

# Australian Standard<sup>®</sup>

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## Methods of testing soils for engineering purposes

### Method 6.3.2: Soil strength and consolidation tests—Determination of the penetration resistance of a soil—9 kg dynamic cone penetrometer test

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**1 SCOPE** This method sets out the procedure for determining the penetration resistance of a soil to the penetration of a steel cone of 30 degrees angle and  $20 \pm 0.2$  mm diameter driven with a 9 kg mass, dropping 510 mm.

**2 APPARATUS** The following apparatus is required:

- (a) Dynamic cone penetrometer conforming to the dimensions and masses given in Figure 1.
- (b) Metre scale, graduated in millimetres (optional, for Clause 3(d)(ii)).

**3 PROCEDURE** The procedure shall be as follows:

- (a) Excavate to the level to be tested (see Note 1). Remove material such as crushed rock or gravel, which will be too hard to penetrate with the penetrometer or could damage the equipment.

Measure the depth from the surface level to the upper surface of the layer to be tested to the nearest 10 mm, and record.

- (b) Hold the penetrometer vertical with the point of the cone on the surface of the layer to be tested and, if necessary, gently tap the hammer on the anvil until the widest part of the cone has started to penetrate the surface.
- (c) Drive the penetrometer into the ground by raising the hammer to the stop and allowing it to fall freely onto the anvil.
- (d) Determine the relationship between penetration and blows by one of the following methods:
  - (i) Where the penetrometer has graduations at uniform intervals marked on the shaft, readings may be taken by counting the number of blows to penetrate the distance between the graduations. In this case a metre scale need not be used, but any convenient fixed reference will be satisfactory. Since the penetration will not, in general, correspond to the exact level of the graduation, take the count as the whole number of blows to penetrate to or beyond the graduation.
  - (ii) With an end of the metre scale in contact with the surface of the layer to be tested, and the scale parallel to the rod, take a reading alongside the ring engraved near the base of the hammer to the nearest 1 mm and record this as the depth at zero blows.

Raise the hammer to the stop and allow it to fall freely onto the anvil. Take the depth reading to the nearest 1 mm and record.