

# GEOTECHNICAL ENGINEERING

## TABLE OF CONTENTS

### Special Issue on Geosynthetic-reinforced Earth Structures

Guest Editor: Jie Han

| <u>Paper Title</u>                                                                                                                                          | <u>Pages</u> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <b>Some Issues in Geosynthetic Reinforced Walls and Slopes</b><br><i>by D. Leshchinsky</i>                                                                  | 1 – 8        |
| <b>Advance in Geogrid Reinforced Slopes in Malaysia</b> <i>by</i><br><i>T.A. Ooi and C.H. Tee</i>                                                           | 9 – 34       |
| <b>Embankment Construction with Saturated Clayey Fill Material Using Geocomposites</b><br><i>by J.-C. Chai, T. Hino, Y. Igaya, and Y. Yamauchi</i>          | 35 – 41      |
| <b>Numerical Modeling of Geosynthetic-Reinforced Earth Structures and Geosynthetic-Soil Interactions</b><br><i>by J. Huang, A. Bhandari, and X. Yang</i>    | 42 – 55      |
| <b>Geosynthetic Tubes and Geosynthetic Mats: Analyses and Applications</b><br><i>by J. Chu, W. Guo, and S.W. Yan</i>                                        | 56 – 65      |
| <b>Performance-based Design for Geosynthetic Liner Systems in Landfills</b><br><i>by Y.M. Chen, W.A. Lin, B. Zhu, and L.T. Zhan</i>                         | 66 – 73      |
| <b>Quantifying the Influence of Geosynthetics on Performance of Reinforced Granular Bases in Laboratory</b><br><i>by J. Han, Y. Zhang, and R.L. Parsons</i> | 74 – 83      |

# GEOTECHNICAL ENGINEERING

## TABLE OF CONTENTS

### Special Issue on Pile Foundations

Guest Editor: Tatsunori Matsumoto

| <u>Paper Title</u>                                                                                                                                                     | <u>Pages</u> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <b>Field Measurements on Piled Rafts with Grid-Form Deep Mixing Walls on Soft Ground</b><br><i>by Kiyoshi Yamashita, Junji Hamada and Takeshi Yamada</i>               | 1-10         |
| <b>Static Axial Reciprocal Load Test of Cast-in-place Nodular Concrete Pile and Nodular Diaphragm Wall</b><br><i>by K. Watanabe, H. Sei, T. Nishiyama and Y. Ishii</i> | 11-19        |
| <b>Vertical Load Test and Settlement Analysis of Cast-in-place Concrete Nodular Piles Supporting a High-Rise Building</b><br><i>by N. Suzuki and T. Seki</i>           | 20-28        |
| <b>Extended Use of Spring Hammer Rapid Load Testing</b><br><i>by K. Matsuzawa and T. Matsumoto</i>                                                                     | 29-42        |
| <b>Push-up Load Tests Using Uncrushable Particles and Its DEM Analyses</b><br><i>by SuriyahThongmunee, Shun-ichi Kobayashi and Tatsunori Matsumoto</i>                 | 43-55        |
| <b>On Design and Construction of Pile Group Foundation of Taipei 101</b><br><i>by Ching-Han Yu</i>                                                                     | 56-69        |
| <b>Capacity versus Deformation Analysis for Design of Footings and Pile Foundations</b><br><i>by Bengt H. Fellenius</i>                                                | 70-77        |
| <b>Pile Raft Foundations for Tall Buildings</b><br><i>by H.G. Poulos, J.C. Small and H. Chow</i>                                                                       | 78-84        |
| <b>Foundation Design of the 151 Story Incheon Tower in a Reclamation Area</b><br><i>by Ahmad Abdelrazaq, Frances Badelow, Sung Ho-Kim, Harry G. Poulos</i>             | 85-93        |

# GEOTECHNICAL ENGINEERING

## Special Issue on DEEP EXCAVATIONS

*Guest Editor: Prof. Chang-Yu Ou*

## TABLE OF CONTENTS

| <u>List of Papers</u>                                                                                                                                                     | <u>Page</u> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>Building Damage Assessment for Deep Excavations in Singapore and the Influence of Building Stiffness</b><br><i>by K.H. Goh and R.J. Mair</i> .....                     | 1-12        |
| <b>Concept and Design Methodology of Redundancy in Braced Excavation and Case Histories</b><br><i>by G. Zheng, X.S. Cheng, Y. Diao, and H.X. Wang</i> .....               | 13-21       |
| <b>Three-Dimensional Deformation Behavior of an Over-sized Excavation in Shanghai Clay</b><br><i>by Y. M. Hou, J. H. Wang and D-S. Jeng</i> .....                         | 22-29       |
| <b>Numerical Study on the Movement of Existing Tunnel Due to Deep Excavation in Shanghai</b><br><i>by J. J. Chen, J. H. Wang, G. W. Xiang, S. L. Wen, and Y. Du</i> ..... | 30-40       |
| <b>Observed Performance of Diaphragm Wall Construction</b><br><i>by C.Y. Ou and L.L. Yang</i> .....                                                                       | 41-49       |
| <b>Performance of Construction with New Pneumatic Caisson Method in Shanghai Soft Ground</b><br><i>by F.L. Peng and H.L. Wang</i> .....                                   | 50-58       |
| <b>Technologies of Micro-disturbance Construction of Pipe-Jacking</b><br><i>by W. Q. Ding, B. Li, S. L. Yuan and J. K. Ge</i> .....                                       | 59-64       |
| <b>Design and Construction of InJe Tunnel, the Longest Road Tunnel of Korea</b><br><i>by S. M. Cho, S. D. Lee, and Y. J. Kwon</i> .....                                   | 65-74       |

# GEOTECHNICAL ENGINEERING

Special Issue on Soil Behaviour  
Guest Editor: Dr. Dariusz Wanatowski

## TABLE OF CONTENTS

| <u>List of Papers</u>                                                                                                                                                          | <u>Page</u> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>Research Papers:</b>                                                                                                                                                        |             |
| <b>Dilation and Stability of Sand in Triaxial Tests</b><br><i>by A. Sawicki</i>                                                                                                | 1 - 9       |
| <b>The Strength Anisotropy of a Residual Soil in Singapore</b><br><i>by G. Meng and J. Chu</i>                                                                                 | 10 - 18     |
| <b>Effect of Boundary Conditions on Shear Banding in True Triaxial Tests on Sand</b><br><i>by P.V. Lade and Q. Wang</i>                                                        | 19 - 25     |
| <b>Behavioural Patterns of Fine Sands</b><br><i>by V.N. Georgiannou</i>                                                                                                        | 26 - 41     |
| <b>Simulating Shear Rate-Dependent Undrained Stress-Strain Behaviour of Natural Sedimentary Clay at Kobe Airport</b><br><i>by M.-S. Jung and S. Shibuya</i>                    | 42 - 52     |
| <b>Experimental Investigation on Settling Behavior of Hong Kong Marine Deposits in Settling Column Condition</b><br><i>by F. Tong J.H. Yin and G.F. Zhu</i>                    | 53 - 57     |
| <b>Development of a Hollow Cylinder Torsional Apparatus for Pre-failure Deformation and Large Strains Behaviour of Sand</b><br><i>by E. Ibraim, P. Christiaens and M. Pope</i> | 58 - 68     |
| <b>Effect of High Confining Pressure on the Behaviour of Fibre Reinforced Sand</b><br><i>by S. Ud-din, A. Marri and D. Wanatowski</i>                                          | 69 - 76     |
| <b>TECHNICAL NOTE</b>                                                                                                                                                          |             |
| <b>A Comment on the Ratio of the Maximum and Minimum Dry Density for Sand</b><br><i>by E. Imre, S. Fityus, E. Keszeyne and T. Schanz</i>                                       | 77 - 82     |

# GEOTECHNICAL ENGINEERING

## Special Issue on Unsaturated Soil Mechanics And Engineering

*Guest Editors: Charles W. W. Ng & Apiniti Jotisankasa*

### TABLE OF CONTENTS

| <u>List of Papers</u>                                                                                                                                                     | <u>Page</u> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>Some Applications Of Unsaturated Soil Mechanics In Thailand: An Appropriate Technology Approach</b><br><i>by W. Mairaing, A. Jotisankasa and S. Soralump</i>           | 1 - 11      |
| <b>Calculation Of Heave Of Deep Pier Foundations</b><br><i>by J.D. Nelson, K.C. Chao, D.D. Overton and R.W. Schaut</i>                                                    | 12 -25      |
| <b>In-Situ And Laboratory Investigations Of Stress-Dependent Permeability Function And SDSWCC From An Unsaturated Soil Slope</b><br><i>by C. W. W. Ng and A. K. Leung</i> | 26 -39      |
| <b>Measurements Of Shrinkage Induced Pressure (Sip) In Unsaturated Expansive Clays</b><br><i>by A.J. Puppala, T. Wejrungsikul, V. Puljan and T. Manosuthikij</i>          | 40 - 47     |
| <b>Unsaturated Soil Mechanics For Slope Stabilization</b><br><i>by H. Rahardjo, A. Satyanaga, E. C. Leong</i>                                                             | 48 - 58     |
| <b>The Development Of Unsaturated Soil Mechanics At Imperial College, London</b><br><i>by J.R. Standing</i>                                                               | 59 - 75     |
| <b>Climate Change And The Role Of Unsaturated Soil Mechanics</b><br><i>by D.G. Toll, J. Mendes, P.N. Hughes, S. Glendinning and D. Gallipoli</i>                          | 76 - 82     |
| <b>Some Mining Applications Of Unsaturated Soil Mechanics</b><br><i>by D.J. Williams</i>                                                                                  | 83 - 98     |

# GEOTECHNICAL ENGINEERING

## Special Issue on Geotechnical Earthquake Engineering

**Guest Editors: Prof. Ikuo Towhata, Prof. Der Wen Chang & Dr. Ivan Gratchev**

## TABLE OF CONTENTS

| <u>List of Papers</u>                                                                                                                                                                                | <u>Page</u> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>Proposed Changes to the Geotechnical Earthquake Engineering Provisions of the Bangladesh National Building Code</b><br><i>by Tahmeed M. Al-Hussaini, Tahsin R. Hossain and M. Hayeem Al-Noman</i> | 01 - 07     |
| <b>Analysis of Soil Liquefaction during the Recent Canterbury (New Zealand) Earthquakes</b><br><i>by RP Orense, MJ Pender and LM Wotherspoon</i>                                                     | 08 - 17     |
| <b>Numerical Simulation of Seismic Slope Stability Analysis based on Tension-Shear Failure Mechanism</b><br><i>by Yingbin Zhang, Guangqi Chen, Jian Wu, Lu Zheng, Xiaoying Zhuang</i>                | 18 - 28     |
| <b>A Real-time Prediction Method for Regional Rainfall-induced Geohazards in Post-earthquake Region of Wenchuan Earthquake</b><br><i>by Z. Yang, J. Qiao, H. Tian, D. Huang, M. Wang and H. Meng</i> | 29 - 32     |
| <b>Effects of Anisotropic Consolidation and Stress Reversal on the Liquefaction Resistance of Sands and Silty Sands</b><br><i>by Abbas Galandarzadeh and Alireza Ahmadi</i>                          | 33 - 39     |
| <b>Characteristics of Slope Failures During Natural Disasters Considering Geographical Features and Groundwater Level: Case Study of the Chuetsu Region of Niigata, Japan</b><br><i>by H. Toyota</i> | 40 - 48     |
| <b>Overview of the Geotechnical Damages and the Technical Problems Posed after the 2011 off the Pacific Coast of Tohoku Earthquake</b><br><i>by M. Kazama, T. Noda, T. Mori and J. Kim</i>           | 49 - 56     |
| <b>Development of Potentail Map for Landslides Induced by the Chi-Chi Earthquake Using Instability Index</b><br><i>by Meei-Ling Lin and Yu-Hung Shu</i>                                              | 57 - 64     |
| <b>Technical Notes:</b>                                                                                                                                                                              |             |
| <b>Geotechnical Hazards with Emphasis on Seismically-Combined Effects on Slopes</b><br><i>by Ikuo Towhata</i>                                                                                        | 65 - 70     |
| <b>Monitoring on Earthquake Induced Landslide - A Case Study in Northwest Chengdu, China</b><br><i>by Hongling Tian, Jianping Qiao., Taro Uchimura and Lin Wang</i>                                  | 71 - 74     |

# GEOTECHNICAL ENGINEERING

## Special Issue on Geosynthetics and Sanitary Landfill

*Guest Editor: Prof. Abdelmalek Bouazza*

### TABLE OF CONTENTS

| <u>List of Papers</u>                                                                                                                                                                        | <u>Page</u> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>Waste/Lining System Interaction: Implications for Landfill Design and Performance</b><br><i>by N. Dixon, K. Zamara1, D.R. V. Jones and G. Fowmes</i>                                      | 1-10        |
| <b>Wrinkling of a Geomembrane on a Compacted Clay Liner on a Slope</b><br><i>by R. K. Rowe, P. Yang, M.J. Chappel, R.W.I. Brachman , W.A. Take</i>                                           | 11-18       |
| <b>Diffusion of phenolic compounds through an HDPE geomembrane</b><br><i>by N. Touze-Foltz, M. Ahari, M. Mendes, C. Barral, M. Gardoni and L. Mazéas</i>                                     | 19-29       |
| <b>Shear-Induced Geomembrane Damage due to Gravel in Underlying Compacted Clay</b><br><i>by P. J. Fox, C. Athanassopoulos, S. S. Thielmann, and A. N. Stern</i>                              | 30-34       |
| <b>Evaluation of mineral barriers against acid rock drainage</b><br><i>by A. Naka, T. Katsumi, G. Flores, T. Inui, T. Ohta, T. Urakoshi, and T. Ishihara</i>                                 | 35-42       |
| <b>Improvement on the Performance of Geosynthetic Clay Liners Using Polymer Modified Bentonite</b><br><i>by Y. Liu, W. P. Gates and A. Bouazza</i>                                           | 43-45       |
| <b>Effect of Settlement rate and Geogrid reinforcement on the Deformation Behaviour of Soil barriers of Landfill Covers: Centrifuge Study</b><br><i>by S. Rajesh and B. V.S. Viswanadham</i> | 46-54       |
| <b>Effect of differential settlements on the sealing efficiency of GCLs compared to CCLs: Centrifuge Study</b><br><i>by B.V.S. Viswanadham, S. Rajesh and A. Bouazza</i>                     | 55-61       |
| <b>Geosynthetic Lining System for Modern Waste Facilities – Experiences in Developing Asia</b><br><i>by H. B. Ng and B. Ramsey</i>                                                           | 62-67       |
| <b>The Use of Geosynthetics in Major Metropolitan Landfills in Perth, WA – Two Case Studies</b><br><i>by L. Du Preez, R. Beaman and I. Watkins</i>                                           | 68-70       |

