Concrete Cube Competition

(March 16, 2017)

Organised by

1. **Objective:**

To produce a concrete cube that achieves, as closely as possible, a target design strength of 48 MPa (7 Days) and a target mass of 7000 grams per cube (150 × 150 × 150 mm)

2. **Prizes:**

First, Second, and Third Prizes will be awarded to the teams with the HIGHEST LOAD-TO-WEIGHT RATIOS as defined in paragraph 4. First Prize will be awarded Rs. 10000/-, with Rs. 7000/- for Second Prize and Rs. 5000/- for Third Prize.

3. **Rules**

1. The Student Teams:

   a) Each team must have a faculty advisor who will see that the student team complies with the rules of the contest.
   b) Each team must consist of not less than two and not more than five students currently enrolled in an undergraduate program at any college or university worldwide.
   c) Undergraduate students on cooperative or internship work assignment are eligible to compete. All members of a given team must be from the same institute.
   d) It is strongly recommended that at least one individual (faculty advisor or student team member) be designated to represent each team and be present during the testing of specimens at the time and location specified for this competition.
   e) Each team must complete and submit the Preregistration Form and the Official Registration Form.

2. The materials and the specimen geometry

   a) A concrete of the target strength of 48 Mpa (7 Days) and target mass of 7000 grams per cube prepare for said contest.

b) Must use cementitious materials as binder, chemical admixtures, supplementary cementituous materials.

c) Epoxies and other polymers, glue, and similar binders are not allowed. Fibers or other types of reinforcement are not allowed. Any type of non-metallic aggregate may be used.

d) Test specimens cubical in shape shall be 150 × 150 × 150 mm. If the largest nominal size of the aggregate does not exceed 20 mm.

e) Making and curing test specimens of concrete in the laboratory under accurate control of materials and test conditions using concrete that can be consolidated by rodding or vibration. (Reference: IS 456: 2000, SP: 23-1982, IS: 1199-1959)

f) The test method covers determination of compressive strength of cubic concrete specimens. It consists of applying a compressive axial load to molded cubes at a rate which is within a prescribed range until failure occurs. (Reference: IS: 516 - 1959, IS: 1199-1959, SP: 23-1982, IS: 10086-1982)

4. The Evaluation Process:

Two cubes from each entry will be tested in direct compression for strength determination and all three cubes will be used for mass determination.

$$Final\ Score = 48 \times \left[1 - \left|\frac{\sigma_c - 48}{48}\right|\right] + 20 \times \left[1 - \left|\frac{m - 7000}{7000}\right|\right] + 30 \times \left[1 - \left|\frac{\sigma_{c1} - \sigma_{c2}}{48}\right|\right]$$

σ_c - he average strength of the two tested cubes in MPa.

σ_{c1} - and σ_{c2} - are the respective strengths of the two individual tested cubes.

m - the average masses of all three cubes

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