$$N_{c,rd} = \frac{\chi Q A_g f_y}{\gamma_{a1}}$$

$$Q = Q_a Q_s$$

$$\lambda = \frac{b}{t}$$

$$\lambda = \frac{28,00cm}{0,60cm} = 46,67$$

$$\left(\frac{b}{t}\right)_{lim1} = 1,49\sqrt{\frac{E}{f_y}} = 1,49 \cdot \sqrt{\frac{20500,00kN/cm^2}{25,00kN/cm^2}} = 42,67$$

$$Q_a = \frac{A_{ef}}{A_g}$$

$$b_{ef} = 1,92t\sqrt{\frac{E}{\sigma}}\left[1 - \frac{c_a}{b/t}\sqrt{\frac{E}{\sigma}}\right] \leq b$$

$$\sigma = f_y = 25,00kN/cm^2$$

$$c_a = 0,34$$

$$b_{ef} = 1,92 \cdot 0,60cm\sqrt{\frac{20500,00kN/cm^2}{25,00kN/cm^2}}\left[1 - \frac{0,34}{28,00cm/0,60cm}\sqrt{\frac{20500,00kN/cm^2}{25,00kN/cm^2}}\right] \leq 28,00cm = 26,11cm$$

$$A_{ef} = A_g - (b - b_{ef})t$$

$$A_{ef} = 45,60cm^2 - (28,00cm - 26,11cm)0,60cm = 44,46cm^2$$

$$Q_a = \frac{44,46cm^2}{45,60cm^2} = 0,98$$

$$\lambda = \frac{b}{t}$$

$$\lambda = \frac{12,00cm}{0,60cm} = 20,00$$

$$\left(\frac{b}{t}\right)_{lim1} = 0,64 \cdot \sqrt{\frac{E}{f_y/k_c}}$$

$$k_c = \frac{4}{\sqrt{h/t_w}}$$

$$k_c = \frac{4}{\sqrt{28,00cm/0,60cm}} = 0,59$$

$$0,64 \cdot \sqrt{\frac{20500,00kN/cm^2}{25,00kN/cm^2/0,59}} = 14,02$$

$$\left(\frac{b}{t}\right)_{lim2} = 1,17\sqrt{\frac{E}{f_y/k_c}} = 1,17 \cdot \sqrt{\frac{20500,00kN/cm^2}{25,00kN/cm^2/0,59}} = 25,64$$

$$\left(\frac{b}{t}\right)_{lim1} < \lambda < \left(\frac{b}{t}\right)_{lim2}$$

$$Q_s = 1,415 - 0,65\,\frac{b}{t}\sqrt{\frac{f_y}{k_c \cdot E}}$$

$$Q_s = 1,415 - 0,65 \cdot \frac{12,00cm}{0,60cm} \cdot \sqrt{\frac{25,00kN/cm^2}{0,59 \cdot 20500,00kN/cm^2}} = 0,82$$

$$Q = 0,98 \cdot 0,82 = 0,80$$

$$\chi(\lambda_0) \rightarrow \lambda_0(N_e)$$

$$N_e = \frac{\pi^2 EI}{(KL)^2}$$

$$N_e = \frac{\pi^2 \cdot 20500,00kN/cm^2 \cdot 1382,90cm^4}{(1,00 \cdot 650,00cm)^2} = 662,24kN$$

$$\lambda_0 = \sqrt{\frac{QA_g f_y}{N_e}} = \sqrt{\frac{0,80 \cdot 45,60cm^2 \cdot 25,00kN/cm^2}{662,24kN}} = 1,17$$

$$\lambda_0 \leq 1,5 \therefore \chi = 0,658^{\lambda_0{}^2}$$

$$\chi = 0,658^{1,17^2} = 0,56$$

$$N_{c,rd} = \frac{0,56 \cdot 0,80 \cdot 45,60cm^2 \cdot 25,00kN/cm^2}{1,10} = 466,19kN$$