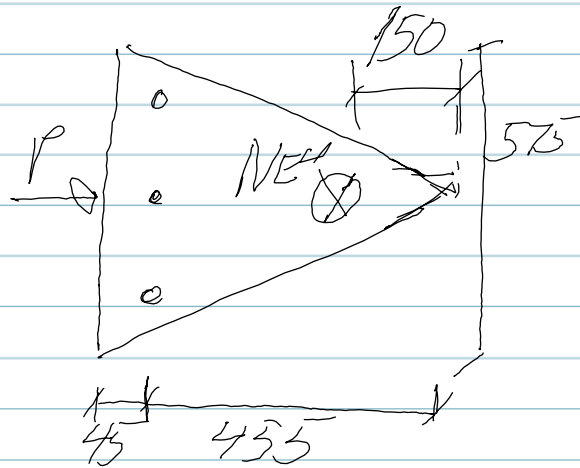
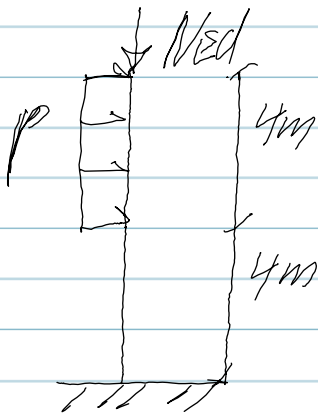


DTU Betonkonstruktioner

1/2



$$\begin{aligned} f_{cd} &= 35/1.45 = 24 \text{ MPa} \\ f_{yd} &= 500/1.2 = 417 \text{ MPa} \\ P &= 24 \text{ kN/m} \\ N_{ed} &= 200 \text{ kN} \\ e_0 &= 100 \text{ mm} \\ e_1 &= 5 \text{ mm} \end{aligned}$$

$$M_{TV} = \left(\frac{P}{2} \cdot \frac{1}{2} L \right) \left(\frac{3}{4} L \right) = 2 \cdot \frac{8}{2} \cdot \frac{3}{4} \cdot 8 = 48 \text{ kNm} = 48 \cdot 10^6 \text{ Nmm}$$

$$\begin{aligned} M_{Eod} &= M_{TV} + N_{ed} (e_0 + e_1) \\ &= 48,0 \cdot 10^6 + 200 \cdot 10^3 (100 + 5) = 69,0 \cdot 10^6 \text{ Nmm} \\ &= 69,0 \text{ kNm} \end{aligned}$$

$$\begin{aligned} V &= \frac{1}{10} \cdot \left(\frac{E_{cu3} + E_{yd}}{2} \right) \cdot (2L)^2 \\ &= \frac{1}{10} \cdot \left(\frac{3,5 \cdot 10^3 + 2085 \cdot 10^3}{2} \right) \cdot (2 \cdot 8000)^2 = 314,2 \text{ mm} \end{aligned}$$

$$E_{cu3} = 3,5 \text{ ‰} \quad E_{yd} = f_{yd}/E_s = 417/200 = 2,085 \text{ ‰}$$

$$\begin{aligned} M_{Ed} &= M_{Eod} + N_{ed} \cdot V \\ &= 69,0 \cdot 10^6 + 200 \cdot 10^3 \cdot 314,2 = 131,8 \cdot 10^6 \text{ Nmm} \\ &= 131,8 \text{ kNm} \end{aligned}$$