ASSESSMENT OF THE CHANGE IN GEOTECHNICAL CHARACTERISTICS OF SOIL IN ORGADAM REGION WITH ADDITION OF DEMOLITION AND CERAMIC WASTE

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ABSTRACT

The destination of the paper is on study the possibility of the provision development obliteration waste to moving forward the execution from claiming establishment subways layer in the roadway. Utilizations of obliteration waste to enhancing dirt property may be invaluable since they would cheap. Mainly accessible what's more Eco-friendly. The paper display impact of waste obliteration tidy ahead fluid limit ,plastic limit, plastic index, California bearing ratio, shear quality parameter and swelling. Weight for development dirt. The dirt gathered mainly might have been blended for obliteration waste and ceramic tidy starting with 0.30% At those sub grade what's more establishment will be reinforced CDW, for regularly utilized layer thickness, a decrease of 3 inches alterbeg,4 inches will be picked up both In the thickness about surface span furtherance establishment

KEY WORDS*: Construction Demolition waste, Sub grade, California bearing Ratio (CBR), Unconfined Compression Test (UCC)*

1.INTRODUCTION

The land available for construction is very less because of increasing urbanization and modernization. Everywhere land is being utilized for various structures from an ordinary house to sky scrapers, from bridge to airports and form village road to highways (or) expressway. Soil being the cheapest and readily available construction material, has been poor properties with the civil engineers even though it being poor properties. At the beginning the construction demolition waste consists of plastics, Metals, concrete rubble clean dirty are separated. This separated material is added to local soil in the mixture content kiln dust is added varied percentage by weight. Optimum moisture content & Maximum dry density. The optimum Moisture content is the moisture content Resulting in the largest density at a given compactive Efforts. The purpose of the field control test is to Ensure that the compacted soils stick to the prescribed design specification[1]Now stability of any structure depends on the properties of soil. Most of the soil

available are such that they have good compressive strength adequate shear strength weak in tension strength .To overcome the same many researchers have concentrated their studies on the elaboration of composites[2]

There are number of techniques available to improve the engineering properties of expansive soil to make it suitable for construction .Stabilization using dust/ powder like waste material with and without a binder like lime, cement etc. Is are of them. Quarry dust, marble dust are the same of the prominent dust/powder like waste material which have been successfully utilized for stabilization of expansive soil. [3]

1.1 OBJECTIVES:

1. The weighted structural number for the design of pavement and foundation.

2. Pavement layer thickness for the most Economical design

3. Commonly used pavement layer thickness

1.2 COMPONENT OF STABILIZATION:

Soil stabilization involves the expenditure of stabilization agents fashionable weak soil in the direction of better it's such as compressibility, strength, permeability in addition to durability .The piece of stabilization skill take account of soil with soil granite along with stabilization agents (or) binders.

The vast majority of adjustment must be embraced in delicate soil with a specific end goal to accomplish alluring designing properties. As per Sherwood fine grained granular material are the least demanding to balance out because of their Extensive surface region in connecting to their molecule distance across. A dirt soil contrasted with other on Extensive in connection to their molecule width. [4] Bond hydration is an unpredictable procedure with a mind connection responses. However this procedure can be influenced by 1. Nearness of outside Issues2.Water concrete proportion 3.Curring Temperature 4.Particular surface of the be land [4]California bearing proportion test is an Infiltration test. The test is utilized for deciding the quality of street subgrade and base courses. The test is directed by Estimating load Required to infiltration a dirt example at a standard rate with a cylinder under standard condition.

2. EXPERIMENTAL INVESTIGATION:

The experimental work consists of the following step. Specific gravity, Determination of soil index properties (Atterberg Limits) ,Liquid limit by Casagrande's apparatus, Plastic limit , Plastic size distribution by sieve analysis and find the unconfined compression strength.

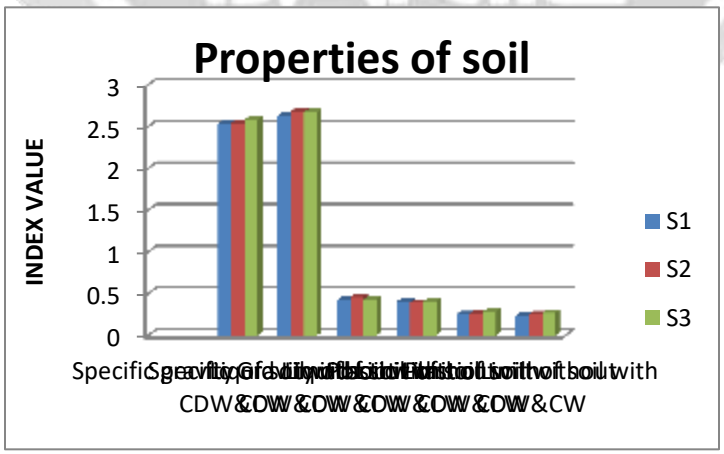

Chart –1: Properties of soil

The above table shows the basic index properties of soil, such as specific gravity of soil without CDW&CW for sample 1,2,3 as 2.53, 2.54 and 2.58. And specific gravity of soil with CDW&CW for samples as 2.63, 2.68, 2.67 and Liquid Limit of soil without CDW&CW as 42.30%, 46.02% and 43.2%.Liquid Limit of soil with CDW&CW for the three samples as 40.2%, 39.2% and 40.5%. the plastic limit of soil without CDW&CW for three samples as 25.2%, 26.2% and 28.3% . Plastic Limit of soil with CDW&CW as 23.5 %, 25.1% and 26.9.

