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
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QUESTIONS:

1. For which of the following
purposes is an intumescent
coating used?
   a. fire protection
   b. to coat the faying surfaces
      of slip-critical connections
   c. to touch-up abrasions and
      bare spots on galvanized
      members
   d. none of the above

2. A cambered beam has addi-
tional flexural strength
because of the prestressing
effect that is induced during
cambering, True or False?

3. Both the AISC LRFD
   Specification for Structural
   Steel Buildings and the
   RCSC LRFD Specification
   for Structural Joints Using
   ASTM A325 or A490 Bolts
   make reference to the Guide
   for the background of many
   concepts and issues in bolted
   construction. What is the
   Guide?

4. A WT tension member is con-
nected to a gusset with six
bolts (total) on two gage lines
through its flange. What are
the potential patterns of fail-
ure for block shear rupture?

5. Why is wind speed a factor
in field work involving gas-
shielded flux-cored arc weld-
ing (FCAW-g)?

6. What is AESS?

7. Within the limits as specified
in AWS D1.1, which of the
following discontinuities is
allowed in welds?
   a. porosity
   b. undercut
   c. cracking
   d. convexity

8. A 2-in.-diameter headed
anchor rod is ordered as
ASTM A490. Is this accept-
able?

9. A bridge girder to be hot-dip
galvanized is too long to fit
in the tank. However, the
galvanizer indicates that it
can be double dipped. What
does this mean?

10. In steel design least weight
always equals least cost,
True or False?
AESS stands for Architecturally Exposed Structural Steel. AISC Code of Standard Practice Section 10 covers fit, finish, and other related requirements for steel that is designated in the contract documents as AESS. Structural steel can be designated as AESS when the desired architectural effect or appearance of exposed structural steel is such that the additional cost of more stringent tolerances and preparation is justified.

7. a, b, and d. Porosity, undercut, and convexity are all acceptable within the limits specified in AWS D1.1. Cracking, however, is not permitted.

8. No. ASTM A490 is a structural bolt material specification that covers diameters up to and including 1½ in. (only). Additionally, it is doubtful that ASTM A490 material can be obtained in lengths suitable for anchor-rod applications, except by special order. ASTM A354 material (the strength equivalent to ASTM A490) is a suitable alternative when this strength level is required. Side note: ASTM A449 is similarly a suitable alternative for ASTM A325.

9. When double dipped, a member to be galvanized is first dipped to coat part of its length, flipped around, and dipped to coat the remaining length. If the visible region of galvanized overlap is acceptable, this practice markedly extends the practical range of length than can be galvanized.

10. False. Today, steel prices are lower and labor costs are higher, so the driving force in steel economy is the minimization of labor in fabrication and erection. In fact, the reckless pursuit of the least-weight assembly of members will most often result in a more costly structure because of the increased need for labor-intensive detail materials like stiffeners and reinforcing plates at the connections. With modern cost ratios, it is usually beneficial to trade some inexpensive additional steel weight in members to eliminate labor-intensive detail pieces. Your local fabricator can best show you where the cost is (and isn’t).