A STUDY ON SOIL STABILIZATION USING WASTE TEXTILE MATERIAL

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Abstract : The paper deals with stabilization of soil using industrial waste. Unsuitable highway sub grade soil requires stabilization to improve its properties. Industrial waste is used as raw materials. Ingredients are used as waste textile materials like a polyester, etc. In this paper various experiment like specific gravity, proctor compaction test, CBR test and direct shear test to increase strength properties and behavior of sub base. Then the results and its graph of various mixes are compared to see their effects in sub base stabilization. The stabilization technique has an additional benefit of providing an environment friendly way to deal with industrial textile waste.

I. INTRODUCTION

This paper aims to study on soil stabilization at where soil is some erodible and not good for sub base compare to other area. By adding some waste textile material like polyester clothes layers to increase soil strength and its capacity. In this paper we scrutinized from research paper to carry out aim and testing on soil. Soil stabilization may be defined as the alteration or preservation of one or more soil properties to improve the engineering characteristics and performance of a soil. Stabilization, in a broad sense, incorporates the various methods employed for modifying the properties of a soil to improve its engineering performance.

II.AIM

To perform Investigation on soil stabilization utilizing waste textile material

III.OBJECTIVES: -

- To study soil property.
- To prepare sample of stabilized soil and determine the properties of soil with textile material.
- To compare normal soil sample and sample with waste textile material in laboratory.

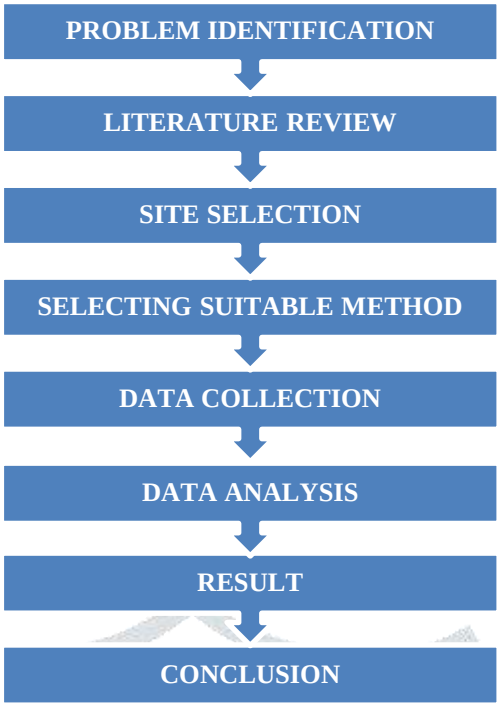
IV. MATERIALS USED IN THIS WORK: -

Generally, in market different types of materials are available for stabilization of soil but they may be extensive. So, we decided to use wastage materials from textile industry. Industry that we have selected was loom industry located at laskana area in Surat. Waste material includes yarn resins which were useless due to defects.

V. STUDY AREA: -

In Surat city we have selected kosmada village area for this experiment. In this village we found black cotton soil. Hence, by use of yarn wastage we stabilize the soil by Random fiber reinforcement method.

1.RESEARCH METHODOLOGY:



1.1.WORK METHODOLOGY:

(a)Interaction With**:**

- Industry owner
- Industry's manager
- Machine operators
- Village personnel

(b)Collection of Yarn Material

(c)Collection of Soil Sample

(d)Performed Different Tests on:

We have performed some testes on soil like particle size distribution, specific gravity of soil, Atterberg limit, California bearing ratio test (CBR).

