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.

Designation: D4394 – 17

Standard Test Method for Determining In Situ Modulus of Deformation of Rock Mass Using Rigid Plate Loading Method[1]

This standard is issued under the fixed designation D4394; 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.

1. Scope*

1.1 This test method covers the preparation, equipment, test procedure, and data reduction for determining in situ modulus of deformation of a rock mass using the rigid plate loading method.

1.2 This test method is designed to be conducted in an adit or small underground chamber; however, with suitable modifications it could be conducted at the surface.

1.3 This test method is usually conducted parallel or perpendicular to the anticipated axis of thrust, as dictated by the design load and to diametrically opposite surfaces.

1.4 Both instantaneous deformation and primary creep can be obtained from this test method.

1.5 Time dependent tests can be performed and are discussed briefly here but are to be reported in another standard.

1.6 Observed and calculated values shall conform to the guidelines for significant digits and rounding established in Practice D6026.

1.6.1 The method used to specify how data are collected, calculated, or recorded in this standard is not directly related to the accuracy to which the data can be applied in design or other uses, or both. How one applies the results obtained using this standard is beyond its scope.

1.7 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.8 The references appended to this standard contain further information on this test method.

1.9 *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 and health practices and determine the applicability of regulatory requirements prior to use.* For specific precaution statements, see Section 8.

1.10 *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]

D653 Terminology Relating to Soil, Rock, and Contained Fluids

D2113 Practice for Rock Core Drilling and Sampling of Rock for Site Exploration

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

D4395 Test Method for Determining In Situ Modulus of Deformation of Rock Mass Using Flexible Plate Loading Method

D4403 Practice for Extensometers Used in Rock

D4879 Guide for Geotechnical Mapping of Large Underground Openings in Rock (Withdrawn 2017)[3]

D5079 Practices for Preserving and Transporting Rock Core Samples (Withdrawn 2017)[3]

D5434 Guide for Field Logging of Subsurface Explorations of Soil and Rock

D6026 Practice for Using Significant Digits in Geotechnical Data

D6032 Test Method for Determining Rock Quality Designation (RQD) of Rock Core

3. Terminology

3.1 *Definitions:*

[1] This test method is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.12 on Rock Mechanics.

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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.

[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

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