



Standard Practices for Obtaining Undisturbed Block (Cubical and Cylindrical) Samples of Soils¹

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1. Scope

1.1 This designation outlines the procedures for obtaining undisturbed block (cubical and cylindrical) soil samples.

1.2 Undisturbed block samples are obtained for laboratory tests to determine the strength, consolidation, permeability, and other geotechnical engineering or physical properties of the undisturbed soil.

1.3 Two sampling practices are presented. Practice A covers cubical block sampling, while Practice B covers cylindrical block sampling.

1.4 These practices usually involve test pit excavation and are limited to relatively shallow depths. Except in the case of large diameter (that is, >0.75 m) bored shafts of circular cross-section in unsaturated soils, for depths greater than about 1 to 1½ meters or depths below the water table, the cost and difficulties of excavating, cribbing, and dewatering generally make block sampling impractical and uneconomical. For these conditions, use of a thin-walled push tube soil sampler (Practice D 1587), a piston-type soil sampler (Practice D 6519), or Hollow-Stem Auger (D 6151), Dennison, or Pitcher-type soil core samplers, or freezing the soil and coring may be required. This practice does not address environmental sampling; consult Guides D 6169 and D 6232 for information on sampling for environmental investigations.

1.5 Successful sampling of granular materials requires sufficient cohesion, cementation, or apparent cohesion (due to moisture tension (suction)) of the soil for it to be isolated in a column shape without undergoing excessive deformations. Additionally, care must be exercised in the excavation, preservation and transportation of undisturbed samples (see Practice D 4220, Group D).

1.6 The values stated in SI units are to be regarded as the standard. No other units are included in this standard.

1.7 *This practice offers a set of instructions for performing one or more specific operations. This document cannot replace education or experience and should be used in conjunction with professional judgment. Not all aspects of this practice may be applicable in all circumstances. This ASTM standard is not*

intended to represent or replace the standard of care by which the adequacy of a given professional service must be judged, nor should this document be applied without consideration of a project's many unique aspects. The word "Standard" in the title of this document means only that the document has been approved through the ASTM consensus process.

1.8 *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 requirements prior to use. For specific hazard statements, see Section 6.*

2. Referenced Documents

2.1 ASTM Standards:²

- D 653 Terminology Relating to Soil, Rock, and Contained Fluids
- D 1587 Practice for Thin-Walled Tube Sampling of Soils for Geotechnical Purposes
- D 1785 Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120
- D 2488 Practice for Determining Unified Soil Classification (Visual Method)
- D 2937 Test Method for Density of Soils in Place by the Drive-Cylinder Method
- D 3740 Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
- D 4220 Practices for Preserving and Transporting Soil Samples
- D 5434 Guide for Field Logging of Subsurface Explorations of Soil and Rock
- D 6151 Practice for Using Hollow-Stem Augers for Geotechnical Exploration and Soil Sampling
- D 6169 Guide for Selection of Soil and Rock Sampling Devices Used With Drill Rigs for Environmental Investigations
- D 6232 Guide for Selection of Sampling Equipment for

¹ These practices are 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 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.

