MODEL TEST OF FOOTING ON COHESIVE FRICTIONAL C-ϕ SOIL.

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In the name of God, the Compassionate and Merciful !

Praise is for God. Lord of the worlds, Guide of the bewildered and Joiner of those who are severed; Whose help we seek in worldly matters and in religion. May He send His blessings and peace upon our master Muhammad, the Truthful and Trustworthy, and upon his Family, and Companions, and all those who excel in following them until the Day of Reckoning.

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SYNOPSIS

This project presents the result of an experimental investigation on model footings of different shapes, placed at different depth in a soil of varied moisture content . The bearing capacity of a foundation depends upon many factors such as angle of internal friction, depth of the foundation, unit-weight and unit cohesion of the soil. The tests were carried out until failure point were reached. Settlement of 25 mm is considered the maximum settlement for the failure load.

The objective of this experimental work is to evaluate the bearing capacity of c-ϕ soil and to compare the result with existing formulae on bearing capacity. The tests were carried out for footing at ground level and at 1 meter depth with different moisture content (i.e. 25 %, 30 % , and 35 %) and different shape of footing (i.e. square, rectangular and circular)

From the experiment performed the following conclusion could made; Percentage difference between theoretical results and experimental of the Bearing Capacity taking into account the depth, shape and moisture content were 50 %. With increase in depth of footing, the bearing capacity of c- ϕ soil also increases. The lower the moisture content of the soil, the higher is the bearing capacity. As the moisture content of soil increases, the cohesion and angle of friction decrease, therefore the bearing capacity factor Nc, Nq and N γ also decrease.

CHAPTER 1

BEARING CAPACITY - SHALLOW FOUNDATION

1.1 INTRODUCTION.

The word foundations usually refers to that part of a structure which transmits to the soil the dead and the live load of the superstructure. The purpose of a structural foundation is to transfer the structural loads safely to the ground below in such a manner as to avoid excessive deformations. It should be noted that unless foundations are placed on hard sound rock, some measurable settlement will always occur. It is the most important part of any structure and knowledge of the principle of foundation work is essential for soil engineers or for foundation engineers.

It is difficult to say which type of foundation is best suited for a certain type of structure . The design of foundation is trial and error method. A type of foundation and trial diameter are selected . Analysis are then made to ascertain the adequacy of the proposed foundation.

A safe foundation design provides for suitable safety against shear failure of the soil and excessive settlement. The ability of a soil to sustain a building load without undergoing excessive settlement or shear failure is a measure of the bearing capacity of the soil.

Essentially the designer must establish to what is the ultimate contact pressure from the foundation loads that will cause a probable or impending failure (or what is the ultimate bearing capacity) and what is the safe contact pressure or what is the allowable bearing capacity of the stratum for which one designs. It is common practice to express the allowable bearing capacity as the ultimate bearing capacity devised by a suitable safety factor. A number of formulas and procedures related to bearing capacity design will be focused upon in this chapter. The design of foundation is a trial and error method. A type of