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Study of Black Cotton Soil and Settled Soil near Bhatghar Dam by using Lime Rice Husk Ash and Fly Ash Stabilized

Wayal Akshay[1], Shailendra Vishwas[2], Todkar Suraj [3], Tahir Pathan[4], Prof. Gauri Patil[5]
[1, 2, 3, 4, 5]*Civil Engineering, Trinity Academy of Engineering, Pune, India*

Abstract: ***Lack of stable ground for development of this infrastructure is very common in view of this unsuitable ground is unavoidable and making in view of this unsuitable ground is unavoidable and making a suitable ground before construction is challenging issue geotechnical engineer soil in.***
Geotechnical application on one side and safe disposal of solid waste on the other side an attempt is disposal of solid waste on the other side an attempt is disposal of solid waste on the other side an attempt made is investigation to explore the possibilities of made is investigation to explore the possibilities utilizing solid waste to improve the engineering behaviour of problematic soil in this present
It is found that Black cotton soil mainly stabilized using Fly ash , rice husk ash and Lime. Combination of Fly ash , rice husk ash and Lime proves to be very effective and cheaper method of stabilization. Stabilization of soils is an effective method for improvement of soil properties.
Keywords: Black cotton soil . Rice husk ash, Lime, Fly ash, Rice Husk Ash Liquid limit, Plastic limit

I. INTRODUCTION

Bhatghar dam is constructed on Yelwanti river is a concrete structure. The dam was built in 1927 and mainly for generating electricity and irrigations maximum height of dam 57.2m length 1625m . It is 40km from pune .
Soil is defined as unconsolidated material, composed of solid particles, produced by physical and chemical disintegration of rocks
The process of soil stabilization refers to changing the physical properties of soil in order to improve its strength, durability, or other qualities.The process of soil stabilization refers to changing the physical properties of soil in order to improve its strength, durability, or other qualities. Typically, this is important for road construction, and other concerns related to the building and maintenance of infrastructure.

II. LITERATURE REVIEW

A. Experimental Investigation on Stabilization of black Cotton Soil Using Lime and fly ash

In this paper Satbilization of soil is important enchance the engineering propertites of expansive properties of expansive soil like strength
Volume stability and durability in research has been made to stabilize the soil using fly ash and lime

B. Stabilization of soil using Rice husk ash

In this paper the unsoaked cbr value in the value the case additional rha to clay soil increased

C. Laboratgory Study On Stabilization Using Fly Ash And Rice Husk Ash

Liquid limit reduced to 55% for soil sample specific gravity content reduced perpartion of the sub base highway project with the without admixture stabilization

D. Stabilization of soil using Rice husk ash

In this paper they study effect of same on the index and engineering characteristic of problematic soil . In order to utilize the rice husk ash for the improvement of problematic soil clay and alluvial soil with increasing % of solid wastes

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III. OBJECTIVE

To Analyze the characteristics of Black cotton soil.
To evaluate the effect of the properties of black cotton soil stabilized with mixture of rice husk , fly ash and lime
To study the combined effect of fly ash , rice husk ash, lime on properties of black cotton soil
To find the optimum value rice husk ash , fly ash and lime ss

A. Experimental Investigation

Has been found during handling of various It investigation project assignments for assessing causes of structural failures that water has got easy access into the foundations. It saturates the soil and thus lowers its bearing capacity, ultimately resulting in heavy depressions and settlement**.**

IV. METHODOLOGY

LITERATURE REVIEW
↓
DATA COLLECTION
↓
DATA ANALYSIS
↓
RESULT

V. MATERIAL USED

A. Black Cotton Soil

Locally availables soil used for the experimental investigation . nature black cotton soil was obtained from pune district in maharastra state.

B. Lime

Lime is caustic material appears usually in white colour it is normally obtained lime stone when lime combine through water generates some heat and gaines some resonables strength characteristics as well

C. Rice husk ash

The rice husk ash collected Karnataka state kamakshi rice mills , produced material from the process manufacturing puffed rice contains large amout of iron oxide temperature for solidification

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D. Fly ash

Fly ash collected from aniket rmc plant pune the collected dried fly ash was subject to various geo technical chraacterization such as gradation compaction , strength, permeability

E. Testing soil sample

1) Plastic Limit

Sr.No	Percentage	Plastic limit
1	0%	14.33%
2	5% lime	61.33%
3	5% fly ash	52.61%
4	5% rice husk ash	42.31%

2) Liquid Limit

Sr.No	Percentage	Liquid limit
1	0%	0.21%
2	5% lime	0.20%
3	5%fly ash	0.22%
4	5% rice husk ash	0.16%

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3) Modified Procotar Test

Sr.no	MASSO F Mould + soil	Mass of soil	Bulk Density	Water content	Dry Density
1.	5227.5	1476	1.48	0.114	1.33
2.	5301.5	1550	1.55	0.13	1.37
3.	5371	1619.5	1.62	0.15	1.42
4.	5466	1766.5	1.71	0.22	1.39

