



Standard Practice for Using Hollow-Stem Augers for Geotechnical Exploration and Soil Sampling¹

This standard is issued under the fixed designation D 6151; 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 covers how to obtain soil samples using hollow-stem sampling systems and use of hollow-stem auger drilling methods for geotechnical exploration. This practice addresses how to obtain soil samples suitable for engineering properties testing.

1.2 In most geotechnical explorations, hollow-stem auger drilling is combined with other sampling methods. Split barrel penetration tests (Test Method D 1586) are often performed to provide estimates of engineering properties of soils. Thin-wall tube (Practice D 1587) and ring-lined barrel samples (Practice D 3550) are also frequently taken. This practice discusses hole preparation for these sampling events. For information on the sampling process, consult the related standards. Other in situ tests, such as the vane shear Test Method D 2573, can be performed below the base of the boring by access through the drill string.

1.3 This practice does not include considerations for geoenvironmental site characterizations and installation of monitoring wells which are addressed in Guide D 5784.

1.4 This practice may not reflect all aspects of operations. It offers guidance on current practice but does not recommend a specific course of action. It should not be used as the sole criterion or basis of comparison, and does not replace or relieve professional judgment.

1.5 *Hollow-stem auger drilling for geotechnical exploration often involves safety planning, administration, and documentation. This standard does not purport to specifically address exploration and site safety. 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 its use.* Performance of the test usually involves use of a drill rig, therefore, safety requirements as outlined in applicable safety standards, for example OSHA (Occupational Health and Safety Administration) regulations, DCDMA safety manual (1),² drilling safety manuals, and other applicable state and local regulations must be observed.

¹ This practice is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.02 on Sampling and Related Field Testing for Soil Investigations.

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² The boldface numbers in parentheses refer to the references at the end of this practice.

2. Referenced Documents

2.1 ASTM Standards:

D 420 Guide to Site Characterization for Engineering, Design, and Construction Purposes³

D 653 Terminology Relating to Soil, Rock, and Contained Fluids³

D 2488 Practice for Description and Identification of Soils (Visual-Manual Procedure)³

D 5434 Guide for Field Logging of Subsurface Explorations of Soil and Rock³

2.2 Standards for Sampling of Soil and Rock:

D 1452 Practice for Soil Investigation and Sampling by Auger Borings³

D 1586 Test Method for Penetration Test and Split-Barrel Sampling of Soils³

D 1587 Practice for Thin-Walled Tube Geotechnical Sampling of Soils³

D 2113 Practice for Diamond Core Drilling for Site Investigation³

D 3550 Practice for Ring-Lined Barrel Sampling of Soils³

D 4220 Practice for Preserving and Transporting Soil Samples³

D 4700 Guide for Soil Sampling from the Vadose Zone³

D 5079 Practices for Preserving and Transporting Rock Core Samples³

2.3 In situ Testing:

D 2573 Test Method for Field Vane Shear Test in Cohesive Soils³

D 3441 Test Method for Deep, Quasi Static, Cone and Friction-Cone Penetration Tests of Soil³

D 4719 Test Method for Pressuremeter Testing in Soils³

2.4 Instrument Installation and Monitoring:

D 4428 Test Methods for Crosshole Seismic Testing³

D 4750 Test Method for Determining Subsurface Liquid Levels in a Borehole or Monitoring Well (Observation Well)³

D 5092 Practice for Design and Installation of Ground Water Monitoring Wells in Aquifers³

2.5 Drilling Methods:

D 5784 Guide for the Use of Hollow-Stem Augers for

³ Annual Book of ASTM Standards, Vol 04.08.