FEBRUARY 2018 NEWSLETTER

SEAGS Southeast Asian Geotechnical Society · **AGSSEA** Association of Geotechnical Societies in Southeast Asia

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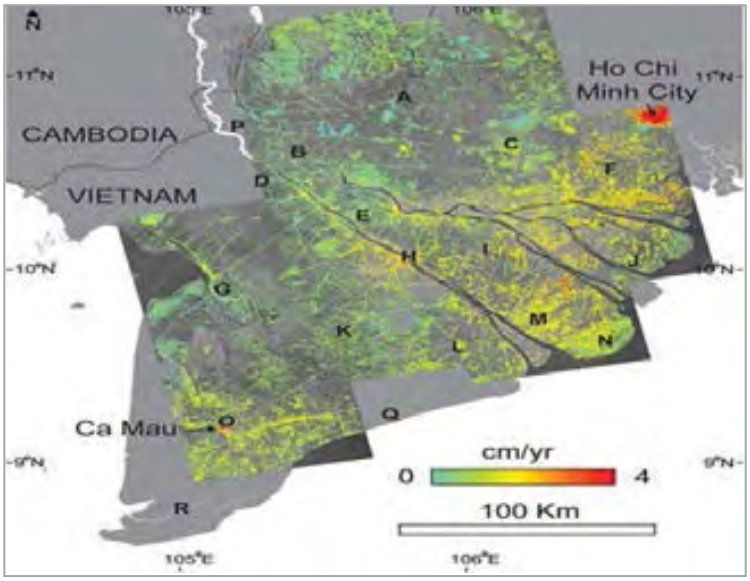

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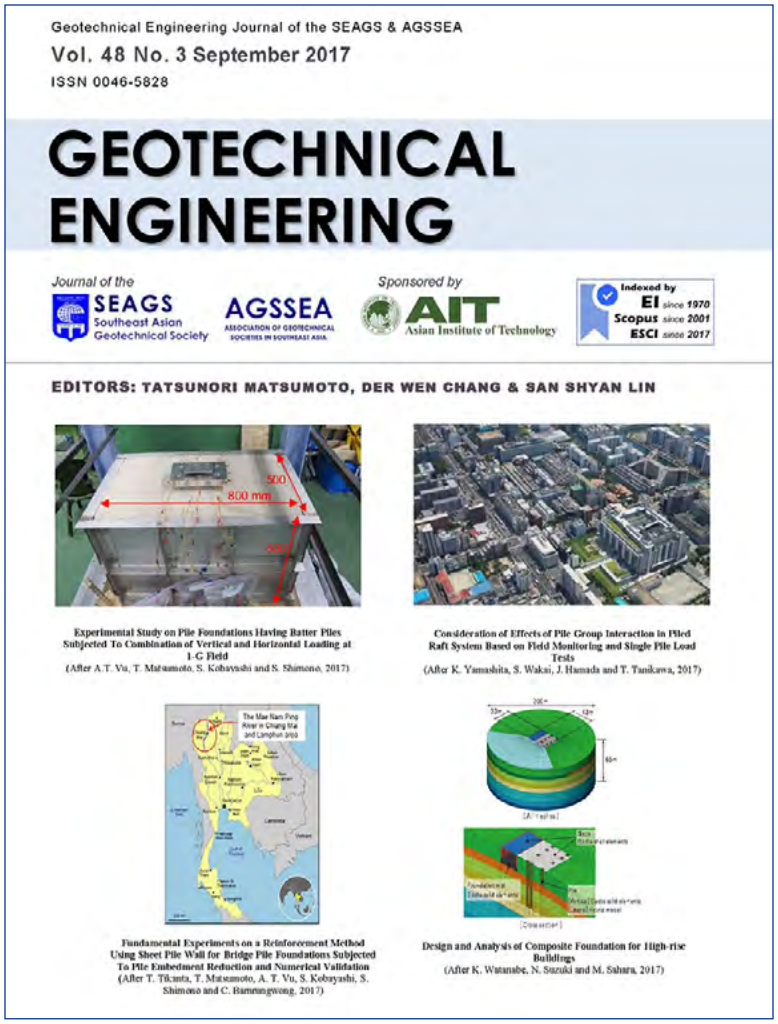
DEEP FOUNDATIONS

EDITORS

Tatsunori Matsumoto,
Der Wen Chang &
San Shyan Lin



PREFACE

There are 17 papers in this Issue; the first twelve are papers edited by the Guest Editors: Tatsunori Matsumoto, Der-Wen Chang and San-Shyan Lin; additionally there are five contributed papers are processed by our in-house editors.

The first paper is by K. Ng and T. Sullivan on challenges and recommendations for steel H- piles driven in soft rock: The capacity of a pile driven in soft rock depends on soil confinement along the pile and rock at its toe; these are rarely known during design. This design challenge often leads to a large discrepancy between estimated and measured resistances. Results of six bridge projects completed in Wyoming, USA, are presented to highlight the challenges pertaining to present design and construction practices of driven piles in rock. The results show that static analysis methods, dynamic analysis methods, and structural analyses yield inconsistent pile resistance estimations. A recommendation considering the structure- geomaterial interaction is proposed to improve the design and construction of steel H-piles driven in soft rock.

The second paper is by Anh-Tuan Vu, Tatsunori Matsumoto, Shun-ichi Kobayashi and Shinya Shimono on Experimental study on pile foundations having batter piles subjected to combination of vertical and horizontal loading at 1-g field: in the paper, the behaviours and resistance mechanisms of pile foundations having batter piles were investigated through a series of vertical load tests and combination load tests on model foundations in dry sand ground at 1-g field. Pile foundation models consisting of 3 piles and 6 piles, with or without batter piles, were used in the experiments. The model pile was close- ended pipe with a length of 255 mm and an outer diameter of 20 mm. Dry silica sand having a relative density, Dr, of about 82% was used for the model ground. The results indicate that the piled raft having batter piles is the most effective to increase the resistances (in both vertical and horizontal directions) and reduce the inclination.

In the third paper, T. Tikanta, T. Matsumoto, A. T. Vu, S. Kobayashi, S. Shimono and C. Bamrungwong conduct experiments on a reinforcement method using sheet pile wall for bridge pile foundations subjected to pile embedment reduction and numerical validation. Due to the riverbed soil excavation for the utilization in construction works for many years, the level of riverbed of the Mae Nam Ping River has been considerably decreased, resulting in reduction of embedment lengths of piles for many bridge foundations. Erosion was not a cause of the lowering of the riverbed. Reductions of bearing capacity due to the lowering of riverbed soil is the main cause of bridge pile foundation settlements or collapses at present. In order to prevent the damages of existing bridge pile foundations caused by the riverbed soil excavation, a reinforcement method using sheet piles called “Sheet Pile Wall (SPW) reinforcement” is proposed. The experimental results show that the proposed SPW reinforcement method is very efficient and promising. Numerical simulation of an experiment using FEM was also carried out to get more insight into the mechanism of the SPW method and validate the proposed SPW method.

In their paper (fourth one) San-Shyan Lin, Yun-Chih Chiang, Xin-Hua Lin, Hsing-Yu Wang, and Sung-Shan Hsiao carry our numerical studies on performance of offshore wind turbine composite suction pile in sand subjected to combined loading. Numerical analysis on the performance of the proposed suction pile with enlarged lid size subjected to combined lateral and axial loading is presented in the paper. The numerical model is firstly validated by comparison with other numerical study results. The parametric analysis results prove a suction pile with enlarged lid size has better performance than a normal suction pile on both the overall bearing capacity and the stability of the foundation.

The fifth paper is on Consideration of Effects of Pile Group Interaction in Piled Raft System Based on Field Monitoring and Single Pile Load Tests by K. Yamashita, S. Wakai1, J. Hamada and T. Tanikawa. In the paper, the effects of pile group interaction were investigated based on the results of two monitoring cases of piled raft foundations and single pile load tests in soft ground. Based on the investigation, it was found that the modified load-settlement data of the monitored piles were generally consistent with the static load-settlement curve of a single pile. Therefore, no significant effects of pile group interaction on settlement were found. In such cases as pile groups with large spacing, single pile load test data can be more useful in the settlement prediction of piled rafts and pile groups. In addition, it was found that the pile head stiffness of the equivalent static load-settlement curve derived from the rapid load testing in clay soils using the UPM was considerably large compared to the stiffness of the static load test curve, as pointed out by previous studies.

In the sixth paper, In-situ Full Scale Load Tests and Reliability Evaluation of Bearing Capacity for Nodular Cast-in-place Concrete Pile is studied by K. Watanabe, A. Mitsumori, H. Nishioka and M. Koda. This paper firstly summarizes the in-situ full scale load tests, and then describes the results of standard bearing capacity based on the data from the in situ full-scale load tests, finally mentions the estimation of ground resistance coefficient for nodular cast-in-place concrete piles.

The seventh paper by K. Watanabe, T. Yamamoto and T. Sudo is titled Development of Steel Pipe Pile Combined with Ground Improvement in Narrow Spaces. Since pile construction in narrow spaces is constrained by the site and process, in this paper, a construction method combining steel pipe piles with ground improvement using a mechanical agitator (e-column construction method®) was developed. This paper briefly summarizes the construction method, presents the static load tests and rapid load tests, and discusses the results of load tests. The results of the loading tests suggest that the bearing capacity can be evaluated by using the undrained shear strength and SPT N-value. Also, a simplified rapid loading test can be applied to validating the bearing capacity at a construction site. For the joint of the steel pipe piles, the maximum tensile resistance obtained from the experiment was larger than that obtained from the calculation formula.

In the subsequent paper eight in the series K. Watanabe, N. Suzuki and M. Sahara deal with Design and Analysis of Composite Foundation for High-rise Buildings. This paper shows two design cases of composite foundations for high-rise buildings. These two foundations were designed by considering the effect

of deformation on the results of a static FEM analysis. The slab settlement was measured upon completion of construction. It was con-firmed that composite foundations deform within a presupposed range.

Hung-Jiun Liao, Chin-Lung Chiu, Chung-Kuang Chien, Yi-En Tang and Heng-Chih Cheng in the ninth paper deal with Pervious Material Made from Landslide Debris for Road Base Construction. This paper introduces an on-site mixing method to prepare pervious-CLSM (controlled low strength material) from the landslide debris by mixing it with proper amount of cement and water. Through the mixing process, the fine soils in the debris will flocculate to a sizable particles and/or stick to the surface of aggregates. As a result, the fines content of the debris can be eliminated and a pervious-CLSM is made. Through the binding effect of cement, the pervious-CLSM can also have moderate strength to maintain the stability of filled embankment and to sustain the traffic load as well. Together with geo-grid, a wrap-faced reinforced embankment as the road base can be constructed quickly using the site prepared CLSM as well as a backhoe machine and hand tools.

The tenth paper is by E. Heins, K.-F. Seitz, A. Chmelnizkij, M. Milatz and J. Grabe on Advances in numerical modelling of different ground improvement techniques. A lot of successful scientific research is conducted on piles and piling using various numerical methods. Therefore, it is assumed that numerical models can be used to improve ground improvement methods. In this contribution, different ground improvement techniques and numerical models to simulate the influence of these techniques on the surrounding soil are presented. Furthermore, optimization methods and potentials of ground improvement techniques are shown.

Ashutosh Kumar and Deepankar Choudhury are the authors of the eleventh paper on Load sharing mechanism of Combined Pile-Raft Foundation (CPRF) under seismic loads. In the present work, the load sharing mechanism under seismic loads for fully hinged (H) and fully rigid (R) connected Combined Pile-Raft Foundation (CPRF) have been studied by using three- dimensional finite element based geotechnical software. Results of the present analyses show that connection rigidity had little influence on vertical settlement of CPRF but had pronounced response on the load sharing by foundation components. In the purview of seismic loading, lateral stiffness played a pivotal role in deciding the load-settlement, lateral displacement, bending moment in piles and inclination response of CPRF. The load sharing by foundation components is governed by mobilization of lateral displacement.

The 12th paper and the last one as assembled by the guest editors is Deflection Behaviour of GFRP Bar Reinforced Concrete Passive Bored Pile in Deep Excavation Construction by J. L. Zhou, E. Oh, X. Zhang, M. Bolton, H. Y. Qin and L. Zhang. This paper describes the investigation of a glass fibre reinforced polymer bar (GFRP bar) as a replacement for a traditional steel bar reinforcement in bored concrete piles with specific application to deep excavation construction. The deflection behaviours of GFRP piles during the installation of one concrete and two steel supports were provided. It is concluded that, based on the difference between the total accumulated deflection of each pile, the GFRP bar reinforced concrete piles can resist the lateral loading and can provide an alternative to traditionally reinforced concrete piles used in shield construction.

The 13th paper by describe by Byron Mawer, Denis Kalumba and Charles Warren-Codrington is the first of the contributed papers edited by San Shyan Lin on Loading and Dynamic Response Considerations for the Design of Wind Turbine Foundations on South African Soils. The discussion of this paper was centered on the sources of loading that wind turbines experience and the consequences of this on the geotechnical design of gravity footings. Rotational stiffness of the foundation was shown to have an important effect on the dynamic response of the wind turbine tower, and thus, on the assumptions surrounding the calculation of the natural frequency of the global system. Soil stiffness effects on natural frequency assumptions were found to be more critical than the minimum stiffness requirements applied by design guidelines and had a notable effect on dynamic amplification for an undamped system.

The 14th paper (also contributed direct to the in-house editors) by Mounir BOUASSIDA, Mnaouar KLAI, Seifeddine TABCHOUCHE and Mekki MELLAS on Comparison of Numerical Analyses of Behaviour of Column-Reinforced Foundations. This paper studies the prediction of behaviour of foundations resting on a soil reinforced by sand and stone columns. A Tunisian case history of oil tank is investigated. By adopting the Mohr-Coulomb failure criterion for columns material and the hardening soil model for soft clay, the evolution of long term settlement predicted by Plaxis code showed the acceleration of the consolidation of the compressible soft clay due to the enhanced drainage property of column material.

P. Pizette and N-E. Abriak in the 15th paper (also contributed direct to the in-house editors) is on Particle image velocimetry analysis on the sinking of shallow foundation in 2D. This paper focuses on the development of punching device dedicated to study the failure of 2D analogue soil. In order to follow the kinematic behaviors of soil, Particle Image Velocimetry (PIV) analysis has been developed and tested in the case of the shallow foundations. The results show that the field of the soil displacement under the foundation can be followed via the PIV method. In particular, the image analysis results are qualitatively in good agreement with the Prandlt scheme.

The 16th paper of this Issue (also contributed direct to the in-house editors) is by B. T. T. Nguyen1, T. Takeyama2 and M. Kitazume on Attempt of Simple Calculation on studying Failure mechanism of DM Columns. A simple calculation, based on limit equilibrium method, was performed to evaluate the failure pattern of deep mixing (DM) columns, used to reinforce an embankment slope. In this study, a trial of limit equilibrium method to access the failure mode of the columns is focused with an overall mechanism. As a result, while the calculation can simply predict the failure pattern of the DM columns, a parametric study was also performed to evaluate the effect of several improvement factors.

The last paper of this Issue, the 17th (also contributed direct to the in-house editors) is Microzonation of liquefaction hazard using liquefaction index in Babol City by A. Janalizadechoobbasti, M. Naghizadeh rokni, and R. Charaty. In this paper, the zoning map of Babol liquefaction risk is provided. In this regard, a study was conducted on the soils in Babol and after examining different areas of the city, laboratory results and field studies of more than 50 boreholes in different areas with a depth of 20 m were analyzed for finding liquefaction and non-liquefaction segments. In this study, different approaches were used including Seed, Iwasaki, Haeri and Yasrebi, Chin & Zhang and Sewmez & Gocojlou procedures and finally, a computer program was written for examining and providing microzoning map of Babol liquefaction risk.

Editors:
Tatsunori Matsumoto
Der Wen Chang
San Shyan Lin

ACKNOWLEDGEMENT

Seventeen papers are contained in this issue. Twelve of them are assembled by the Guest Editors and another four contributed papers by the in-house editors. No doubt the material contained herein would be most valuable to our profession. The editors have adequately described the contributions in the preface. They are to be congratulated for these contributions.

Dr. Teik Aun Ooi
Prof. San Shyan Lin
Prof. Kwet Yew Yong
Dr. Noppadol Phienwej
Prof. A. S. Balasubramaniam

Tatsunori Matsumoto

Prof. Matsumoto is now with Kanazawa University in Japan for nearly 37 years. He was educated at the Kanazawa University and received his Doctoral Degree from Kyoto University for his work on steel pipe piles in 1989. He has extensive research and practical experience on piled foundations and piled raft foundations. Prof. Matsumoto has a Shake Table Facility for the study of dynamic and earthquake type of behaviour of piled foundations. He has also worked on the centrifuge with pile groups and piled raft foundations in collaboration with Taisei Corporation. Prof. Matsumoto also has wide experience in the seismic design of raft and piled raft foundations. Prof. Matsumoto is one of the authors of the computer software PRAB—Piled Raft Analysis with Batter Piles. With this software piled raft foundation can be analyzed with vertical and horizontal loads as well as moment.

Der Wen Chang

Prof. Der-Wen Chang has been the Geotechnical faculty member at The Department of Civil Engineering of Tamkang University (TKU), Taipei, Taiwan for over 25 years. He received Ph.D. in Civil Engineering at The University of Texas at Austin in 1991 and MS in Civil Engineering at Michigan State University in 1987. Prof. Chang has supervised the research work of over 70 Master Thesis and 3 Ph.D. Thesis at TKU, and published more than 200 articles as the Journal, Conf. papers and reports. Nearly all his research studies are related to numerical modeling and dynamic analyses for the geotechnical structures. His research experiences include NDT methods on pavements, seismic behaviors of the pile foundation, constitutive modeling of the soils, and recent study on the performance based design for the earth structures. Prof. Chang is also the visiting Professor at University of Washington at Seattle, US in 2008 and LN Gumilyov Eurasian National University at Astana, Kazakhstan for research studies in 2010 and 2011. Other than the research works, Prof. Chang devotes himself a great deal to serve the communities. He involves heavily and indeed shows his good performance in the public works related to education and constructions. Prof. Chang is currently the Executive Board member of Chinese Taipei Geotechnical Society, GC member at SEAGS and Editorial Panel for SEAGS/AGSSEA J. of Geotechnical Engineering, and TC212/TC305/ATC18 member at ISSMGE. He is also the Chairman of Conference Committee at 16ARC which is to be held in Taipei, Taiwan in October, 2019.

