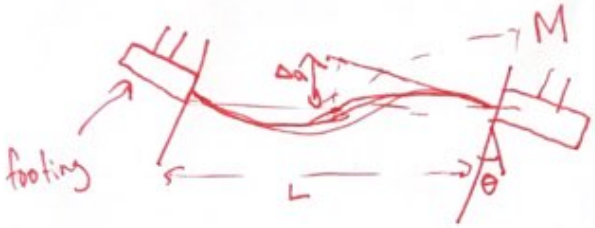
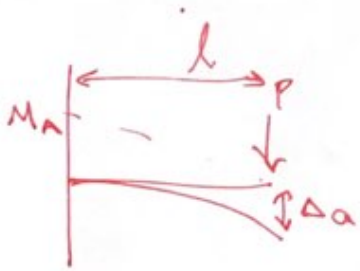
Tie beam stiffness





$$\Delta = \theta \cdot L$$

$$\Delta_a = \frac{\Delta}{2}$$

$$\theta = \frac{\Delta}{L}$$

$$\theta = \frac{2\Delta_a}{L}$$

$$l = \frac{L}{2}$$

$$M_A = P\,l$$

$$\Delta_A = \frac{P l^3}{3 \in I}$$

$$\Delta_A = \frac{M_A l^2}{3 \in I}$$

$$\Delta_A = \frac{M_A L^2}{12 \in I}$$

$$\theta = \frac{2 \cdot M_A L^2}{L \cdot 12 \in I}$$

$$\theta = \frac{M_A L}{6 \in I}$$

$$K^{-1} = \frac{L}{6 \in I}$$