Bearing Capacity of Sand using the angle of internal friction, φ:

In Cohesionless(granular) Soils

qu = γD(Nq) + 0.6γ R(N γ)--for circular footings

qu = γD(Nq) + 0.4γ B(N γ)-- for square or rectangular footings

qu = γD(Nq) + 0.5γ B(N γ)—for continuous footings

Bearing Capacity of Sand using CPT:

1 *Static cone penetrometer (SCP)*: Meyerhof (1955) proposed that soil bearing capacity can be estimated from static cone penetration test (CPT) results as

$$q_a = \frac{q_c}{15} \quad \text{where } B < 4 \tag{12.25}$$

$$q_a = \frac{q_c}{25}\left(\frac{B+1}{B}\right)^2 \quad \text{where } B > 4 \tag{12.26}$$

where q_a = allowable bearing capacity of ground soil (ksf), q_c = static cone resistance (ksf), and B = width of foundation (footing) (ft). Equations (12.25) and (12.26) are based on 1 in. (25 mm) settlement. For the bearing capacity of a raft foundation, Meyerhof suggested using $2q_a$, where q_a is computed from Equation (12.26). Sanglerat (1972) gives the following equation between allowable bearing capacity and static cone penetration results:

$$q_a = \frac{q_c}{10} \tag{12.27}$$