San Shyan Lin

Prof. San-Shyan Lin graduated from Chung Yuan University with a BSCE degree in 1981. He then obtained his master degree from Utah State University, Logan, Utah in 1985 and his PhD from Washington University in St. Louis, Missouri in 1992. Before his teaching career at university, Dr. Lin served as an engineer at Taiwan Area National Expressway Engineering Bureau between1992 to1994. Dr. Lin has been serving at Department of Harbor and River Engineering (DHRE) of National Taiwan Ocean University (NTOU) since 1994. He was promoted as a full professor in 2000. Thereafter, he took some university duties by serving as the secretary- general at office of the secretariat between 2001 and 2003; the chairman of DHRE between 2005 and 2006; the acting dean of college of engineering in 2007 and the vice president of NTOU between 2006 and 2012.

Prof. Lin served as a committee member of committee A2K03-Foundations of Bridges and Other Structures of TRB, USA between 1995 and 2004. Currently, he is still serving as a committee member of TC-212 and ATC-1 of ISSMGE and as an editorial board member of four international journals. In addition, Dr. Lin also served as the president of Taiwan Geotechnical Society (2011-2013); Chairman of International Geosynthetics Society- West Pacific Regional Chapter (2002-2004); CEO of Sino-Geotechnics Foundation (2011-2014) etc. Dr. Lin received the distinguished alumnus award from Chung Yuan University in 2009 and the distinguish Engineering Professor Award from Taiwan Pavement Engineering Society in 2011. Prof. Lin's research and practical experiences have been dealt with deep foundations and geosynthetics.

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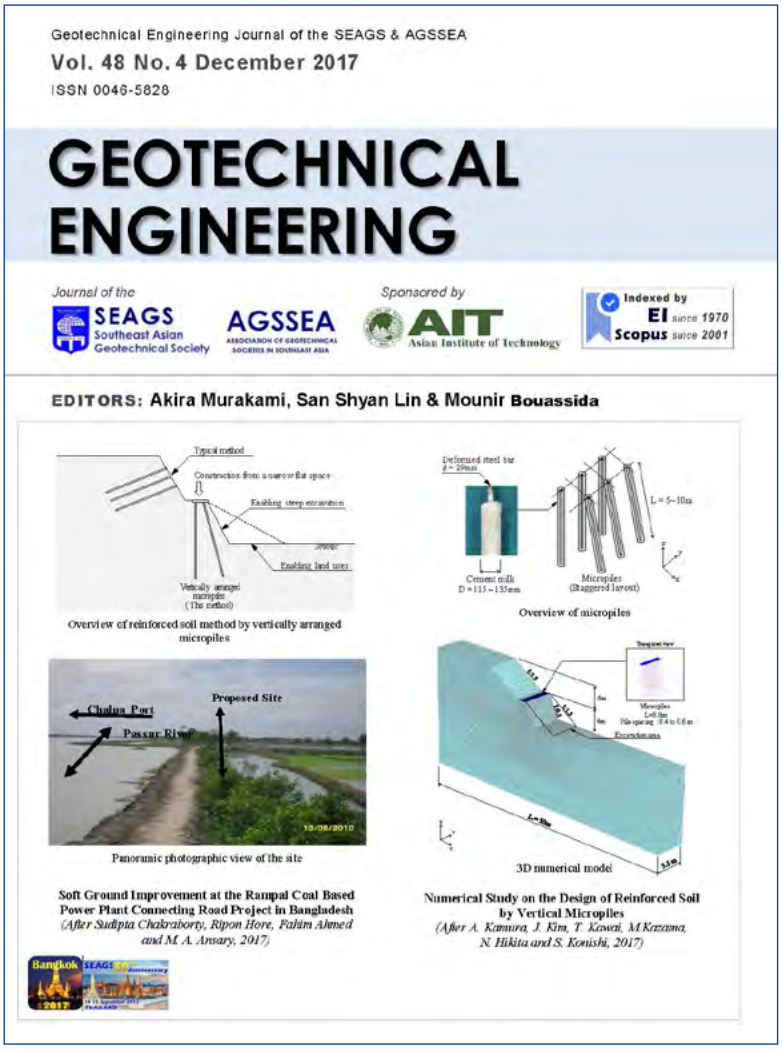
PAPERS by Guest Editor Akira Murakami & CONTRIBUTED PAPERS

EDITORS

Akira Murakami,
San Shyan Lin &
Mounir Bouassida



PREFACE

This Issue is in two parts; Part 1 papers edited by Prof Akira Murakami as Guest Editor and Part 2 contributed papers directly edited by In-house Editors and Prof Mounir Bouassida

The first seven papers in the Issue are edited by Prof Akira Murakami as the Guest Editor and the subsequent papers are direct contributed ones; quite a few papers were acquired by Prof Mounir of papers from African continent.

The first paper is on Modelling the Effects of Static Shear on the Undrained Cyclic Torsional Simple Shear Behaviour of Liquefiable Sand by Gabriele Chiaro, L.I. Nalin De Silva and Junichi Koseki: Spanning from purely theoretical standpoint to practical applications, there is a particular interest to enhance understanding of the effects of static shear on the cyclic behavior of soil elements underneath sloped ground. To address this issue, two subsequent steps were undertaken in this study. First, a systematic laboratory investigation was carried out on Toyoura sand specimens subjected to

various levels of combined static and cyclic shear stresses. Then, a new state-dependent cyclic model was developed. Since experimental findings have been exhaustively reported elsewhere, in this paper they are only briefly recalled for the benefit of comprehensiveness. Instead, the new model is presented in details and its performance is verified by simulating undrained cyclic torsional simple shear tests carried out on Toyoura sand specimens. Essentially, the model is built on an extended general stress-strain hyperbolic equation approach, in which the void ratio and stress level dependency upon non-linear stress-strain response of sand is incorporated. Besides, a novel empirical stress-dilatancy relationship is used to account for the effect of density on the stress ratio as well as to model the excess pore water pressure generation in undrained shear conditions as the mirror effect of volumetric change in drained shear conditions.

The second paper by A. Kamura, J. Kim, T. Kawai, M. Kazama, N. Hikita and S. Konishi is on Numerical Study on the Design of Reinforced Soil by Vertical Micropiles. The mechanical behaviour of the reinforced soil by vertical micropiles was considered using the three-dimensional finite element analysis. To make effective use of space around the slope, soil needs to be reinforced using micropiles placed in a small area. The main objective of this investigation was to evaluate the mechanical influence of various micropile arrangements and to determine the effects of pile spacing for design purposes. Numerical simulations of three cases using different pile angles indicated the amount of slope displacement and the values of the sectional force of the micropiles differed significantly. Among the three cases, the maximum slope displacement was 1.7 times the minimum value. Finally, numerical simulations of three cases using different pile spacing was carried out to clarify the effects of pile spacing on the amount of slope displacement and the sectional force of the micropiles.

In the third paper Soil-water Coupled Analysis of Pore Water Pressure Dissipation in Performance Design—Examinations of Effectiveness in Reclaimed Ground is studied by Toshihiro Nonaka, Shotaro Yamada, and Toshihiro Noda: Japan has a large number of reclaimed regions unimproved against liquefaction and countermeasures in such regions are necessary to prepare for a great earthquake. A new macro-element method has been proposed that involves applying the soil-water-coupled finite deformation analysis code GEOASIA with an inertial term, and a numerical-analysis technique has been designed that quantitatively evaluates the improvement effect of the pore water pressure dissipation method (PWPDM). In this study, PWPDM effectiveness was examined for a reclaimed ground using the proposed method. Detailed examinations were conducted with the intention of developing a more advanced performance design, without being limited to the concept of the current design code. The main findings are as follows: 1) the proposed analysis code enables quantitative evaluation of the improved effectiveness of PWPDM in a reclaimed ground; 2) more advanced PWPDM designs are possible by not only suppressing the maximum excess pore water pressure to the permissible range of the current design code, but also evaluating the ground deformation adequately; and 3) the new macro-element method, capable of reproducing the phenomenon of well resistance, can evaluate the reduction in the improvement effect because of the degradation of drainage capability, thus making it useful for maintenance purposes such as drain clogging.

In their paper (fourth one), Y. Fukumoto and S. Ohtsuka made Comparison of Sheared Granular soils: Same Void Ratio but Considerably Different Fabric: This paper reports a comparison of two types of sheared granular soil specimens, with almost the same void ratios but considerably different fabric, using the discrete element method in two dimensions. The specimens are prepared by applying two different methods of particle generation; one specimen is generated by placing the particles geometrically, while the other specimen is generated by placing the particles randomly. Then, computational direct shear tests are conducted in order to compare the yielding behaviours of the two specimens. The obtained bulk shear responses show different trends, even though the values for the void ratio at the initial state are almost the same. Toward the critical state, however, the initial differences in the stress state and the granular fabric gradually disappear and eventually reach almost the same state. The results reveal that not only macroscopic quantities, but also the contact force distribution and the angular variation in contact forces, have a unique critical state. In particular, the angular distribution of contact angles inside the shear band is also found to have a unique critical state.

The fifth paper is on Coupled Analysis of Navier-Stokes and Darcy Flows by the Brinkman Equations by S. Arimoto, K. Fujisawa and A. Murakami: Simultaneous analysis of seepage flows in porous media and regular flows in fluid domains has a variety of applications to practical problems. The objective of this paper is to present a numerical method to simulate these two different flows simultaneously and continuously, and to investigate the influence of the Darcy flows in porous media on the Navier-Stokes flows in the fluid domain. To this end, the authors have employed the Darcy-Brinkman equations, which include the Navier-Stokes equations and can approximately describe Darcy flows by changing the values of porosity and hydraulic conductivity. The solutions of the Darcy-Brinkman equations are affected by two dimensionless quantity, i.e., the Reynolds number, Re and the Darcy number, Da. After the procedures to provide stable solutions of the governing equations are explained, this paper considers the two types of problems involving Navier-Stokes/Darcy coupled flows and the influence of the two dimensionless parameters on the solutions are investigated. One is the backward-facing step flow with a porous step, and the other is the preferential flows in porous media. The numerical results have shown that the permeability of the porous step slightly affects the reattachment of the flow in the former problem, and that the shape of the void or cavity in porous media changes the structure of the flow in it and the Darcy number changes the flux into the fluid domain in the latter problem.

In the sixth paper, Y. Kurimoto, Y. L. Xiong, S. Kageyama and F. Zhang presented Numerical Investigation on Mechanical Behaviour of Natural Barrier in Geological Repository of High-Level Radioactive Waste. It is commonly known that geological repository is regarded as the most practical way of permanent disposal of high-level radioactive waste (HLW). Yet, there are some engineering problems needed to be solved before its practical application. In geological repository, one of the most important factors is the thermo-hydraulic-mechanical (THM) behaviour of natural barrier. The aim of this paper is to investigate the influence of temperature on the deformation and the strength of host rocks, such as the soft sedimentary rock, with some element tests and the numerical simulations with a program of FEM named as SOFT based on a thermo-elasto-viscoplastic constitutive model.

Trihanyndio Rendy Satrya, Ria Asih Aryani Soemitro, Toshifumi Mukunoki and Indarto are the authors of the seventh paper and the last one assembled by the guest editor on Change of Soil Properties in the Bengawan Solo River Embankment due to Drying–Wetting Cycles. This paper studies the behaviour of Bengawan Solo River embankment soil properties for both in-situ and laboratory conditions. In the laboratory, series of cyclic drying and wetting tests were carried out to clarify the changes of in-situ soil properties over time since the soil had been initially compacted. Maximum dry density from Standard Proctor test was applied as initial compacted condition. Three cycles of drying and wetting were used to represent three cycles of dry and rainy seasons. The in-situ soil investigation was carried out during seasons.

The results show that the investigated in-situ soil properties were in good agreement with the laboratory test results at the 2nd and 3rd cycles. It denotes that these numbers of cycles are required to achieve the similar condition as in-situ soil. In addition, by observing the rate of change in soil properties, it was possible to trace back the construction time of the river embankment.

The eighth paper and the rest are from direct contribution. The eighth paper is on Soft Ground Improvement at the Rampal Coal Based Power Plant Connecting Road Project in Bangladesh by Sudipta Chakraborty, Ripon Hore, Fahim Ahmed and M. A. Ansary. Preloading with vertical sand drain (VSD) is presented as a soil improvement method in this paper. The work is based on a real life road (4 lane and 2 slow moving lanes) construction project carried out in Rampal sub-district of Bagerhat, Khulna, Bangladesh. The construction sequences and the basic design example of VSD for embankment works on very soft clay soil are discussed in this paper. This paper presents soft ground improvement using VSD including VSD installation, preloading techniques, settlement and stability, design calculation, observational method and analysis of monitoring data. No extra load has been used; preloading has been carried out with the self-weight of road in combination with fill embankment. Soil treated with VSD, has resulted in improvement of soil settlement.

The ninth paper by Badee Alshameri , Aziman Madun and Ismail Bakar is entitled Assessment on the Effect of Fine Content and Moisture Content Towards Shear Strength. The shear strength τ, shear modulus G, friction angle ∅, and cohesion c are remarkable design parameters in the geotechnical and civil projects. These design parameters were affected by several factors. In this paper, the fine content and moisture content factors will be evaluated. Numerous compacted sand-kaolin samples were test through the direct shear box test (by using shear rate equals to 1 mm/min, the samples dimension equals to 100 × 100 mm) to assess the effect of these factors. The results show interface between both effects of fine content and moisture content towards the shear strength parameters. According to the results; (1) there is no significant effect on shear strength parameters at low portions of fine content FC and moisture content w, (2) at higher portion of FC and w, bot FC and w show different relationships with shear strength parameters, (3) both relative high shear rate and low applied stress lead to present high value of friction angle (4) compact the soil mixtures with same compaction effort and different fine and moisture content lead to change the soil structure and void ratio thus produce regressive relationship between the friction angle toward density.

Dipendra Gautam, Hemchandra Chaulagain, Hugo Rodrigues and Hem Raj Shahi in the tenth paper worked on Ground Response Based Preliminary Microzonation of Kathmandu Valley. This paper analyzes spatially selected 286 deep borehole logs reaching up to the bedrock are and the results are presented in terms of amplification factor, ground acceleration and predominant period. The peak ground acceleration (PGA) is estimated to be 0.10 and 0.50 g indicating strong influence of nonlinearity in particular areas of Kathmandu valley wherein de-amplification is observed. The peak spectral acceleration is found to be varying between 0.30 to 1.75 g for the study area and soil predominant period is estimated in the range of 0.7 to 5 sec. Preliminary microzonation maps for PGA and soil predominant period are prepared and presented in this paper. Comparisons and interpretations on the basis of 1934 and 2015 earthquakes are presented in terms of damage scenario.

In the eleventh paper, V. Oderah and D. Kalumba investigated on the Use of Sugarcane Bagasse for Soil Reinforcement in Geotechnical Applications. The global initiative of minimizing the generation of waste materials, and the reduction of the environmental footprint of industrial processes has impelled the innovation into their use in geotechnical applications. Use of these materials in this manner, especially as soil reinforcements, could help solve the drudgery and secondary snags of disposing of the materials. This study therefore aimed at investigating the effects of sugarcane bagasse reinforcement on selected South African soils as well as the drawbacks of environmental conditions on the composite formed. Different types of sugarcane bagasse were utilised in evaluating their effect on the shear strength characteristics of the composite. The results indicated a higher improvement in the angle of internal friction in finely grained soil compared to coarsely grained soil. Saturation of the composite in water insignificantly reduced the strength characteristics beyond 2 days. In addition, an increase in shear characteristics depended on fineness of the soil, bagasse type and content, and on the vertical load.

The twelfth paper as described by S. Daoud, I. Said, S. Ennour and M. Bouassida on Quasi-Static Numerical Modelling of an Ore Carrier Hold: The problems associated with ore carriers' incidents, have preoccupied international organizations and many research laboratories which have been mobilised to identify the causes and seek for the solutions. The cargo liquefaction is considered to be the major cause of ore carriers' capsizing. The final aim of this research is to establish a new test procedure for evaluating the shear strength of loaded ore in view of its liquefaction prevention. First, a brief review is presented about the possible origins of cargo instability and examines the stress distribution by means of a quasi-static numerical modelling. Second, an assessment of the shear ratio variation, in terms of the hold inclination is established. According to this analysis, at a 15° hold inclination, the maximum shear ratio is less than 0.2 in all pile areas except under the residual slopes and at the surface that are assumed to be the most vulnerable parts.

The thirteenth paper is on Shear Strength of an Expansive Overconsolidated Clay Treated with Hydraulic Binders by A. Mahamedi and M. Khemissa: This paper presents and analyzes the results of a series of identification, compaction and direct shear tests performed in accordance with the Algerian standards

on an expansive overconsolidated clay treated with locally manufactured hydraulic binders (composed Portland cement and extinct lime). This clay comes from the urban site of Sidi-Hadjrès city (wilaya of M'sila, Algeria), where significant damages frequently appear in the road infrastructures, roadway systems and various networks and in civil and industrial light structures. Tests results show that the geotechnical parameters values deduced from these tests are concordant and confirm the shear strength improvement of this natural clay treated with cement or lime and compacted under the optimum Proctor conditions. However, contrary to its mineralogical characteristics which do not seem to be affected by the treatment, this expansive natural clay is characterized by as well drained as undrained shear strength sensitive to stabilizer content; the best performances are obtained for a treatment corresponding to 8% cement or lime content.

