



CAIRO UNIVERSITY
FACULTY OF ENGINEERING
Soil Mechanics and Foundation Engineering Division

FOUNDATIONS

EXERCISE (3)

4th Year Civil

2016-2017

FOOTINGS

- 1) A 0.30 m thick masonry wall exerts 20 t/m' at ground surface and is to be supported on a strip footing. The foundation level is 1.5 m below ground surface. The soil below the base has a gross allowable bearing capacity of 1.0 kg/cm². It is required to give a complete design and neat sketches for the strip footing.

- 2) a- A large footing settles more than small footing subjected to the same stresses on the same soil conditions. Give reasons using neat sketches.
b- Make a complete design for a footing supporting a 30 cm x 60 cm column load of 230 t at ground surface (G.S.). The foundation level is 1.5 m below G.S. and the net allowable bearing capacity is 1.75 kg/cm².

- 3) A 30 cm x 50 cm column in a factory carries a single track crane. The column loads at G.S. are: axial load (P) = 150 t, horizontal load (Q) = 10 t, and moment (M) = 15 tm. Make a complete design for a footing to support the column. The foundation level is 1.5 m below G.S. and the allowable gross bearing capacity is 2.5 kg/cm².

- 4) Give a complete design for a combined footing supporting the two columns shown in Figure (1). The allowable net bearing capacity is 1.1 kg/cm^2 and the foundation level is 2.0 m below G.S.
- 5) Make a complete design and draw neat sketches of a foundation supporting the two columns shown in Figure (2). The foundation level is at 2.0 m below ground surface (G.S) where the allowable gross bearing capacity of supporting soil is 1.0 kg/cm^2 .
- 6) Make a complete design for the footing of the shed shown in Figure (3). The allowable gross bearing capacity of soil = 0.5 kg/cm^2 at foundation level (F.L. = 1.75m). No tilt of the shed is allowed.

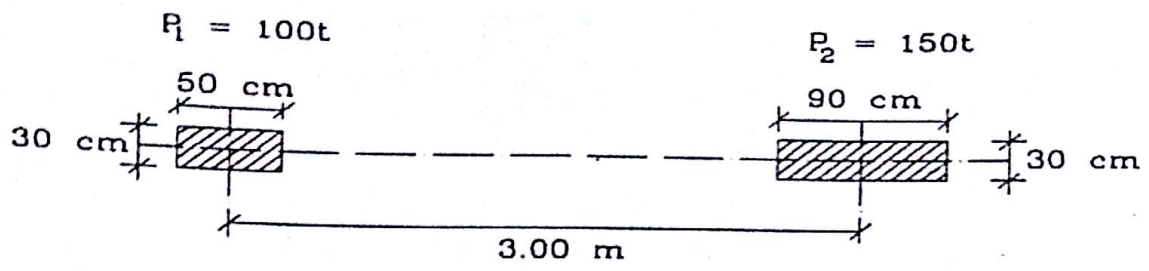


Figure (1)

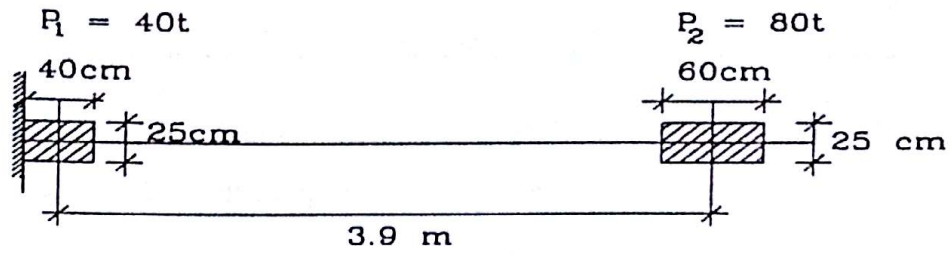


Figure (2)

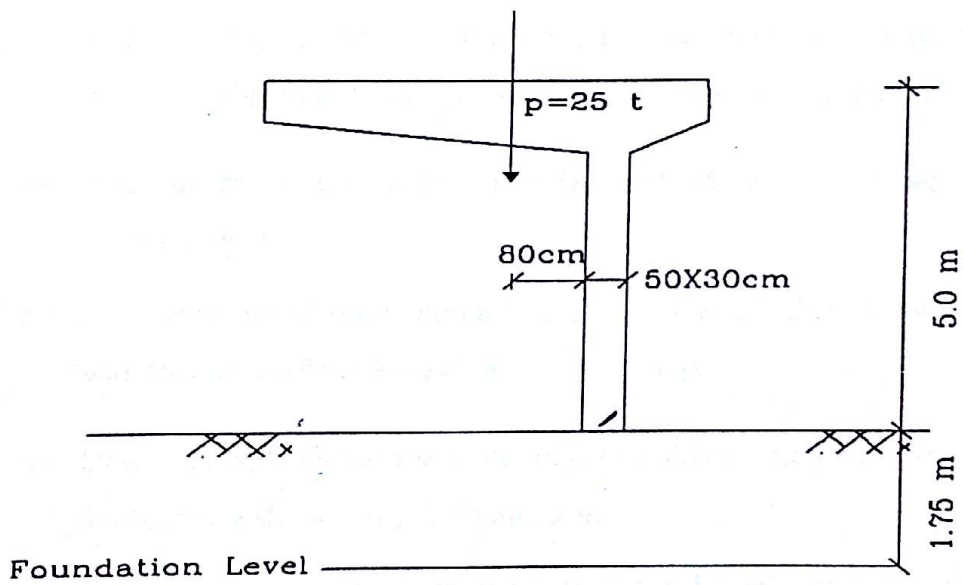


Figure (3)