



SOIL STABILIZATION TECHNIQUES FOR POORLY GRADED SOIL

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ABSTRACT

Stabilization is a broad sense for the various methods employed and modifying the properties of a soil to improve its engineering performance and used for a variety of engineering works. In today's soil stabilization is the major problem for civil engineers, either for construction of road and also for increasing the strength or stability of soil and reduces the construction cost. Soil stabilization can be explained as the alteration of the soil properties by chemical or physical means in order to enhance the engineering quality of the soil. The main objective of the soil stabilization is to increase the bearing capacity of the soil, its resistance to weathering process and soil permeability. Due to rapid growth of urbanization and industrialization, minimization of industrial waste is serious problem in present days. To encounter this innovative and nontraditional research on waste utilization is gaining importance now a days. Soil improvement using the waste material like Slags, Rice husk ash, Silica fume etc. In geotechnical engineering has been recommended from environmental point of view.

INTRODUCTION

Civil engineering projects located in areas with soft soil is one of the most common problems in many parts of the world. The old usual method to soft soil stabilization is to remove the soft soil and replace it with stronger materials. The high cost of this method has driven the researchers to look for alternative methods and one of these methods is the process of the soil stabilization. Soil stabilization is the technique introduced many years ago with main purpose to render the soil capable of meeting the requirements of the specific engineering projects. In addition, when the soils at site are poor or when they have undesirable property making them unsuitable for use in a geotechnical project, they may have to be stabilized



LITERATUREREVIEW

Amanpreet Tangri, Gagandeep (2018), In the present civil engineering world sometimes the foundation soil is not suitable for construction purpose. This creates lots of problem to civil engineer during the execution. To make the problematic soil suitable for engineering projects is known as ground improvement. So for the purpose of ground improvement, we use numerous types of admixtures like cement, lime, blast furnace slag, rice husk ash, fly ash etc. This paper reviews on the influence of blast furnace slag when used alone or with some other admixtures on various properties of clayey soil. From the experimental results it has been found that by using blast furnace slag with admixtures like lime increases the value of U.C.S and C.B.R. and the variation is also found in the compaction characteristics of soil.

J Bala Krishna(2017), This research work presents the efficacy of sodium based alkaline activators and class F fly ash as an additive in improving the engineering characteristics of expansive Black cotton soils. Sodium hydroxide concentrations of 10, 12.5 and 15 molal along with 1 Molar solution of sodium silicate were used as activators. The activator to ash ratios was kept between 1 and 2.5 and ash percentages of 20, 30 and 40 %, relatively to the total solids. The effectiveness of this binder is tested by conducting the Unconfined compressive strength (UCS) at curing periods of 3,7 and 28 days and is compared with that of a common fly ash-based binder, also the most effective mixtures were analysed for mineralogy with XRD.

CONCLUSIONS

After doing a review of various research papers we can conclude the by using the blast furnace slag we can reduce the environmental pollution and it could be used for the stabilization of clayey soil. The primary benefits of using these additives for soil stabilization are Cost Savings: because slag is typically cheaper than cement and lime; and Availability: because slag sources are easily available across the country from nearby steel plants. Waste management one of the industrial wastes can be done economically. Use of slag as an admixture for improving engineering properties of the soils is an economical solution to use the locally available poor soil.



Stabilization of black cotton soil with lime, fly ash, lime and their combinations shows significant improvement in the unconfined compressive strength of soil to the extent of 3.8 times that of unsterilized soil.

It is observed that with the increases of fly ash and GGBS percentage, optimum moisture content goes on decreasing while maximum dry density goes on increasing, hence compact ability of soil increases and making the soil denser and harder

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