Standard Specification for

Steel-Reinforced Polyethylene (SRPE) Corrugated Pipe

AASHTO Designation: MP 42-20[1]

Technical Subcommittee: 4b, Flexible and Metallic Pipe

Release: Group 2 (June)

AASHTO

American Association of State Highway and Transportation Officials
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1. SCOPE

1.1. This specification covers the requirements and methods of tests for steel-reinforced polyethylene (SRPE) corrugated pipe, couplings, and fittings for use in surface and subsurface drainage applications.

1.1.1. Nominal sizes of 300 to 1800 mm (12 to 72 in.) are included.

1.1.2. Materials, workmanship, dimensions, pipe stiffness, impact resistance, joining systems, and form of markings are specified.

1.2. SRPE corrugated pipe is intended for surface and subsurface drainage applications where soil provides support to its flexible walls. Its major use is to collect or convey drainage water by open gravity flow as culverts, storm drains, etc.

Note 1´ When SRPE corrugated pipe is to be used in locations where the ends may be exposed, above ground, consideration should be given to protection of the exposed portions due to combustibility of polyethylene and the effects of prolonged exposure to ultraviolet radiation, as well as corrosion of steel reinforcement.

1.3. This specification only deals with this pipe˜s materials requirements. The structural design of steel reinforced thermoplastic culverts and the proper installation procedures are given in the *AASHTO LRFD Bridge Design Specifications*, Section 12, and *AASHTO LRFD Bridge Construction Specifications*, Section 26, respectively. Upon request of the specifying agency or engineer, the manufacturer shall provide profile wall section detail required for a full engineering evaluation.

1.4. The values stated in SI units are to be regarded as standard. Within the text, the U.S. Customary units are shown in parentheses and may not be exact equivalents.

1.5. The following precautionary caveat pertains only to the test method portion, Section 9, of this specification: *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 limitations prior to use.*

2. REFERENCED STANDARDS

2.1. *AASHTO Standards*:

- M 288, Geosynthetic Specification for Highway Applications
- T 341, Determination of Compression Capacity for Profile Wall Plastic Pipe by Stub Compression Loading
- *AASHTO LRFD Bridge Design Specifications*, Section 12
- *AASHTO LRFD Bridge Construction Specifications*, Section 26

2.2. *ASTM Standards*:

- A653/A653M, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
- A1008/A1008M Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable
- D618, Standard Practice for Conditioning Plastics for Testing
- D883, Standard Terminology Relating to Plastics
- D2122, Standard Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings
- D2412, Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading
- D2444, Standard Test Method for Determination of the Impact Resistance of Thermoplastic Pipe and Fittings by Means of a Tup (Falling Weight)
- D3212, Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
- D3350, Standard Specification for Polyethylene Plastics Pipe and Fittings Materials
- D4703, Standard Practice for Compression Molding Thermoplastic Materials into Test Specimens, Plaques, or Sheets
- D7091, Standard Practice for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to Ferrous Metals and Nonmagnetic, Nonconductive Coatings Applied to Non-Ferrous Metals
- F412, Standard Terminology Relating to Plastic Piping Systems
- F477, Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
- F2136, Standard Test Method for Notched, Constant Ligament-Stress (NCLS) Test to Determine Slow-Crack-Growth Resistance of HDPE Resins or HDPE Corrugated Pipe

3. TERMINOLOGY

3.1. The terminology used in this standard is in accordance with the definitions given in ASTM D883 and ASTM F412 unless otherwise specified.

3.2. *Definitions*:

3.2.1. *crack´* any break or split that extends through the pipe wall.

3.2.2. *crease´* a visible irrecoverable indentation.

3.2.3. *delamination´* a gap extending through the fused PE between two adjacent Corrugated Profiles.

3.2.4. *encapsulation thickness´* the thickness of the high density polyethylene (HDPE) bonded to either side of the steel reinforcement (see Figure 2).