INTERNATIONAL JOURNAL OF PURE AND APPLIED RESEARCH IN ENGINEERING AND TECHNOLOGY

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SPECIAL ISSUE FOR
2nd NATIONAL CONFERENCE ON
"Recent Trends and Development in Civil Engineering"

PRE-PACKED AGGREGATE CONCRETE

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Accepted Date: 22/12/2018; Published Date: 01/02/2019

Abstract: On the topic of pre packed aggregate concrete by observing the cost of construction is more in normal concrete so, creating something more economical which can revolutionize the art of construction. So, It comes to point to work on the domain of the Pre-Packed Aggregate Concrete and how to make cube of it and make it more economical with respect to normal cube.

Keywords Compaction of Aggregate, Mixing of Water And Cement, Use of Modern Technology of Concrete

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Access Online On:

www.ijpret.com

How to Cite This Article:

Kalkirajsinh Zala, IJPRET, 2019; Volume 7 (6): 190-193

PAPER-QR CODE

INTRODUCTION

The significance of using prepacked aggregate concrete (PAC) lies within its two-stage placing method. Once the coarse aggregates are placed inside the formwork and then the pumping procedure begins by applying either a manual or a mechanical pump, the role of density, grout consistency, bleeding, and compressive strength of the grout cannot be ignored. The grout is made of cement, sand, and water along with mineral or chemical admixtures to improve the quality of grout and the cement consumption through using pozzolanic materials including different ashes. For the purpose of reducing the cement consumption of the mix, the pozzolanic material named palm oil fuel ash (POFA) was incorporated to reduce the cement consumption and hence reduce the heat of hydration along with improved grout workability.[1]

During the last decades the concrete industries has widely developed in many directions, e.g. improving the methods of pouring concrete in order to achieve high quality concrete and low cost. Two-stage concrete (TSC) is produced by placing coarse aggregate in a form and injecting a cement-sand grout in order to fill the voids between aggregate particles. For economic and technical reasons two-stage concrete is particularly used for construction and repair of massive structures, especially foundations, underwater constructions, and all kinds of construction with closely spaced reinforcement.[2]

Pouring of concrete underwater is widely demanded in many projects, especially in marine projects and for off-shore structures such as harbours, oil refineries and jetties, as well as for some in-shore structures that are near the coast, or where the level of the water table is near the ground surface. Where this occurs, it can be seen clearly in the pile construction. Concrete can be placed underwater successfully through good design of the concrete mix and through choosing the most suitable method for placing the concrete underwater.[3]

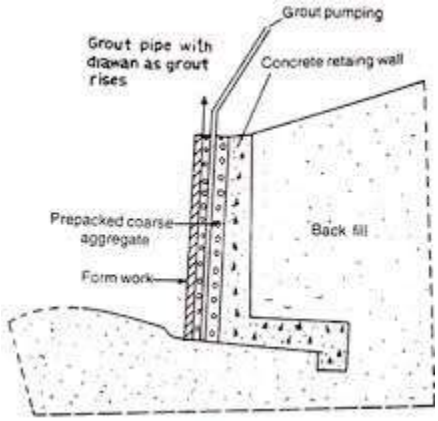

Figure 1 Pre-packed Aggregate concrete[1]

OBJECTIVES

The main objective of the pre-packed aggregate concrete is to reduce the cost of construction and elimination of segregation also to achieve desired strength and to get well stress distribution between aggregates.

MATERIALS AND METHODS

Take a 15x15 formwork cube and fix it in such a manner that there should not be any leakage in it. Now take 14 kg aggregates and put it with some amount of water to get wet so, the water from the slurry. Now take 3.65 kg cement and 1.45 kg water and keep it in good qualities. So that the overall quality will be maintained Thereafter, Mix both of the material in addition to 2% GGBS so that the slurry will not get solid and keep it into liquid form more than normal cubes. Now put the straw and wet aggregate into the formwork in 3 to 4 layers and make it sure that the top layer should be well plane. Now inject the slurry through injecting device and keep doing this up to the top should be filled well. Then keep that formwork for 24 hours and take outside of formwork. Cure the cube for the 28 days and then we can use these cube for the construction purpose.

LITERATURE REVIEW

Reza Hodjati, Hossein Aslani Iman Faridmehr, It was concluded from this study that the packing effect of the cement paste with POFA increased with an increase in POFA fineness. Therefore, the compressive strength of grout with POFA increases with respect to increased packing effect.[1]

Hakim. S. Abdelgeder, TSC is very efficient material for the repair of deteriorated concrete elements. Drying shrinkage of TSC is lower than that of NC; shrinkage is reduced due to the point-to-point contact of the stone aggregate particles. The modulus of elasticity as a function of compressive strength of the TSC is investigated. The modulus values for specific types of aggregate can be described by linear constant functions.[2]

Hakim el at It is possible to use local materials to produce under water concrete by using TCS methods. It is possible to use local materials to produce underwater concrete by TSC method.[3]

RESULT AND DISCUSSION

The final conclusion is the stress distribution between aggregates is increased, also it do not contain sand and the percentage of fine aggregate can be reduced by 40%, and the density of concrete will be higher than normal concrete. The cost can be reduces up to 15%.

REFERENCES

1. Reza Hodjati, Hossein Aslani Iman Faridmehr, A. S. M Abdul Awal and Ziba Kazemi Indian Journal of Materials ScienceASTM C618, "Standard specification for coal fly ash and raw or calcined natural pozzolan for use mineral admixture in Portland cement concrete,"2015

2. Hakim. S. Abdelgeder, Concrete repair using two-stage concrete method "Concrete repair using two-stage concrete method".2015

3. Hakim Abdelgader, Manal Najjar, Tareq Azabi "Study of underwater concrete using two-stage (pre-placed aggregate) concrete in Libya"2010