



Standard Test Method for CBR (California Bearing Ratio) of Soils in Place¹

This standard is issued under the fixed designation D4429; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope*

1.1 This test method covers the determination of the California Bearing Ratio (CBR) of soil tested in place by the penetration load of the soil. This test method covers the evaluation of the relative quality of subgrade soils, but is applicable to subbase and some base-course materials. This test method is designed to test in-situ materials and corresponds to Test Method **D1883**.

1.2 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.2.1 In the engineering profession it is customary to use units representing both mass and force interchangeably, unless dynamic calculations are involved. This implicitly combines two separate systems of units, that is, the absolute system and the gravitational system. It is scientifically undesirable to combine the use of two separate sets of inch-pound units within a single standard. This test method has been written using the gravitational system of units when dealing with the inch-pound system. In this system, the pound (lbf) represents a unit of force (weight). However, conversions are given in the SI System. The use of balances or scales recording pounds of mass (lbm), or the recording of density in lbm/ft³ should not be regarded as nonconformance with this test method.

1.3 All observed and calculated values shall conform to the guidelines for significant digits and rounding established in Practice **D6026**, unless superseded by this standard.

1.3.1 The procedures used to specify how data are collected/recorded or calculated in this standard are regarded as the industry standard. In addition they are representative of the significant digits that generally should be retained. The procedures used do not consider material variation, purpose for

obtaining the data, special purpose studies, or any consideration for the user's objectives; and it is common practice to increase or reduce significant digit of reported data to be commensurate with these considerations. It is beyond the scope of this standard to consider significant digits used in analysis methods or engineering design.

1.4 *This standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

- D653** Terminology Relating to Soil, Rock, and Contained Fluids
- D1556** Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method
- D1883** Test Method for CBR (California Bearing Ratio) of Laboratory-Compacted Soils
- D2167** Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method
- D2216** Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
- D2937** Test Method for Density of Soil in Place by the Drive-Cylinder Method
- D3740** Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
- D6026** Practice for Using Significant Digits in Geotechnical Data
- D6780** Test Method for Water Content and Density of Soil in Place by Time Domain Reflectometry (TDR)
- D6938** Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

¹ This test method is under the jurisdiction of ASTM Committee **D18** on Soil and Rock and is the direct responsibility of Subcommittee **D18.08** on Special and Construction Control Tests.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.