

DESIGN OF SHALLOW FOUNDATION

QUESTION 1

A square foundation (2.0 m x 2.0 m) is to be constructed on a uniform sand deposit. A plate load test was performed using a square plate of 60 cm x 60 cm at a depth of 1.5 m and the following results were obtained:

<u>Load (kPa)</u>	<u>Plate Settlement (mm)</u>
50	1.6
100	2.2
200	4.0
300	7.0
400	12
500	20
600	40

What would be the safe allowable load for this footing if the specifications do not allow settlement more than 3.0 cm. (Use a factor of safety of 3.0)

QUESTION 2

Two plate tests with circular plates were conducted in the field. At 13 mm of settlement the results were as follows:

<u>Diameter of plate (mm)</u>	<u>Load (kN)</u>
304.8	45.5
762	169.7

What size square footing is required to carry a net load of 400 kN at a settlement of 13 mm?

QUESTION 3

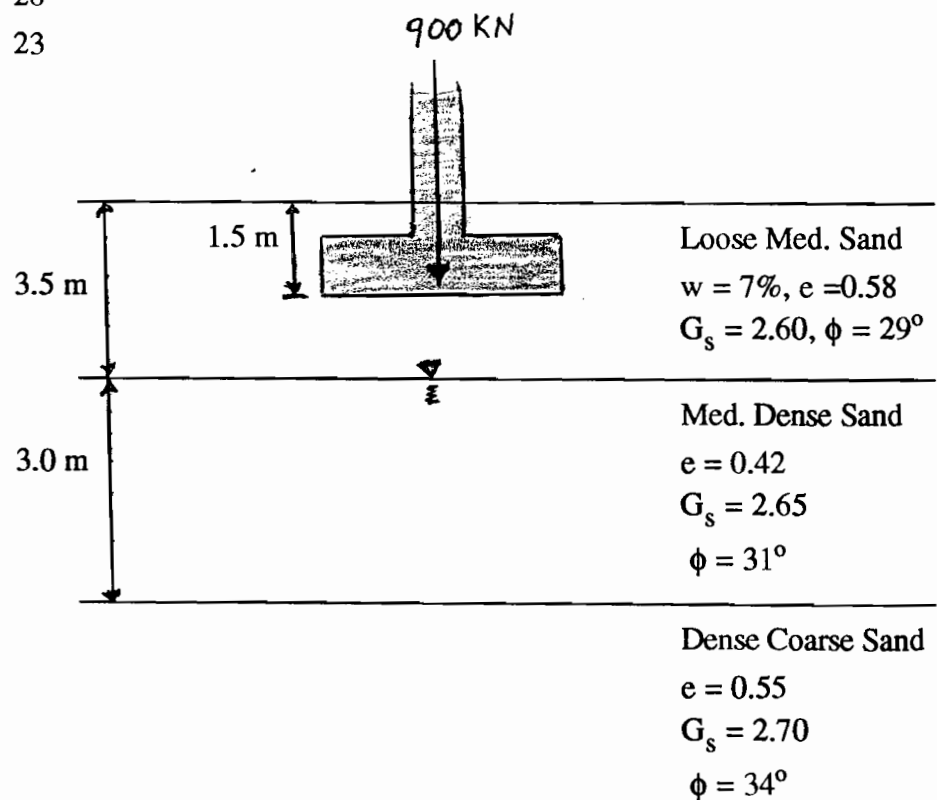
Compute the settlement of the square footing (3.0 m x 3.0 m) shown below using:

(i) Meyerhof's Equation.

(ii) Strain Influence Factor Method (Schmertmann's Method).

The SPT results are:

Depth (m)	N
1.0	3
1.5	5
2.0	5
3.0	6
4.0	9
5.0	11
6.0	12
7.0	18
8.0	20
9.0	23



NOT TO SCALE