

Audit Course Of Stabilization Of Black Cotton Soil Using Hydrated Lime And Jute Fiber

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Abstract- Soil stabilization is the process which involves enhancing the physical properties of the soil in order to improve its strength, durability etc. by blending or mixing with additives. The different types of method used for soil stabilization are: Soil stabilization with lime, Soil stabilization using bitumen, Chemical stabilization and a new emerging technology of stabilization Geo synthetic fibers.

In this study, we are making use of Jute fibers as geo synthetic material for stabilization of soil. With the introduction of Jute fibers to the soil the CBR values will improve and thickness of pavement layer also gets reduced. It also reduces the intensity of stress on subgrade. Jute fibers is such a geosynthetic material which is easily available, ecofriendly and also cost effective. With the application of soil stabilization method in construction the overall cost gets reduced when compared to the ordinary method of construction.

I. INTRODUCTION

Adjustment is a vast sense which fuses with different types of techniques in order to alter the properties of soil to improve its building execution. The procedure of adjustments may include mixing of soil in order to accomplish an ideal state of degree and blending monetarily accessible added substances that may change the state of degree and also change quality and toughness.

Balanced out soils can frequently be satisfactory for runways, traffic asphalts, and stopping and capacity regions where an all-climate surface is required, yet traffic does not legitimize higher-quality asphalt. Surface medicines are additionally used to give dust control. The most broadly perceived type of adjustment is compaction, which improves the mechanical soundness of basically any dirt. Be that as it may, compaction alone is regularly insufficient.

PROBLEMS OF BLACK COTTON SOIL FOR HIGHWAY CONSTRUCTION

- Cracking when dry and swelling when wet makes them difficult to manage.

- Poor drainage and water logging during rainfall.

Black cotton soil is an exceedingly clayey soil. It is hard to the point that the lumps can't be effectively pounded for treatment for its utilization in street development. This postures significant issues as respects to resulting execution of the street. In addition, the relaxed sub level tends to up hurl into the top layers of the asphalt, particularly when the sub-base comprises of stone soling with parcel of voids. Progressive interruption of liquid block soil constantly prompts disappointment of the street.

II. METHODOLOGY

1. To conduct particle size distribution tests on the soil and find out the liquid and plastic limit with respect to soil and soil using 2% hydrated lime.
2. To conduct Liquid Limit and Plastic Limit test for the specimen of soil with and without using emulsion treated jute for different aspect ratio.
3. To conduct Optimum Moisture Content (OMC) and Maximum Dry Density (MDD) for the specimen for different aspect ratio.
4. Analyzing and experimenting to find the best length and percentage of fiber required to be mixed with the soil by conducting the California Bearing Test for black soil stabilized with hydrated lime and emulsion treated jute fiber for soaked conditions.
5. To design a pavement and its economic analysis for the obtained soil values of black cotton soil using 2% hydrated lime and jute fibers of selected length and percentage.

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