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

[illegible]

Projecting elements of bolted connection attachments, such as clip-angles or end-plates, often are not flat in the plane of the connection because of profile variations due to as-rolled mill tolerances or welding distortions. In double-angle connections, for example, the outstanding legs tend to bend back toward the centerline of the span. Any resulting gaps are usually drawn together when the bolts are installed, except in relatively thick material.

In bearing connections, this is of little concern. In slip-critical connections, the full slip resistance of the connection will be developed regardless of the initial position of such projecting elements if the following conditions are met:

1. Some part of the connection is in contact with the support before the bolts are tensioned.
2. The bolts are subsequently tensioned in accordance with the RCSC Specification.
3. The faying surfaces are drawn into contact at the bolts within the area of the bolt head or nut as illustrated in the figure below.

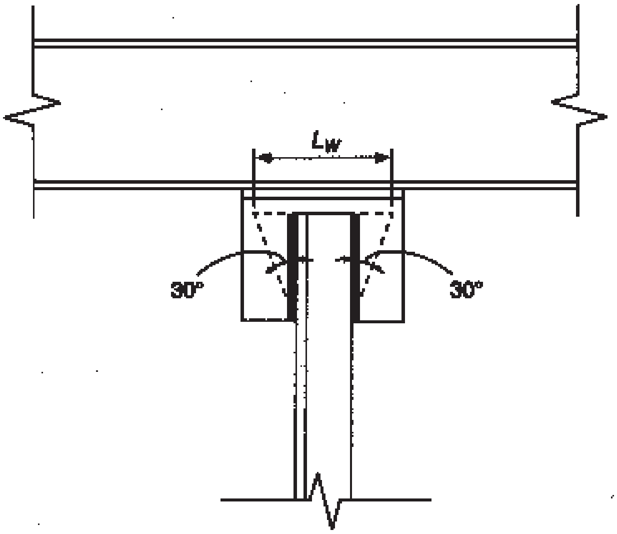
Accordingly, it is stated in AISC *Code of Standard Practice* Section 6.3.1 that “projecting elements of connection attachments need not be straightened in the connecting plane if it can be demonstrated that installation of the connectors or fitting aids will provide reasonable contact between faying surfaces.”

[illegible]

A building designed to the AISC *LRFD Specification for Structural Steel Buildings* is one that possesses adequate strength to resist all design loads, primarily through nominally elastic behavior. A building designed to the AISC *Seismic Provisions for Structural Steel Buildings*, contains additional provisions for dissipating large magnitude seismic input energy through controlled inelastic deformations in discreet locations in the structure, such as through hinging of beams in moment frames, buckling of braces in concentrically braced frames, and shear (or flexural) yielding of the link in eccentrically braced frames to preclude structural collapse under high overload conditions that may occur. Obviously, a higher cost is associated with designing to the latter specification and achieving this level of ductility.

[illegible]

A Whitmore section identifies a theoretically effective cross-sectional area at the end of a connection resisting tension or compression, such as that from a brace-to-gusset-plate connection or similar fitting. As illustrated in the figure above for a WT hanger connection, the effective length for the Whitmore section L_w is determined using a



Whitmore section

New Questions

Listed below are questions that we would like the readers to answer or discuss.

If you have an answer or suggestion please send it to the Steel Interchange Editor, Modern Steel Construction, One East Wacker Dr., Suite 3100, Chicago, IL 60601-2001. Questions can also be sent via e-mail to melnick@aiscmail.com.

Questions and responses will be printed in future editions of Steel Interchange. Also, if you have a question or problem that readers might help solve, send these to the Steel Interchange Editor.