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Reprinted to correct a clerical error.

b. On the net section at pin holes in eyebars, pin-connected plates or built-up members

$$F_t = 0.45\ F_y$$

Note: F_t = Allowable tensile stress
F_y = Minimum yield point of type of steel used

2. Shear. On the gross section of beam and plate girder webs

$$F_v = 0.40 F_y$$

3. Compression. a. On the gross section of axially loaded compression members when $\frac{l}{r}$, the largest slenderness ratio of any unbraced segment is less than C_c

(FORMULA 1)

$$F_a = \frac{\left[1 - \frac{\left(\frac{l}{r}\right)^2}{2C_c^2}\right] F_y}{F.\ S.}$$

Where

$$F.\ S. = \text{factor of safety} = \frac{5}{3} + \frac{3\left(\frac{l}{r}\right)}{8C_c} - \frac{\left(\frac{l}{r}\right)^3}{8C_c}$$

and

$$C_c = \sqrt{\frac{2\pi^2 E}{F_y}}$$

b. On the gross section of axially loaded columns when $\frac{l}{r}$ exceeds C_c

(FORMULA 2)

$$F_a = \frac{149{,}000{,}000}{\left(\frac{l}{r}\right)^2}$$

c. On the gross section of axially loaded bracing and secondary members, when $\frac{l}{r}$ exceeds 120

(FORMULA 3)

$$F_{as} = \frac{F_a\ (\text{by Formula 1 or 2})}{1.6 - \frac{l}{200r}}$$

d. On the gross area of plate girder stiffeners

$$F_a = 0.60\ F_y$$

e. On the web of rolled shapes at the toe of the fillet.

$$F_a = 0.75\ F_y$$

4. Bending. a. Tension and compression on extreme fibers of rolled shapes and built-up members having an axis of symmetry in the plane

of loading and proportions meeting the requirements of compact sections, when the member is supported laterally at intervals no greater than 13 times its compression flange width

$$F_b = 0.66\ F_y$$

b. Beams and girders which meet the requirements of the preceding paragraph and are continuous over supports or are rigidly framed to columns by means of rivets, high-strength bolts or welds, may be proportioned for 9/10 of the negative moments produced by gravity loading which are maximum at points of support provided that, for such members, the maximum positive moment shall be increased by 1/10 of the average negative moments. This reduction shall not apply to moments produced by loading on cantilevers. If the negative moment is resisted by a column rigidly framed to the beam or girder, the 1/10 reduction may be used in proportioning the column for the combined axial and bending loading, provided that the unit stress, due to any concurrent axial load on the member, does not exceed $0.15F_y$.

c. Tension and compression on extreme fibers of unsymmetrical members supported in the region of compression stress as specified in section 4. a.

$$F_b = 0.60F_y$$

d. Tension and compression on extreme fibers of box-type members whose proportions do not meet the provisions of compact sections, but do conform to the provisions of section 5—Width-Thickness Ratio.

$$F_b = 0.60F_y$$

e. Tension on extreme fibers of other rolled shapes, built-up members, and plate girders.

$$F_b = 0.60F_y$$

f. Compression on extreme fibers of rolled shapes, plate girders, and built-up members having an axis of symmetry in the plane of their web (other than box-type beams and girders), the larger value computed by formulas (4) and (5), but not more than $0.60F_y$

(FORMULA 4)

$$F_b = \left[1.0 - \frac{\left(\frac{1}{r}\right)^2}{2C_c^2\ C_b}\right] 0.60F_y$$

(FORMULA 5)

$$F_b = \frac{12{,}000{,}000}{\frac{1d}{A_f}}$$

where 1 is the unbraced length of the compression flange; r is the radius of gyration of a tee section comprising the compression flange plus 1/6 of the web area, about an axis in the plane of the web; A_f is the area of the compression flange; C_c is defined in section 3. a. and C_b, which can conservatively be taken as unity, is equal to

$$C_b = 1.75 - 1.05\left(\frac{M_1}{M_2}\right) + 0.3\left(\frac{M_1}{M_2}\right)^2, \text{ but not more than } 2.3$$