

SPECIAL PROCEDURES FOR TESTING SOIL AND ROCK FOR ENGINEERING PURPOSES

Fifth Edition

Sponsored by
ASTM COMMITTEE D-18
on Soil and Rock for Engineering Purposes

Suggested Methods
Standard and Tentative Methods, Definitions,
and Nomenclature (by Reference Only)

ASTM SPECIAL TECHNICAL PUBLICATION 479

List price \$15.75



AMERICAN SOCIETY FOR TESTING AND MATERIALS
1916 Race Street, Philadelphia, Pa. 19103

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Library of Congress Catalog Card Number: 70-114701
ISBN 0-8031-0054-X

NOTE—The Society is not responsible, as a body, for the
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Printed in Easton, Md.
June 1970

FOREWORD

The science of soil mechanics is a complex one, due to the very nature of the materials involved, which vary not only geographically but locally as well. This variability of soils makes it especially difficult to develop standard methods of test that can be universally used for evaluating the engineering properties of soils. The science of rock mechanics is also complex and the development of widely accepted test methods is relatively new.

ASTM Committee D-18 on Soil and Rock for Engineering Purposes has sponsored this publication, which covers many suggested methods of test that have generally received wide recognition in the United States. A good many of these methods may ultimately become ASTM standards. All existing ASTM standards on testing soils, which standards are the result of general agreement and acceptance, are referenced in this publication and are published in the *Annual Book of ASTM Standards*, Part 11. This publication is considered to be the only one that brings together in convenient form all of these various methods now in current use.

The soil test procedures are grouped into 14 categories, each pertaining to related phases of soil testing and the subcommittee structure of Committee D-18, as follows:

- Section I—Soil and Foundation Engineering Studies—General
- Section II—Surface and Subsurface Reconnaissance
- Section III—Sampling and Related Field Testing for Soil Investigation
- Section IV—Texture, Plasticity, and Density Characteristics of Soils
- Section V—Permeability and Capillarity Properties of Soils
- Section VI—Structural Properties of Soils
- Section VII—Physicochemical Properties of Soils
- Section VIII—Identification and Classification of Soils
- Section IX—Special and Construction Control Tests
- Section X—Dynamic Properties of Soils
- Section XI—Bearing Tests of Soils in Place
- Section XII—Deep Foundations
- Section XIII—Rock Mechanics
- Section XIV—Nomenclature for Soil and Rock Mechanics

This special compilation was first published in 1944, with a second printing of the first edition being required. The second edition was published in 1950, the third edition in 1958, and the fourth edition in 1964. This fifth edition represents a complete review in which certain test procedures were deleted and new methods added, based on current use. Other methods have been revised to bring them up to date. Standards and tentatives have, however, been deleted, requiring that the user also rely on Part 11 of the *Annual Book of ASTM Standards* for a complete reference to available test methods.

Credit for bringing this group of soil test methods up to date is due the subcommittee chairmen and present and past officers of Committee D-18, and especially John P. Gaedinger who served as Editor, and W. G. Holtz who served as Assistant Editor.

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November 1969

RELATED ASTM PUBLICATIONS

The American Society for Testing and Materials has issued special technical publications and other publications which may be of particular interest to the users of this compilation of Special Procedures for Testing Soil and Rock for Engineering Purposes. These are as follows:

Load Tests of Bearing Capacity of Soils—STP 79 (1947)	\$6.20*
Triaxial Testing of Soils and Bituminous Mixtures—STP 106 (1949–1950)	\$12.35*
Identification and Classification of Soils—STP 113 (1950)	\$3.35*
Surface and Subsurface Reconnaissance—STP 122 (1951)	\$8.20*
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Vane Shear and Cone Penetration Resistance Testing of In Situ Soils—STP 399 (1966)	\$2.25
Testing Techniques for Rock Mechanics—STP 402 (1966)	\$14.75
Permeability and Capillarity of Soils—STP 417 (1967)	\$10.50
Soil as an Engineering Material, 1968 Marburg Lecture, ASTM, by W. G. Holtz, ASTM <i>Journal of Materials</i> , December 1968 (This lecture has been reprinted as Water Resources Technical Publication Report No. 17 by the U. S. Govern- ment Printing Office, Washington, D. C. The cost is 55¢)	
Determination of Stress in Rock—A State-of-the-Art Report—STP 429 (1968)	\$4.75
Performance of Deep Foundations—STP 444 (1969)	\$20.00
Use of Nuclear Meters in Soils Investigations: A Summary of Worldwide Re- search and Practice—STP 412 (1968)	\$8.75
Vibration Effects of Earthquakes on Soils and Foundations—STP 450 (1969)	\$18.50

A list of ASTM Publications is available on request.

* Copies are no longer available from ASTM but may be obtained on microfilm from University Microfilms, Inc., 300 N. Zeeb Road, Ann Arbor, Mich. 48106.

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