



Designation: D8169/D8169M – 18

Standard Test Methods for Deep Foundations Under Bi-Directional Static Axial Compressive Load¹

This standard is issued under the fixed designation D8169/D8169M; 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 The test methods described in this standard measure the axial displacement of a single, deep foundation element when loaded in bi-directional static axial compression using an embedded bi-directional jack assembly. These methods apply to all deep foundations, referred to herein as “piles,” which function in a manner similar to driven piles, cast in place piles, or barrettes, regardless of their method of installation. The test results may not represent the long-term performance of a deep foundation.

1.2 This standard provides minimum requirements for testing deep foundations under bi-directional static axial compressive load. Plans, specifications, and/or provisions prepared by a qualified engineer may provide additional requirements and procedures as needed to satisfy the objectives of a particular test program. The engineer in charge of the foundation design, referred to herein as the engineer, shall approve any deviations, deletions, or additions to the requirements of this standard.

1.3 This standard provides the following test procedures:

Procedure A	Quick Test	9.2.1
Procedure B	Extended Test (optional)	9.2.2

1.4 Apparatus and procedures herein designated “optional” may produce different test results and may be used only when approved by the engineer. The word “shall” indicates a mandatory provision, and the word “should” indicates a recommended or advisory provision. Imperative sentences indicate mandatory provisions.

1.5 The engineer may use the results obtained from the test procedures in this standard to predict the actual performance and adequacy of piles used in the constructed foundation. See [Appendix X1](#) for comments regarding some of the factors influencing the interpretation of test results.

1.6 A qualified engineer (specialty engineer, not to be confused with the foundation engineer as defined above) shall design and approve the load test configuration and test procedures.

The text of this standard references notes and footnotes which provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of the standard. This standard also includes illustrations and appendixes intended only for explanatory or advisory use.

1.7 *Units*—The values stated in either SI units or inch-pound units (presented in brackets) are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard. Reporting of test results in units other than SI shall not be regarded as nonconformance with this test method.

1.8 The gravitational system of inch-pound units is used when dealing with inch-pound units. In this system, the pound (lbf) represents a unit of force (weight), while the unit for mass is slugs. The rationalized slug unit is not given, unless dynamic ($F=ma$) calculations are involved.

1.9 All observed and calculated values shall conform to the guidelines for significant digits and rounding established in Practice [D6026](#).

1.9.1 The procedures used to specify how data are collected, recorded and calculated in this standard are regarded as the industry standard. In addition, they are representative of the significant digits that should generally be retained. The procedures used do not consider material variation, purpose for obtaining the data, special purpose studies, or any considerations for the user’s objectives; and it is common practice to increase or reduce significant digits of reported data to be commensurate with these considerations. It is beyond the scope of this standard to consider significant digits used in analysis methods for engineering design.

1.10 *This standard 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 guide 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,*

¹ This test method is under the jurisdiction of ASTM Committee [D18](#) on Soil and Rock and is the direct responsibility of Subcommittee [D18.11](#) on Deep Foundations. Current edition approved Jan. 1, 2018. Published February 2018. DOI: 10.1520/D8169_D8169M-18.