



Correlation between Chemical and Index Properties of Soils of Hyderabad Region

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Abstract

Each soil has unique nature of the characteristics and its properties are beyond the control of the designer. Since the soil parameters varies from site to site or location to location, thus selecting the reliable properties of soil is always a challenge for the Geotechnical Engineers. One of the option is intense soil investigations. However, there are various soil properties whose determination is time consuming and expansive. Geotechnical Engineer usually tries to develop mathematical equations specific to a particular soil type. However, a mathematical formula that is more reliable for the type of soil in which the link is genuine. In the light of above discussion, index and chemical properties were not investigated in most of the areas of Hyderabad region. Also correlation between chemical and index properties were not investigated. Correlation between chemical and index properties were not well understood. Thus it is important to develop the appropriate mathematical equations to be able to access the local area. The aim of this study is to determine index and chemical properties of soil selected from different locations of Hyderabad Region and also develop correlation between chemical and index properties of soils of Hyderabad region. Regression analysis have been carried out between Index and chemical properties. Such correlations may be of use to geotechnical engineers, in preliminary estimates of index and chemical properties of soils Hyderabad region and perhaps reduce testing requirements. The data obtained from independent laboratory tests on soils sourced from several locations in Hyderabad region were subjected to regression analysis after the samples had been grouped in A-4, A-6, and A-7-6 using AASHTO classification system. The derived Regression equations can be used to estimate the index and chemical properties of soils in Hyderabad region.

Keywords: Index Properties; Chemical Properties; AASHTO Classification System; Regression Analysis.

1. Introduction

Correlation between the soil properties has an important role in the geotechnical engineering. They can be used to obtain values of soil property that has not been measured during the testing program or they can help in getting the additional data where only a few direct measurement of the property have been made. Many researchers have been working on correlations between different soils properties throughout the short history of soil mechanics [1]. The correlated properties of soils generally include soil particle size and its plasticity, permeability, density, consolidation, settlement, California bearing ratio, shrinkage and swelling characteristics and shear strength. However, very little work has been done on the correlation of chemical properties. The formation of soil is the result of gradual chemical and physical weathering of rocks overlong period of time. The detailed chemical composition of soil is generally of very little interest to the geotechnical engineers. However, the information about the presence of constituents such as organic

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