Designation: C12 – 16a

Standard Practice for Installing Vitrified Clay Pipe Lines[1]

This standard is issued under the fixed designation C12; 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 practice covers the proper methods of installing vitrified clay pipe lines by open trench construction methods in order to fully utilize the structural properties of such pipe.

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 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:*[2]

C301 Test Methods for Vitrified Clay Pipe
C403/C403M Test Method for Time of Setting of Concrete Mixtures by Penetration Resistance
C425 Specification for Compression Joints for Vitrified Clay Pipe and Fittings
C700 Specification for Vitrified Clay Pipe, Extra Strength, Standard Strength, and Perforated
C828 Test Method for Low-Pressure Air Test of Vitrified Clay Pipe Lines
C896 Terminology Relating to Clay Products
C923 Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals
C1091 Test Method for Hydrostatic Infiltration Testing of Vitrified Clay Pipe Lines
D2487 Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
D2488 Practice for Description and Identification of Soils (Visual-Manual Procedure)
D4832 Test Method for Preparation and Testing of Controlled Low Strength Material (CLSM) Test Cylinders
D5821 Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate
D6103 Test Method for Flow Consistency of Controlled Low Strength Material (CLSM) (Withdrawn 2013)[3]

3. Terminology

3.1 *General*—Terminology C896 can be used for clarification of terminology in this specification.

3.2 See Fig. 1.

DESIGN CONSIDERATIONS

4. Supporting Strength

4.1 The field supporting strength of vitrified clay pipe is materially affected by the methods of installation. The field supporting strength of a pipe is defined as its capacity to support dead and live loads under actual field conditions. It is dependent upon two factors: (*1*) the inherent strength of the pipe and (*2*) the bedding of the pipe.

4.2 The minimum bearing strength requirement in accordance with Specification C700, as determined by the 3-edge-bearing test of Test Methods C301, is a measure of the inherent strength of the pipe.

4.3 The tests used to measure bearing strength determine relative pipe strengths but do not represent actual field conditions. Therefore, an adjustment called a load factor is introduced to convert minimum bearing strength to field supporting strength. The magnitude of the load factor depends on how the pipe is bedded. The relationship is:

$$\text{Field supporting strength} = \text{minimum bearing strength} \times \text{load factor}$$

4.4 A factor of safety >1.0 and ≤1.5 shall be applied to the field supporting strength to calculate a safe supporting strength. The relationship is:

[1] This practice 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.

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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.

[3] The last approved version of this historical standard is referenced on www.astm.org.