



$$a_1 = \min \{ 3 \cdot a_o, a_o + h; a_e \} = \min \{ 3 \cdot 420; 420 + 300; 500 \} = 500 \text{ mm}$$

$$b_1 = \min \{ 3b_o; b_o + h; b_e \} = \min \{ 3 \cdot 300; 300 + 300; 2000 \} = 900 \text{ mm}$$

$$k_j = \sqrt{\frac{a_1 b_1}{a_o b_o}} = \sqrt{\frac{500 \cdot 900}{420 \cdot 300}} = 1,89$$

$$f_{jd} = \frac{\beta_j \cdot k_j \cdot f_{ck}}{\gamma_c} = \frac{2}{3} \cdot \frac{1,89 \cdot 25}{1,5} = 21 \text{ MPa}$$

$$c = t_p \sqrt{\frac{f_{jd}}{3 \cdot f_{jd}}} = 20 \sqrt{\frac{235}{3 \cdot 21}} = 39 \text{ mm}$$

$$A_{eff} = 280^2 - 100^2 = 68\,400 \text{ mm}^2$$

$$N_{Rd} = A_{eff} \cdot f_{jd} = 68\,400 \cdot 21 \cdot 10^{-3} = 1\,436,4 \text{ kN} > N_{Ed} = 340 \text{ kN}$$

→ PATEA NA TLAK VÝHOVÍ

$$\text{HEA } 140 \rightarrow A_{v2} = 1010 \text{ mm}^2$$

$$V_{pRd} = \frac{1010 \cdot 235}{\sqrt{3}} \cdot 10^{-3} = 137 \text{ kN} > V_{Ed} = 115 \text{ kN}$$

$$h \geq \frac{V_{Ed}}{b \cdot f_{cd}} = \frac{115\,000}{140 \cdot \frac{25}{1,5}} = 50 \text{ mm} \rightarrow \text{NÁVRH: } h = 100 \text{ mm}$$

→ SMYKOVÁ ZARÁŽKA HEA 140 VÝHOVÍ

