



Designation: D6467 – 13^{ε1}

Standard Test Method for Torsional Ring Shear Test to Determine Drained Residual Shear Strength of Cohesive Soils¹

This standard is issued under the fixed designation D6467; 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 reappraisal. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reappraisal.

^{ε1} NOTE—Editorially updated units of measurement statement in April 2018.

1. Scope*

1.1 This test method provides a procedure for performing a torsional ring shear test under a drained condition to determine the residual shear strength of cohesive soils. An intact specimen can be used for testing. However, obtaining a natural slip surface specimen, determining the direction of field shearing, and trimming and aligning the usually non-horizontal shear surface in the ring shear apparatus is difficult. As a result, this test method focuses on the use of a reconstituted specimen to measure the residual strength. This test method is performed by deforming a presheared, reconstituted specimen at a controlled displacement rate until the constant drained shear resistance is offered on a single shear plane determined by the configuration of the apparatus. An unlimited amount of continuous shear displacement can be achieved to obtain a residual strength condition. Generally, three or more normal stresses are applied to a test specimen to determine the drained residual failure envelope. A separate test specimen may be used for each normal stress.

1.2 A shear stress-displacement relationship may be obtained from this test method. However, a shear stress-strain relationship or any associated quantity, such as modulus, cannot be determined from this test method because soil extrusion and volume change prevents defining the height needed in the shear strain calculations. As a result, shear strain cannot be calculated but shear displacement can be calculated.

1.3 The selection of normal stresses and determination of the shear strength envelope for design analyses and the criteria to interpret and evaluate the test results are the responsibility of the engineer or office requesting the test.

1.4 The values stated in SI units are to be regarded as standard. The values given in parentheses after SI units are provided for information only and are not considered standard.

¹ This test method is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.05 on Strength and Compressibility of Soils.

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1.5 All measured and calculated values shall conform to the guidelines for significant digits and rounding established in Practice D6026.

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

1.7 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:²

D422 Test Method for Particle-Size Analysis of Soils (Withdrawn 2016)³

D653 Terminology Relating to Soil, Rock, and Contained Fluids

D854 Test Methods for Specific Gravity of Soil Solids by Water Pycnometer

D2216 Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

D2435 Test Methods for One-Dimensional Consolidation Properties of Soils Using Incremental Loading

D2487 Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)

D3080 Test Method for Direct Shear Test of Soils Under Consolidated Drained Conditions

D3740 Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction

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.

³ The last approved version of this historical standard is referenced on www.astm.org.

*A Summary of Changes section appears at the end of this standard