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# HDOT TM 1-00

## Standard Test Method for Density of Soil In-Place by the Sand-Cone Method

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### 1. Scope

1.1 This test method covers the determination of the in-place density of soils, base courses and, in general, all backfill material.

### 2. Apparatus

2.1 Density Apparatus - The density apparatus shall be of molded plexiglass of the type issued by the Department. (See Figure 1 and Note 1).

Note 1: Other apparatus of similar proportions as in AASHTO T191 or ASTM D1556 will perform satisfactorily so long as the basic principles of the sand-volume determinations are observed. This apparatus when full can be used to test holes having a volume of approximately 0.003 m<sup>3</sup> (0.1 cubic feet). The base plate shall be used and considered part of the lower cone in the procedure of this test method.

2.2 Sand - Any clean, dry, free flowing uncemented sand having few, if any, particles passing the 75  $\mu\text{m}$  (No. 200) or retained on the 1.18 mm (No. 16) sieves. The loose density shall be determined in accordance with Hawaii Test Method, HDOT TM 2, "Determining the Loose Density of Sand".

2.3 Balances - Any suitable or appropriate balances or scales generally having capacities of 20 kg readable to 5 g (0.01 lb.) for density samples and 300 g readable to 0.01 g for moisture samples.

2.4 Drying Apparatus - Stove, oven or other suitable apparatus adapted for drying moisture content samples.

2.5 Miscellaneous Apparatus - Chisel, hammer, spoon, and brush for digging test holes; sack or other containers for soil sample and density sand; seamless tin cans with lids for moisture sample; thermometer for determining temperature of the drying unit; tongs to handle heated container of moisture sample, etc.

### 3. Procedure

3.1 Surface Voids Determination:

3.1.1 Prepare the surface of the location to be tested so that it is a level plane.

3.1.2 Brush the surface lightly of all loose material. Position and seat the base plate to attain a stable and firm bearing. Mark its outline on the surface.