# GEOTECHNICAL ENGINEERING

## Special Issue on In-situ Testing of Soils

**Guest Editors:** Tom Lunne and Don J. DeGroot

## TABLE OF CONTENTS

| <b><u>List of Papers</u></b>                                                                                                                            | <b><u>Page</u></b> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| <b>Evaluation of existing CPT correlations in silt</b> ..... 1 - 10<br><i>by A. S. Bradshaw, A. C. Morales-Velez and C.D.P. Baxter</i>                  |                    |
| <b>Characterisation of quick clay at Dragvoll, Trondheim, Norway</b> .....11 - 23<br><i>by A. Emdal, M. Long, A. Bihs, A. Gylland and N. Boylan</i>     |                    |
| <b>Field response of push-in earth pressure cells for instrumentation and site characterization of soils</b> .....24 - 33<br><i>by Alan J. Lutenege</i> |                    |
| <b>Frequent-interval SDMT and continuous SCPTu for detailed shear wave velocity profiling in soils</b> .....34 - 40<br><i>by T. Ku and P.W. Mayne</i>   |                    |
| <b>In situ testing of peat – a review and update on recent developments</b> .....41 - 55<br><i>by M. Long and N. Boylan</i>                             |                    |
| <b>Understanding the stiffness of soils in Singapore from pressuremeter testing</b> ..... 56 - 62<br><i>by K.H. Goh, K. Jeyatharan and D. Wen</i>       |                    |
| <b>In situ measurement of hydraulic conductivity of saturated soils</b> ..... 63 - 71<br><i>by D.J. DeGroot, D.W. Ostendorf and A.I. Judge</i>          |                    |
| <b>Rate effect on cone penetration test in sand</b> .....72 - 81<br><i>by F. A. B. Danziger and T. Lunne</i>                                            |                    |



# GEOTECHNICAL ENGINEERING

**March 2013: Contributed papers**

**Editors: D W Chang and Dariusz Wanatowski**

## TABLE OF CONTENTS

| <b><u>List of Papers</u></b>                                                                                                      | <b><u>Page</u></b> |
|-----------------------------------------------------------------------------------------------------------------------------------|--------------------|
| <b>Some factors affecting deep excavation in clay over gassy bedrock .....</b>                                                    | <b>1 - 8</b>       |
| <i>By Ahmed B. Mabrouk and R. Kerry Rowe</i>                                                                                      |                    |
| <b>Effects of Consolidation and Specimen Disturbance on Strengths of Taipei Clays .....</b>                                       | <b>9 - 18</b>      |
| <i>By Richard N. Hwang, Za-Chieh Moh and I-Chou Hu</i>                                                                            |                    |
| <b>Lime Stabilisation of Organic Clay and the Effects of Humic Acid Content .....</b>                                             | <b>19 - 25</b>     |
| <i>By N.Z. Mohd Yunus, D. Wanatowski and L.R. Stace</i>                                                                           |                    |
| <b>Estimating Wetting-induced Settlement of Compacted Soils using Oedometer Test .....</b>                                        | <b>26 - 33</b>     |
| <i>By E.C. Leong, S. Widiastuti and H. Rahardjo</i>                                                                               |                    |
| <b>Compaction Curve with Consideration of Time and Temperature Effects for Mudstones .....</b>                                    | <b>34 - 39</b>     |
| <i>By A. Puttiwongrak, H. Honda, T. Matsuoka and Y. Yamada</i>                                                                    |                    |
| <b>Small strain behavior of sand under various stress paths considering anisotropic initial stress state.....</b>                 | <b>40 - 46</b>     |
| <i>By Lai Yong, Shi Jian-yong, Yu Xiao-jun and Cao Qiu-rong</i>                                                                   |                    |
| <b>Study of Joint Effect on Pipe in Pipe Jacking Method .....</b>                                                                 | <b>47 - 56</b>     |
| <i>By L. G. Le, M. Takise, M. Sugimoto and K. Nakamura</i>                                                                        |                    |
| <b>Finite Element Analysis of Ground Behaviour due to Box-jacking Tunnel Work .....</b>                                           | <b>57 - 60</b>     |
| <i>By K. Komiya and T. Nakayama</i>                                                                                               |                    |
| <b>Tunneling Induced Deformation of a Historic Building in Shanghai .....</b>                                                     | <b>61 - 67</b>     |
| <i>By Shi-ping Gea, Dong-wu Xied, Wen-qi Dinga, Ya-fei Qiao and Jin-chun Chai</i>                                                 |                    |
| <b>In-situ monitoring of internal displacements by FBG sensors and slope stability analysis under rainfall infiltration .....</b> | <b>68 - 74</b>     |
| <i>By Dongsheng Xu, Fei Tong, Huahu Pei, and Jianhua Yin</i>                                                                      |                    |
| <b>Mechanistic-Empirical Pavement Design; A Brief Overview .....</b>                                                              | <b>75 - 82</b>     |
| <i>By A. T. Papagiannakis</i>                                                                                                     |                    |

# GEOTECHNICAL ENGINEERING

## June 2013: Modelling Aspects of Soil Behaviour

**Editors: Akira Murakami**

**Dariusz Wanatowski**

### TABLE OF CONTENTS

| <u>List of Papers</u>                                                                                                                   | <u>Page</u>    |
|-----------------------------------------------------------------------------------------------------------------------------------------|----------------|
| <b>Soil-water-air coupled finite element analysis of model test on slope failure in unsaturated soil .....</b>                          | <b>1 - 8</b>   |
| <i>By Y.L. Xiong, X.H. Bao and F. Zhang</i>                                                                                             |                |
| <b>Relation between seepage force and velocity of sand particles during sand boiling .....</b>                                          | <b>9 - 17</b>  |
| <i>By K. Fujisawa, A. Murakami, S. Nishimura and T. Shuku</i>                                                                           |                |
| <b>A density-and stress-dependent elasto-plastic model for sands subjected to .....<br/>monotonic undrained torsional shear loading</b> | <b>18 - 26</b> |
| <i>By G. Chiaro, J. Koseki and L.I. Nalin De Silva</i>                                                                                  |                |
| <b>1-G model test with digital image analysis for seismic behavior of earth dam .....</b>                                               | <b>27 - 34</b> |
| <i>By Y. Miyanaga, A. Kobayashi and A. Murakami</i>                                                                                     |                |
| <b>X-ray CT imaging of 3-D bearing capacity mechanism for vertically loaded shallow foundations .....</b>                               | <b>35 - 41</b> |
| <i>By D. Takano, J. Otani, M. Nakamura, and R. Mokwa</i>                                                                                |                |
| <b>Modeling and bending test simulations of cement treated soil .....</b>                                                               | <b>42 - 47</b> |
| <i>By K. Kaneda, T. Tanikawa and S. Onimaru</i>                                                                                         |                |
| <b>Modelling viscous effects during and after construction in London Clay .....</b>                                                     | <b>48 - 54</b> |
| <i>By S. D. Clarke and C. C. Hird</i>                                                                                                   |                |

# GEOTECHNICAL ENGINEERING

**September 2013: Numerical Analyses**

**Guest Editors:**

**Prof. Fusao Oka & Prof. Helmut F. Schweiger**

## TABLE OF CONTENTS

| <u>List of Papers</u>                                                                                                                                                           | <u>Page</u> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>Numerical Simulation of the Rainfall Infiltration on Unsaturated Soil Slope Considering a Seepage Flow</b><br><i>By S.Kimoto, F.Oka and E.Garcia</i>                         | 1 – 13      |
| <b>Seismic Response of Gravity-Cantilever Retaining Wall Backfilled with Shredded Tire</b><br><i>By N. Ravichandran and E. L. Huggins</i>                                       | 14 – 24     |
| <b>Numerical modeling of lateral response of long flexible piles in sand</b><br><i>By Md. Iftekharuzzaman and Bipul C Hawlader</i>                                              | 25 – 31     |
| <b>A New Sampling Algorithm in Particle Filter for Geotechnical Analysis</b><br><i>By T. Shuku, S. Nishimura, K. Fujisawa and A. Murakami</i>                                   | 32 – 39     |
| <b>Comparison of deep foundation systems using 3D finite element analysis employing different modeling techniques</b><br><i>By F. Tschuchnigg &amp; H.F. Schweiger</i>          | 40 – 46     |
| <b>Application of a constitutive model for swelling rock to tunnelling</b><br><i>By B. Schadlich, T. Marcher and H.F. Schweiger</i>                                             | 47 – 54     |
| <b>Finite element modelling of seismic liquefaction in soils</b><br><i>By V. Galavi, A. Petalas and R.B.J. Brinkgreve</i>                                                       | 55 – 64     |
| <b>Random Wave-Induced Seabed Responses around Breakwater Heads</b><br><i>By Y Zhang, D-S Jeng, Z-W Fu and J Ou</i>                                                             | 65 – 83     |
| <b>Influence of brittle property of cement treated soil on undrained bearing capacity characteristics of the ground</b><br><i>By S. Yamada, T. Noda, A. Asaoka and T. Shina</i> | 84 – 93     |

# GEOTECHNICAL ENGINEERING

**December 2013: Commemorative Issue on  
Prof. D. T. Bergado's Retirement from AIT**  
Editors: Prof. Jinchun Chai & Prof. Shui-Long Shen

## TABLE OF CONTENTS

| <u>List of Papers</u>                                                                                                                                                                                                                | <u>Page</u> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>Part I General papers</b>                                                                                                                                                                                                         |             |
| <b>Behaviour of Clay Subjecting to Vacuum and Surcharge Loading in an Oedometer</b><br><i>By J.-C. Chai, J. P. Carter, A. Saito and T. Hino</i> -----                                                                                | 1           |
| <b>Behaviour of Geogrid Reinforced Abutments on Soft Soil</b><br><i>By Ennio M. Palmeira, André R.S. Fabel and Gregório. L. S. Araújo</i> -----                                                                                      | 9           |
| <b>Geocell-Reinforced Granular Fill under Static and Cyclic Loading: A Synthesis of Analysis</b><br><i>By X. Yang and J. Han</i> -----                                                                                               | 17          |
| <b>Electrical Vertical Drains in Geotechnical Engineering Applications</b><br><i>By J. K. Lee and J.Q. Shang</i> -----                                                                                                               | 24          |
| <b>Design and Performance of Soft Ground Improvement Using PVD with and without Vacuum Consolidation</b><br><i>By P.V. Long, D.T. Bergado, L.V. Nguyen and A.S. Balasubramaniam</i> -----                                            | 36          |
| <b>Reassessment of Long-Term Performance of Geogrids by Considering Mutual Interaction among Reduction Factors</b><br><i>By Han-Yong Jeon and Yuan Chun Jin</i> -----                                                                | 52          |
| <b>Part II State-of-the-art (review type) papers</b>                                                                                                                                                                                 |             |
| <b>Simulations of PVD Improved Reconstituted Specimens with Surcharge, Vacuum and Heat Preloading using Axisymmetric and Equivalent Vertical Flow Conditions</b><br><i>By P. Votipruex and D.T. Bergado, and W. Wongprasan</i> ----- | 61          |

|                                                                                                                                                                     |     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Reinforced Embankments on Soft Deposits: Behaviour, Analysis and Design</b><br><i>By C. Taechakumthorn and R.K. Rowe</i> -----                                   | 69  |
| <b>Current State of the Art in Vacuum Preloading for Stabilising Soft Soil</b><br><i>By C. Rujikiatkamjorn and B. Indraratna</i> -----                              | 77  |
| <b>Jet Grouting Practice: an Overview</b><br><i>By Z.F. Wang, S.L. Shen, C.E. Ho and Y.H. Kim</i> -----                                                             | 88  |
| <b>Deep Mixing Method in Japan</b><br><i>By Masaki Kitazume</i> -----                                                                                               | 97  |
| <b>Recent Studies of Geosynthetic Tubes and Matterres: an overview</b><br><i>By Wei Guo, Jian Chu and Shuwang Yan</i> -----                                         | 115 |
| <b>Design Method for Bearing Reinforcement Earth Wall</b><br><i>By S. Horpibulsuk, C. Suksiripattanapong and A. Chinkulkijniwat</i> -----                           | 125 |
| <b>Current State of Knowledge on Thermal Consolidation using Prefabricated Vertical Drains</b><br><i>By H. M. Abuel-Naga, G. A. Lorenzo and D. T. Bergado</i> ----- | 132 |

# GEOTECHNICAL ENGINEERING

**March 2014: Geotechnics for Advancing Transport Infrastructure**

**Editors: Prof. Buddhima Indraratna & Dr. Chalachat Rujikiatkamjorn**

## TABLE OF CONTENTS

| <u>List of Papers</u>                                                                                                                                | <u>Page</u> |
|------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>Geosynthetic-Reinforced Soil Structures for Railways: Twenty Five Year Experiences in Japan.....</b>                                              | <b>01</b>   |
| <i>by F. Tatsuoka, M. Tateyama, J. Koseki and T. Yonezawa</i>                                                                                        |             |
| <b>Enhancement of Rail Track Performance through Utilisation of Geosynthetic Inclusions .....</b>                                                    | <b>17</b>   |
| <i>by Buddhima Indraratna, Sanjay Nimbalkar, and Chalachat Rujikiatkamjorn</i>                                                                       |             |
| <b>Railway Track Transition Dynamics and Reinforcement Using Polyurethane GeoComposites.....</b>                                                     | <b>28</b>   |
| <i>by P. Woodward, O. Laghrouche and A. El-Kacimi</i>                                                                                                |             |
| <b>How to Overcome Geotechnical Challenges in Implementing High Speed Rail Systems in Australia .....</b>                                            | <b>39</b>   |
| <i>by H. Khabbaz and B. Fatahi</i>                                                                                                                   |             |
| <b>Maintenance Model for Railway Substructure .....</b>                                                                                              | <b>48</b>   |
| <i>by Ali Ebrahimi, James M. Tinjum, and Tuncer B. Edil</i>                                                                                          |             |
| <b>Dynamic Behaviour of Railway Ballasted Track Structures in Shaking Table Tests<br/>and Seismic Resistant Performance Evaluation in Japan.....</b> | <b>56</b>   |
| <i>by T. Ishikawa, S. Miura and E. Sekine</i>                                                                                                        |             |
| <b>Mechanical Properties of Polyurethane-Stabilized Ballast.....</b>                                                                                 | <b>67</b>   |
| <i>by A. Keene, J.M. Tinjum, and T.B. Edil</i>                                                                                                       |             |
| <b>Dependency of Cyclic Plastic Deformation Characteristics of Unsaturated Recycled<br/>Base Course Material on Principal Stress Axis Rotat.....</b> | <b>74</b>   |
| <i>by A. Inam, T. Ishikawa, and S. Miura</i>                                                                                                         |             |
| <b>Quickness Test Approach for Assessment of Flow Slide Potentials .....</b>                                                                         | <b>85</b>   |
| <i>by V. Thakur and S. A. Degago</i>                                                                                                                 |             |
| <b>Cement Stabilization for Pavement Material in Thailand.....</b>                                                                                   | <b>95</b>   |
| <i>by S. Horpibulsuk, A. Chinkulkijniwat, A. Suddepong, and A. Neramitkornburee</i>                                                                  |             |
| <b>Stone Columns Field Test: Monitoring Data and Numerical Analyses .....</b>                                                                        | <b>103</b>  |
| <i>by Marcio Almeida, Bruno Lima, Mario Riccio, Holger Jud, Maria Cascão, Felipe Roza</i>                                                            |             |
| <b>Technical Note:<br/>Numerical Analysis of Response of Geocell Confined Flexible Pavement .....</b>                                                | <b>113</b>  |
| <i>by G. L Sivakumar Babu and Ram Babu</i>                                                                                                           |             |

