

$$f_{cd} = 45 / 1,45 = 31,0 \text{ MPa}$$

$$\epsilon_{cu3} = 3,5 \cdot 10^{-3}$$

$$f_{yd} = 550 / 1,2 = 458,3 \text{ MPa}$$

$$\epsilon_{cu4} = 5 \cdot 10^{-2}$$

$$E_{yd} = 458,3 / 2 \cdot 10^{-5} = 2,29 \cdot 10^{-3}$$

$$M_{TV} = 0$$

$$M_{Eod} = M_{TV} + N_{Ed} (c_0 + c_1)$$

$$= 0 + 500 (600 + 600/2 + 5) \cdot 10^{-3} = \underline{452,5 \text{ kNm}}$$

$$L_s = 2L = 2 \cdot 6000 = \underline{12000 \text{ mm}}$$

$$\epsilon_2 = \nu = \frac{1}{10} \frac{\epsilon_{cu3} + \epsilon_{yd}}{d} \cdot L_s^2$$

$$d = 600 - 25 - 8 - 24/2 = \underline{555 \text{ mm}}$$

$$\nu = \frac{1}{10} \cdot \frac{3,5 \cdot 10^{-3} + 2,29 \cdot 10^{-3}}{555} \cdot 12000^2 = \underline{150,2 \text{ mm}}$$

$$M_{Ed} = M_{Eod} + N_{Ed} \cdot \nu$$

$$= 452,5 + 500 \cdot 150,2 \cdot 10^{-3}$$

$$= \underline{527,6 \text{ kNm}}$$

Vi antager at v. kun regnes med
stængerne i trækssiden og at der
er $\epsilon_{yd} \leq \epsilon_s \leq \epsilon_{uh}$ så $\sigma_s = f_{yd} \Rightarrow$

$$y = \frac{A_s f_{yd} + N_{Ed}}{b \cdot f_{cd}} = \frac{5\pi (24/2)^2 \cdot 458,3 + 500 \cdot 10^3}{600 \cdot 31,0}$$

$$= \underline{82,6 \text{ mm}} \Rightarrow$$

$$x = y/2 = 82,6/0,8 = \underline{103,3 \text{ mm}}$$

$$\Rightarrow$$

$$\epsilon_s = \frac{\epsilon_{us}}{x} (d - x) = \frac{3,5 \cdot 10^{-3}}{103,3} (555 - 103,3)$$

$$= \underline{1,531 \cdot 10^{-2}}$$

$$\epsilon_{yd} = 2,29 \cdot 10^{-3} < \epsilon_s = 1,531 \cdot 10^{-2} < \epsilon_{uh} = 5 \cdot 10^{-2}$$

$$\text{Så } \sigma_s = f_{yd}$$

$$\Rightarrow$$

$$M_{Rd} = A_s f_{yd} (d - \frac{x}{2}) + b y f_{cd} (\frac{x}{2} - \frac{y}{2})$$

$$= 5\pi (24/2)^2 \cdot 458,3 (555 - 600/2)$$

$$+ 600 \cdot 82,6 \cdot 31,0 (600/2 - 82,6/2)$$

$$= 661,84 \cdot 10^6 \text{ Nmm} = \underline{661,8 \text{ kNm}}$$

$$> M_{Ed}$$

Støben kan bære