

AISC Design Guides

Making Life a Little Easier

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For many structural steel design challenges, AISC has a design guide to help you through.

The AISC Steel Solutions Center answers thousands of technical questions every year concerning structural steel design and construction. For the most part, the questions are based on AISC *Specification* provisions or design recommendations found in the AISC *Manual*. But then, there are a variety of questions with answers that can't be found in those two important publications.

Fortunately, AISC's *Design Guide* publications offer an abundance of design information on topics too broad for the *Specification* or *Manual*. Common design questions, such as how to account for shear in column anchorages, or when to use slip-critical bolted joints, are addressed in AISC design guides.

AISC design guides provide comprehensive guidance on specialized technical topics relevant to structural steel design, and they are authored by recognized industry experts. They can be ordered through the AISC web site at www.aisc.org/bookstore, or by calling 800.644.2400. All AISC members have free access to AISC's ePubs web site, www.aisc.org/epubs, where they can instantly download electronic copies of AISC design guides any time, anywhere. A brief summary of each design guide follows.

Design Guide 1:
Column Base Plates
mic design, applicable limit states, and base plate design examples.

Design Guide 2:
Steel and Composite Beams with Web Openings

Design Guide 2 offers thorough guidance for the design of beams with circular or rectangular openings in their webs. Included in the design guide are LRFD and ASD design procedures for the effects of holes subjected to moment and/or shear. Most importantly, the guide covers design cases for both composite and non-composite steel beams, and includes a step-by-step procedure for checking, proportioning, and detailing beam web openings and reinforcement.

Design Guide 3:
Serviceability Design Considerations for Steel Buildings, 2nd Edition

Did you know that the recommended maximum vertical deflection for an underhung crane runway beam is $L/450$? Recommended maximum serviceability values and considerations for a wide range of building applications are discussed in detail in *Design Guide 3*. This guide contains several tables with recommended maximum serviceability values for roofing, skylight supports, cladding,

ceilings, partitions, and equipment. The guide also presents the latest revision to existing vibration information due to human activity and machines as it relates to modal damping (a good supplement to *Design Guide 11: Floor Vibrations Due to Human Activity*). The guide contains information on cambering beams and how deflection issues relate to the construction of concrete slabs. Roof ponding cladding-structure interaction and membrane and metal roofs are also addressed.

Design Guide 4:
Extended End-Plate Moment Connections, 2nd Edition

This second edition now addresses seismic and wind applications. It includes design procedures and examples for the four-bolt extended stiffened and unstiffened, as well as the eight-bolt extended stiffened, end-plate moment connections. Users will find that the guide contains a clarified design approach to seismic end-plate connection design compared to the recommendations found in FEMA 350. The basis for each design recommendation is outlined in detail and presented as a step-by-step procedure. Connection limit states are discussed in the guide to help designers understand the principles behind the behavior of extended end-plate moment connections.

Design Guide 5:
Low- and Medium-Rise Steel Buildings

A great primer for designers involved in multi-story designs, *Design Guide 5* addresses many of the most common questions regarding the design of buildings. The guide includes design rules for economy, live load and bay size selection, composite floors, open web joist floors, wind load design, and other associated design topics.

It also discusses floor load capacity

ing ASTM A7 and A9, are tabulated over the past 100 years. Allowable stress information for bolts, rivets, and welds over the past several decades are tabulated. There are chapters dedicated to the evaluation and enhancement of existing structural systems and an appendix that outlines historical changes to the AISC specifications since their inception.

Design Guide 16:
**Flush and Extended Multiple-Row
Moment End-Plate Connections**

This design guide covers two- and four-bolted flush unstiffened, and four-bolt stiffened moment end-plate connections. This design guide includes design examples for multiple row $\frac{1}{2}$ and $\frac{1}{3}$ extended unstiffened moment end-plate connections, as well as the $\frac{1}{3}$ stiffened version. For pre-engineered metal buildings, there is a chapter dedicated to gable-frame panel-zone design. In addition, design procedures for using snug-tightened and pretensioned bolts are addressed.

Design Guide 17:
**High Strength Bolts – A Primer for
Structural Engineers**

A must-have design guide on structural bolting, this primer assists engineers in understanding the basis of the requirements in the *RCSC Specification for Structural Joints Using ASTM A325 or A490 Bolts*. The guide also includes a chapter dedicated to the static strength of rivets, which can be invaluable for retrofit work. The guide addresses bolt installation, inspection, behavior, and design. In addition, specialized topics are covered, including the proper use of washers, galvanized bolts, reuse of high-strength bolts, joints with combined bolts also includes ast.0983 wbf thesurfac.8(eabolts.n.)Tj/F5 1 Tf10 0 0 10 29 122.9675 Tm/Cs6 cs 0 0.215

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