State of Nevada
Department of Transportation
Materials Division

METHOD OF TEST FOR FLOW OF GROUT MIXTURES (Flow Cone Method)

SCOPE

This method of test covers the procedure, used both in the laboratory and in the field, for determining the flow of grout mixtures by measuring the time of efflux of a specified volume of grout from a standardized flow cone.

APPARATUS

1. Flow Cone, with dimensions as shown in Figure 1. The discharge tube shall be stainless steel. The body can be stainless steel, cast aluminum, or other non-corroding metal.

2. Receiving container, capacity of 2000 mL, minimum.

3. Ring stand or other suitable device, capable of supporting the flow cone in a vertical, steady position over the receiving container.

4. Level, carpenter's or similar.

5. Stop watch, least reading of not more than 0.2 seconds.

6. Rubber stopper for grout cone.

CALIBRATION OF APPARATUS

1. The flow cone shall be firmly mounted in such a manner that the top will be level and the cone free from vibration. The discharge tube shall be closed by placing a rubber stopper from the underneath side into the lower end. A quantity of water equal to 1725 ± l mL shall be introduced into the cone to indicate the grout level as per Figure 1.

SAMPLE

1. The test sample shall consist of 1725 ± 1 mL of grout.

PROCEDURE

1. Moisten the inside surface of the flow cone (Note 1). Place rubber stopper into the outlet of the discharge tube. Introduce grout into the cone until the grout surface rises into contact with the grout level as per Figure 1. Start the stopwatch and remove the rubber stopper simultaneously. Stop the stopwatch at the first break in the continuous flow of grout from the discharge tube. The time indicated by the stopwatch is the time of efflux of the grout. At least two tests shall be made for any grout mixture. Results from two properly conducted tests on the same material should not differ by more than 2.50 s.

   Note 1:A recommended procedure for insuring that the interior of the cone is properly wetted is to fill the cone with water and, one minute prior to adding the grout sample, allow the water to drain from the cone.

REPORT

1. The Daily Construction Report shall include:

   a. Average time of efflux to the nearest 0.2 seconds

   b. Temperature of grout sample at the time of test

   c. Ambient temperature at the time of test

   d. Composition of the sample

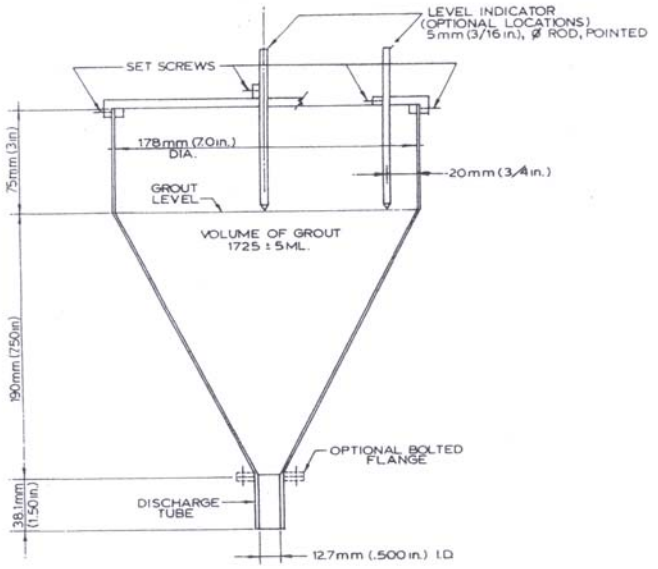

Figure 1 - Cross Section of Flow Cone