

# steel quiz

This month's Steel Quiz takes a look at topics addressed in the AISC *Seismic Provisions* (available at [www.aisc.org/2010seismic](http://www.aisc.org/2010seismic)).

- 1 True or False: The AISC *Seismic Provisions* require the use of slip-critical connections when bolted joints are used in the SFRS.
- 2 True or False: The AISC *Seismic Provisions* have special requirements that help minimize welding into the k-area of columns.
- 3 The AISC *Seismic Provisions* require which of the following to be provided in structural design drawings and specifications (choose one):
  - a. Designation of the SFRS
  - b. Identification of members that are part of the SFRS
  - c. Locations and dimensions of protected zones
  - d. a and c
  - e. a, b and c
- 4 True or False: All CJP groove welds in the SFRS are required to be demand-critical.
- 5 True or False: When the AISC *Seismic Provisions* require the use of the amplified seismic load, load combinations containing the over-strength factor,  $\Omega_o$ , should be used.
- 6 True or False: When designing a brace connection for  $R_y F_y A_g$ , the designer is permitted to use  $R_y F_y$  and  $R_t F_{ur}$ , respectively, for checking tension yield and tension rupture of the brace.
- 7 In Tables J6 through J10 of the AISC *Seismic Provisions*, (O) stands for Observe, (P) stands for Perform and (D) stands for \_\_\_\_\_.
  - a. Daily
  - b. Detect
  - c. Document
  - d. Delay
- 8 Chapter 5 in AISC 358 *Prequalified Connections for Special and Intermediate Steel Moment Frames for Seismic Applications* (a free download at [www.aisc.org/aisc358](http://www.aisc.org/aisc358)) covers RBS moment connections. RBS stands for \_\_\_\_\_.
  - a. Reinforced beam section
  - b. Rectangular beam section
  - c. Reduced beam section
  - d. Restrained beam section

TURN PAGE FOR ANSWERS

- 1 False. Section D2.2 requires that bolts be installed as pretensioned high-strength bolts with a minimum Class A faying surface. However, the available shear strength of these bolted joints is calculated as a bearing-type joint as required in Section D2.2(1). There are exceptions that permit oversize holes at diagonal braces and exclude the faying surface requirements where seismic loads are not transferred through shear in the bolts.
- 2 True. The required corner clip sizes of Section D2.4 and I2.4 in the AISC *Seismic Provisions* are sized to avoid welding in the k-area for these conditions. The AISC *Specification* also recommends in Commentary Section J10.8 to avoid welding in the k-area of highly restrained joint (joints with continuity plates and full-depth stiffeners).
- 3 e. a, b and c. This is addressed in Section A4 of the AISC *Seismic Provisions*.
- 4 False. Welds designated as demand-critical are specified in the provisions in the section applicable to the specific seismic force resisting system or within the prequalification/qualification standard for prequalification/qualification connections. The AISC *Seismic Provisions* do not require all CJP groove welds to be demand-critical.
- 5 True. This is explained in the Commentary to Section B2 of the AISC *Seismic Provisions*.
- 6 True. The user note in Section A3.2 states: "In several instances a member, or a connection limit state within that member, is required to be designed for forces corresponding to the expected strength of the member itself. In such cases it is permitted to use the expected material strength in the determination of the available member strength."
- 7 c. Document. As stated in Section J5.3, the inspector must prepare reports indicating that the work has been performed in accordance with the contract documents.
- 8 c. Reduced beam section. A reduced beam section is a beam section where portions of the beam flanges are selectively trimmed in the region adjacent to the beam-to-column connection. Yielding and hinge formation are intended to occur primarily within this area.



Everyone is welcome to submit questions and answers for Steel Quiz. If you are interested in submitting one question or an entire quiz, contact AISC's Steel Solutions Center at 866.ASK.AISC or at [solutions@aisc.org](mailto:solutions@aisc.org).