Australian Standard™

Methods of testing soils for engineering purposes

Method 6.3.1: Soil strength and consolidation tests—Determination of the penetration resistance of a soil—Standard penetration test (SPT)

1 SCOPE

This Standard sets out a method for determining the resistance of soils to the penetration of a sampler, and the obtaining of disturbed samples of the soils for identification purposes.

NOTE: This test gives a value for the penetration resistance of any soil. For the interpretation of *N* values to give in situ density or strength parameters the reader is referred to current standard texts.

2 APPARATUS

The following apparatus is required:

(a) Drilling equipment, capable of providing a clean stable hole for insertion of the sampler, and such that the penetration test can be performed on soil that is essentially undisturbed by the drilling process.

Casing or drilling mud shall be provided for use in soils that will not stand open. Where rotary techniques are used, the drilling bit shall be designed to provide side discharge rather than downward discharge.

(b) Sampler rods for driving the sampler, having a stiffness not less than that of an AW rod. For holes deeper than 15 m, steadies shall be used at intervals of 6 m or, alternatively, stiffer rods shall be used. The diameter of the rods shall not exceed 70 mm (NQ rod).

(c) Sampler as shown in Figure 1. The drive shoe shall be of hardened steel and shall be replaced or repaired when it becomes dented or distorted sufficiently to affect the test results. The coupling head shall have a check valve with a minimum vent area of 390 mm^2 or four 13 mm diameter vent ports.

The central section of the sampler is normally of split construction allowing easy removal of the sample. However, a continuous tube conforming to the dimensions of Figure 1 is also acceptable. The sampler may have a core retainer that should be thin and flexible enough to cause minimum interference to the soil entering the sampler.

(d) Drive hammer assembly, consisting of a 63.5 ±1 kg mass, a driving head and guide permitting a free fall of 760 ±15 mm. The assembly shall incorporate a self-tripping mechanism so that the hammer is allowed to fall freely without any energy loss due to lifting winch inertia. The striking face of the anvil shall preferably be domed, 3 mm in 100 mm, to prevent off-centre impact between the hammer and anvil. The driving head and guide shall be essentially vertical.