# GEOTECHNICAL ENGINEERING

## JUNE 2014: SPECIAL ISSUE ON DEEP FOUNDATION

**Editors: Tatsunori Matsumoto, Jurgen Grabe & Der Wen Chang**

### TABLE OF CONTENTS

| <u>List of Papers</u>                                                                                                                                                                                        | <u>Page</u> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>Numerical Investigation of Passive Loads on Piles in Soft Soils</b><br><i>By C. Moormann and J. Aschrafi</i>                                                                                              | <b>01</b>   |
| <b>Numerical Simulation of an Energy Pile Using Thermo-Hydro-Mechanical Coupling and a Visco-Hypoplastic Model</b><br><i>By Xiaolong Ma, Gang Qiu, Jürgen Grabe</i>                                          | <b>12</b>   |
| <b>Numerical Studies on Dynamic Load Testing of an Open-ended Pipe Pile and a Case Study</b><br><i>By L. Phan Ta, T. Matsumoto and H. Nguyen Hoang</i>                                                       | <b>17</b>   |
| <b>Performance of Piled Raft Foundation Subjected to Strong Seismic Motion</b><br><i>By K. Yamashita, T. Hashiba, H. Ito and T. Tanikaw</i>                                                                  | <b>33</b>   |
| <b>Static Cyclic Load Tests on Model Foundations in Dry Sand</b><br><i>By Y.S. Unsever, T. Matsumoto, S. Shimono and M.Y. Özkan</i>                                                                          | <b>40</b>   |
| <b>Axial Bearing Behaviour of a Model Pile in Sand Under Multiple Static Cycles</b><br><i>By J. H. Hwang, Z. X. Fu, P. Y. Yeh, D. W. Chang</i>                                                               | <b>52</b>   |
| <b>Seismic PBD of Piles from Monte Carlo Simulation Using EQWEAP Analysis with Weighted Intensities</b><br><i>By D.W. Chang, Y.H. Lin, H.C. Chao, S.C. Chu and C.H. Liu</i>                                  | <b>62</b>   |
| <b>Case Studies on Response of Laterally Loaded Nonlinear Piles</b><br><i>By Wei Dong Guo</i>                                                                                                                | <b>70</b>   |
| <b>le Tip Shape on Soil Behaviour Around Pile</b><br><i>By Y. Wu and H. Yamamoto</i>                                                                                                                         | <b>78</b>   |
| <b>Shaking Table Test on Superstructure-foundation-Ground System in Liquefiable Soil and Its Numerical Verification</b><br><i>By F. Zhang, R. Oka, Y. Morikawa, Y. Mitsui, T. Osada, M. Kato and Y. Wabi</i> | <b>90</b>   |
| <b>Model Loading Tests on Bearing Behaviour of a Group Pile and Ground Deformation in Sand</b><br><i>By S. Aoyama B. Liu L. Danardi W. Mao S. Goto and I. Towhata</i>                                        | <b>96</b>   |
| <b>Numerical Study on the Bearing Behaviour of Pile Groups Subjected to Lateral Pressure due to Soil Movements</b><br><i>By O. Reul, J. Bauer and C. Niemann</i>                                             | <b>106</b>  |
| <b>Deep Foundation Systems for High-rise Buildings in Difficult Soil Conditions</b><br><i>By R. Katzenbach and S. Leppla</i>                                                                                 | <b>115</b>  |

# GEOTECHNICAL ENGINEERING

## SEPTEMBER 2014: SPECIAL ISSUE ON CENTRIFUGE MODELLING OF GEOTECHNICAL INFRASTRUCTURE

**Editors: B.V.S. Viswanadham, Christophe Gaudin & Tom Schanz**

### TABLE OF CONTENTS

| <u>List of Papers</u>                                                                                                                                                                                                                   | <u>Page</u> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>Centrifuge Modelling of Improved Ground</b><br>By M. Kitazume, Y. Morikawa and S. Nishimura                                                                                                                                          | <b>01</b>   |
| <b>Simulation of Soil Movement in Geotechnical Centrifuge Testing – Deep Excavations, Tunnelling, Deposit</b><br>By D. König, O. Detert and T. Schanz                                                                                   | <b>12</b>   |
| <b>Run-out of Sensitive Clay Debris: Significance of the Flow Behavior of Sensitive Clays</b><br>By V. Thakur and D. Nigussie                                                                                                           | <b>22</b>   |
| <b>Verification of the Generalized Scaling Law for Flat Layered Sand Deposit</b><br>By T. Tobita, S. Escoffier, J. L. Chazelas and S. Iai                                                                                               | <b>32</b>   |
| <b>Performance of Rail Embankments Constructed with Coal Ash as a Structural Fill Material: Centrifuge Study</b><br>By B.V.S. Viswanadham and V.K. Mathur                                                                               | <b>40</b>   |
| <b>Field Scale Tests for Determination of Pullout Capacity of Suction Pile Anchors Under Varying Loading Conditions</b><br>By Vijaya Ravichandran, R. Ramesh, S. Muthukrishna Babu, G.A. Ramadass, .M.V.Ramanamoorthy and M.A. Atmanand | <b>49</b>   |
| <b>A Novel Mobile Information System for Risk Management of Adjacent Buildings in Urban Underground Construction</b><br>By Hanh Quang Le and Bin-Chen Benson Hsiung                                                                     | <b>52</b>   |
| <b>Comparison Between Design Methods Applied to Segmental Tunnel Linings</b><br>By N.A. Do, D. Dias, P.P. Oreste, I. Djeran-Maigre                                                                                                      | <b>64</b>   |
| <b>Challenging Construction Projects Related to Urban Tunnels</b><br>By R. Katzenbach and S. Leppla                                                                                                                                     | <b>71</b>   |
| <b>Bulk Compression of Dredged Soils by Vacuum Consolidation Method Using Horizontal Drains</b><br>By Hiroshi Shinsha and Takahiro Kumagai                                                                                              | <b>78</b>   |
| <b>Mechanical Behavior of Energy Piles in Dry Sand</b><br>By A.M. Tang, J.M. Pereira, G. Hassen, N. Yavari                                                                                                                              | <b>86</b>   |
| <b>Estimating Side Resistance of Bored Pile in Residual Soils</b><br>By Mutiasani Dianmarti Kusuma and Eng-Choon Leong                                                                                                                  | <b>90</b>   |
| <b>Seismic Response of Geosynthetic Reinforced Earth Embankment by Centrifuge Shaking Table Tests</b><br>By W.Y. Hung, J.H. Hwang, C.J. Lee                                                                                             | <b>96</b>   |



# GEOTECHNICAL ENGINEERING

## DECEMBER 2014: SPECIAL ISSUE ON Offshore and Coastal Geotechnics

**Editors: Shinji Sassa, Poul V. Lade, Lizhong Wang, Yean K. Chow, Dong S. Jeng,  
Christophe Gaudin & Fuping Gao**

### TABLE OF CONTENTS

| <u>List of Papers</u>                                                                                                                                                                                                           | <u>Page</u> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>Recent Advances in Seabed Liquefaction and Its Implications for Marine Structures</b><br>By B. Mutlu Sumer                                                                                                                   | 01          |
| <b>Eulerian–Lagrangian Modeling of Current-Induced Coastal Sand Dune Migration</b><br>By R. Sun, J. Wang, Y. Sakai and H. Xiao                                                                                                  | 15          |
| <b>Numerical Study of the Penetration Mechanism and Kinematic Behaviour of Drag Anchors Using a Coupled Eulerian-Lagrangian Approach</b><br>By Haixiao Liu and Yanbing Zhao                                                     | 29          |
| <b>Cyclic Pore Pressure Generation in Silty Soils under the Action of Combined Waves and Current</b><br>By Yi-Fa Wang, Fu-Ping Gao, and Wen-Gang Qi                                                                             | 40          |
| <b>A Model for Predicting Pipeline Sinkage Induced by Tunnel Scour</b><br>By Chengcai Luo, Hongwei An, Liang Cheng and David White                                                                                              | 46          |
| <b>Predicting Spudcan Extraction Resistance in Soft Clay</b><br>By Omid Kohan, Christophe Gaudin, Mark J. Cassidy, and Britta Bienen                                                                                            | 53          |
| <b>A FE Procedure for Foundation design of Offshore Structures – Applied to Study a Potential OWT Monopile Foundation in the Korean Western Sea</b><br>By H.P. Jostad, G. Grimstad, K.H. Andersen, M. Saue, Y. Shin, and D. You | 63          |
| <b>Compressibility as an Indicator of Liquefaction Potential</b><br>By M. Murat Monkul, Poul V. Lade, Ehsan Etminan, Aykut Senol                                                                                                | 73          |
| <b>Centrifuge Modelling of the Seismic Responses of a Gently Sloped Liquefiable Sand Deposit Confined within Parallel Walls</b><br>By C.J. Lee, W.Y. Chung, and W.Y. Hung                                                       | 78          |
| <b>Eulerian Finite Element Analysis for Uplift Capacity of Circular Plate Anchors in Normally Consolidated Clay</b><br>By Z. Chen, K. K. Tho, C. F. Leung and Y. K. Chow                                                        | 88          |
| <b>Restoration Method of Artificial Tidal Flat by Use of Pressure Injection of Slurry Dredge Clay</b><br>By Takahiro Kumagai, Takashi Tsuchida, Changjin Ko and Hiroaki                                                         | 93          |
| <b>Tsunami-Seabed-Structure Interaction from Geotechnical and Hydrodynamic Perspectives</b><br>By S. Sassa                                                                                                                      | 102         |
| <b>Feature Storey on “Challenges in the Design of Tall Building Foundations”</b><br>By Harry G. Poulos                                                                                                                          | 108         |

# GEOTECHNICAL ENGINEERING

**March 2015 Issue: Special Country Issue of Thailand**

**– Dr. Surachat Sambhadharaksa Memorial Issue**

**Advances in Geotechnical Engineering for Infrastructure Developments in Thailand**

**Edited by : Suched Likitlersuang, Suksun Horpibulsuk, Suttisak Soralump,  
Tirawat Boonyatee Suchatvee Suwansawat, and Thanakorn Chompoorat**

## TABLE OF CONTENTS

### List of Papers

|                                                                                                                                                                                                                                                           | <u>Page</u> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>Settlement due to Consolidation</b><br><i>By H. Ohta</i>                                                                                                                                                                                               | 01          |
| <b>A Simulation of Surface Runoff and Infiltration due to Torrential Rainfall Based on Field Monitoring Results at a Slope Comprising Weathered Granite</b><br><i>By H. Ohtsu, H. Masuda, T. Kitaoka, K. Takahashi, M. Yabe, S. Soralump and Y. Maeda</i> | 12          |
| <b>Calcium Carbide Residue – A Cementing Agent for Sustainable Soil Stabilization</b><br><i>By S. Horpibulsuk, A. Kampala, C. Phetchuay, A. Udomchai and A. Arulrajah</i>                                                                                 | 22          |
| <b>Soil Parameter Optimization of the NGI-ADP Constitutive Model for Bangkok Soft Clay</b><br><i>By B. Ukritchon and T. Boonyatee</i>                                                                                                                     | 28          |
| <b>Laboratory Investigation of Hot Mix Asphalt Behaviour for Mechanistic-Empirical Pavement Design in Tropical Countries</b><br><i>By T. Chompoorat and S. Likitlersuang</i>                                                                              | 37          |
| <b>Slope Stability and Pore-Water Pressure Regime in Response to Rainfall: A Case Study of Granitic Fill Slope in Northern Thailand</b><br><i>By A. Jotisankasa, K. Mahannopkul and A. Sawangsuriya</i>                                                   | 45          |
| <b>Evaluation of the Hydraulic Conductivity of Clayey Soil Mixed with Calcium-Bentonite Using Oedometer Tests</b><br><i>By R.D. Fan, Y.J. Du, S.Y. Liu and Y.L. Yang</i>                                                                                  | 55          |
| <b>Undrained Shear Strength of Very Soft to Medium Stiff Bangkok Clay from Various Laboratory Tests</b><br><i>By W. Ratananikom, S. Yimsiri and S. Likitlersuang</i>                                                                                      | 64          |
| <b>A Review on Design of Pile Foundations in Bangkok</b><br><i>By T. Boonyatee, J. Tongjarukae, T. Uaworakunchai and B. Ukritchon</i>                                                                                                                     | 76          |
| <b>Structured Cam Clay Model with Cementation Effect</b><br><i>By S. Horpibulsuk and M.D. Liu</i>                                                                                                                                                         | 86          |
| <b>Evaluation of Strength of Soft Ground Improved by Vacuum Consolidation</b><br><i>By T. Shibata, S. Nishimura, M. Fujii and A. Murakami</i>                                                                                                             | 95          |

|                                                                                                                                                                           |     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Chemical Stabilization of Loess in Northeast Thailand Using the Mixture of Calcined Marble Dust Waste and Sugarcane Bagasse Ash Waste</b><br><i>By P. Julphunthong</i> | 103 |
| <b>Numerical Analyses of Piled Raft Foundation in Soft Soil Using 3D-FEM</b><br><i>By K. Watcharasawe, P. Kitiyodom and P. Jongpradist</i>                                | 109 |
| <b>Investigation of Shrinkage and Swelling Behaviour of Expansive/Non-Expansive Clay Mixtures</b><br><i>By S. Por, S. Likitlersuang and S. Nishimura</i>                  | 117 |

