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Standard Specification for Joints for Concrete Arch Pipe Using Profile Rubber Gaskets¹

This standard is issued under the fixed designation C1896; 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 specification covers flexible joints for concrete arch pipe, using rubber gaskets for leak resistant joints. The specification covers the design of joints and the requirements for rubber gaskets to be used therewith, for arch pipe conforming in all other respects to Specification C506 provided that if there is conflict in permissible variations in dimensions the requirements of this specification for joints shall govern.

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.3 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*²

C497 Test Methods for Concrete Pipe, Concrete Box Sections, Manhole Sections, or Tile

C822 Terminology Relating to Concrete Pipe and Related Products

C506 Specification for Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe

C1619 Specification for Elastomeric Seals for Joining Concrete Structures

3. Terminology

3.1 *Definitions*—For definitions of terms relating to concrete pipe, see Terminology C822.

¹ This test method is under the jurisdiction of ASTM Committee C13 on Concrete Pipe and is the direct responsibility of Subcommittee C13.08 on Joints for Precast Concrete Structures.

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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.

4. Basis of Acceptance

4.1 The acceptability of the pipe joints and gaskets shall be determined by the results of the physical test prescribed in this specification, if and when required, and by inspection to determine whether the pipe joints and gaskets conform to this specification as to design and freedom from defects.

5. Materials and Manufacture for Gaskets

5.1 The gasket shall be fabricated from a rubber compound. The basic polymer shall be natural rubber, synthetic rubber, or a blend of both meeting the physical requirements prescribed in Specification C1619.

5.1.1 Gaskets for standard use shall meet Class C requirements. Gaskets which require oil resistant properties shall meet Class D requirements.

5.2 Profile Cross-Section Gaskets:

5.2.1 Profile cross-section gaskets shall be extruded or molded to the design size within a tolerance of $\pm 1/64$ in. (± 0.4 mm) or ± 3.0 % on any dimension, measured at any cross section, whichever is larger.

5.2.2 Profile cross-section gaskets shall have the nominal design cut length tolerance of ± 3 % for extruded and spliced gaskets.

6. Design of Joints

6.1 The manufacturer shall furnish the owner with the detailed design of the joint or joints including design and durometer hardness of the rubber gasket proposed to be furnished under this specification.

6.1.1 The joint design shall consist of a bell or groove on one end of a unit of pipe, and a spigot or tongue on the adjacent end of the joining pipe.

6.1.2 All surfaces of the joint upon or against which the gasket is capable of bearing shall be smooth, free of spalls, cracks or fractures, and imperfections that would adversely affect the performance of the joint.

6.1.3 The joints of the pipe shall be of such design that they will withstand the forces caused by the compression of the gasket when joined, without cracking or fracturing when tested in accordance with Section 9.

6.1.4 The angle of taper on the surfaces of the inside of the bell or groove and the outer surface of the spigot or tongue