

STEEL QUIZ

STEEL QUIZ, A MONTHLY FEATURE IN *MODERN STEEL CONSTRUCTION*, allows you to test your knowledge of steel design and construction. Unless otherwise noted, all answers can be found in the *LRFD Manual of Steel Construction*.

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If you or your firm are interested in submitting a Steel Quiz column, please contact Scott Melnick at 312/670-8311 or via email at melnick@aiscmail.com.

Questions and answers for this month's Steel Quiz were contributed by the AISC Chicago staff.

QUESTIONS

1. What is the standard torque setting for the installation of a fully-tensioned ASTM A325 bolt? For an ASTM A490 bolt?
2. What is the metric equivalent of 50 ksi, as noted in AISC's Metric Conversion of the Second Edition LRFD Manual?
3. True or false? It is good practice to plug weld a partially-engaged nut to an anchor rod.
4. When is a new edition of the ASD Manual going to be published?
5. What degree of cleaning is implied when surfaces are indicated to be "blast cleaned"?
6. Can the same nut be used on threaded parts with either cut or rolled threads?
7. What commonly used steel product is covered by the ASTM F1554 specification?
8. What are the four categories in AISC's Quality Certification Program for structural steel fabricators?
9. True or false: The 1997 AISC Seismic Provisions have been updated.
10. What color is AISC's new metric conversion of the second edition LRFD manual?

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ANSWERS

1. There is no such value. Torque is not a valid measure for fully-tensioned installation, unless it is calibrated. Although the first RCSC bolt specification in 1951 incorporated a table of standard torque values for the installation of fully-tensioned high-strength bolts, it was later demonstrated that the condition of the threads could cause the installed bolt tension to vary by as much as 40 percent. The recognition of these standard torques has long been withdrawn. Accepted procedures for fully-tensioning high-strength bolts can be found in the RCSC Specification (1994) Section 8. If torque is to be used as in the calibrated wrench installation method, as described in Section 8 (d) (2), it must be calibrated on a daily basis for the bolts being installed.
2. The metric equivalent of 50 ksi is 345 MPa. ASTM A572 Grade 50 steel has the metric designation of ASTM A572M Grade 345. ASTM A992, another 50 ksi steel, is also considered a 345 MPa steel.
3. False. Plug welding the partially engaged nut to the anchor rod is not considered to be an effective means of attachment. It's unclear as to what WPS you would even follow.
4. There will be no new editions of the ASD Manual. The AISC Board of Directors has stated that "LRFD is the preferred Specification for the fabricated structural steel industry" and that "...LRFD is consistent with the prevailing trend toward limit-states design in all materials, both domestically and internationally."
5. When blast-cleaned surfaces are specified in contract documents without identification of the desired degree of cleaning, SSPC-SP6 (commercial blast cleaning) is assumed.
6. Yes. Both rolled and cut threads are produced to meet the same threading specification.
7. Anchor rods (ASTM calls them "anchor bolts") are specified by ASTM F1554. This specification covers anchor rods in typical configurations with yield stresses of 36 ksi, 55 ksi, and 105 ksi. If you don't already have a copy, contact ASTM at 610/832-9500 to order a copy.
8. The four categories and their AISC Quality Certification abbreviations are: Conventional Buildings (Sbd), Simple Bridges (Sbr), Complex Buildings (Cbd), and Major Bridges (Cbr).
9. True. The 1997 AISC Seismic Provisions have been updated by Seismic Supplement No. 1, February 15, 1999. Order your free update from AISC publications at 800/644-2400, item S341s.
10. We like to call it "metric orange." You won't lose these books on your shelf!