

steelwise

REQUIRED READING

BY MARTIN ANDERSON

A collection of valuable engineering resources, some familiar

OVER THE LAST DECADE, the AISC Steel Solutions Center has answered more than 100,000 questions, making use of innumerable references and resources in the process.

While many of these sources are very recognizable, others are perhaps not as well-known as they deserve to be, so we've compiled a list of those we find the most interesting and useful to structural engineers. Some of them may not need to be consulted every day, but they likely will come in handy sooner or later.

AISC Commentary. It's right there in front of you—if you happen to be looking at an AISC document. Many times, the answer to a question can be found in the document itself or, more specifically, in the Commentary that AISC includes with documents like the AISC *Specification for Structural Steel Buildings* and *Manual of Steel Construction*. Commentaries in AISC standards contain extensive sections with background information and references intended to provide a fuller understanding of their various requirements. The Commentary is not normative but rather is included for information only. In the AISC *Specification for Structural Steel Buildings* and AISC *Manual of Steel Construction*, Commentary pages can be identified by the vertical gray stripe at the edge of the page. In the *Manual of Steel Construction*, the Commentary is presented in-line with the main text in gray boxes.

AISC Design Guides. Recognizing the wide range of projects that design professionals are called upon to handle, AISC has produced a number of design guides to help the practicing engineer. The design guides are intended to be informational, not normative, and as such compile and organize the thoughts and suggestions of their authors on particular topics. For example, *Design Guide 1* deals with the complexities of base plate and anchor rod design, including practical tips on how to handle common problems. *Design Guide 24* covers HSS connections in detail. The full list of topics covered is available at www.aisc.org/dg. All design guides are free in digital form to AISC members; nonmembers may purchase them.

ASME BTH-1 and B30.20. AISC provisions for design of pins are intended to apply to pin-connected members in buildings (such as found in trusses) and not lifting hardware. However, the American Society of Mechanical Engineers (www.asme.org) publishes BTH-1, which covers the design of below-the-hook lifting devices, as well as B30.20, which includes provisions that apply to the marking, construction, installation, inspection, testing, maintenance and operation of those devices.

ASTM DS67C. There are innumerable steel materials standards in the world and while no summary can replace the close

reading of a standard, you may still find it useful to have a broad summary to give you a general idea of what another material standard requires. ASTM, home of more standards than you or I can count (www.astm.org), also publishes the *ASTM Guide to Stability Design Criteria for Metal Structures*, which covers 6,000 steel materials standards.

Guide to Stability Design Criteria for Metal Structures. The definitive work on design for stability, this text is presently in the sixth edition and has grown to span over a thousand pages of detailed information on stability, with the current edition having significant revisions in a number of areas. Although no new chapters were added for the sixth edition, this latest version from the Structural Stability Research Council (www.stabilitycouncil.org) improves upon the information in previous versions.

Industrial Fasteners Institute. Need to calculate the required thread engagement for a specialty threaded item? Consult the Industrial Fasteners Institute (www.indfast.org). When it comes to the design of threaded fastener components other than the structural bolts that are commonly used in building design and construction, if you follow the chain of references and standards you'll end up here at some point. IFI's technical publications also do a good job of conveying the knowledge and concerns of fastener manufacturers, which can help guide structural engineers who seek to address a less common case of fastener usage. One example is the IFI technical bulletin on calculating thread strength. This is taken care of for us in the fasteners assemblies we use in typical structural bolting applications but may require consideration in specialty applications, like installing a bolt in a tapped plate.

Manufacturers. When you have questions about a manufactured part, always consider asking the manufacturer! Many companies have detailed technical specifications available to help design professionals that use their products. Their technical representatives also can be a wealth of knowledge and experience about their product.

Materials Handling Industry. The MHI (www.mhi.org) is an umbrella organization with a number of subgroups covering all areas of materials handling, ranging from AS-RS (automated storage and retrieval systems) to SCESTG (supply chain execution software). Some of the most commonly referenced standards in our segment of interest are Crane Manufacturers Association (www.mhi.org/cmaa) documents, especially CMAA 70 for single-girder cranes and CMAA 74 for multiple-girder cranes. They also have a number of other items you may find interesting or useful, such as ANSI MH 16.1.