Design method CC

FLOWCHART

In this guide, we use the calculation method SPIT-CC (Concrete capacity). It is a simplified method extracted from the method A as detailed in the Annexe C of the ETA guideline.

Tensile resistance

Pull out failure

$N_{Rd,p} = N^{O}_{Rd,p} \cdot f_b$

- $N^{O}_{Rd,p}$ Design resistance for pull-out failure
- f_b Factor taking into account the concrete strength

Concrete cone failure

$N_{Rd,c} = N^{O}_{Rd,c} \cdot f_b \cdot \Psi_s \cdot \Psi_{c,N}$

- $N^{O}_{Rd,c}$ Design resistance at the ultimate limit state for one anchor without influence of spacing and distance from the edge concrete
- f_b Factor taking into account the concrete strength
- Ψ_s Factor taking into account the influence of spacing
- $\Psi_{c,N}$ Factor taking into account the influence of distance from the edge concrete

Steel failure

$N_{Rd,s}$

- $N_{Rd,s}$ Design resistance at the ultimate limit state for steel failure

$N_{Rd} = \min(N_{Rd,p} \; ; \; N_{Rd,c} \; ; \; N_{Rd,s})$

$\beta_N = N_{Sd} / N_{Rd}$

Shear resistance

Concrete edge failure

$V_{Rd,c} = V^{O}_{Rd,c} \cdot f_b \cdot f_{\beta,V} \cdot \Psi_{C,S-V}$

- $V^{O}_{Rd,c}$ Design resistance at the ultimate limit state for one anchor placed at C_{min} from edge concrete
- f_b Factor taking into account the concrete strength
- $f_{\beta,V}$ Factor taking into account the influence of shear loading direction.
- $\Psi_{C,S-V}$ Factor taking into account the influence of spacing between anchor and edge distance.

Steel failure

$V_{Rd,s}$

- $V_{Rd,s}$ Design resistance at the ultimate limit state for steel failure

$V_{Rd} = \min(V_{Rd,c} \; ; \; V_{Rd,s})$

$\beta_V = V_{Sd} / V_{Rd}$

Combined load

$$\beta_N = \frac{N_{sd}}{N_{Rd}} \leq 1$$

$$\beta_V = \frac{V_{sd}}{V_{Rd}} \leq 1$$

$$\beta_N^{1.5} + \beta_V^{1.5} \leq 1$$

The anchor is suitable for your application