

$$M_{sd} := \frac{q_d \cdot l_o^2}{8} \quad M_{sd} = 8.767 \text{ kN}\cdot\text{m} \quad \alpha := 0.85$$

$$s_{bc} := \frac{M_{sd}}{\alpha \cdot b \cdot d^2 \cdot f_{cd}} \quad s_{bc} = 0.024 \quad \xi := \frac{1 - \sqrt{1 - 2 \cdot s_{bc}}}{0.8} \quad \xi = 0.031 \quad x := \xi \cdot d \quad x = 0.488 \text{ cm}$$

$$A_{s1} := \frac{0.8 \cdot x \cdot b \cdot \alpha \cdot f_{cd}}{f_{yd}} \quad A_{s1} = 1.3207 \text{ cm}^2 \quad \text{- przyjęto } \phi 8 \text{ co } 12 \text{ cm - } A_{s.obl} = 4.19 \text{ cm}^2$$

- płyta P_09.1

$$q_d := 12.7 \cdot \frac{\text{kN}}{\text{m}} \quad h := 0.18 \cdot \text{m} \quad d := h - 0.02 \text{ m} \quad d = 16 \text{ cm}$$

$$l_{ox} := 5.70 \cdot \text{m} \quad l_{oy} := 7.335 \cdot \text{m} \quad b := 1 \cdot \text{m} \quad d_y := d - 1.20 \cdot \text{cm} \quad d_y = 14.8 \text{ cm}$$

$$\frac{l_{oy}}{l_{ox}} = 1.287 \quad \phi_{1x} := 0.0587 \quad \phi_{1y} := 0.0227 \quad \chi_1 := 0.741 \quad \alpha := 0.85$$

$$M_{sd.x} := q_d \cdot l_{ox}^2 \cdot \phi_{1x} \quad M_{sd.x} = 24.221 \text{ kN}\cdot\text{m} \quad M_{sd.px} := \frac{-\chi_1}{12} \cdot q_d \cdot l_{ox}^2 \quad M_{sd.px} = -25.479 \text{ kN}\cdot\text{m}$$

$$M_{sd.y} := q_d \cdot l_{oy}^2 \cdot \phi_{1y} \quad M_{sd.y} = 15.511 \text{ kN}\cdot\text{m} \quad M_{sd.py} := -\frac{1 - \chi_1}{12} \cdot q_d \cdot l_{ox}^2 \quad M_{sd.py} = -8.906 \text{ kN}\cdot\text{m}$$

$$s_{bcx} := \frac{M_{sd.x}}{\alpha \cdot b \cdot d^2 \cdot f_{cd}} \quad s_{bcx} = 0.067 \quad \xi := \frac{1 - \sqrt{1 - 2 \cdot s_{bcx}}}{0.8} \quad \xi = 0.086 \quad x := \xi \cdot d \quad x = 1.381 \text{ cm}$$

$$A_{s1x} := \frac{0.8 \cdot x \cdot b \cdot \alpha \cdot f_{cd}}{f_{yd}} \quad A_{s1x} = 3.7332 \text{ cm}^2 \quad \text{- przyjęto } \phi 12 \text{ co } 12 \text{ cm - } A_{s.obl} = 9.42 \text{ cm}^2$$

$$s_{bcy} := \frac{M_{sd.y}}{\alpha \cdot b \cdot d_y^2 \cdot f_{cd}} \quad s_{bcy} = 0.05 \quad \xi := \frac{1 - \sqrt{1 - 2 \cdot s_{bcy}}}{0.8} \quad \xi = 0.064 \quad x := \xi \cdot d \quad x = 1.024 \text{ cm}$$

$$A_{s1y} := \frac{0.8 \cdot x \cdot b \cdot \alpha \cdot f_{cd}}{f_{yd}} \quad A_{s1y} = 2.7685 \text{ cm}^2 \quad \text{- przyjęto } \phi 12 \text{ co } 12 \text{ cm - } A_{s.obl} = 9.42 \text{ cm}^2$$

- płyta P_10.1

$$q_d := 12.7 \cdot \frac{\text{kN}}{\text{m}} \quad h := 0.18 \cdot \text{m} \quad d := h - 0.02 \text{ m} \quad d = 16 \text{ cm}$$

$$l_{ox} := 6.885 \cdot \text{m} \quad l_{oy} := 7.225 \cdot \text{m} \quad b := 1 \cdot \text{m} \quad d_y := d - 1.20 \cdot \text{cm} \quad d_y = 14.8 \text{ cm}$$

$$\frac{l_{oy}}{l_{ox}} = 1.049 \quad \phi_{1x} := 0.0403 \quad \phi_{1y} := 0.0333 \quad \chi_1 := 0.550 \quad \alpha := 0.85$$

$$M_{sd.x} := q_d \cdot l_{ox}^2 \cdot \phi_{1x} \quad M_{sd.x} = 24.261 \text{ kN}\cdot\text{m} \quad M_{sd.px} := \frac{-\chi_1}{12} \cdot q_d \cdot l_{ox}^2 \quad M_{sd.px} = -27.593 \text{ kN}\cdot\text{m}$$

$$M_{sd.y} := q_d \cdot l_{oy}^2 \cdot \phi_{1y} \quad M_{sd.y} = 22.076 \text{ kN}\cdot\text{m} \quad M_{sd.py} := -\frac{1 - \chi_1}{12} \cdot q_d \cdot l_{ox}^2 \quad M_{sd.py} = -22.576 \text{ kN}\cdot\text{m}$$