

The Lizotte Bridge

A Review and Discussion of "The Case for Galvanized Bridges" by J. R. Hall

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ABRIDGMENT

•THE FIRST hot-dip galvanized conventional steel bridge in the world was recently opened to traffic near Deschaillons, outside of Quebec City, Canada. Problems investigated by the Quebec Department of Public Works included plant and kettle capacity of local galvanizers, possibility of warpage, acid entrapment, physical effects of pickling and galvanizing, and the slip resistance of galvanized connections.

It was found that the use of high-tensile bolts, designed to develop full friction at the contact surfaces, can be recommended. No effects on the physical properties were observed as a result of galvanizing. No prohibitive undesirable effects on the physical properties of the steel will result from a properly controlled galvanizing process. Excessive warpage of large members of roughly symmetrical cross-section will not occur. Proper design and good fabricating technique will prevent acid entrapment. Current capacity is up to 80 ft, with larger galvanizing facilities awaiting demand.

The galvanized bridge is a three-hinged arch structure joining river banks 400 ft apart. It is designed for H-20 loading, weighs almost 400 tons, and has a clear mid-span of 200 ft. It cantilevers 60 ft from the piers carrying 45-ft suspended box girders. The deck-type truss is composed of rolled wide-flange shapes and some welded H-sections. The longest members are the box girders and the 49-ft bent chord sections. The box girders are 45 ft long, have a cross-section of 2 by 3½ ft, and weigh 4½ tons each.

The added cost of galvanizing was about \$10,000, or 3 percent of the cost of the entire project. If a painting program is instituted before the evidence of first rust, this bridge will remain in as-new condition structurally and esthetically, and will cost the taxpayers less than any other combination of materials or coatings. Considering the numerous advantages of steel as a structural material, it may be logically concluded that the use of galvanized steel for small bridges and highway structures offers advantages unchallenged by other materials.

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