

CALCULATION OF STAIRCASE

Structural height = 3070 mm

Number of steps: 18

Structural height / number of steps =

$$3070 / 18 = 170,56 \text{ mm}$$

Lehman formula

$$2 \times h + b = 630$$

$$2 \times 170,56 + b = 630$$

$$b = 630 - 2 \times 170,56$$

$$b = 288,88 \text{ mm}$$

I propose tread with the width $b = 275 \text{ mm}$

Staircase inclination:

$$\tan \alpha = h_s / b$$

$$\tan \alpha = 170,56 / 275 = 0.62$$

$$\alpha = 31.79^\circ < 35^\circ \dots \text{comply}$$

Headroom height:

$$H1_{\min} = 1500 + 750 / \cos \alpha$$

$$H1_{\min} = 1500 + 750 / \cos 31.79$$

$$H1_{\min} = 2382 \text{ mm} > 2100 \text{ mm} \dots \text{Comply}$$

Unobstructed height:

$$H2_{\min} = 750 + 1500 \cdot \cos \alpha$$

$$H2_{\min} = 750 + 1500 \cdot \cos 31.79$$

$$H2_{\min} = 2025 \text{ mm} > 1900 \text{ mm} \dots \text{Comply}$$