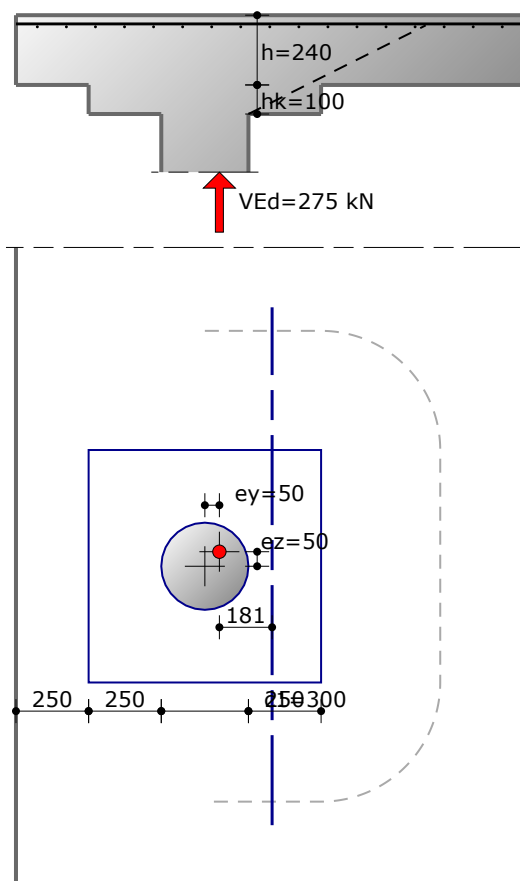


ALGEMEEN

Bestand :Struct4U\website\voorbeeld uitdraai\XConstructVoorbeeldenDutch.xcst

Gevolgklasse : CC2

PONS: Pons**INVOERGEGEVENS**

Betonsterkteklasse	C30/37
Betonstaalsoort	B500B
Langswapening y	10-100
Langswapening z	10-100
1ste laag	Langswapening y
Dekking c	25 mm
Hoek ponswapening	90 graden
V_{Ed}	275 kN
Excentriciteit	$e_y = 50$ mm
q_{Ed}	0 kN/m ²

 $e_z = 50$ mm

BEREKENING volgens Eurocode 2

Gehanteerde normen: : NEN-EN 1992-1-1+C1:2011/NB:2016+A1:2020 nl

6.4.3 Ponsberekening

$$d_{\text{eff}} = \frac{d_y + d_z}{2} = \frac{210 + 200}{2} = 205 \text{ mm} \quad \dots(6.32)$$

$$v = 0,6 \left[1 - \frac{f_{\text{ck}}}{250} \right] = 0,6 \times \left[1 - \frac{30}{250} \right] = 0,528 \quad \dots(6.6N)$$

$$v_{\text{Rd,max}} = 0,4 v f_{\text{cd}} = 0,4 \times 0,528 \times 20 = 4,22 \text{ MPa}$$

$$c_1 / (2 c_2) = 800 / (2 \times 800) = 0,5 \quad k = 0,45 \quad \dots(T 6.1)$$

$$W_1 = 2,365 \text{ m}^2 \quad \dots(6.40)$$

$$\beta = \frac{u_1}{u_{1^*}} + k \frac{u_1}{W_1} e_{\text{par}} = \frac{3845}{2888} + 0,45 \times \frac{3845}{2,365 \times 10^6} \times 50 = 1,37 \quad \dots(6.44)$$

$$u_0 = \pi D = \pi \times 300 = 942 \text{ mm}$$

$$v_{\text{Ed}} = \beta \frac{V_{\text{Ed}}}{u_0 d} = 1,37 \times \frac{275 \times 10^3}{942 \times 305} = 1,31 \text{ MPa} < v_{\text{Rd,max}} = 4,22 \text{ MPa} \quad \dots(6.53)$$

$$k = 1 + \sqrt{\frac{200}{d}} = 1 + \sqrt{\frac{200}{205}} = 1,988 \leq 2,0$$

$$\rho_{\text{ly}} = A_{\text{sly}} / (b_w d_y) = 785 / (1000 \times 210) = 0,00374$$

$$\rho_{\text{lz}} = A_{\text{slz}} / (b_w d_z) = 785 / (1000 \times 200) = 0,00393$$

$$\rho_l = \sqrt{\rho_{\text{ly}} \rho_{\text{lz}}} = \sqrt{0,004 \times 0,004} = 0,0037 < 0,02$$

$$v_{\text{Rd,c1}} = C_{\text{Rd,c}} k (100 \rho_l f_{\text{ck}})^{1/3} + k_1 \sigma_{\text{cp}} = \quad \dots(6.47)$$

$$= 0,12 \times 1,988 \times (100 \times 0,004 \times 30)^{1/3} + 0,15 \times 0 = 0,54 \text{ MPa}$$

$$v_{\text{min}} = 0,035 k^{3/2} f_{\text{ck}}^{1/2} = 0,035 \times 1,988^{3/2} \times 30^{1/2} = 0,54 \text{ MPa} \quad \dots(6.3N)$$

$$v_{\text{Rd,c2}} = v_{\text{min}} + k_1 \sigma_{\text{cp}} = 0,537 + 0,15 \times 0 = 0,54 \text{ MPa}$$

$$u_1 = 3845 \text{ mm} \quad u_{1^*} = 2888 \text{ mm} \quad A_1 = 2,08 \text{ m}^2$$

$$V_{\text{Ed}} = V_{\text{Ed}} - A_1 q_{\text{Ed}} = 275 - 2,08 \times 0,00 = 275 \text{ kN}$$

$$v_{\text{Ed}} = \beta \frac{V_{\text{Ed}}}{u_1 d} = 1,37 \times \frac{275 \times 10^3}{3845 \times 205} = 0,48 \text{ MPa} < v_{\text{Rd,c}} = 0,54 \text{ MPa}$$

Ponswapening is niet nodig