

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*. **To receive a copy of the 1997 AISC Publications List, please call 800/644-2400 or fax 312/670-5403.**

QUESTIONS:

1. The increase in bolt tension due to deformation of the connected part is known as what?
2. When a beam web penetration requires reinforcement, the most efficient location for that reinforcement is:
 - a) around the entire periphery of the opening
 - b) horizontal reinforcement above and below the hole only
 - c) vertical reinforcement on both sides of the hole only
 - d) b and c
3. When a bolt is indicated as ASTM A325T, what does the T indicate?
 - a) that the bolt is threaded for the full length of the shank
 - b) that the bolt is suitable for high temperature applications
 - c) that the bolt has weathering characteristics similar to that of ASTM A588 (weathering) steel
 - d) that the bolt is a tension-control or twist-off bolt
4. The purpose of a weld access hole is to:
 - a) allow the welder access to start and stop the beyond the plane of the beam web
 - b) minimize restraint to allow for shrinkage in the welded joint
 - c) eliminate intersection of welds in orthogonal directions
 - d) all of the above
5. Which of the following material specifications would not be appropriate for a hooked anchor rod?
 - a) ASTM A572
 - b) ASTM A449
 - c) ASTM A325
 - d) ASTM A687
6. A transversely loaded fillet weld is 50 percent stronger in shear than the same fillet weld loaded longitudinally, True or False?
7. Generally speaking, wide-flange (W) shapes differ from American standard (S) shapes in what way?
8. Paint is not permitted on the faying surfaces of slip-critical connections, True or False?
9. Through-plates are required for single-plate shear connections to HSS columns, True

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or False?

10. A structural member that resists both axial compression and strong-axis bending is known as what?

ANSWERS:

1. Prying action
2. b.
3. a. The shank of an ASTM A325T bolt is fully threaded; it may be ordered in lengths up to and including four times the bolt diameter.
4. d.
5. c. ASTM A36, A572, A588, and A687 are available for use as unheaded rod material, ASTM A307, A354 and A449 are available as headed bolt or unheaded rod material, and ASTM A325 and A490 are available as headed bolt material only. Therefore, specification of a hooked anchor rod as ASTM A325, or A490 would imply that a head is required. Note that the strength equivalent of these grades is available in unheaded rod material as ASTM A449 and A354, respectively.
6. True. 1993 LRFD Specification Appendix J2.4 recognizes the increase in strength of fillet welds in shear due to load angle.
7. The flange surfaces on W-shapes are parallel, while the inner flange surfaces on S-shapes are at an approximate 2:12 slope.
8. Well, true and false. True because unqualified paint is not permitted on the faying surfaces of slip-critical connections. False because paint systems which offer a Class

A or B slip coefficient and have been qualified by RCSC Specification Appendix A are permitted on the faying surfaces of slip-critical connections.

9. False. As covered in the AISC HSS Connections Manual, a single-plate shear connection welded directly to the face of the HSS wall is acceptable as long as the punching shear check outlined therein is satisfied.
10. A beam-column.

This Steel Quiz column was contributed by Charles Carter, P.E., AISC's Director of Manuals. If you would like to contribute a Steel Quiz Column, please contact: Scott Melnick, One East Wacker Dr., Suite 3100, Chicago, IL 60601-2001; ph: 312/670-5407; email: melnick@aiscmail.com