

STANDARDS AUSTRALIA

RECONFIRMATION

OF

AS 1289.6.1.3—1998

Methods of testing soils for engineering purposes

**Method 6.1.3: Soil strength and consolidation tests—Determination of the California
Bearing Ratio of a soil—Standard field-in-place method**

RECONFIRMATION NOTICE

Technical Committee CE-009 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

Certain documents referenced in the publication may have been amended since the original date of publication. Users are advised to ensure that they are using the latest versions of such documents as appropriate, unless advised otherwise in this Reconfirmation Notice.

Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 13 June 2013.

The following are represented on Technical Committee CE-009:

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NOTES

Australian Standard™

Methods of testing soils for engineering purposes

Method 6.1.3: Soil strength and consolidation tests — Determination of the California Bearing Ratio of a soil — Standard field-in-place method

1 SCOPE This Standard sets out the procedure for the field-in-place or in situ determination of the California Bearing Ratio (CBR) of a soil. The method is applicable to both fine-grained and medium-grained soils as defined in AS 1289.0.

2 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS

1152	Specification for test sieves
1289	Methods of testing soils for engineering purposes
1289.0	Method 0: General requirements and list of methods
1289.2.1.1	Method 2.1.1: Soil moisture content tests—Determination of the moisture content of a soil—Oven drying method (standard method)
1289.5.3.1	Method 5.3.1: Soil compaction and density tests—Determination of field density of a soil—Sand replacement method using a sand-cone pouring apparatus
1289.5.3.2	Method 5.3.2: Soil compaction and density tests—Determination of field dry density of a soil—Sand replacement method using a sand pouring can, with or without a volume displacer
1289.5.8.1	Method 5.8.1: Soil compaction and density tests—Determination of field density and field moisture content of a soil using a nuclear surface moisture-density gauge — Direct transmission mode
1289.6.1.1	Method 6.1.1: Soil strength and consolidation tests—Determination of the California Bearing Ratio—Standard laboratory method for a remoulded specimen
2103	Dial gauges and dial test indicators
2193	Methods for calibration and grading of force-measuring systems of testing machines

3 APPARATUS The following apparatus is satisfactory but alternative designs may be employed provided that the essential requirements of the apparatus are met and the test procedure is followed:

- (a) Steel penetration piston of a 49.6 ± 0.1 mm diameter over the length of the penetration and at least 150 mm long. The length of the piston will depend upon the number of surcharges and the depth of penetration required. Suitable extensions may be required.

- (b) Force-measuring device capable of —
 - (i) meeting the accuracy and repeatability requirements of AS 2193 Grade C testing machines for the range of forces used in the test; and
 - (ii) indicating seating loads of approximately 50 N and approximately 250 N (see Note 1).
- (c) Displacement measuring device (e.g. dial gauges) capable of —
 - (i) measuring the expected range of travel, graduated to 0.01 mm and meeting the accuracy and repeatability requirements of AS 2103; and
 - (ii) being equipped with an adjustable extension clamp.
- (d) One annular metal surcharge and several slotted metal surcharges of 250 mm in diameter, each having a mass of 4.5 ± 0.04 kg and with a centre hole of approximately 55 mm in diameter.
- (e) Mechanical screw-jack equipped with a special swivel for applying load to the piston at a controlled rate of 1 ± 0.2 mm/min (see Note 2).
- (f) Suitable reaction, e.g. ballasted truck with a reaction beam fitted either front or rear, approximately 0.5 m above the ground to provide a reaction of about 50 kN at the beam, and two truck jacks. The lower flange of the reaction beam shall be nearly horizontal when the ballasted truck is raised to take the load off the springs.
- (g) Reference beam and supports consisting of 50 mm × 50 mm × 8 mm low carbon steel angle or other section of equivalent stiffness with supports to give a length between supports of not less than 2.5 m.
- (h) Watch or stop clock readable in seconds.
- (i) 19 mm sieve complying with AS 1152.
- (j) Other apparatus such as straight edge and excavating tools.

4 PREPARATION OF THE TEST AREA Level the surface of the soil to be tested over an area of approximately 0.5 m diameter and clear all loose material (see Note 3). Commence the test as described in Clause 6 as soon as practicable after preparation of the test area, ensuring that moisture is not lost from the surface (see Note 4).

5 ASSEMBLY OF APPARATUS Assemble the apparatus as follows:

- (a) Where a ballasted truck is used, position the truck with the centre of the reaction beam directly over the surface to be tested. Place the truck jacks beneath the ends of the reaction beam and take the load of the truck off the springs.
- (b) Clamp the mechanical screw-jack to the underside of the reaction beam immediately above the surface to be tested. Connect the force-measuring device to the end of the jack and connect the penetration piston to the bottom of the force-measuring device, using extensions as necessary, so that the piston is 20 mm to 50 mm from the surface to be tested.
- (c) Loosen the swivel head on the jack and bring the piston to a vertical position. Lock the apparatus into position.
- (d) Place the circular surcharge plate centrally beneath the penetration piston.
- (e) Position the reference beam so that it is centrally located to the surface being tested adjacent to but not touching the penetration piston (see Figure 1) and firmly seated on the ground.