Assignment #1
Rekayasa Pondasi I

Shallow Foundation
(duration of task : 1 weeks)
Lecture : Sherly Meiwa ST., MT

Note :

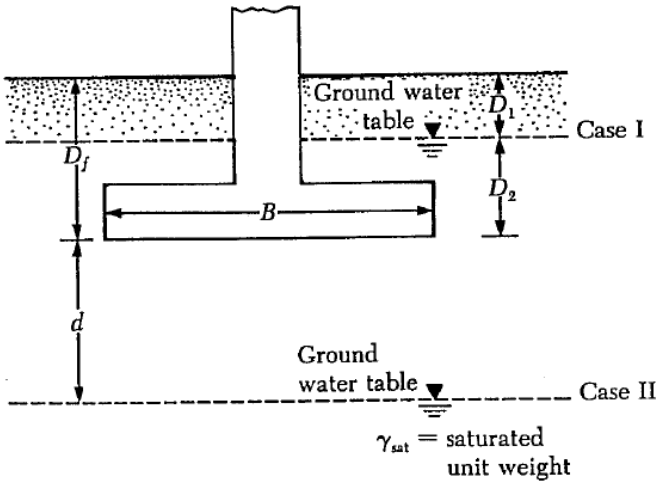
YOU ARE REQUESTED to complete this task and make a report. Assignments can be handwritten or typed but must be in pdf format.
TASK 1 – 3 *(PROBLEM NO 1-4), due dates 20 October 2020*

TASK 1

Problem No 1

Please explain about *Terzaghi's Bearing Capacity Equation* and *Meyerhoff's Bearing Capacity Equation*

Problem No 2

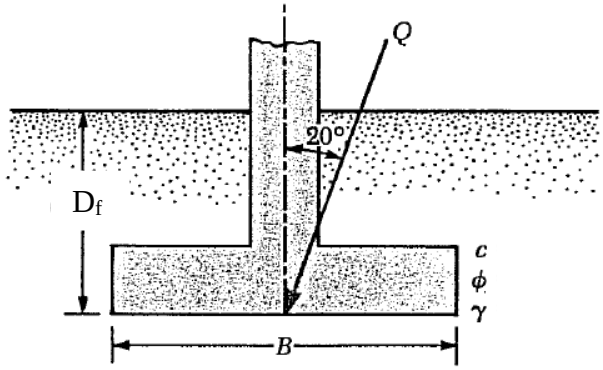


A square foundation is B x B m in plan. The soil supporting the foundation has a friction angle of ϕ and c. The unit weight of soil γ and saturated unit weight of soil γ_{sat}. Assume that the depth of foundation is D_f and that general shear failure occurs in the soil.
B = 1.5 , 1.75, 2.0 m,
ϕ = 20°, 22°, 24°,
c = 14, 15, 16 kN/m^2.
γ = 17.2, 17.4, 17.6 kN/m^3
and γ_{sat} = 19 kN/m^3.
D_f = 1, 1.25, 1.5 m

Determine the allowable gross load on the foundation with a factor of safety (FS) of 4 using Terzaghi's Bearing Capacity Equation, if:
a) The ground water table is located in Case II with d = 10m.
b) The ground water table is located in Case II with d = 1m
c) The ground water table is located in Case I with D_1 = 0.5m

TASK 2

Problem No 3



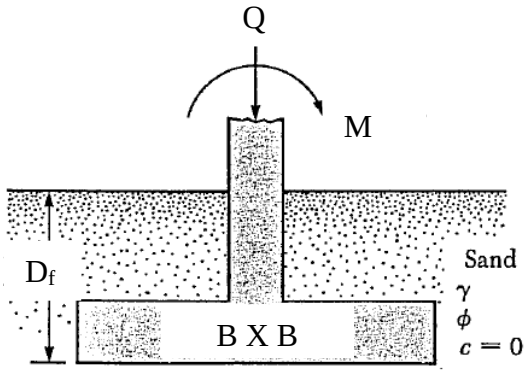
A square column foundation has to carry a gross allowable total load of Q. The depth of the foundation is D_f. The load is inclined at an angle of 20° to the vertical. Determine the allowable gross load with a factor safety of 3 using Meyerhof's Bearing Capacity Equation with shape, depth and inclination factors from:

a) Meyerhoff

If B = 1.25 , 1.5, 1.5 m, D_f = 0.6, 0.7, 0.8 m, Q = 125, 150, 175 kN
ϕ = 28°, 30°, 32°, c = 10, 15, 20 kN/m^2. γ = 17.0, 17.5, 18.0 kN/m^3

TASK 3

Problem No 4



A square foundation is shown in figure. It is subjected to a load Q and a moment M. Using a factor safety of SF = 3, determine the size of footing (B) if:

D_f = 0.6, 0.7, 0.8 m
ϕ = 28°, 30°, 32°,
c = 0 kN/m^2.
γ = 17.5, 17.8, 18.0 kN/m^3
Q = 175, 180, 185 kN
M = 25, 27, 30 kN-m