

3. KONTROLNÍ TEST

opravný termín

Jméno a příjmení:

Skupina:

Datum:

Vyřešte vnitřní síly nosníku.

- $F_c = 10 \text{ kN}$
- $F_e = 15 \text{ kN}$
- $M_f = 10 \text{ kNm}$
- $q = 10 \text{ kN/m}$

Řešení:

$$Q = 20 \text{ kN}$$

$$F_{cx} = F_c \cdot \sin 30 = 5 \text{ kN}$$

$$F_{cz} = F_c \cdot \cos 30 = 8,66 \text{ kN}$$

$$\sum F_{ix} = 0: F_{cx} - Q + R_{ax} + F_e = 0$$

$$\underline{R_{ax} = 0}$$

$$\sum F_{iz} = 0: -R_{az} + F_{cz} = 0$$

$$\underline{R_{az} = 8,66 \text{ kN}}$$

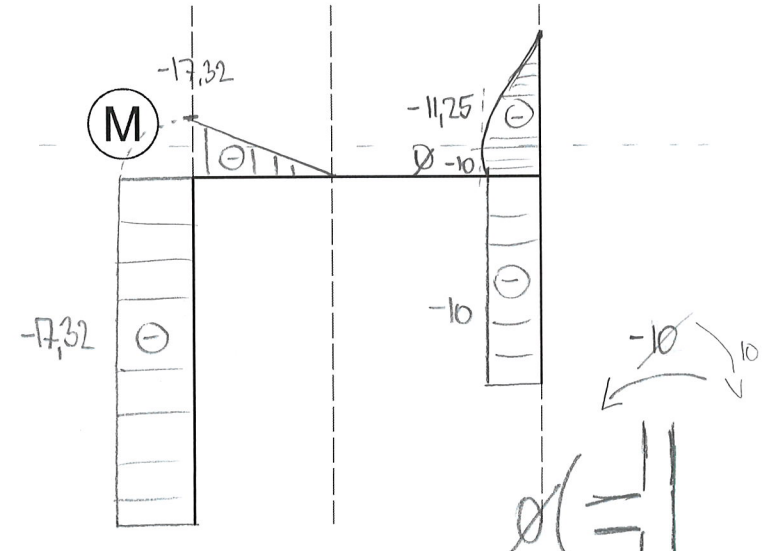
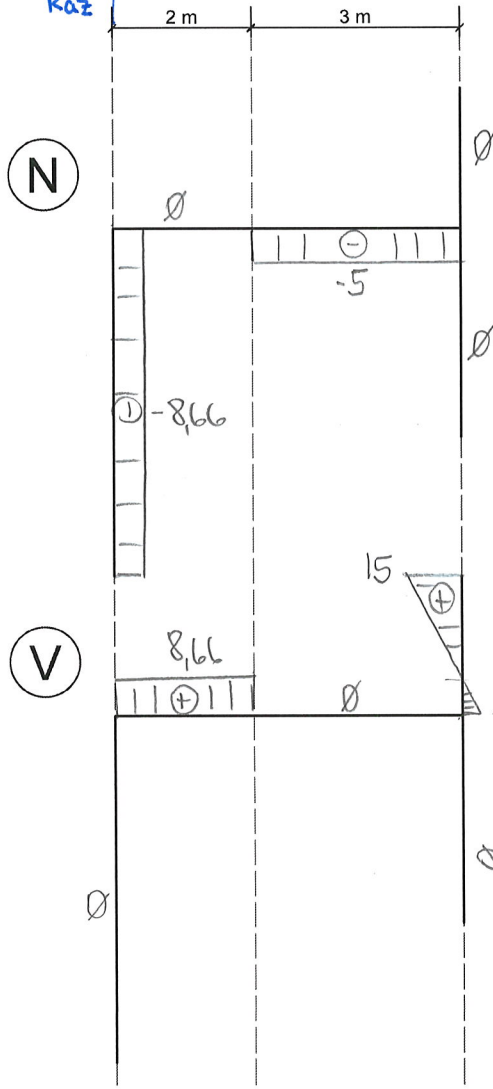
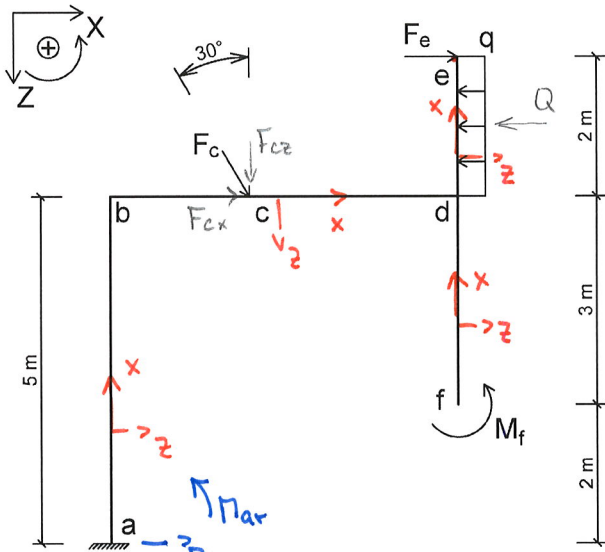
$$\sum M_a = 0: M_{ar} - 2 \cdot F_{cz} - 5 F_{cx} + M_f + 6 \cdot Q - 7 \cdot F_e = 0$$

$$\underline{M_{ar} = 17,32 \text{ kNm}}$$

$$V(x) = 0: 15 - qx = 0$$

$$\underline{x = 1,5 \text{ m}}$$

$$M_{max} = -x \cdot F_e + \frac{1}{2} qx^2 = \underline{-11,25 \text{ kNm}}$$



$$\sum M_d = 0: 0 + 10 - 10 = 0$$