The fourteenth paper is on Numerical Modelling of Retaining Wall Resting on Expansive Soil by Bushra Suhale Al-Busoda , Safa Hussain Abid Awn, & Hassan Obaid Abbase : To model the behavior of expansive soil, it seems necessary to move towards elastoplastic models that have been used for different types of clays. Hardening soil model is chosen in this study. Retaining walls rested on expansive soils are subjected to uplift and lateral forces due to soil swelling. More importantly, the swelling in expansive soil tends to cause additional lateral pressure on wall that caused deformations and bending. Various pattern types of helical piles are used to reduce the vertical and lateral movement of retaining wall constructed on expansive soil. The backfill soil beyond retaining wall is affected by swelling of expansive soil that caused additional lateral earth pressure on the wall of retaining wall. This study showed that the use of inclined helical piles beside vertical helical piles under the base of retaining wall decreased vertical movement 94% and lateral movement 70% for ratio of length of helical pile to depth of expansive soil (L/H) equal to 3.2. In general, the presence of helical piles below retaining wall resisted and controlled the vertical movement but do not control lateral movement except the case of using inclined helical piles.

N. M. Alsanabani, T. O. AL-Refeai, and A. O. Alshenawy in the fifteenth paper is on Simplified Method for Designing Piled Raft Foundation in Sandy Soils: The main purpose of this study is to develop a simplified method for computing the load carried by piles, and settlement of piled raft based on the characteristics of an unpiled raft, pile group, and soil. These are important criteria for preliminary piled raft design. Based on the results obtained from finite element analysis, simplified formulas and curves are generated for different conditions of sand and different pile spacing. These formulas and curves contain the stiffness ratio and efficiency factor of the unpiled raft and pile groups. The results of the proposed method were validated using the Poulos–Davis–Randolph method.

The sixteenth paper by Ramkrishnan R., Karthik V., Mukund S. Unnithan, Kiran Balaji R., Athul Vinu M., Anju Venugopalan is on Stabilization of Seepage Induced Soil Mass Movements using Sand Drains: Rising groundwater levels increases the pore water pressure in the soil slopes, acting as a triggering factor for landslides. By installing sand drains (horizontal or vertical) along the slope, the groundwater level can be lowered below the critical level, reducing the pore water pressure and also the probability of slope failure significantly. In this study, laboratory-scale soil slopes of varying geometry were modelled in a tank and constant inflow was provided to simulate groundwater flow. With and without loading, the critical phreatic levels for the various slopes were determined. Vertical sand drains were then installed along the slope and the tests were repeated for a fixed duration. It was found that the slopes did not fail and remained stable for a longer time period, even with increase of groundwater flow. Hence it was concluded that sand drains are a feasible slope stabilization technique even on slopes subjected to static loading.

The seventeenth paper is on Experimental Study on the Durability of Soil-Cement Columns in Coastal Areas by Pham Van Ngoc, Brett Turner, Jinsong Huang and Richard Kelly: Deep soil mixing is one of the most commonly used ground improvement techniques. With high sulphate content in soil and seawater, stabilized soil in coastal areas can deteriorate in strength due to sulphate attack. In this research, the degradation in strength of cement treated soil exposed to synthetic seawater is measured by uniaxial compression and needle penetration testing. Three exposure conditions, namely 100% seawater, 200% seawater and in sealed condition (control samples), were used to measure the deterioration level due to the effect of sulphate. In addition, the extent of the portlandite consumption was also measured by

Thermo-gravimetric Analysis which reflects the calcium distribution in the soil-cement columns. The test results show that the strength deterioration occurs deeper and faster in higher seawater environments. Furthermore, when in contact with increasing sulphate concentration, the strength deterioration shows a close relation with calcium distribution.

The eighteenth paper is by Wei Xiaoming, Li Changhong, Zhou Xiaolong, Hu Baowen & Li Wanling on The Change Laws of Strength and Selection of Cement-sand Ratio of Cemented Backfill: Lilou Iron Mine is the largest domestic underground backfill mining and uses advanced whole tailings cemented filling process system. For the backfill, both the change law of strength development and the cement-sand ratio are important considerations for design. A differentiation analysis was performed of the strength of laboratory test blocks at the age of 28d and in situ cemented backfill samples. When the filling slurry concentration was 72% and cement-sand ratio was 1:4, the in situ coring strength was 2.98 MPa higher than that of laboratory-cured specimens; when the slurry concentration was 68% and cement-sand ratios were 1:4, 1:6 and 1:8, the in situ coring strength was 1.68MPa, 2.33 MPa and 1.44 MPa higher than that of laboratory-cured specimens. With an increase of filling height, the change laws has been explored of downward parabola in conditions that the strength difference is consistent with the bulk density difference of the cemented backfill. The stress of cemented backfill with different ratios were calculated and analyzed on the basis of ANSYS numerical simulation and similar filling mines. According to the position of stress concentration and change law of strength difference, this paper proposes an design scheme for high-stage cemented backfill with ratio parameters at different heights.

The last paper of this issue is nineteenth by T.C. Ekneligoda, L.-T. Yang, D. Wanatowski, A.M. Marshall1, and L.R. Stace on Numerical modelling of Ground Subsidence at an Underground Coal Gasification Site. A detailed numerical modelling study was carried out by the authors to represent geotechnical aspects of the Wieczorek underground coal gasification (UCG) site in Poland. A coupled thermos-mechanical numerical model was created to represent a single coal burning panel. The coal burning process was simulated by modifying the energy balance equation with an additional term related to the calorific value of coal as a source. Temperature dependent material properties were assigned to the coupled thermal-mechanical model according to published data. In the model, the burning zone spread about 7.5m laterally after 20 days of burning. Results from the coupled model were used to gauge a worst-case scenario in terms of the potential size of a formed cavity. This data was used within a less computationally expensive mechanical-only numerical model in order to evaluate the ground subsidence caused by the worst-case scenario for single and multiple UCG burning panels. The single panel burning resulted in 23mm of ground subsidence at the top of the model after long term coal burning. The ground subsidence measured at the top of the model, at the centre point of the gasification arrangement, was approximately 72mm when five panels were burnt with an edge to edge panel distance of 5m; this was increased to 85mm for seven panels.

ACKNOWLEDGEMENT

Nineteen papers are contained in this issue. Twelve of them are assembled by the Guest Editors and another seven contributed papers directly to the in-house editors. No doubt the material contained herein would be most valuable to our profession. The editors have adequately described the contributions in the preface. They are to be congratulated for these contributions.

Dr. Teik Aun Ooi
Prof. San Shyan Lin
Prof. Kwet Yew Yong
Dr. Noppadol Phienwej
Prof. A. S. Balasubramaniam

Akira Murakami

Prof. Akira Murakami received his BS (1978) at the Agricultural Engineering Department; MS (1980) at the Civil Engineering Department and Dr. Agr. (1991) from Kyoto University (KU), respectively. In 1982, he became an assistant professor at the Agricultural Engineering Department of KU, and was promoted to an associate professor of KU in 1994. He moved to the Graduate School of Environmental Science of Okayama University with a promotion to full professor in 1999. After joining Okayama University for just 10 years, he moved back to a full professor of KU in 2009. He has served as the Vice President of the Japanese Geotechnical Society (JGS), the Board Member of the Japanese Society of Irrigation, Drainage and Rural Engineering (JSIDRE), and the International Association for Computer Methods and Advances in Geomechanics (IACMAG), and also serves as a core member of TC103 of ISSMGE and a member of the Multidisciplinary International Society on Inverse Problems in Science and Engineering. He had acted as the Secretary of TC34 of ISSMGE for two terms and delivered a general report of 'Numerical Methods' at 16ICSMGE held in Osaka. He is the recipient of the Japanese Society of Civil Engineering (JSCE) Paper Award (1996), the JSIDRE Sawada Prize (2007), the JGS Best Accomplishment Award (2008), the JSIDRE Best Paper Award (2010), the JGS Paper Award (2011, 2013) and is a Fellow of JSCE. His research interests include the data assimilation, inverse problem, finite element methods, mesh free methods, and DEM in geomechanics.

San-Shyan Lin

Prof. San-Shyan Lin graduated from Chung Yuan University with a BSCE degree in 1981. He then obtained his master degree from Utah State University, Logan, Utah in 1985 and his PhD from Washington University in St. Louis, Missouri in 1992. Before his teaching career at university, Dr. Lin served as an engineer at Taiwan Area National Expressway Engineering Bureau between1992 to1994. Dr. Lin has been serving at Department of Harbor and River Engineering (DHRE) of National Taiwan Ocean University (NTOU) since 1994. He was promoted as a full professor in 2000. Thereafter, he took some university duties by serving as the secretary-general at office of the secretariat between 2001 and 2003; the chairman of DHRE between 2005 and 2006; the acting dean of college of engineering in 2007 and the vice president of NTOU between 2006 and 2012.

Prof. Lin served as a committee member of committee A2K03-Foundations of Bridges and Other Structures of TRB, USA between 1995 and 2004. Currently, he is still serving as a committee member of TC-212 and ATC-1 of ISSMGE and as an editorial board member of four international journals. In addition, Dr. Lin also served as the president of Taiwan Geotechnical Society (2011-2013); Chairman of International Geosynthetics Society- West Pacific Regional Chapter (2002-2004); CEO of Sino-Geotechnics Foundation (2011-2014) etc. Dr. Lin received the distinguished alumnus award from Chung Yuan University in 2009 and the distinguish Engineering Professor Award from Taiwan Pavement Engineering Society in 2011. Prof. Lin's research and practical experiences have been dealt with deep foundations and geosynthetics.

Mounir Bouassida

Mounir Bouassida is a professor of civil engineering at the National Engineering School of Tunis (ENIT) of the University of Tunis El Manar where he earned his B.S., M.S., Ph.D., and doctorate of sciences diplomas, all in civil engineering. He is the director of the Research Laboratory in Geotechnical Engineering and has supervised 16 Ph.D. and 29 Master of science graduates. His research focuses on soil

improvement techniques and behavior of soft clays. Dr. Bouassida is the (co) author of 87 papers in refereed international journals; 130 papers, including 20 keynote lectures; and three books. He is a member of the editorial committees of journals Ground Improvement (ICE), Geotechnical Geological Engineering, Infrastructure Innovative Solutions, and International Journal of Geomechanics (ASCE). He is also an active reviewer in several international journals. As a 2006 Fulbright scholar, Bouassida elaborated a novel methodology for the design of foundations on reinforced soil by columns. He was awarded the 2006 S. Prakash Prize for Excellence in the practice of geotechnical engineering. In 2008, Bouassida launched a Tunisian consulting office in geotechnical engineering, SIMPRO. He is a co-developer of the software Columns 1.01 used for designing column-reinforced foundations. Prof. Bouassida held the office of the vice president of ISSMGE for Africa (2005–2009). He benefited from several grants as a visiting professor in the USA, France, Belgium, Australia, Vietnam, Hong Kong, and Norway.

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March 2018 ISSUE TO HONOUR PROF MADHIRA MADHAV

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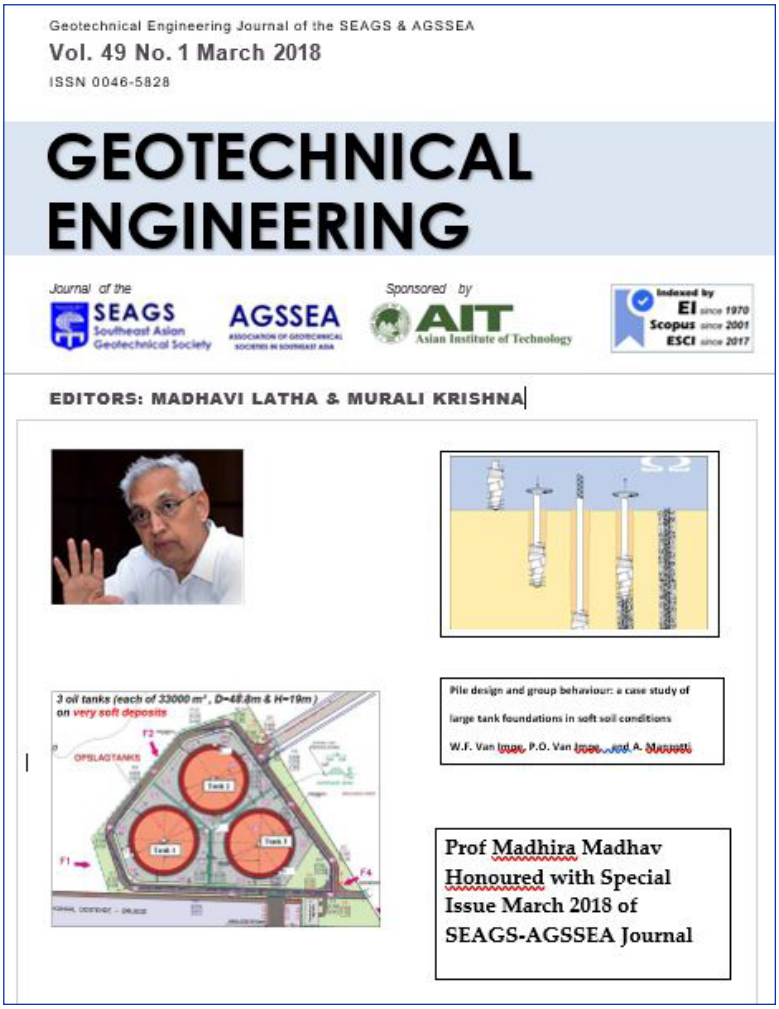
Madhavi Latha &
Murali Krishna

PREFACE

March 2018 Issue to Honour Prof Madhira Madhav

For his Contributions in Geotechnics Through Indian Geotechnical Society, ISSMGE and Universities in IIT Kanpur, IIT Bangalore, Saga, etc.

Prof. M.R.Madhav, Visiting Professor, IIT, Hyderabad, Professor Emeritus, J.N.T.U, Hyderabad, Resource Person, Rajiv Gandhi University of Knowledge Technology, Chairman, Research Council, CSIR-CRRI, and Advisor/Consultant to Energy Infratech, Halcrow, KSK Infra, etc., retired as Professor of Civil Engineering, IIT, Kanpur. He graduated in Civil Engineering from Andhra University in 1960, obtained the Master of Engineering and the Doctorate of Philosophy degrees



from the Indian Institute of Science, Bangalore in the years 1961 and 1967 respectively. Prof. Madhav worked at several universities - Sydney, Australia; Concordia, Canada, Saga, Saga, Japan; Ghent, Belgium, Queen's, Belfast, etc. He was an Associate at the International Center for Theoretical Physics, Trieste, Italy, Vice President for Asia, International Society of Soil Mechanics & Geotechnical Engineering, advisor to Navi Mumbai SEZ, CRRI, New Delhi.

Prof. Madhav's research interests span the whole gamut of Geotechnical Engineering. He guided more than 45 doctoral and several master's theses and final year projects. He co-edited book entitled 'Lowlands - Development and Management' and on 'Foundations and Soft Ground Engineering Challenges in Mekong Delta', and authored more than 500 publications in refereed international and national journals and conferences.

Prof Madhav is well known internationally as a researcher, teacher and consultant. He established schools of research at IIT, Kanpur, and JNTU, Hyderabad in Geotechnical Engineering, was associated closely in developing the schools of research at the Institute of Lowland Technology, Saga and IIT, Hyderabad. His work on Modelling and Numerical Analyses of Geotechnical and Ground Engineering Problems is monumental. He has contributed to the Practice of Geotechnical Engineering as a Consultant and to the Indian Geotechnical Society as a Member of the Executive Committee, as a Reviewer for and Editor of the Indian Geotechnical Journal and as President.

Prof. Madhav delivered Keynote/Plenary Lectures, Chaired Technical Sessions in several International and National Conferences, was a Panelist in the XIII, XV and XVI International Conferences on Soil Mechanics and Geotechnical Engineering at New Delhi (1994), Istanbul (2001) and Osaka (2005). He delivered the prestigious Annual Lecture of the IGS, Keynote Lecture at the 12th Asian Regional Conference at Singapore, the Inaugural Miura Lecture at Busan, etc. He is Life Fellow of the Indian National Academy of Engineering, the Indian Geotechnical Society, The Institution of Engineers (India), etc. He is recipient of the Keucklemann Award of the IGS, the Prof. Mehra Research Award of the University of Roorkee, Pundit Jawaharlal Nehru Birth Centenary Research Award of CBIP, the Doctor of Science degree of the Indian Institute of Science, Distinction in Engineering Technology from the Central Board of Irrigation and Power, IGS – Prof. Dinesh Mohan Prize, etc. He was the President of IGS, and the Vice President for Asia of IS SM & GE, the Vice President (1998-2010) and currently (2010 onwards) the President of the International Association of Lowland Technology. He has been awarded the Honorary Fellowship and Diamond Jubilee Honour by the Indian Geotechnical Society. He received the prestigious Bharat Ratna M Visweswaraya Award by Government of AP & Institution of Engineers (I) AP State Centre, Gopal Ranjan Research award of IIT, Roorkee for Innovative and Outstanding Research, Outstanding Researcher Award from IANAMG, IGS-MS Jain Prize for Innovations in Piling, Vishwakarma Award for Academic Excellence from Construction Industry Development Council, IGS – H C Verma Diamond Jubilee Award for Innovative Instrument Design, the Distinguished Alumnus Award from the Indian Institute of Science, Bangalore in Aug. 2014 (the second graduate from Civil Engineering) and the Prof. Dinesh Mohan Award for Excellence in Geotechnical Practice, etc. and delivered the most prestigious IGS-Ferroco Terzaghi Oration. Most recently, Prof. Madhav delivered the first Victor de Mello Goa lecture. Prof. Madhav pursues Origami as his hobby.

Journal Contents: This Issue contain sixteen papers, the first ten were acquired by Profs Madhavi Latha and Murali Krishna to honour Prof Madhira Madhav and the other seven are directly contributed papers to our Journal Office.

The first paper is by Harry G. Poulos on Rational Assessment of Modulus of Subgrade Reaction: The concept of modulus of subgrade reaction has been employed within the engineering world for almost 150 years. It has been especially embraced by structural engineers who have found it convenient to represent the behaviour of the ground supporting their structures by elastic springs. Despite the best efforts of the geotechnical profession to dissuade our structural colleagues from using this flawed concept in foundation design, requests to provide a modulus of subgrade reaction continue almost unabated. Given this situation, a suitable response is to provide such values via a rational process of evaluation, rather than by empirical correlations which have little theoretical basis and which may not be applicable to the foundation being considered.

