MERO SEMBENELLI MILANO

VOL.102 NO.GT11. NOV. 1976

PROCEDINGS OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS



AMERICAN SOCIETY OF CIVIL ENGINEERS

BOARD OF DIRECTION

Precident Leland J. Walker Past President Arthur J. Fox. Jr.

President Elect William R. Gibbs

Vice Presidents Russel C. Jones William W. Moore

Directors

Philip Abrams Richard O. Albright Donald S. Austin Lynn S. Beedle Frederick R. Brown Jose L. Capacete William J. Carroll Francis J. Connell John J. Cusack Anthony M. DiGioia, Jr.

R. Gene Ellis George F. Flay, Jr. James W. Gillespie Robert T. Lawson Eugene R. McMaster Virgil G. Meedel Franklin D. Meyers Edward H. Sokolowski D. Russell Tatman Eben Vev

Ralph H. Wallace

Joseph S. Ward

John H. Wiedeman

EXECUTIVE OFFICERS

Eugene Zwoyer, Executive Director Louis L. Meier, Washington Counsel William N. Carey, Secretary Emeritus William H. Wisely, Executive Director Emeritus Michael N. Salgo, Treasurer Elmer B. Isaak, Assistant Treasurer

STAFF DIRECTORS

Don P. Reynolds, Director—Policy, Research, and Standards Services Joseph McCabe, Director-Education Services

Edmund H. Lang, Director-Professional Services

Paul A. Parisi, Director-Publication Services Albert W. Turchick, Director-Technical Services

William D. French, Director-Support Services

COMMITTEE ON PUBLICATIONS

Eben Vey, *Chairman* John H. Wiedeman, *Vice Chairman* James W. Gillespie Irvan F. Mendenhall Virgil G. Meedel D. Russell Tatman

GEOTECHNICAL ENGINEERING DIVISION

Executive Committee Richard E. Gray, Chairman John A. Focht, Jr., Vice Chairman William F. Swiger Kenneth L. Lee John Lysmer, Secretary Woodland G. Shockley, Management Group E Contact Member

Publications Committee E. T. Selig, Chairman O. B. Andersland Warren J. Baker Don Banks Joseph Bowles Ralph Brown J. T. Christian G. W. Clough C. S. Desai I M Duncan Herb Einstein L. R. Gebhart D. H. Gray Bobby Hardin M. Idriss H. Y. Ko. L. M. Kraft R. J. Krizek C. C. Ladd Poul Lade L. J. Langfelder

Roberto Lastrico Ulrich Luscher Gholamreza Mesri Victor Milligan N. Morgenstern Donald J. Murphy Iraj Noorany Ed Nowatzki Adrian Richards Wally Sherman W. G. Shockley M. L. Silver Glen S. Tarbox G. R. Thiers Dave Thompson C. V. G. Vallabhan J. Lawrence Von Thun R. J. Woodward, III S. G. Wright T. H. Wu R. N. Yong

John Lysmer, Exec. Comm. Contact Member PUBLICATION SERVICES DEPARTMENT

Paul A. Parisi, Director

Technical Publications

Richard R. Torrens, Editor Robert D. Walker, Associate Editor Geraldine Fahey, Assistant Editor Howard Brenker, Editorial Assistant Vicki L. Iguchi, Editorial Assistant Paul Andrew Kunkel, Editorial Assistant Patricia G. Silverberg, Editorial Assistant Richard C. Scheblein, Draftsman

Information Services

Irving Amron, Editor

CONTENTS

Cavity Expansion in Sands with Curved Envelopes
by Mohsen M. Baligh
Evaluation of Resonant Column Test Devices
by George R. Skoglund, William F. Marcuson, III,
and Robert W. Cunny
Nonlinear Behavior in Soil-Structure Interaction
by Eduardo Kausel, José M. Roësset, and John T. Christian 1159
Dynamic Shear Moduli for Dry Sands
by Mehmet A. Sherif and Isao Ishibashi
TECHNICAL NOTES
Proc. Paper 12513
Stresses in Shallow Elliptical Tunnel
by Robert Mark
Relative Motion of Two Points during an Earthquake
by John T. Christian
Flow at Interface of Two Anisotropic Soil Zones
by Robin N. Chowdhury

This Journal is published monthly by the American Society of Civil Engineers. Publications office is at 345 East 47th Street, New York, N.Y. 10017. Address all ASCE correspondence to the Editorial and General Offices at 345 East 47th Street, New York, N.Y. 10017. Allow six weeks for change of address to become effective. Subscription price to members is \$10.00. Nonmember subscriptions available: prices obtainable on request. Second-class postage paid at New York, N.Y. and at additional mailing offices. HY, GT.

The Society is not responsible for any statement made or opinion expressed in its

publications.

DISCUSSION

Proc. Paper 12507

Mica Dam Embankment Stress Analysis, by Nigel A. Skermer (Mar., 1975. Prior Discussion: Apr., 1976). closure	1201
Effect of Catalyst in Soil-Resin Stabilization, by Dalim K. Majumdar	
(June, 1975, Prior Discussion: May, 1976).	
closure	1202
Elastoplastic Stress-Strain Theory for Cohesionless Soil, by Poul V.	
Lade and James M. Duncan (Oct., 1975. Prior Discussions: Mar.,	
June, July, 1976).	
by Michael J. Pender	1202
Strength of One Dimensionally Consolidated Clays," by Adel S. Saada	
and Gary F. Bianchini (Nov., 1975).	
by Ravikumar Bhaskaran	1204

INFORMATION RETRIEVAL

The key words, abstract, and reference "cards" for each article in this Journal represent part of the ASCE participation in the EJC information retrieval plan. The retrieval data are placed herein so that each can be cut out, placed on a 3×5 card and given an accession number for the user's file. The accession number is then entered on key word cards so that the user can subsequently match key words to choose the articles he wishes. Details of this program were given in an August, 1962 article in CIVIL ENGINEERING, reprints of which are available on request to ASCE headquarters.

iscussion period closed for this paper. Any other discussion received during this scussion period will be published in subsequent Journals.