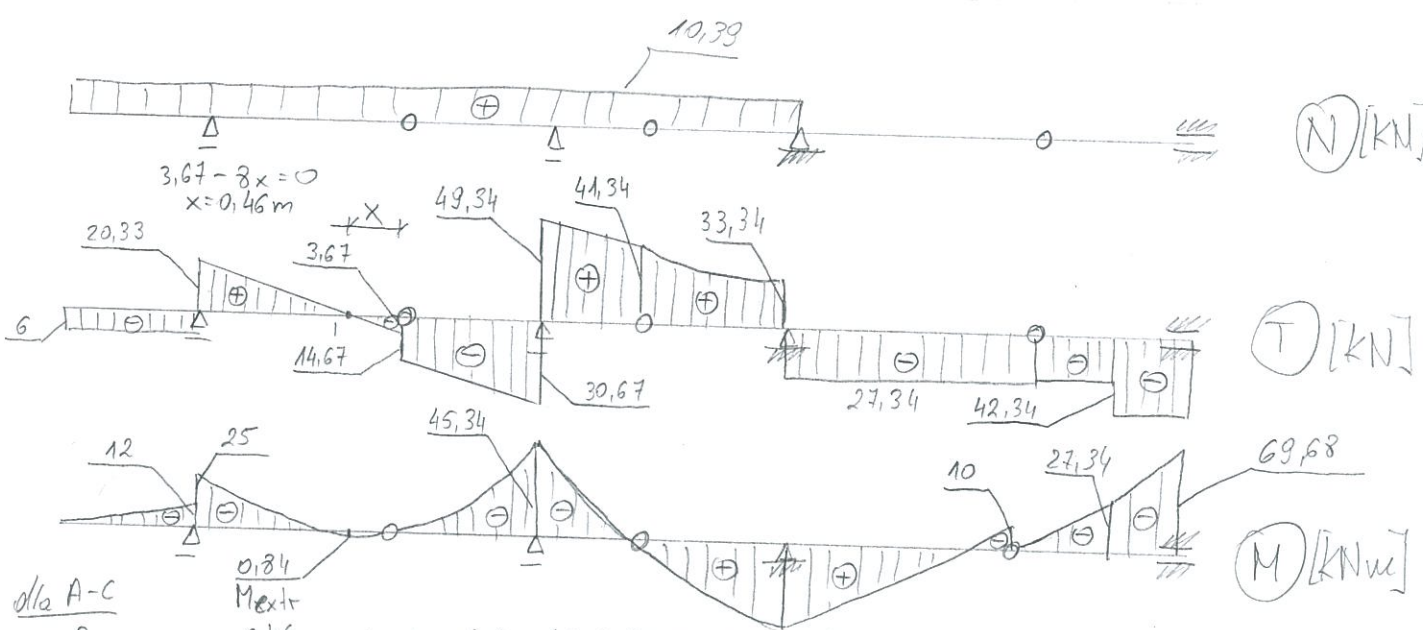


$$P_x = \cos 30^\circ \cdot P = 10,39 \text{ kN}$$

$$P_y = \sin 30^\circ \cdot P = 6 \text{ kN}$$

SCHEMAT PRACY



$$M_{extr} = \sum M_i^P = -8 \cdot 0,46 \cdot \frac{0,46}{2} + 14,67 \cdot 0,46 - 11 \cdot 0,46 = 0,84 \text{ kNm}$$

1. USTALENIE SCHEMATU PRACY.
2. WYZNACZENIE REAKCYI PODPOROWYCH

BELKA AC

$$\sum X = -10,39 - H_c = 0; H_c = -10,39 \text{ kN}$$

$$\sum M_c = -6 \cdot 5 - 13 - 8 \cdot 3 \cdot 1,5 + V_B \cdot 3 = 0; V_B = 26,33 \text{ kN}$$

$$\sum Y = -6 + 26,33 - 8 \cdot 3 - 11 + V_c = 0; V_c = 14,67 \text{ kN}$$

$$\text{spr: } \sum M_A = -13 - 26,33 \cdot 2 + 8 \cdot 3 \cdot 3,5 + 11 \cdot 5 - 14,67 \cdot 5 = -0,01 \approx 0$$

BELKA E-G

$$\sum M_G = 10 + 41,34 \cdot 5 + V_F \cdot 3 - \frac{1}{2} \cdot 8 \cdot 2 \cdot (\frac{2}{3} \cdot 2 + 3) = 0; V_F = -60,68 \text{ kN}$$

$$\sum X = -10,39 - H_F + H_G = 0 \rightarrow \text{2A DUZO NIEWIADOMYCH! ZOSTAWIAMY DE DALEJ}$$

$$\sum Y = 41,34 - \frac{1}{2} \cdot 8 \cdot 2 - 60,68 + V_G = 0; V_G = 27,34 \text{ kN}$$

$$\text{spr: } \sum M_E = \frac{1}{2} \cdot 8 \cdot 2 \cdot \frac{1}{3} \cdot 2 + 60,68 \cdot 2 + 10 - 27,34 \cdot 5 = -0,01 \approx 0$$

$$\sum X = -10,39 - H_F + 0 = 0 \quad H_F = -10,39 \text{ kN}$$

BELKA C-E

$$\sum X = -10,39 - H_E = 0; H_E = -10,39 \text{ kN}$$

$$\sum M_E = -14,67 \cdot 3 - 8 \cdot 3 \cdot 1,5 + V_D \cdot 1 = 0; V_D = 80,01 \text{ kN}$$

$$\sum Y = -14,67 - 8 \cdot 3 + 80,01 + V_E = 0; V_E = -41,34 \text{ kN}$$

$$\text{spr: } \sum M_C = 8 \cdot 3 \cdot 1,5 - 80,01 \cdot 2 + 41,34 \cdot 3 = 0$$

BELKA G-H

$$\sum X = -H_G = 0; H_G = 0$$

$$\sum M_H = 15 \cdot 1 - 27,34 \cdot 2 + M_H = 0; M_H = 69,68 \text{ kNm}$$

$$\sum Y = -27,34 - 15 + V_H = 0; V_H = 42,34 \text{ kN}$$

$$\text{spr: } \sum M_G = 15 \cdot 1 - 42,34 \cdot 2 + 69,68 = 0$$

③ RYSUNKI WYKRESÓW N, T i M + WYZNACZENIE WARTOŚCI EKSTREMALNYCH