

Second Pacific Area Meeting Papers

SOILS



Published by the
AMERICAN SOCIETY FOR TESTING MATERIALS
1916 Race St., Philadelphia 3, Pa.

ASTM Special Technical Publication No. 206

PAPERS ON SOILS

Presented at the
SECOND PACIFIC AREA NATIONAL MEETING
Los Angeles, Calif., September 17, 1956
AMERICAN SOCIETY FOR TESTING MATERIALS



Reg. U. S. Pat. Off.

ASTM Special Technical Publication No. 206

Price \$4.50; to Members \$3.60

Published by the
AMERICAN SOCIETY FOR TESTING MATERIALS
1916 Race St., Philadelphia 3, Pa.

COPYRIGHT, 1957
BY THE
AMERICAN SOCIETY FOR TESTING MATERIALS

Printed in Baltimore, Md.
October, 1957

FOREWORD

A wide range of testing and research projects on soils is covered in the papers included in this publication. These projects vary from field tests of piles in sand to properties of soil-cement mixtures. A total of twelve papers were presented in three sessions during the Second Pacific Area National Meeting held in Los Angeles, Calif., during the week of September 17, 1956. Eleven of these papers, together with discussions, are included in this publication with one paper on Soil Density and Soil Moisture Determination by Radiation Methods by R. K. Bernhard, Rutgers University, not published in this group. An added feature in this publication is the address presented by Prof. K. B. Woods at the Soils Industry Luncheon. This presentation reviews the important techniques used for site selection and for explorations.

The three sessions on soils were sponsored by Committee D-18 on Soils for Engineering Purposes, through a special symposium committee under the chairmanship of F. J. Converse. The presiding officers for the three sessions were R. Horonjeff, University of California; W. S. Housel, University of Michigan; and W. G. Holtz, U. S. Bureau of Reclamation, respectively.

**NOTE.—The Society is not responsible, as a body, for the statements
and opinions advanced in this publication.**

CONTENTS

	PAGE
Soil Explorations for Site Selection and Engineering Design—K. B. Woods	1
A Generalized Theory of Soil Resistance—W. S. Houel	13
Discussion	30
A Procedure for Separately Evaluating Friction and Cohesion of Soils by a Consolidated Direct Shear Test—L. A. Palmer, P. B. Brown and C. M. Yeomans	34
Discussion	45
Experiences with the Consolidation of Pipe Bedding by Vibration on the San Diego Aqueduct—W. G. Holtz	50
Discussion	66
The Use of a Vibratory Compactor on Granular Base Courses—C. R. White	67
Discussion	73
Compaction of Cohesive Soil by Low-Frequency Vibration—F. J. Converse	75
Discussion	82
Microseismics—R. K. Bernhard	83
Experiences with Electrical Resistivity Surveys on Foundation and Subsurface Investigations in Southern California—R. A. Maurseth, J. B. Howe and S. N. Mitchell	103
Discussion	113
Tests of Concrete Deadman Anchorages in Sand—J. E. Smith	115
Discussion	131
Field Tests on Laterally Loaded Piles in Sand and Clay—H. G. Mason	133
Discussion	150
Strength and Elastic Properties of Compacted Soil-Cement Mixtures—E. J. Felt and M. S. Abrams	152
Discussion	175
<i>Universal Soil Testing Machine—J. W. Maloney (published in ASTM BULLETIN No. 226, December 1957.)</i>	

THIS PUBLICATION is one of many issued by the American Society for Testing Materials in connection with its work of promoting knowledge of the properties of materials and developing standard specifications and tests for materials. Much of the data result from the voluntary contributions of many of the country's leading technical authorities from industry, scientific agencies, and government.

Over the years the Society has published many technical symposiums, reports, and special books. These may consist of a series of technical papers, reports by the ASTM technical committees, or compilations of data developed in special Society groups with many organizations cooperating. A list of ASTM publications and information on the work of the Society will be furnished on request.

