

CIVE 3205
Example AC10-2
Axially Loaded Columns
Column Strength - Mid-Height Brace

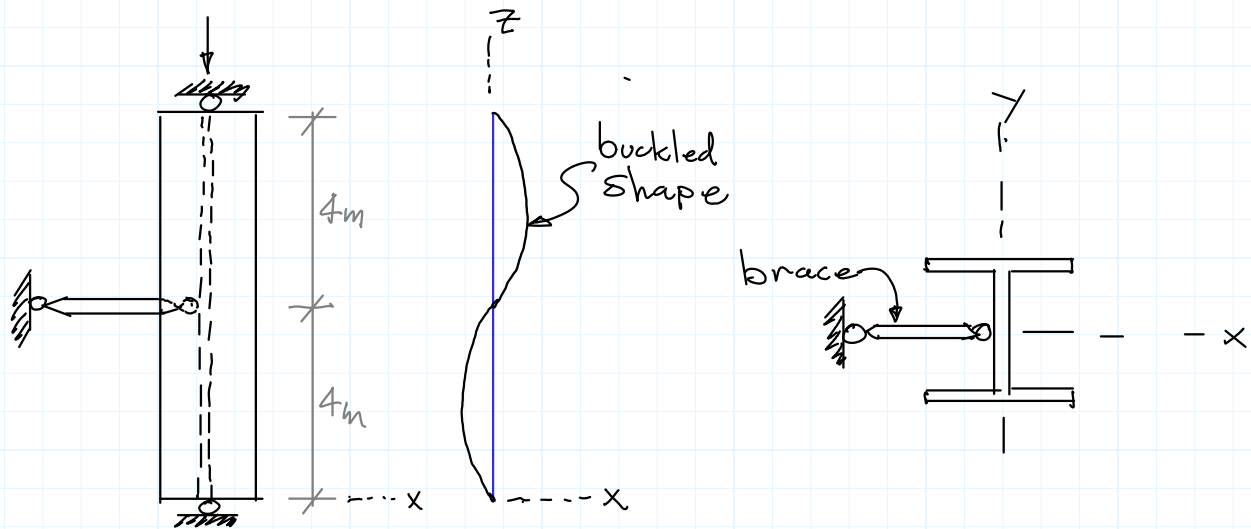
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Revisions:

- Feb 28/20: new posting

The W250x73 of example AC10-1 is to be braced at mid-height against buckling about the weak axis, as shown:



i) local buckling - as before O.K.

ii) overall strength

$$\frac{k_x L_x}{r_x} = \frac{1.0 \times 8000}{110} = 72.7 \quad \leftarrow \text{governs}$$

$$\frac{k_y L_y}{r_y} = \frac{1.0 \times 4000}{64.6} = 61.9$$

$$F_e = \frac{\pi^2 \times 200000}{(72.7)^2} = 373.5 \text{ MPa}$$

$$\lambda = \sqrt{\frac{350}{373.5}} = 0.9680$$

$$n = 1.34$$

$$C_r = 0.9 \times 9290 \times 0.35 \times \left(1 + 0.9680^{2.68} \right)^{-1/1.34}$$

$$C_r = 1801 \text{ kN}$$

$$\underline{\underline{C_r = 1800 \text{ kN}}}$$

