

A STUDY ON CONSOLIDATION CHARACTERISTICS OF ORGANIC CLAY TREATED WITH STONE DUST

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Abstract

One-dimensional consolidation tests have been conducted to study the effect of addition of various percentages of stone dust on consolidation characteristics of organic clay. Statically compacted soil specimens have been prepared at optimum moisture content and maximum dry density by adding 4, 8, 12, 16 and 20% by weight of stone dust materials to the parent soil. Specimens have been subjected to increments of vertical pressure of 0.25, 0.50, 1.00, 2.00 and 4.00 kg/cm² in a fixed ring consolidometer. The use of stone dust as an additive in parent clay results in decrease in optimum moisture content and increase in maximum dry density. Coefficient of compressibility (a_v) and coefficient of volume compressibility (m_v) show no significant trend for variation in values with change in proportion of additives in the soil at a particular effective stress. It has been observed that there is decrease in the values of these parameters with increase in effective stress for a particular percentage of additives. Compression index (C_c) has been found to decrease significantly with increase in percentage of stone dust. It has also been observed that the time required for achieving a given degree of consolidation decreases with increase in the percentage of additives at a particular effective stress. Overall, it has been observed that stone dust effectively increase one-dimensional stiffness and therefore, reduce settlement.

Keywords: Stone dust, compressibility, characteristics, maximum dry density, optimum moisture content and stabilization.