Evaluation of Nareshwar Sand and Badoli Sand Properties

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***Abstract*- The use of dc technology was almost discarded in the power transmission systems. DC power systems have been used in applications like avionic, automotive, marine, rural areas, telecommunication infrastructures and point-to-point transmissions over long distances or via sea cables and for interconnecting ac grids with different frequencies. This Paper describes a new application of single-ended primary converter (SEPIC) and Cuk converter for dc bipolar network.**

***Index terms*- Nareshwar Sand, Badoli Sand, Cement, Coarse Aggregate, Water**

I.INTRODUCTION

Concrete is world's most widely used construction material. The utilization of concrete is increasing at a higher rate due to development in infrastructure and the construction activities all around the world. However there are some negative impacts of more production of on concrete like continuous extensive extraction of aggregate from natural resources will lead to its depletion and ecological imbalance. Researches are in search of replacing fine aggregate to make concrete less expensive and to lead sustainable development. This environmental reason has generated a lot of concern in the construction world. The uses of sugarcane bagasse, wooden chips, plastic waste, rice husk ash, rubber tyres, paper and pulp industry waste, waste glass, ceramic tiles powder, broken bricks are some example of the replacing fine aggregate in concrete. Natural sand use in concrete. In Asia the construction industry is at to realize the advantage of concern in high rise building. The aim of this spread awareness of using natural sand as partial replacement of fine aggregate in concrete and improve its compressive strength and density. Tests are as per the specified procedure of Indian standard codes.

II. EXPERIMENTAL MATERIAL

A. Natural Sand

Aggregate are the important constituents in concrete. They give body to the concrete, reduce shrinkage and effect economy. One of the most important factors for producing workable concrete is a good gradation of aggregate. Good grading implies that a sample friction of aggregate in required proportion such that the sample contains minimum voids. Sample of well graded aggregate containing minimum voids require minimum paste to fill up the voids in the aggregate. Minimum paste means less quality of cement and less water, which are further mean increased economy, higher strength, lower shrinkage and greater durability. Those frictions from 4.75mm to 150 microns are termed as fine aggregate. The river sand is used in combination as fine aggregate confirming to the requirement of IS: 383. The river sand is washed and screens, to eliminate deleterious material and oversize particles

B. Cement

Ordinary Portland cement is the most common type of cement in general use around the world as a basic ingredients of concrete, mortar, stucco, and most non-specially grout. It is developed from limestone. It is a fine powder produced by heating material to from clinker. After grinding the clinker we will add small amounts of remaining ingredients. Many type of

cement are available in the market. When it comes to different grade of cement, the 53 grade OPC cement provides consistency higher strength compared to others. As per the bureau of Indian Standards (BIS), the grade number of cement highlight the minimum compressive strength that the cement is expected to attain within 28 days. For 53 grades OPC cement the minimum compressive strength achieved by the cement at the end of the 28th day shouldn't be less than 53MPa or 530 kg/cm2.

C. Coarse Aggregate

The frictions from 20mm to 4.75mm are used as coarse aggregate. The coarse aggregate from crushed basalt rock, confirming to IS: 383 is being use. The flakiness and elongation index were maintained well below 15%.

D. Water

Water is an important ingredient of concrete as it actually participates in the chemical reaction with cement. It's practically proved that minimum water cement ratio 0.35 is required for conventional concrete. If more water is used, segregation and bleeding takes place, so that the concrete becomes weak, but most of the water will absorb by the fibers. Hence it may avoid bleeding. If water content exceeds permissible limits it may cause bleeding. If less water is used, the required workability is not achieved. Portable water fix for drinking's required to be used in the concrete and it should have pH values range between 6 to 9. Since it helps to from the strength giving cement gel, the quantity and quality of water are required to be looked into very carefully

III. MIX DESIGN

Cement concrete mix design means, determination of the proportion of the ingredients i.e. cement, water, fine aggregate, coarse aggregate which would produce concrete possessing specified properties such as workability, strength and durability with maximum overall economy. A mix M20 grade was designed as per Indian Standard method (IS 10262-2009) and the same was used to prepare the test samples. The design mix proportion is in the table below.

Grade	M-20
Cement(kg)	1.542
Water(liter)	0.848
Nareshwar sand(kg)	3.5
Coarse aggregate(kg)	4.1
Badoli sand(kg)	3.5

IV. EXPERIMENTAL METHODOLOGY

Concrete contains cement, water, natural aggregate, coarse aggregate.With the control concrete aggregate is replaced with natural sand i.e.badoli sand and nareshwar sand.Three cube sample were cast for each percentage of content as per concrete mix design with partial replacement of aggregate with w/c ratio as per design. After 24h the cube were de-moulded and water curing was continued till respective cube were tested after 7and 28 days for compressive strength test. Also test for different natural sand as per Indian standard codes criteria.

Compressive strength tests were performed on compression testing machine using cube sample per batch were tested with the average strength values reported in this paper. The loading rate on the cube is 35 N/mm2 per min. The comparative studies were made on their characteristics for concrete mix ratio as per design with partial replacement of aggregate with natural different sand.

Natural different test result

Test	Badoli sand
Specific gravity	2.39
Water absorption	0.46
Bulk loose density	1495
Fineness modules	2068
Finer then 75micron	1.24

Test	Nareshwar sand
Specific gravity	2.43
Water absorption	0.45
Bulk loose density	1483
Fineness modules	2.41
Finer then 75micron	1.38

Test	Nareshwar sand + Badoli sand
Specific gravity	2.38
Water absorption	0.47
Bulk loose density	1498
Fineness modules	2.54
Finer then 75micron	1.20

Compressive strength

Concrete type	Average compressive strength	
	7 days	28 days
Nareshwar sand cube	14.47	20.28
Badoli sand cube	15.12	21.99
Nareshwar sand +Badoli sand	15.56	22.65

V. CONCLUSION

Conclusion made on based of experimental investigation on compressive strength considering the environmental aspects also, the strength of concrete increases at 5% to 10% minor effects on replacement with the aggregate.

As per compressive strength we conclude that replacement of fine aggregate to natural sand of nareshwar in concrete give 20.28MPa at 28 days for M20 grade of concrete.

With using badoli sand in behalf of fine aggregate in concrete the compressive strength 21.99MPa at 28days for M20 grade of concrete.

At using both mixed sand in replacement as fine aggregate in concrete the compressible strength is 22.65 MPa at 28days for M20 grade of concrete.

Concrete obtain compressive strength using natural sea or river sand also effect on cost of project work. They reduce the cost and made economic based on sand materials.

REFERENCES

[1] Hawkins, P., Tennis P, and Detwiler R (2003) – The use of limestone in Portland cement: a stateof-the-art review, EB227, Portland Cement Association, Skokie, IL, 44.

[2] ASTM C 125, Standard Terminology Relating toconcrete and concrete aggregate, 1994 Annual Book of ASTM Standards.

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[4] S.O.Ajamu Int (2017) The effects of maximum aggregate size on the compressive strength . ETIR (ISSN – 2349-5162)

[5] www.pace.ac.in

[6] https://www.ijraset.com

[7] Ijrpublisher.com

[8] www.researchpapaer .com

[9] IS-456-2000

[10] Referance book B.C.Punamiya, M.S.Shetty,