This paper sets out an approach to the estimation of values of modulus of subgrade reaction for various types of foundation. The key points made are that the modulus of subgrade reaction (k) is not a fundamental soil property, but varies with the foundation type, foundation dimension, and type of loading. k can be related to the Young's modulus of the supporting soil and to the foundation dimensions, but for pile groups, account must be taken of the reduction in k because of group effects arising from pile-soil-pile interaction. It is also emphasized that careful distinction must be made between the modulus of subgrade reaction, k, and the spring stiffness K.

The second paper is by S. Basack, B. Indraratna and C. Rujikiatkamjorn on Effectiveness of Stone Column Reinforcement for Stabilizing Soft Ground with Reference to Transport Infrastructure: The use of stone columns for soft soil stabilization has numerous advantages compared to other methods. There are many factors controlling performance of stone columns including column geometry and particle morphology. The reinforced soft ground supporting transport infrastructure like the railways and highways is subjected to cyclic loading, usually initiating a partially drained condition. The study reveals that the stone columns are more effective in mitigating the built up of cyclic excess pore water pressure compared to conventional vertical drains. This paper presents a brief overview on the rigorous theoretical and experimental studies carried out by the Authors to investigate the effectiveness of stone column reinforcement for stabilizing soft ground with particular reference to transport infrastructure.

The third paper on Pile design and group behavior; a case study of large tank foundations in soft soil conditions is by W.F. Van Impe, P.O. Van Impe and A. Manzotti: The paper presents the case study on the construction of three 48m diameter oil tanks in Ostend (Belgium), each founded on a group of 422 displacement cast in-situ screw piles. The three tanks are close enough to each other to induce interaction. Monitoring of the tanks' movements has been performed during the hydro-testing of the steel tanks and during the subsequent working stage of the tanks. The bearing layer of the pile group is a 5m thick stiff sand layer at a depth of about 20m, overlain by a very heterogeneous soft clayey/silty fill containing sand pockets, and underlain by a very thick slightly over-consolidated clay. Some short and long term settlement prediction of the tanks have been done, assuming soil parameters derived from the CPT data on site, and compared to the measured settlements. The initially derived soil parameters are then re-evaluated in order to predict the long term settlement for the full life span of the construction.

The fourth paper is by V Sivakumar on Granular Columns for Geotechnical Applications: Soft clay deposits are globally widespread and often coincide with strategic transport links and growing urban developments. These soft deposits are often waterlogged and are composed of clay with varying degrees of silt, sand and organic matter. These soils have low undrained shear strength and high compressibility, contributing to construction problems in relation to stability and settlement. Granular columns, also referred to as flexible piles, are one of the techniques widely considered in the industry for improving soft deposits for low-moderate structural loading. The purpose of this article is to highlight some of the key investigations carried out in the topic of granular columns at Queen's University Belfast, the UK.

The investigations focused on several aspects: (a) the interaction between columns and surrounding clay (b) containment of columns in geo-grid for enhanced strength performance (c) settlement performance under single or multiple column configuration (d) stress distribution under the footing and along the column (e) assessment of consolidation and creep settlement under constant loading and (f) granular columns for anchoring purposes and therefore stabilization of slopes. Overall observations are: settlement improvement factors were moderate under isolated loading, but granular columns are very effective in providing pull-out capacity in the form of anchors.

The paper entitled Ground Engineering Using Prefabricated Vertical Drains: A Review is the fifth paper in this issue by V.A. Sakleshpur, M. Prezzi, and R. Salgado: Improvement of soft ground by preloading with prefabricated vertical drains (PVDs) is a common practice in the field of ground engineering. PVDs accelerate the consolidation process of soft soils by providing a shorter drainage path for the pore water and thereby increase the strength and stiffness of soft soils over time. This paper presents a review

of recent analytical, laboratory, numerical and field studies performed using preloading with PVDs for improvement of soft ground. The focus of the paper is on conventional PVDs without the use of vacuum, thermal and electro-osmosis techniques. Summary tables, which provide quick and easy access to the latest information from various research efforts, have been prepared and discussed. The review is complemented by two case histories that highlight the performance of PVDs in the field.

The sixth paper is on Soil Reinforcement under Oblique Pull- An updated Discretization by S Patra & J.T. Shahu: Reinforced soil structures are gaining popularity for a variety of reasons mainly because it is safe, economical, aesthetic and rapid in constructions. However, the actual behaviour of these structures at failure is still not properly understood. The present study attempts to evaluate the internal stability of these structures against pullout failure. Kinematics of failure suggests that the failure surface intersects the reinforcement obliquely causing an oblique pullout of the reinforcement. In this paper, an updated discretization technique is used to determine the pullout capacity of an inextensible reinforcement resting on a linear elastic Pasternak subgrade and subjected to an oblique end force. A parametric study is conducted and a new factor, length correction factor is introduced in the present analysis. The correction factors have a significant influence on the pullout response especially for high values of obliquity and end displacement. Present analysis thus gives a more realistic value of pull out capacity which is required for the internal stability analysis and design of reinforced soil structures. A case study is also presented to validate the proposed analysis. The maximum reinforcement tension is predicted for top few reinforcements using the proposed method and the AASHTO Simplified Method. The present analysis gives a better prediction of the mobilized reinforcement tension compared to the AASHTO method.

The paper by Madhavi Latha G and Manju G. S. is the seventh paper on Effect of Facing Slope on the seismic response of Geocell Walls: This paper presents the effect of slope angle of facing on the seismic response of retaining walls with geocell facing. Keeping the dimensions and configuration of geocell layer same, shaking table model tests were carried out with vertical and battered walls retaining sand backfill. In case of battered walls, geocell layers were laid with an offset, resulting in an overall slope of the wall. Vertical walls were constructed with geocell layers stacked vertically above each other. Gravel was used as infill material in geocells. Models were subjected to different levels of ground motion conditions by controlling the acceleration and frequency of shaking. Acceleration amplitudes of 0.2g and 0.3g with frequencies ranging between 1 Hz and 7 Hz were used in the model tests. Response of models was monitored with cyclic shaking at intended acceleration and frequency by measuring the face deformations and acceleration amplifications along the height of the retaining wall, Results from model tests showed that battered walls perform better than the vertical walls since the measured deformations and acceleration amplifications were comparatively low in battered walls. The improved performance of battered walls is due to the increased stiffness and increase in dynamic impedance caused due to shifting of moment of inertia of pressure distribution at the back of the wall in case of walls battered towards the backfill.

The eighth paper is on Evaluation of Resilient Modulus of Geosynthetic Reinforced Layers Using Repeated Load Triaxial Tests by Sudheer S Prabhu, Lekshmi Suku and G L Sivakumar Babu: The stiffness and strength of the pavement layers are the major parameters that influence the design of highway pavements which in turn decides the thickness of various pavement layers. Studies have shown that the thickness of the base layer plays a crucial role in limiting the rutting of the in situ subgrade soil. Due to the lack of availability of aggregates, there is a dire need to minimize the thickness of the base. Geosynthetics in the form of geogrid and geocell have long been used for reinforcing unbound base/subbase layers in paved and unpaved roads and have been found to be effective in reducing the base thickness. A few laboratory studies have been conducted to evaluate the different aspects of geosynthetic reinforced base layers, and further studies are required to examine the behavior of these reinforced sections under elastic and plastic shake down range. The purpose of the current study is to evaluate and compare the resilient modulus of geogrid reinforced, geocell reinforced and the unreinforced granular base under repeated loading using the Repeated Load Triaxial tests. The response of aggregate under repeated loading expressed in terms of resilient modulus is a key parameter in the new Mechanistic Empirical Pavement Design Guide (MEPDG). The permanent strains of aggregates are also compared in the study to get an overall idea about the reinforcement effect in the granular base.

The paper by Ritwik Nandi and Deepankar Choudhury is the ninth paper on Seismic Analysis of Reinforced Soil Wall Considering Oblique Pullout of Reinforcements: A Review: Several methods are available for stability analysis of reinforced soil structures. However, most of these methods mainly concentrated on the horizontal pullout of the reinforcement in spite of the evidences available that show the failure surface of reinforced soil structure will always intersect reinforcement layers diagonally due to the failure kinematics. It will cause oblique/transverse deformation to reinforcements across the failure surface. In the present paper, state-of-the-art review of earthquake stability analysis of reinforced soil-wall by employing the oblique/transverse pull of reinforcements is discussed. Formulations that are developed in various studies to determine the mobilization of diagonal pullout resistance of reinforcements, the amount of drag force triggered in the reinforcement sheets due to instability in the structure and the factor of safety against pullout are presented. A comparative study is also carried out between existing models and methods that are used in determining the seismic stability of reinforced soil structure subjected to diagonal pullout of soil reinforcements. The comparative study shows the effect of various models and methods on the factor of safety against reinforced soil-wall stability and the influence of different parameters i.e., horizontal seismic acceleration, internal friction angle of soil, interface friction angle of soil and reinforcement, relative subgrade stiffness factor etc. Depending on the model used in analyses, the computed factor of safety may vary significantly.

The tenth paper is by Nevin Koshy, S. U. Sushalekshmi, Susmita Sharma, Jeevan Joseph, Vikas, D. N. Singh, Bhagwanjee Jha and M. Singh on Characterization of the Soil Samples from the Lonar Crater, India: The Lonar crater and its enclosed lake have been a universally recognized young and well preserved meteoritic formation in the state of Maharashtra, India. Previous studies on the uniqueness (salty and alkaline nature) of sediments (the crater soil) and the lake water, hint at its creation by meteor impact and post-impact induced hydrothermal interaction between the meteor and the then earth surface in the region. Also, the earlier reports confirm the sediments as basaltic rock, in nature. However, not many efforts have been made by the present generation of researchers for detailed chemical and mineralogical characterization of the sediments, which may reveal an analogue relationship between the crater sediments and a meteor (the lunar or the Martian soil) from the space. In this context, the present study attempts to understand the characteristics of the soil samples extracted from the crater region, with respect to their physical, chemical, mineralogical, electrical and magnetic properties. The findings also shed light into the response of the crater samples when subjected to different energy fields (viz., mechanical, chemical, electrical and X-rays). Based on a critical synthesis of the results, the characteristics (viz., alkalinity, saltiness, geological-structural properties, water-sediment interaction) of the sediments have been showcased and evaluated for their partial conformity with extraterrestrial objects (i.e., the meteors).

The eleventh paper by J. Jayapal & K. Rajakopal is on Encased Columnar Inclusions in Soft Grounds - A Review: Even before the evolution of soil mechanics, the research on mitigating the problems induced by soft soils has started. The granular column is one of the promising ground improvement technique widely accepted as a solution to soft soil problems all over the world. Recently the performance of it is improved by encasing with geosynthetic products like geogrid and geotextiles. This paper gives an insight into the technical aspects of encased granular columns by reviewing the advancements that have happened in the published literature. The focus of this paper is more on the problems associated with soft clay deposits, although granular columns can also be employed to mitigate liquefaction in saturated loose sand deposits. Discussions on the key technical aspects associated with encased granular columns and its applicability in the field are provided.

The twelfth paper by P. A. Faby Mole, S. Sireeshand M. R. Madhav on Influence of Shear Stiffness of Geocell Mattress on the Performance of Strip Footings- A Numerical Study: A modified Pasternak model was proposed to predict the behavior of a strip footing resting on a geocell reinforced granular layer overlying weak soil, especially considering the variation of shear stiffness of the geocell mattress. Both linear and nonlinear responses of the geocell reinforced beds were considered in the analysis. Results from the present model were validated with independent experimental load-deformation responses. The model parameters viz. inverse of normalized shear stiffness of the geocell and inverse of normalized ultimate bearing capacity of foundation soil were varied for the parametric study. It was found that the shear stiffness of the reinforced granular bed i.e. the product of shear modulus and the height of the

geocell reinforced granular bed plays an important role in improving the performance of the foundation system. Design charts are presented in the form of improvement factors for the practical range of shear layer width, shear stiffness of the geocell reinforcement and ultimate bearing capacity of the soft soil.

The thirteenth paper is on Interference of Two Closely-Spaced Footings on Finite Sand Layer by Macharam Rohith, Sasanka Mouli, and Umashankar Balunaini: Bearing capacity of footing is influenced by the presence of adjacent footing. In this study, two closely-spaced strip, square, and circular footings are modelled in finite elements using commercially available software - PLAXIS 2D and 3D. Analysis is done considering both smooth and rough footing bases. The effect of spacing between the footings is examined for footings resting on both semi-infinite and finite sand layers. In addition, angle of shearing resistance of foundation soil is varied from 30° to 40° to investigate its effect on the bearing capacity. Bearing capacity of footings with rough base are found to attain a peak value at a particular spacing indicating the “blocking effect”. For square and circular footings, interference due to spacing is found to be insignificant compared to strip footing. Interference factors for rough footings are found to be higher than that for smooth footings.

The fourteenth paper on Stone Columns/Granular Piles for Improving Liquefiable Sites: Case studies is by A. Murali Krishna, A. Madan Kumar, Utpal Kr. Baruah: Liquefaction is considered as a major hazard among different seismic risks. Ground improvement methods are commonly adopted to improve the liquefiable sites. The paper presents various aspects of liquefaction mitigation strategies to be implemented for liquefaction susceptible sites with focus on granular inclusions. A short discussion on liquefaction susceptible soils and its evaluation followed by outlines of the ground engineering applications is presented herein. Mechanisms that function at sites treated with stone columns/granular piles for liquefaction mitigation are discussed. Design aspects of granular piles for liquefaction mitigation are outlined. Few case studies, wherein stone columns have been adopted for improving the liquefiable sites, are presented. The paper concludes and highlights the effectiveness of granular inclusions in improving the liquefiable sites through various mechanisms.

The paper on Biogeotechnological Methods for Mitigation of Liquefaction is the fifteenth by S. Wu, B. Li, J. He and J. Chu: Liquefaction of granular soils during earthquake has long been identified as one of the major geohazards. Conventional soil improvement methods for mitigating liquefaction such as dynamic compaction or deep mixing are costly for large-scale applications. Recently some biological processes have shown significant influence on both the physical and chemical performance of geotechnical systems. Two types of biogeotechnological methods, biocementation and biogas desaturation, have been experimentally examined in this study. For the former, a microbial induced carbonate precipitation (MICP) process has turned one cubic meter of loose sand into sandstone-like material. The shear strength of the sand is greatly improved whereas the permeability is reduced at the same time. For the later, tiny inert gas bubbles are generated microbiologically within liquefaction prone ground to increase the resistance of sand to liquefaction. A series of shaking table model tests on biogas treated sand have demonstrated that this biogas desaturation method is effective for reducing pore pressure generation and shaking induced settlement during cyclic loading. When the degree of saturation of the soil is controlled to be around 90%, the generation of pore pressure in sand and the potential for liquefaction could be largely contained.

The last paper in this issue is the sixteenth paper on A Critical and Comparative Study on 2D and 3D Analyses of Raft and Piled Raft Foundations by V. Balakumar1, Min Huang2, Erwin Oh3 and A. S. Balasubramaniam: The piled raft foundation has gained a very high level of acceptance as a foundation system whenever settlement alone governs the design. In the design of piled raft many of the traditional methods could not be applied due to the complex nature of interactions involved. Hence there is a need to use detailed three dimensional finite element analyses for the final design. But in the initial stages of design a simpler but effective analytical process need to be used to save the computational efforts. Since the primary requirement in the piled raft design is the design of optimum pile group to achieve the desired settlement reduction, through number of trials, the applicability of simpler two dimensional analyses are examined to save the computational efforts during the initial trials. It was found that simple two dimensional analyses provide results of acceptable accuracy for the design office requirements.

ACKNOWLEDGEMENT

Seventeen papers are contained in this issue. Twelve of them are assembled by the Guest Editors and another five contributed papers directly to the in-house editors. No doubt the material contained herein would be most valuable to our profession. The editors have adequately described the contributions in the preface. They are to be congratulated for these contributions.

Dr. Teik Aun Ooi
Prof. San Shyan Lin
Prof. Kwet Yew Yong
Dr. Noppadol Phienwej
Prof. A. S. Balasubramaniam

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June 2018 PART 1 PAPERS OF SEAGS 50TH ANNIVERSARY

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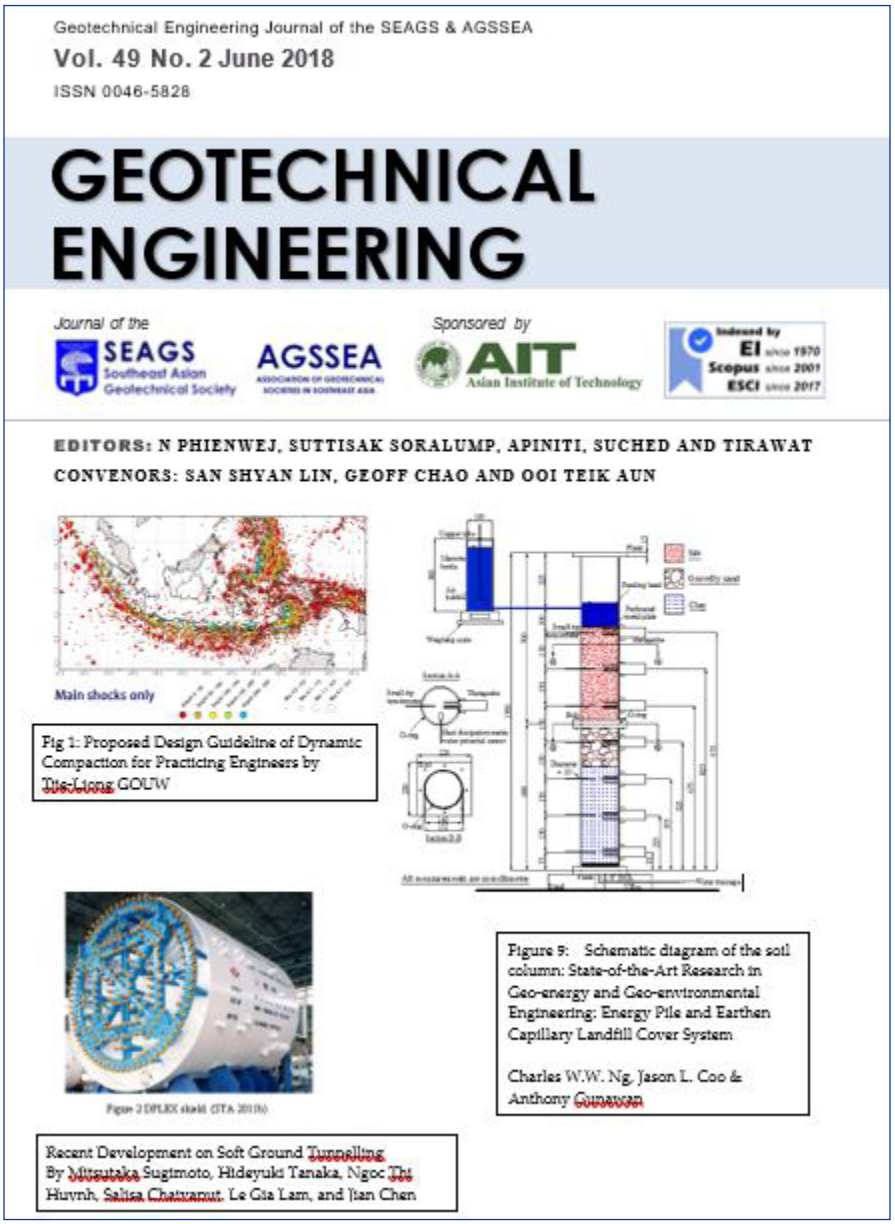

PREFACE

This volume contains 17 papers from invited authors from SEAGS-AGSSEA member countries, Japan, Korea, India and elsewhere.

