

COMPARISON OF FOOD NUTRITION VALUES USING SOIL CEMENT MIX**P.B. Daigavane¹ and A. Ansari²**¹Professor and Dean (Infra & Liaison), Department of Civil Engineering, Government College of Engineering Nagpur, Nagpur – 441108²PhD Research Scholar, Department of Civil Engineering, Indian Institute of Technology Delhi, Hauz Khas, New Delhi – 110016¹prashant.daigavane@gmail.com, ²aamomin183@gmail.com**ABSTRACT**

When compacted and dried, soil cement can be a mixture of soil, hydraulic cement, and water that creates a solid and durable pavement basis. Concerns about suitable internal control procedures and the testing process for soil cement have been raised as a result of construction practices and variations in core strength data. To answer these questions, numerous types of soil cement buildings were examined, and conclusions were drawn from them that include grouting with soil cement in various structures. The specifics of the properties of soils and cement are briefly addressed. Additionally, a thorough explanation of the applications and hence the future scope of our study is provided.

Keywords: Stabilization, Grouting, Red Soil, Cement Mortar.

1. Introduction

Soil-cement may be a mixture of pulverized soil material and measured amounts of hydraulic cement and water, compacted to high density. because the cement hydrates, the mixture becomes a tough, durable artifact . A bituminous wearing course is placed on the soil-cement base to finish the pavement. Only three basic ingredients are needed for soil-cement: soil material, hydraulic cement, and water. The soil in soil cement are often a good sort of materials. Either in-place or borrow material are often used (Ansari & Daigavane, 2021; Spencer, 1967). Old granular-base roads, with or without their bituminous surfaces, are often recycled to form soil-cement. Soil-cement is usually called cement-treated base or cement-stabilized-aggregate base. no matter what it's called, the principles governing its composition and construction are an equivalent. Before construction with soil-cement starts, the soil materials which will be treated with cement should are identified and representative samples of every type tested. These tests determine the minimum cement content required to harden each material adequately and therefore the approximate optimum moisture content and density values to be used in construction. Soil-cement construction involves two steps—preparation and processing. Variations in these steps are dictated by the sort of blending equipment used.

2. Literature Review**Soil Stabilization**

General Soil stabilization may be a method of improving soil properties by blending and mixing other materials. There are various soil stabilization methods and there are various materials used for soil stabilization. the subsequent are the few methods described in literature.

- Soil Stabilization with Cement
- Soil Stabilization by Grouting
 1. Clay grouting
 2. Chemical grouting
 3. Chrome lignin grouting

4. Polymer grouting, and
5. Bituminous grouting

Red Soil Treatment

Red soil may be a porous and friable structure. Red soil may be a fine soil which holds great deal of water than the coarse soil. thanks to its 0-permeability it are often used for building high rise building (multi-storied building). Red soil are often utilized in RCC also as(prestressed concrete. If this concrete is employed in RCC, then there will be no corrosion in steel.

Soil Cement Mortar

The supply of sand is declining in need of meeting the demand, it becomes imperative to seek out a special alternative. Mud mortar was generally used for low-rise masonry buildings within the past. When the soil used for the mortar consists of clay, difficulties like volume instability thanks to its high affinity towards water are faced (Daigavane & Ansari, 2021a; Patra &Basudhar, 2005). To negate this action, stabilization of the clay is important. Cement is employed as binding agent. This paper address on an experimental study to know the varied inclination of soil-cement mortars. Workability and compressive strength of soil-cement mortars are studied. Flow table tests are conducted to measure the workability of the mortars. during this paper, the vitality of replacing river sand with locally available red soil is studied(Daigavane & Ansari, 2021).

3. Methodology

3.1 Pressed Soil Cement Blocks

Three distinct operations can be recognized in the process of soil-cement block production using manually operated machines. They are (a) soil preparation (b) block pressing, and (c) stacking and curing.



Figure 1. Constructed DSMW used in a subway project in Tianjin, China

3.2 Grouting

Grouting also can be categorized by either grouting method or the aim. The jet grout is advanced to the treatment depth, where grout jets (cement grout with optional water and air) are sprayed with high velocity from nozzles under high within the side of the drill chamber counting on the appliance and kinds of soils, jet grouting can use the only fluid system (slurry grout jet), the double fluid system (slurry grout jet surrounded by an air jet) or the triple fluid system (water jet surrounded by an air jet, with a separate grout port).

4. Materials

Soil Cement Base (SCB):

It contains relatively high proportion of hydraulic cement. It is used as pavement base in streets, parking lots, airports, roads and material handling areas. Equipment used are mechanical cement spreader and stabilizer. To lock the moisture and to stop the moisture out a seal coat is provided.

Cement-Modified Soil(CMS):

A cement modified soil contains low proportions of hydraulic cement as compared to soil cement base. the ultimate result's sort of a soil cake, but with improved properties like lower plasticity, increased bearing ratio and shearing strength and decreased volume change(Ansari et al. 2021; Prater, 1979).

Cement-Treated Base:

A cement treated base may be a mixture of granular soil mixed with hydraulic cement and water. Its uses are same as that of soil cement base.

5. Conclusion

In pressed block, characteristics of soil cement blocks having three different cement contents (6%, 8% and 12%) are examined. White cement is that the most usual stabilized added 5 to 10% by weight to the soil. In red soil, compressive strength, for plain concrete the values are 13.6-16.8 N/mm² but in red soil mixed concrete, there is significant improvement. In split lastingness, for plain concrete the particular value stops at 7.11-7.42 N/mm² but in red soil mixed concrete, there is significant improvement in strength. The values of red soil mixed concretes split lastingness is 8.48-9.2 N/mm². Soil-cement mixture may be a product of cement grouting or mixing with soils. Chemicals like soluble glass are frequently utilized in combination to satisfy specific needs. The proportion of cement required in soil decides supported the sort of soil. hydraulic cement widely used as a soil stabilizer, due to its easy handling and internal control properties. With the rise in cement quantity within the strength of the cement stabilized soil increases. In most cases of blending 5.5% organic clay with cement content of 300 kg/m³ and more, the extent of strength reached 3.0 MPa.

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