



Standard Practice for Structural Design of Reinforcements for Fittings in Factory-Made Corrugated Steel Pipe for Sewers and Other Applications¹

This standard is issued under the fixed designation A998/A998M; 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 reinforcement for fittings in factory-made, round corrugated steel pipe, conforming to Specifications [A760/A760M](#) or [A762/A762M](#), for use as storm and sanitary sewers and other buried applications. This practice is for fittings on pipe installed in a trench or embankment and subjected to earth loads and live loads. It must be recognized that a buried corrugated pipe is a composite structure made up of the steel ring and the soil envelope, and both elements play a vital part. Both main and branch pipe shall be designed in accordance with Practice [A796/A796M](#) and installed in accordance with Practice [A798/A798M](#).

1.2 This practice covers the structural design of reinforcement for fittings such as those for branch pipes. Refer to Section 5 for design limitations.

1.3 *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.*

1.4 The values stated in either inch-pound units or SI units shall be regarded separately as standard. The values stated in each system are not exact equivalents; therefore, each system must be used independently of the other, without combining values in any way. SI units are shown in brackets in the text for clarity, but they are the applicable values when the design is to be performed using SI units.

2. Referenced Documents

2.1 ASTM Standards:²

[A36/A36M](#) Specification for Carbon Structural Steel

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 For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[A153/A153M](#) Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

[A307](#) Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength

[A760/A760M](#) Specification for Corrugated Steel Pipe, Metallic-Coated for Sewers and Drains

[A762/A762M](#) Specification for Corrugated Steel Pipe, Polymer Precoated for Sewers and Drains

[A796/A796M](#) Practice for Structural Design of Corrugated Steel Pipe, Pipe-Arches, and Arches for Storm and Sanitary Sewers and Other Buried Applications

[A798/A798M](#) Practice for Installing Factory-Made Corrugated Steel Pipe for Sewers and Other Applications

[A902](#) Terminology Relating to Metallic Coated Steel Products

[A929/A929M](#) Specification for Steel Sheet, Metallic-Coated by the Hot-Dip Process for Corrugated Steel Pipe

[F568M](#) Specification for Carbon and Alloy Steel Externally Threaded Metric Fasteners (Metric) (Withdrawn 2012)³

2.2 AASHTO Standard:⁴

Standard Specifications for Highway Bridges

LRFD Bridge Design Specifications

2.3 American Railway Engineering and Maintenance-of-Way Association:

[AREMA Manual](#)⁵

2.4 Society of Automotive Engineers:

[J78](#) Steel Self-Drilling Tapping Screws⁶

3. Terminology

3.1 For definitions of general terms used in this standard, refer to Terminology [A902](#).

³ The last approved version of this historical standard is referenced on www.astm.org.

⁴ Available from American Association of State Highway and Transportation Officials (AASHTO), 444 N. Capitol St., NW, Suite 249, Washington, DC 20001, <http://www.transportation.org>.

⁵ Available from American Railway Engineering and Maintenance-of-Way Association (AREMA), 8201 Corporate Drive, Suite 1125, Landover, MD 20785-2230.

⁶ Available from SAE International (SAE), 400 Commonwealth Dr., Warrendale, PA 15096-0001, <http://www.sae.org>.