

# **Dynamic Cone Penetrometer testing for Subgrade Stability**

**NCDOT- Geotechnical Engineering Unit**

**September 2005**



## Description of Equipment

Refer to ASTM D 6951 Section Five (5) for equipment specifications. The 17.6-pound hammer is used in this test method. Dynamic Cone Penetrometer can be abbreviated to the letters: DCP. A schematic of apparatus is attached.

## Procedure

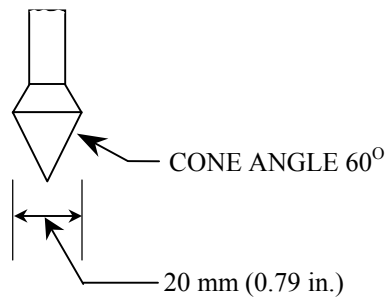
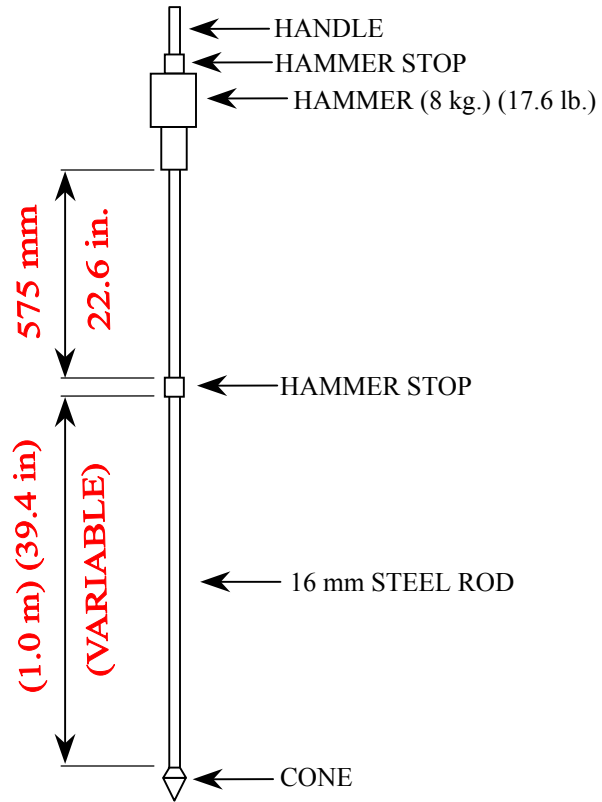
Refer to ASTM D 6951 Section Six (6) for operation of DCP. A survey stake may be used to mark each blow during test. Each test is advanced to a minimum of 32 inches. With safe practices, the extraction of a DCP without a disposable tip can be performed in the same manner as a DCP with disposable tip. A condensed procedure is attached.

## Safety

All safety guidelines outlined in the NCDOT Workplace Safety manual are followed in addition to:

- Never place any body part between the hammer and anvil or upper stop during transport and operation.
- Never perform the test alone.

DYNAMIC CONE PENETROMETER  
(DCP)



**N.C. DOT, DIVISION OF HIGHWAYS  
GEOTECHNICAL ENGINEERING UNIT**

PROCEDURES FOR USING DYNAMIC CONE PENETROMETER

**PARTS NEEDED:**

1. DYNAMIC CONE PENETROMETER HAMMER, 2 CONNECTING RODS & TIP
2. PENCIL & MARKING STAKE
3. MASKING TAPE

1. ASSEMBLE PARTS WITH THE USE OF THE DIAGRAM. MAKE SURE CONNECTIONS ARE TIGHT AND SECURED. LOOSE CONNECTIONS COULD RESULT IN EQUIPMENT DAMAGE.
2. PLACE PENETROMETER GENTLY ON TESTING AREA WITH POINTED END DOWN
3. PLACE MARKING STAKE APPROXIMATELY 4" – 6" ALONG THE SIDE OF THE PENETROMETER. WRITE STATION, LANE, AND REFERENCE TO GRADE POINT ON THE MARKING STAKE TO DIFFERENTIATE FROM FUTURE READINGS.
4. MARK THE STAKE ONCE TO SHOW THE STARTING POINT.
5. LIFT THE HAMMER CAREFULLY TO THE TOP OF THE SMALL CYLINDER AND RELEASE, MAKING SURE NOT TO SLAM THE HAMMER AGAINST THE TOP WHEN RAISING HAMMER.
6. MARK ON THE STAKE THE AMOUNT OF PENETRATION AFTER EACH DROP.

***REPEAT STEPS 5 & 6 UNTIL INSTRUMENT HAS PENETRATED APPROXIMATELY 32 INCHES.***