# GEOTECHNICAL ENGINEERING

## JUNE 2015: SPECIAL ISSUE ON PILE FOUNDATIONS

**Editors: San-Shyan Lin, Charng Hsein Juang, and Robert Liang**

### TABLE OF CONTENTS

| <b>List of Papers</b>                                                                                                                                                                 | <b>Page</b> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>Operational Soil Stiffness From Back-Analysis of Pile Load Tests Within Elastic Continuum Framework</b><br><i>By Fawad S. Niazi and Paul W. Mayne</i>                              | 01          |
| <b>Elastic Continuum Solution of Stacked Pile Model For Axial Load-Displacement Analysis</b><br><i>By Fawad S. Niazi and Paul W. Mayne</i>                                            | 20          |
| <b>Lateral Loading Tests on Piled Rafts and Simplified Method to Evaluate Sectional Forces of Piles</b><br><i>By J. Hamada, T. Tsuchiya, T. Tanikawa and K. Yamashita</i>             | 29          |
| <b>Applicability of Simple Method to Piled Raft Analysis in Comparisons With Field Measurements</b><br><i>By K. Yamashita, T. Tanikawa, and J. Hamada</i>                             | 43          |
| <b>Engineering Assessment of Ground Vibrations Caused by Impact Pile Driving</b><br><i>By K. Rainer Massarsch and Bengt Fellenius</i>                                                 | 54          |
| <b>Analysis of results of an instrumented bidirectional-cell test</b><br><i>By Bengt Fellenius</i>                                                                                    | 64          |
| <b>Deep Barrette Pile Capacity with Aging Effect</b><br><i>By W. Teparaksa</i>                                                                                                        | 68          |
| <b>Case study of dynamic responses of a single pile foundation installed in coal ash landfills using effective stress analysis and EQWEAP</b><br><i>By C. W. Lu and D. W. Chang</i>   | 77          |
| <b>The Response of A “Plug” in An Open-Toe Pipe Pile</b><br><i>By Bengt H. Fellenius</i>                                                                                              | 82          |
| <b>Effects of Toe Grouting on Axial Performance of Drilled Shafts Socket in Intermediate Geomaterial</b><br><i>By S.S. Lin, Y.L. Yin, K.C. Fu, Y.K. Lin, C.J. Kuo, and Y.H. Chang</i> | 87          |
| <b>Reliability-Based Design of Proof Load Test Programs for Foundations</b><br><i>By Y. Abdallah, S.S. Najjar and G. Saad</i>                                                         | 94          |
| <b>Probabilistic approaches for ultimate resistance of drilled shafts considering spatial variability</b><br><i>By Z. Luo, L. Wang, W. Gond, and C. Hsein Juang</i>                   | 102         |
| <b>SPECIAL FEATURE STORY ON “Liquefaction Problems in the 21st Century”</b><br><i>By I. Towhata</i>                                                                                   | 111         |

# GEOTECHNICAL ENGINEERING

## SEPTEMBER 2015: SPECIAL ISSUE ON SOIL BEHAVIOUR AND MODELLING

**Editors: Prof. Zhen-Yu Yin and Prof. Jian-Hua Yin**

### TABLE OF CONTENTS

| <b><u>List of Papers</u></b>                                                                                                                                                                                          | <b><u>Page</u></b> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| <b>Overview and Interpretation of Rate-Dependency of the Behaviour of Soft Clays.</b><br><i>By Z. X. Wu , Q. Y. Zhu, Z. Y. Yin</i>                                                                                    | 01                 |
| <b>Overview and Interpretation of Stress-Relaxation of Soft Clay.</b><br><i>By L. Ye, Q.Y. Zhu, J.X. Liu, P.P. Sun and Z.Y. Yin</i>                                                                                   | 12                 |
| <b>Modeling Undrained Shear Behavior of Reconstituted Clays considering the Effects of Initial Water Contents</b><br><i>By X. Bian , L. L. Zeng, J. W. Ding and Z. S. Hong</i>                                        | 24                 |
| <b>Statistical Analysis on Physical Properties of Shanghai Soft Clay</b><br><i>By Y. M. Lu, Y. F. Jin, S. L. Shen, F. Yu and J. Zhang</i>                                                                             | 31                 |
| <b>A Review of the Dynamic Behaviour of Frozen Soils</b><br><i>By S. Wang, J. Qi and Z. Yin</i>                                                                                                                       | 37                 |
| <b>Influence of Mineral Constituents on One-dimensional Compression Behaviour of Clayey Soils</b><br><i>By L. Ye, Y.F. Jin, Q.Y. Zhu and P.P. Sun</i>                                                                 | 46                 |
| <b>Effects of Addition of Fine-grained Zeolite on the Compressibility and Hydraulic Conductivity of Clayey Soil/Calcium-Bentonite Backfills for Vertical Cutoff Walls</b><br><i>By R.D. Fan, Y.J. Du and S.Y. Liu</i> | 54                 |
| <b>Effect of Long-term Aggressive Environments on the Porosity and Permeability of Granular Materials Reinforced by Nanosilica and Sodium Silicate.</b><br><i>By M. Cheng and N. Saiyouri</i>                         | 62                 |
| <b>Strength of Lime-Treated Fly Ash Using Bentonite</b><br><i>By S. Deka, S.K. Dash and S Sreedeeep</i>                                                                                                               | 73                 |
| <b>Soil Deformation Induced by Underground Tunnel Construction</b><br><i>By L. Wang, R. Liu and G. G. Wang</i>                                                                                                        | 82                 |
| <b>Full-Scale Field Tests on Soil Arching Triggered during Construction of Shallowly Buried HDPE Pipes</b><br><i>By M. Zhou,Y. J. Du and F. Wang</i>                                                                  | 89                 |
| <b>A Pollutant Migration Model Considering Solute Decay in Layered Soil</b><br><i>By C. Yu and X.Q. Cai</i>                                                                                                           | 94                 |
| <b>Effect of Cyclic Strain History on Shear Modulus of Dry Sand using Resonant Column Tests</b><br><i>By J. Kumar and A. C. Cherian</i>                                                                               | 99                 |

|                                                                                                        |     |
|--------------------------------------------------------------------------------------------------------|-----|
| <b>Vertical Uplift Capacity of Circular Anchor Plates</b>                                              | 105 |
| <i>By P. Bhattacharya and J. Kumar</i>                                                                 |     |
| <b>Prediction of Ground Surface Settlements Caused by Deep Excavations in Sands</b>                    | 111 |
| <i>By B. C. B. Hsiung and S. D. Dao</i>                                                                |     |
| <b>SPECIAL FEATURE STORY ON “Soil Mechanics at Emmanuel College - Elegant, Rigorous and Relevant ”</b> | 119 |
| <i>By John Burland</i>                                                                                 |     |
| <b>SPECIAL FEATURE STORY ON “Ground Improvement Methods for Port Infrastructure Expansion”</b>         | 125 |
| <i>By B. Indraratna, Heitor, A and Rujikiatkamjorn, C.</i>                                             |     |

# GEOTECHNICAL ENGINEERING

## DECEMBER 2015: SPECIAL ISSUE ON PROBLEMATIC SOILS INCLUDING CONTAMINATED SOILS

**Editors: Prof. Jay N. Meegoda and Prof. Liming Hu**

### TABLE OF CONTENTS

| <u>List of Papers</u>                                                                                                                                                   | <u>Page</u> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>Geochemistry in Geotechnical Engineering Problems: Ettringite as Case Study</b><br><i>By M. Chryschoou</i>                                                           |             |
| <b>Engineering Properties of Chromium Contaminated Soils</b><br><i>By Wiwat Kamolpornwjit, Jay N. Meegoda, Janitha H. Batagoda</i>                                      |             |
| <b>Study on factors affecting heavy metal sorption characteristics of two geomaterials</b><br><i>By K.M.Nithya, D.N.Arnepalli and S.R.Gandhi</i>                        |             |
| <b>Reduction of Chromium in Water and Soil Using a Rhamnolipid Biosurfactant</b><br><i>By I. Ara and C.N. Mulligan</i>                                                  |             |
| <b>Reclamation project of a Brownfield site at Rio de Janeiro State, Brazil</b><br><i>By M.C. Barbosa, A.R.M. Barboza de Oliveira and M.E.S. Marques</i>                |             |
| <b>A Review of Acidic Groundwater Remediation in the Shoalhaven Floodplain in Australia</b><br><i>By Buddhima Indraratna, Udeshini Pathirage and Laura Banasiak</i>     |             |
| <b>Experimental and numerical study of electro-osmosis on kaolinite under intermittent current</b><br><i>By Liming Hu, Hui Wu, Jay N. Meegoda, and Qingbo Wen</i>       |             |
| <b>Electro-osmosis drainage effect of a new type of EKG electrode</b><br><i>By Yang Shen and Yande Li</i>                                                               |             |
| <b>Innovative Soft Soil Improvement Method through Intelligent Use of Vacuum De-Watering and Dynamic Compaction Techniques</b><br><i>By R. Liang, S. Xu and T. Edil</i> |             |
| <b>Some Studies on Engineering Properties, Problems, Stabilization and Ground Improvement of Lithomargic Clays</b><br><i>By R. Shivashankar, A. U. Ravi</i>             |             |
| <b>Stone column reinforcement of a soft South African clay: A laboratory investigation</b><br><i>By L. Sobhee-Beetul and D. Kalumba</i>                                 |             |
| <b>Numerical modelling of Tunis soft clay</b><br><i>By Mnaouar Klai, Mounir Bouassida and Seifeddine Tabchouche</i>                                                     |             |

**A Framework for the Deconstructing of Clays During Compression**

*By M. D. Liu, S. Horpibulsuk, and Y. J. Du*

**Inundation Caused by Sea-Level Rise Combined with Land Subsidence**

*By K. Yasuhara, S. Murakami and N. Mimura*

**Levels of what and how in the Education of Geo-engineering on Problematic Soils**

*By R. Ray, P. Scharle, R. Szepesházi*

***SPECIAL FEATURE STORY ON “Challenges in Going Underground in Big Cities”***

***By L. J. Endicott***

***HISTORIC NOTE:***

***Underexcavating the Tower of Pisa: Back to Future***

***By J. B. Burland, M. B. Jamiolkowski, and C. Viggiani***



# GEOTECHNICAL ENGINEERING

**March 2016: VIETNAM SPECIAL ISSUE**

**Editors: Dr. Phung Duc Long & San Shyan Lin**

## TABLE OF CONTENTS

| <b><u>List of Papers</u></b>                                                                                                                                                 | <b><u>Page</u></b> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| 1: Prediction of Piled Raft Foundation Settlement – A Case Study<br>By Phung Duc Long                                                                                        | 01-06              |
| 2: Geotechnical Adaptation to the Vietnamese Coastal and Riverine Erosion in the Context of Climate Change<br>By K. Yasuhara, M. Tamura, Trinh Cong Van and Do Minh Duc      | 07-14              |
| 3: Bidirectional Tests on Two Shaft-Grouted Barrette Piles in Mekong Delta, Vietnam<br>By H. M. Nguyen, B. H. Fellenius, A. J. Puppala, P. Aravind, and Q. T. Tran           | 15-25              |
| 4: Soil Characterization and Land Subsidence Prediction for the First MRT Line in HCM City<br>By Pham Huy Giao and Ta Thi Thoang                                             | 26-31              |
| 5: Soft Ground Improvement by Deep Cement-Mixing Technique in Southern Vietnam<br>By Dinesh Raj Shiwakoti and Ryuji Manai                                                    | 32-38              |
| 6: Over Consolidation Feature of Clayey Soils in Southern Vietnam According to Piezocone<br>By Bui Truong Son, Le Hong Quang, Lam Ngoc Qui                                   | 39-44              |
| 7: Ground Improvement Using Soil-Cement Method: A Case Study with Laboratory Testing and In-Situ Verification for a Highway Project in Southern Vietnam<br>By Phan To Anh Vu | 45-49              |
| 8: Wide Storage Tanks on Piled Foundations<br>By Bengt H. Fellenius and Mauricio Ochoa                                                                                       | 50-61              |
| 9: Discrete Modelling of Excavation in Fractured Rock by NSCD Method<br>By Tran Thi Thu Hang and Frederic Dubois                                                             | 62-68              |

|                                                                                                                                                                                                             |         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 10: A Method for Estimating Pile Group Settlement Considering Distribution of Pile Shaft Friction (SDF) – Application for Pile Groups in Vietnam<br>By Duong Diep Thuy, Pham Quang Hung, and Le Thiet Trung | 69-78   |
| 11: Mechanical behaviour of Hai Duong Medium Sand in Triaxial Test and its DEM Simulations<br>By Nguyen Quang Tuan and Heinz Konietzky                                                                      | 79-86   |
| 12: Influence of Geometrical Parameters of Soil-Cement Columns on the Average Settlement of Embankment on Reinforced Soft Soil – Numerical Analysis<br>By Tran The Truyen, Nguyen Van Hung, and Tran N. Hoa | 87-91   |
| 13: Evaluation of Performance of Diaphragm Walls by Wall Deflection Paths for Deep Excavations in Central Ha Noi<br>By Benson Hsiung, Dao Sy Dan, and William Cheang                                        | 92-99   |
| 14: Effect of Vacuum Pressure Distribution on Settlement Analysis Results for an Improved Thick Soft Clay Deposit at Sai Gon-Hiep Phuoc Terminal Port, South of Vietnam<br>By Hoang Hiep and Pham Huy Giao  | 100-105 |
| 15: Characteristic of Unsaturated Soil of Earth Fill Dams in Vietnam<br>By Nguyen Thi Ngoc Huong and Trinh Minh Thu                                                                                         | 106-117 |
| 16: Settlement management for urban tunnels: an example from France<br>By Alain Guilloux and Hervé Le Bissonnais                                                                                            | 118-125 |

Cover Photographs:

1. Multiple protective measures used in coastal areas (After Yasuhara et al. June 2016)
2. Example of erosional scene of river bank in the Mekong Delta (After Yasuhara et al. June 2016)
3. Plaxis 3D piled raft foundation model (After Phung Duc Long June 2016)
4. Geometry of DEM models (After N.Q. Tuan and H. Konietzky June 2016)

