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: D7864/D7864M – 15 (Reapproved 2023)

Standard Test Method for Determining the Aperture Stability Modulus of Geogrids[1]

This standard is issued under the fixed designation D7864/D7864M; 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 procedure for measuring the Aperture Stability Modulus of a geogrid. (The terms "Secant Aperture Stability Modulus," "Torsional Rigidity Modulus," "In-plane Shear Modulus," and "Torsional Stiffness Modulus" have been used in the literature to describe this same property.)

1.2 This test method is intended to determine the in-plane stability of a geogrid by clamping a center node and measuring the stiffness over an area of the geogrid. This test method is applicable for various types of geogrid.

1.3 This test method is intended to provide characteristic properties for design. The test method was developed for pavement and subgrade improvement calibrated design methods requiring input of aperture stability modulus.

1.4 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system are not necessarily exact equivalents; therefore, to ensure conformance with the standard, each system shall be used independently of the other, and values from the two systems shall not be combined.

1.5 *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.*

1.6 *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]

D4354 Practice for Sampling of Geosynthetics and Rolled Erosion Control Products (RECPs) for Testing

D4439 Terminology for Geosynthetics

2.2 *FHWA Document:*[3]

FHWA Geosynthetic Design and Construction Guidelines (2008)

3. Terminology

3.1 *Definitions:*

3.1.1 For definitions of general terms used in this test method, refer to Terminology D4439.

3.1.2 *geogrid, n*—a geosynthetic formed by a regular network of integrally connected elements with apertures greater than 6.35 mm [¼ in.] to allow interlocking with surrounding soil, rock, earth, and other surrounding materials to primarily function as reinforcement.

3.1.3 *index test, n*—a test procedure which may contain a known bias but which may be used to establish an order for a set of specimens with respect to property of interest.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *aperture*—the openings between adjacent ribs forming an angle which enable soil interlocking to occur.

3.2.2 *aperture stability modulus*—a measure of the in-plane torsional stiffness of a geogrid. This is defined as torque divided by the rotation at that torque.

3.2.3 *geosynthetic, n*—a product manufactured from polymeric material used with soil, rock, earth, or other geotechnical engineering material as integral part of a man-made project, structure, or system.

[1] This test method is under the jurisdiction of ASTM Committee D35 on Geosynthetics and is the direct responsibility of Subcommittee D35.01 on Mechanical Properties.

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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] Available from U.S. Department of Transportation, Federal Highway Administration, 1200 New Jersey Ave., SE, Washington, DC 20590, http://www.fhwa.dot.gov.

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