

HIGH PERFORMANCE CONCRETE; TRIAL MIXES

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ABSTRACT

The practice of designing concrete mixes is now well established in many fields of constructions where large quantities of concrete are required. The advantages to be gained from spending some time in selecting economical proportions of the materials whether in the use of large quantities or in permanent installations such as ready mixed plants or precast works. Although there are many simple or small jobs in which the work involved in designing a mix is obviously unnecessary, the specification usually leaves some details to be fixed when the concrete is made, or the specified mix proportions can often be adapted to give a more satisfactory material, so providing an opportunity for some of the principles of mix design to be applied to most jobs. As a result, there best use can be made of available materials to produce a concrete with its highest performance to the class of work being undertaken.

Basically, the problem of designing a concrete mix consists of selecting the correct proportions of cement, fine and coarse aggregate and water to produce concrete having the specified properties. Sometimes additional ingredients such as ground granulated blast furnace slag, pulverized-fuel ash, or admixtures are used. There are many properties of concrete that can be specified, e.g. workability, strength, density, thermal characteristic, elastic modulus and durability requirements.

However the purpose of this research is to study the effect on the compressive strength due to the mix proportioning of its materials. Due to time constraints, this research is based only on fine and coarse aggregate. Other constituent materials are taken as constant. Fifteen different trial mixes with a total number of 90 cubes are studies by varying the fine and course aggregate.