The 1st paper is by Ikuo Towhata, titled: Future Task of our discipline: The basic trend of human civilization has changed drastically between the old good 20th Century and the present 21th Century. This change is caused by the limited resources of our planet and the increasing human population. We have to sustain the civilization while improving the living condition of many people in developing countries. Obviously, we cannot seek for the past model of engineering and life style in the coming decades. Under these difficult circumstances, what should geotechnical engineering do, collaborating with other disciplines? I think there are three issues that deserve our attention. The first is the reuse or recycling of resources such as industrial wastes. Further, shortage water resources is becoming a serious problem in many

countries. To cope with this, the reuse of tap water waste for toilet flushing, gardening and other appropriate purposes is a good idea. Being small in size, this is one kind of geotechnical engineering. Rain water in urban areas goes directly into waste water pipelines and then river, without infiltration into soil as was the case before urbanization. By installing more seepage path into soil, we can reduce the flood water level in rivers and, at the same time, obtain ample ground water resource. Further it seems possible to collect fresh ground water immediately before it flows into the sea by installing underground dams. The second addresses energy resources. The hydraulic power is clean and always an important source but nowadays old reservoirs have a problem of silt/sand deposition. Good technology is needed to remove soil from reservoirs. The side effect of sediment discharge into river is the mitigation of coastal erosion. Another resource is geothermal. Once attempted in the middle of 20th Century, now we can try this energy from deeper elevations in the earth. There is no need to refer to the methane hydrate in ocean bed. Recovery of this resource in an industrial scale is evidently a geotechnical task. Mega cities are developing now in many developing countries and the urban transportation still relies on automobiles. The fuel consumption, the number of passengers per unit area of road and the air pollution due to exhaust gas all imply wasting of resource. Modal shift towards such mass transit as metros and light railways are urgent. This modal shift has to be started while there are land resources in cities; otherwise new construction in developed cities will be extremely difficult and time consuming. In addition to new construction, the mitigation of ageing and deterioration of built infrastructures will be our mission and this is certainly a big task of the entire construction.

The 2nd paper is by Shan Shyan Lin et al on Finite Element Analysis to Characterize the Lateral Behavior of a Capped Pile Group: Finite element simulation for analysis of a capped pile group was conducted to investigate the interaction among piles, soil and pile cap, especially the effects resulted from concrete damaging. The simulation was to develop a calibrated model using the test data and to apply that model for conditions not present during the test. In addition to consider pile/soil and cap/pile interaction in the numerical simulation, interaction between steel reinforcement and concrete was also modelled in the analysis. Each steel reinforcement installed in the tested piles and the pile cap was modelled as an individual element at its installed position in the numerical analysis. The simulation results showed that the leading and the middle row piles in the group carried the highest and the lowest fraction of pile head loads when concrete around the pile cap/soil contact area remained its integrity. Increasing loading level, the pile head load carried by the middle row increased due to constraint of the pile cap affected by the concrete damage at the pile cap/soil contact zone.

Third paper is by Siau Chen Chian on Optimising Cement Dosage in Ground Improvement and Early Quality Control Schemes: Judicious dosage of cement in soft clayey soils is key in reducing waste, time and cost in this growingly environmental conscious modern society. Despite being a well-established technique in ground improvement, studies on the prediction of strength development of cement stabilised soils are often limited to a couple of clay types or site specific. This paper presents an extensive suite of unconfined compressive strength tests of cement-mixed clayey soils over a wide range of mix ratios, curing ages and sand impurities. A strength predictive model encompassing the above variables was developed and validated with several types of clay and cement from different sources. This enables the optimisation of cement dosage to achieve a desirable unconfined compressive strength to satisfy the ground improvement criteria with ease. Quality control schemes using early age strength and portable bender element were also discussed in this paper.

Geoff Chao et al are the authors of the fourth paper on the Evaluation of Factors Influencing Expansive Soil Embankment Slope Failure: Slope failures in embankments constructed in expansive soils are often induced by rainfall infiltration during wet seasons or after a heavy rainfall event. Field investigations regarding the effect of rainfall infiltration on slope instability for expansive soil embankments indicate that shrinkage cracks developed during the drying and wetting cycles play an important role on the slope instability. The excessive amount of infiltration through the shrinkage cracks decreases the matric suction of the expansive soil, and hence, results in a reduction of the shear strength of the soil accompanied with soil expansion, or heave. Furthermore, the modulus of elasticity of the soil decreases as water content increases and the soil heaves. The influence of these factors on the slope stability of expansive soil embankments is reviewed and discussed in the paper. Numerical modeling using the finite element computer programs SEEP/W and SIGMA/W was conducted to evaluate the volume change

of an expansive soil embankment slope due to changes in suction arising from infiltration. Long-term stability of the expansive soil embankment slope was conducted using the computer program SLOPE/W. The expansive soil slope was also analyzed with a proposed remediation scheme to evaluate the effect of the remediation on long-term stability. The results of the numerical modeling for the slope with remediation were compared to those obtained for the slope without remediation. Furthermore, heaving of the expansive soil is accompanied by a reduction in the shear strength of the soil. Therefore, analysis of heave using the oedometer method was discussed in the paper. The results of the heave prediction using the oedometer method were compared to those obtained from the numerical modeling method. Reasons for the differences in amounts of predicted heave using both methods are discussed in the paper.

Yasuhara et al are authors of the fifth paper on Settlement of river dykes and their adjacent residences on soft clay deposits after the Tohoku-Pacific Ocean Earthquake of 2011: Among the cases of extensive infrastructural collapse that resulted from the cataclysmic earthquake that struck off the eastern coast of Japan on March 11, 2011, long-term settlement and deformation of clay deposits during earthquakes have sometimes been overlooked. This paper presents a case history of clay deposit settlement and deformation beneath river dykes and their adjacent residences after the Great East Japan Earthquake in 2011. As a countermeasure against damage of this kind, parts of existing river dykes were removed and then sheet piles were installed immediately after the earthquake at the toes of river dykes. Thereafter, the river dykes were returned to the original height by surcharging the fills for dykes. In addition to measurement of river dyke and residence behavior after those countermeasures, numerical analysis was conducted using ALID software for dynamic analysis of behavior during earthquakes and DACSAR software for static analysis of post-earthquake behavior to predict settlement and deformation of deposits consisting of the thick clay layer underlying the sand layer and to verify effectiveness of the countermeasures.

The sixth paper is by Tjie Leong Gouw on Proposed Design Guideline of Dynamic Compaction for Practicing Engineers: During an earthquake, saturated fine sands tends to lose its bearing capacity due to the earthquake induced and accumulated excess pore water pressure. The phenomenon, known as liquefaction, is one of the earthquake hazards that need to be mitigated in an earthquake prone area such as the archipelagos of Indonesia. The occurrence of an earthquake cannot be prevented and, with the present knowledge, is difficult - if not impossible - to predict. However, liquefaction potential can be mitigated by carrying out proper ground improvement methods. The most common ground improvement schemes that have been widely implemented in mitigating liquefaction potential of saturated fine sands in Indonesia are dynamic compaction and vibro-compaction. However, many practicing engineers are still not familiar with the methods. This paper presents the design, execution, and evaluation methods of dynamic compaction. Two case histories on real projects are also presented as examples.

Seventh paper is by Dong Hyun Kim et al on Application of photogrammetry and image processing for rock slope investigation: High-resolution 3D photogrammetric models facilitate the generation of rock surface attributes which can be used to highlight the products of weathering on rock slopes. Recent studies of image analysis have also demonstrated that if the features of interest are clearly visible in digital photographs, various surface features which are associated with its weathering characteristics can be investigated using image analysis techniques. However, combining their potential of both 3D and 2D images for providing more reliable data, these approaches are computationally complicated and difficult to implement. This article presents an image analysis workflow via a MATLAB image filtering code for the estimation of a recession area focussing on the variation of rock surface roughness. By comparing annual photogrammetric 3D images, the roughness variations were processed with relative brightness integers (I) obtained from their greyscale images. The results show that the loss of roughness on the exposed surface appeared to be strongly related to the changes of brightness integers (I) derived from filtered greyscale images. The combined image analysis with 3D photogrammetric models could compensate the limitations of the uses of both digital photographs and 3D surface models for quantifying weathering patterns.

In the eighth paper by Charles W.W. Ng, Jason L. Coo & Anthony Gunawan deal with on State-of-the-Art Research in Geo-energy and Geo environmental Engineering: Energy Pile and Earthen Capillary Landfill Cover System: Geo-energy and geo-environment are two branches of geotechnical engineering representing current and future grant challenges because of the pressing need to conserve energy

and protect the environment. The Hong Kong University of Science and Technology has been actively seeking solutions to these two challenges. The first part (geo-energy) of this paper describes a series of novel cyclic heating and cooling centrifuge tests performed on replacement and displacement floating energy piles installed in both saturated sand and clay. The test results reveal that replacement floating energy piles exhibit ratcheting settlement under a constant working load but at a reducing rate when subjected to temperature cycles, irrespective of the type of soil in which they are embedded. On the contrary, displacement floating energy piles exhibit heave behaviour. No existing theoretical model can capture observed ratcheting pile settlement well. This suggests that care must be taken when designing replacement floating energy piles. In the second part (geo-environment) of the paper, a novel three-layer environmentally friendly earthen cover system for climate regions like Thailand, Indonesia, the Philippines, Malaysia and Singapore is investigated through theoretical examination, physical modelling (e.g., one-dimensional soil column and twodimensional large flume tests), and advanced numerical simulations. This novel cover system consists of a fine-grained soil underneath a conventional two-layer cover with capillary barrier effects. Two-dimensional water infiltration experiments and numerical simulations show that the newly introduced fine-grained soil layer can greatly minimize rainfall infiltration even after a 4-h rainfall event having a return period of 100 years in climate regions. One-dimensional gas emission tests and numerical simulations reveal that a minimum of 0.6 m thick fine grained soil layer compacted at 10% saturation (e.g. those in arid regions) can adequately satisfy the Australian guidelines. No geomembrane is needed. This new environmentally friendly and robust earthen landfill cover system is thus a promising alternative to other landfill covers for minimizing rainfall infiltration and landfill gas emission under all kinds of weather conditions.

The ninth paper is by Dr Dominic Ong on detrimental effects of lateral soil movements on pile behaviour: Deep excavation, tunnelling and river tidal fluctuations are some activities that can induce lateral soil movements, which can detrimentally impact nearby existing infrastructure. One major design concern is that the behaviour and mechanisms of complex soil-structure interaction that occur in these situations are often still not well understood. Limited design methods are currently available to evaluate these problems in practice. Therefore, the latest development and understanding of soil-structure interaction involving pile foundations subject to lateral soil movements are presented with reference to successfully implemented projects and research outcomes based on finite element modelling, centrifuge experiments as well as field observations and interpretations. The novel concept of passive pile behaviour and limiting soil pressure due to stress relief will be evaluated and explained in detail.

Yin & Feng in the tenth paper deal with the validation of a new simplified Hypothesis B method for calculating consolidation settlement of clayey soils exhibiting creep: This paper introduces a new simplified Hypothesis B method for calculating consolidation settlement of clayey soils exhibiting creep. The general equations of the new simplified Hypothesis B method are presented and explained first. After this, four different cases are used to examine the validation of this new method. The first case is a single layer of clay with test data. Two fully coupled finite element (FE) programs, the new method, and Hypothesis A method are used to calculate the consolidation settlements of the clay which are compared with test data. The second case is one layer of Hong Kong Marine Deposits (HKMD) with four different over-consolidation ratios. Again, the two FE programs, the new method, and Hypothesis A method are used to calculate the consolidation settlements of the HKMD with results compared and relative errors obtained. The third case is two layers of soils: one is HKMD and the other is Alluvium. One commercial FE program, the new method, and Hypothesis A method are used to calculate the consolidation settlements of this two-layer system. Two methods for determining the average degree of consolidation of the two layers are used in the new simplified method. All results in this case are compared with relative errors obtained. The fourth case is one layer of Hong Kong Marine Deposits (HKMD) with vertical drain. The commercial FE program, the new method, and Hypothesis A method are used to calculate the consolidation settlements of this HKMD with vertical drain. Two methods for determining the average degree of consolidation of the HKMD with vertical drain are used in the new simplified method. Results from the FE analysis and the new method are compared with relative errors obtained. From the above validation cases, it is found that the settlements from the new simplified Hypothesis B method are closer to test data or the values from the fully coupled finite element modelling with least relative errors. Hypothesis A normally under-estimates the settlement a lot with the largest errors. The main conclusion is that the new simplified

Hypothesis B method is very suitable for calculating consolidation settlement of clayey soils exhibiting creep and is easy to use by simple spreadsheet calculation.

The 11th paper is by Boon & Ooi on advances in tunnelling Geotechnics – stacked twin tunnels: The construction of underground metro projects involves both tunnelling and deep excavations for station construction. The construction programme of the contractor needs to take into account the time required for excavating the launching shaft or station to launch the tunnel boring machines (TBMs), and also the interfacing of the tunnelling activities with the intermediate stations located in between the launching and retrieval shafts or stations. Risks in construction programme may arise in a project for instance due to land issues such as merger and acquisition or relocation of the original land occupants. The risks in construction programme can nonetheless be addressed through design provided there is strong understanding of its mechanics. This also allows more optimal construction programmes to be developed at the outset of a project. An example is demonstrated for the unusual case of stacked twin tunnels in residual soils where the upper tunnel is constructed first and undermined subsequently by the lower tunnel. The mathematics and the mechanics governing their interactions are detailed.

The twelfth paper is on the Study on Shield Operation Method in Soft Ground by Shield Simulation (authors: Mitsutaka Sugimoto, Hideyuki Tanaka, Ngoc Thi Huynh, Salisa Chaiyaput, Le Gia Lam, and Jian Chen): Shield tunneling technologies have been developed for constructing tunnels in soft ground especially under groundwater.Recently, challenging projects from the viewpoint of tunneling technology have been planned. To realize these constructions, it is necessaryto examine the shield operation method preliminarily. The authors have developed a method to carry out the above examination and have confirmed its validity for a tunnel in stiff ground. In this research, to examine the performance of the proposed method for soft ground tunnel, the simulation on shield behavior was carried out using the estimated shield operational data for a tunnel in soft ground. As a result, the following were found: the shield steering conditions by the proposed method are not enough to rotate the shield along a sharp curve in case of soft soil; and the simulation results have a good agreement with the planned alignment using proper shield operational data.

The 13th paper is by Bergado et al on the Development of Soft Ground Improvements Using Prefabricated Vertical Drains (PVD) and Deep Cement Mixing (DCM) Techniques: Thailand, located on soft clay, has highly settlement. Ground improvement has become one alternative to increase soil strength, soil stiffness and reduce soil compressibility. This paper focuses on comparative performances of prefabricated vertical drain (PVD) in the improvement of soft Bangkok clay using surcharge, vacuum and heat preloading. The Vacuum-PVD can increase the horizontal coefficient of consolidation, Ch, resulting in faster rate of settlement at the same magnitudes of settlement compared to PVD. Moreover, the Thermal PVD and Thermal Vacuum PVD can increase further the coefficient of horizontal consolidation, Ch, with the associated reduction of kh/ks values by reducing the drainage retardation effects in the smear zone around the PVD which resulted in faster rates of consolidation and higher magnitudes of settlements. In addition, a new kind of reinforced method, namely: Stiffened Deep Cement Mixing (SDCM) pile is introduced to mitigate the problems of the Deep Cement Mixing (DCM) pile due to the low flexural resistance, lack of quality control in the field and unexpected failure. The SDCM pile consists of DCM pile reinforced with precast concrete core pile. The full scale embankment test on soft clay improved by SDCM and DCM piles was studied. The 3D finite element and parametric study have been investigated to understand the behavior of SDCM and DCM piles. The simulation results indicated that the surface settlements decreased with increasing lengths of the concrete core piles, and increasing sectional areas of the SDCM piles. In addition, the lateral movements of the embankment decreased by increasing the lengths (longer than 4 m) and, the sectional areas of the concrete core piles in the SDCM piles. The results of the numerical simulations closely agreed with the observed data and successfully verified the parameters affecting the performances and behavior of both SDCM and DCM piles.

Strength and stiffness parameters of Bangkok clays for finite element analysis is the title of the fourteenth paper by Suched Likitlersuang, Chhunla Chheng, Chanaton Surarak and Arumugam Balasubramaniam:

Constitutive soil model and its parameters are the important issue in finite element analysis. Hardening soil model and Mohr-Coulomb model parameters of Bangkok clays for finite element analysis were evaluated in this study. To achieve this purpose, a case study of Sukhumvit MRT Station was selected to model in three dimension with hardening soil and Mohr-Coulomb models. The instrumented data during construction was used to compare with the results from finite element analysis. PLAXIS 3D software was adopted as solving tool in this study. Lateral wall movement and ground surface settlement predictions were used to compare with the data. The outcomes were concluded that the hardening soil model characterised the Bangkok clay better than Mohr-Coulomb model in 3D finite element analysis for excavation.

