



Designation: D7207 – 05

Standard Test Method for Determination of Unvegetated Rolled Erosion Control Product (RECP) Ability to Protect Sand from Hydraulically- Induced Shear Stresses under Bench-Scale Conditions¹

This standard is issued under the fixed designation D7207; 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 index test method establishes the guidelines, requirements and procedures for evaluating the ability of unvegetated Rolled Erosion Control Products (RECPs) to protect soil (sand) from hydraulically induced shear stress in a bench-scale apparatus.

1.2 This index test method utilizes bench-scale testing procedures and shall not be interpreted as indicative of field performance.

1.3 This index test is not intended to replace full-scale simulation or field testing in acquisition of performance values that are required in the design of erosion control measures utilizing unvegetated RECPs.

1.4 The values stated in SI units are to be regarded as standard. The inch-pound values given in parentheses are provided for information purposes only.

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 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](#)

[D698 Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort \(12 400 ft-lbf/ft³ \(600 kN-m/m³\)\)](#)

[D4354 Practice for Sampling of Geosynthetics for Testing](#)

¹ This test method is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.25 on Erosion and Sediment Control Technology.

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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.

[D6460 Test Method for Determination of Rolled Erosion Control Product \(RECP\) Performance in Protecting Earthen Channels from Stormwater-Induced Erosion](#)

3. Terminology

3.1 For definitions of terms used in this method, see Terminology [D653](#).

4. Summary of Test Method

4.1 Soil cores consisting of containers with bare soil and/or RECP-protected soil are immersed in water and subjected to shear stresses caused by the rotation of an impeller with three blades. At a minimum, testing of containers with bare soil should be performed when a new or renewed soil stockpile is used.

4.2 The amount of soil that erodes at each of three shear stress levels is measured.

5. Significance and Use

5.1 This index test method indicates an unvegetated RECP's ability to reduce soil erosion caused by shear stress induced by moving water under bench-scale conditions. Only tangential shear is measured in this method. Radial and uplift forces generated by the circular motion of the water are not measured.

5.2 This test method is bench-scale and therefore, appropriate as an index test for general soil/product composite behavior under hydraulic shear conditions, and for product quality assurance/conformance testing. The results of this test shall not be interpreted as indicative of field performance.

6. Apparatus

6.1 The shear stress test apparatus includes a shear tank, false floor with test wells, transition cover plate, and motor-driven impeller. (See [Fig. 1](#).)

6.1.1 *Shear Tank*—A cylindrical tank of sufficient diameter and depth to develop the desired shear levels. (See [Fig. 1](#) for an example.)

6.1.2 *False Floor*—A false floor shall be positioned in the tank with at least three test wells cut into the false floor to hold soil cores. When soil cores are placed in the wells, the soil

surfaces must be flush with the false floor surface. (See **Fig. 1.**)

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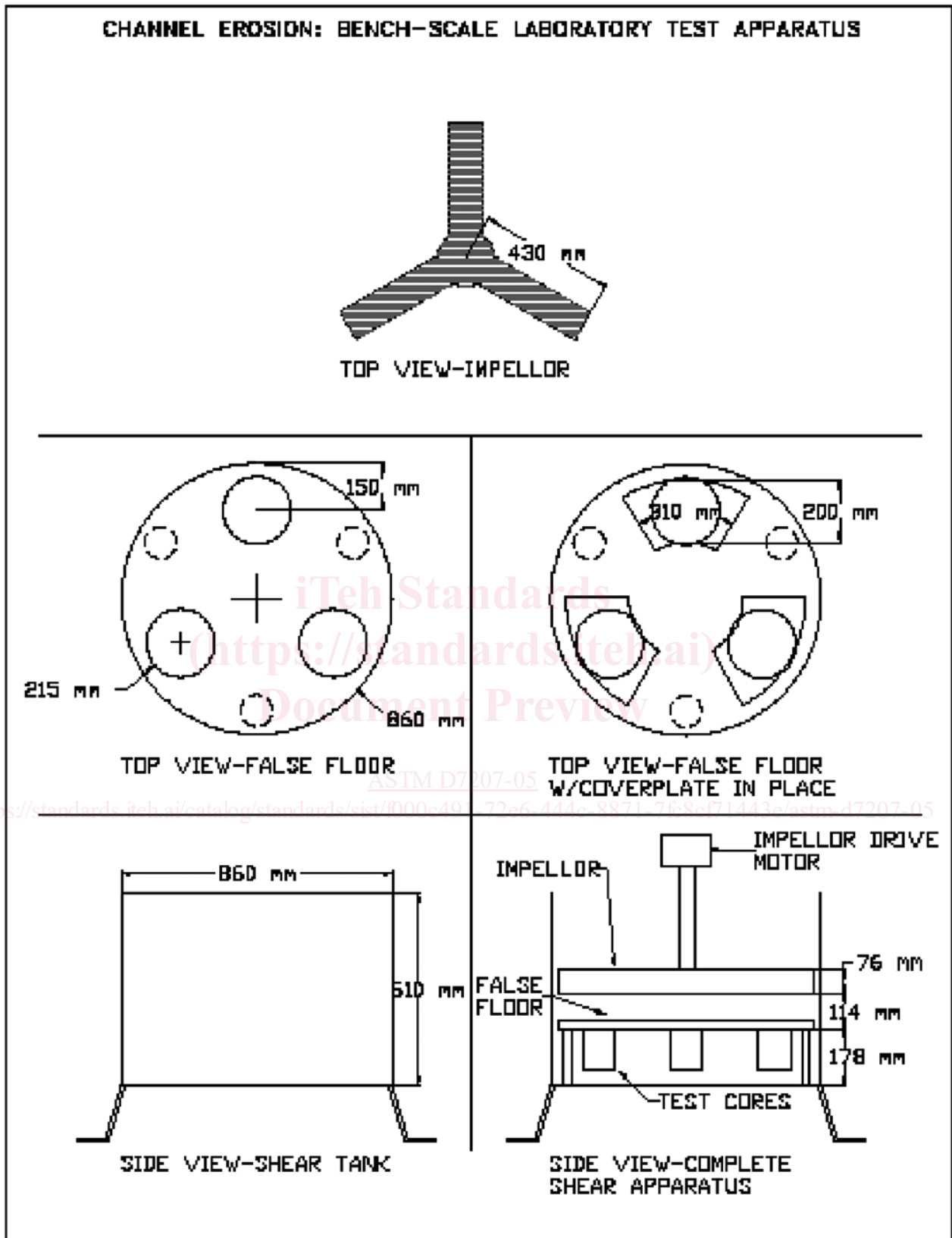


FIG. 1 Example of a Low-Shear Bench-Scale Laboratory Test Apparatus

6.1.3 *Motor-driven Impeller Assembly*— The impeller motor shall be capable of driving the impeller assembly at

sufficient revolutions per minute (RPMs) to develop the necessary shear stresses. The blades of the three-blade impeller