DEPARTMENT OF CIVIL ENGINEERING

DELHI TECHNOLOGICAL UNIVERSITY

2016

CERTIFICATE

This is to certify that majo project report entitled "PLATE LOAD TEST ON CIRCULAR PLATE ON REINFORCED LAYERED SOIL" is a confide record of work carried out by AJEET (2K14/GTE/01) under my guidance and supervision, during the session 2016 in partial fulfillment of the requirement of degree of Master of Technology (Geotechnical Engineering) from Delhi Technological University, Delhi.

To the best of my knowledge, the matter embodied in the thesis has not been submitted to any other University/Institute for the award of any Degree or Diploma.

Dr. A.K.SAHU

Professor

Department of Civil Engineering

Delhi Technological University

Delhi-110042

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NOTATIONS

SYMBOL	DESCRIPTION
C_C	Coefficient of curvature
C_U	Coefficient of uniformity
D_{10}	Effective size
D_{30}	Grain diameter corresponding to 30% finer
D_{60}	Grain diameter corresponding to 60% finer
G	Specific gravity
DST	Direct shear test
PLT	Plate load test
OMC	Optimum moisture content
MDD	Maximum dry density
LL	Liquid limit
PL	Plastic limit
PI	Plasticity index
γ_d	Dry density
ϕ	Angle of internal friction
µ	Micron
^{o}	Degree
Z	Thickness of layer
UBC	Ultimate bearing capacity
SM	Silty sand
SP	Coarse sand

PLATE LOAD TEST ON CIRCULAR PLATE ON REINFORCED LAYERED SOIL

ABSTRACT

The sub structure of any structure is design on the basis of bearing capacity and settlement criteria. Many researchers have proposed several theories and experimental program for the estimation of ultimate bearing capacity and settlement of the footing. The basic assumption made by them is that the soil mass is homogeneous, isotropic and semi-infinite. However in practice the soil is non-homogeneous and anisotropic in nature. In the present investigation plate load tests were carried out on the layered soil having different shear strength. In the present investigation two types of soil were selected i.e. coarse sand and silty sand. The top layer of the soil was silty sand which was underlain by coarse sand. The plate load tests with different plates were carried out on two layered soils then the test was repeated with the placement of geogrid at the interface. The effect on the bearing capacity and the settlement characteristics of footing was observed on layered soils with and without placement of geogrid at the interface. The ultimate bearing capacity of circular footing resting on double layered reinforced soils was about 1.2 to 1.5 times more than that of unreinforced layered soils. The effect of depth of top layer silty sand was observed. It was reported that the reinforcement of the layered soils at interface is beneficial in respect of increment of bearing capacity of the layered soils.