Properties	**S_1**	**S_2**	**S_3**
Specific gravity of soil without CDW&CW	2.53	2.54	2.58
Specific Gravity of soil with CDW&CW	2.63	2.68	2.67
Liquid Limit of soil without CDW&CW	42.30%	46.02%	43.2%
Liquid Limit of soil with CDW&CW	40.2%	39.2%	40.5%
Plastic Limit of soil without CDW&CW	25.2%	26.2%	28.3%
Plastic Limit of soil with CDW&CW	23.5%	25.1%	26.9%

TABLE- 1: Index Properties Of Soil

3. RESULT AND DISCUSSION:

The Table 2 shows the unconfined compression strength test for zeroth day , 3 rd day and 7 th day strength in (kg/cm^2) for the following combinations with soil CW 10 +CDW 5, CW 10%+CDW10%, CW 10%+CDW 15%, CW 10%+CDW 20%, CW 15%+CDW 5%, CW 15%+CDW10%, CW15%+CDW15%,CW15%+CDW20%, CW20%+CDW5%, CW20%+CDW10%, CW20%+CDW15% and CW20%+CDW20%

Sample	Content Mix	0th day (kg/cm^2)	3th day (kg/cm^2)	7th day (kg/cm^2)
1	CW 10 %+CDW 5%	1.80	1.82	6.82
2	CW 10%+CDW10%	2.68	2.94	8.38
3.	CW 10%+CDW 15%	2.79	3.30	9.69
4.	CW 10%+CDW 20%	2.40	2.89	8.36
5.	*CW 15%+CDW 5%*	1.96	2.41	10.68
6.	CW 15%+CDW10%	2.79	3.26	11.51
7.	CW15%+CDW 15%	2.85	4.36	13.78
8.	CW15%+CDW20%	2.24	4.23	12.54
9.	CW20%+CDW5%	1.67	2.48	8.81
10.	CW20%+CDW10%	2.58	3.61	10.76
11.	CW20%+CDW15%	2.78	4.52	12.76
12	CW20%+CDW20%	2.52	4.38	11.41

TABLE- 2 :RESULT OF UCC TEST

3.1 UCC Test Results

For the 7 th day for the compression strength 6.82, 8.38, 9.69, 8.36,10.68, 11.51, 13.78 ,12.54, 8.81, 10.76, 12.76 and 11.41kg/m^2.from this above table shows the highest strength attain by the proportion of CW15%+CDW 15% with 13.78 kg/cm^2. The graph represents about the various proportion with their corresponding UCC strength .

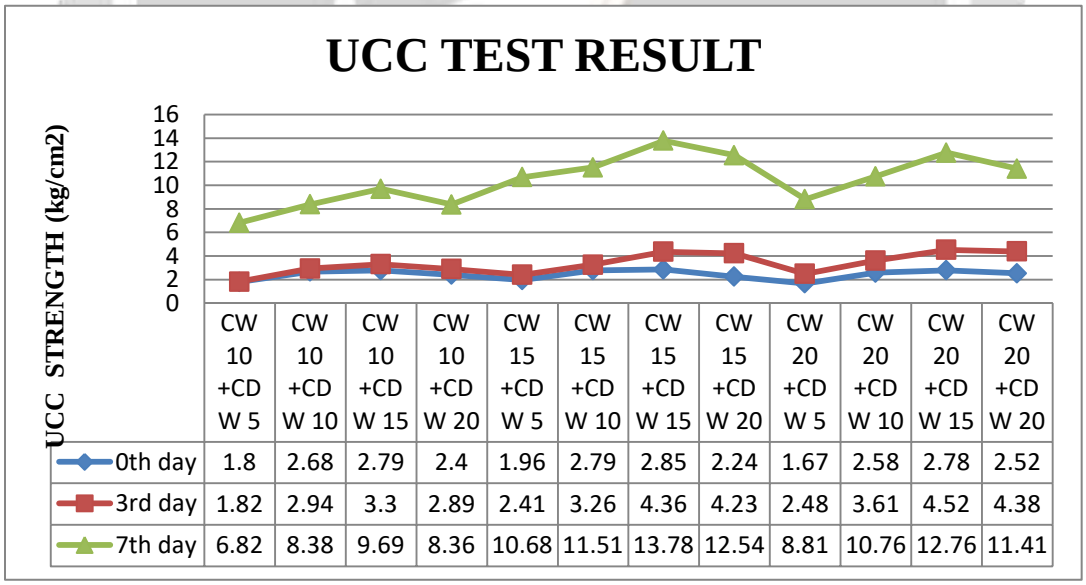

Chart-2: UCC Test Result

4. CONCLUSIONS

The conclusions obtained from the Research work can be summarized as follows .Soil Demolition waste provided strength and durability which is outstanding value as a base/sub base material. Also it best alternative material for low cost structure. when the sub grade and foundation is strengthened with CDW for commonly used layer thickness a reduction of 3 inches is gained both in the thickness of surface course and base course.

The addition of demolition waste into the soil has changed the compaction parameters .The optimum moisture content of the Expansive soil has decreased and the maximum dry density increased with addition of demolition waste.

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