

steel quiz

LOOKING FOR A CHALLENGE?

Modern Steel Construction's monthly Steel Quiz tests your knowledge of steel design and construction. Most answers can be found in the 2005 *Specification for Structural Steel Buildings*, available as a free download from AISC's web site, www.aisc.org/2005spec. Where appropriate, other industry standards are also referenced.

Questions 1 through 5 relate to the 2005 AISC *Code of Standard Practice*.

- 1 True/False: When there is a discrepancy between the design drawings and specifications, the specification governs.
- 2 What is the camber tolerance for a beam that is 30 ft long?
 - (a) +/- ¼ in.
 - (b) -0 / + ½ in.
 - (c) -0 / + ¾ in.
 - (d) None of the above
- 3 Is the fabricator responsible for supplying steel stud shear connectors to the field?
- 4 True/False: Lintels are considered structural steel in Section 2 of the 2005 AISC *Code of Standard Practice*.
- 5 What is the permissible variation in distance between the centers of anchor rod groups?
 - (a) ⅙ in.
 - (b) ⅛ in.
 - (c) ¼ in.
 - (d) ½ in.
- 6 When a single-plate shear connection is welded to the face of an HSS wall, how can the designer preclude punching shear of the HSS wall?
- 7 Is the reuse of high-strength bolts permitted by the AISC *Specification*?
- 8 Is load rating by testing of existing floor or roof systems permitted by AISC?
- 9 Does AISC provide any guidance for load transfer and stiffening requirements when framing a beam to the weak axis of a column?
- 10 True/False: Equations H1-1a and H1-1b in the 2005 AISC *Specification* can be used to design WT shapes under combined compression and flexural loading.

steel quiz

ANSWERS

- 1 False. According to Section 3.3 of the 2005 AISC *Code of Standard Practice*, when there is a discrepancy between the design drawings and specifications, the design drawings govern. Two additional notes: (1) It is not the contractor's responsibility to find discrepancies, but (2) if discovered before work is performed, they are required to be reported for resolution.
- 2 (b) According to Section 6.4 of the 2005 AISC *Code of Standard Practice*, the camber tolerance for members of 50 ft or less in length is $-0 / + \frac{1}{2}$ in.
- 3 According to Section 7.8.3 of the 2005 AISC *Code of Standard Practice*, steel stud shear connectors are supplied by the fabricator if they are attached to structural steel in the shop. Otherwise, the responsibility for providing steel stud shear connectors must be specified in the contract documents. Note that OSHA requirements do not allow shop attachment of shear studs and similar items in the shop when they would create a tripping hazard in the field.
- 4 Trick question. The answer is true for lintels that are attached to the structural steel frame. Otherwise, the answer is false.
- 5 (b) According to Section 7.5 of the 2005 AISC *Code of Standard Practice*, the variation in distance between centers of anchor rods in groups should not exceed $\frac{1}{8}$ in.
- 6 Punching shear of an HSS wall that has a single-plate shear connection attached to it can be precluded by ensuring that the force from the plate does not exceed the shear strength of the wall. This is commonly done using the inequality provided in Equation K1-10 of the 2005 AISC *Specification*.
- 7 The AISC *Specification* incorporates the reuse provisions in the RCSC *Specification* by reference. The RCSC *Specification* permits reuse of black ASTM A325 bolts, but not ASTM A490 bolts or galvanized ASTM A325 bolts. This is also discussed in AISC Design Guide 17 (www.aisc.org/epubs).
- 8 Yes. The provisions of Appendix 5.4 in the 2005 AISC *Specification* permit the testing of existing floor and roof structures to establish a load rating.
- 9 Yes. Part 10 of the 13th edition AISC *Manual* (page 10-140) and information in AISC Design Guide No. 13 (Appendix B) provide guidance on the design and details for beams that frame to the weak axis of a column.
- 10 False. The WT shapes shown in Part 1 of the 13th edition AISC *Manual* do not satisfy the I_{yc}/I_y ratio limits set in section H1.1. Therefore, Equation H2-1 is used for WT design with combined loading.

Anyone 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.



Steel SolutionsCenter