

steel quiz

This month's Steel Quiz is all about the AISC *Steel Construction Manual*, 15th Ed., available this month at www.aisc.org/publications. (It's also all about the True or False question format.)

Many thanks to Lutfur R. Khandaker, PE, and Raunac A. Khandaker of KBK Structural Design, LLC, who contributed this month's questions and answers.

- 1 **True or False:** The *Manual* requires that Table 14-2 must be used for maximum anchor-rod holes sizes for base plates.
- 2 **True or False:** The effects of mill, fabrication and erection tolerances all must be considered in the design and construction of structural steel buildings.
- 3 **True or False:** The accumulation of the mill tolerances and fabrication tolerances shall not cause the erection tolerances to be exceeded.
- 4 **True or False:** Per Section 3.1.2 of the AISC *Code of Standard Practice for Steel Buildings and Bridges* (ANSI/AISC 303-16, available at www.aisc.org/standards) there are three commonly accepted methods for establishing criteria for connections.
- 5 **True or False:** The induced residual stresses due to typical cambering and curving of structural steel members do not affect the available strength since the effect of residual stresses is considered in the provisions of the AISC *Specification for Structural Steel Buildings* (ANSI/AISC 360-16, available at www.aisc.org/standards).
- 6 **True or False:** The mechanical properties of steels are largely unaffected by heating operations described in the *Manual* under the section titled "Hot Bending."
- 7 **True or False:** The inelastic deformations required in common cold bending operations, such as for beam cambering, normally fall well short of the strain-hardening range.
- 8 **True or False:** All column base plates must be designed and fabricated with a minimum of four anchor rods, per the *Specification*.
- 9 **True or False:** The *Manual* includes both LRFD and ASD approaches for the design of structural steel members and connections.
- 10 **True or False:** For LRFD and ASD, the loads and load combinations shall be those stipulated in ASCE 7.

TURN PAGE FOR ANSWERS

- 1 **False. (Trick question!)** Unlike the *Specification*, which contains requirements, the *Manual* provides recommendations. Even the title of Table 14-2 indicates that the values provided in the table are "Recommended." Refer to Table 14-2 on page 14-21 of the *Manual*.
- 2 **True.** Refer to the section on tolerances on page 2-31 of the *Manual*.
- 3 **True.** This is stated in Section 7.12 of the *Code*. Additional information is also provided on page 2-31 of the *Manual*.
- 4 **True.** In addition to Section 3.1.2 of the *Code*, more discussion on this topic can be found on page 2-27 of the *Manual*.
- 5 **True.** Additional information is provided on page 2-34 of the *Manual*.
- 6 **True.** Refer to the section on hot bending on page 2-35 of the *Manual*.
- 7 **True.** Refer to the section on cold bending on page 2-35 of the *Manual*.
- 8 **False.** This is required per OSHA regulations. See Section 1926.755(a)(1) of the 29 *CFR Standards for Steel Erection*. Note that posts (which weigh less than 300 lb.) are excluded from the four-anchor-rod requirement. OSHA requirements are summarized on page 2-6 of the *Manual*.
- 9 **True.** As indicated on page 2-9 of the *Manual*, the "two approaches are equally valid for any structure for which the *Specification* is applicable" and there is "no preference stated or implied in the *Specification*." Refer to page 2-9 of the *Manual* for additional information.
- 10 **Mostly true.** Section B2 of the *Specification* states that loads and load combinations shall be those stipulated in ASCE 7 in the absence of a building code. As stated in the discussion provided on page 2-11 of the *Manual*, loads, load factors and load combinations are "usually based on ASCE 7, which may be used when there is no applicable building code."



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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.