Environmental Geotechnics and Problematic Soils and Rocks

Edited by
A.S.BALASUBRAMANIAM, S.CHANDRA, D.T.BERGADO & PRINYA NUTALAYA
Asian Institute of Technology, Bangkok

A.A.BALKEMA / ROTTERDAM / BROOKFIELD / 1988
Contents

Preface  ix
Lek Kanchanaphol, 1925-1985 xi

Section A: Geotechnical control and environmental protection
Slope evolution on coal-mine disturbed land  3
Martin J. Haigh
Fly ash utilization for soil improvement  15
R.C. Joshi & T.S. Nagaraj
Systems analysis in multi-dam reservoir systems including water quantity and quality controls  25
T. Kojiri
Development energy and the environment: India  39
K.S. Murty
Divagation of stabilized pavement materials  45
T. Ramamurthy, G. Venkatappa Rao & C.P. Nag
Engineered clay liners: A short review  63
R.M. Quigley, F. Fernandez & V.E. Crooks
Environmental protection of human settlements from technological hazards — Report on the state-of-art in the development of industrial towns in India  75
R.C. Gupta
Improvement of geotechnical properties of residual sand with rice husk ash  95
Md. Anisur Rahman
Some geotechnical aspects of seismic response  101
P.J. Moore
Road damage due to ground freezing in the Republic of Korea and a method to predict frost depth for pavement design  115
Daesuk Han
Soil-cement technology: A key instrument for rural housing development  123
V. Poopath
Modeling of gradual earth-fill dam erosion
Vijay P. Singh & Panagiotis D. Scarlatos

A study on the use of sea water in lime and cement stabilization
Zaki A. Baghdadi & Ahmed M. Khan

Statistical analysis on road slope collapse
K. Makiuchi, S. Hayashi & S. Mino

Soil-pollutant interaction effects on the soil behavior and the stability of foundation structures
Hsai-Yang Fang

Engineering behaviour of soils contaminated with different pollutants
A. Sridharan & P. V. Sivapullaiah

Effect of polluted water on the physico-chemical properties of clayey soils
P. V. Sivapullaiah & A. Sridharan

Measurement of traffic-induced vibrations on Lopburi historical monument, Thailand
Ikuo Towhata

Relation between physical properties of soils and effects of chemical stabilization
Haruyuki Nakayama & Yuji Miura

Section B: Environmental geotechnical aspects of major infra-structure projects

Environmental and geotechnical considerations for the use of bored tunnels in urban areas
Ian McFeat-Smith

Geotechnical modelling – An engineering approach to problems of mechanical interaction of construction work and natural geological environment
Ján P. Jesenák

Environmental aspects of underground space development in Kansas City, USA
Syed E. Hasan

Study on the utilisation of steel slag as ballast material
S. D. Ramaswamy, S. C. Kheok & Y. Tanaboriboon

Geotechnical considerations in storage sewer operations
D. J. Hagerty

Environmental aspects related to Sabarmati river bank structures
R. C. Sonpal

Cakar Ayam construction system – Pavement and foundation system for structures on soft soil
Rijanto P. Hadmodjo

Experimental study on concrete block retaining walls
K. Makiuchi, S. Hayashi, T. Yamanouchi & S. Mino

Geology of a stream terrace deposit in Massachusetts and its utilization as aggregate
Oswald C. Farquhar
Typical landforms and slope stability of the Zagros Mountains along the Shiraz-Boushire road in Southwestern Iran

G.Rantucci

Section C: Environmental geotechnical aspects of natural hazards

Effects of forest roads on watershed function in mountainous areas

Walter F. Megahan

The Deep Creek Mudflow of April 16, 1979, Uintah County, Utah, USA

Benjamin L. Everitt & Andrew E. Godfrey

A landslide in clayshales: Environmental damages and measures for restoration

P. Jagannatha Rao

Role of remote sensing in the detection of potential sites for landslides/rockfalls in the Deccan Trap lava terrain of Western India

V.V. Peshwa & Vivek S. Kale

Mechanics of deposition of sand (and dust formation in sand storms)

A.V. Jalota

Reducing landslide hazards

William J. Kockelman

Section D: Wastes and their use

New theoretical models for waste disposal sites with clay liners

R. Kerry Rowe & John R. Booker

Land waste disposal systems

T. Viraraghavan

Sanitary landfill treatment, Interstate Highway 84

Philip Keene

Colliery wastes in the United Kingdom – Findings and implications: 1966-1985

R. K. Taylor

New process of sewage sludge treatment and utilization of slag for construction materials

S. Iwai, T. Kawakatsu & Y. Miura

Section E: Problematic soils and rocks

Strength of a compacted mudstone

R. H. Chen & J. J. Wang

Improvement of dispersive soils by mixing with Bangkok clay or bentonite

D. T. Bergado & K. -Y. Kang

Mathematical models for saturated expansive soils with and without CNS

R. K. Katti, K. K. Moza & Dinesh R. Katti
Comparative study of problematic soils in two areas around Cairo
Mohamed A.El-Sohby, S.Ossama Mazen & Azza M.Elleboudy

Effects of particle breakage on mechanical characteristics of decomposed granite soils
K.Makiuchi, T.Miyamori & S.Iwai

Geotechnical properties of the very sensitive Ariake clay in Saga plain
R.Nakamura, K.Onitsuka, G.Aramaki & N.Miura

Influence of initial water content and soaking on compressibility and shear strength of decomposed granite soil
K.Onitsuka & S.Yoshitake

Instability detection in rock
Blahoslav Kostak