
Standard Specification for Precast Reinforced Concrete Manhole Sections

AASHTO Designation: M 199M/M 199-21¹

Technically Revised: 2021

Technical Subcommittee: 4a, Concrete Drainage Structures

ASTM Designation: C478M-15a and C478-15a



**American Association of State Highway and Transportation Officials
555 12th Street NW, Suite 1000
Washington, D.C. 20004**

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PART I—GENERAL

1. SCOPE

- 1.1. This specification covers the manufacture and purchase requirements of products used for the assembly and construction of circular vertical precast reinforced concrete manholes and structures used in sewer, drainage, and water works.
- 1.2. Part I (Sections 1 through 11) of this specification presents general requirements and requirements that are common to each precast concrete product covered by this specification.
- 1.3. Part II of this specification presents specific requirements for each manhole product in the following sections:

Product	Section
Grade rings	12
Flat slab tops	13
Risers and conical tops	14
Base sections	15
Steps and ladders	16

Note 1—Future products will be included in Part II in a future revision of this specification.

- 1.4. This specification is applicable for orders in either SI units (M 199M) or in inch-pound units (M 199). 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 199.

Note 2—This specification is a manufacturing and purchase specification only, and does not include requirements for backfill, or the relationship between field load conditions and the strength requirements of the manhole products and appurtenances. Experience has shown, however, that the successful performance of this product depends on the proper selection of the product strength, type of foundation and backfill, and care in the field installation of the manhole products and connecting pipes. The owner of the project for which these products are specified herein is cautioned to require inspection at the construction site.

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 154M/M 154, Air-Entraining Admixtures for Concrete
- M 157, Ready-Mixed Concrete
- M 194M/M 194, Chemical Admixtures for 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 22M/T 22, Compressive Strength of Cylindrical Concrete Specimens
- T 280, Concrete Pipe, Manhole Sections, or Tile

2.2. *ASTM Standards:*

- A 706/A 706M, Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement
- C 309, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
- C 1017/C 1017M, Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete

2.3. *ACI Standard:*

- 318, Building Code, Requirements for Reinforced Concrete

3. TERMINOLOGY

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

4. MATERIALS AND MANUFACTURE

4.1. General material requirements for precast reinforced concrete manhole products are presented in Sections 4.1.1 through 4.1.8. Other materials or additional requirements for a product, if any, are covered in the Part II section for that specific product.

4.1.1. *Reinforced Concrete*—The reinforced concrete shall consist of cementitious materials, mineral aggregates, and water, in which steel reinforcement has been embedded in such a manner so that the steel reinforcement and concrete act together.