

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.

This month's Steel Quiz was developed by AISC's Steel Solutions Center. Sharpen your pencils and go!

- 1 What colors are on the cover of the 13th Edition AISC *Steel Construction Manual*?
 - a. green with gold letters
 - b. black with gold letters
 - c. dark blue with white letters
 - d. red with gold letters
 - e. silver with black letters.
- 2 Where can one find copies of the 10th, 11th, and 12th editions of the AISC manual?
- 3 What is the approximate total number of AISC manuals that have been printed since the first manual was published in 1927?
 - a. 100,000
 - b. 500,000
 - c. 1 million
 - d. 1.5 million
 - e. 2 million
- 4 **True/False:** The steel section dimensions and properties tables are the same in the 13th Edition AISC *Steel Construction Manual* as in the ASD 9th edition *Manual of Steel Construction*.
- 5 Why are two k dimensions listed in the W-shapes tables of the 13th edition AISC manual? There is a difference between these two listed dimensions for the same section.
- 6 Why is the design wall thickness for HSS and pipe shown in the 13th edition AISC manual tables less than the designated wall thickness?
- 7 The beam and column load tables include two values, one in green shading and one in blue print, for each shape and span or effective length combination. Which capacity can be used in a design?
- 8 How many design guides does AISC currently offer?
 - a. 16
 - b. 17
 - c. 18
 - d. 19
 - e. 20
- 9 What is the latest version of the AISC Shapes Database?
 - a. V3.0
 - b. V3.1
 - c. V4.0
 - d. V13.0
- 10 **True/False:** The 13th Edition AISC *Steel Construction Manual* contains published design examples.

TURN PAGE FOR ANSWERS

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ANSWERS

1 The answer is **b**, black with gold letters. This color combination reflects that found on the cover of the first edition of the AISC manual (then titled *Steel Construction*), which was published in 1927.

2 There are no 10th, 11th, or 12th editions of the AISC manual. The numbering of the new 13th edition represents the nine previous editions of the ASD manual, plus the three previous editions of the LRFD manual, plus one for the current manual, the 13th edition.

3 The answer is **e**. More than 2 million manuals have been printed to date since the first printing in 1927. A commemorative copy of the 13th edition AISC manual has been printed in a gold cover with black lettering and is on display in AISC's office in Chicago.

4 False. The 13th Edition *Steel Construction Manual* reflects dimensions and properties as indicated in the ASTM A6-05 (for hot-rolled shapes), ASTM A500-03a (for HSS), and ASTM A53/A53M-02 (for pipe). These documents represent the current shapes being produced by the mills. There are many significant changes, including the recent revision of W36 shapes.

5 The two designations for the k dimension listed in the W-shapes (and similar WT-shapes) are not new to the 13th edition AISC manual. Similar

double designations also were included in the 3rd edition LRFD manual, but not in the 17-year-old ASD manual. The actual k dimension is not a set standard and will vary from mill to mill. There is a decimal k_{des} dimension given for design use such that the section properties will not be overestimated when designing. There is also a fractional k_{det} dimension given for detailing use such that the flat portion of the beam web will not be overestimated when detailing.

6 The design wall thickness for HSS and pipe being less than the designated (nominal) wall thickness is also not new to the 13th edition AISC manual. The HSS manufacturing process for ERW tubes is such that the thickness of the sheet and plate used can be controlled to a very tight tolerance—and is usually controlled near the minimum, which is 10% under nominal. Originally recognized in the 1999 AISC LRFD specification and Supplement No. 1 to the 1989 ASD specification, the 2005 AISC specification likewise requires that the design thickness be based on 0.93 times the nominal thickness.

7 If the designer has based the load computations on ASD load combinations per Section 2.4 of ASCE 7-05, the capacity shown in green shading under the ASD column heading should be used. If the designer has based the load computations on the LRFD load combinations per Section 2.3 of ASCE 7-

05, the capacity shown in blue lettering under the LRFD column heading should be used.

8 The answer is **d**. A complete list of AISC design guides can be found at www.aisc.org/epubs. Several more are on their way in 2006.

9 The answer is **d**. This database is developed and designated in conjunction with the 13th Edition AISC *Steel Construction Manual*. Database V13.0 is based on the current shapes found in ASTM A6-05 and also provides previous shapes no longer used in the historic shapes file (V13.0H).

10 True. An expanded number of design examples are included with the 13th Edition AISC *Steel Construction Manual* on a CD. The examples illustrate the use of every major provision in the specification, tables in the manual, and a full building example. The CD also contains the AISC Shapes Database V13.0 and V13.0H, as well as PDF copies of all the AISC-owned references from the *Manual* and the *Specification*.

Anyone is welcome to submit questions 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.



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