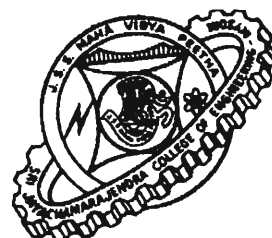


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EFFECT OF AGGREGATE GRADATION ON THE PROPERTIES OF POROUS CONCRETE

Thesis submitted in partial fulfillment of curriculum prescribed for the
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BACHELOR OF ENGINEERING IN CIVIL ENGINEERING

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ABSTRACT

Porous concrete is a mixture of coarse aggregate, portland cement, water and little to no sand, that allows water from precipitation and other sources to pass directly through, thereby reducing the runoff from a site and allowing ground water recharge. The pervious concrete containing supplementary cementitious materials could be considered as an environmentally friendly sustainable concrete. Recent interest in the use of pervious concrete for pavements has been very high. It is traditionally used in parking areas, areas with light traffic, residential streets, pedestrian walkways and greenhouses.

This paper presents the study on effect of aggregate gradation on the mix design and performance properties of porous concrete. Three aggregate gradations were tested with due consideration to gradations specified by different agencies around the world. The mixes were characterized for strength properties, permeability and density of porous concrete. The results were statistically analyzed to identify the factors that significantly influence the properties of porous concrete. Findings of the study clearly indicate that the gradations considered will have significant effect on the design properties of porous concrete, thus they are different.

This paper reports the results of an experimental investigation on the strength properties of pervious concrete. The compressive strength, flexural strength and splitting tensile strength of porous concrete mixes containing cement, fly ash and ground granulated blast furnace slag (GGBFS) as binding materials for different gradation of aggregates are reported. The results showed that the compressive strength, flexural strength and splitting tensile strength increases with the increase in gradation of aggregates and degree of compaction. The findings of the present study recommended considering the permeability as one of the prime parameters in the design of porous concrete mix. The permeability of porous concrete decreases with the increase in gradation of aggregates and degree of compaction.