Standard Specification for

Corrugated Steel Structural Plate, Zinc-Coated, for Field-Bolted Pipe, Pipe-Arches, and Arches

AASHTO Designation: M 167M/M 167-17

Technical Section: 4b, Flexible and Metallic Pipe

Release: Group 2 (June 2017)

ASTM Designation: A761/A761M-04

AASHTO

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1. SCOPE

1.1. This specification covers corrugated steel structural plate, zinc-coated, used in the construction of pipe, pipe-arches, arches, underpasses, and special shapes for field assembly. Appropriate fasteners and accessory materials are also described. The pipe, arches, and other shapes are generally used for drainage purposes, pedestrian and vehicular underpasses, and utility tunnels.

1.2. This specification does not include requirements for bedding, backfill, or the relationship between earth cover load and plate thickness of the pipe. Experience has shown that the successful performance of this product depends on the proper selection of plate thickness, type of bedding and backfill, manufacture in the plant, and care in the installation. The purchaser must correlate the above factors and also the corrosion and abrasion requirements of the field installation with the plate thickness. The structural design of corrugated steel structural plate pipe and the proper installation procedures are described in *AASHTO LRFD Bridge Design Specifications*, Section 12 and *AASHTO LRFD Bridge Construction Specifications*, Section 26, respectively.

1.3. The values stated in either SI units or inch-pound units are to be regarded separately as standard. Within the text, the inch-pound units are shown in brackets. The values stated in each system are not exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in nonconformance with the specification.

2. REFERENCED DOCUMENTS

2.1. *AASHTO Standards*:

- M 111M/M 111, Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
- M 232M/M 232, Zinc Coating (Hot-Dip) on Iron and Steel Hardware
- T 65M/T 65, Mass [Weight] of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings
- T 244, Mechanical Testing of Steel Products
- *AASHTO LRFD Bridge Design Specifications*
- *AASHTO LRFD Bridge Construction Specifications*

2.2. *ASTM Standards*:

- A36/A36M, Standard Specification for Carbon Structural Steel
- A307, Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 psi Tensile Strength
- A449, Standard Specification for Hex Cap Screws, Bolts and Studs, Steel, Heat Treated, 120/105/90 ksi Minimum Tensile Strength, General Use
- A563/A563M, Standard Specification for Carbon and Alloy Steel Nuts
- A751, Standard Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products
- A754/A754M, Standard Test Method for Coating Weight (Mass) of Metallic Coatings on Steel by X-Ray Fluorescence
- A780/A780M, Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
- A902 Standard Terminology Relating to Metallic Coated Products
- B6, Standard Specification for Zinc
- E29, Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications
- E376, Standard Practice for Measuring Coating Thickness by Magnetic-Field or Eddy-Current (Electromagnetic) Testing Methods
- F568M, Standard Specification for Carbon and Alloy Steel Externally Threaded Metric Fasteners (withdrawn 2012)

2.3. *American National Standards*:

- B18.2.1, Square and Hex Bolts and Screws, Inch Series
- B18.2.2, Square and Hex Nuts
- B18.2.3.6M, Bolts, Metric Heavy Hex
- B18.2.4.6M, Hex Nuts, Heavy, Metric

3. TERMINOLOGY

3.1. *Definitions*—See ASTM A902 for definitions of general terminology related to metallic-coated steel products.

3.2. *Descriptions of Terms Specific to This Standard*:

3.2.1. *arch*—a partial circle shape spanning an open invert between the footings on which it rests.

3.2.2. *box culvert*—a rectangular box with a long-radius crown and either short-radius corners or welded corners. It can be with full invert or with footings.

3.2.3. *circumferential flange connection*—a circumferential seam for structural plate that is connected through a flange along the edge of the plate; circumferential flanges are cold-formed.

3.2.4. *circumferential reinforcing member*—a structural section bolted to a structural plate structure, parallel to the corrugations, to provide additional strength or stiffness.

3.2.5. *circumferential seam*—a connection seam along the edge of the plate parallel to the corrugations.

3.2.6. *fabricator*—the producer of the components for the finished product.