

VOL. 113 NO. 10. OCT. 1987

ISSN 0733-9410
CODEN: JGENDZ

Journal of
**Geotechnical
Engineering**

AMERICAN SOCIETY OF CIVIL ENGINEERS

GEOTECHNICAL ENGINEERING DIVISION

General Information

Journal of Geotechnical Engineering covers the field of soil mechanics and foundations, with special emphasis on the relationship between the geologic environment and man-made works. Computer applications are also examined. Topics include dynamic response of foundations, earth-retaining structures, earth-supported structures, and dam construction and slope stability, as well as soil failures and their solutions.

Journal of Geotechnical Engineering (ISSN 0733-9410) is published monthly by the American Society of Civil Engineers. Publications office is at 345 East 47th Street, New York, NY 10017-2398. All editorial correspondence should be directed to the Journals Department. Second-class postage is paid at New York, NY, and at additional mailing offices.

Postmaster: Send address changes to *Journal of Geotechnical Engineering*, ASCE, 345 East 47th Street, New York, NY 10017-2398.

Submission of papers. Submit four copies of papers, notes, and discussions to the Journals Department. Maximum length for papers is 10,000 words; for notes, 2,500 words; for discussions, 1,250 words. Multiple submissions are not accepted for review. Indicate division and, if applicable, committee to which material is being submitted. The use of SI units is preferred; if other units are used, SI equivalents must also be given. Write or phone Journals Department for *ASCE Authors' Guide to Journals, Books, and Reference Publications* for complete instructions for manuscript preparation.

Reprints for authors are ordered prior to publication; others may order them by using the coupon published in *ASCE News* and *ASCE Publications Information* or contacting the Reprint Department, ASCE.

Photocopies. Permission to photocopy for personal or internal reference beyond the limits in Sections 107 and 108 of the U.S. Copyright Law is granted by the American Society of Civil Engineers for libraries and other users registered with the Copyright Clearance Center, 21 Congress Street, Salem, MA 01970, provided the appropriate fee is paid to the CCC for all articles bearing the CCC code. Requests for special permission or bulk copying should be addressed to the Journals Reprint Department, ASCE.

Subscriptions. 1987 rates are \$25.00 for members and \$100.00 for nonmembers. Postage outside the U.S.A. is \$8.50 additional. Single copies are \$10.00. Address all *member* subscription inquiries and correspondence to Member Records, ASCE. Address all *nonmember* inquiries and correspondence to Publications Fulfillment Department, ASCE. Subscriptions are filled for the calendar year and must be prepaid. Notify the appropriate ASCE department of address changes as soon as possible; allow six weeks for it to become effective.

This publication is abstracted in *ASCE Publications Information* (bimonthly), *Transactions of the ASCE* (annually), and Civil Engineering Database (online), and indexed in *ASCE Annual Combined Index*. Address inquiries to Information Products, ASCE.

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

Copyright ©1987 by American Society of Civil Engineers.

Journal of Geotechnical Engineering

Volume 113 Number 10 October 1987

SPECIAL MEMORIAL ISSUE: CONCRETE-FACE ROCKFILL DAM

EDITORIAL	1095
TECHNICAL PAPERS	
Concrete-Face Rockfill Dam: I. Assessment. <i>James L. Sherard and J. Barry Cooke</i>	1096
Concrete-Face Rockfill Dam: II. Design. <i>J. Barry Cooke and James L. Sherard</i>	1113
DISCUSSIONS	
Performance of Cogoti Dam under Seismic Loading. Luis Arrau, Ismael Ibarra, and Guillermo Noguera. <i>By Robert B. Jansen. Closure by Guillermo Noguera</i>	1135
New Exchequer Dam, California. Thomas M. Leps, C. A. Cashatt, and R. N. Janopaul. <i>By Arthur G. Strassburger. Closure by authors</i>	1138
Golillas Dam—Design, Construction and Performance. Fabio Amaya and Alberto Marulanda. <i>By Ranji Casinader. Closure by authors</i>	1143
The Outardes 2 Concrete-Faced Rockfill Dam. O. Dascal. <i>By Felix Tenorio and Alberto Bernal. Closure by author</i>	1147
Concrete Face Rockfill Dams of the Winneke Project. R. Casinader and R. E. Watt. <i>By Leonard A. McDonald. Closure by authors</i>	1153
Foz do Areia Dam—Design, Constuction, and Behaviour. Nelson L. de S. Pinto, Pedro L. Marques Filho, and Edilberto Maurer. <i>By Warren H. Schumann</i>	1155
Construction of Foz do Areia Dam. Bayardo Materon. <i>By J. Barry Cooke. Closure by author</i>	1158
Design and Performance of Shiroro Rockfill Dam. William L. Bodtman and John D. Wyatt. <i>By Andrew J. Coles. By Jorge E. Hacelas and Alberto Marulanda. By Richard L. Kulesza. Closure by authors.</i>	1160
Fortuna Concrete Face Rockfill Dam. D. A. Perdomo, M. S. Vasilescu, and E. A. Ferro. <i>By J. Barry Cooke. By Richard</i>	