2. RESULT AND GRAPHS:

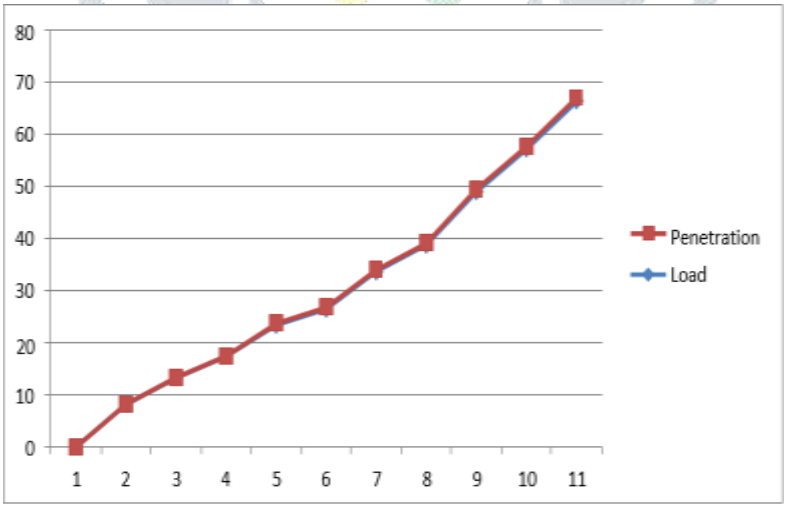


Figure 1: Normal soil

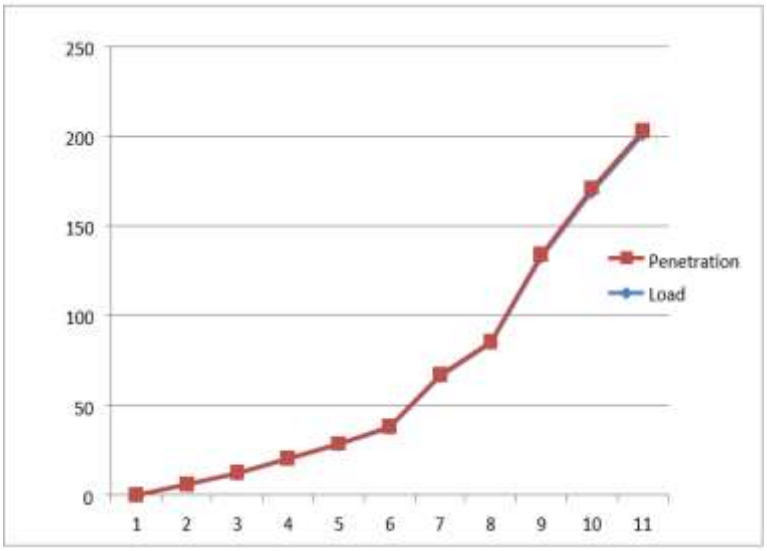


Figure 2: soil with 2-layer material

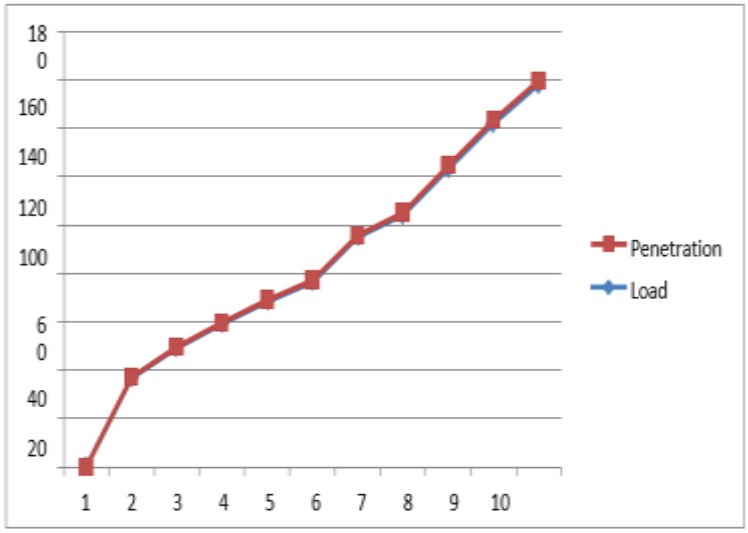


Figure 3: soil with 3-layer material

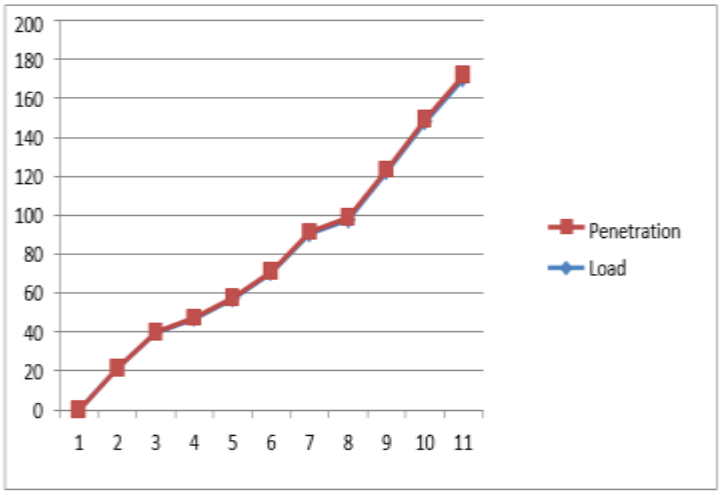


Figure 4: soil with 4-layer material

2.1 CONCLUSION: -

By performing C.B.R. experiment, we can conclude that, using polyester fibre in various layers the strength of soil increases as follows:

- C.B.R value of soil sample = 1.935 % @ 2.5mm penetration

- By using 2 fibres = 2.753 % @ 2.5mm penetration
- By using 3 fibre – 5.2% at 2.5 mm penetration **which seems to be more effective**
- By using 4 fibres = 4.09 % @ 2.5mm penetration

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