



Standard Guide for Use of Maxi-Horizontal Directional Drilling for Placement of Polyethylene Pipe or Conduit Under Obstacles, Including River Crossings¹

This standard is issued under the fixed designation F 1962; 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 guide describes the design, selection considerations, and installation procedures for the placement of polyethylene pipe or conduit below ground using maxi-horizontal directional drilling equipment. The pipes or conduits may be used for various applications including telecommunications, electric power, natural gas, petroleum, water lines, sewer lines, or other fluid transport.

1.2 Horizontal directional drilling is a form of trenchless technology. The equipment and procedures are intended to minimize surface damage, restoration requirements, and disruption of vehicular or maritime traffic with little or no interruption of other existing lines or services. Mini-horizontal directional drilling (min-HDD) is typically used for the relatively shorter distances and smaller diameter pipes associated with local utility distribution lines. In comparison, maxi-horizontal directional drilling (maxi-HDD) is typically used for longer distances and larger diameter pipes common in major river crossings. Applications that are intermediate to the mini-HDD or maxi-HDD categories may utilize appropriate “medi” equipment of intermediate size and capabilities. In such cases, the design guidelines and installation practices would follow those described for the mini- or maxi-HDD categories, as judged to be most suitable for each situation.

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

1.4 *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 the regulatory limitations prior to use.* Section 6 contains general safety information related to the use of maxi-horizontal directional drilling equipment.

2. Referenced Documents

2.1 ASTM Standards:

- D 420 Guide to Site Characterization for Engineering, Design, and Construction Purposes²
- D 422 Test Method for Particle-Size Analysis of Soils²
- D 1586 Test Method for Penetration Test and Split-Barrel Sampling of Soils²
- D 1587 Practice for Thin-Walled Tube Geotechnical Sampling of Soils²
- D 2113 Practice for Diamond Core Sampling for Site Investigations²
- D 2166 Test Method for Unconfined Compressive Strength of Cohesive Soil²
- D 2435 Test Method for One-Dimensional Consolidation Properties of Soils²
- D 2447 Specification for Polyethylene (PE) Plastic Pipe, Schedules 40 and 80 Based on Controlled Outside Diameter³
- D 2513 Specification for Thermoplastic Gas Pressure Pipe, Tubing, and Fittings³
- D 2657 Practice for Heat-Joining of Polyolefin Pipe and Fittings³
- D 2850 Test Method for Unconsolidated, Undrained Compressive Strength of Cohesive Soils in Triaxial Compression²
- D 3035 Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Controlled Outside Diameter^{3,4}
- D 4186 Test Method for One-Dimensional Consolidation Properties of Soils Using Controlled-Strain Loading
- D 4220 Practices for Preserving and Transporting Soil Samples²
- D 4318 Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils²
- D 4767 Test Method for Consolidated-Undrained Triaxial Compression Test on Cohesive Soils²
- D 5084 Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter⁵
- F 714 Specification for Polyethylene (PE) Plastic Pipe

¹ This guide is under the jurisdiction of ASTM Committee F-17 on Plastic Piping Systems and is the direct responsibility of Subcommittee F17.67 on Trenchless Plastic Pipeline Technology.

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² *Annual Book of ASTM Standards*, Vol 04.08.

³ *Annual Book of ASTM Standards*, Vol 08.04.

⁴ *Annual Book of ASTM Standards*, Vol 08.02.

⁵ *Annual Book of ASTM Standards*, Vol 04.09.