Standard Practice for

Solid Wall High-Density Polyethylene (HDPE) Conduit for Non-Pressure Applications Used for the Protection of Power and Telecommunications Cables

AASHTO Designation: R 63-13 (2021)[1]

Adopted: 2013 **Reviewed but Not Updated: 2021**

Technical Subcommittee: 4b, Flexible and Metallic Pipe

AASHTO

American Association of State Highway and Transportation Officials
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1. SCOPE

1.1. This standard practice provides guidance to engineers in the specification of HDPE conduit used in buried applications for the protection of power cables for use in highways, airport lighting, traffic control, and fiber optic data and command and control applications in State Transportation Projects.

This standard practice covers conduit used in the following manner:

- HDPE pipe used as a casing for the protection of smaller individual conduits, innerducts, in road crossings;
- HDPE conduit in coils, on steel reels, or in straight sticks; and
- CIC (cable in conduit), when power cable (conductors), CATV (coaxial), or fiber optic cable is installed in the conduit at the conduit manufacturing facility.
- HDPE pipe is commonly installed in standalone duct installations for the protection of power cable (conductors), CATV (coaxial cable), or fiber optic cable.
- HDPE pipe is commonly installed in standalone duct applications for road crossings when the bury depth is sufficient to avoid degradation effects to the road.
- HDPE pipe is commonly installed in standalone duct applications parallel to the roadway.

1.2. This standard practice covers material, dimensional, workmanship, and performance requirements for use of conduit in non-pressure applications.

1.3. HDPE conduit meeting the guidelines of this standard practice shall be outside diameter (OD)-controlled solid wall, with or without external or internal ribs. The sizing shall be Iron Pipe Size or Schedule as noted in Tables 6 and 7. The internal or external surface may contain a coextruded layer provided the finished conduit meets the product requirement in this standard.

1.4. This standard practice does not include guidelines for installation of HDPE conduit. Typical installation methods include trenching, plowing, and Horizontal Directional Drilling (HDD). Consult the PPI (Plastic Pipe Institute) *Handbook of Polyethylene Pipe* and TN (Technical Notes) on the PPI website, http://plasticpipe.org, for further information and guidance on installation methods.

2. REFERENCED DOCUMENTS

2.1. *ASTM Standards*:

- D570, Standard Test Method for Water Absorption of Plastics
- D618, Standard Practice for Conditioning Plastics for Testing
- D638, Standard Test Method for Tensile Properties of Plastics
- D790, Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
- D792, Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement
- D1238, Standard Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer
- D1505, Standard Test Method for Density of Plastics by the Density-Gradient Technique
- D1600, Standard Terminology for Abbreviated Terms Relating to Plastics
- D1603, Standard Test Method for Carbon Black Content in Olefin Plastics
- D1693, Standard Test Method for Environmental Stress-Cracking of Ethylene Plastics
- D2122, Standard Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings
- D2239, Standard Specification for Polyethylene (PE) Plastic Pipe (SIDR-PR) Based on Controlled Inside Diameter
- D2412, Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading
- D2444, Standard Practice for Determination of the Impact Resistance of Thermoplastic Pipe and Fittings by Means of a Tup (Falling Weight)
- D2839, Standard Practice for Use of a Melt Index Strand for Determining Density of Polyethylene
- D3350, Standard Specification for Polyethylene Plastics Pipe and Fittings Materials
- D3485, Standard Specification for Coilable High Density Polyethylene (HDPE) Cable in Conduit
- D4703, Standard Practice for Compression Molding Thermoplastic Materials into Test Specimens, Plaques, or Sheets
- D4883, Standard Test Method for Density of Polyethylene by the Ultrasound Technique
- D6070, Standard Test Methods for Physical Properties of Smooth-Wall, Coilable, Polyethylene (PE) Conduit (Duct) for Preassembled Wire and Cable (withdrawn 2016; no replacement)
- F412, Standard Terminology Relating to Plastic Piping Systems
- F1804, Standard Practice for Determining Allowable Tensile Load for Polyethylene (PE) Gas Pipe During Pull-In Installation
- F1962, Standard Guide for Use of Maxi-Horizontal Directional Drilling for Placement of Polyethylene Pipe or Conduit Under Obstacles, Including River Crossings
- F2160, Standard Specification for Solid Wall High Density Polyethylene (HDPE) Conduit Based on Controlled Outside Diameter (OD)

2.2. *National Electrical Manufacturers Association (NEMA) Standard*:

- NEMA TC 7, Smooth-Wall Coilable Electrical Polyethylene Conduit

2.3. *Underwriters Laboratories (UL) Standards*:

- UL 651A, High Density Polyethylene HDPE Conduit