Standard Method of Test for

Measuring the Field Application Rate of Portland Cement

SCDOT Designation: SC-T-141 (9/08)

1. SCOPE

1.1. This standard describes the procedure for determining the field spread rate of Portland cement for Cement Modified Subbase, Cement Stabilized Earth Base, Cement Stabilized Aggregate Base, or Reclaimed Asphalt Pavement.

1.2. This standard may involve hazardous materials, operations and equipment. This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this standard to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. REFERENCED DOCUMENTS

None.

3. SIGNIFICANCE AND USE

3.1. This practice provides standardized requirements for measuring the field spread rate of Portland cement used in road-mix applications of Cement Modified Subbase, Cement Stabilized Aggregate Base, Cement Stabilized Earth Base, and Reclaimed Asphalt Base.

3.2. Proper cement spread rate is essential to achieving a high quality base or subbase. The use of too little cement can result in weak layers and premature pavement failure. The use of excessive cement can result in shrinkage cracks that can reflect through overlying asphalt layers. Consequently, operations should strive to consistently place the specified quantity of cement.

4. APPARATUS

4.1. *Square Yard Pan* — A pan with an area equal to one square yard. These pans are available from the Research and Materials Laboratory.

4.2. *Balance* — A balance accurate to the nearest 0.1 pounds with a capacity sufficient to adequately measure the pan and contents.

5. DIRECT MEASUREMENT

5.1. Measure and record the weight of the empty pan to the nearest 0.1 pounds. Place the pan in front of the spreader. After the spreader has passed over the pan, reweigh the pan and its contents and subtract the weight of the empty pan. The weight of the contents should be within ±5% of the recommended spread rate.

5.2. If the cement spread rate is outside the tolerance, require the Contractor to adjust the spreader and repeat Step 5.1 until the desired spread rate is achieved.

6. INDIRECT MEASUREMENT

6.1. Once the proper spread rate is established using the Direct Method given in Section 5, make periodic checks of the spread rate by calculating the distance a load of cement should cover.

6.2. Example —The printout ticket for a cement tanker shows it is carrying 50,000 pounds of cement. The application rate established by OMR is 48 pounds per square yard. The spreader is set to cover a width of 12 feet. Cement application will start at Station 100+00. Determine at what station the tanker should run out.

First, determine the area the tanker should cover at the established application rate:
(50,000 pounds / 48 pounds/yd^2) = 1041.7 yd^2

Next, calculate how many linear feet the tanker will cover at a width of 12 feet:
(1041.7 yd^2 x 9 ft2/yd^2) / 12 feet = 781 feet

The tanker should run out of cement at approximately Station 107+80. If the tanker runs out more than ±5% (40 feet) of the estimated point, the spreader should be readjusted and recalibrated using the Direct Method given in Section 5.