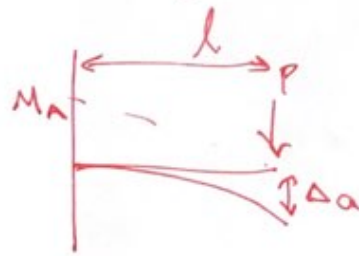# Tie beam stiffness

$$\Delta = \Theta \cdot L$$

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

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

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

$$\Theta = \frac{2 \cdot M_A L^2}{L \cdot 12 \, EI}$$

$$\Theta = \frac{M_A L}{6 \, EI}$$

$$K = \frac{L}{6 \, EI}$$

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

$$M_A = P\,l$$

$$\Delta_A = \frac{P\,l^3}{3 \, EI}$$

$$\Delta_A = \frac{M_A \, l^2}{3 \, EI}$$

$$\Delta_A = \frac{M_A \, L^2}{12 \, EI}$$