

# Steel Interchange

Steel Interchange is an open forum for AISC members and other interested readers to exchange useful and practical professional ideas and information.

The following responses from previous Steel Interchange columns have been received:

**I** WT sections are commonly used as bracing members and in this application these members are subjected to combined axial and flexural loads. With axial loads being transferred through gusset plates, moments are generated as a result of the location of these forces with respect to the neutral axis of the WT section. Hence, it is imperative that in addition to the axial stress, a flexural stress equal to the product of the axial force and the distance (y) from the neutral axis to the flange of the WT be considered in the analysis of the member.

**Sam Babatunde, P.E.**

Old Bridge, PA

After a few dozen passes of the crane wheels a path will be worn through the galvanizing on the crown of the rail because the zinc is soft compared to the wheel, and the wheel flanges may scuff the sides of the rail. Small flakes of galvanizing can be expected to fall to the floor. The engineer must decide whether or not this constitutes a problem.

Distortion of the rail due to the heat of galvanizing is unpredictable but can be removed later so as to obtain proper alignment. Strength should not be appreciably affected.

I question the need for galvanizing a crane rail. Usually there is enough oil and grease seepage from the wheel bearings and gears to keep the rails free from significant erosion, even for exposed runways.

For more on crane runways see "Tips for Avoiding Crane Runway Problems" in the AISC Engineering News-Record, Vol. 19, No. 4, 4th Quarter 1982, p. 181.

**Dave Ricker, P.E.**

Philadelphia, PA

The accumulation of tolerances is a real problem requiring special consideration. In my opinion this can be resolved by better mill tolerances whereby tolerances rarely approach the maximum allowances, and finally by corrective action and an acceptable level of quality control in the fabrication facility.

Additionally, the use of oversize, short-slotted, and long-slotted holes for achieving erection within tolerances should not be treated as a "given" but should be approved by the Engineer of Record and meet specific design requirements. This becomes particularly clear under the AISC Specification, Part 5, A, A325 A490 Bolts, approved by RCSC, which states that the usage of oversize holes is subject to approval by the Engineer.

In closing, what are, if by, the differences under the AISC Specification, Part 5, D, and the AISC Specification, Part 5, E, in terms of accumulation of tolerances and also the overall requirements in the usage of oversize holes? The singular reference to the usage of oversize holes "as provided for by the LRFD Specification" seems to imply that there may be some. (Editors Note: the LRFD Specification and the ASD Specification have similar requirements in regard to the accumulation of tolerances and the use of oversize and slotted holes)

**Henry Butum, P.E.**

CNF Corporation, Ithaca, NY

Meriden, CT

**Henry Butum, P.E.**

CNF Corporation, Ithaca, NY

Meriden, CT

