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U. S. DEPARTMENT OF COMMERCE
 BUREAU OF PUBLIC ROADS

625 North Robert Street
 St. Paul, Minnesota

February 14, 1964

IN REPLY REFER TO:

Mr. James C. Marshall
 Commissioner of Highways
 Department of Highways
 St. Paul, Minnesota

Re: Minn. I 035-3(47)112
 Bridge No. 9340
 I 35 over Mississippi River
 In Minneapolis

Dear Sir:

Reference is made to your January 3, 1964 letter with which were submitted additional data on subject bridge. We have reviewed these data together with your suggestions and offer the following comments:

The proposed truss joint detail at U12 appears to be satisfactory, except that the unbalanced rivet pattern and resulting eccentric connection of the truss diagonals is considered undesirable and unnecessary. It is recommended that the gusset plates be enlarged to facilitate a balanced connection.

Our position, in regard to painting inside closed steel members, is that these members should be painted. We recommend a complete paint system for the inside of any sealed box member that may be utilized on this project.

We have no specific data on the notch toughness values for the types of steels listed in MHD 3309.63. Our concern is based on statements by producers and the fact that problems with weldability are recognized by both the American Welding Society and the American Society for Testing and Materials.

The producers of Type A, Corten, have stated that a maximum effective thickness of 1/2 inch was established for welded applications because of the unsatisfactory notch toughness properties of welds in plate above that thickness. The producers of Type D, Mayari R, have stated that where thick sections involve restraint or design notches, the desirability of normalizing to improve resistance to impact should be considered. The notch toughness of MHD 3309 steel would seem to depend on the thickness of the "Mayari R" Type D referred to by the producer as thick. Does your limit of 2 1/2" take care of the problem?

Since June, 1961 a Task Group under Subcommittee 2, ASTM Committee AI, Steels, has been working on specification requirements to resolve the weldability problems of A242 steels. Up to the present time, the Task Group has not reached a solution satisfactory to the Subcommittee.

Because the steels furnished under ASTM A242, and MHD 3309 have different chemical compositions and, consequently, may have different degrees of notch toughness, and because the "as welded" notch toughness may not be the same as in the unwelded plate, we believe that a Charpy V-notch impact test of the weld should be included in the special investigation for weldability as required by Paragraph 105 (d) of the Specifications for Welded Highway and Railway Bridges of the American Welding Society. We would like to suggest that records of Charpy V-notch impact tests of the weld metal be furnished us if they are available. If they are not available, possibly a test program under the design phase of the work could be conducted.

Very truly yours

(R)

For W. W. Fryhofer
Division Engineer

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