

EFFECT OF WASTE CLOTH ON THE PROPERTIES OF BLACK COTTON SOIL

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Abstract: The black cotton soil is mainly inorganic clay and owns medium to high compressibility, this soil also referred as expansive soil. The properties of the soil are influenced by the environment condition the soil gets swell during winter season and shrinks during summer seasons .the black cotton soil was unable to withstand the high impact load from the heavy structures due to constant change in properties of the soil parallel to environmental condition, in order to make it possible the black cotton soils are get mixed with the stabilizing materials ,in the same manner in this analysis the black cotton soil properties are analyzed by using waste cloth. The highlighting reason for using waste cloth is because of its easy availability, eco-friendly and its fibrous properties. The waste cloth are collected from the cloth shop and stitching shop, the black cotton soils are collected from the city of Bhalki.

Keywords: Black cotton soil, waste synthetic cloth, SPT test, UCT test, Direct shear test.

1. Introduction:

The black cotton soil it is an expansive soil the load bearing capacity of an B.C.soil is collectively recessive, in the presence of heavy structure laying foundation over B.C.soil is very important to spike the load bearing strength of an B.C.soil, as a result various stabilizing materials utilized to spike the B.C.soil strength properties. In the previous work the waste cotton cloths are used and mixed with high percentage of cotton cloths, but in this existing work the B.C.soil are incorporated with the synthetic cloths at the percentage of 0.5%,1%,1.5%and 2% by the weight of soil. In order to analyze the effects of the B.C.soil properties in the presence of synthetic cloth as a stabilizing materials. Finally after performing the entire test successfully the project work comes out with the result that the stabilizing materials shows increase in the strength properties o the B.C.soil.

2. Material used:

2.1 Black cotton soil:

The black cotton soil it is a core material of this project, this soil shrinks and swells in high moisture content region .The B.C.soil was collected from the place called as Bhalki. The shrinkage and swelling of an B.C.soil makes unsuitable for the load bearing of the heavy structures.



Fig 1 b.c.soil

2.2 waste synthetic cloth:

The main stabilizing material in the project study is the waste synthetic cloth, the reasons behind utilizing this is because of its fibrous properties which was helpful in imparting the strength properties of the B.C.soil. The waste synthetic cloth was collected from the cloth shop and stitching shops as required amount.



Fig 2 w.s.cloth

3. Methodology:

The properties and characteristics of B.C.soil are visualized with the combination of stabilizing material waste synthetic cloth with four trials for in a laboratory studies. The result obtained after performing the laboratory test are compared. And the effects of stabilizing materials over B.C.soil are determined.

- Atterberg limits.
- Standard proctor compaction test.
- Unconfined compression test.
- Direct shear test.

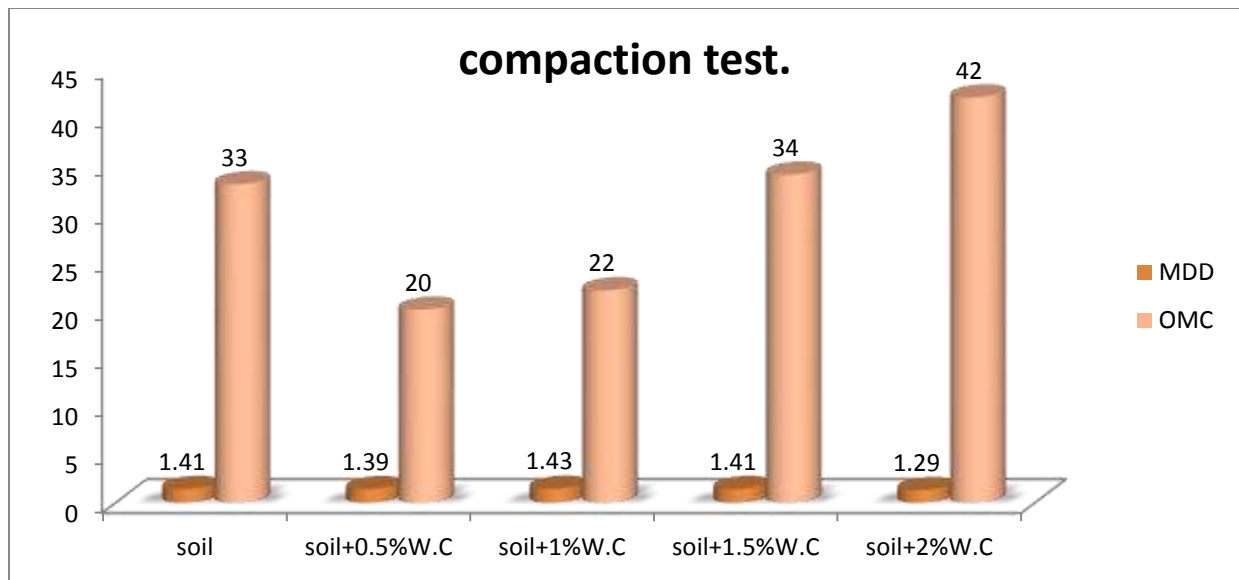
4. Test results.

4.1 Test on soil : Initially the basic tests are performed on the Black cotton soil in order to aware about the properties of Black cotton soil, and the test result shown in the

Table:1

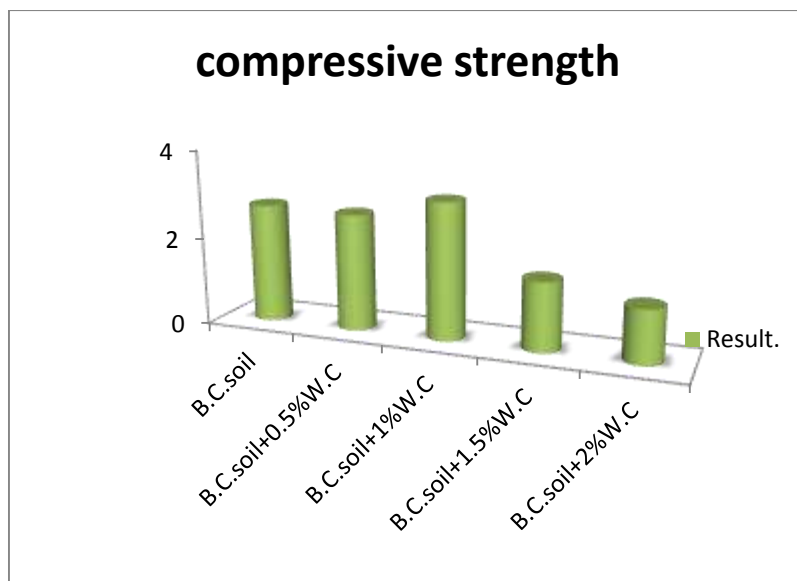
S.NO	Test	Result
1.	Moisture content	22
2.	Specific gravity	2.675
3.	Liquid limit	66%
4.	Plastic limit	50
5.	Plasticity index.	16
6.	Unconfined compression test	2.71kg/cm ²
7.	Maximum dry density	1.41gm/cc
8.	Optimum moisture content.	33.33%

4.2 Standard proctor test: The test performed on the B.C.soil with the stabilizing material for a three trial of 0.5%,1%,1.5% and 2% to analyze the soil properties.



4.3 unconfined compression test:

S.NO.	test	Result.
1.	B.C.soil	2.71
2.	B.C.soil+0.5% W.C	2.65
3.	B.C.soil+1% W.C	3.1
4.	B.C.soil+1.5% W.C	1.56
5.	B.C.soil+2% W.C	1.21



4.4 Direct shear test.

