CONTENTS

Volume 1

A. Keynote Lectures

Grouting Improvement of Foundation Soils
Francesco Gallavresi ........................................... 1

Ground Anchorage Technology—A Forward Look
Stuart Littlejohn ............................................... 39

Remaining Technical Barriers to Obtain General Acceptance of Geosynthetics
Robert M. Koerner, Yick Hsuan and Arthur E. Lord, Jr. ........ 63

The Role of Soil Modification in Environmental Engineering Applications
James K. Mitchell and Wade A. Van Court .................... 110

B. Jet Grouting

Jet Grouting for a Self-standing Wall
Gohichi Miyasaka, Yutaka Sasaki, Toshiaki Nagata, Mitsuhiro Shibazaki, Masahiro Iji and Masami Yoda .......... 144

Stabilization of Pier Foundation Using Jet Grouting Techniques
R. Parry-Davies, R.M.H. Bruin, G. Wardle and M.G. Nixon .... 156

Jet Grouting: State-of-the-Practice
J.L. Kausching, E.B. Perry, and R. Hankour ..................... 169

Jet Grouting in Airport Construction
Yoshiomi Ichihashi, Mitsuhiro Shibazaki, Hiroaki Kubo, Masahiro Iji and Akira Mori ........................................ 182

Methods to Estimate Composition of Jet Grout Bodies
L. Joseph Kausching, Rachid Hankour and E.B. Perry .......... 194

Jet Grouting in Contaminated Soils
Herff N. Gazaway and Brian H. Jaspere ...................... 206

C. Compaction Grouting

A Design Theory for Compaction Grouting
John H. Schmertmann and James F. Henry ....................... 215

Compaction Grout: Rheology vs. Effectiveness
James Warner ...................................................... 229

Settlement, Structural Failure and In-place Repair of Above Ground Storage Tanks
Richard M. Berry and Robert P. Buhrow ....................... 240

Recent Advances in Compaction Grouting Technology
James Warner, Norbert Schmidt, John Reed, Don Shepardson, Russ Lamb and Sam Wong .................................. 252

Wanaque Filtration Plant Subgrade Stabilization: A Case History
Joseph D. Chastanet and Paul M. Blakita ...................... 265
D. Grouting Practice

Recent European Developments in Constructing Grouted Slabs
Norbert Tausch .................................................. 301

Some Factors Related to Injected Shape in Grouting
Akira Mori, Masahito Tamura, Hideo Hayashi and Hideaki Shibata ........................................ 313

Development of a Gas-Liquid Reaction Injection System
Shunsuke Shimada, Masanori Ide and Hiromu Iwasa ................................................................. 325

The Effects of Fillers and Admixtures on Grout Performance
Sandra Z. Tosca and Jeffrey C. Evans .................................................. 337

Exploration/Grouting in Cambro-Ordovician Karst
Joseph A. Fischer, Richard W. Greene, Frank W. Gregory and Joseph J. Fischer ............... 350

Fracture Grouting with Bentonite slurries
C. Ran and J.J.K. Daemen ............................................... 360

Estimation of Chemical Grout Void Filling By Electrical Resistivity
Hideo Komine .................................................. 372

E. Ground Treatment for Tunnels

Soilcrete Cut-Off Wall for Undercrossing a Busy Rail Line
Walter Steiner, Ernst Schneider and Manfred Cartus .................................................. 384

Settlement Reduction by Soil Fracture Grouting
Mario J. Pototschnik .......................................... 398

Integration of Chemical and Cement Grouting Techniques for Controlling Mine Water
Inflows through Fractured Ground
Trevor G. Carter, Stephen H.E. Phillips and Patrick C. Cochrane ........................................ 410

Temporary Tunnel Excavation Support by Chemical Grouting
Francis B. Gularte, Gary E. Taylor and Roy H. Borden .................................................. 423

Tunnel Seepage Control by the Interior Grouting Method
Bruce A. La Penta, Reuben H. Karol and Charles H. Arnold .................................................. 436

Classification of Jointed Rock with Emphasis on Grouting
Lars Hässler, Ulf Håkansson and Håkan Stille .................................................. 449

Computer Simulated Flow of Grouts in Jointed Rock
Lars Hässler, Ulf Håkansson and Håkan Stille .................................................. 461

F. Cement Grouting

Fundamental Observations on Cement Based Grouts (1): Traditional Materials
B. De Paoli, B. Bosco, R. Granata and D.A. Bruce .................................................. 474

Fundamental Observations on Cement Based Grouts (2): Microfine Grouts and the Cemill® Process
B. De Paoli, B. Bosco, R. Granata and D.A. Bruce .................................................. 486

Properties of Cement Grouts and Grouted Sands with Additives
C. Vipulanandan and S. Shenoy .................................................. 500

Effects of Mixing on Rheological Properties of Microfine Cement Grout
Lois G. Schwarz and Raymond J. Krizek .................................................. 512
Preferred Orientation of Pore Structure in Cement-Grouted Sand
Maan Helal and Raymond J. Krizek ........................................ 526

