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Experimental On Properties Of No-Fine Concrete

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Abstract— Today in the present world we are very much fond of sustainable and eco-friendly means of Construction.No-fine concrete has been in use in many countries over more than a century.In this study, no-fine concrete were made into several number of cubes, cylinders and prisms and being tested for its high compressive strength and study the effectiveness of fine aggregate on the compressive strength of no-fine concrete were investigated concernly. The purpose of this project is to analyze the feasibility of producing highly sustainable no-fine concrete mixtures and evaluating the effect of fine aggregate on their properties. No-fine concrete is produced by using ordinary Portland cement, coarse aggregates, and water. This concrete is tested for its properties, such as slump value, compressive strength, Flexural strength, etc..

Keywords - Light weight Concrete, Economic ingredients , No fine aggregates Less w/c ratio.

I. INTRODUCTION

More than 40 million residential units are needed to house millions of homeless people in India. Blocks are important components in residential buildings. Even though bricks made of soil have been widely used so far, there is very good scope for using blocks made of cement, sand and coarse aggregates because bricks are not available at all places to the desired requirements. A concrete block is primarily used as a building material in the construction of walls. A concrete block is one of several precast concrete products used in construction. Major advantage of concrete blocks is that their strength can be engineered as per requirement, thus making them relatively stronger than masonry with bricks walls by around 15-20%. The market for building block is growing at a rapid rate, especially in the areas where burnt bricks are not easily available or of poor quality. Unfortunately, rigorous scientific studies have not been made on the strength, durability and economy of concrete building blocks. Lightweight concretes can either be lightweight aggregate concrete, foamed concrete or autoclaved aerated concrete.Such lightweight concrete blocks are often used in mason's house construction, because of their less density and self-weight, it helps for faster construction.

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II. LITERATURE SURVEY

Cement concrete was prepared using cement and fly ash as binder, sand as fine aggregate and pumice as coarse aggregate. American Concrete Institute (ACI) method was used to proportion the concrete. The concrete and constituent mortar cubes were cast and cured in water. The cubes were tested at different ages to find the compressive strengthconventional concrete. It is good in marine environment.

III. MATERIAL USED

The material investigated in this study are as follows

A. Cement

Ordinary Portland Cement of 53 grade used in this investigation and it confirming specifications as per IS 12269-1987 having specific gravity of 3.15.

B. Coarse Aggregate

Angular coarse aggregate of maximum size 12mm with specific gravity 2.82 was used.

C. Water

Ordinary drinking water available in the construction laboratory was used for cassting all specimens of this investigation and the quality of water was found to satisfy the requirement if IS 456-2000.

IV. CONCRETE MIX PROPORTION

The mix proportions for ordinary grade concrete of $M_{30}$are designed using IS:10262-2009.Materials required for 1 cubic meter of concrete in ordinary grade concrete are

Table 1: Mix Ratio

Cement	Coarse aggregate	Water
1	4.5	0.4

V. RESULTS AND DISCUSSION

A. Compressive strength test:

M_{20} grade of concrete are casted in the moulds of size 150mmx150mmx150mm and tested for compressive strength at 7,14 & 28 days.

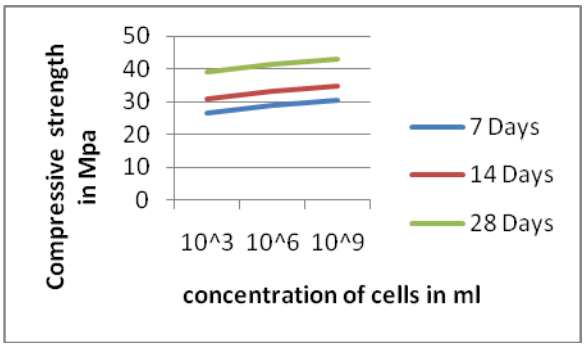

Figure 1: compressive strength at 7,14,28 days

B. Split tensile strength test:

M_{20} grade of concrete are casted in the cylinder specimen of diameter 150mm & height 300mm and tested for compressive strength at 7,14 & 28 days.

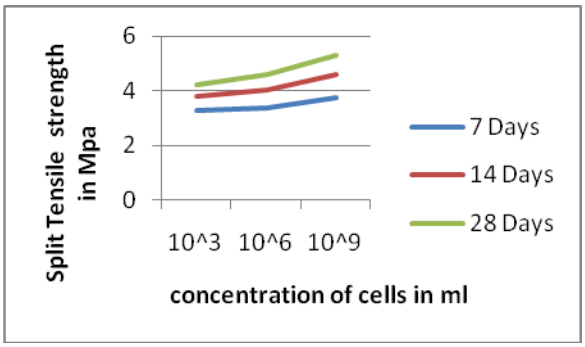

Figure 2:Split tensile strength at 7,14,28 days

C.Flexur strength test:

M_{20} grade of concrete are casted in the prism of size 750mmx150mmx150mm and tested for compressive strength at 7,14 & 28 days.

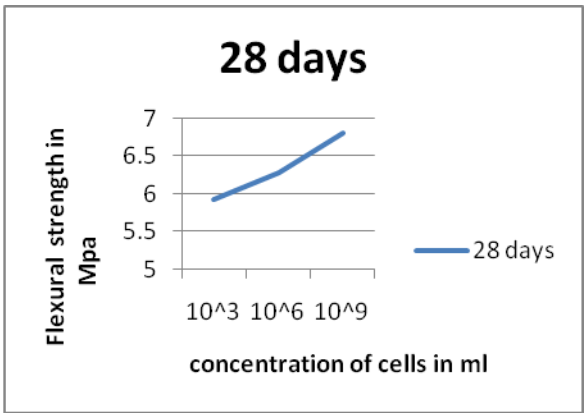

Figure 3:Flexural strength at 7,14,28 days

VI. CONCLUSION

Based on the experimental investigation, the following conclusions are drawn

- There is also an increment in split tensile and flexural strength of concrete.

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