Remarks: See §2.2.1, pages 19 till 21
See §2.3, pages 24 till 26
See §2.6, pages 34 onwards

Answers:

a. $u_{\text{block}} = 0,72 \text{ mm } (\downarrow)$

b. $N^{(1)} = N^{(3)} = +24 \text{ kN}$; $N^{(2)} = +15 \text{ kN}$

c. $\sigma^{(1)} = \sigma^{(3)} = 96 \text{ N/mm}^2$; $\sigma^{(2)} = 60 \text{ N/mm}^2$

Explanation:

b. $\Delta\ell^{(1)} = \Delta\ell^{(2)} = \Delta\ell^{(3)} \Rightarrow N^{(1)} = N^{(3)} = 1,6 \times N^{(2)}$

$N^{(1)} + N^{(2)} + N^{(3)} = 3,6 \times N^{(2)} = F \Rightarrow N^{(2)} = 15 \text{ kN}$

$N^{(1)} = N^{(3)} = 24 \text{ kN}$

a. $u_{\text{block}}(\downarrow) = \Delta\ell^{(1)} = \dfrac{(24 \text{ kN})(1500 \text{ mm})}{(200 \text{ kN/mm}^2)(250 \text{ mm}^2)} = 0,72 \text{ mm}$

c. $\sigma^{(1)} = \sigma^{(3)} = \dfrac{24 \times 10^3 \text{ N}}{250 \text{ mm}^2} = 96 \text{ N/mm}^2$

$\sigma^{(2)} = \dfrac{15 \times 10^3 \text{ N}}{250 \text{ mm}^2} = 60 \text{ N/mm}^2$