

**UNDERWATER  
SOIL SAMPLING,  
TESTING, AND  
CONSTRUCTION  
CONTROL**

**STP 501**



**AMERICAN SOCIETY FOR TESTING AND MATERIALS**

# UNDERWATER SOIL SAMPLING, TESTING, AND CONSTRUCTION CONTROL

A symposium  
presented at the  
Seventy-fourth Annual Meeting  
AMERICAN SOCIETY FOR  
TESTING AND MATERIALS  
Atlantic City, N. J., 27 June-2 July 1971

ASTM SPECIAL TECHNICAL  
PUBLICATION 501

E. D'Appolonia, symposium chairman

List price \$15.50

04-501000-38



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

© BY AMERICAN SOCIETY FOR TESTING AND MATERIALS 1972  
Library of Congress Catalog Card Number: 77-185536

NOTE

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

Printed in Easton, Pa.  
March 1972

## **Related ASTM Publications**

- Permeability and Capillarity of Soils, STP 417  
(1967), \$10.50**
- Materials Performance and the Deep Sea, STP  
445 (1969), \$9.50**
- Special Procedures for Testing Soil and Rock for  
Engineering Purposes, STP 479 (1970),  
\$15.75**
- Sampling of Soil and Rock, STP 483 (1971), \$8.00**

## Foreword

The Symposium on Underwater Soil Sampling, Testing, and Construction Control was held on 29 June 1971 at the Seventy-fourth Annual Meeting of the American Society for Testing and Materials in Atlantic City, N. J. The symposium was presented in the form of two panel discussion sessions: (I) Underwater Soil Sampling and Testing and (II) Construction Control of Underwater Construction Work. E. D'Appolonia, D'Appolonia Consulting Engineers, Inc., served as moderator for both sessions and as symposium chairman; ASTM Committee D-18 on Soil and Rock for Engineering Purposes acted as sponsor.

# Contents

Introduction	1
Underwater Soil Sampling and Testing—A State-of-the-Art Review— I. NOORANY	3
Recent Trends in Underwater Soil Sampling Methods—G. B. TIREY	42
In-Place Measurement of Deep Sea Soil Shear Strength—A. F. RICHARDS, V. J. MCDONALD, R. E. OLSON, AND G. H. KELLER	55
A Static Cone Penetrometer for Ocean Sediments—T. J. HIRST, A. F. RICHARDS, AND A. L. INDERBITZEN	69
Correlation of Standard Penetration Test Results with Vibracore Sampler Penetration Rates—F. M. BABCOCK AND H. J. MILLER	81
An Analysis of Piston Coring through Corehead Camera Photography— F. W. MCCOY, JR.	90
Obtaining Strength Profiles with Depth for Marine Soil Deposits Using Disturbed Samples—D. A. SANGREY	106
Control for Underwater Construction—S. J. JOHNSON, J. R. COMPTON, AND S. C. LING	122
Construction beyond the Continental Shelf—P. P. BROWN	181
Control of Underwater Earthwork at Hugh Keenleyside (Arrow) Dam— D. J. BAZETT AND R. G. FOXALL	187
A Study of the Strength Characteristics of Marine Sediments Utilizing a Submersible—A. L. INDERBITZEN AND F. SIMPSON	204
Instrumenting RUM for <i>in situ</i> Subsea Soil Surveys—V. C. ANDERSON, J. R. CLINTON, D. K. GIBSON, AND O. H. KIRSTEN	216
Foundation Investigations for Drilling Platform in Cook Inlet— J. ANGEMEER	232