# GEOTECHNICAL ENGINEERING

**June 2016: CHINESE TAIPEI SPECIAL ISSUE**

**Editor: Professor Meei-Ling Lin**

## TABLE OF CONTENTS

| <b><u>List of Papers</u></b>                                                                                                                                                               | <b><u>Page</u></b> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| 1: Rock Tunneling Applied to Steady Water Resources Supply in Taiwan: Challenges and Examples<br>By Chia-Han Lee, Tai-Tien Wang, Shih-Hsien Chang, Shang-Yao Lien and Shih-Wei Huang       | 01-06              |
| 2: State-of-the Art of the Tunnel Maintenance in Taiwan and Challenges to Sustainable Development<br>By Ya-Chu Chiu, Tai-Tien Wang, Tsan-Hwei Huang                                        | 07-13              |
| 3: Tunneling Issues Regarding the Rock Tunnel-Shaft Intersection in Taiwan<br>By Tai-Tien. Wang, Tzu-Tung. Lee, Shun-Min. Lee, Kwei-Shr. Li and Cheng-Hsun. Chen                           | 14-23              |
| 4: Assessment of Hard Rock Tunnel Stability: A Note on the Influence of Post-peak Strength Degradation<br>By F. Y. Hsiao, H. C. Kao and S. Y. Chi                                          | 24-31              |
| 5: Deep Excavations in Taipei Basin and Performance of Diaphragm Walls<br>By R. N. Hwang, C. H. Wang, C. R. Chou and L. W. Wong                                                            | 32-40              |
| 6: Hydraulic Characteristics of Jingmei Formation and Dewatering for Deep Excavations in Taipei Basin<br>By G. R. Yang, L. W. Wong and R. N. Hwang                                         | 41-49              |
| 7: Forensic Investigation of A Subway Tunnel Construction Failure<br>By W. F. Lee, C. C. Wang, K. Ishihara, R. N. Hwang                                                                    | 50-59              |
| 8: Case Study of Renovation on Alishan Route 18 after Typhoon Morakot<br>By Kung, Tai, Chou, Wen-Long Wu, Chiao-An Hsiao, Kun-Hsien Chou                                                   | 60-71              |
| 9: Combining rainfall parameter and landslide susceptibility to forecast shallow landslide in Taiwan<br>By C.F. Lee, C.M. Huang, T.C. Tsao, L.W. Wei, W.K. Huang, C.T. Cheng, and C.C. Chi | 72-82              |

|                                                                                                                                                                           |         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 10: Dynamic Analyses for Performance-Based Seismic Design of Geotechnical Structures with Examples in Deep Foundations<br>By D.W. Chang, C.W. Lu, S.S. Lin and J.R. Lai   | 83-88   |
| 11: Time-Dependent Dynamic Characteristics of Model Pile in Saturated Sand during Soil Liquefaction<br>By Chia-Han Chen, Yung-Yen Ko, Cheng-Hsing Chen and Tzou-Shin Ueng | 89-94   |
| 12: Geological Investigation and Sliding Mitigation in Jiufen Area<br>By Lee-Ping Shi, Jen-Cheng Liao, Sheng-Hsiung Hung and Chien-Shui Huang                             | 95-100  |
| 13: Interpretation and Analysis of Potential Fluidized Landslide Slope<br>By H. M. Shu, T. C. Chen, W.C. Yang and Y.X. Luo                                                | 101-111 |
| <b><i>SPECIAL FEATURE STORY ON “Recent Diaphragm Wall Technologies and Future Challenge”</i></b><br>By Hosoi Takeshi and Matsushita Shinya                                | 112-125 |
| <b><i>HISTORICAL NOTE ON “ Experiences of Geotechnical Development in Japan and Future Directions”</i></b><br>By Masami Fukuoka                                           | 126-129 |
| <b><i>OBITUARY of Masami Fukuoka</i></b><br>By Fumio Tatsuoka                                                                                                             | 130-131 |

#### **Cover Photographs:**

1. Photo 1 Satellite Image of the Taipei Basin (After Yang, Wong and Hwang, June 2016)
2. Photo 1 Sedimentation of Typhoon Morakot on Wanda Reservoir in central Taiwan. (After Lee, Wang, Chang Lien and Huang, June 2016)
3. Photo 1 Geological profile along tunnels in TDT project (After Lee, Wang, Chang, Lien and Huang, 2016)

# GEOTECHNICAL ENGINEERING

**September 2016: HONG KONG AND SINGAPORE SPECIAL ISSUE**

**Edited by**

**Sing Lok Chiu** (*Part A: Hong Kong*), **Tiong Guan Ng** (*Part B: Singapore*) and  
**Prof. San-Shyan Lin** (*Part C: Contributed Papers*)

## TABLE OF CONTENTS

| <u>List of Papers</u>                                                                                                                                                        | <u>Page</u> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>PART A - HONG KONG</b>                                                                                                                                                    |             |
| 1: Challenges in Improving Slope Safety in Hong Kong through the Landslip Prevention and Mitigation Programme<br>By Ken K.S. Ho and Raymond W.M. Cheung                      | 01- 10      |
| 2: Rock Caverns – Hong Kong’s Hidden Land<br>By K.C. Ng, K.J. Roberts and Y.K. Ho                                                                                            | 11-18       |
| 3: The First Subsea TBM Road Tunnel in Hong Kong<br>By Albert Liu, Stephen Chan, Conrad Ng, Joseph Lo, C. K. Tsang and Dunson Shut                                           | 19-24       |
| 4: Achievements of and Challenges to the Hong Kong Landslide Risk Management<br>By Rick CK Tam and Michael MK Chang                                                          | 25-30       |
| 5: Subsea Horizontal Directional Coring (HDC)<br>By C. K. Tsang, S. F. Chau and Jimmy Chan                                                                                   | 31-36       |
| 6: 7 <sup>th</sup> Lumb lecture 10th October 2012 “Peter Lumb’s legacy, Soil Mechanics<br>= Simple concepts + mathematical processes + lateral thinking”<br>By John Endicott | 37-50       |
| <b>PART B - SINGAPORE</b>                                                                                                                                                    |             |
| 7: Singapore Case Histories on Omission of Strut by Observation Approach For Circle Line and Down Town Line Projects<br>By David Ng C. C. and Simon Low Y. H.                | 51-61       |

|                                                                                                                                                                        |         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 8: Vacuum preloading methods: an update<br>By Jian Chu, Shuwang Yan and Wei Guo                                                                                        | 62-69   |
| 9: A New Lithostratigraphical Framework Proposed for Singapore<br>By K.K Lat, K.H Goay, S.G Lau, S.L Chiam and K.C Chew                                                | 70-73   |
| 10: Economical Design for NSF Piles in Soft Clays using Soil-Structure Interaction<br>By Siew Ann Tan                                                                  | 74-78   |
| 11: Towards a Design Framework for Spatial Variability in Cement Treatment for Underground Construction<br>By Y. Liu, Y. Jiang and F. H. Lee                           | 79-84   |
| 12: Advances and Challenges in Underground Space Use in Singapore<br>By Y. Zhou and J. Zhao                                                                            | 85-95   |
| <br><b>PART C - Contributed Papers</b>                                                                                                                                 |         |
| 13: Effect of Ageing Environment on Fiber-Reinforced Polymer/Granular Interface Shear Behaviour<br>By H.A. Shaia and H.M. Abuel-Naga                                   | 96 -100 |
| 14: Groundwater Flow Modeling and Slope Stability Analysis for Deepening of Mae Moh Open Pit Lignite Mine<br>By A.B.N. Dassanayake, N. Phien-wej and P. H. Giao        | 101-115 |
| 15: A Study on Internal Erosion of Low-Plasticity Silty Sand<br>By Jing-Wen Chen, Bo-Rung Lin, Wei F. Lee and Yie-Ruey Chen                                            | 116-122 |
| 16: Analysis of Influencing Factors on Brazilian Test Results Based on A Complex-shaped Grain Model<br>for Brittle Rock<br>By Guangcheng Yang and Xinghua Wang         | 123-129 |
| 17: Effect of Infill Moisture Content and Thickness on Shear Behavior of Planar and Rough Rock Joints<br>By Tsu-Chiang Cheng, Shuh-Gi Chern, Shin-Ru Wu and Yu-The Lin | 130-135 |
| 18: Role of Bentonite in Improving the Efficiency of Cement Grouting in Coarse Sand<br>By T.G.Santhoshkumar, Benny Mathews Abraham, A, Sridharan, and Babu T Jose      | 136-143 |

# **GEOTECHNICAL ENGINEERING**

**December 2016: MALAYSIA SPECIAL ISSUE**

**Edited by**

**Thien Seng Yee, Swee Huat Chan and Teik Aun Ooi**

## **TABLE OF CONTENTS**

| <b><u>List of Papers</u></b>                                                                                                                                                                              | <b><u>Page</u></b> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| 1. Professionalism and Ethics of Engineering<br>By Z.C. Moh                                                                                                                                               | 01-03              |
| 2. Recent Advances in Pile Testing and Diaphragm Wall Constructions in Japan<br>By K. Ishihara                                                                                                            | 04-23              |
| 3. Innovation in Soil Improvement Methods<br>By J. Chu                                                                                                                                                    | 24-34              |
| 4. Lessons Learned from Designing High-rise Building Foundations<br>By H.G. Poulos                                                                                                                        | 35-49              |
| 5. A Critical Review of Rail Track Geotechnologies Considering Increase Speeds and Axle Loads<br>By Buddhima Indraratna, Sanjay Nimbalkar and Chalachat Rujikiatkamjorn                                   | 50-60              |
| 6. Performance and Analyses of Thick Soft Clay Deposit Improved by PVD with Surcharge<br>Preloading and Vacuum Consolidation - A Case Study at CMIT<br>By P.V. Long, L.V. Nguyen and A.S. Balasubramaniam | 61-70              |
| 7. Characteristics of Hardpan Calcrete of the Nyalau Formation and Impact on Design of Foundations<br>By A.C.Y. Sim, D.E.L. Ong, L.Y. Tai, W.H. Ting,, E.P.S. Chai and J. Bachat                          | 71-79              |
| 8. Ground Improvement via Vacuum Consolidation Method in Vietnam<br>By T.H. Seah, T.B. Kim and T.D. Nguyen                                                                                                | 80-88              |
| 9. Laboratory Study on Dynamic Properties of Compacted Residual Soil in Malaysia<br>By Y. Tanaka and M.L. Lee                                                                                             | 89-96              |

|                                                                                                                                                                                                |         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 10. On The Preconsolidation Pressure: Experience Based on Testing the Holocene Marine Clay of Peninsula Malaysia<br>By M.J. Dobie                                                              | 97-108  |
| 11. Tunnelling Past Critical Structures in Kuala Lumpur: A Discussion of Case Histories with Insights from Finite Element Analysis and T-Z Load Transfer Analyses<br>By C.W. Boon and L.H. Ooi | 109-122 |
| 12. A Comparison of Performance of Deep Excavation using the Top Down and Bottom Up Methods in Kenny Hill Formation<br>By J.G. Tan and L.H. Ooi                                                | 123-133 |
| 13. Fallacy of Capacity Performance & Innovation Improvement of Jack-In Piling in Malaysia<br>By Liew, S.S. and Ho, S.F.                                                                       | 134-143 |
| 14. An Overview of Slope Failure during Monsoon Seasons in Malaysia<br>By M.L. Lee, Y. Tanaka and S.Y. Chong                                                                                   | 144-151 |
| 15. Considerations of Deep Excavation in Kenny Hill and Kuala Lumpur Limestone Formations at the KVMRT<br>By J.G. Tan, L.H. Ooi & H.K. Yeoh                                                    | 152-163 |
| 16. Grain Crushing under Pile Tip Explored by Acoustic Emission<br>By W. Mao, I. Towhata, S. Aoyama and S. Goto                                                                                | 164-175 |
| 17. A Vibro Stone Column Supported Test Embankment for a High-speed Rail Project in Malaysia<br>By Y.W. Yee, L.H. Ooi and J. Daramalinggam                                                     | 176-183 |

## **Cover Photographs:**

1. Photo 1 Weathering profile of tropical residual soil (After Lee, Tanaka and Chong, 2016)
2. Photo 2 Shaking table test on soil block (After Tanaka and Lee, 2016)
3. Photo 3 Petrographic thin section of hardpan calcrete (After Sim et al., 2016)
4. Photo 4 Jeddah Tower, Saudi Arabia (After Poulos, 2016)
5. Photo 5 Burj Khalifa Tower, Dubai (After Poulos, 2016)
6. Photo 6 Vacuum Consolidation, Vietnam (After Seah et al, 2016)
7. Photo 7 Bird-eye view of pier platform (After Ishihara, 2016)



# GEOTECHNICAL ENGINEERING

**March 2017: Climate Change, Environmental Geotechnics and Geo-hazards**

**Edited by  
Kazuya Yasuhara, Farrokh Nadim and Dennes Bergado**

## TABLE OF CONTENTS

| <b><u>List of Papers</u></b>                                                                                                                                                            | <b><u>Page</u></b> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| 1: Geo-disasters in Japan in the Context of Climate Change<br>By K. Yasuhara, S. Kawagoe and K. Araki                                                                                   | 01-11              |
| 2: Climate change impacts in a large-scale erosion coast of Hai Hau district,<br>Vietnam and the adaptation<br>By Do Minh Duc, Nguyen Manh Hieu and Nguyen Chau Lan                     | 12-25              |
| 3: Subsidence and shoreline retreat in the Ca Mau Province – Vietnam:<br>Causes, consequences and mitigation options<br>By K. Karlsrud, B.V. Vangelsten and R. Frauenfelder             | 26-32              |
| 4: Rainfall Erosivity Variability for Penang Island<br>By A. S. Yahaya, F. Ahmad, Z.A Mohtar and S. Suri                                                                                | 33-37              |
| 5: Influence of increased precipitation on the transient seepage through levees during flood events<br>By A. Scheuermann, J. Brauns and A. Bieberstein                                  | 38-44              |
| 6: Use of Low Carbon and Low Cost (LC2) Materials in Climate Change Adaptation Measures<br>By H. Hazarika                                                                               | 45-52              |
| 7: Performance Monitoring of Bridge Foundations under Multi-hazards<br>By W. F. Lee, C. I. Yen and C. K. Huang                                                                          | 53-59              |
| 8: Analysis and Simulations of Flood Control Dikes and Erosion Protection<br>Schemes using PLAXIS FEM 2D and SLIDE Softwares<br>By N. Chanmee, D.T. Bergado, T. Hino and L.G. Lam       | 60-71              |
| 9: Arresting rainfall-induced red soil run off in a farmland by inhibitory adaptation measures<br>By K. Araki, N. Yasufuku, K. Iwami, K. Okumura, K. Omine and K. Vilayvong             | 72-81              |
| 10: Iron and Steel Slag Properties and Mechanisms for Carbon<br>Dioxide Fixation in a Low- carbon Society<br>By M. Umino, H. Komine, S. Murakami, K. Yasuhara, K. Setoi and Y. Watanabe | 82-89              |
| 11: Development of Gross National Safety Index for Natural Disasters<br>By O. Kusakabe, M. Kikumoto, K. Shimono, K. Itoh, H. Inagaki, S. Ohsato and K. Watanabe                         | 90-101             |
| 12: Flooding Hazards and Potential Risks due to Heavy Rain and<br>Sea Level Change in Shanghai, China<br>By Y. Yuan, Y. S. Xu and S.L., Shen                                            | 102-108            |

- |                                                                                                                                   |         |
|-----------------------------------------------------------------------------------------------------------------------------------|---------|
| 13: Modeling impact of future climate on stability of slope based on general circulation model<br>By S. Soralump and T. Chaithong | 109-116 |
| 14: Geotechnical Measures for Uttarakhand Flash Flood-2013, India<br>By C. Ghosh and I. Pal                                       | 117-127 |

