

## Colorado Procedure 53-21

*Standard Method of Test for*

### **Determining the Maximum Density of Cold In-Place Recycled Pavement**

(This procedure modifies AASHTO T 180. The current AASHTO T 180 is to be used in conjunction with this procedure.)

#### **1. SCOPE**

- 1.1 This test is intended for determining the maximum density of cold in-place recycled pavement using AASHTO T 180. Two alternate procedures are recommended as follows:

Method C - Deleted

Method D - 6-inch (152.60 mm) mold, material passing a 3/4 in. (19.0 mm) sieve.

#### **2. REFERENCED DOCUMENTS**

##### 2.1 *AASHTO Standards:*

- T 19 Bulk Density ("Unit Weight") & Voids in Aggregate
- T 180 Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop

##### 2.2 *Colorado Procedures:*

- CP 41 Sampling Hot Mix Asphalt

#### **2A. SAMPLING**

- 2A.1 Obtain a sample from the windrow or roadway, after rolling in the finished roadway. For cationic emulsions, sample after rolling in the finished roadway. **Follow CP 41, Method C.** Prepare and compact the sample as described in Method D below.

#### **METHOD C (Deleted)**

#### **METHOD D**

#### **10. SAMPLE**

- 10.1 (Follow as modified.) Select the representative sample following CP 41, Method C, except that it shall weigh (have a mass of) approximately 12 lb. (5 kg).

**11. PROCEDURE**

- 11.1 (Follow per AASHTO T 180.) Form a specimen by compacting the prepared sample in the 6 in. (152.40 mm) mold (with collar attached) in five approximately equal layers, to give a total compacted depth of about 5 in. (127 mm), each layer being compacted by applying 56 uniformly distributed blows from the rammer. For molds conforming to tolerances in Subsection 3.1, and masses recorded in pounds, multiply the mass of the compacted specimen and the mold, minus the mass of the mold, by 13.33, and record the result as the wet density,  $W$ , in  $\text{lb/ft}^3$  of the compacted material. For molds conforming to tolerances in Subsection 3.1, and masses recorded in kilograms, multiply the mass of the compacted specimen and the mold, minus the mass of the mold, by 471, and record the result as the wet density,  $W$ , in kilograms per cubic meter, of compacted material. For used molds out of tolerance by not more than 50 percent (Subsection 3.1), use the factor for the mold, as determined per Section 8 (Calibration of Measure) AASHTO T 19.

**12. CALCULATIONS**

- 12.1 (Follow as modified.) The wet density, which was calculated in Subsection 11.1, will be the maximum density used for determining the percent relative compaction.

**13. FIELD TESTING OF IN-PLACE DENSITY**

- 13.1 Perform the Field Test following CP 81.

**14. RECORD**

- 14.1 No CDOT Form. Record on your worksheet.