Steel Quiz

Steel Quiz, a monthly feature in Modern Steel Construction, allows you to test your knowledge of steel design and construction. Answers can generally be found in the LRFD Manual of Steel Construction, 2nd edition, but other industry standards are often referenced.

If you or your firm are interested in submitting a Steel Quiz question or column, please contact:

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It's time for your fall midterm exam. Get ready; get set; go!

Questions

1. For a 3/4” A490 bolt, what would be the size of a short-slotted hole?

2. What are the two meanings of the acronym HSS?

3. Which of the following is NOT an abbreviation for a welding procedure:
   a. GMAW
   b. SMAW
   c. MEOW

4. What is the identification color for A572 Grade 50 steel, according to ASTM A6/A6M?

5. What is the $\phi$-factor for tension rupture?
   a. 0.65
   b. 0.75
   c. 0.85

6. True or False: The AISC Specification requires that bolts be spaced at 3” o.c. minimum.

7. True or false: Structural steel must be shop primed to receive spray-applied fire protection.

8. The AISC Manual recommends what weld size for the plate-to-web weld (both sides) of a single plate shear connection:
   a. 1/2”
   b. 3/4 of the plate thickness
   c. 3/4 of the supporting beam web thickness

9. What color are the AISC Seismic Provisions (1997)?

10. Shear studs must project how far above the ribs of a composite slab?
    a. 3/4”
    b. 1-1/2”
    c. 2”

Turn page for answers
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Answers

1. For a 3/4” bolt, a short slotted hole would be 13/16” by 1”.

2. Hollow Structural Section, or High Strength Steel.

3. c. (Unless your CWI likes catnip and yarn)

4. Green and yellow, usually painted on the ends of the steel sections, identifies it as A572 grade 50.

5. b. For tension rupture, the φ-factor is 0.75.

6. False. The minimum center-to-center spacing for bolts is 2 2/3 \( d_b \), although 3\( d_b \) is preferred.

7. False. Spray-applied fire protection won’t properly adhere to standard shop primers.

8. b. 3/4 of the shear plate thickness is the recommended weld size. This guarantees that the plate will yield before the weld will fail.

9. The 1997 AISC Seismic Provisions are this color:

10. b. Shear studs must project 1 1/2” above the deck ribs according to the AISC Specification.