**Standard Specification for** 

# Reinforced Concrete D-Load Culvert, Storm Drain, and Sewer Pipe

AASHTO Designation: M 242M/M 242-20<sup>1</sup> Technical Subcommittee: 4a, Concrete Drainage Structures Release: Group 2 (June) ASTM Designation: C655M-15 and C655-15



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**Standard Specification for** 

# **Reinforced Concrete D-Load Culvert, Storm Drain, and Sewer Pipe**

AASHTO Designation: M 242M/M 242-201



Technical Subcommittee: 4a, Concrete Drainage Structures

Release: Group 2 (June)

ASTM Designation: C655M-15 and C655-15

# 1. SCOPE

- 1.1. This specification covers reinforced concrete pipe designed for specific D-loads and intended to be used for the conveyance of sewage, industrial wastes, and storm water, and for the construction of culverts.
- 1.2. This specification is applicable for orders in either SI units (M 242M) or in inch-pound units (M 242). SI units and inch-pound units are not necessarily equivalent. Inch-pound units are shown in brackets in the text for clarity, but they are the applicable values when the material is ordered to M 242.

**Note 1**—Experience has shown that the successful performance of this product depends on the proper selection of the pipe strength, the type of bedding and backfill, the care that the installation conforms to the construction specifications, and provision for adequate inspection at the construction site. This specification does not include requirements for bedding, backfill, the relationship between field load conditions and the strength designation of pipe, or durability under unusual environmental conditions. These requirements should be included in the project specification.

# 2. REFERENCED DOCUMENTS

#### 2.1. *AASHTO Standards*:

- M 6, Fine Aggregate for Hydraulic Cement Concrete
- M 31M/M 31, Deformed and Plain Carbon and Low-Alloy Steel Bars for Concrete Reinforcement
- M 80, Coarse Aggregate for Hydraulic Cement Concrete
- M 85, Portland Cement
- M 157, Ready-Mixed Concrete
- M 240M/M 240, Blended Hydraulic Cement
- M 262, Concrete Pipe and Related Products
- M 295, Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
- M 302, Slag Cement for Use in Concrete and Mortars

- M 336M/M 336, Steel Wire and Welded Wire, Plain and Deformed, for Concrete Reinforcement
- T 280, Concrete Pipe, Manhole Sections, or Tile

#### 2.2. *ASTM Standards*:

- C33/C33M, Standard Specification for Concrete Aggregates
- C1116/C1116M, Standard Specification for Fiber-Reinforced Concrete
- E105, Standard Practice for Probability Sampling of Materials
- MNL7, Manual on Presentation of Data and Control Chart Analysis, 9th Edition, 2018. Committee E-11 on Quality and Statistics
- STP15C, ASTM Manual on Quality Control of Materials

### 3. TERMINOLOGY

3.1. *Definitions*—For definitions of terms relating to concrete pipe, see M 262.

# 4. BASIS OF ACCEPTANCE

- 4.1. The acceptability of the pipe design shall be determined in accordance with Section 9. After the pipe design has been accepted, or if the pipe design has been accepted previously in accordance with Section 9, the owner may select and have applied the basis of acceptance described in either Section 4.1.1 or Section 4.1.2. Unless designated by the owner at the time of, or before placing an order, either basis of acceptance shall be permitted.
- 4.1.1. Acceptance on the Basis of Pipe Load and Material Tests and Inspection of Manufactured Pipe for Defects—Determine in accordance with Sections 5, 6, 8, and 10.
  Note 2—It is necessary that samples be selected at random. For guidance, see ASTM E105.
- 4.1.2. Acceptance on the Basis of Concrete Compression and Materials Tests and Inspection of Manufactured Pipe for Defects—Determine in accordance with Sections 5, 6, 8, and 11.
- 4.2. *Age for Acceptance*—Pipe shall be considered ready for acceptance when they conform to the requirements.

## 5. DESIGN AND MANUFACTURING DATA

- **5.1.** *The manufacturer shall provide the following information regarding the pipe unless waived by the owner:*
- 5.1.1. Basis of acceptance, and
- 5.1.2. Pipe design strength.
- 5.1.3. *Physical Characteristics*:
- 5.1.3.1. Diameter, wall thickness, laying length, and joint details;
- 5.1.4. Design concrete strength, minimum  $f'_c = 27.6$  MPa [4000 psi]; and

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