

**Example 3.4** Find the axial compression design strength for a 40 ft A36 steel W12×65 section with no bracing. Compare this strength with that of the same column made out of A572 Grade 50 steel ( $F_y = 50$  ksi).

**Example 3.5** Repeat Example 3.4 for the case of bracing at mid-length.

**Example 3.6** A 16 ft column with pinned ends in a braced frame is to support a compression load. The dead load is 95 kips and the live load is 100 kips. Select the lightest section of A36 steel. Choose among W8, W10 and W12 sections.

**Example 3.7** A 30 ft column with pinned ends in a braced frame is to support a compression load. The column has an additional lateral support in the weak-axis direction at mid-height. The dead load is 245 kips and the live load is 110 kips. Select the lightest section of A36 steel. Choose from W8, W10, and W12 sections.

**Example 3.8** Design the column shown below. The dead load ( $P_D$ ) is 198 kips and the live load ( $P_L$ ) is 164 kips. In the strong axis, the column is rigidly connected to the girders, and in the weak axis it is flexibly connected to the beams. Using A36 steel find the lightest member among W12 sections. The girders are W16×36 sections with 40 ft spans. The columns are all 12 ft high.

