## Method of Making and Curing Concrete Specimens in the Field for Flexural Tests

### 1. Scope:

This is the procedure for making and curing concrete specimens to be used for flexural tests.

### 2. Apparatus:

- 2.1 Beam Mold. Inside measurements will be 6" x 6" x 22". They will be collapsible for easy removal of the specimen.
- 2.2 Tamping Rod A round smooth straight 5/8 in. diameter steel rod with the tamping end or both ends rounded to a hemispherical tip of 5/8 in. diameter. The length of the tamping rod will be at least 4 inches greater than the depth of the mold, but not greater than 24 inches.
- 2.3 Finishing Tools Straightedge, handheld float, or trowel.
- 2.4 Miscellaneous Small scoop or shovel, and mallet.

#### 3. Procedure:

- 3.1 Molding Specimens.
  - A. Obtain a sample of concrete in accordance with SD 402.
  - B. Fill the mold with concrete in 2 approximately equal layers.

Rod each layer sixty-six strokes, once for each 2 square inches of surface area.

Rod the lower layer its total depth, but the rod must not forcibly strike the bottom of the mold so as to cause excessive vibration. Rod the second layer with the rod penetrating slightly (approximately 1 inch) into the layer below.

Heap the concrete above the top of the mold for the final layer, adding additional concrete, as required, to keep the surface above the mold as it is rodded.

After each layer is rodded, tap the outsides of the mold 10 to 15 times with the rubber mallet. Tap with enough force to close any holes left by rodding and to release any large air bubbles that may have been trapped. For concrete with a slump less than 2" the number of taps may be increased to achieve consolidation.

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Self-Consolidating Concrete – Mold the specimens as described in 3.1.B without layers or consolidation.

- D. After tapping, spade the concrete along the sides and ends of the beam mold with a trowel.
- E. Strike off and finish with a straightedge and trowel to produce a flat even finish.
- F. Curing.
  - (1) Immediately after molding, place the specimen in a storage box or completely cover with plastic, sealing it to prevent moisture loss.
  - (2) Store the specimens where they are not subject to vibration or being moved for  $24 \pm 8$  hours after molding.
  - (3) Do not remove the specimen from the mold until 24 hours after molding.
  - (4) Cure and transport specimens in accordance with SD 405 3.1.D.(6).
  - (5) Transport the beam to be cured in the mold or place the specimen in a bed of sand.
  - (6) After removing from the mold, store the specimens in lime water (calcium hydroxide) at a temperature between  $70^{\circ}$  and  $77^{\circ}$ F.

The lime water in the curing tank should have a concentration of at least 1 teaspoon of lime to 1 gallon of water. Stir the lime water monthly. Lime will be calcium hydroxide.

In lieu of a lime water curing tank, a moist room may be used. The moist room will maintain a temperature range of  $70^{\circ}$  to  $77^{\circ}$ F and a relative humidity of not less than 95%.

NOTE: Before placing the beams into the lime water solution, make sure the necessary identification data has been provided on each at a location that is clearly visible.

# 4. Report:

DOT-7 (Central Office)

# 5. References:

None.

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