

$$R_e = 235 \text{ MPa}$$

$$I_y = 1312,02 \text{ cm}^4$$

$$W_{sp} = \frac{I_y}{z_{max}} = \frac{1312,02}{6,87} = 190,978 \text{ cm}^3 = 0,00019 \text{ m}^3$$

$$A_c = 76 \text{ cm}^2$$

$$\frac{A_c}{2} = 38 \text{ cm}^2$$

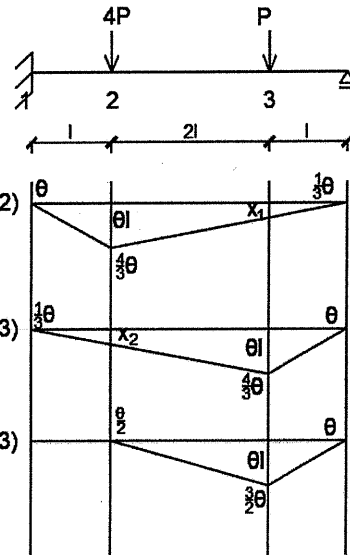
$$38 = 8 * 4 + x * 2 * 2 \rightarrow x = \frac{6}{4} = 1,5 \text{ cm}$$

$$W_{pl} = |S_{yp'}| + |S_{ypl}|$$

$$W_{pl} = \left| 4 * 8 * (5,5 - 2) + \left( 2 * 1,5 * \frac{1,5}{2} \right) * 2 \right| + \left| \left( 7,5 * 2 * \frac{7,5}{2} \right) * 2 + 4 * 2 * (7,5 - 1) \right| = 281 \text{ cm}^3 = 0,000281 \text{ m}^3$$

$$\bar{M} = R_e * W_{sp} = \frac{235000 \text{ kN}}{\text{m}^2} * 0,00019 \text{ m}^3 = 44,65 \text{ kNm}$$

$$\bar{M} = R_e * W_{pl} = \frac{235000 \text{ kN}}{\text{m}^2} * 0,000281 \text{ m}^3 = 66,04 \text{ kNm}$$



$$\frac{\theta l}{3l} = \frac{x_1}{l} \rightarrow x_1 = \frac{\theta l}{3}$$

$$\frac{\theta l}{3l} = \frac{x_2}{l} \rightarrow x_2 = \frac{\theta l}{3}$$

(1,2)

$$M_p * \theta + M_p * \frac{4}{3} \theta = 4P * \theta l + P * \frac{\theta l}{3}$$

$$\frac{7}{3} M_p = \frac{13}{3} Pl$$

$$P = \frac{7}{13l} M_p$$

(1,3)

$$M_p * \frac{1}{3} \theta + M_p * \frac{4}{3} \theta = P * \theta l + 4P * \frac{\theta l}{3}$$

$$\frac{5}{3} M_p = \frac{7}{3} Pl$$

$$P = \frac{5}{7l} M_p$$

(2,3)

$$M_p * \frac{1}{2} \theta + M_p * \frac{3}{2} \theta = P * \theta l$$

$$\frac{4}{2} M_p = Pl$$

$$P = \frac{4}{2l} M_p$$