California bearing ratio
5 % lime 5% fly ash 5 %Rice husk ash

Sr no	Type of mixture soil	Cbr % for 2.5mmPenetration	Cbr %For 5mm Penetration
1	Black cotton soil	2.012	1.98
2	5%fly ash	3.57	3.15
3	5%rice husk ash	5.13	5.01
4	5%lime	5.27	5.11
5	5 %rice husk ash and lime fly ash	5.29	5.23

VI. RESULT

By analysis existing data by The Reaction is very quick and Stabilization of soil starts with in few hours black cotton soil stabilization the relatively low unit weight of fly ash, rice hush ash and lime it well suited for placement over soft or low bearing strength

VII. CONCLUSION

With the use of Fly Ash and Rice husk ash, lime bhatghar Dam & Black Cotton Soil, there is a great change in Index properties. It further leads towards stabilization of soil. With the help of this stabilization of soil, pavements can be designed economically such that sub-base thickness can be reduced with varying percentage of Fly Ash and Lime

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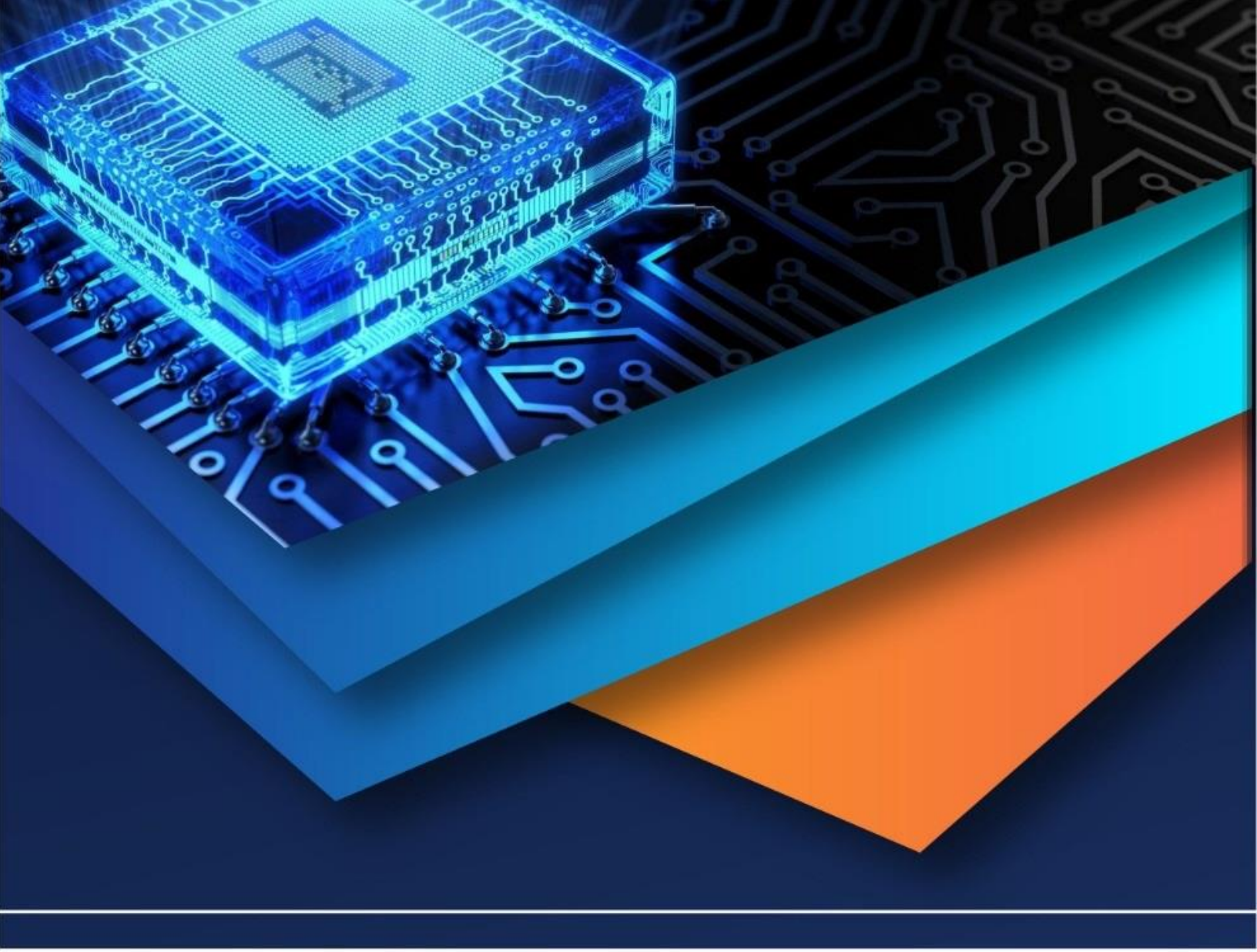

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