Betongdekke - Slakkarmert

Geometri

$b := 1000\ \text{mm}$ $h := 200\ \text{mm}$

Armering

$c := 35\ \text{mm}$ $cc := 250\ \text{mm}$

$\varnothing_1 := 12\ \text{mm}$

$A_{s1} := \pi \cdot \frac{\varnothing_1^{\,2}}{4} \cdot \frac{1}{cc} = 452.3893\ \frac{\text{mm}^2}{\text{m}}$

Tverrsnittsegenskaper

$d := h - c - \frac{\varnothing_1}{2} = 159\ \text{mm}$

Material

$f_{yk} := 500\ \text{MPa}$ $\gamma_s := 1.15$

$f_{ck} := 14\ \text{MPa}$ $\gamma_c := 1.5$

$f_{yd} := \frac{f_{yk}}{\gamma_s} = 434.7826\ \text{MPa}$ $f_{cd} := \frac{0.85 \cdot f_{ck}}{\gamma_c} = 7.9333\ \text{MPa}$

ULS - Kapasiteter

Momentkapasitet

$M_{Ed} := 28\ \text{kN m}$

$M_{Rd.c} := 0.275 \cdot b \cdot d^{\,2} \cdot f_{cd} = 55.1547\ \text{kN m}$

$z := \min\left(\left[\begin{matrix} 0.95 \cdot d \\ d \cdot \left(1 - 0.17 \cdot \frac{M_{Ed}}{M_{Rd.c}}\right) \end{matrix}\right]\right) = 145.2779\ \text{mm}$ $z_{bal} := 0.835 \cdot d = 132.765\ \text{mm}$

$M_{Rd.s} := A_{s1} \cdot f_{yd} \cdot z = 28.5749\ \frac{\text{kN m}}{\text{m}}$