

Steel Quiz, a monthly feature in *Modern Steel Construction*, allows you to test your knowledge of steel design and construction. All references to LRFD specifications pertain to the 1999 *LRFD Specification for Structural Steel Buildings*, available as a free download at

www.aisc.org/lrfdspec

ASD references pertain to the 1989 *ASD Specification for Structural Steel Buildings*. Where appropriate, other industry standards are also referenced.

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



One E. Wacker Dr., Suite 3100
Chicago, IL 60601
tel: 866.ASK.AISC
fax: 312.423.4651

solutions@aisc.org

This month's *Steel Quiz* was written by AISC's Steel Solutions Center. All of the questions pertain to single plate shear connections.

1. Which of the following is the most common alternate name for a single plate shear connection?
 - a. shear tab
 - b. shear key
 - c. shear lug
 - d. shear stud
2. True or False: The plate in a single plate shear connection is always welded to the support on both sides of the plate and bolted to the supported member.
3. True or False: It is desirable for bearing deformations to appear in the plate before the bolt shear limit state is reached.
4. Who is commonly credited for the single plate shear connection design procedure found in today's *Manual of Steel Construction*?
5. True or False: Eccentricity need not be considered in the design of single plate shear connections.
6. What is the minimum recommended plate thickness to prevent local buckling of the plate?
 - a. $\frac{1}{8}$ "
 - b. $\frac{1}{4}$ "
 - c. $\frac{3}{8}$ "
 - d. $\frac{1}{2}$ "
7. True or False: For ease in erection, providing short-slotted holes in the plate is common.
8. What is the usual distance between the face of the support and the center line of the row of bolts in a single plate shear connection?
 - a. 1"
 - b. 2"
 - c. 3"
 - d. 4"
9. Assuming an ASTM A36 plate connection to an ASTM A992 column flange, what size is appropriate for the plate-to-column flange weld?
 - a. 50% the thickness of the plate
 - b. 50% the thickness of the column flange
 - c. 75% the thickness of the plate
 - d. 75% the thickness of the column flange
10. True or False: Rotation predominantly occurs in the support for the rigid case and at the bolt line for the flexible case.

TURN PAGE FOR ANSWERS

STEEL QUIZ

ANSWERS

A more detailed explanation of these answers can be found in Part 10 of the 3rd Edition *LRFD Manual of Steel Construction*.

1. a.
2. True.
3. True. In fact, the plate thickness is specifically limited to encourage this.
4. Abolhassan Astaneh-Asl. See "Design of Single Plate Shear Connections," *Engineering Journal*, First Quarter, 1989.
5. False. Eccentricity equations can be found in the *AISC Manual*.
6. b.
7. True.
8. c, although the procedure given in the *Manual* is valid for a distance of 2.5" to 3.5".
9. c. This weld size develops the strength of the plate, thereby eliminating weld rupture as a limit state.
10. False. The reverse is true.

