



Standard Test Method for Low-Pressure Air Test of Vitrified Clay Pipe Lines¹

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1. Scope

1.1 This test method defines procedures for testing vitrified clay pipe lines, using low-pressure air, to demonstrate the structural integrity of the installed line.

1.2 This test method shall be performed on lines after connection laterals, if any, have been plugged and braced adequately 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 low-pressure air testing shall be determined by the approving authority.

1.3 This test method may also be used as a preliminary test, which enables the installer to demonstrate the condition of the line prior to backfill and further construction activities.

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

1.5 Terminology C 896 is to be used for clarification of terminology in this test method.

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

1.7 *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:*

C 12 Practice for Installing Vitrified Clay Pipe Lines²

C 896 Terminology Relating to Clay Products²

3. Summary of Test Method

3.1 The section of the line to be tested is plugged. Air, at low pressure, is introduced into the plugged line. The line passes the test if the rate of air loss, as measured by pressure drop, does not exceed a specified amount in a specified time. This

may be determined by the use of Table 1, or calculated by use of the formulas in Appendix X1.

4. Hazards

4.1 The low-pressure air test may be dangerous to personnel if, through lack of understanding or carelessness, a line is overpressurized or plugs are installed improperly. It is extremely important that the various plugs be installed so as to prevent the sudden expulsion of a poorly installed or partially inflated plug. As an example of the hazard, a force of 250 lbf (1112 N) is exerted on an 8-in. (205-mm) plug by an internal pressure of 5 psi (34 kPa). Observe the following safety precautions:

4.1.1 No one shall be allowed in the manholes during testing because of the hazards.

4.1.2 Install all plugs securely.

4.1.3 When lines are to be tested, it may be necessary that the plugs be braced as an added safety factor.

4.1.4 Do not overpressurize the lines.

5. Preparation of the Line

5.1 Air may pass through the walls of dry pipe. A wetted interior pipe surface is desirable and will produce more consistent test results. Usually moisture absorbed from the backfill is sufficient to cope with this situation. Where practical, clean the line prior to testing to wet the pipe surface and eliminate debris.

6. Procedure

6.1 Determine the test time for the section of line to be tested using Table 1 or Table X1.1 or the formulas in Appendix X1.

6.2 Plug all openings in the test section.

6.3 Add air until the internal pressure of the line is raised to approximately 4.0 psi (28 kPa). After this pressure is reached, allow the pressure to stabilize. The pressure will normally drop as the air temperature stabilizes. This usually takes 2 to 5 min, depending on the pipe size. The pressure should be reduced to 3.5 psi (24 kPa) before starting the test.

6.4 Start the test when the pressure is at 3.5 psi (24 kPa). If a 1 psi (7 kPa) drop does not occur within the test time, the line has passed. If the pressure drop is more than 1 psi (7 kPa) during the test time, the line is presumed to have failed the test. If the line fails the test, segmental testing may be utilized solely to determine the location of leaks, if any, but not for the

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² *Annual Book of ASTM Standards*, Vol 04.05.