



ges.: S_1 , S_2 & S_3 im dargestellten Lastfall

Zerlegen der schrägen Kräfte:

$$\begin{aligned} S_{1x} &= \cos \alpha_1 \cdot S_1 = 0,6 \cdot S_1 & S_{2x} &= \cos \alpha_2 \cdot S_2 \approx 0,448 \cdot S_2 \\ S_{1z} &= \sin \alpha_1 \cdot S_1 = 0,8 \cdot S_1 & S_{2z} &= \sin \alpha_2 \cdot S_2 \approx 0,894 \cdot S_2 \end{aligned}$$

Gleichgewichtsbedingungen:

$$\begin{aligned} \sum \overset{\curvearrowleft}{M_D} = 0 &= S_1 \cdot 0 + S_2 \cdot 0 - S_3 \cdot 5m + \overset{10kN}{G} \cdot 6,5m \quad \left| : 5m \right. + S_3 \cdot 5m \\ &\Rightarrow \underline{S_3 = 10kN \cdot \frac{6,5m}{5m} = +13kN} \end{aligned}$$

$$\begin{aligned} \sum \overset{\curvearrowleft}{M_H} &= +G \cdot 8,5m + S_{1x} \cdot 0 + S_{1z} \cdot 5,0m + S_2 \cdot 0 - S_3 \cdot 3,0m \\ &= 10kN \cdot 8,5m + \underbrace{0,8 \cdot S_1}_{S_{1z}} \cdot 5,0m - 13kN \cdot 3,0m \\ &= 46 kNm + S_1 \cdot 4,0m \Rightarrow \underline{S_1 = \frac{-46 kNm}{4,0m} = -11,5 kN} \end{aligned}$$

$$\begin{aligned} \sum \overset{\rightarrow}{F_{xi}} = 0 &= S_{1x} - S_{2x} = 0,6 \cdot (-11,5) - 0,448 \cdot S_2 \\ &\Rightarrow \underline{S_2 = \frac{+11,5 \cdot 0,6}{-0,448} = -15,4 kN} \end{aligned}$$

$$\begin{aligned} \text{Kontrolle: } \sum \overset{\downarrow}{F_z} &= 0 = 10kN + 13kN + \underbrace{0,8 \cdot (-11,5kN)}_{S_{1z}} \dots \\ &\dots + \underbrace{0,894 \cdot (-15,4)}_{S_{2z}} = \underbrace{0,0324 kN}_{S_3} \approx 0 \quad \checkmark \end{aligned}$$