Designation: D7764 – 20

Standard Practice for Pre-Installation Acceptance Testing of Vibrating Wire Piezometers[1]

This standard is issued under the fixed designation D7764; 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.

1. Scope*

1.1 This practice describes two acceptance tests for a vibrating wire piezometer: a zero test and a down-hole test. The two tests can help a user verify that the piezometer is operating properly before it is installed.

1.2 *This practice offers an organized collection of information or a series of options and does not recommend a specific course of action. This document cannot replace education or experience and should be used in conjunction with professional judgment. Not all aspects of this practice may be applicable in all circumstances. This ASTM standard is not intended to represent or replace the standard of care by which the adequacy of a given professional service must be judged, nor should this document be applied without consideration of a project's many unique aspects. The word "standard" in the title of this document means only that the document has been approved through the ASTM consensus process.*

1.3 *Units*—The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard. Reporting of test results in units other than SI shall not be regarded as nonconformance with this standard.

1.4 *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.*

1.5 *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]

D653 Terminology Relating to Soil, Rock, and Contained Fluids

D3740 Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction

3. Terminology

3.1 *Definitions:*

3.1.1 For definitions of common technical terms in this standard, refer to Terminology D653.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *vibrating wire piezometer, n*—a type of pressure sensor that is used to monitor pore-water pressure.

3.2.1.1 *Discussion*—"Vibrating wire" refers to the mechanism by which pressure on the sensor's diaphragm is converted to an electrical signal that is transmitted to a readout device. A tensioned wire connected to the diaphragm is plucked by an electromagnetic pulse, and the resulting natural frequency is monitored by the readout. Any change in pressure on the diaphragm changes the tension of the wire and the resulting frequency. A typical vibrating wire piezometer reports gauge pressure, rather than absolute pressure. In this standard, the words "vibrating wire piezometer," "piezometer," and "sensor" will be used interchangeably.

4. Significance and Use

4.1 Vibrating wire piezometers are typically not recoverable after installation. Replacement, which involves drilling a new borehole, is expensive and sometimes impossible. Thus it is important to be certain that the sensor is operational before it is installed.

[1] This practice is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.23 on Field Instrumentation.

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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.

*A Summary of Changes section appears at the end of this standard