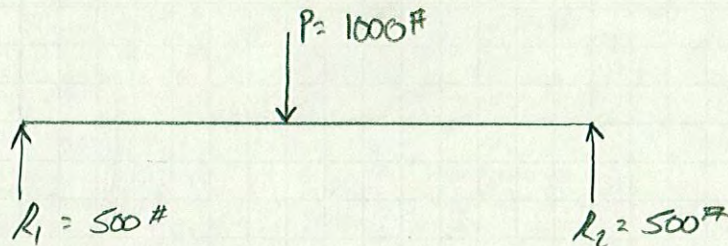


DEMISING WALL SUPPORT COLUMN

ASSUME HSS 6x6x 1/4 TUBE FOR COLUMN,  $F_y = 36 \text{ KSI}$  (ASD)

$$A = 5.59 \text{ IN}^2, I = 30.3 \text{ IN}^4, S = 10.1 \text{ IN}^3$$

$$L = 18.75', \ell = 225''$$



$$M_{\text{max}} = \frac{PL}{4} = \frac{1 \times 225}{4} = 56.25 \text{ IN-K}$$

$$F_b = 0.6F_y = 0.6 \times 36 = 21.6 \text{ KSI}$$

$$S_y = \frac{M}{F_b} = \frac{56.25 \text{ IN-K}}{21.6 \text{ KSI}} = 2.6 \text{ IN}^3 < 10.1 \text{ IN}^3 \therefore \text{OK}$$

$$\Delta = \frac{\ell}{240} = \frac{225}{240} = 0.94''$$

$$P = \frac{4M}{\ell} = \frac{4 \times 56.25}{225} = 1\text{K}$$

$$I = \frac{P\ell^3}{48EA} = \frac{1\text{K} \times 225^3}{48 \times 29000 \times 0.94''} = \frac{11390625}{1308480} = 8.70 \text{ IN}^4$$

$$8.70 \text{ IN}^4 < 30.3 \text{ IN}^4 \therefore \text{OK}$$