



Standard Practice for Structural Design of Corrugated Steel Pipe, Pipe-Arches, and Arches for Storm and Sanitary Sewers and Other Buried Applications¹

This standard is issued under the fixed designation A 796/A 796M; 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 structural design of corrugated steel pipe and pipe-arches, ribbed and composite ribbed steel pipe, closed rib steel pipe, and steel structural plate pipe, pipe-arches, and underpasses for use as storm sewers and sanitary sewers, and other buried applications. Ribbed and composite ribbed steel pipe, and closed rib steel pipe, shall be of helical fabrication having a continuous lockseam. This practice is for pipe installed in a trench or embankment and subjected to earth loads and live loads. It must be recognized that a buried corrugated steel pipe is a composite structure made up of the steel ring and the soil envelope, and both elements play a vital part in the structural design of this type of structure. This practice applies to structures installed in accordance with Practice A 798/A 798M or A 807/A 807M.

1.2 Corrugated steel pipe and pipe-arches shall be of annular fabrication using riveted or spot-welded seams, or of helical fabrication having a continuous lockseam or welded seam.

1.3 Structural plate pipe, pipe-arches, underpasses, and arches are fabricated in separate plates that, when assembled at the job site by bolting, form the required shape.

1.4 This specification is applicable to design in inch-pound units as A 796 or in SI units as A 796M. Inch-pound units and SI units are not necessarily equivalent. SI units are shown in brackets in the text for clarity, but they are the applicable values when the design is done per A 796M.

1.5 *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 Documents

2.1 ASTM Standards:

- A 760/A 760M Specification for Corrugated Steel Pipe, Metallic-Coated for Sewers and Drains²
- A 761/A 761M Specification for Corrugated Steel Structural Plate, Zinc-Coated, for Field-Bolted Pipe, Pipe-Arches, and Arches²
- A 762/A 762M Specification for Corrugated Steel Pipe, Polymer Precoated for Sewers and Drains²
- A 798/A 798M Practice for Installing Factory-Made Corrugated Steel Pipe for Sewers and Other Applications²
- A 807/A 807M Practice for Installing Corrugated Steel Structural Plate Pipe for Sewers and Other Applications²
- A 902 Terminology Relating to Metallic-Coated Steel Products²
- A 978/A 978M Specification for Composite Ribbed Steel Pipe, Precoated and Polyethylene-Lined for Gravity Flow Sanitary Sewers, Storm Sewers, and Other Special Applications²
- A 1019/A 1019M Specification for Closed Rib Steel Pipe with a Diameter of 36 in. [900 mm] or Less, Polymer Precoated for Sewers and Drains²
- D 698 Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft³ [600 kN·m/m³])³
- D 1556 Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method³
- D 2167 Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method³
- D 2487 Classification of Soils for Engineering Purposes (Unified Soil Classification System)³
- D 2922 Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)³
- D 2937 Test Method for Density of Soil in Place by the Drive-Cylinder Method³
- 2.2 AASHTO Standard:
Standard Specifications for Highway Bridges⁴

¹ This practice is under the jurisdiction of ASTM Committee A05 on Metallic-Coated Iron and Steel Products and is the direct responsibility of Subcommittee A05.17 on Corrugated Steel Pipe Specifications.

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² Annual Book of ASTM Standards, Vol 01.06.

³ Annual Book of ASTM Standard, Vol 04.08.

⁴ Available from American Association of State Highway and Transportation Officials, 444 North Capitol St., N.W., Suite 225, Washington DC, 20001.