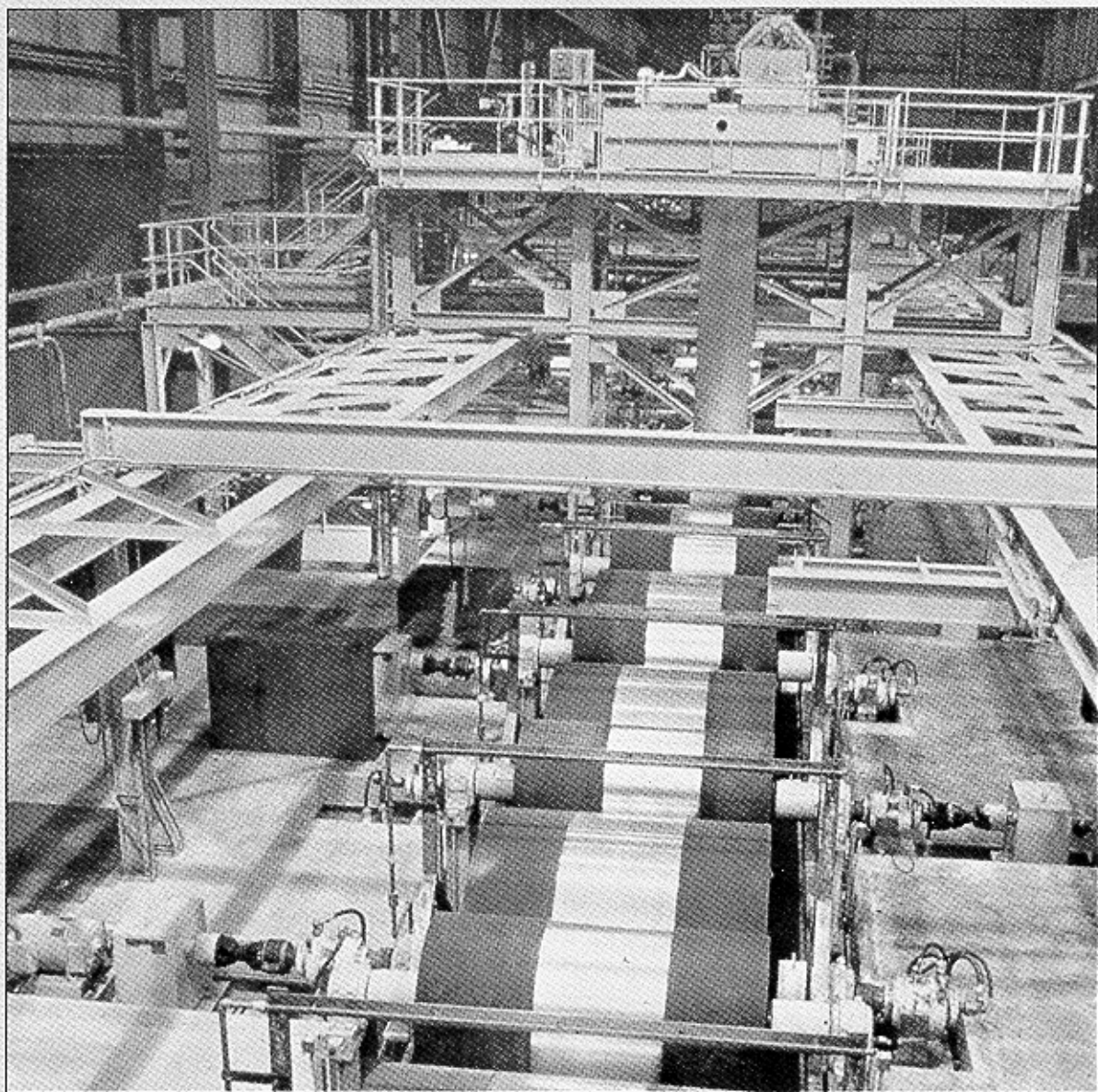
Reprinted with the permission of American Metal Market, copyright 1991 Capitol Cities/ABC Inc. All Rights Reserved.

**AMERICAN METAL MARKET**

**S T E E L M O N T H L Y**

SUPPLEMENT, JULY 15, 1991

# Galvanized Steel



**Expanding capacity: How much is too much?**