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Consequences of Protein Based Foaming Agent on Lightweight Concrete

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***Abstract*: The main objective of this project is to develop traditional or conventional concrete and simultaneously motivate the people about light weight concrete. This focuses on tests such as Compressive test, Water absorption, and flexural test only. The results obtained are interesting and useful to compare the results with that of traditional concrete. The main fortes of this concrete is to low density and thermal conductivity, Ultimately there is reduction of dead load, faster building rate in construction and lessen haulage and handling costs.**

***Keywords*: Light weight concrete blocks, Compressive test, Water absorption test, Flexural test.**

I. INTRODUCTION

Since concrete is the major building material, there is wide scope in innovation of concrete. Definition-Lightweight concrete can be defined as a type of concrete which includes an expanding agents in that it increases the volume of mixture[1].The study of light weight concrete plays very important role in development of construction field. The light weight concrete is the better option for the replacement of conventional concrete since it is a light weight which helps in economizes the structural design. The densities of lightweight concrete varies between 300-1800 kg/m^3 [2].The main objective of this paper is to aware the people about Lightweight concrete and how is the Lightweight concrete is better option over conventional concrete. This paper focuses on test such as Compressive Test, Water absorption Test, Flexural Strength Test and Density.

II. MATERIALS USED

Light weight concrete is produced by the combination of Portland cement, sand, fly ash, potable water and appropriate aerating agent (Kemilite-PR-Protein Based Foaming Agent).

III. GOALS

a. *Development of traditional or conventional concrete*

b. *Strength parameter data collection*

c. *.To motivate the people about light weight concrete*

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IV.OUTLINE OF PROPOSED WORK

Testing Program Of Lightweight Concrete:-

In order to study the behaviour of lightweight concrete, normal concrete testing will be done to determine the material and structural properties of each type of lightweight concrete and how will these properties differ according to a different type of mixture and its composition. Once concrete has hardened it can be subjected to a wide range of tests to prove its ability to perform as planned or to discover its characteristics. For new concrete this usually involves casting specimens from fresh concrete and testing them for various properties as the concrete matures.

V.METHODOLOGY

A. Compressive Strength:

Compressive strength is the primary physical property of concrete (others are generally derived from it). Compressive strength is one of the most basic properties used for quality control for lightweight concrete. Compressive strength may be defined as the measured maximum resistance of a concrete specimen to axial loading. It is originate by computing the uppermost compression stress that a test cylinder or cube will support. There are three types of test that can be used to determine compressive strength; cube, cylinder, or prism test. The 'concrete cube test' is the most familiar test and is used as the standard method of measuring compressive strength for quality control purposes (Neville, 1994) [3]. The test for determining the compressive strength is going to be done.

B. Water Absorption:

These properties are particularly important in concrete, as well as being important for durability. It can be used to predict concrete durability to resist corrosion. Absorption capacity is a measure of the porosity of an aggregates; it is also used as a correlation factor in determination of free moisture by oven-drying method. The absorption capacity is determined by finding the weight of surface-dry sample after it has been soaked for 24 hr. and yet again verdict the weight after the sample has been dried in an oven; the difference in weight, expressed as a percentage of the dry sample weight, is the absorption capacity. The test is intended as a durability quality control check and the specified age is 28-32 days. Test procedure has been described in IS 456 2000 [4].

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C. *Density:*

The density, or more precisely, the volumetric mass density, of a substance is its mass per unit volume. The study of density of lightweight concrete leads important role in understanding the effect on strength, durability and resistance to permeability. For the determination of density of lightweight concrete, firstly weight the sample using weighing scale. After that get the average weight of at least 3 samples. Finally find out the density using known formula-

$$Density = \frac{Mass}{Volume}\ kg/m^3$$

D. Flexural strength:

Flexural strength which is also known as fracture strength, modulus of rupture or bend strength. Simply flexural strength is ability of material to resist deformation under loading. It is measured in terms of stress. Test is conducted as the test specimen is placed centrally on two roller supports and load is applied through another roller, taking care not to cause local failure. The transverse load is applied at a uniform rate not exceeding 300 N/min through the central roller. The individual breaking load is recorded and flexural strength is calculated using pure bending equation [5].

VI. EXPECTED RESULTS

The project is going to focus on performance of Lightweight Concrete in relation to compressive strength, density, flexural strength and water absorption for different mixes of Light Weight Concrete.

VII. CONCLUSION

Light Weight Concrete is becoming very popular day by day. In this project the performance of Light Weight Concrete obtained from mixing fly ash and aerating agent (Kemilite-PR-Protein Based Foaming Agent) in conventional concrete will be analysed. Finally, the results obtained are going to be published.

REFERENCES

1. Mat Lazim Zakaria,. Bahan dan Binaan, “Dewan Bahasa dan Pustaka”, 1978.
2. Narayanan N, Ramamurthy K. “Structure and Properties of aerated concrete: A review”, *Cement and Concrete composites*, 200 pp. 321-329.
3. A.M Neville (1985), “Properties of concrete”, *Pitman publishing house*, pp.139-14.
4. “Is456 2000 Plain And Reinforced Concrete Code of Practice”, *(Fourth Revision).*
5. Prakash T.M., Naresh kumar B.G., Karisiddappa, Raghunath S., “Properties of Aerated (Foamed) Concrete Blocks”, *International Journal of Scientific & Engineering Research ISSN 2229-5518,* Volume 4,Issue1,January-2013.
6. K.Krishna Bhavani Siram, “Cellular Light-Weight Concrete Blocks as a Replacement of Burnt Clay Bricks”, *International Journal of Engineering and Advanced Technology (IJEAT) ISSN: 2249 – 8958,* Volume-2, Issue-2, December 2012.

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