# GEOTECHNICAL ENGINEERING

## June 2017: Mass Transit Projects & Contributed papers

Edited by  
**Kok Hun Goh, Jeyatharan Kumarasamy, Richard Hwang & San Shyan Lin**

### TABLE OF CONTENTS

| <b><u>List of Papers</u></b>                                                                                                                       | <b><u>Page</u></b> |
|----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| 1: Deep Excavations in Taipei Metro Construction<br>By R. N. Hwang and Z. C. Moh                                                                   | 1-13               |
| 2: Development of Reinforced Concrete Segmental Lining Design for MRT Bored Tunnels in Singapore<br>By D Wen                                       | 14-23              |
| 3: Geology and its Impact on the Construction of Singapore MRT Circle Line<br>By Jeyatharan Kumarasamy                                             | 24-31              |
| 4: Constructing the cut-and-cover tunnels and bored tunnels of the Singapore Downtown Line<br>By K.H. Goh and Y. Zhang                             | 32-44              |
| 5: Bored Tunnelling directly below Buildings in Singapore Downtown Line<br>By K.H. Goh, S. S. Ng and K.S. Ho                                       | 45-55              |
| 6: Application of Gravity Survey in Urbanized City Environment<br>By Charles Im, John Davies, Frank Collar and Seng Tiok Poh                       | 56-63              |
| 7: Water Sealing by Wire Brush with Grease for Pneumatic Caisson Method at Great Depth Underground<br>By M. Kawasaki, K. Yoshizaki and M. Sugimoto | 64-71              |
| 8: Geotechnical Challenges of Kolkata Metro Construction<br>By N. Som                                                                              | 72-79              |
| 9: Use of Pressure Relief Wells to Optimise Ground Improvement Layer Thickness in Deep Excavations<br>By Gerardo Agustin Pittaro                   | 80-85              |
| 10: Bukit Timah Granite Formation: Engineering Properties and Construction Challenges<br>By C. Veeresh and K.H. Goh                                | 86-91              |

|                                                                                                                                                                             |         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 11: 41 years of Mass Transit Underground Railways<br>By L.J.Endicott                                                                                                        | 92-95   |
| 12: Simulation of H&V shield behavior at sharp curve by kinematic shield model<br>By T. N. Huynh, H.V. Pham, M. Sugimoto, Y. Tanaka, H. Ohta and K. Yasui                   | 96-103  |
| 13: Comparison of the Effect of Fine Content and Density towards the Shear Strength Parameters<br>By Badee Alshameri, Aziman Madun and Ismail Bakar                         | 104-110 |
| 14: Shaft Resistances of Jacked Open-ended PHC Pipe Piles<br>By Xiao-long Zhou, Hai-lei Kou, Chang-hong Li                                                                  | 111-114 |
| 15: Estimation of Shrink/Swell Potential and Variability of Clays by Small-Scale Suction Tests<br>By P.R. Stott and E. Theron                                               | 115-125 |
| 16: Pullout Tests on Strips with Anchorage Elements under Low Stresses<br>By M. R. Selamat, M. H. Roslan, and M. A. M. Ismail                                               | 126-133 |
| 17: Numerical Simulation Analysis and In-situ Monitoring of Long Narrow and Deep Foundation Pit<br>By Li Changhong* ,Zhou Xiaolong ,Zhang Long ,Wei Xiaoming and Li Wanling | 134-139 |

# GEOTECHNICAL ENGINEERING

## September 2017: Deep Foundations

Edited by  
Tatsunori Matsumoto, Der Wen Chang & San Shyan Lin

### TABLE OF CONTENTS

| <u>List of Papers</u>                                                                                                                                                                                                                                      | <u>Page</u> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 1: Challenges and Recommendations for Steel H-Piles Driven in Soft Rock<br>By K. Ng and T. Sullivan                                                                                                                                                        | 1-11        |
| 2: Experimental Study on Pile Foundations Having Batter Piles Subjected to Combination of Vertical and Horizontal Loading at 1-G Field<br>By Anh-Tuan Vu, T. Matsumoto, S. Kobayashi and S. Shimono                                                        | 12-24       |
| 3: Fundamental Experiments on a Reinforcement Method using Sheet Pile Wall for Bridge Pile Foundations Subjected to Pile Embedment Reduction and Numerical Validation<br>By T. Tikanta, T. Matsumoto, A.T. Vu, S. Kobayashi, S. Shimono and C. Bamrungwong | 25-39       |
| 4: Numerical Studies on Performance of Offshore Wind Turbine Composite Suction Pile in Sand Subjected to Combined Lading<br>By S.S. Lin, Y.C. Chiang, X.H. Lin, H.Y. Wang and S.S. Hsiao                                                                   | 40-46       |
| 5: Pile Group Interaction Based on Field Monitoring and Load Tests<br>By K. Yamashita, S. Wakai, J. Hamada and T. Tanikawa                                                                                                                                 | 47-57       |
| 6: In-Situ Full Scale Load Tests and Reliability Evaluation of Bearing Capacity for Nodular Cast-In-Place Concrete Pile<br>By K. Watanabe, A. Mitsumori, H. Nishioka and M. Koda                                                                           | 58-64       |
| 7: Development of Steel Pipe Pile Combined with Ground Improvement in Narrow Spaces<br>By K. Watanabe, T. Yamamoto and T. Sudo                                                                                                                             | 65-72       |
| 8: Design and Analysis of Composite Foundation for High-Rise Buildings<br>By K. Watanabe, N. Suzuki and M. Sahara                                                                                                                                          | 73-81       |
| 9: Pervious Backfill Material Made from Landslide Debris for Road Base Construction<br>By Hung-Jiun Liao, Chin-Lung Chiu, Chung-Kuang Chien, Yi-En Tang and James Cheng                                                                                    | 82-86       |
| 10: Advances in Numerical Modelling of Different Ground Improvement Techniques<br>By E. Heins, M. Milatz, A. Chmelnizkij, K.-F. Seitz and J. Grabe                                                                                                         | 87-94       |
| 11: Load Sharing Mechanism of Combined Pile-Raft Foundation (CPRF) under Seismic Loads<br>By Ashutosh Kumar and Deepankar Choudhury                                                                                                                        | 95-101      |
| 12: Deflection Behaviour of GFRP Bar Reinforced Concrete Passive Bored Pile in Deep Excavation Construction<br>By J. L. Zhou, E. Oh, X. Zhang, M. Bolton, H. Y. Qin and L. Zhang                                                                           | 102-109     |
| 13: Loading and Dynamic Response Considerations for the Design of Wind Turbine Foundations on South African Soils<br>By Byron Mawer, Denis Kalumba and Charles Warren-Codrington                                                                           | 110-117     |

|     |                                                                                                                                                             |         |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 14: | Comparison of Numerical Analyses of Behaviour of Column-Reinforced Foundations<br>By Mounir Bouassida, Mnaouar Klai, Seifeddine Tabchouche and Mekki Mellas | 118-122 |
| 15: | Particle Image Velocimetry Analysis on the Sinking of Shallow Foundation in 2D<br>By P. Pizette and N-E. Abriak                                             | 123-125 |
| 16: | Attempt of Simple Calculation on Studying Failure Mechanism of DM Columns<br>By B. T. T. Nguyen, T. Takeyama and M. Kitazume                                | 126-136 |
| 17: | Microzonation of Liquefaction Hazard using Liquefaction Index in Babol City<br>By A. Janalizadechoobbasti, M. Naghizadeh rokni, and R. Charaty              | 137-143 |

# GEOTECHNICAL ENGINEERING

**December 2017: Papers by Guest Editor Akira Murakami & Contributed Papers**

**Edited by:**  
**Akira Murakami, San Shyan Lin & Mounir Bouassida**

## TABLE OF CONTENTS

| <b><u>List of Papers</u></b>                                                                                                                                                                                 | <b><u>Page</u></b> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| 1: Modelling the Effects of Static Shear on the Undrained Cyclic Torsional Simple Shear Behaviour of Liquefiable Sand<br><i>By Gabriele Chiaro, L.I. Nalin De Silva and Junichi Koseki</i>                   | 01-09              |
| 2: Numerical Study on the Design of Reinforced Soil by Vertical Micropiles<br><i>By A. Kamura, J. Kim, T. M. Kazama, N. Hikita and S. Konishi</i>                                                            | 10-18              |
| 3: Soil-water Coupled Analysis of Pore Water Pressure Dissipation in Performance Design - Examinations of Effectiveness in Reclaimed Ground<br><i>By Toshihiro Nonaka, Shotaro Yamada and Toshihiro Noda</i> | 19-31              |
| 4: Comparison of Sheared Granular Soils: Same void ratio but Considerably Different Fabric<br><i>By Y. Fukumoto and S. Ohtsuka</i>                                                                           | 32-39              |
| 5: Coupled Analysis of Navier-Stokes and Darcy Flows by the Brinkman Equations<br><i>By S. Arimoto, K. Fujisawa and A. Murakami</i>                                                                          | 40-49              |
| 6: Numerical Investigation on Mechanical Behaviour of Natural Barrier in Geological Repository of High-Level Radioactive Waste<br><i>By Y. Kurimoto, Y. L. Xiong, S. Kageyama and F. Zhang</i>               | 50-57              |
| 7: Change of Soil Properties in the Bengawan Solo River Embankment due to Drying–Wetting Cycles<br><i>By Trihanyndio Rendy Satrya, Ria Asih Aryani Soemitro, Toshifumi Mukunoki and Indarto</i>              | 58-68              |
| 8: Soft Ground Improvement at the Rampal Coal Based Power Plant Connecting Road Project in Bangladesh<br><i>By Sudipta Chakraborty, Ripon Hore, Fahim Ahmed and M. A. Ansary</i>                             | 69-75              |
| 9: Assessment on the effect of fine content and moisture content towards shear strength<br><i>By Badee Alshameri, Aziman Madun and Ismail Bakar</i>                                                          | 76-86              |
| 10: Ground Response Based Preliminary Microzonation of Kathmandu Valley<br><i>By Dipendra Gautam, Hemchandra Chaulagain, Hugo Rodrigues and Hem Raj Shahi</i>                                                | 87-92              |

| <b><u>List of Papers</u></b>                                                                                                                                                             | <b><u>Page</u></b> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| 11: Investigation of the Use of Sugarcane Bagasse for Soil Reinforcement in Geotechnical Applications<br><i>By V. Oderah and D. Kalumba</i>                                              | 93-102             |
| 12: Quasi-Static Numerical Modelling of an ore Carrier Hold<br><i>By S. Daoud, I. Said, S. Ennour and M. Bouassida</i>                                                                   | 103-109            |
| 13: Shear Strength of an Expansive Overconsolidated Clay Treated with Hydraulic Binders<br><i>By A. Mahamedi and M. Khemissa</i>                                                         | 110-115            |
| 14: Numerical Modelling of Retaining Wall Resting on Expansive Soil<br><i>By Bushra Suhale Al-Busod, Safa Hussain Abid Awn and Hassan Obaid Abbase</i>                                   | 116-121            |
| 15: Simplified Method for Designing Piled Raft Foundation in Sandy Soils<br><i>By N. M. Alsanabani, T. O. AL-Refeai and A. O. Alshenawy</i>                                              | 122-128            |
| 16: Stabilization of Seepage Induced Soil Mass Movements using Sand Drains<br><i>By R. Ramkrishnan, Karthik, Mukund S. Unnithan, R. Kiran Balaji, M. Athul Vinu and Anju Venugopalan</i> | 129-137            |
| 17: Experimental Study on the Durability of Soil-Cement Columns in Coastal Areas<br><i>By Pham Van Ngoc, Brett Turner, Jinsong Huang and Richard Kelly</i>                               | 138-143            |
| 18: The Change Laws of Strength and Selection of Cement-sand Ratio of Cemented Backfill<br><i>By Xiaoming Wei, Changhong Li, Xiaolong Zhou, Baowen Hu, Wanling Li</i>                    | 144-150            |
| 19: Numerical Modelling of Ground Subsidence at an Underground Coal Gasification Site<br><i>By T.C. Ekneligoda, L.T. Yang, D. Wanatowski, A.M. Marshall, and L.R. Stace</i>              | 151-154            |



# GEOTECHNICAL ENGINEERING

**March 2018: Issue to Honour Prof M. R. Madhav  
for his Contributions in Geotechnics Through Indian Geotechnical Society,  
ISSMGE and Universities in IIT Kanpur, IIT Bangalore, Saga etc.**

**Edited by:  
Madhavi Latha & Murali Krishna**

## TABLE OF CONTENTS

| <b><u>List of Papers</u></b>                                                                                                                                                                                  | <b><u>Page</u></b> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| 1: Rational Assessment of Modulus of Subgrade Reaction<br>By <i>Harry G. Poulos</i>                                                                                                                           | 01 - 07            |
| 2: Effectiveness of Stone Column Reinforcement for Stabilizing Soft Ground with Reference to<br>Transport Infrastructure<br>By <i>S. Basack Indraratna and C. Rujikiatkamjorn</i>                             | 08 - 14            |
| 3: Pile design and group behaviour; a case study of large tank foundations in soft soil conditions<br>By <i>W.F. Van Impe, P.O. Van Impe and A. Manzotti</i>                                                  | 15 - 29            |
| 4: Granular Columns for Geotechnical Applications<br>By <i>V Sivakumar</i>                                                                                                                                    | 30 - 44            |
| 5: Ground Engineering Using Prefabricated Vertical Drains: A Review<br>By <i>V.A. Sakleshpur, M. Prezzi, and R. Salgado</i>                                                                                   | 45 - 64            |
| 6: Soil Reinforcement under Oblique Pull - An Updated Discretization<br>By <i>S. Patra and J.T. Shahu</i>                                                                                                     | 65 - 72            |
| 7: Effect of Facing Slope on the seismic response of Geocell Walls<br>By <i>Madhavi Latha G and Manju G. S.</i>                                                                                               | 73 - 83            |
| 8: Evaluation of Resilient Modulus of Geosynthetic Reinforced Layers Using Repeated<br>Load Triaxial Tests<br>By <i>Sudheer S Prabhu, Lekshmi Suku and G L Sivakumar Babu</i>                                 | 84 - 89            |
| 9: Seismic Analysis of Reinforced Soil Wall considering Oblique Pull-out of Reinforcements: A Review<br>By <i>Ritwik Nandi and Deepankar Choudhury</i>                                                        | 90 - 98            |
| 10: Characterization of the Soil Samples from the Lonar Crater, India<br>By <i>Nevin Koshy, S. U. Sushalekshmi, Susmita Sharma, Jeevan Joseph, Vikas Sharma, D. N. Singh,<br/>Bhagwanjee Jha and M. Singh</i> | 99 - 105           |

| <b><u>List of Papers</u></b>                                                                                                                                           | <b><u>Page</u></b> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| 11: Encased Columnar Inclusions in Soft Grounds - A Review<br><i>By J.Jayapal and K.Rajagopal</i>                                                                      | 106 - 118          |
| 12: Influence of Shear Stiffness of Geocell Mattress on the Performance of Strip Footings: A Numerical Study<br><i>By P. A. Faby Mole, S. Sireesh and M. R. Madhav</i> | 119 - 127          |
| 13: Interference of Two Closely-Spaced Footings on Finite Sand Layer<br><i>By Macharam Rohith, Sasanka Mouli, and Umashankar Balunaini</i>                             | 128 - 135          |
| 14: Stone Columns/Granular Piles for Improving Liquefiable Sites: Case studies<br><i>By A. Murali Krishna, A. Madan Kumar, Utpal Kr. Baruah</i>                        | 136 - 142          |
| 15: Biogeotechnological Methods for Mitigation of Liquefaction<br><i>By S. Wu, B. Li, J. He and J. Chu</i>                                                             | 143 - 149          |
| 16: A Critical and Comparative Study on 2D and 3D Analyses of Raft and Piled Raft Foundations<br><i>By V. Balakumar, Min Huang, Erwin Oh and A. S. Balasubramaniam</i> | 150 - 164          |

