

Remarks: See §4.4, pages 168 till 170

See §5.4, pages 310 till 367

Answer:

$$h \geq 905 \text{ mm}$$

Explanation:

The largest loads occur at the clamp:

$$V_{\max} = 90 \text{ kN}$$

$$M_{\max} = 270 \text{ kNm}$$

$$\tau_{\max} = \frac{3}{2} \frac{V_{\max}}{A} = \frac{3}{2} \frac{(90 \times 10^3 \text{ N})}{\frac{1}{2} h^2} \leq 0,33 \text{ N/mm}^2 \Rightarrow h \geq 905 \text{ mm}$$

$$\sigma_{\max} = \frac{M_{\max} |z_{\max}|}{I} = \frac{(270 \times 10^6 \text{ Nmm}) \cdot \frac{1}{2} h}{\frac{1}{24} h^4} \leq 15 \text{ N/mm}^2 \Rightarrow h \geq 600 \text{ mm}$$

The largest value of the shear force is critical.