FLORIDA DEPARTMENT OF TRANSPORTATION
State Materials Office
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April 2, 2008

Florida Method of Test
for
MAKING, CURING, AND TESTING SPECIMENS OF DRAINCRETE FOR EDGEDRAINS

Designation: FM 5-570

1. SCOPE

1.1 This method covers procedures for making, curing, and testing specimens from draincrete being used in the construction of edgedrains.

1.2 This method describes a procedure for making 6 inch diameter x 6 inch high draincrete samples to perform drain rate tests through the specimens.

2. APPARATUS

2.1 Molds - Molds for specimens shall be made of tough durable nonabsorbent plastic material, non-reactive with concrete containing Portland or other hydraulic cements. Molds shall hold their dimensions and shape under conditions of severe use. Molds shall be watertight during use as judged by their ability to hold water poured into them.

2.1.1 Molds shall conform to ASTM C-470, Molds for Forming Concrete Test Cylinders Vertically.

2.1.2 The molds shall be constructed in the form of right circular cylinders which stand with the cylindrical axis vertical and the top open to receive the draincrete.

2.1.3 The molds shall be watertight and sufficiently strong enough to permit their use without tearing or deforming.

2.1.4 The standard size cylinder mold shall be 6 (± 1/16 inches) in diameter by 12 (± 1/4 inches) in height.

2.1.5 The inside surfaces of the molds shall be smooth and free from blemishes.

2.2 Water Holding Container – Use a container with a known volume. One of the following may be used:

2.2.1 Graduated container (flask, beaker, bucket or other pre-measured container) measuring at least 128 ounces by volume.

2.2.2 Clean, empty cylinder mold measuring 6 (± 1/16 inches) in diameter by 12 (± 1/4 inches) in height. Before testing, weigh by volume 128 fluid ounces or 8.33 pounds of water in the cylinder. Be sure not to include the cylinder tare weight in the 8.33 pounds. Legibly mark the inside of the cylinder at the height of the water column with a permanent marker.

2.3 Tampers - Two 2 inch x 2 inch square wooden shaft approximately 24 inches long, each, (preferably non-absorptive).

2.4 Small Tools - Tools and items required as needed such as shovels, pails, trowels, blunted trowels, wheelbarrow, scoops, knife with a sturdy blade, gloves, a stopwatch, etc.

3. SAMPLING DRAINCRETE

3.1 Take two cylindrical samples of draincrete for each LOT in accordance with ASTM C-172, Sampling Fresh Concrete. Record the location the sampled batch of draincrete was deposited in the structure in the project records.

4. MOLDING SPECIMENS

4.1 Place the molds on a level rigid, horizontal surface, free from vibrations and other disturbances, at a place as near as practicable to the location where the specimens are to be stored during the first 24 hours. Use an insoluble marker to place several marks on the inside of the molds 6 inches from the top to serve as a fill gauge.

4.1.1 If it is not practicable to mold the specimens where they are to be stored during the first 24 hours, move the specimens to the place of storage immediately after being prepared. Avoid jarring or striking the specimens when moving the specimens to a safe place.

4.2 Place a sample of the draincrete that is representative of the batch in the molds in one 6 inch layer using a scoop or blunted trowel.

4.3 Move the scoop or trowel around the top edge of the mold as the draincrete is discharged in order to ensure symmetrical distribution.

4.4 Tamp the layer forcibly (attempting to penetrate) with 25 strokes of the tamper uniformly distributed over the cross section of the mold.

4.5 In placing the layer, attempt to place an amount of draincrete that will exactly fill the mold to the 6 inch gauge marks after tamping.

4.6 Do not add non-representative porous concrete to an under filled mold.

4.7 Immediately after tamping the layer strike excess draincrete off flush with the gauge fill marks inside the molds by means of a screeding motion of the tamper. Carefully remove any excess draincrete lying above the fill marks with a spoon or similar device.

4.8 Perform all finishing with the minimum manipulation necessary to produce a flat surface that is level with the 6 inch gauge fill marks.

5. CURING

5.1 Immediately after finishing, the unhardened draincrete specimens shall be covered with a non-absorptive, non reactive plate or sheet of tough, durable, and impervious plastic to prevent evaporation of water from the unhardened draincrete specimens.

5.2 As a minimum, during the first 24 hours after molding, all test specimens shall be stored in the field in a secure vertical upright position under the same ambient conditions that the actual draincrete edgedrains are maintained. The storage shall be in a location as close to the actual work as possible without being in danger of damage or movement.

6. PROCEDURE FOR DETERMINING DRAINABILITY

6.1 Determine the drainability of the draincrete specimens in the field or lab at any convenient location where a supply of potable water is available. Perform the tests between 24 hours and 7 days of preparing the specimens.

6.2 Carefully remove only the bottoms of the molds containing the specimens with an appropriate cutting tool such as a carpet knife or a small knife with a sturdy blade. Work gloves with leather palms and fingers should be worn to protect hands and fingers during this operation. Remove the bottoms of the molds so they are approximately flush with the sides of the specimens. Leave a lip approximately 1/8” around the bottom of the mold so that the sample will not fall out of the mold.

6.3 Place the molds, with the bottoms removed, vertically upright with the 6 inch cavity end facing upward and the exposed bottom of the specimens resting on two small blocks that have been leveled by eye. The two 2 inch

x 2 inch tampers may be used for this purpose. The specimens should be set on the blocks in such a manner as to impede as little of the flow through the draincrete as possible.

6.4 Fill the water holding container to 128 ounces by volume with potable water. Use a stopwatch to time the flow of water through the specimens.

6.5 Carefully pour the water from the graduated container or mold into the upper opened 6 inch cavity end of the specimen mold containing the draincrete. Care shall be taken not to overfill the specimen mold. Begin the timed reading when the water is poured into the specimen mold. End the timed reading when the last of the water in the 6 inch cavity portion of the specimen mold clears the surface of the draincrete specimen. Record the total seconds for the water to clear the surface of the draincrete specimen.

6.6 Record the drain rate time to the nearest second. If a stop watch is used, read the seconds and record.

6.7 Record the total ounces used during the test of 128 ounces by volume.

6.8 Calculate the drain rate by dividing the total ounces by the total time. Record the drain rate in ounces per second to the nearest tenth.

7. REPORT

7.1 Drainability of Specimens – Report the total ounces, seconds and drain rate in ounces per second, for each cylinder in a LOT. Report the average drain rate for the two cylinders.