# GEOTECHNICAL ENGINEERING

**June 2018:**  
**Special Issue on**  
**50<sup>th</sup> Anniversary of the Southeast Asian Geotechnical Society**

**Edited by**  
**Noppadol Phienwej, Suttisak Soralump, Apiniti Jotisankasa, Suched Likitleruang**  
**and Tirawat Boonyatee**

## TABLE OF CONTENTS

| <b><u>List of Papers</u></b>                                                                                                                                                                                  | <b><u>Page</u></b> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| <b>1:</b> State-of-the-Art Research in Geo-energy and Geo-environmental Engineering: Energy Pile and Earthen Capillary Landfill Cover System<br><i>By Charles W.W. Ng, Jason L. Coo &amp; Anthony Gunawan</i> | 1-11               |
| <b>2:</b> Validation of a New Simplified Hypothesis B Method for Calculating Consolidation Settlement of Clayey Soils Exhibiting Creep<br><i>By J.-H. Yin and W.-Q. Feng</i>                                  | 12-21              |
| <b>3:</b> Finite Element Analysis to Characterize the Lateral Behaviour of a Capped Pile Group<br><i>By Chao-Kuang Hsueh, San-Shyan Lin and Dominic E. L. Ong</i>                                             | 22-31              |
| <b>4:</b> Proposed Design Guideline of Dynamic Compaction for Practicing Engineers<br><i>By Tjie-Liong Gouw</i>                                                                                               | 32-40              |
| <b>5:</b> Settlement of River Dykes and Their Adjacent Residences on Soft Clay Deposits After the Tohoku-Pacific Ocean Earthquake in 2011<br><i>By K. Yasuhara, S. S. Yang, I. Horikawa and H. Yamane</i>     | 41-48              |
| <b>6:</b> Application of Photogrammetry and Image Analysis for Rock Slope Investigation<br><i>By D-H. Kim, A. S. Balasubramaniam and I. Gratchev</i>                                                          | 49-56              |
| <b>7:</b> Longitudinal and Transverse Interactions between Stacked Parallel Tunnels Constructed using Shield Tunnelling in Residual Soil<br><i>By C.W. Boon and L.H. Ooi</i>                                  | 57-71              |
| <b>8:</b> Common Blind Spots in Ground Investigation, Design, Construction, Performance Monitoring and Feedbacks in Geotechnical Engineering.<br><i>By Shaw Shong Liew</i>                                    | 72-84              |
| <b>9:</b> Detrimental Effects of Lateral Soil Movements on Pile Behaviour<br><i>By D.E.L. Ong</i>                                                                                                             | 85-95              |
| <b>10:</b> Optimising Cement Dosage in Ground Improvement and Early Quality Control Schemes<br><i>By S.C. Chian</i>                                                                                           | 96-103             |
| <b>11:</b> Effects of Preloading of Struts on Retaining Structures in Deep Excavations<br><i>By Richard N. Hwang and Lup-Wong Wong</i>                                                                        | 104-114            |

|                                                                                                                                                                                                 |         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| <b>12:</b> Anchors of Anchored Slopes in Taiwan<br><i>By Hung-Jiun Liao, Shih-Hao Cheng and Chun-Chung Chen</i>                                                                                 | 115-122 |
| <b>13:</b> Hexagonal Wire Mesh Panel Tensile Behaviour due to Weaving Patterns<br><i>By Chiwan Hsieh, Zhi-Yao Cai, and Wen-Shin Shuy</i>                                                        | 123-130 |
| <b>14:</b> Trenchless Excavations for Underground Pipelines in Difficult Geology<br><i>By Keh-Jian Shou, Jonas Yen, and Chih-Ying Hsieh</i>                                                     | 131-135 |
| <b>15:</b> Liquefaction-Induced Settlement of Structures on Shallow Foundation<br><i>By C.W. Lu, L. Ge, M.C. Chu, and C.T. Chin</i>                                                             | 136-139 |
| <b>16:</b> Evaluation of Failure of Embankment Slope Constructed with Expansive Soils<br><i>By Kuo Chieh Chao, Jong Beom Kang and John D. Nelson</i>                                            | 140-149 |
| <b>17:</b> Strength and Stiffness Parameters of Bangkok clays for Finite Element Analysis<br><i>By Suched Likitlersuang, Chhunla Chheng, Chanaton Surarak and Arumugam Balasubramaniam</i>      | 150-156 |
| <b>18:</b> Failure of Riverbank Protection Structure and Remedial Approach<br><i>By S. Horpibulsuk, A. Udomchai, M. Hoy, A. Chinkulkijniwat, and D. B. Van</i>                                  | 157-163 |
| <b>19:</b> Recent Developments of Soft Ground Improvements using Prefabricated Vertical Drains (PVD) and Deep Cement Mixing (DCM)<br><i>By D.T. Bergado, A.S. Balasubramaniam and P.V. Long</i> | 164-181 |
| <b>20:</b> Study on Shield Operation Method in Soft Ground by Shield Simulation<br><i>By Mitsutaka Sugimoto, Hideyuki Tanaka, Ngoc Thi Huynh, Salisa Chaiyaput, Le Gia Lam, and Jian Chen</i>   | 182-191 |

# GEOTECHNICAL ENGINEERING

September 2018: Contributed

Edited by  
**Dominic Ong, San Shyan Lin & Ooi Teik Aun**

## TABLE OF CONTENTS

| <b><u>List of Papers</u></b>                                                                                                                                           | <b><u>Page</u></b> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| 1: Strength Characteristics of Soda Waste Treated with Fly Ash and Lime<br><i>By Hai-lei Kou and Wen-gang Zhang</i>                                                    | 01-03              |
| 2: Groundwater Recharge Estimation in Kathu, Phuket using Groundwater Modelling<br><i>By A. Puttiwongrak, K. Sam O and V. Sakanann</i>                                 | 04-10              |
| 3: Seismic Microzonation of Cox's Bazar Municipal Area Bangladesh<br><i>By A. Imtiaz, A. Barua, M. Sakib and M.A. Ansary</i>                                           | 11-17              |
| 4: Geophysical Investigation in Bukit Merah Reservoir<br><i>By M. R. Selamat, A. Shafie, R. Saad, and M. M. Nordiana</i>                                               | 18-22              |
| 5: Effect of Ground Disruption on the Strength of Gatch Soil in Kuwait<br><i>By Ziad Abdelsalam and Nabil Ismael</i>                                                   | 23-26              |
| 6: Greenheart Timber Strip Reinforcement for Reinforced Soil Retaining Walls<br><i>By Sean A. Surujdas and C.N.V. Satyanarayana Reddy</i>                              | 27-31              |
| 7: HWYL Method for Predicting Settlement of Soft Soil<br><i>By Yudhi Lastiasih and Herman Wahyudi</i>                                                                  | 32-35              |
| 8: Bearing Capacity and Settlement Study on Small-Scale Piled-Raft Groups in Sand<br><i>By Sengara, IW., Roesyanto, Krisnanto, S., Jayaputra, A. A., and Irsyam, M</i> | 36-46              |
| 9: Influence of Two Rough Parallel Joint Surface Profiles on Stress Wave Energy Dissipation<br><i>By Yexue Li, Hongke Pan, Li Qinand Jianhui Fan</i>                   | 47-54              |
| 10: Failure Mode for Creep Area of High Open-pit Slope Under the Influence of Underground Mining<br><i>By Wang Ning, Zhou Xiaolong, Zhu Dengyuan</i>                   | 55-61              |
| 11: Properties of Desert Sands Reinforced with Ground Tire Rubber in Kuwait<br><i>By Nabil Ismael and Hasan Al-Sanad</i>                                               | 62-66              |
| 12: A Study on Behaviour of Vertical Pile in Sand under Uplift Load<br><i>By R. Saravanan and P.D. Arumairaj</i>                                                       | 67-72              |
| 13: Numerical Simulations of $K_0$ Triaxial Tests on Collapsible Porous Clay<br><i>By J.C. Ruge, A. López, F.A. Molina-Gómez, R.P da Cunha and J.E. Colmenares</i>     | 73-81              |

# GEOTECHNICAL ENGINEERING

**December 2018:**

**Edited by**

**SUJIT KUMAR DASH (LEAD EDITOR), ALFRENDINO, DARREN CHIAN & SAN SHYAN LIN**

## TABLE OF CONTENTS

| <b><u>List of Papers</u></b>                                                                                                                                            | <b><u>Page</u></b> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| 1: Analysis of Effect of Reinforcement on Stability of Slopes and Reinforcement Length optimization<br><i>By Akshay Kumar Jha, M.R. Madhav and G.V.N. Reddy</i>         | 01-05              |
| 2: Fatigue Performance of Geosynthetic Reinforced Two-Layered Asphalt Concrete Beams<br><i>By V. Vinay Kumar and S. Sireesh</i>                                         | 06-12              |
| 3: Deformation Response of Geocells in Pavements under Moving Loads<br><i>By Priti Maheshwari and G. L. Sivakumar Babu</i>                                              | 13-19              |
| 4: Effect of Multilayered Geosynthetic Reinforcements on the Response of Foundations resting on Stone Column-Improved Soft Soil<br><i>By K. Deb</i>                     | 20-30              |
| 5: A Critical Review of the Performance of Geosynthetic-Reinforced Railroad Ballast<br><i>By Syed Khaja Karimullah Hussaini; Buddhima Indraratna, and J. S. Vinod</i>   | 31-41              |
| 6: Performance of Geosynthetic Reinforced Model Pavements under Repetitive Loading<br><i>By K. H. Mamatha, S. V. Dinesh and B. C. Swamy</i>                             | 42-48              |
| 7: Lateral Response Analysis of GRS Bridge Abutments under Passive Push<br><i>By M. Ramalakshmi and G. R. Dodagoudar</i>                                                | 49-54              |
| 8: Numerical Analysis of Machine Foundation Resting on the Geocell Reinforced Soil Beds<br><i>By H. Venkateswarlu and A. Hegde</i>                                      | 55-62              |
| 9: Finite Element Modeling of Embankment Resting on Soft Ground Stabilized with Prefabricated Vertical Drains<br><i>By B. Giridhar Rajesh, S. K. Chukka, and A. Dey</i> | 63-72              |
| 10: Effect of Geobags on Water Flow through Capillary Barrier System<br><i>By H. Rahardjo, N. Gofar, F. Harnas, A. Satyanaga</i>                                        | 73-78              |

|                                                                                                                                                                              |         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 11: Performance of Ballasted Track under Impact Loading and Applications of Recycled Rubber Inclusion<br><i>By SanjayNimbalkar, Sujit KumarDash, and Buddhima Indraratna</i> | 79-91   |
| 12: Probabilistic Stability Analyses of Reinforced Slope Subjected to Strip Loading<br><i>By Koushik Halder and Debarghya Chakraborty</i>                                    | 92-99   |
| 13: Advancing the Use of Geosynthetic Clay Liners as Barriers<br><i>By J. Scalia IV, C.A. Bareither, and C.D. Shackelford</i>                                                | 100-114 |
| 14: Field and laboratory tests on the bearing behaviour of unpaved roads reinforced by different Geosynthetics<br><i>By G. Bräü and S. Vogt</i>                              | 115-123 |
| 15: Performance of nonwoven geotextiles as separators for pavement applications<br><i>By Maria P.S. Susunaga, Ennio M. Palmeira, &amp; Gregório L.S. Araújo</i>              | 124-131 |
| 16: Geosynthetics Application in Indonesia – A Case Histories<br><i>By Tjie-Liong GOUW</i>                                                                                   | 132-145 |

## COVER PHOTOGRAPH

1. Figure 1. Typical seat type bridge abutment  
(After M. Ramalakshmi and G. R. Dodagoudar, 2018)
2. Figure 1(a). Ballast breakage in a rail track (b) Buckling of track due to insufficient lateral confinement  
(After Indraratna et al. 2011);  
(Qouted by Syed Khaja Karimullah Hussaini, Buddhima Indraratna, and J. S. Vinod, 2018)
3. Figure 2(b). View of the equipment during one of the tests  
(After Maria P.S. Susunaga, Ennio M. Palmeira and Gregório L.S. Araújo, 2018)

# **GEOTECHNICAL ENGINEERING**

## **March 2019: Special Issue in Unsaturated Soils – Testing, Modelling and Applications**

**Edited by:**  
**Eng-Choon Leong & Hossam Abuel-Naga**

### **TABLE OF CONTENTS**

| <b><u>List of Papers</u></b>                                                                                                                              | <b><u>Page</u></b> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| 1: Water Retention Characteristics of Swelling Clays<br>By Kannan R. Iyer and D. N. Singh                                                                 |                    |
| 2: Water Retention and Unsaturated Hydraulic Behaviors of a Biochar-modified Silt<br>By Abraham C.F. Chiu, B. Qiao and Y. Xiao                            |                    |
| 3: Investigation of a Nonisothermal Apparent Thermal Conductivity Function for Unsaturated Sand<br>By R.A. Samarakoon, and J.S. McCartney                 |                    |
| 4: Simple Approach to Monitor Soil Moisture Dynamic in Vapour Equilibrium Cell<br>By Y. Lu, Z. Shang, Hossam Abuel-Naga                                   |                    |
| 5: A Classification Tree Guide to Soil-water Characteristic Curve Test for Soils with Bimodal Grain-size Distribution<br>By L. Zou and E.C. Leong         |                    |
| 6: Back Pressure Saturation Effects on the Mechanical Behaviour of a Quasi-Saturated Compacted Residual Soil<br>By G.G. Carnero-Guzman and F.A.M. Marinho |                    |
| 7: Induced and Inherent Anisotropies of Saturated and Unsaturated Soil Shear Properties<br>By H. Toyota, B. N. Le and S. Takada                           |                    |
| 8: Modeling of Unsaturated Soil Aided by Probability and Statistics<br>By R. Kitamura and K. Sako                                                         |                    |
| 9: Elastoplastic Modelling of Hydro-mechanical Behaviour of Unsaturated Soils<br>By J.R. Zhang, D.A. Sun and W.J. Sun                                     |                    |
| 10: Interpretation of Desiccation Soil Cracking in the Framework of Unsaturated Soil Mechanics<br>By H. Al-Dakheeli and R. Bulut                          |                    |
| 11: Field Response of an Instrumented Dyke subjected to Rainfall<br>By A. Jotisankasa, S. Pramusandi, S. Nishimura and S. Chaiprakaikeow                  |                    |
| 12: Simplified Shear Deformation Method for Analysis of Mechanical Behavior of Pile Foundations in Expansive Soils<br>By Y. Liu and S.K. Vanapalli        |                    |
| 13: Validation of Foundation Design Method on Expansive Soils<br>By K.C. Chao and J.D. Nelson                                                             |                    |



