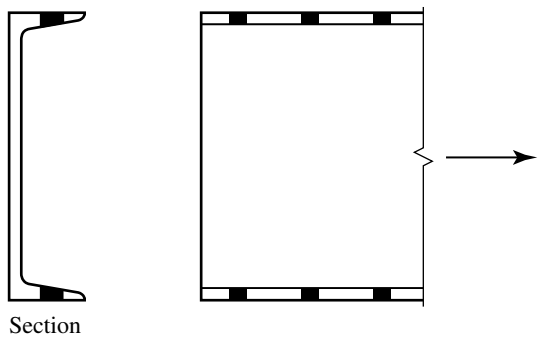

FIGURE P3.2-3

3.2-4 A PL $\frac{3}{8} \times 6$ tension member is welded to a gusset plate as shown in Figure P3.2-4. The steel is A36. Assume that $A_e = A_g$ and compute the following.

a. The design strength for LRFD.

b. The allowable strength for ASD.

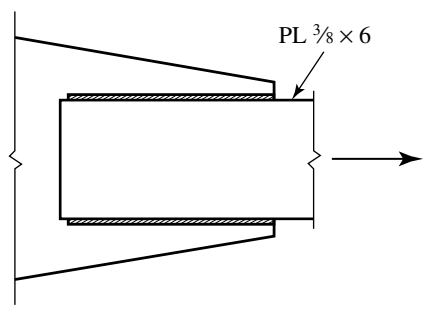

FIGURE P3.2-4

3.2-5 The tension member shown in Figure P3.2-5 is a PL $\frac{1}{2} \times 8$ of A36 steel. The member is connected to a gusset plate with-$1\frac{1}{8}$ inch-diameter bolts. It is subjected to the dead and live loads shown. Does this member have enough strength? Assume that $A_e = A_n$.

a. Use LRFD.

b. Use ASD.

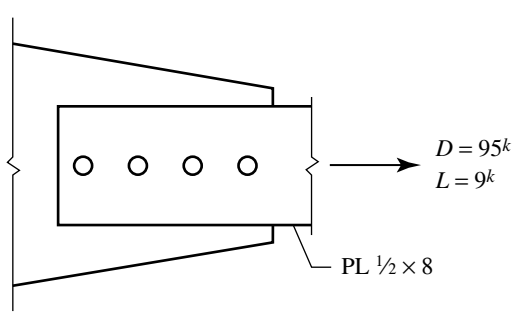

FIGURE P3.2-5

3.2-6 A double-angle tension member, 2L 3 × 2 × ¼ LLBB, of A36 steel is subjected to a dead load of 12 kips and a live load of 36 kips. It is connected to a gusset plate with ¾-inch-diameter bolts through the long legs. Does this member have enough strength? Assume that $A_e = 0.85A_n$.

a. Use LRFD.

b. Use ASD.

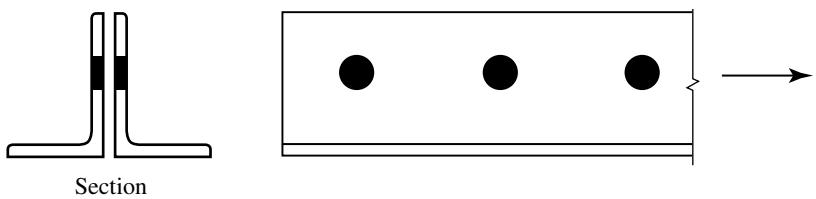

FIGURE P3.2-6

3.2-7 A C8 × 11.5 is connected to a gusset plate with ⅞-inch-diameter bolts as shown in Figure P3.2-7. The steel is A572 Grade 50. If the member is subjected to dead load and live load only, what is the total service load capacity if the live-to-dead load ratio is 3? Assume that $A_e = 0.85A_n$.

a. Use LRFD.

b. Use ASD.

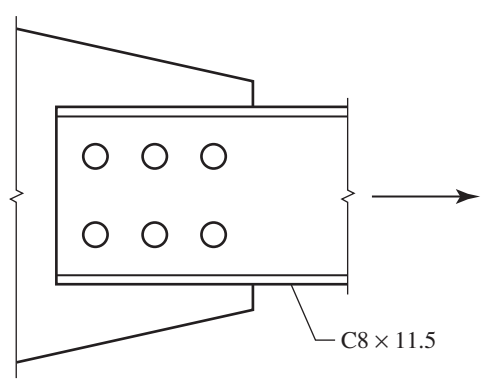

FIGURE P3.2-7

Effective area

3.3-1 Determine the effective area A_e for each case shown in Figure P3.3-1.