International Journal of Emerging Trends in Engineering and Basic Sciences (IJEEBS)
ISSN (Online) 2349-6967
Volume 7, Special Issue 4 (July-August 2020), PP. 082-084

"Review on Design and Comparative study of concrete and concrete by using Coconut shell, Waste marbles"

[1]Rohan Tak[2], Pranil Jachak[3], Pawan Ambatkar[4], Shubham Chaure

[1-4]U.G. Student, Civil Engineering Department, G.H.R.A.E.T Nagpur, Maharashtra, India, Civil Engineering Department, G.H.R.A.E.T Nagpur, Maharashtra, India

Abstract: The most influencing factor in development is its expense. For most of the construction work concrete is used. Compressive strength is main property of concrete. Coarse aggregate is ingredient of concrete produce compressive strength in Compressive strength is main property of concrete. Coarse aggregate is ingredient of concrete produce compressive strength in concrete. Cost of construction material increases cost of structure but it may reduce to some amount by using by–product in construction.

The study is deals with the partial replacement of aggregate with eco-friendly material coconut shell and marble. Investigation of compressive strength is evaluated by adding coconut shell and marble material with 25%, 50%75% and 100%. From result it is concluded that by replacing 25% coconut shell get more compressive strength as compared to conventional concrete. Replacing 50% marble get more strength compared to conventional concrete. In the investigation we use M20 grade of concrete with the mix design ratio of (1:1.5:3).

Keywords: Coconut shell and Waste Marble

I. Introduction

Compressive strength is main property of concrete. Coarse aggregate is ingredient of concrete produce compressive strength inconcrete. Cost of construction material increases cost of structurebut it may reduce to some amount by using by–product in construction. In India about 11,930,000 tone coconut produced per year, and about 29, 82,500 tone coconut shell produced per year in India. When such amount of shell is used in construction work partially with coarse aggregate, some amount of conventional aggregate may save.

The Marble has establishing properties, so by utilizing it we can supplant concrete and sand which will decrease the natural and wellbeing impacts just as cost moreover. Waste marble is found 6 million annually in India.

II. Aim and Objective

Investigation and comparison of compressive strength of concrete by using coconut shells, waste marbles with conventional concrete.
Main Objectives of study are as follows

1. To improve the strength of concrete.
2. To improve the durability by concrete.
3. To improve the physical property of concrete.

III. Materials used

- Cement: Ordinary Portland cement was used because it is easily available in market. The cementwas used in measuring whole tests. The Specificgravity of cement was 3.13 and the fineness of cement was 4%.
- Coarse Aggregate: The Coarse aggregate was used as natural coarse aggregate. The specific gravity of thecoarse aggregate was 2.58. The Fineness modulus was 7.76
- Fine Aggregate: Natural river sand was used as fine aggregate. The Specific gravity of Fine aggregate was 3.42.
- **Coconut shell:** Coconut shell is hard outer part of coconut having composition of cellulose, hemi-cellulose and lignin as major composition which protect it from decay. In India about 11,930,000 tone coconut produced per year, and about 29, 82,500 tone coconut shell produced per year in India. When such amount of shell is used in construction work partially with coarse aggregate, some amount of conventional aggregate may save.
- **Waste marble:** As we probably am aware the term 'concrete" is a blend of concrete + sand + coarse total with water. Concrete is a generally utilized in structures as primary constructional material. It is most significant substance of a structure. The Marble has establishing properties, so by utilizing it we can supplant concrete and sand which will decrease the natural and wellbeing impacts just as cost moreover. Waste marble is found 6 million annually in India.

Advantages

1. Producing economic concrete by reducing the cost of material.
2. Useful for low cost housing and partition wall.
3. Production of light weight concrete.
4. Coconut shells are more resistant towards crushing, impact and abrasion.

Disadvantages

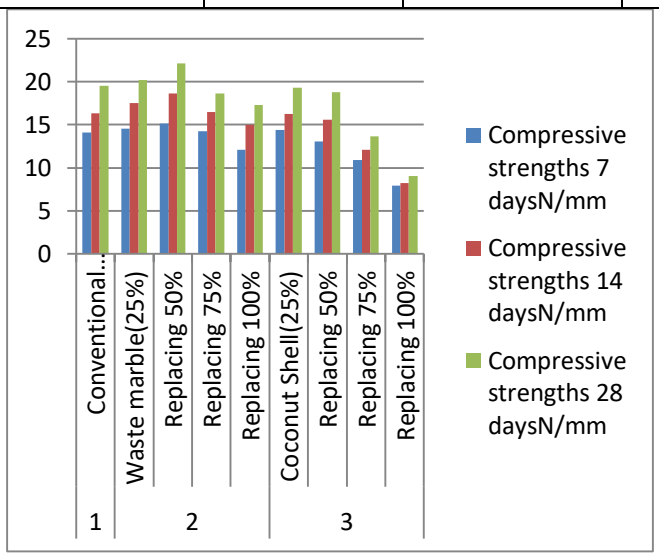
1. Coconut shell and waste marble cannot use in large proportion in concrete.
2. Coconut shell and waste marble are not useful for high rise building.

IV. Results

Table:1 Shows compressive strength of concrete.

Sr.No	Material of combination	Compressive strengths		
		7 days N/mm^2	14 days N/mm^2	28 days N/mm^2
1	Conventional concrete (M20)	14.11	16.33	19.54
2	Waste marble(25%)	14.5	17.5	20.21
	Replacing 50%	15.12	18.64	22.1
	Replacing 75%	14.21	16.45	18.64
	Replacing 100%	12.1	14.95	17.31
3	Coconut Shell (25%)	14.36	16.22	19.26
	Replacing 50%	13.03	15.56	18.75
	Replacing 75%	10.93	12.1	13.62

	Replacing 100%	7.93	8.23	9.05



Graph No 1:-Comparative analysis of compressive strength.

V. Conclusion

From this trial, the mix of coconut shell invigorates great. Likewise, utilizing the mix of coconut shell as total in cement can lessen the expense of material. For practical reason, the coconut shell is appropriate for course total. It has been seen that the marble residue can be utilized as a concrete. The most significant however backhanded advantages of study expresses that an otherwise squanders material substance can be utilized in development rehearses henceforth maintaining a strategic distance from dangerous impacts of waste marble dust in nature.

References

[1] Daniel Yaw Osei *"*Experimental assessment on coconut shells as aggregate in concrete".
[2] Shivkumar halale , shinde swapnil, londhe vika ,"experimental analysis of the use of coconut shell as coarse aggregate."
[3] B.A.V.Ramkumar, J.Vakateswara rao "Effect of inclusion coconut shell in concrete".
[4] Ritesh mall, Saurabh Dubey "Concrete by using waste marble as aggregates".
[5] Vishal Panchal, Lakshya Gupta "Comparative study of waste marble".
[6] Dr.A.K.Mishra "Utilization of waste marble in concrete".
[7] K.Vamshi krishna and J.Venkateswara rao "Effect of waste marble on green concrete".