



Designation: C 1091 – 02

## Standard Test Method for Hydrostatic Infiltration and Exfiltration Testing of Vitrified Clay Pipe Lines<sup>1</sup>

This standard is issued under the fixed designation C 1091; 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.

### 1. Scope

1.1 This test method defines procedures for hydrostatically testing vitrified clay pipe lines, to demonstrate the structural integrity of the installed line. Refer to Practice C 12.

1.2 This test method is suitable for testing gravity-flow pipe lines constructed of vitrified clay pipe or combinations of clay pipe and other pipe materials.

1.3 This test method is applicable to the testing of the pipe lines only. Manholes or other structures should be tested separately.

1.4 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are provided for information only.

1.5 *This standard does not purport to address all of the safety problems, 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:*

C 12 Practice for Installing Vitrified Clay Pipe Lines<sup>2</sup>

C 828 Test Method for Low-Pressure Air Test of Vitrified Clay Pipe Lines<sup>2</sup>

C 896 Terminology Relating to Clay Products<sup>2</sup>

### 3. Terminology

3.1 Terminology C 896 can be used for clarifications of terminology in this test method.

### 4. Summary of Test Method

4.1 This test method shall be performed on lines after connection laterals, if any, have been plugged and adequately braced to withstand the test pressure, and after the trenches have been backfilled for a sufficient time to generate a significant portion of the ultimate trench load on the pipe line.

The time between completion of the backfill operation and hydrostatic testing shall be established by the approving authority.

### 5. Significance and Use

5.1 The tests called for herein, for their results, indicate the acceptability of installed vitrified clay pipelines.

### 6. Preparation of the Line

6.1 To ensure the proper seating of the test plugs and the accuracy of the test, the lines should be cleaned prior to testing.

6.2 Examples of methods for cleaning the lines are the sewer cleaning ball and high pressure flushing equipment.

### 7. Procedure

#### 7.1 Infiltration Testing:

7.1.1 This test procedure is applicable where the measured water table is 2 ft (610 mm) or greater above the pipe barrel at the midpoint of the test section (see Note 1). Where the ground water elevation is indeterminate, less than 2 ft (610 mm) above the top of the pipe barrel, or the line is partially below the water table, use a combination of both the air test and infiltration procedure.

NOTE 1—What can be called false infiltration represents condensate on the pipe walls. This may amount to as much as 50 gal/in. diameter-mile-day (4.6 L/mm diameter-kilometre-day). Thus, evaluate flow in the pipeline for this condition.

7.1.2 Determine the allowable infiltration rate for the test section using Table 1.

7.1.3 Discontinue all pumping of ground water for a period of 24 h prior to testing.

7.1.4 Plug the inlet to the test section to be tested. It is usually necessary to also plug the inlet of the upper manhole to prevent the manhole from filling with water or provide a method of de-watering the manhole or remotely removing the plug at the inlet to the test section. Securely plug all lateral inlets to the line.

7.1.5 To determine the infiltration rate, measure the flow at the outlet of the test section.

7.1.5.1 At the outlet of the test section, collect the water and measure the quantity collected within a specific time. Achieve collection and measurement with the use of a plug having a

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee C04 on Vitrified Clay Pipe and is the direct responsibility of Subcommittee C04.20 on Methods of Test and Specifications.

Current edition approved Sept. 10, 2002. Published November 2002. Originally published as C 1091 – 88. Last previous edition C 1091 – 99.

<sup>2</sup> *Annual Book of ASTM Standards*, Vol 04.05.