



Designation: C1745/C1745M – 11

# Standard Test Method for Measurement of Hydraulic Characteristics of Hydrodynamic Stormwater Separators and Underground Settling Devices<sup>1</sup>

This standard is issued under the fixed designation C1745/C1745M; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reappraisal.

## 1. Scope

1.1 This test method concerns measurement of selected hydraulic characteristics of hydrodynamic separators and underground settling devices critical to their function as stormwater treatment devices.

1.2 Units tested shall be of a size commonly manufactured, not a scale model.

1.3 As each stormwater treatment device is unique in design, so are its hydraulic characteristics (flow versus head and loss coefficients). A sufficient number of accurately measured data points are needed to define properly the hydraulic characteristics of each test unit. Therefore, it is imperative that the unit setup and subsequent testing methodologies be well defined and executed to ensure accurate flow and elevation data.

1.4 This test method addresses gravity flow operation only. It does not address performance of units operating under pressurized conditions.

1.5 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.

1.6 *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 and health practices and determine the applicability of regulatory limitations prior to use.*

## 2. Referenced Documents

### 2.1 ASTM Standards:<sup>2</sup>

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee C27 on Precast Concrete Products and is the direct responsibility of Subcommittee C27.70 on Precast Concrete Products for Stormwater Management.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

D3858 Test Method for Open-Channel Flow Measurement of Water by Velocity-Area Method

D4409 Test Method for Velocity Measurements of Water in Open Channels with Rotating Element Current Meters

D5089 Test Method for Velocity Measurements of Water in Open Channels with Electromagnetic Current Meters

D5242 Test Method for Open-Channel Flow Measurement of Water with Thin-Plate Weirs

D5389 Test Method for Open-Channel Flow Measurement by Acoustic Velocity Meter Systems

D5413 Test Methods for Measurement of Water Levels in Open-Water Bodies

D5640 Guide for Selection of Weirs and Flumes for Open-Channel Flow Measurement of Water

2.2 ASME Standard:<sup>3</sup>

MFC-3M Measurement of Fluid Flow in Pipes Using Orifice, Nozzle, and Venturi

## 3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *inlet (or outlet) rounding, n*—radius of fillet at inside pipe junction with separator structure.

## 4. Summary of Test Method

4.1 This test method describes procedures and equipment required to measure the hydraulic characteristics of hydrodynamic separators and underground settling devices used for treating stormwater runoff.

4.2 Other standards that may be useful to reference include: Test Methods D3858, D4409, D5089, D5242, D5389, D5413, Guide D5640, and ASME MFC-3M (see Section 2).

## 5. Significance and Use

5.1 Each device has unique flow patterns and turbulence characteristics. In addition, each device exhibits a wide range of efficiencies as discharge, particle size, particle density, and flow viscosity (that is, water temperature) change. The testing procedure in Section 7 will help develop the parameters

<sup>3</sup> Available from American Society of Mechanical Engineers (ASME), ASME International Headquarters, Three Park Ave., New York, NY 10016-5990, <http://www.asme.org>.