Designation: D 5780 – 95 (Reapproved 2002)

Standard Test Method for Individual Piles in Permafrost Under Static Axial Compressive Load[1]

This standard is issued under the fixed designation D 5780; 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.

INTRODUCTION

This test method has been prepared to cover methods of axial load testing of piles in permafrost. The provisions permit the introduction of more detailed requirements and procedures when required to satisfy the objectives of the test program. The procedures herein produce a relationship between applied load and pile settlement for conditions of ground temperature at the time of test. The results may be interpreted to establish long-term load capacity of piles in permafrost.

1. Scope

1.1 This test method covers procedures for testing individual vertical piles to determine response of the pile to static compressive load applied axially to the pile. This test method is applicable to all deep foundation units in permafrost that function in a manner similar to piles regardless of their method of installation. This test method is divided into the following sections:

	Section
Referenced Documents	2
Terminology	3
Significance and Use	4
Installation of Test Piles	5
Apparatus for Applying Loads	6
Apparatus for Measuring Movements	7
Safety Requirements	8
Loading Procedures	9
Standard Test Procedures	10
Procedures for Measuring Pile Movements	11
Report	12
Precision and Bias	13
Keywords	14

NOTE 1—Apparatus and procedures designated "optional" are to be required only when included in the project specifications or if not specified, may be used only with the approval of the engineer responsible for the foundation design. The word "shall" indicates a mandatory provision and "should" indicates a recommended or advisory provision. Imperative sentences indicate mandatory provisions. Notes, illustrations, and appendixes included herein are explanatory or advisory.

NOTE 2—This test method does not include the interpretation of test results or the application of test results to foundation design. See Appendix X1 for comments regarding some of the factors influencing the interpretation of test results. A qualified geotechnical engineer should interpret the test results for predicting pile performance and capacity.

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

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.* Specific precautionary statements are given in Section 8.

2. Referenced Documents

2.1 *ASTM Standards:*

D 653 Terminology Relating to Soil, Rock, and Contained Fluids[2]

2.2 *ANSI Standard:*

B 30.1 Safety Code for Jacks[3]

3. Terminology

3.1 *Definitions:*

3.1.1 The standard definitions of terms and symbols relating to soil and rock mechanics is Terminology D 653.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *adfreeze bond strength*—the strength of the bond developed between frozen soil and the surface of the pile.

3.2.2 *base load*—a load equivalent to the design load adjusted for test pile geometry and expected ground temperature.

[1] This test method is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.19 on Frozen Soils and Rock.

Current edition approved Sept. 10, 1995. Published January 1996.

[2] *Annual Book of ASTM Standards*, Vol 04.08.

[3] Available from American National Standards Institute, 25 W. 43rd St., 4th Floor, New York, NY 10036.

This document is now PUBLIC

Copyright © ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States.