<i>H. Foster and Ian Mitchell. Closure by authors.</i>	1171
Design Features of Salvajina Dam. Jesus M. Sierra, Carlos A. Ramírez, and Jorge E. Hacelas. <i>By J. Barry Cooke. By James L. Sherard. Closure by Jorge E. Hacelas and Carlos A. Ramirez</i>	1175
Construction and Performance of Salvajina Dam. Jorge E. Hacelas, Carlos A. Ramírez, and Guillermo Regalado. <i>By J. Barry Cooke. Closure by authors</i>	1181
Khao Laem—A Concrete Face Rockfill Dam on Karst. Somkuan Watakeekul, Gordon J. Roberts, and Andrew J. Coles. <i>By Anthony R. Beach. By John Newbery. By Steven H. Snider. Closure by authors</i>	1187
Kotmale Dam and Observations on CFRD. Edward M. Gosschalk and A. N. S. Kulasinghe. <i>By Ranji Casinader. By Daumantas (Mike) Namikas and Richard L. Kulesza. Closure by authors</i>	1198
Batang Ai—Transition Zone. P. R. Phillips. <i>By Ivor L. Pinkerton. By N. Prapaitrakul. Closure by author</i>	1209
Design of Cirata Concrete Face Rockfill Dam. Ivor L. Pinkerton, Soetomo Siswamidjono, and Yutaka Matsui. <i>Supplementary Comments by authors</i>	1213
Design of Concrete-Faced Rockfill Dams. Mike D. Fitzpatrick, Bruce A. Cole, Frank L. Kinstler, and Bram P. Knoop. <i>By Andrew J. Coles. By Daumantas (Mike) Namikas and Richard L. Kulesza. By N. Prapaitrakul. By Carlos A. Ramirez and Jorge E. Hacelas. By Lewis Tuthill. Closure by authors</i>	1214
Construction of Concrete Face Rockfill Dams. Alan Varty, Rick J. Boyle, Edward D. Pritchard, and Roger E. Gill. <i>By Bayardo Materon and Warren H. Schumann. Closure by authors</i>	1227
The Upstream Zone in Concrete-Face Rockfill Dams. James L. Sherard. <i>By Ranji Casinader. By Cao Keming. By Bayardo Materon. By Edmundo Moreno. Closure by author</i>	1231
Seismic Design of Concrete Faced Rockfill Dams. H. Bolton Seed, Raymond B. Seed, S. S. Lai, and B. Khamenehpour. <i>By J. Lawrence Von Thun</i>	1246
Seismic Analysis of Concrete Face Rockfill Dams. Gilles Bureau, Richard L. Volpe, Wolfgang H. Roth, and Takekazu Udaka. <i>By George Gazetas. By Robert B. Jansen. By James L. Sherard. By J. Lawrence Von Thun. Closure by authors</i>	1247
A Study of Deformations in Concrete Faced Rockfill Dams.	

Hideo Imaizumi and Alvaro E. Sardinha. <i>By Jorge E. Hacelas and Carlos A. Ramírez. By Warren H. Schumann. Closure by authors</i>	1264
Design of Deer Creek Dam. Harold Hollingsworth, Timothy R. Conner, and Victor E. Anderson. <i>By Joseph Ehasz and Michael Pavone. Closure by authors</i>	1269
The Xingó Rockfill Dam. Aurélio A. Vasconcelos and Luiz Paulo Eigenheer. <i>By Cao Keming. By Othilio Moura Filho and Waldo Duarte de Matos. Closure by authors</i>	1276
Segredo Dam—Basic Design Aspects. Nelson L. de S. Pinto, Pedro L. Marques Filho, and Edilberto Maurer. <i>Supplementary Comments by authors</i>	1281
Itá Dam—Selection of Type. Jose Antunes Sobrinho and Joaquim C. da Cunha. <i>By N. Prapaitrakul. Closure by authors</i>	1281
The Design of Macagua Concrete Face Rockfill Dam. Z. Prusza, K. De Fries, and F. Luque. <i>By Ali Pérez. Closure by authors</i>	1288
ERRATA	1290