

Remarks: See §2.2.1, pages 19 till 21
 See §2.3, pages 24 till 26
 See §2.6, pages 34 onwards

Answers:

- a. $u_C = 20 \text{ mm}$ ($\downarrow$)
- b. $\varepsilon^{(1)} = 6,67 \text{ ‰}$ $N^{(1)} = +20 \text{ kN}$
 $\varepsilon^{(2)} = 13,33 \text{ ‰}$ $N^{(2)} = +20 \text{ kN}$
- c. $A_v = 10 \text{ kN}$ ($\downarrow$)

Explanation:

a. $\sum T_z|_A = 0 \Rightarrow N^{(1)} + 2N^{(2)} = 2F$

$$\frac{(3000 \text{ kN}) \times \frac{1}{2} u_C}{1500 \text{ mm}} + 2 \times \frac{(1500 \text{ kN}) \times u_C}{1500 \text{ mm}} = 2 \times (30 \text{ kN}) \Rightarrow u_C = 20 \text{ mm}$$

b. $\varepsilon^{(1)} = \frac{10 \text{ mm}}{1500 \text{ mm}} = 6,67 \times 10^{-3}$

$$\varepsilon^{(2)} = \frac{20 \text{ mm}}{1500 \text{ mm}} = 13,33 \times 10^{-3}$$

$$N^{(1)} = 6,67 \times 10^{-3} \times (3000 \text{ kN}) = +20 \text{ kN}$$

$$N^{(2)} = 13,33 \times 10^{-3} \times (1500 \text{ kN}) = +20 \text{ kN}$$

c. $\sum F_{\text{vert}} = 0 \Rightarrow A_v = 10 \text{ kN}$ ($\downarrow$)