

SOIL STABILIZATION BY USING WASTE PLASTIC.

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ABSTRACT

The process of improving the physical and engineering properties of soil such as shear strength and bearing capacity is known as Soil Stabilization. Indian terrain is mostly occupied by black cotton soil. It is highly expansive soil which shows more swelling, shrinkage and settlement problems. Thus, Construction of buildings and other Civil Engineering structures on this soil is risky. This review paper motivates for the further studied with the change in dimensions of plastic strips and performing Plate load test may speak on the effect of plastic strips on bearing capacity of soil.

This review paper concludes that soil stabilization is possible by plastic waste which is a cheap method of soil stabilization. Thus, Construction of buildings and Other Civil Engineering structures on this soil is risky. Use of compaction technique or suitable admixtures like Cement, lime and waste material like fly ash, phosphagypsum etc can bring out the soil stabilization.

Keyword – *Optimum plastic , plastic waste, Dry Density, plastic Strips, Shear strength, California Bearing ratio CBR test, compaction test.*

1. Introduction

Soil deposits in nature exist in an extremely erratic manner Producing thereby an infinite variety of possible which will affect the strength of the soil and The procedures to make it purposeful. Major soil deposits in the capital Region (Amaravathi) of Newly formed Andhra Pradesh are Black Cotton Soils which Are very fertile and suitable for agriculture but not good for Construction of Civil Engineering Structures because of its Low Bearing Capacity and intensive shrink-swell process. Which results in development of cracks. With the formation Of new capital, rapid Industrialization, bursting population And decrease of available land, more and more number of Buildings and other civil engineering constructions has to be Carried out on available Black Cotton soils which are having Poor shear strength. Hence, a great diversity of ground Improvement techniques such as soil stabilization and Reinforcement are needed to be employed to improve Behavior of soil, thereby enhancing the reliability of Construction.

2. Material Used



soil



plastic waste





3.Objectives Of Soil Stabilizati

Substituting poor-quality soils with aggregates with better engineering properties. Strengthening of the soil, and its bearing capacity. Waterproofing is used to preserve natural or man-made buildings. To encourage the use of waste geomaterials in building construction. To improve permeability characteristics.

4.Types of soil stabilization

There are three broad types of soil stabilization: biological, physical and chemical.

Biological soil stabilization is achieved through afforestation or planting, and its main purpose is erosion control. Root traits such as architectural, morphological, physiological and biotic play an important role in both the physical and chemical development of soils enabling structural stability of the soil. This method is suitable for terrain exposed to water and wind influences, which are not meant for building.

Physical soil stabilization is the modification of soil particle size distribution and plasticity by the addition or subtraction of different soil fractions in order to modify its physical properties. Mechanical stabilization is the modification of soil porosity and interparticle friction or interlock. The two methods work synergistically together to yield soil stabilization. Physical and mechanical types of soil stabilization include five different types of techniques namely; compaction, pre-wetting, wetting-drying cycles, reinforcement and solid wastes.

Chemical types of soil stabilization can be achieved through use of traditional and non-traditional agents. The distinction between the two classes exists as a result of the pre-existing and well-established additives as compared to the most recently developed agents. Examples of traditional chemical stabilization agents include lime, cement and fly ash and they are usually calcium based. On exposure to water, they undergo both short- and long-term chemical changes resulting in overall enhancement of the soil matrix with regards to swell reduction, shear strength improvement and resistance to influence of wetting and drying

5. Advantages soil stabilization

- Permanent.
- Environmentally Friendly.
- Long-lasting and permanent.
- Tested and proven.
- Most soil types are compatible with it.
- The soil is extremely dense.
- Reduces soil moisture content.

6. RESULT

By using plastic waste materials . The physical properties of soil can be Increased.

7. Reference-

- A. Burman “Experimental Study on Effect of waste Plastic Bottle Strips in Soil Improvement”, March 2018
- Sager Mali, Sachin Kadam, Segar Mane, Krushna Panchal, Swati Kade