



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

A REVIEW PAPER ON NO-FINES CONCRETE

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ABSTRACT: -

No-fines concrete is used nowadays as special concrete. This concrete is eliminating the use of fine aggregates in normal concrete. It is specially used in pavement blocks which are used in Industrial area. Its higher porosity helps in permeating rain water directly helps in refreshing groundwater aquifer. This concrete has high porosity due to this behavior relative density is lower than normal concrete. This is also reducing dead weight in the structure. The compressive strength of this concrete is also lower than normal concrete. This concrete is mix with different ratios of aggregate/cement and it helps find different properties like chemical, physical and mechanical.

Keywords: No-fines concrete, Compressive strength, Tensile strength, porous concrete.

educational campus, commercial infrastructures pedestrian's waterways and garden way, etc. Nowadays we should face many problems regarding highly demand of probable water in that cases in rain season with the use of such type of no fines or pervious concrete aquifer accordingly also it plays vital role in flooded storm water management. According to American Concrete Institute there are lots of researches ongoing on pervious concrete. Pervious paving systems, especially those with porous surface require maintenance order to keep pores clear of fine aggregate as it no under the system ability to highly infiltration storm water. It someplace very important role in Sustainable Urban Drainage System Such type of system more compatible with components of the natural water cycle such as storm surge overflows soil percolation and bio filtration etc. It may give urban frees the roofing space they need to grow full size.

1. INTRODUCTION: -

The pervious concrete is a special type of concrete consist of a gap graded system generally contains cement coarse aggregate admixtures and water. In pervious concrete slump value is nearly to be zero. This type of concrete with highly porous properties used for constructing various types of flatworks that should allow water drains easily it is made using large size aggregates. the cement concrete paste then coats the aggregate and allows water to pass easily through the concrete slabs. It is mainly used in parking lots. In a low traffic area

2. MATERIALS

Materials along with specification which was used for this project are summarized below-

Cement

Ordinary Portland Cement (OPC) of 53 grades is used in this concrete. Cement can be stored in airtight room before use. It should be fresh cement means it should use under three months after manufacture. It should satisfy the requirement of IS: 456; 10262. The normal

consistency and initial setting time of cement was 29% and 32 minutes respectively.

Coarse aggregate

The coarse aggregate is the main component of this concrete on basis of strength. It reduces the drying shrinkage and other changes occurring in moisture. The coarse aggregate used passes in 20 mm and is retained in 10 mm sieve.

Water

Water is an important component of concrete. It chemically reacts with cement to form a cement paste, it serves as a lubricant by making concrete workable, it also helps in the adhesion of cement, sand, and aggregate. The Extra amount of water is not good for this concrete at the time of hydration it acquires some space and while evaporating leaves void in the structure. water making concrete porous thus it makes it weaker in strength.

3.METHODS FOR MAKING NO-FINES CONCRETE

Manual mixing method – Take all specified material and mix with various proportions by manual mixing by hand and just careful about water addition during the manual procedure.

Mechanical Mixing method- In this method, all materials are taken properly and mix in the mixer.

4.CONSTRUCTION

- No fine concrete is the simple concrete which not consist the fine aggregates it only the mixture of coarse aggregate, cement and water.
- No-fines concrete is required the aggregates which are passing through 20mm sieve and retain on 10mm sieve.
- Because of using single size aggregates the voids which are required of this concrete is maintain.
- The void content may vary between 30 to 40% depending upon the degree of consolidation of concrete,
- No fine concrete is made with the aggregate / cement ratio from 6:1 to 10:1.

The water /cement ratio for satisfice the consistency of concrete is varying in between the 0.38 to 0.50.

- On the ratios of water/cement, aggregate/cement and unit weight of concrete the strength of No-fines concrete is depends.

5.1 ADVANTAGES: -

- In no fines, concrete shrinkage is very less as compared to other concrete
- Due to high porosity, there are less capillary action in this concrete,
- It is useful in lightweight structures.
- Thermal insulating properties are better than other concrete.
- No kind of especially making equipment is used in this concrete.

5.2 DISADVANTAGES: -

- Difficult in providing the reinforcement.
- Frequent maintenance is required.
- Compressive strength is comparatively less.
- Required more time and experimental workers for the construction.
- It can't be used for the construction of bridges, buildings and dams.
- Pervious concrete is not ideal for high traffic/speed areas.

6.CONCLUSION:

- The effect of water cement ratio has greater impact over the strength of no fine concrete as 0.41% water content gave more strength the other water content used in this study. Strength of no fine concrete increases with increase in w/c ratio. From this study, 0.41 w/c ratio was observed to be ideal for no fine concrete.

7. ENVIRONMENTAL BENEFITS

- Reduces Storm water runoff
- Eliminates need for detention ponds and other costly storm water management practice.
- Replenishes water tables and aquifers.
- Allows for more efficient land development.
- Mitigates surface pollutants.
- Minimizes flash flooding and standing water.

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