International Journal on Applications in Civil and Enviornmetal Engineering
Volume 2: Issue 3: March 2016, pp 3-4. www.aetsjournal.com ISSN (Online) : 2395-3837

An Optimistic Solution for Peer-To-Peer Multi Keyword Searching Using Bloom FilterSettings

N.Thameem Ansari , M.Poovizhiselvi , V.Kavimani

Abstract— Aggregate is one of the main ingredients in producing concrete. It covers 75% of the total for any one concrete mix. The strength of the concrete produced is dependent on the properties of aggregates used.

However, the construction industry is increasingly making higher demands of this material and is feared to accommodate the many requests at one time. With this need other alternatives to prevent this from happening. The study was conducted on recycled aggregate from destroyed concrete.

This study aims to investigate the characteristics of recycled aggregate concrete, which consists of various grades of hardened concrete is broken (recycled aggregate). In this paper, an experimental investigation has been conducted to replace natural coarse aggregate with demolition waste in gradual percentage as (0, 20, 40, 60, 80, and 100%) in nominal mix concrete with addition of steel fibre and super plasticizer to find strength and durability of concrete.

Keywords: Recycled Aggregate, Steel Fibre, Super Plasticizer, Strength, Durability.

I. INTRODUCTION

The rapid development of the concrete industry in the past decades has been largely attributed to environmental impoverishment. Non-renewable natural resources are overly exploited because of the increasing demand for concrete structures. At the same time, large amounts of construction waste are produced with the rapid urbanization. These wastes negatively affect the environment and strongly contribute to landfill saturation. Thus, lessening the negative effect of concrete industry on the ecological environment requires the use of only a small amount of natural resources in concrete production. To minimize the exploitation of natural resources, construction waste, particularly the concrete waste, must be reused. Some countries have exerted great effort to recycle the concrete waste, a new product of which is the recycled aggregate concrete, which is used to completely or partially replace the natural coarse aggregate in concrete mixtures. Recycled aggregate concrete is a kind of green construction material that positively contributes to the sustainable development of concrete industry.

N.Thameem Ansari ,PG Student (M.E Structural Engineering), Department of Civil Engineering,Tamilnadu College of Engineering, Karumathampatty, Tamilnadu, India.(Email: thameemer@gmail.com)

M.Poovizhiselvi , Assistant Professor, Department of Civil Engineering, Tamilnadu College of Engineering, Karumathampatty, Tamilnadu, India.

V.Kavimani , Head Of the Department, Department of Civil Engineering, Tamilnadu College of Engineering, Karumathampatty, Tamilnadu, India.

II. LITERATURE SURVEY

Mmasetlhomo Tommy Gumede, at, al.,(2015)From the investigations carried out, a number of conclusions may be deduced. Finally in respect of the tests conducted in the study, it is observed that RCA up to a level of 60 % replacement of the natural coarse aggregate may be utilized in infrastructural applications like concrete pavements and blocks.

Hui Maa, et al., (2014)investigated the test results show that the short column has poor ductility, as demonstrated by its brittle shear failure, and that the long column has excellent ductility, as demonstrated by its ductile flexural failure. Mirjana Malešev (2010)investigated three types of concrete mixtures were tested: workability of concrete with natural and recycled aggregate is almost the same if water saturated surface dry recycled aggregate is used. Also, if dried recycled aggregate is used and additional water quantity is added during mixing, the same workability can be achieved after a prescribed time. Additional water quantity depends on the time for which the same workability has to be achieved. It is determined as water quantity for which the recycled aggregate absorbs for the same period of time.

III. MATERIAL USED

The materials 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 3.02.

B. Fine Aggregate

The fine aggregate obtained from river is used in this experimental purpose and its fineness modulus of 2.23(Sand confirming to zone II) as per IS 383-1970.

C. Coarse Aggregate

Angular coarse aggregate of maximum size 20mm with specific gravity 3.012 was used.

D. Water

Ordinary drinking water available in the construction laboratory was used for casting all specimens of this

investigation and the quality of water was found to satisfy the requirement if IS 456-2000.

E. Recycled Coarse Aggregate

Angular recycled coarse aggregate of maximum size 20mm with specific gravity 2.44 was used.

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	Fine aggregate	Coarse aggregate	Water
1	2.029	3.489	0.4

V. RESULTS AND DISCUSSION

A. Compressive strength test:

The average or mean compressive strengths for grade 30 concrete at 3, 7, 14 and 28 days with different RCA replacement levels of 0%, 20%, 40%, 60%, 80% and 100% are shown in **Table.** It is obvious that the compressive strength is affected by the level of RCA replacement of natural coarse aggregates.

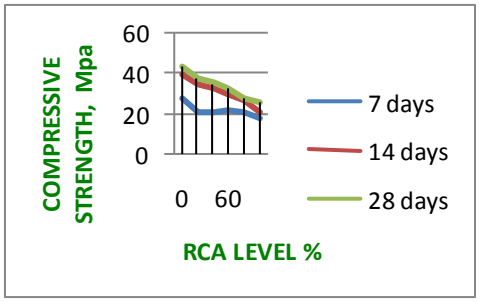

Figure 1: compressive strength at 7, 14, 28 days

Table 2: Compressive strength of concrete at different days.

RCA level	Compressive strength (Mpa)		
(%)	7 days	14 days	28 days
0	28.00	39.04	43.02
20	21.18	34.00	37.13
40	20.38	32.67	35.04
60	21.74	29.86	32.68
80	20.47	26.81	27.89
100	17.80	21.18	26.04

B. Flexural strength test:

M_{30} grade of concrete are casted in the prism of size 750mmx150mmx150mm and tested for compressive strength at 7, 14 & 28 days.

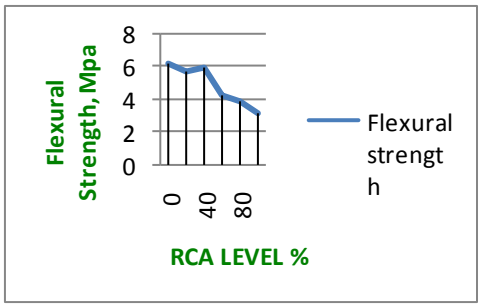

Figure 2:Flexural strength at 7,14,28 days

VI. CONCLUSION

The focus of the present work is the compressive and flexural strengths of recycled aggregate concretes. From the investigations carried out, a number of conclusions may be deduced.

✓ Firstly in recycled aggregate concretes the adhering mortar in the RCA can have a significant effect on the performance of the concrete. More particularly, the quantity and quality of the adhering mortar can profoundly affect the workability of the fresh concrete mix as well as the strength of the hardened concrete.

✓ Secondly as a consequence, in the manufacture of the fresh concrete, it may be necessary to pre-soak the RCA in order to avoid rapid slump loss and early setting of the fresh concrete.

✓ Thirdly, with increasing RCA replacement of natural coarse aggregate in the concrete mix, the density in addition to the compressive and flexural strengths of the concrete is progressively reduced in relation to the reference concrete.

✓ Finally in respect of the tests conducted in the study, it is observed that RCA up to a level of 60 % replacement of the natural coarse aggregate may be utilized in infrastructural applications like concrete pavements and blocks.

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