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Civil engineering software development
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Project:

Client:
Location:
Date: 2026-07-23

Bearing capacity: Method C-ϕ

Standard: Eurocode 7 (NF P 94-261)

For drained conditions, the general bearing capacity equation recommended by Eurocode 7:

$$q_{net} = c' N_c b_c s_c i_c + q'_0 N_q b_q s_q i_q + q N_q b_q s_q i_q + 0{,}5 \gamma' B' N_\gamma b_\gamma s_\gamma i_\gamma - q'_0$$

With:

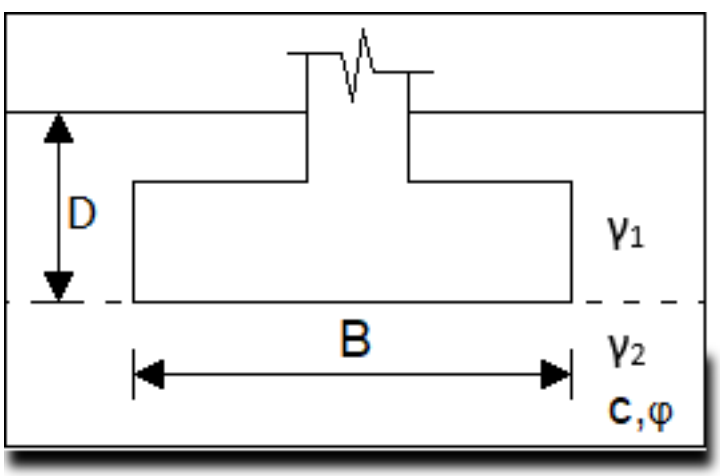
- c': The undrained cohesion of the subgrade of the foundation;
- Nc, Nq et Nγ: Bearing capacity factors;
- γ': The effective density of the soil under the base of the foundation;
- q and q'0 are the overload stress and the effective stress at the foundation base
- bc, bq et bγ: Base inclination correction factors;
- sc, sq et sγ: Shape correction factor;
- ic, iq et iγ: Loads inclination correction factors.

Results

$$\sigma_{V;d} \leq \frac{q_{net}}{\gamma_{R;v}\,\gamma_{R;d;v}} + q_0$$

ELU: σ V;d ≤ 514,30 kPa; ELS: σ V;d ≤ 324,79 kPa

qnet= 1356,04 kPa; q_o= 30,00 kPa; q= 450,00 kPa
γ R;v;d= 2; ELS: γ R;v= 2,3; ELU: γ R;v= 1,4
A'= 1,50 m²; A= 1,50 m²; B'= 1,00 m; L'= 1,50 m
Nc= 7,170; Nq= 1,880; Nγ= 0,220
sc= 1,174; sq= 1,081; sγ= 0,800



Isolated Footings-Rectangular : B= 1 m; L= 1,5 m; D= 2 m
q= 450 kPa; Hw= 9999 m; α(Base angle)= 0°
γ1= 15 kN/m³; γ2= 19 kN/m³; C= 45 kPa