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A Review Paper on Artificial Sand by Replacement of Natural Sand with Artificial Sand

Akanksha P. Tawade[1], Lomesh P. Chandewar[2]
[1]*Under Graduate Student :- Department of Civil Engineering*
[2]*Assistant Professor:- Department of Civil Engineering Tulsiramji Gaikwad-Patil College of Engineering & Technology, Nagpur, India*

Abstract: *This review paper shows the replacement of river or natural sand with artificial sands so as to give the maximum strength of concrete or any structure when replacing the natural sand with artificial sand. Generally natural sand is available in banks of the river and that type of sand is called natural sand or river sand. As we know that the sand is used in construction in civil engineering like bridges, buildings, houses, dams, etc. natural sand contains the rocks particles and also various types of grades and sizes which depending upon the amount of wearing. At that present time it's not very easy to get the good quality of sand and also transportation problems are faces from a long distance and hence cost of construction is increased. In the process of natural sand it takes too much time to formed but at present time the demand of sand which is used in construction work is very high therefore now a days we need to find some another or alternate natural sand for construction work so if we replace the natural sand with artificial sand for the betterment of construction work.*
Keywords: *Artificial sand, Natural sand, Concrete, Strength.*

I. Introduction

The river or natural sand is formed by weathering process of small particles of rocks in million of years. A present time the good quality of sand is not available at every time and sometimes sand is transported from a long distance due to this transportation problems the cost of construction is increased. The natural resources are finishing rapidly hence we need to search alternate source to natural river sand. Artificial sand manufacture by proper machines by certain grains by the mixed of coarse and fine grains. The artificial sand contains sixe of particles from 150 micron to 4.75 mm in the proper proportion and due to this reduces the voids in sand and it results the requirement of cement quantity in construction is less and it will be more economical as compare to natural sand. It is very much beneficial for making the concrete and increasing day by day while the natural sand cannot fulfil the increasing demand of construction sector. In artificial sand it is found that the sharp edges of the particles provides better and with cement gives the round part of natural sand. In river or natural sand there were presence of other impurities like coal, shells, mica etc. makes inferior use in cement concrete. Artificial sand gives more strength and workability as compare to the natural sand. It contains minimum voids hence it results to reduction of quantity of cement and it is economical.

II. Literature Review

G.Sreenivasa:- It is states that at present time the civil engineers, Architecture, Builders and Contractors agree that the river sand is available today. It contains very high silt, fine particles of other impurities like coal, bones, shells, mica and silt etc. The distruction of all these materials due to weathering effect. Now a days removel of sand from the river bed it results the impacts on environment i.e water table get deeper and ultimately dry therefore government have put ban on the lifting of sand from the river bed. The requirement of manufacture sand is all the particles have higher crushing strength.

Rajendra P. Mogre, Dr. Dhanjay Prabat et. al. :- It states he has been observed that the replacement of natural 60% to 80% by artificial and is found it. By replacement of natural sand in that M20 grade of concrete increase the percentage of compressive strength and tensile strength by 29.44% and 5.39%. Therefore it results in artificial sand can be recommended as competitive substitute for river sand. The cost of artificial sand is about 60% to 70% that natural sand. Therefore as compare to natural sand the artificial sand concrete may be chipper.

Harshlata R. Raut, Ashish B. Ugale :- Reported that in 50% the replacement of artificial sand with admixtures then it increases the compressive strength by 12.18% and in case of 100% the compressive strength increases by 18.265 when natural sand replacing with artificial sand increase in proportion of artificial sand the concrete mix becomes harsh. Workability reduces with increasing the % of artificial sand. Hence it is conclude that natural sand can be replace with artificial sand.

Akshay A. Waghmare, Akshay G. Kadao, Ayushi R. Sharma and Sunil G. Thorre :- It is states that the concreting can be done eco-friendly by this experiment. The results shows that if 100% compressive strength

which replace by natural sand is higher than the 0% and in the case of 60% replacement the compressive strength is maximum. When compressive strength is increases upto 60% then it decreases upto 100% but at 100% the strength is more than 0% by the replacement of natural sand.

M.R.Chitlange in 2010 :- It is states that the sharp edges of the particles in artificial sand provides the better bond with cement than rounded particles of natural sand it shows in higher strength . Artificial sand reduces the excessive bleeding of concrete. The mixes with artificial sand as fine aggregate gives higher strength than mixes with natural sand.

Marks James Krinke:- It is show that the additional cost of these large amount of super plasticiser in concrete mix makes the manufacture sand concrete mix. The additional super plasticiser a concrete mix containing manufacture similar with natural sand however it achieved workability dosage high 2.36% were required. It is observed form the above studies that there is a variation in the strength enhancement of the concrete which is made from the artificial sand to encourages the use of sand which is locally available artificial sand which promotes to study to check it the suitable replacement of percentage in the concrete.

III. Conclusion

(1) It is found that the replacement of natural sand with 60% to 80% by artificial sand.
(2) It is observed that the mixes with artificial sand as fine aggregates gives more strength than that of mixes of natural sand.
(3) Due to its sharp edges of that particles in artificial sand provides better bond with cement than that of rounded particles.
(4) In M20 grade of concrete increasing percentages of compressive strength by 29.44% by replacing natural sand.
(5) Hence it is conclude that the artificial sand can be recommended good and also competitive substitute for the natural sand.
(6) It is observed that strength of concrete increases with the artificial sand.

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