



Designation: C444/C444M – 21

Standard Specification for Perforated Concrete Pipe¹

This standard is issued under the fixed designation C444/C444M; 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.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

1.1 This specification covers perforated concrete pipe intended to be used for underdrainage.

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

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *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

C822 Terminology Relating to Concrete Pipe and Related Products

3. Terminology

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

4. Classification

4.1 Pipe manufactured according to this specification shall be of two classes known as Type 1 and Type 2, which cover

¹ This specification is under the jurisdiction of ASTM Committee C13 on Concrete Pipe and is the direct responsibility of Subcommittee C13.01 on Non-Reinforced Concrete Sewer, Drain and Irrigation Pipe.

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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.

two arrangements of perforations to be used with pipe manufactured according to any of the standard specifications for plain or reinforced concrete pipe, and any of the classifications within those standard specifications.

4.1.1 Type 1 perforated pipe shall have circular perforations conforming to **6.1** and **Table 1**.

4.1.2 Type 2 perforated pipe shall have slotted perforations conforming to **6.2** and **Table 2**.

4.1.3 It is intended that perforated pipe shall be specified by reference to this specification and the specification for the type and class of pipe desired.

NOTE 1—*Example*—“Perforated concrete pipe shall conform to the requirements of Specification C444/C444M Type 2, and all applicable requirements of Specification C14, Class 2.”

5. Basis of Acceptance

5.1 The acceptability of the pipe shall be determined by the results of all applicable tests (**Note 2**) prescribed for the type and class of pipe specified, and by inspection to determine whether the pipe conforms to this specification as to design and freedom from defects.

NOTE 2—It is intended that all tests will be applicable except those having to do with permeability and the hydrostatic test.

6. Perforations

6.1 *Type 1*—Perforations shall be circular, not more than $\frac{5}{16}$ in. [8 mm] or less than $\frac{3}{16}$ in. [5 mm] in diameter, and arranged in rows parallel to the axis of the pipe. Perforations shall be 3 in. [75 mm] center-to-center, along rows, with no less than $\frac{1}{2}$ in. [13 mm] of cover over any reinforcing steel. The spigot or tongue end shall not be perforated for a length equal to the depth of the socket, or depth of the groove plus $\frac{3}{4}$ in. [19 mm] and perforations shall continue at uniform spacing along the entire length of the barrel. The total number of rows shall be as shown in **Table 1**. The rows shall be spaced over not more than 165° of circumference. Rows shall be symmetrically arranged with respect to the intended top or bottom of the pipe.

6.2 *Type 2*—Slots shall be circumferential in direction, not more than $\frac{3}{16}$ in. [5 mm] or less than $\frac{1}{8}$ in. [3 mm] in width, and of the lengths shown in **Table 2**. There shall be two rows of slots, spaced 165° apart, and centered, in the case of