Designation: ~~F2019 – 11~~ F2019 – 20

Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Pulled in Place Installation of Glass Reinforced Plastic ~~(GRP) Cured-in-Place Thermosetting Resin Pipe (CIPP)~~Cured-in-Place (GRP-CIPP) Using the UV-Light Curing Method[1]

This standard is issued under the fixed designation F2019; 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 the procedures for the reconstruction of pipelines and conduits (4 to ~~60~~72 in. (100 to ~~1500~~1830 mm) diameter) by the pulled-in place installation of a resin-impregnated, ~~flexible fabric~~glass fiber tube into an existing pipe or conduit followed by its inflation with compressed air pressure (see Fig. 1~~). The resin/fabric tube can be cured by either the flow through the fabric tube of mixed air and steam or hot water or by use of ultraviolet~~) to expand it firmly against the wall surface of the host structure. The photo-initiated resin system in the tube is then cured by exposure to ultraviolet (UV) light. When cured, the finished cured-in-place pipe will be a continuous and tight ~~fitting. This~~ fitting pipe within a pipe. This type of reconstruction process can be used in a variety of gravity flow applications such as sanitary sewers, storm sewers, process piping, electrical conduits, ~~ventilation systems, and pressure applications.~~and ventilation systems.

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

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

1.4 *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]

D543 Practices for Evaluating the Resistance of Plastics to Chemical Reagents
D578 Specification for Glass Fiber Strands
~~D638 Test Method for Tensile Properties of Plastics~~
D790 Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
D1600 Terminology for Abbreviated Terms Relating to Plastics
~~D3039/D3039M~~D2990 Test ~~Method for Tensile Properties of Polymer Matrix Composite Materials~~Methods for Tensile, Compressive, and Flexural Creep and Creep-Rupture of Plastics
D3567 Practice for Determining Dimensions of "Fiberglass" (Glass-Fiber-Reinforced Thermosetting Resin) Pipe and Fittings
D5813 Specification for Cured-In-Place Thermosetting Resin Sewer Piping Systems
F412 Terminology Relating to Plastic Piping Systems
F1216 Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube
F1417 Practice for Installation Acceptance of Plastic Non-pressure Sewer Lines Using Low-Pressure Air

[1] This practice is under the jurisdiction of ASTM Committee F17 on Plastic Piping Systems and is the direct responsibility of Subcommittee F17.67 on Trenchless Plastic Pipeline Technology.

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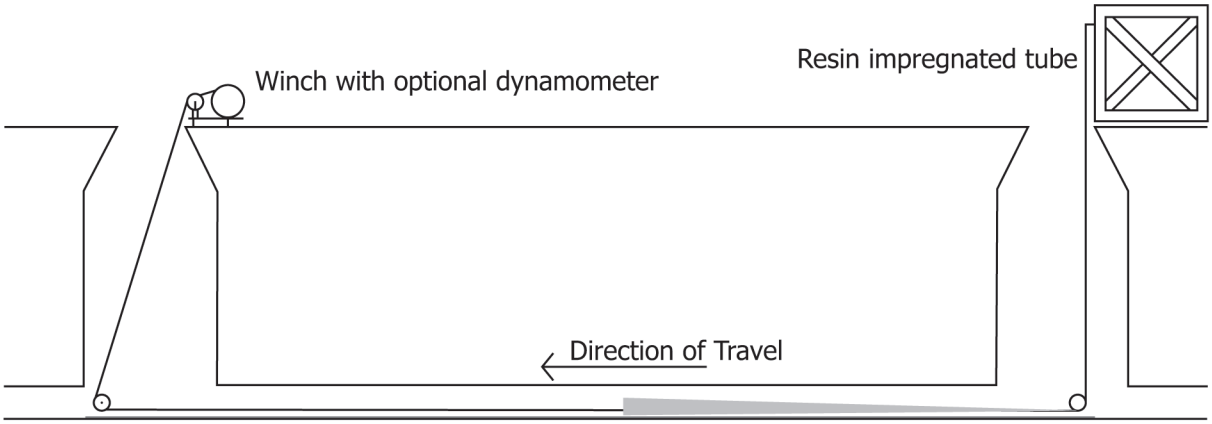
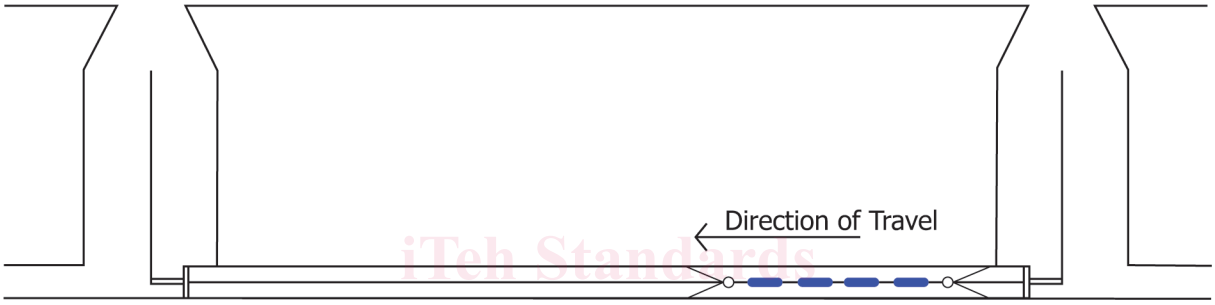
[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

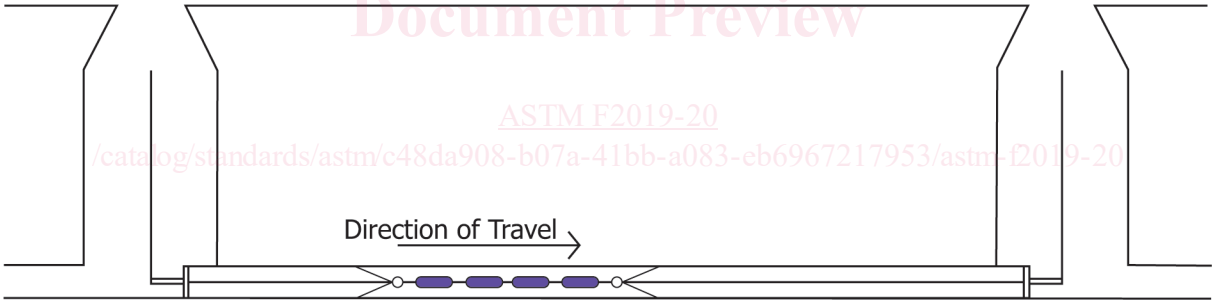
***A Summary of Changes section appears at the end of this standard**



The resin impregnated tube is pulled into place using a winch. A slip sheet is placed in the bottom of the pipe prior to this process.



CCTV on Light Train is used to confirm fit and configuration of liner before curing is commenced.



UV Lights are ignited per manufacturer's recommendations and the light train is then pulled to the end of the liner. The speed of the light train's passage is driven by the conditions being measured as the curing takes place.

FIG. 1 UV Cured-In-Place Pipe Installation Method (Air/Steam)