



Standard Practice for Pre-Installation Acceptance Testing of Vibrating Wire Piezometers¹

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 The values stated in SI units are to be regarded as standard. No other units of measurement are included in 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 and health practices and determine the applicability of regulatory limitations prior to use.*

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](#)

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.

Current edition approved July 1, 2012. Published October 2012. DOI: 10.1520/D7764-12.

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.

Used in Engineering Design and Construction

3. Terminology

3.1 *Definitions:*

3.1.1 For general definitions, see Terminology [D653](#).

3.1.2 *absolute pressure, n*—a pressure value that includes the effect of atmospheric pressure.

3.1.3 *gauge pressure, n*—a pressure value that excludes the effect of atmospheric pressure.

3.1.4 *vibrating wire piezometer, n*—a type of pressure sensor that is used to monitor pore-water pressure. 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 typical vibrating wire piezometer reports absolute pressure, rather than gauge 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.

4.2 Lacking sophisticated testing facilities, field testers must use equipment that is at hand. But in so doing, field testers should not expect to achieve the same accuracy and precision that manufacturers state on the sensor calibration record. Instead, field testers should look for obvious non-conformances, as explained in the procedures.

4.3 This standard practice is not meant to restrict the use of other appropriate acceptance tests and procedures.

NOTE 1—Notwithstanding the statements on precision and bias contained in this practice, the precision of this practice is dependent on the competence of the personnel performing it and the suitability of the equipment and facilities used. Agencies that meet the criteria of Practice [D3740](#) are generally considered capable of competent and objective testing. Users of this practice are cautioned that compliance with Practice [D3740](#) does not itself ensure reliable testing. Reliable testing depends on many factors; Practice [D3740](#) provides a means of evaluating some of these factors.