



Designation: C444M – 03 (Reapproved 2009)

## Standard Specification for Perforated Concrete Pipe (Metric)<sup>1</sup>

This standard is issued under the fixed designation 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 ( $\epsilon$ ) 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 This specification is the SI companion to Specification C444.

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.*

### 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

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 to this specification shall be of two classes, Type 1 and Type 2, describing two arrangements of perforations for pipe manufactured to the standard specifications for plain or reinforced concrete pipe, and their classifications.

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.

<sup>1</sup> 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.

Current edition approved June 1, 2009. Published July 2009. Originally approved in 1980. Last previous edition approved in 2003 as C444M – 03. DOI: 10.1520/C0444M-03R09.

<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

NOTE 1—Example: “Perforated concrete pipe shall conform to the requirements of Specification C444M Type 2, and all applicable requirements of Specification C14M, 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 8 mm or less than 5 mm in diameter, and arranged in rows parallel to the axis of the pipe. Perforations shall be 75 mm center-to-center, along rows. 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 19 mm and perforations shall continue at uniform spacing along the length of the barrel. The 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 5 mm or less than 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 elliptically reinforced pipe, about the minor axis of the reinforcing. Slots shall be spaced as shown in Table 2, except as modified herein for plain-end pipe. The distance from the spigot end, or from the shoulder of the tongue end, to the first pair of slots shall be not more than 25 mm greater than the specified slot spacing, nor less than 25 mm less than the specified slot spacing. Slots shall continue at uniform spacing along the length of the barrel.

6.2.1 Slots in plain-end pipe shall be spaced as shown in Table 2 except that smaller spacing shall be used where necessary to provide not less than three equally spaced slots in each row. Slots shall be centered with respect to the ends of the pipe and there shall be not more than the specified slot spacing from the pipe end to the first pair of slots, or less than one half of the slot spacing employed.