Warakorn Mairaing and Bunpoat Kulsuwan, in the fifteenth paper deal with Vegetation Effects on Landslides in Thailand: Increasing of rain triggered landslide in the last decade in Thailand is partially related to land use change and vegetation. The natural forest had changed to mono cropping land due to agricultural product demand. The study was done on two watersheds namely Mae Phrong-Mae Phun(MPMP) and Khlong Kram(KK) on the north and south of Thailand respectively. Land use study reveals that on MPMP, decreasing of natural forest is more than 58% of the total area. Where on KK, the change of natural forest is not significant. The largest root spreads of 2.5 to 5.0 m. with root depth of 0.4 to 1.6 m was observed in forest tree group. The orchard land show intermediate root spreads of 1.2 to 3.5 m. with root depth of 0.9 to 1.3 m. The pioneer trees show must less root spread and depth. Root cohesion (CR) can be calculated from tree distribution in each land use and the characteristics of each tree on that land use. The results show that root cohesion on the natural forest is the highest and less on orchard and pioneer plants respectively. When root cohesions were input to 3-D stability model. The Factor of Safety and probability of failure over the watershed area were obtained. The warning chart can be created from the level of antecedent and triggered rainfall.

The sixteenth paper on Reclamation for Al Raha Beach Development, Abu Dhabi, UAE is by Suraj De Silva and Henry Wang: Al Raha Beach Development, a 650 (10 km x 0.8 km) hectare upmarket residential and commercial development was undertaken by the Abu Dhabi developer ALDAR to house a resident population of 120,000. The reclamation was built over very soft contaminated silts and clays which had deposited in the channel since it was dredged in the 1970s. Extreme care was therefore necessary in forming the reclamation and the seawalls. The vertical L-shaped precast seawalls in the Western Precincts were founded on marine stone columns. The Seawalls in the Eastern Precincts were formed with diaphragm walls installed from land-after reclamation. The very soft mud layers within the reclamation area were treated by consolidation under the reclamation fill. The reclamation sandfill comprising carbonate sand dredged from nearby islands and was densified to prevent liquefaction and to achieve the design strength by deep vibrocompaction. The near surface reclamation fill was compacted with high impact rollers to achieve an allowable bearing capacity of 150 kPa. This paper describes the reclamation design criteria and approach, ground treatment techniques used, the testing & verification of treatment and the behaviour of the reclamation upon completion.

The 17th paper in this volume is by Hung Jiun Liao et al on Anchors of Anchored Slopes in Taiwan: A catastrophic failure of an anchored cut slope at the national expressway in 2010 uncovered the status quo of tie-back anchors in Taiwan. Serious corrosion of anchor components due to poor corrosion protection was found to be the most obvious factor contributing to this landslide among other factors. After an extensive island-wide investigation on the existing anchored slopes, similar corrosion problem was found in many other anchored slopes. After the investigation, the construction and maintenance practice of anchored slopes had been fundamentally changed in Taiwan. This paper covers the inspection results on anchored slopes and also the measures taken to improve the corrosion protection of existing anchors and new anchors. Based on the problems found from the existing anchored slopes, some modifications on anchor tendon assembly and cement grouting practice had been developed to upgrade the corrosion protection of the new anchors and to monitor the long-term anchor load change as well.

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September 2018 CALL FOR ABSTRACTS AND PAPERS

Fellenius Issue: Announcement on call-for-papers

Announcement and invitation of call for abstracts and papers contributed to the September 2018 Issue of SEAGS-AGSSEA Journal

Theme: Deep Foundation Practice and Interpretation of Load Test Data

1. Interpretation of Pile load test data
2. New pile testing techniques
3. Design and analysis of piled foundations
4. Design and Analysis of Pile-Raft Foundations
5. Construction aspects of deep Foundations
6. Field monitoring of Deep Foundations
7. Others in Deep Foundation Engineering

For this Issue about 15 papers are envisaged The following is the tentative schedule for this issue: flexible and will be adjusted

(1) Call for paper abstracts (Month 2016 – March 2017)

(2) Full paper submission (on or before June 2017)

(3) Revision to and finalization of papers (before December 2017)

(4) Manuscripts ready for publication (March 2017)

(5) This special Issue appears in September 2018

The Journal is an open access, specialized, peer-reviewed, Journal for SEAGS: (Southeast Asian Geotechnical Society) & AGSSEA. (Association of Geotechnical Societies in South East Asia) that focuses on research, development and application within the fields of geotechnical engineering and technology; Published four times per year. Contributions must be original, not previously or simultaneously published elsewhere.

Accepted papers are available freely with full-text content upon receiving the final versions, and will be indexed by major academic databases.

- Papers should be written in English.
- All articles are sent for blind peer review, with a fast and without delay review procedure (within approximately one month of submission).
- Submitted papers should follow the format of the sample article attached.
- Submissions are accepted via e-mail: please contact

  P. D. Long phung.long@gmail.com

  Der-Wen Chang dwchang@mail.tku.edu.tw

  Harry G Poulos: Harry Poulos Harry.Poulos@coffey.com

Download Sample Article for Abstract (PDF format)

December 2018 CALL FOR ABSTRACTS AND PAPERS

SPECIAL ISSUE ON GEOSYNTHETICS FOR INFRASTRUCTURE DEVELOPMENT

Geosynthetics are being widely used in the construction of geotechnical and geoenvironmental structures, worldwide. This is primarily due to their simplicity, ease of construction and overall economy that finds favour with the practicing engineers. With the objective of highlighting the current international trends in the application of geosyhtetics for infrastructure development, the SEAGS & AGSSEA Journal-of Geotechnical Engineering has proposed a Special Issue on geosynthetics, considering research papers in the following areas.

- Ground improvement and reinforcement
- Transportation structures such as Railways, Highways, and Airports
- Coastal and waterways structures
- Erosion control
- Waste landfills
- Materials and testing
- Design concepts
- Case histories
- Any other closely associated topic

For this issue on research and practice in Geosynthetics for infrastructure development, about 15 papers are envisaged with consideration of balances among topics, expertise and countries. Following is the timelines for submission:

Abstract Submission: 30 March 2017
Intimation for full paper submission: 30 April 2017
Submission of full paper: 30 July 2017
Note for paper status and feedback for revision: 30 Jan 2018
Final camera ready manuscript received for publication: 30 May 2018
Journal Issue date: December 2018

Geotechnical Engineering is an open access, specialized, peer-reviewed, Journal for SEAGS: (Southeast Asian Geotechnical Society) & AGSSEA. (Association of Geotechnical Societies in South East Asia). It focuses on research, development and applications in geotechnical engineering and is published four times a year. Contributions must be original, not previously or simultaneously published elsewhere. Accepted papers will be available freely with full-text content and will be indexed at major academic databases.

- Papers should be written in English.
- All articles are sent for blind peer review, with a fast and without delay review procedure (within approximately one month of submission).
- Abstracts submitted should follow the format of the sample article appended below

Authors are requested to submit a 150-200 word abstract of their proposed contribution to one of the guest editors via e-mail

- Dr. Sujit Kumar Dash, sujit@civil.iitkgp.ernet.in
- Prof. Ennio M. Palmeira, palmeira@unb.br
- Prof. R. M. Koerner, robert.koerner@coe.drexel.edu
- Prof. M.R. Madhav, madhavmr@gmail.com

In-house Editor: Prof. San Shyan Lin, sslin46@gmail.com

Advisors

- Prof. K. Rajagopal, gopalkr@iitm.ac.in
- Prof. Sarvesh Chandra, sarviitk@gmail.com
- Prof. R. Shivashankar, shivashankar.surathkal@gmail.com

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March 2019 CALL FOR ABSTRACTS AND PAPERS

Theme: Application & Case Studies on Remote Sensing Technology & Bio-engineering in Landslide Mitigation

Guest Editors:
Prof. Chandan Ghosh, National Institute of Disaster Management, New Delhi, India
Assoc. Prof. Dominic E. L. Ong, Swinburne Sarawak Research Centre for Sustainable Technologies, Sarawak, Malaysia

We are pleased to announce the Call-for-Paper on the theme "Application & Case Studies on Remote Sensing Technology & Bio-engineering in Landslide Mitigation" for a special issue in the SEAGS & AGSSEA Journal, which is scheduled for publication in March 2019. There has been significant development in the use of Remote Sensing Technology & Bio-engineering as landslide mitigation techniques over the recent years. Therefore, this special issue aims to bring together the advances in application and case studies in landslide mitigation techniques, but not limited to:

1) Conventional methods (application of existing technology: geo-products, analytical tools, modelling technique):
- Site characterisation, interpretation of geotechnical parameters, field instrumentation & monitoring, observational method etc.
- Field mapping, engineering geology interpretation, geohazard risk vulnerability, development of landslide proforma, numerical modelling (FEM, DEM etc.), centrifuge modelling, lab-scale models etc.
- Application of geosynthetics, retaining walls, passive piles etc.

2) Remote sensing technology:
- Application of recent technology such as SAR, LiDAR, photogrammetry, drone, image processing, satellite imagery, terrestrial laser scanning (TLS), acoustic real-time monitoring system, landslide early warning system etc.

3) Bio-engineering:
- Microbial Induced Calcite Precitation (MICP)
- Surface covering methods such as vetiver grass, hydroseeding
- Biotechnical structures: bush mattress, fences, fascines, long brush barrier
- Design considerations: micro-climate, hydrology, rainfall, plant species, geology

Please kindly note the following important dates should you like to contribute an article.

(1) Call for paper abstracts (June – December 2017)
(2) Full paper submission (on or before March 2018)
(3) Revision to and finalization of papers (Before August 2018)
(4) Manuscripts ready for publication (September 2018)
(5) This special Issue appears in March 2019

The Journal is an open access, specialized, peer-reviewed, Journal for SEAGS: (Southeast Asian Geotechnical Society) & AGSSEA. (Association of Geotechnical Societies in South East Asia) that focuses on research, development and application within the fields of geotechnical engineering and technology. Published four times per year. Contributions must be original, not previously or simultaneously published elsewhere.

Accepted papers are available freely with full-text content upon receiving the final versions, and will be indexed at major academic databases.
- Papers should be written in English.
- The number of papers accepted is generally 15 but can be more depending on the quality.
- All articles are sent for blind peer review, with a fast and without delay review procedure (within approximately one month of submission).

• Submitted papers should follow the format of the sample article attached.
• Submissions are accepted via e-mail: please contact

An abstract with less than 300 words can be sent to cghosh24@gmail.com and elong@swinburne.edu.my. A sample abstract template is attached at the end of this document.

Download Sample Article for Abstract (PDF format)

June 2019 CALL FOR ABSTRACTS AND PAPERS

Editor in Chief: Dr Long, Vietnam

Fellenius Issue: Announcement and invitation of call for abstracts and papers contributed to the June 2019 Issue of SEAGS-AGSSEA Journal

Theme: Deep Foundation Practice and Interpretation of Load Test Data

1. Interpretation of Pile load test data
2. New pile testing techniques
3. Design and analysis of piled foundations
4. Design and Analysis of Pile-Raft Foundations
5. Construction aspects of deep Foundations
6. Field monitoring of Deep Foundations
7. Others in Deep Foundation Engineering

For this Issue about 15 papers are envisaged The following is the tentative schedule for this issue: flexible and will be adjusted

(1) Call for paper abstracts (Jan 2018 – March 2018)
(2) Full paper submission (on or before June- September 2018)
(3) Revision to and finalization of papers (before December 2018)
(4) Manuscripts ready for publication (March 2019)
(5) This special Issue appears in June 2019

The dates are some what flexible.

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Accepted papers are available freely with full-text content upon receiving the final versions, and will be indexed by major academic databases.

• Papers should be written in English.
• All articles are sent for blind peer review, with a fast and without delay review procedure (within approximately one month of submission).
• Submitted papers should follow the format of the sample article attached.
• Submissions are accepted via e-mail: please contact
P. D. Long: phung.long@gmail.com
Der-Wen Chang: dwchang@mail.tku.edu.tw
San Shyan Lin: sslin46@gmail.com
Bala Balasubramaniam: bala.b.balasubramaniam@griffith.edu.au

Download Sample Article for Abstract (PDF format)

CLSF Issue 2019 CALL FOR ABSTRACTS AND PAPERS

Theme: Cyclic Loading of Soils and Foundations

Aim and Scope:

Infra-structures and private residences are in many occasions situated under cyclic/transient/dynamic loading and are sometimes endangered to disasters and damage caused by Cyclic/transient/dynamic loading actions. Although the geotechnical issues on cyclic loading of soils and foundations have frequently been focused on the earthquakes and their relative topics as the most important subject, foundations and structures are placed on the cyclic situations which are different from the earthquake. Traffic loading on highway, railway and airport is counted as one of the important issues in civil engineering practices to maintain sustainable human lives. Besides this, coastal structures are also required to provide high durability undergoing severe ocean wave assailing, particularly under climate change associated by global warming. Apart from these situations, machine foundations and foundations followed by pile driving and dynamic compaction are also situated under cyclic loading.

This issue aims to begin with the state-of-the-art review on cyclic loading of soils and foundations and thereafter to include the papers on the recent topics from the case histories at fields and the academic experiences from various kinds of cyclic loading situations as sated above. Contribution from the specifically new aspects related to cyclic loading except the above stated situations are also welcome.

● **Examples of the Topic:** The special issues includes cyclic loading events in geotechnical engineering (CLSF in abbreviation), such as:

(1) Case histories associated with geotechnical issues of earth structures and foundations under cyclic, transient and dynamic loading situations
(2) Clarification of behavioral mechanism of various kinds of soils under cyclic loading using numerical analysis, laboratory experiments and field investigation
(3) Risk management of climate change-related geo-disasters and environmental impacts
(4) Solution of difficult and important geotechnical practices such as in pile driving, dynamic compaction or blasting at foundations
(5) Cyclic loading issues arisen from the situations in using CPT, STP or recently advance techniques used for field investigations
(6) Countermeasures and adaptive measures against geo-disasters and environmental impacts triggered from cyclic loading events

● **Timeline:**

For this CLSF Issue about 15 through 20 papers are envisaged with consideration of balances among topics, expertise and countries. The following is the provisional schedule for this issue:

(1) Call for paper abstracts starting from as soon as possible. Deadline of abstract is due to 30th April, 2018.
(2) Full paper submission (on or before 24 December 2018)
(3) Revision to and finalization of papers (before 24 June 2019)
(4) Manuscripts ready for publication (30 September 2019)
(5) CLSF Issue appears in December 2019

● **Journal for SEAGS: (Southeast Asian Geotechnical Society) & AGSSEA. (Association of Geotechnical Societies in South East Asia)**

Journal is an open access, specialized, peer-reviewed, Journal for SEAGS: (Southeast Asian Geotechnical Society) & AGSSEA. (Association of Geotechnical Societies in South East Asia) that focuses on research, development and application within the fields of geotechnical engineering and technology. Published four times per year, it tries to give its contribution for enhancement of research studies.

Contributions must be original, not previously or simultaneously published elsewhere. Accepted papers are available freely with full-text content upon receiving the final versions, and will be indexed at major academic databases.

- Papers should be written in English.
- The acceptance number of papers is less than 15.
- All articles are sent for blind peer review, with a fast and without delay review procedure (within approximately one month of submission).
- Submitted papers should follow the format of the sample article attached.
- Submissions are accepted via e-mail of each of them shown below as co-chairs and co-secretaries:

● **Co-chairs**

Dr. Kazuya YASUHARA, Professor Emeritus, Institute for Global Change Adaptation Science (ICAS), Ibaraki University, 2-1-1 Bunkyo, Mito, Ibaraki 310-8512, Japan
e-mail address: kazuya.yasuhara.0927@vc.ibaraki.ac.jp
Dr. Buddhima INDRARATNA, Distinguished Professor, Faculty of Engineering and Information Sciences, University of Wollongong, NSW, Australia-2522 e-mail address: indra@uow.edu.au

● **Co-secretaries:**

Dr. Tadao ENOMOTO, Associate Professor, Department of Urban and Civil Engineering, 4-12-1, Nakanarusawa, Hitachi 312-8511, Ibaraki University, Japan
e-mail address: tadao.enomoto.geote@vc.ibaraki.ac.jp
Dr. Jayan S. VINOD, Associate Professor, School of Civil, Mining and Environmental Engineering, Faculty of Engineering and Information Sciences, University of Wollongong, NSW, Australia-2522
e-mail address: vinod@uow.edu.au

Thailand Issue 2019 CALL FOR ABSTRACTS AND PAPERS

Prospective authors are welcome to submit their high quality papers related to latest development in geotechnical and geo-environmental engineering in Thailand to the special issue of Geotechnical Engineering, the SEAGS-AGSSEA JOURNAL. Original research of direct fundamental and practical significance on all aspects of geotechnical and geo-environmental profession as well as case studies in Thailand are particularly encouraged.

The accepted papers will be published according to one of the following three categories: Technical paper, Technical note and Case studies. Technical paper is a complete research that demonstrates originality and innovative features in geotechnics. Technical note is a report of preliminary research findings that is of interests and relevance to fundamentals and practice. Case studies present major practical development in geotechnical engineering projects in Thailand.

The authors are required to indicate their preferred category when submitting their manuscript. Please strictly follow the instructions as indicated in following link. http://seags.ait.asia/submission-services/

Deadlines: Abstract submission 30 April 2018
Full paper submission 30 November 2018
Please e-mail the abstract and full paper to fengatj@ku.ac.th
Geotechnical Engineering is indexed in Scopus and Emerging Sources Citation Index (ESCI) of Web of Science.

