

The factored resistances so determined, in order to meet the strength requirements of this Standard, shall be greater than or equal to the effect of factored loads determined in accordance with Clause 7.2.

13.2 Axial Tension Member and Connection Resistance

The factored tensile resistance, T_r , developed by a member subjected to an axial tensile force shall be taken as

- (a) the least of
 - (i) $T_r = \phi A_g F_y$;
 - (ii) $T_r = 0.85 \phi A_n F_u$; or
 - (iii) $T_r = 0.85 \phi A_{ne} F_u$; and
- (b) for pin connections

$$T_r = 0.75 \phi A_n F_y$$

13.3 Axial Compression

13.3.1 Flexural Buckling

The factored axial compressive resistance, C_r , of doubly symmetric shapes conforming to the requirements of Clause 11 for Class 1, 2, or 3 sections shall be taken as

$$C_r = \phi A F_y (1 + \lambda^{2n})^{-1/n}$$

where

- $n = 1.34$ for hot-rolled, fabricated structural sections, and hollow structural sections manufactured according to CSA Standard G40.20, Class C (cold-formed non-stress-relieved)
- $= 2.24$ for doubly symmetric welded three-plate members with flange edges oxy-flame-cut and hollow structural sections manufactured according to CSA Standard G40.20, Class H (hot-formed or cold-formed stress-relieved)

$$\lambda = \frac{KL}{r} \sqrt{\frac{F_y}{\pi^2 E}}$$

$$= \sqrt{\frac{F_y}{F_e}}$$

Doubly symmetric shapes that may be governed by torsional flexural buckling shall also meet the requirements of Clause 13.3.2.

13.3.2 Torsional or Torsional-Flexural Buckling

The factored compressive resistance, C_r , of asymmetric, singly symmetric, and cruciform or other bisymmetric sections not covered under Clause 13.3.1 shall be computed using the expressions given in Clause 13.3.1 with a value of $n = 1.34$ and the value of F_e taken as

- (a) for doubly symmetric (eg, cruciform) and axisymmetric (eg, Z sections), the least of F_{ex} , F_{ey} , and F_{ezi} ;
- (b) for singly symmetric sections, with the y axis taken as the axis of symmetry, the lesser of F_{ex} and F_{eyz} ,