Anisotropic Behavior of Cement-Grouted Sand
Raymond J. Krizek and Maan Helal ........................................ 541

Rheological Properties of Microfine Cement Grouts with Additives
Ulf Hákansson, Lars Hässler and Håkan Stille .......................... 551

G. Remedial Grouting for Dams, Locks and Liquefaction Control

Shallow Soil Mixing—A Case Study
David Broomhead and Brian H. Jasperse ................................ 564

Hybrid Grouting Techniques to Stabilize a Weakly Cemented Sandstone at
King Talal Dam, Jordan
B.A. Anthony, M.P. Bruen, R.R. Mann and Z. Alam .................... 577

Effectiveness of Injected Cement Grout under Harsh Environmental Conditions
G. Ballivy, J.C. Colin and T. Mnif ........................................ 588

Progress and Developments in Dam Rehabilitation by Grouting
Donald A. Bruce ............................................................. 601

Rehabilitation of Concrete Dams: Laboratory Simulation of Cracking and Injectability

Ultrafine Cement Tests and Dam Test Grouting
William J. Clarke, Millard D. Boyd and Maan Helal .................... 626

A Geologist’s Perspective on Dam Foundation Grouting
Kenneth D. Weaver ......................................................... 639

H. Chemical Grouting

Chemical Based Cement Grout System for Rock Grouting
A.V. Shroff and D.L. Shah .................................................. 651

Time-Viscosity Relationships of Newtonian and Binghamian Grouts
A.V. Shroff and D.L. Shah .................................................. 663

Microfine Cement/Sodium Silicate Grout
Hung-Jiun Liao, Raymond J. Krizek and Roy H. Borden ............... 676

Mechanical Properties of Microfine Cement/Sodium Silicate Grouted Sand
Raymond J. Krizek, Hung-Jiun Liao and Roy H. Borden ............... 688

Bonding Strength of Grouts and Behavior of Silicate Grouted Sand
C. Vipulanandan and A. Ata ............................................... 700

Engineering Properties of Acrylate Polymer Grout
Raymond J. Krizek, Dominique F. Michel, Maan Helal and Roy H. Borden .... 712

Current Chemical Grout Engineering in Japan
Ryozo Yonekura and Munehiko Kaga .................................... 725

Subject Index ......................................................................... 737A

Author Index .......................................................................... 738A

Volume 2

I. In-Situ Slope Stabilization

French Research Program CLOUTERRE on Soil Nailing
F. Schlosser, P. Unterreiner and C. Plumelle .............................. 739
Soil Nailing: A Simplified Kinematic Analysis
R. John Byrne ........................................... 751
Recent Progress in American Pinnipe Technology
Donald A. Bruce .......................................... 765
Permanent Excavation Support and Underpinning in Sands: A Case History
Russell J. Morgan, Lawrence F. Johnsen and Franklin M. Gryniewicz ............... 778
Retention System Using Compaction Grouting in Clay Soils
Gary T. Brill and Kenneth E. Darnell ........................................ 791
Use of Cement-Bentonite for Cutoff Wall Construction
B.L. Kilpatrick and S.J. Garner ........................................... 803

J. Reinforcement of Foundation Soils

Site Improvement for a Steel Mill Complex
Eun C. Shin, Braja M. Das and Bang W. Shin ........................................... 816
Design of Floating Stone Columns in Hydraulic Fill
Raymond A. DeStephen, Frank J. Swekosky and David W. Kozera .............. 829
Design and Performance of Two Port Silos on Improved Ground
M.U. Ergun ..................................................... 842
Effect of Soil Treatment on Dynamic Response of Foundations
M.H. Maher and J.P. Welsh .................................................. 855
The Use of Vibro Systems in Seismic Design
Roberto A. López and Robert F. Hayden ........................................... 1433
Seismic Repair at Seventh Street Marine Terminal
John A. Egan, Larry L. Sheibel, Mahmut Otus, Robert F. Hayden and
Gerald M. Serventi .................................................... 867
Grouting for Earthquake Support in Sands
Edward D. Graf ..................................................... 879

K. Densification of Foundation Soils

Deep Compaction by Vibro Wing Technique and Dynamic Compaction
Kaare Senneset and Jarle Nestvold .................................................. 889
Compaction of Granular Soils—Remarks on Quality Control
Michelle Jamiołkowski and Erio Pasqualini ....................................... 902
A New Technique for Quality Control of Dynamic Compaction
Chaim J. Poran, King-Sen Heh and Jorge A. Rodriguez ................................ 915
Dynamic Compaction: Predicting Depth of Improvement
Vince Luongo ......................................................... 927
Dynamic Compaction Engineering Considerations
Robert G. Lukas ..................................................... 940
Densification of Loose Sands by Deep Blasting
Ulrich La Fosse and Theodore von Rosenvinge IV ................................ 954
Investigations on Influence of Vibration Parameters on Compacting of Cohesionless Soils
Jerzy Sekowski ......................................................... 969