Editors:
Dr. Apiniti Jotisankasa
Dr. Avirut Chinkulkijniwat
Dr. Pitthaya Jamsawang
Dr. Pornkasem Jongpradist
Prof. Suched Likitlersuang

JOURNAL ISSUES - 2011 to 2016

2011 MARCH Vol. 42 No. 1

http://seags.ait.asia/journals/seags-agssea-journal-march-2011/

Part I General papers

Some Issues in Geosynthetic Reinforced Walls and Slopes
by D. Leshchinsky

Advance in Geogrid Reinforced Slopes in Malaysia
by T.A. Ooi and C.H. Tee

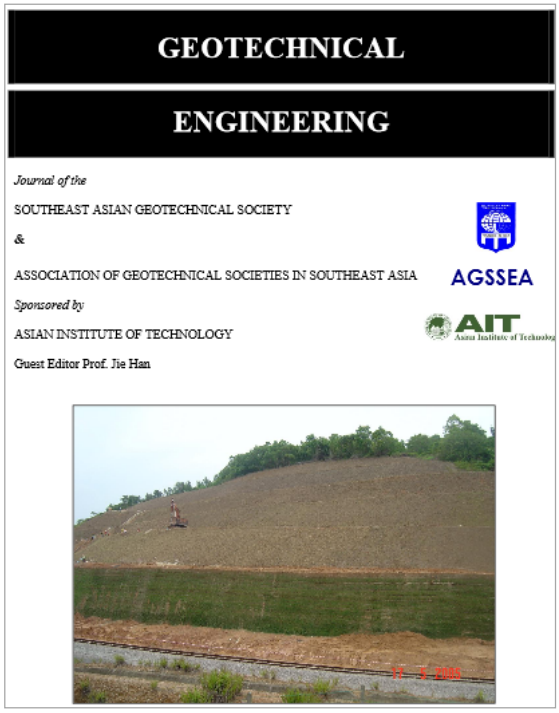
Embankment Construction with Saturated Clayey Fill Material Using Geocomposites *by J.-C. Chai, T. Hino, Y. Igaya, and Y. Yamauchi*

Numerical Modeling of Geosynthetic-Reinforced Earth Structures and Geosynthetic-Soil Interactions
by J. Huang, A. Bhandari, and X. Yang

Geosynthetic Tubes and Geosynthetic Mats: Analyses and Applications *by J. Chu, W. Guo, and S.W. Yan*

Performance-based Design for Geosynthetic Liner Systems in Landfills
by Y.M. Chen,W.A. Lin, B. Zhu, and L.T. Zhan

Quantifying the Influence of Geosynthetics on Performance of Reinforced Granular Bases in Laboratory
by J. Han, Y. Zhang, and R.L. Parsons



2011 JUNE Vol. 42 No. 2

http://seags.ait.asia/journals/seags-agssea-journal-june-2011/

Part I General papers

Field Measurements on Piled Rafts with Grid-Form Deep Mixing Walls on Soft Ground
by Kiyoshi Yamashita, Junji Hamada and Takeshi Yamada

Static Axial Reciprocal Load Test of Cast-in-place Nodular Concrete Pile and Nodular Diaphragm Wall
by K. Watanabe, H. Sei, T. Nishiyama and Y. Ishii

Vertical Load Test and Settlement Analysis of Cast-in-place Concrete Nodular Piles Supporting a High-Rise Building
by N. Suzuki and T. Seki

Extended Use of Spring Hammer Rapid Load Testing
by K. Matsuzawa and T. Matsumoto

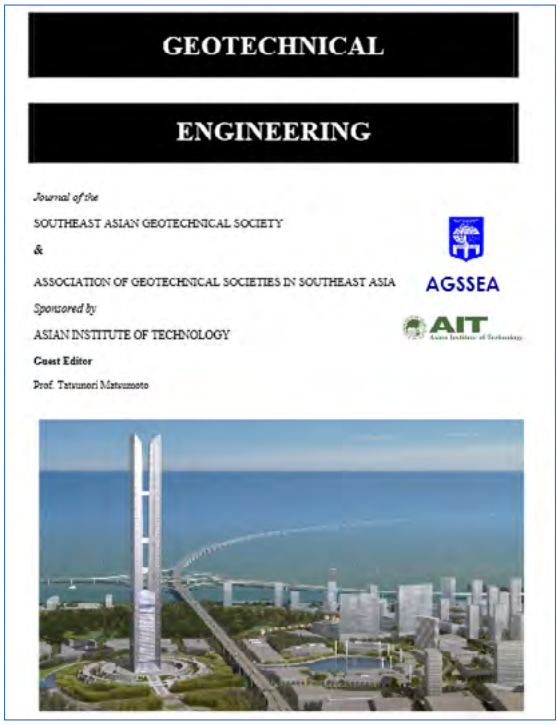
Push-up Load Tests Using Uncrushable Particles and Its DEM Analyses
by SuriyahThongmunee, Shun-ichi Kobayashi and Tatsunori Matsumoto

On Design and Construction of Pile Group Foundation of Taipei 101
by Ching-Han Yu

Capacity versus Deformation Analysis for Design of Footings and Pile Foundations
by Bengt H. Fellenius

Pile Raft Foundations for Tall Buildings
by H.G. Poulos, J.C. Small and H. Chow

Foundation Design of the 151 Story Incheon Tower in a Reclamation Area
by Ahmad Abdelrazaq, Frances Badelow, Sung Ho-Kim, Harry G. Poulos



2011 SEPTEMBER Vol. 42 No. 3 http://seags.ait.asia/journals/seags-agssea-journal-september-2011-16691/

Research Papers:

Building Damage Assessment for Deep Excavations in Singapore and the Influence of Building Stiffness
by K.H. Goh and R.J. Mair

Concept and Design Methodology of Redundancy in Braced Excavation and Case Histories
by G. Zheng, X.S. Cheng, Y. Diao, and H.X. Wang

Three-Dimensional Deformation Behavior of an Over-sized Excavation in Shanghai Clay
by Y. M. Hou, J. H. Wang and D-S. Jeng

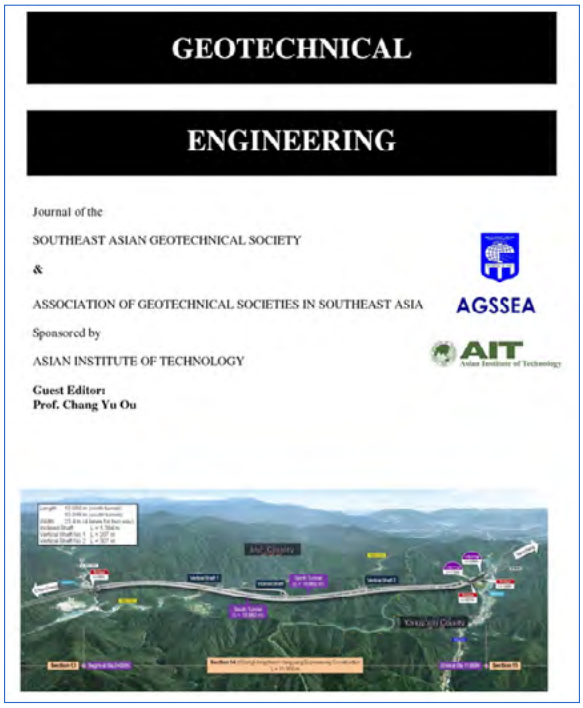
Numerical Study on the Movement of Existing Tunnel Due to Deep Excavation in Shanghai
by J. J. Chen, J. H. Wang, G. W. Xiang, S. L. Wen, and Y. Du

Observed Performance of Diaphragm Wall Construction
by *C.Y. Ou and L.L. Yang*

Performance of Construction with New Pneumatic Caisson Method in Shanghai Soft Ground *by F.L. Peng and H.L. Wang*

Technologies of Micro-disturbance Construction of Pipe-Jacking
by W. Q. Ding, B. Li, S. L. Yuan and J. K. Ge

Design and Construction of InJe Tunnel, the Longest Road Tunnel of Korea *by S. M. Cho, S. D. Lee, and Y. J. Kwon*



2011 DECEMBER Vol. 42 No. 4 http://seags.ait.asia/journals/seags-agssea-journal-december-2011/

Research Papers:

Dilation and Stability of Sand in Triaxial Tests
by A. Sawicki

The Strength Anisotropy of a Residual Soil in Singapore
by G. Meng and J. Chu

Effect of Boundary Conditions on Shear Banding in True Triaxial Tests on Sand *by P.V. Lade and Q. Wang*

Behavioural Patterns of Fine Sands *by V.N. Georgiannou*

Simulating Shear Rate-Dependent Undrained Stress-Strain Behaviour of Natural Sedimentary Clay at Kobe Airport
by M.-S. Jung and S. Shibuya

Experimental Investigation on Settling Behavior of Hong Kong Marine Deposits in Settling Column Condition
by F. Tong J.H.Yin and G.F. Zhun

Development of a Hollow Cylinder Torsional Apparatus for Pre-failure Deformation and Large Strains Behaviour of Sand
by E. Ibraim, P. Christiaens and M. Pope

Effect of High Confining Pressure on the Behaviour of Fibre Reinforced Sand *by S. Ud-din, A. Marri and D. Wanatowski*

TECHNICAL NOTE

A Comment on the Ratio of the Maximum and Minimum Dry Density for Sand
by E. Imre, S. Fityus, E. Keszeyne and T. Schanz

2012 MARCH Vol. 43 No. 1

http://seags.ait.asia/journals/seags-agssea-journal-march-2012/

Some Applications Of Unsaturated Soil Mechanics In Thailand: An Appropriate Technology Approach
by W. Mairaing, A. Jotisankasa and S. Soralump

Calculation Of Heave Of Deep Pier Foundations
by J.D. Nelson, K.C. Chao, D.D. Overton and R.W. Schaut

In-Situ And Laboratory Investigations Of Stress-Dependent Permeability Function And SDSWCC From An Unsaturated Soil Slope
by C. W. W. Ng and A. K. Leung

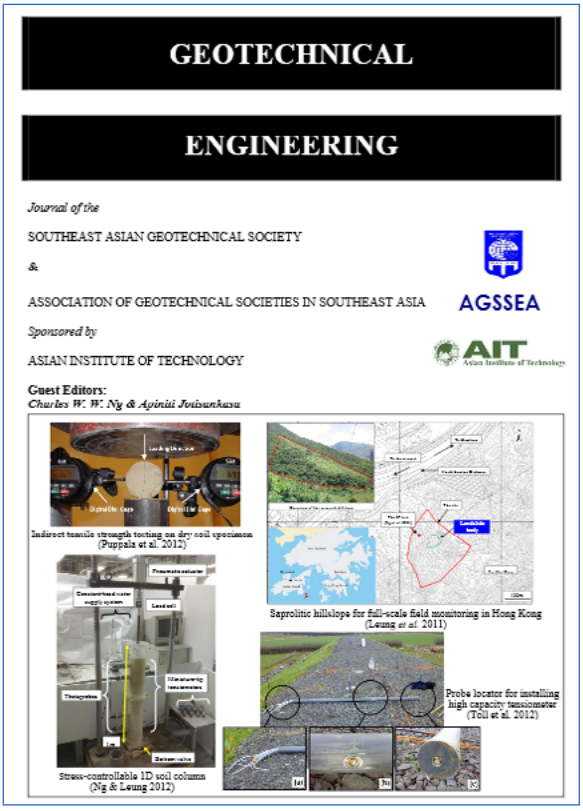
Measurements Of Shrinkage Induced Pressure (Sip) In Unsaturated Expansive Clays
by A.J. Puppala, T. Wejrungsikul, V. Puljan and T. Manosuthikij

Unsaturated Soil Mechanics For Slope Stabilization
by H. Rahardjo, A. Satyanaga, E. C. Leong

The Development Of Unsaturated Soil Mechanics At Imperial College, London
by J.R. Standing

Climate Change And The Role Of Unsaturated Soil Mechanics
by D.G. Toll, J. Mendes, P.N. Hughes, S. Glendinning and D. Gallipoli

Some Mining Applications Of Unsaturated Soil Mechanics
by D.J. Williams



2012 JUNE Vol. 43 No. 2

http://seags.ait.asia/journals/seags-agssea-journal-june-2012/

Papers:

Proposed Changes to the Geotechnical Earthquake Engineering Provisions of the Bangladesh National Building Code
by Tahmeed M. Al-Hussaini, Tahsin R. Hossain and M. Hayeem Al-Noman

Analysis of Soil Liquefaction during the Recent Canterbury (New Zealand) Earthquakes
by RP Orense, MJ Pender and LM Wotherspoon

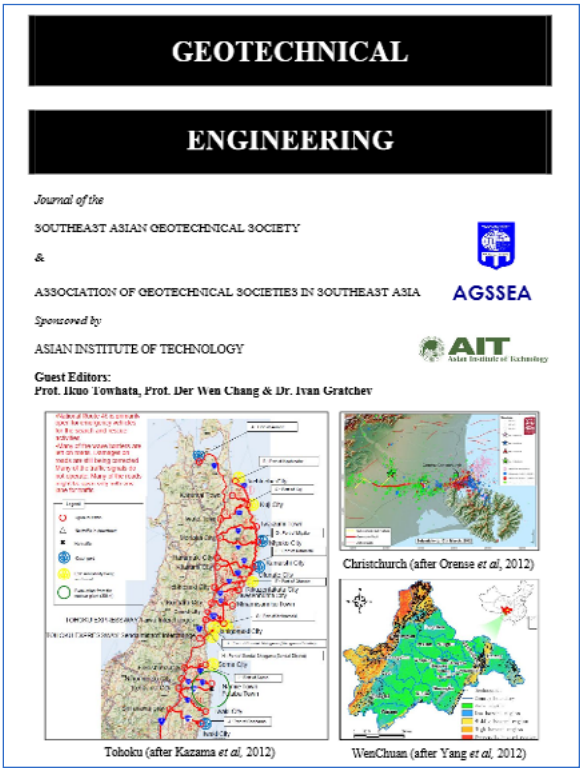
Numerical Simulation of Seismic Slope Stability Analysis based on Tension-Shear Failure Mechanism
by Yingbin Zhang, Guangqi Chen, Jian Wu, Lu Zheng, Xiaoying Zhuang

A Real-time Prediction Method for Regional Rainfall-induced Geohazards in Post-earthquake Region of Wenchuan Earthquake
by Z. Yang, J. Qiao, H. Tian, D. Huang, M. Wang and H. Meng

Effects of Anisotropic Consolidation and Stress Reversal on the Liquefaction Resistance of Sands and Silty Sands
by Abbas Galandarzadeh and Alireza Ahmadi

Characteristics of Slope Failures During Natural Disasters Considering Geographical Features and Groundwater Level: Case Study of the Chuetsu Region of Niigata, Japan
by H. Toyota

Overview of the Geotechnical Damages and the Technical Problems Posed after the 2011 off the Pacific Coast of Tohoku Earthquake
by M. Kazama, T. Noda, T. Mori and J. Kim



Development of Potential Map for Landslides Induced by the Chi-Chi Earthquake Using Instability Index
by Meei-Ling Lin and Yu-Hung Shu

Technical Notes:

Geotechnical Hazards with Emphasis on Seismically-Combined Effects on Slopes *by Ikuo Towhata*

Monitoring on Earthquake Induced Landslide – A Case Study in Northwest Chengdu, China
by Hongling Tian, Jianping Qiao., Taro Uchimura and Lin Wang

2012 SEPTEMBER Vol. 43 No. 3

- *http://seags.ait.asia/journals/seags-agssea-journal-september-2012/*

Waste/Lining System Interaction: Implications for Landfill Design and Performance *by N. Dixon, K. Zamara1, D.R.V. Jones and G. Fowmes*

Wrinkling of a Geomembrane on a Compacted Clay Liner on a Slope
by R. K. Rowe, P. Yang, M.J. Chappel, R.W.I. Brachman , W.A. Take

Diffusion of phenolic compounds through an HDPE geomembrane *by N.Touze-Foltz, M.Ahari, M.Mendes, C.Barral, M.Gardoni and L. Mazeas*

Shear-Induced Geomembrane Damage due to Gravel in Underlying Compacted Clay
by P. J. Fox, C. Athanassopoulos, S. S. Thielmann, and A. N. Stern

Evaluation of mineral barriers against acid rock drainage
by A. Naka, T. Katsumi, G. Flores, T. Inui, T. Ohta, T. Urakoshi, and T. Ishihara

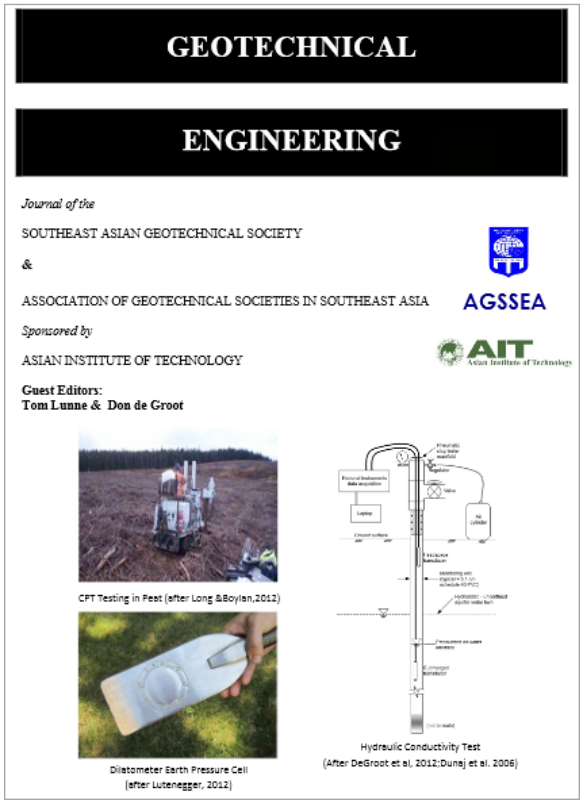
Improvement on the Performance of Geosynthetic Clay Liners Using Polymer Modified Bentonite
by Y. Liu, W. P. Gates and A. Bouazza

Effect of Settlement rate and Geogrid reinforcement on the Deformation Behaviour of Soil barriers of Landfill Covers: Centrifuge Study
by S. Rajesh and B.V.S. Viswanadham

Effect of differential settlements on the sealing efficiency of GCLs compared to CCLs: Centrifuge Study
by B.V.S. Viswanadham, S. Rajesh and A. Bouazza

