



$$\text{HEA } 180 \quad E = 20500 \text{ kN/cm}^2 \quad f_{yk} = 23,5 \text{ kN/cm}^2$$

$$A = 45,25 \text{ cm}^2 \quad b = 10 \text{ cm} \quad h = 17,1 \text{ cm}$$

$$e = 0,95 \text{ cm} \quad a = 0,6 \text{ cm}$$

$$I_x = 7,45 \text{ cm}^4 \quad I_y = 4,52 \text{ cm}^4$$

$$J_x = 2510 \text{ cm}^6 \quad W_n = 293,6 \text{ cm}^3$$

$$\frac{N_{Ed} \cdot f_{T1}}{\lambda_{\min} \cdot f_{yk} \cdot A} + \frac{M_{req,Ed} \cdot f_{T1}}{f_{yk} \cdot W_n \left(1 - \frac{N_{Ed}}{N_{cr,n}}\right)} \leq 1$$

PIANO XZ GLOBALE

$$\beta = 2$$

$$l_0 = \beta \cdot e = 350 \cdot 2 = 700$$

$$\lambda_x = \frac{l_0}{I_n} = \frac{700}{7,45} = 93,96$$

$$\lambda_{cr} = \pi \sqrt{\frac{E}{f_{yel}}} = \pi \sqrt{\frac{20500}{23,5}} = 92,79$$

$$\bar{\lambda}_x = \frac{\lambda}{\lambda_{cr}} = 1,012$$

$$\alpha = 0,49$$

$$\phi = 0,15 [1 + 0,49 (1,012 - 0,2) + 1,012^2] = 1,211$$

$$\chi_y = 0,332$$

PIANO YZ GLOBALE

$$\beta = 2 \quad l_0 = \beta \cdot e = 350 \cdot 2 = 700$$

$$\lambda_y = \frac{l_0}{I_y} = \frac{700}{4,52} = 154,87$$

$$\bar{\lambda}_y = \frac{\lambda}{\lambda_{cr}} = 1,67 \quad \alpha = 0,34 \quad \phi = 0,15 [1 + 0,34 (1,67 - 0,2) + 1,67^2] = 2,14$$

$$\chi_y = 0,286 \Rightarrow \chi_{\min} = \chi_y = 0,286$$

$$P_{cr,n} = \frac{\pi^2 E}{l_n^2} \cdot A = \frac{\pi^2 \cdot 20500}{93,96^2} \cdot 45,25 = 1037,024 \text{ kN}$$

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$$\frac{130 \cdot 1,05}{0,286 \cdot 23,5 \cdot 45,25} + \frac{1300 \cdot 1,05}{23,5 \cdot 293,6 \left(1 - \frac{130}{1037,024}\right)} = 0,673 < 1$$