

$$H = 4^k$$

$$P_{all} \text{ limit} = \frac{W}{300}$$

$$\Delta_{max} = 0.48''$$

$$K = \frac{12EI}{l^3} + \frac{3EI}{l^3}$$

$$F = K\Delta$$

$$K_{rd} = \frac{4^k}{0.48''} = 8.3^k/in$$

$$I_{rd} = \frac{K l^3}{15E} = \frac{8.3 \times 12'^3 \times 1728}{15 \times 29,000} = 57 \text{ in}^4$$

$$\text{Try HSS } 8 \times 6 \times \frac{1}{4}'' \quad I = 56.6 \text{ in}^4 \quad A_g = 6.17 \quad F_y = 46$$

$$\text{First order } \Delta = 0.48''$$

$$\text{Moment @ Base say } \frac{HL}{2} = \frac{4 \times 12'}{2} = 24^k \cdot ft$$

$$P_{nt} = \text{use D+L} = 50 \text{ psf} \times 20' \times \frac{20'}{2} = 10^k$$

$$P_{lt} = 4^k \times 12' \times \frac{1}{20'} = 2.4^k$$

$$M_{nt} = 0^k \cdot ft$$

$$M_{lt} = 24^k \cdot ft$$

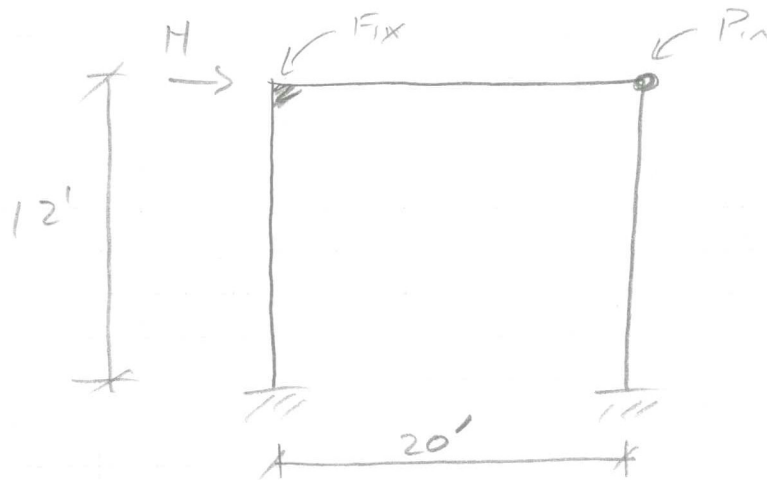
1st Order

$$P_r = 9.9^k$$

$$M_r = 24^k \cdot ft$$

$$0.5 P_y = 0.5 \times 46 \times 6.17 = 142 > 1.6 \times 9.9 = 16^k$$

$$\phi_b = 1.0$$



JOB: _____

SHEET NO.: 2 OF 2

CALCULATED BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

SCALE: _____

$$EI = 0.8EI \quad \text{or use } \frac{1}{0.8} \times \Delta_{1st \text{ order}} = 1.25 \Delta$$

$$\Delta^* = 1.25 \times 0.5'' = 0.625$$

$$P_{e2} = 0.85 \times \frac{EH}{(\Delta^*/L)} = 0.85 \times \frac{4^K}{\left(\frac{0.625}{12' \times 12''}\right)} = 783.4^K$$

$$B_2 = \frac{1}{1 - \frac{\alpha E P_{nt}}{E P_{e2}}} = \frac{1}{1 - \frac{1.6 \times 10.0^K}{783.4}} = 1.02$$

$$B_2 < 1.5$$

Noted loads are applied as minimum.

$$Y_L = 0.002 \times 10^K = 20 \text{ lbs}$$

$$P_c = 134^K$$

$$M_c = 38.8^K\text{-ft}$$

$$\frac{10^K}{134} + \frac{24^K\text{-ft}}{38.8^K\text{-ft}} = 0.7 \text{ ok}$$