# GEOTECHNICAL ENGINEERING

**June 2019: Issue on Buried Pipelines**

**Edited by:  
Dr Jey Jeyapalan**

## TABLE OF CONTENTS

| <b><u>List of Papers</u></b>                                                                                                                                                                     | <b><u>Page</u></b> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| 1: Long-term Deformation Monitoring of CERN Concrete-lined Tunnels using Distributed Fibre-optic Sensing<br><i>By V. Di Murro, L. Pelecanos, K. Soga, C. Kechavarzi, R.F. Morton, L. Scibile</i> | 1-7                |
| 2: Distributed Brillouin Sensing for Geotechnical Infrastructure: Capabilities and Challenges<br><i>By N. Noether and S. von der Mark</i>                                                        | 8-12               |
| 3: State-of-the Art of Geotechnical Monitoring with Geodetic Techniques<br><i>By W. Lienhart</i>                                                                                                 | 13-20              |
| 4: Performance Assessment and Failure Prediction of Corroded Cast Iron Pipes<br><i>By P. Rajeev and D. Robert</i>                                                                                | 21-27              |
| 5: Comparative Study of Distributed Sensors for Strain Monitoring of Pipelines<br><i>By B. Glisic</i>                                                                                            | 28-35              |
| 6: Instrumented Laterally Loaded Pile Test Using Distributed Fibre Optic Sensors<br><i>By H. Mohamad, B.P. Tee, M.F. Chong, K.A. Ang, A.S.A. Rashid and R.A. Abdullah</i>                        | 36-42              |
| 7: Distributed Fibre Optic Sensing for Monitoring Reinforced Concrete Piles<br><i>By C. Kechavarzi, L. Pelecanos, N. de Battista and K. Soga</i>                                                 | 43-51              |
| 8: State-of-the Art Knowledge on Upheaval Buckling of Buried Pipelines<br><i>By Indrasenan Thusyanthan and Dilan Robert</i>                                                                      | 52-59              |
| 9: Cost Effective Free Span Rectification for Offshore Pipelines<br><i>By Indrasenan Thusyanthan</i>                                                                                             | 60-63              |
| 10: Distributed Optical Fiber Sensors for Strain and Deformation Monitoring of Pipelines and Penstocks<br><i>By D. Inaudi</i>                                                                    | 64-70              |
| 11: A Methodology for Identification of Pipe Failure Hotspots<br><i>By Ravin N Deo, Chunshun Zhang, Jian Ji, Suranji Rathnayaka, Benjamin Shannon, Jayantha K Kodikara</i>                       | 71-76              |
| 12: ADYTrack: Development of a Railroad Trackbed Model and Parametric Study of Track Modulus<br><i>By Asif Arshid, Ying Huang, and Denver Tolliver</i>                                           | 77-84              |

|     |                                                                                                                                                                                                 |         |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 13: | Leakage- induced Pipeline Stressing and its Potential Detection by Distributed Fiber Optic Sensing<br><i>By A. Klar, A., Linker, R. and Herrmann, S.</i>                                        | 85-90   |
| 14: | Smart Geosynthetics based on Distributed Fiber-optic Sensors in Geotechnical Engineering<br><i>By A. Wosniok and K. Krebber</i>                                                                 | 91-95   |
| 15: | Loss of Flexibility in Geosynthetics Subjected to Chemical Exposure: Experiments, Constitutive Models and Computations and Estimates for Contaminant Leakage<br><i>By A. P.S. Selvadurai</i>    | 96-106  |
| 16: | Monitoring of Buried Pipeline using Distributed Fibre Optic Technologies: Combined Acoustic-Temperature-Strain sensing<br><i>By C. Prohasky, R. Vivekanantham, P.Rajeev, H. Bao, and S. Roy</i> | 107-112 |
| 17: | Benefits of Standards for Fiber-optic Sensors in Soil-structure Interaction<br><i>By W. R. Habel and J. K. Jeyapalan</i>                                                                        | 113-124 |
| 18: | Rational Methods of Steel Pipe Design Accounting for Poor Native Soils and Soil Migration<br><i>By J. K. Jeyapalan, G. Leonhardt, P. Rajeev, and A. M. Britto</i>                               | 125-130 |
| 19: | Technical Challenges and Solutions for Super-Long Mountainous Tunnels at Great Depth<br><i>By Yan Jinxiu</i>                                                                                    | 131-135 |
| 20: | Risk Analysis and Countermeasure Study of Shield Tunnelling in Karst Stratum of China by<br><i>By Zhong Changping, Zhu Weibin, Huang Weiran, Zhu Siran and Xu Minghui</i>                       | 136-140 |

### Cover Photograph

|    |                                                                                                                                                                                               |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. | Benefits of standards for fiber-optic sensors in soil-structure interaction<br><i>By W. R. Habel and J. K. Jeyapalan</i>                                                                      |
| 2. | Long-term Deformation Monitoring of CERN Concrete-lined Tunnels using Distributed Fibre-optic Sensing<br><i>By V. Di Murro, L. Pelecanos, K. Soga, C. Kechavarzi, R.F. Morton, L. Scibile</i> |
| 3. | State-of-the Art of Geotechnical Monitoring with Geodetic Techniques<br><i>By W. Lienhart</i>                                                                                                 |
| 4. | State-of-the Art Knowledge on Upheaval Buckling of Buried Pipelines<br><i>By N. I. Thusyanthan and D. Robert</i>                                                                              |
| 5. | Distributed Optical Fiber Sensors for Strain and Deformation Monitoring of Pipelines and Penstocks<br><i>By D. Inaudi</i>                                                                     |
| 6. | Smart Geosynthetics based on Distributed Fiber Optic Sensors in Geotechnical Engineering<br><i>By A. Wosniok and K. Krebber</i>                                                               |
| 7. | Leakage-Induced Pipeline Stressing and its Potential Detection by Distributed Fiber Optic Sensing<br><i>By A. Klar, R. Linker and S. Herrmann</i>                                             |
| 8. | Loss of flexibility in geosynthetics subjected to chemical exposure: Experiments, constitutive models and computations and estimates for contaminant leakage<br><i>By A. P.S. Selvadurai</i>  |

# GEOTECHNICAL ENGINEERING

September 2019: Bengt Fellenius Issue

Edited by:

Dr Phung Duc Long, Prof Der Wen Chang & Dr T Hosoi

## TABLE OF CONTENTS

| <b><u>List of Papers</u></b>                                                                                                                                                                           | <b><u>Page</u></b> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| 1: Monitoring and Process Control of Vibratory Driving<br><i>by K. R. Massarsch and C. Wersäll</i>                                                                                                     | 1-10               |
| 2: Load-movement Response by t-z and q-z Functions<br><i>by Bengt H. Fellenius and Mohammad Manzur Rahman</i>                                                                                          | 11-19              |
| 3: Common Mistakes in Static Loading-test Procedure and Result Analyses<br><i>by Bengt H. Fellenius and Ba N. Nguyen</i>                                                                               | 20-31              |
| 4: Stiffening Effect on End Bearing Granular Piles<br><i>by M. R. Madhav, B. Jitendra Kumar Sharma and A. Vaibhaw Garg</i>                                                                             | 32-40              |
| 5: Long-term Behaviour of Piled Raft with DMW Grid on Reclaimed Land<br><i>by K. Yamashita, T. Tanikawa and A. Uchida</i>                                                                              | 41-47              |
| 6: In-situ Full Scale Load Tests and Estimation Method of Pile Resistance for Nodular Diaphragm Wall Supporting High-rise Tower<br><i>by Koji Watanabe and Toshimi Sudo</i>                            | 48-57              |
| 7: Three-dimensional Finite Element Analyses of Barrette Piles under Compression and Uplift Loads with Field Data Assessments<br><i>by D.W. Chang, C. Lin, T. Wang, Y.K. Lin, F.C. Lu and C.J. Kuo</i> | 58-73              |
| 8: AUT: Geo-CPT & Pile Database Updates and Implementations for Pile Geotechnical Design<br><i>by A. Eslami, S. Moshfeghi, S. Heidari and F. Valikhah</i>                                              | 74-90              |
| 9: Drilled Shaft Grouting Effectiveness in Mekong Delta<br><i>by Hai M. Nguyen, Anand J. Puppala, Long D. Phung and Trung T. Nguyen</i>                                                                | 91-98              |
| 10: Design of Axially-loaded Piles: Experimental Evidence from 400 Field Tests<br><i>by Alessandro Mandolini &amp; Raffaele Di Laora</i>                                                               | 99-105             |
| 11: The use of Equivalent Circular Piles to Model the Behaviour of Rectangular Barrette Foundations<br><i>by H.G. Poulos, H.S.W. Chow and J.C. Small</i>                                               | 106-109            |

- |     |                                                                                                                                                                     |         |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 12: | Analysis of Thermo-mechanical Behaviour of Energy Piles<br><i>by G. Russo, R.M.S. Maiorano and G. Marone</i>                                                        | 110-117 |
| 13: | A Method to Estimate Shaft and Base Responses of a Pile from Pile Load Test Results<br><i>by Madhav Madhira and Kota Vijay Kiran</i>                                | 118-123 |
| 14: | Technical Issues on Static Load Tests on Barrettes and Bored Piles<br><i>By K. Watanabe , T. Hosoi, S. Matsushita, A. S. Balasubramaniam and Richard Hwang</i>      | 124-135 |
| 15: | Piled Raft on Sandy Soil - An Extensive Study<br><i>by V. Balakumar, Min Huang, Erwin Oh , Richard Hwang and A. S. Balasubramaniam</i>                              | 136-141 |
| 16: | Finite Element Modelling of A Bidirectional Pile Test in Vietnam<br><i>by Phung Duc Long and B. William Cheang</i>                                                  | 142-145 |
| 17: | A FEM Assessment on the use of t-z and q-z Functions for Deep Foundations<br><i>by Q.J. Ong, S.A. Tan</i>                                                           | 146-154 |
| 18: | Shaft Resistance of Shaft-grouted Bored Piles and Barrettes Recently Constructed in Ho Chi Minh City<br><i>by T.D. Nguyen, V.Q. Lai, D.L. Phung, and T.P. Duong</i> | 155-162 |

# GEOTECHNICAL ENGINEERING

## December 2019: Contributed Papers

Edited by:  
San Shyan Lin, Erwin Oh & Ooi Teik Aun

### TABLE OF CONTENTS

| <u>List of Papers</u>                                                                                                                                                                                                                        | <u>Page</u> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 1: Long-term Deformations of a Historical Church on the Anzer Island, White Sea<br><i>By Chernyshev Sergei N.</i>                                                                                                                            | 1-4         |
| 2: Seismic Observations on Piled Raft Foundation subjected to Unsymmetrical Earth Pressure during Far Earthquake and Near Earthquake<br><i>By J. Hamada and K. Yamashita</i>                                                                 | 5-14        |
| 3: Determination of Virgin Compression Destructuring Line Parameters for Natural Clays<br><i>By M. Manzur Rahman and Mohammed K. Islam</i>                                                                                                   | 15-20       |
| 4: Effect of Liquid Polymer on Properties of Fine-Grained Soils<br><i>By H. Soltani-Jigheh and S.N. Tahaei Yaghoubi</i>                                                                                                                      | 21-29       |
| 5: Geotechnical Aspects of Infrastructure Projects in Gypseous Soils<br><i>By Safa Hussein Abd-Awn and Heba Qasim Hussein</i>                                                                                                                | 30-33       |
| 6: Influence of Nano Copper Slag in Strength Behavior of Lime Stabilized Soil<br><i>By M. Kirithika and V.K.Stalin</i>                                                                                                                       | 34-38       |
| 7: Slope Stability Problem and Bio-engineering Approach on Slope Protection: Case Study of Cox's Bazar Area, Bangladesh<br><i>By Md Shofiqul Islam and Atikur Rahman</i>                                                                     | 39-46       |
| 8: Geotechnical Characterization and Behaviour of Tunis Soft Clay<br><i>By Nadia Mezni and Mounir Bouassida</i>                                                                                                                              | 47-53       |
| 9: Strength of Peat Treated with Peat Ash<br><i>By Mingyang Zhou and Kwong Soon Wong</i>                                                                                                                                                     | 54-57       |
| 10: Temperature-Stress Analysis of Rock-Shotcrete Structure under High Temperature Cooling Effect<br><i>By Hui Su, Min Liang, Baowen Hu, ZhouXiang Xuan, Yue Xin, and Yi Zhu</i>                                                             | 58-64       |
| 11: Applicability of Hyperbolic Method for the Prediction of Shear Strength Parameters from Multistage Direct Shear Tests<br><i>By A.Sridharan, Santhosh Kumar. T.G, Benny Mathews Abraham and Sobha Cyrus</i>                               | 65-70       |
| 12: Behavior of Foundation on End-bearing Stone Columns Group Reinforced Soil<br><i>By Seifeddine Tabchouche, Mounir Bouassida and Mekki Mellas</i>                                                                                          | 71-77       |
| 13: Instrumented Piles Tested in 1969 in Fine Loose Sand at Holmen, Drammen: Revisited 2019<br><i>By A.S. Balasubramaniam, E. Oh, G. Chao, H. Kim and R. N. Hwang</i>                                                                        | 78-88       |
| 14: Application of Electrical Resistivity Imaging and Slope Modelling to the Investigation of the Land slide Sliding Geometry in Phuket<br><i>By A. Puttiwongrak and N. N. Htwe</i>                                                          | 89-95       |
| 15: Comparison of Flexural stiffness between Hat-type and U-type steel sheet pile retaining walls in a Field Test in Singapore<br><i>By S. Moriyasu, S.P. Chiew, K. Otsushi, N. Matsui, S. Taenaka, K. Teshima, M. Tatsuta and H. Tanaka</i> | 96-107      |