L. Improvement of Fine Grained Soils

Cement-Stabilized Soil for Coal Retaining Berms
Gary J. Van Riessen and Kenneth D. Hansen ........................................... 981
Flow Capacity Effect on Vertical Drain Performance
R. Robert Goughnour ..................................................... 993
M. Geosynthetics I—Subgrade and Road Layers

Subgrade and Pavement Improvement with Asphaltic Membranes
Ilan Ishai, Nathan Livnat and Moshe Livneh ........................................... 1067
Experimental and Theoretical Study of Flexural Behavior of Polymer Fiber Reinforced, Cement-Treated Soils
Robert Liang ......................................................................................... 1080
Soft Clay Subgrade Stabilisation Using Geocells
S.Y. Mhaiskar and J.N. Mandal ......................................................... 1092
Reinforced Granular Soil for Track Support
G.P. Raymond, M.S.A. Abdel-Baki, R.G. Karpurapu and R.J. Bathurst ............. 1104
Eccentrically Loaded Plates on Reinforced Subgrades
Vito A. Guido and John J. Nocera ...................................................... 1116

N. Geosynthetics II—Embankments and Slopes

The Evolution of Geotextile Reinforced Embankments
C. Joel Sprague and Michael Koutsourais ............................................. 1129
Stability of Embankments over Weak Soils of Limited Thickness
Radoslaw L. Michalowski ..................................................................... 1142
Factors Influencing Passive Pullout Resistance
Joon-Ik Sohn, Young-Jin Kim, Soo-Il Kim and Dong-Deok Yoon ................. 1153
A New Chart Design for Reinforced Embankments
M. Soubra, C. Coulet and D. Rakotondramanitra .................................... 1163
Interface Friction of Polypropylene Straps
Meijiu J. Wei and Abdemalc Bouazza .................................................. 1175

O. Geosynthetics III—Walls

Design of Geosynthetic-Reinforced Soil Structures
Kh. Farrag and I. Juran ........................................................................ 1188
Two Full Size Structures Reinforced by Geotextiles
Ph. Delmas, Ph. Gotteland, J.P. Gourc and S. Haïdar ............................... 1201
Finite Element Analysis of a Geogrid Reinforced Soil Wall
Richard J. Bathurst, Rajagopal Karpurapu and Peter M. Jarrett ................. 1213
A Computer Program for the Analysis of Reinforced Soil
F. Reyna, D. Humphrey, B. Christopher and J.L. Chameau ....................... 1225
The Behavior of Reinforced Soil Walls Constructed by Different Techniques
A. McGown, K.H. Loke and R.T. Murray ............................................ 1237
Centrifuge Models of Clay-Lime Reinforced Soil Walls
Errol Guler and Deborah J. Goodings ........................................... 1249

P. In-Situ Waste Stabilization

Three Case Histories of Waste Stabilization
Edward L. Kosinski, David S. Martin and Alan R. Ringen ............. 1261

Stabilization and Fixation Using Soil Mixing
Brian H. Jasperse and Christopher R. Ryan ............................. 1273

Improvement of Fuel Oil Contaminated Soils by Additives
Sibel Pamukcu and Hazem Hijazi ........................................... 1285

Hazardous Waste Containment with a Bentonite Cutoff Wall
Chikashi Sato, Derek A. Braithwaite, Angelos Protopapas and Paul P. Stewart ............................................................. 1298

The Use of Dynamic Compaction to Consolidate Nuclear Waste
Cliff Schexnayder and Robert G. Lukas .................................. 1311

Ground Improvement of Rubbish Dump Over Reclaimed Tin Mine
Aziz Mustafa and Mohd Raihan Taha ....................................... 1324

Grouting for Hazardous Waste Site Remediation at Necco Park, Niagara Falls, New York
K.D. Weaver, R.M. Coad and K.R. McIntosh ............................ 1332

Q. Soil Modification and Environmental Geotechnology

Properties of Tire Chips for Lightweight Fill
Dana N. Humphrey and William P. Manion .................................. 1344

Improved Resilient Modulus Realized with Waste Product Mixtures
Seung W. Lee and K.L. Fishman ............................................. 1356

Plastic Waste for Low-Weight Embankments
H. El Ghoche, C. Coulet and D. Daudon .................................. 1368

Principles of Ground Modification with Electromagnetic Waves
J.C. Santamarina and Y.N. Wakim ......................................... 1380

Contaminant-Grout Interaction
Stephen A. Jefferies ............................................................ 1393

Permanence of Grounded Sands Exposed to Various Water Chemistries
John M. Siwula and Raymond J. Krizek ................................. 1403

Electrokinetic Soil Processing (A Review of the State of the Art)
Yalcin B. Acar ........................................................................ 1420

Subject Index ..................................................................... 1447

Author Index ..................................................................... 1451