Test Procedure for

TEXAS CONE PENETRATION

TxDOT Designation: Tex-132-E

Effective Date: August 1999

1. SCOPE

1.1 This method determines the relative density or consistency and load bearing capacity of materials encountered in foundation exploration work.

1.2 Correlation between the cone penetrometer measurements and the load bearing capacity of subsurface materials can be found in the Bridge Division's Geotechnical Manual.

1.3 The values given in parentheses (if provided) are not standard and may not be exact mathematical conversions. Use each system of units separately. Combining values from the two systems may result in nonconformance with the standard.

2. APPARATUS

2.1 Hammer, 77 ± 1 kg (170 ± 2 lb.), with a 0.6 ± 0.01 m (24 ± 0.5 in.) drop.

2.2 Drill stem, sufficient to accomplish boring to the desired depth.

2.3 Anvil, threaded to fit the drill stem, and slotted to accept the hammer.

2.4 Conical Driving Point, 76 mm (3 in.) diameter, with 63.5 mm (2.50 in.) long point. (See Figure 1.)

Note 1—Form driving point from AISI 4142 steel, heat in an electric oven for 1 hr. at 843.3–871.1°C (1,550–1,600°F), plunge point-first into approximately 95 L (25 gal.) of tempering oil, and move continuously until cool.
**PROCEDURE**

3.1 Attach a 76 mm (3 in.) diameter penetrometer cone on the bottom of the drill stem and lower it to the bottom of the cored hole.

3.2 Attach the anvil to the top of the drill stem, and position the 77 kg (170 lb.) hammer above it.

3.3 Drive the penetrometer cone 12 blows, or approximately 152 mm (6 in.), whichever comes first, to seat it in the soil or rock.

3.4 Make two reference marks on the drill stem at 152 mm (6 in.) increments of penetration.

3.5 Material type:

3.5.1 In relatively soft materials, drive the penetrometer point 305 mm (12 in.), and note the number of blows required for each 152 mm (6 in.) increment on Form 513, “Drilling Log,” as found in the Bridge Division’s Geotechnical Manual.
3.5.2  In hard materials, including rock, drive point for 100 blows, recording the depth of penetration for the first and second 50 blows.
  **Note 2**—Record the number of hammer blows for the first 152 mm (6 in.) increment of penetration and the second separately, as these indicate the general type of material.

3.5.3  If the soil is granular, the number of blows for the second increment is significantly greater than for the first.

3.5.4  If it is clay, the number of blows required for both are generally about the same.