HIGHER TECHNICAL INSTITUTE

CIVIL ENGINEERING DEPARTMENT

DIPLOMA PROJECT

COMPACTION CHARACTERISTICS OF DIFFERENT KIND OF SOILS

C/913

BY

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COMPACTION CHARACTERISTICS OF DIFFERENT KIND OF SOILS

RECOMMENDED TESTS:

(A) DETERMINATION OF PARTICLE SIZE DISTRIBUTION BY SIEVING

(B) STANDARD COMPACTION TEST: PROCTOR TEST

Project Report was submitted

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Group ☐

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INTRODUCTION

Soils as they occur in nature are heterogeneous accumulations of solid grains, water and gas. The range in particle sizes in a soil or from one soil to another is enormous; It may extend from grains only a fraction of a micron (10^{-4} cm) in diameter up to boulders many feet in diameter.

According to the sizes and composition of the grains and the relative proportions of the various components, soils exhibit a very wide range of properties. At any one engineering site, the ground to be loaded by a structure will inevitably consist of a number of layers or regions of different soil materials, all exhibiting different properties.

On occasion the variations will be extreme. It is the task of the soil engineer to calculate the displacements, settlement, stresses and forces which will be caused in the soil mass by the proposed structure and to make sure that none of these exceed certain limits. If they do, the structure may be distorted, exhibiting unsightly cracks, or become functionable unusable because of the severance of connecting utilities, or in extreme cases fail or collapse.

In order to prevent the above undesirable results, soils classification and identification of their properties is required, based on specific tests.

For this scope, samples from different areas of Cyprus were tested, as that mentioned below:

a) AYIOS DOMETIOS

b) ENGOMI

c) PETRA ROMIOU

d) PARAMALI

e) MAKEDONITISSA

which were taken for the performance of the following tests:

I) Determination of particle size distribution by sieving

II) Standard compaction test: Proctor test

III) Direct shear test

The procedures of the tests carried out on the five different samples of coarse-grained soils, as well as apparatus and equipment used, comply with the British Standard regulations. The final results of each test to which reference has been made, for the five different samples of coarse-grained soils, are stated at the end of each section. Moreover, comparison of the results found after the execution of all tests and general appreciation and comments on the results for all samples can be found in the last section of the project.