



Designation: D8152 – 18

Standard Practice for Measuring Field Infiltration Rate and Calculating Field Hydraulic Conductivity Using the Modified Philip Dunne Infiltrometer Test¹

This standard is issued under the fixed designation D8152; 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 practice describes a procedure for field measurement of the infiltration rate of liquid (typically water) into soils using the modified Philip Dunne (MPD) infiltrometer. The data from the field measurement is then used to calculate the field hydraulic conductivity. Soils should be regarded as natural occurring fine or coarse-grained soils or processed materials or mixtures of natural soils and processed materials, or other porous materials, and which are basically insoluble and are in accordance with requirements of 5.1.

1.2 This practice may be conducted at the ground surface or at given depths in pits, on bare soil or with vegetation in place, depending on the conditions for which infiltration rates are desired. However, this practice cannot be conducted where the test surface is at or below the groundwater table, a perched water table, or the capillary fringe.

1.3 This practice is for soils within a range of infiltration rate range defined in 5.1, as long as an adequate seal can be made between the MPD Infiltrometer base and the soil being tested. In highly permeable soils, readings can be taken at shorter intervals, to ensure that enough data are collected to determine the infiltration rate.

1.4 The field measurement is a falling head test that can be performed relatively quickly (30 to 60 minutes) in silty sand or clayey sand soils suitable for stormwater infiltration practices. It is suitable for testing several locations across a site, to characterize the spatial variability of the infiltration rate throughout the site.

1.5 The field measurement can be used to measure the infiltration rate, which can be used to calculate the field hydraulic conductivity. The field hydraulic conductivity can be used as an index to compare the suitability of soils for use in the development of surface drainage applications (for example, rain gardens or stormwater fills).

1.6 *Units*—The values stated in SI units are to be regarded as the standard. No other units of measurement are to be included in this standard.

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

1.8 The procedures used to specify how data are collected/recorded or calculated in this standard are regarded as the industry standard. In addition, they are representative of the significant digits that generally should be retained. The procedures used do not consider material variation, purpose for obtaining the data, special purpose studies, or any considerations for the user's objectives; and it is common practice to increase or reduce significant digits of reported data to be commensurate with these considerations. It is beyond the scope of this standard to consider significant digits used in analytical methods for engineering design.

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

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

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

¹ This test method is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.04 on Hydrologic Properties and Hydraulic Barriers.

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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.