A How-To for HSS


The design guide includes discussions on welding (Chapter 2), mechanical fasteners (Chapter 3), moment connections (Chapter 4), tension and compression connections (Chapter 5), branch loads on HSS (Chapter 6), line loads and concentrated forces on HSS (Chapter 7), HSS-to-HSS truss connections (Chapter 8), and HSS-to-HSS moment connections (Chapter 9). An introduction provides general discussion on the advantages of using HSS and other considerations, such as notch toughness, galvanizing issues, and internal corrosion. Users will find this design guide valuable for the clarity of presentation of the Specification provisions, the detailed design examples provided, and the additional information about HSS connection design it includes.

Before getting into the various connection configurations addressed in Chapter K of the 2005 Specification, the design guide gives an excellent general overview of the various welding and fastener issues, and limit states applicable to moment, tension and compression connections that are encountered in designing with HSS. The authors discuss the types of welds and mechanical fasteners specific to HSS. They review the applicable nondestructive testing methods for welds and explain the concepts of effective weld size and effective weld length.

Design examples given for both welds and bolts focus on the topics discussed in those chapters, including a skewed joint, transverse welded plate, through-bolts in shear, and threaded studs and bolts in tension. Chapter 4 includes several types of moment connections: W-shaped beams to HSS columns, continuous beams over HSS columns, through-plate connections, and directly welded connec-

Fig. 1: Table excerpt from Design Guide 24.
organized manner, including diagrams to clarify the connection and force configuration, and references the applicable Specification section or equation.

Figure 1 exemplifies the format of the tables for rectangular HSS-to-HSS truss connections, including the diagram, as well as the applicable limit states for axial and shear loads. Similar tables are provided for plate-to-round and plate-to-rectangular HSS connections, and HSS-to-HSS moment connections. This format brings additional clarity to and understanding of Specification Chapter K. Additionally, the limits of applicability of the provisions are given at the bottom of each table.

*Design Guide 24* is a valuable reference on HSS connection design in that it references the 2005 AISC Specification and 13th Edition Steel Construction Manual and expands on and clarifies the information provided in those publications. AISC members can download the document for free at [www.aisc.org/epubs](http://www.aisc.org/epubs) and nonmembers can purchase it for $60.

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