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Project Phase-I

Abstract

High performance concrete (**HPC**) is concrete mixture possessing high workability, high durability and high ultimate strength. High Strength concrete is a type of high performance concrete generally associated with a specified compressive strength of 40 mPa or greater. Compressive Strength of concrete is measured on 150 mm test cubes or blocks after 28 days.

Among the various grades of High Strength concrete we particularly choose **M 70** concrete's mix Design for our project as it is very rare and unique, added to that concrete of such a high compressive strength is not being used even in most of major project in India currently.

Even **IS code** fails to address concrete mix of such a high compressive strength.

As per IS 456:2000

Table 2 Grades of concrete

(Clauses 6.1, 9.2.2, 15.1.1, and 36.1)

Note: For concrete of compressive strength greater than **M 55** design parameters given in the standard may not be applicable and values may be obtained from specialized literatures and experimental results.

Title of the Project: High Strength Concrete (Mix Design of M 70 Concrete)

Content:

Critical Study of the Following:

- Variation in compressive strength with respect to water cement ratio.
- Factor affecting Strength of Concrete.

Requirements:

Aggregates:

- **Fine Aggregates**
- **Coarse Aggregates: 10 mm and 20 mm**

Cementations Material:

- **OPC Cement**
- **Fly Ash**
- **Micro Silica**

Admixture

BASF Super Plasticizer: Glenium Sky 777

Action Plan

Phase I

Sequence of Operation:

Procurement of above mentioned materials in required quantity for the Project.

Laboratory tests required, to assure quality of materials. Which are as follows:

Tests for Cement

1. Determination of Consistency of Cement Paste.
2. Determination of Fineness of cement by weight Sieving.
3. Determination of Initial and Final setting time of cement.
4. Determination of Compressive Strength of Cement.

Tests for Aggregates

1. Determination of Sieve Analysis of Aggregates.
2. Determination of moisture content of aggregates.
3. Determination of Specific gravity and absorption of Aggregates.
4. Determination of Impact value of coarse aggregates.
5. Determination of Crushing Strength of coarse aggregates.
6. Determination of Elongation and flakiness index of coarse aggregates.

Note: Above aggregates implies “fine aggregates, 10 mm & 20 mm coarse aggregates” unless specified otherwise.

Phase II

Based on the results obtained from standard laboratory tests.

Design and Calculate Mix.

Obtain Mix Proportion for Trial Mix.

Cast 6 Cubes of 150 mm. Place them in curing tank after initial set.

Test compressive strength of casted cubes, 3 cubes after 7 days and 3 cubes after 28 days.

Examine the results if satisfactory results are obtained then proceed to mix design of higher compressive strength else move back to Phase II and redesign the mix.

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