STEEL INTERCHANGE

Steel Interchange is an open forum for *Modern Steel Construction* readers to exchange useful and practical professional ideas and information on all phases of steel building and bridge construction. Opinions and suggestions are welcome on any subject covered in this magazine. If you have a question or problem that your fellow readers might help you to solve, please forward it to *Modern Steel Construction*. At the same time, feel free to respond to any of the questions that you have read here. Please send them to:

Steel Interchange
Modern Steel Construction
One East Wacker Dr., Suite 3100
Chicago, IL 60601-2001

Answers and/or questions should be typewritten and double-spaced. Submittals that have been prepared by word-processing are appreciated on computer diskette (either as a Word file or in ASCII format).

The opinions expressed in *Steel Interchange* do not necessarily represent an official position of the American Institute of Steel Construction, Inc. and have not been reviewed. It is recognized that the design of structures is within the scope and expertise of a competent licensed structural engineer, architect or other licensed professional for the application of principles to a particular structure.

Information on ordering AISC publications mentioned in this article can be obtained by calling AISC at 800/644-2400.

**** **Questions and answers can now be e-mailed to: rokach@aiscmail.com** ****

New Questions

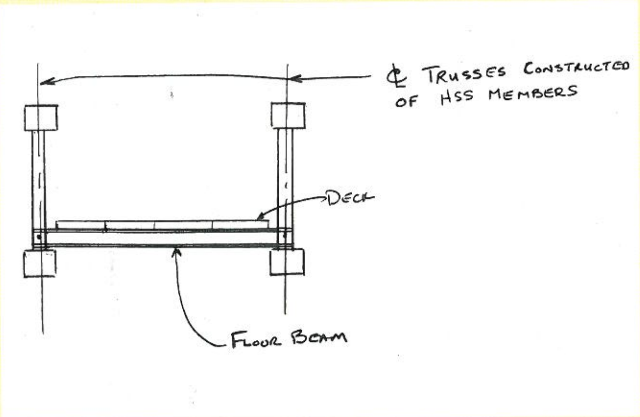
Listed below are questions that we would like the readers to answer or discuss.

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 rokach@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.

For a through truss pedestrian walkway constructed of HSS members, what guidelines do AISC recommend to ensure lateral stability of the topchord?

C. Michael Holtz
GSIInternational
Assumption, IL



In the Manual of Steel Construction, ASD, 9th Edition, Chapter 1, the first paragraph of Section I2.2 states "When shear connectors are used in accordance with Section I4, the composite section shall be proportioned to support all the loads without exceeding the allowable stress prescribed in Section F1.1, even when the steel section in not shored during construction."

My interpretation of this statement is that the bending stress for shear connector composite beams, calculated by dividing the sum of the dead load and live load moments by the transformed section modulus, must not exceed .66Fy. However, I have found widespread discrepancies in the interpretation of this statement amongst textbooks and commercially available structural design software. Is it simply not addressed and/or checked in some textbooks and software? Is this check necessary? I would like to hear other's interpretation of this Section of the Code.

Lisa Bowe, P.E.
Finkbeiner, Pettis & Strout, Inc.
Toledo, OH
via e-mail

In the design of WT hangar connections, the bolts must be evaluated for additional tension due to a prying force. The design equations developed in AISC-LRFD Vol. II - Part 11 seem to account for the deformation and subsequent prying forces developed by the WT flange. Why aren't the deformations and additonal prying forces from the supporting member flange considered in the equations?

Jason Richards
EQE International
St. Louis, MO
via e-mail

The October 1992 issue of *Steel Tips* notes the four available methods to control dead load deflection. They are:

1. Varying thickness slab
2. Overdesign beam/girder
3. Camber beam/girder
4. Shore beams

With a strong preference toward a combination of methods 1 and 2 for short spans, and 1, 2 and 3 for long spans, are there any guidelines & procedures that may help the designer as he/she seeks to juggle several variables such as additional concrete weight, economy, tolerance, and constructibility. Ultimately, the goal seems to be to produce safe, economical, and yet reasonably safe, flat floors.

Ed Gonzalez
via e-mail

Can we design a steel or metal building as an "enclosed" for wind load applications when one sidewall is open for full size doors. When the doors are open, it will make the building "partially enclosed". However, when closed, will make it an "enclosed" structure. What should be the right approach?

Tahir Nasir
Star Building Systems
Oklahoma City, OK

The following questions appeared in past Steel Interchange columns and were never answered. We are reposting them in hopes of receiving an answer to them.

(From March 1994)

Under the ASD design specification, how is the maximum unbraced length (L_c) of a structural tee beam to be determined if the tee stem is in compression? How is the allowable flexural stress to be calculated if the unbraced length exceeds this limit?

(From July 1995)

In field bolted connections for galvanized members, are bolt holes enlarged to account for the layer of zinc which will de deposited? If so, by how much and is it possible to treat the resulting hole as a standard hole in design?

(From February 1996)

One of the primary concerns in flexural design is the use of lateral bracing to control lateral-torsional buckling. What constitutes lateral bracing? Does the bracing member need to be a particular stiffness compared to the member being braced? Does it need to be a particular stiffness compared to the member being braced? Does it need to brace the compression flange, or will it serve its purpose if it braces the web? If the load is applied uniformly by a plate resting across the top flange of the beam, does the plate laterally brace the beam? What if the plate is welded to the beam?

(From June 1996)

An effective net tension area is required by the Specifications for tension members when the tension load is transmitted to some but not all of the cross-sectional elements. How can one calculate U by the LRFD formula B3-2 for welded connections? What is the value of x bar, examples of x bar are given for bolted connections in the commentary but there are no figues shown for welded conections.

(From October 1996)

What design criteria is recommended for a circular bolt pattern in a moment connection, such as a splice joint in a circular column?

(From November 1996)

How are stresses and strains calculated in curved I-beam monorails? Curved beam problems can be solved when the load is pointed to the center of the curve or away from the center. However, what is a practical solution for an I-beam with a curve for the trolley?

(From December 1996)

Are there special design requirements for the design of the deep structural steel girders (deeper than or equal to 12')?

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