Geosynthetic Lining System for Modern Waste Facilities – Experiences in Developing Asia *by H. B. Ng and B. Ramsey*

The Use of Geosynthetics in Major Metropolitan Landfills in Perth, WA – Two Case Studies
by L. Du Preez, R. Beaman and I. Watkins



2012 DECEMBER Vol. 43 No. 4

- *http://seags.ait.asia/journals/seags-agssea-journal-december-2012/*

Evaluation of existing CPT correlations in silt
by A. S. Bradshaw, A. C. Morales-Velez and C.D.P. Baxter

Characterisation of quick clay at Dragvoll, Trondheim, Norway
by A. Emdal, M. Long, A. Bihs, A. Gylland and N. Boylan

Field response of push-in earth pressure cells for instrumentation and site characterization of soils
by Alan J. Lutenegger

Frequent-interval SDMT and continuous SCPTu for detailed shear wave velocity profiling in soils
by T. Ku and P.W. Mayne

In situ testing of peat – a review and update on recent developments *by M. Long and N. Boylan*

Understanding the stiffness of soils in Singapore from pressuremeter testing
by K.H. Goh, K. Jeyatharan and D. Wen

In situ measurement of hydraulic conductivity of saturated soils
by D.J. DeGroot, D.W. Ostendorf and A.I. Judge

Rate effect on cone penetration test in sand *by F. A. B. Danziger and T. Lunne*

2013 MARCH Vol. 44 No. 1

http://seags.ait.asia/journals/seags-agssea-journal-march-2013/

Some factors affecting deep excavation in clay over gassy bedrock
By Ahmed B Mabrouk and R Kerry Rowe

Effects of Consolidation and Specimen Disturbance on Strengths of Taipei Clays *By Richard N Hwang, Za-Chieh Moh and I-Chou Hu*

Lime Stabilisation of Organic Clay and the Effects of Humic Acid Content *By NZ Mohd Yunus, D Wanatowski and LR Stace*

Estimating Wetting-induced Settlement of Compacted Soils using Oedometer Test *By EC Leong, S Widiastuti and H Rahardjo*

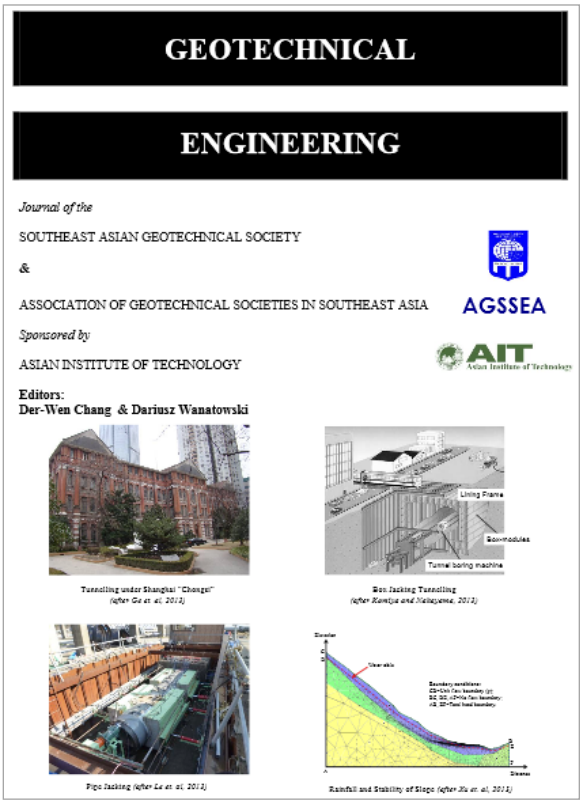
Compaction Curve with Consideration of Time and Temperature Effects for Mudstones
By A Puttiwongrak, H Honda, T Matsuoka and Y Yamada

Small strain behavior of sand under various stress paths considering anisotropic initial stress state
By Lai Yong, Shi Jian-yong, Yu Xiao-jun and Cao Qiu-rong

Study of Joint Effect on Pipe in Pipe Jacking Method
By L G Le, M Takise, M Sugimoto and K Nakamura

Finite Element Analysis of Ground Behaviour due to Box-jacking Tunnel Work *By K Komiya and T Nakayama*

Tunneling Induced Deformation of a Historic Building in Shanghai
By Shi-ping Gea, Dong-wu Xied, Wen-qi Dinga, Ya-fei Qiao and Jin-chun Chai



In-situ monitoring of internal displacements by FBG sensors and slope stability analysis under rainfall infiltration
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Relation between seepage force and velocity of sand particles during sand boiling
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1-G model test with digital image analysis for seismic behavior of earth dam *By Y. Miyanaga, A. Kobayashi and A. Murakami*

X-ray CT imaging of 3-D bearing capacity mechanism for vertically loaded shallow foundations
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Modeling and bending test simulations of cement treated soil
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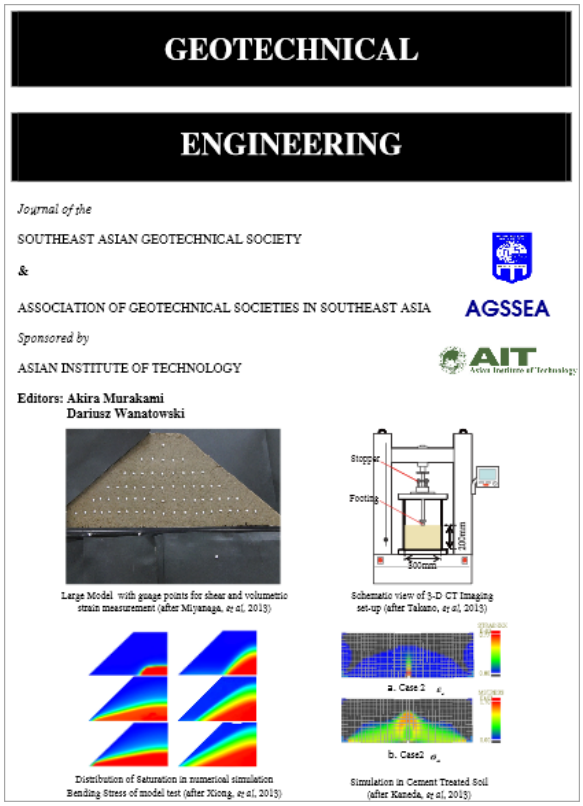
Modelling viscous effects during and after construction in London Clay *By S. D. Clarke and C. C. Hird*



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Seismic Response of Gravity-Cantilever Retaining Wall Backfilled with Shredded Tire
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Numerical modeling of lateral response of long flexible piles in sand
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Application of a constitutive model for swelling rock to tunnelling
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Finite element modelling of seismic liquefaction in soils
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Random Wave-Induced Seabed Responses around Breakwater Heads
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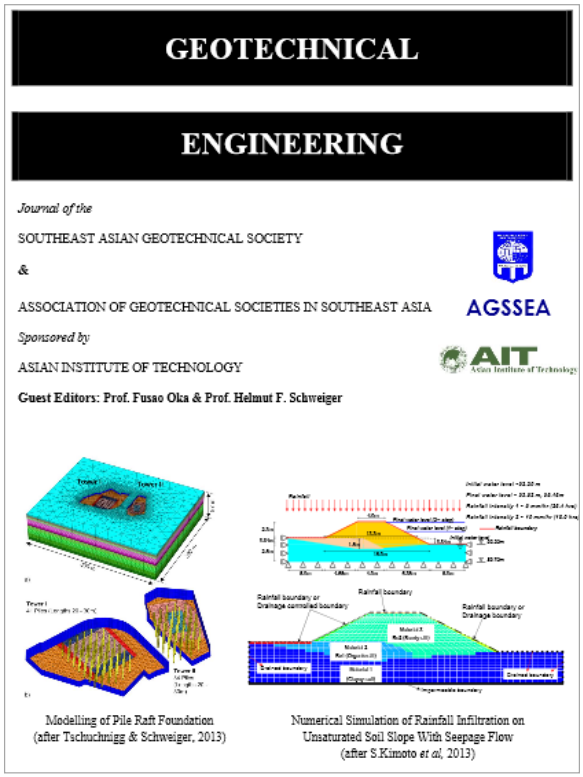
Influence of brittle property of cement treated soil on undrained bearing capacity characteristics of the ground
By S. Yamada, T. Noda, A. Asaoka and T. Shina



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Behaviour of Geogrid Reinforced Abutments on Soft Soil *By Ennio M. Palmeira, André R.S. Fahel and Gregório. L. S. Araújo*

Geocell-Reinforced Granular Fill under Static and Cyclic Loading: A Synthesis of Analysis *By X. Yang and J. Han*

Electrical Vertical Drains in Geotechnical Engineering Applications
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Design and Performance of Soft Ground Improvement Using PVD with and without Vacuum Consolidation
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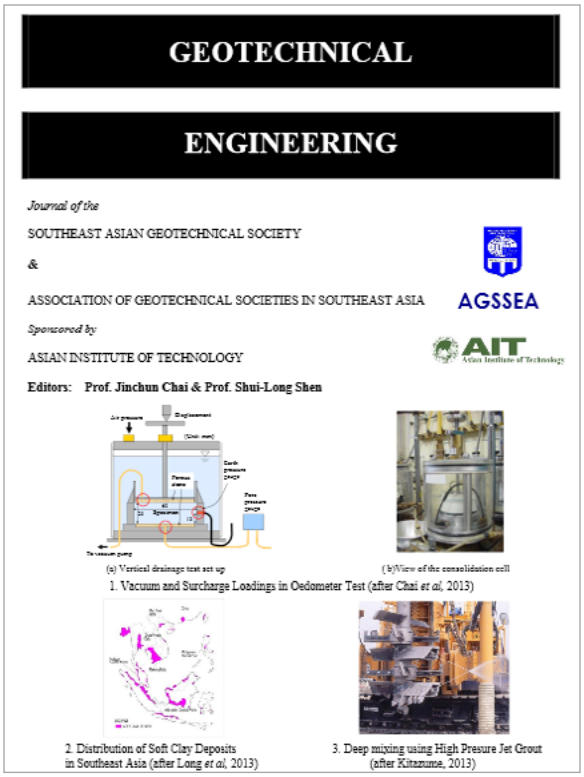
Reassessment of Long-Term Performance of Geogrids by Considering Mutual Interaction among Reduction Factors
By Han-Yong Jeon and Yuan Chun Jin



Part II State-of-the-art (review type) papers

Simulations of PVD Improved Reconstituted Specimens with Surcharge, Vacuum and Heat Preloading using Axisymmetric and Equivalent Vertical Flow Conditions
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Reinforced Embankments on Soft Deposits: Behaviour, Analysis and Design *By C. Taechakumthorn and R.K. Rowe*

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Enhancement of Rail Track Performance through Utilisation of Geosynthetic Inclusion *by Buddhima Indraratna, Sanjay Nimbalkar, and Cholachat Rujikiatkamjorn*

Railway Track Transition Dynamics and Reinforcement Using Polyurethane GeoComposites
by P. Woodward, O. Laghrouche and A. El-Kacimi

How to Overcome Geotechnical Challenges in Implementing High Speed Rail Systems in Australia by H. Khabbaz and B. Fatahi

Maintenance Model for Railway Substructure
by Ali Ebrahimi, James M. Tinjum, and Tuncer B. Edil

Dynamic Behaviour of Railway Ballasted Track Structures in Shaking Table Tests and Seismic Resistant Performance Evaluation in Japan
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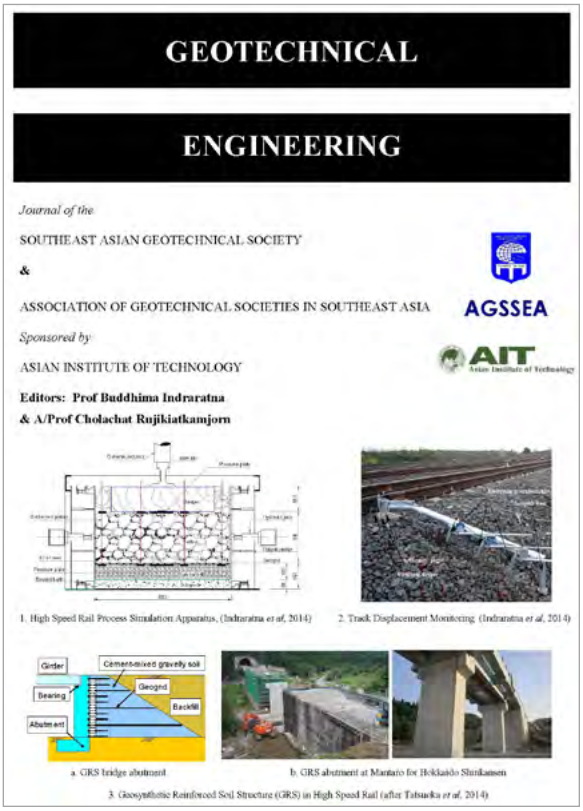

Mechanical Properties of Polyurethane-Stabilized Ballast *by A. Keene, J.M. Tinjum, and T.B. Edil*

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Quickness Test Approach for Assessment of Flow Slide Potentials *by V. Thakur and S. A. Degago*

Cement Stabilization for Pavement Material in Thailand
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Stone Columns Field Test: Monitoring Data and Numerical Analyses
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Numerical Simulation of an Energy Pile Using Thermo-Hydro-Mechanical Coupling and a Visco-Hypoplastic Model
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Case Studies on Response of Laterally Loaded Nonlinear Piles
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Numerical Analysis of the Effect of Pile Tip Shape on Soil Behaviour Around Pile *by Y. Wu and H. Yamamoto*

Shaking Table Test on Superstructure-foundation-Ground System in Liquefiable Soil and Its Numerical Verification
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Numerical Study on the Bearing Behaviour of Pile Groups Subjected to Lateral Pressure due to Soil Movements
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Verification of the Generalized Scaling Law for Flat Layered Sand Deposit *By T. Tobita, S. Escoffier, J. L. Chazelas and S. Iai*

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By Hanh Quang Le and Bin-Chen Benson Hsiung

Comparison Between Design Methods Applied to Segmental Tunnel Linings
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Mechanical Behavior of Energy Piles in Dry Sand
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Estimating Side Resistance of Bored Pile in Residual Soils
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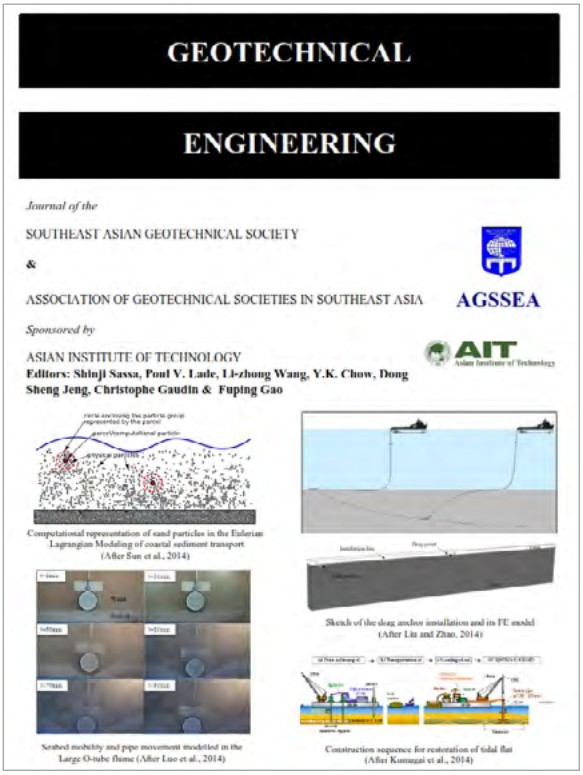
Seismic Response of Geosynthetic Reinforced Earth Embankment by Centrifuge Shaking Table Tests *by W.Y. Hung , J.H. Hwang , C.J. Lee*



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Numerical Study of the Penetration Mechanism and Kinematic Behaviour of Drag Anchors Using a Coupled Eulerian-Lagrangian Approach *By Haixiao Liu and Yanbing Zhao*

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Predicting Spudcan Extraction Resistance in Soft Clay
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FE Procedure for Foundation design of Offshore Structures – Applied to Study a Potential OWT Monopile Foundation in the Korean Western Sea *By H.P. Jostad, G. Grimstad, K.H. Andersen, M. Saue, Y. Shin, and D. You*

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Centrifuge Modelling of the Seismic Responses of a Gently Sloped Liquefiable Sand Deposit Confined within Parallel Walls *By C.J. Lee, W.Y. Chung, and W.Y. Hung*

Eulerian Finite Element Analysis for Uplift Capacity of Circular Plate Anchors in Normally Consolidated Clay
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Evaluation of the Hydraulic Conductivity of Clayey Soil Mixed with Calcium-Bentonite Using Odeometer Tests
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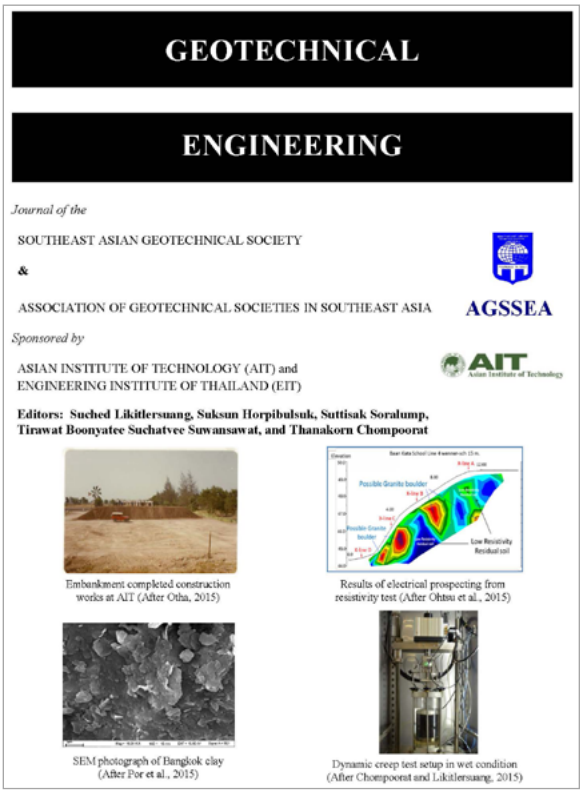

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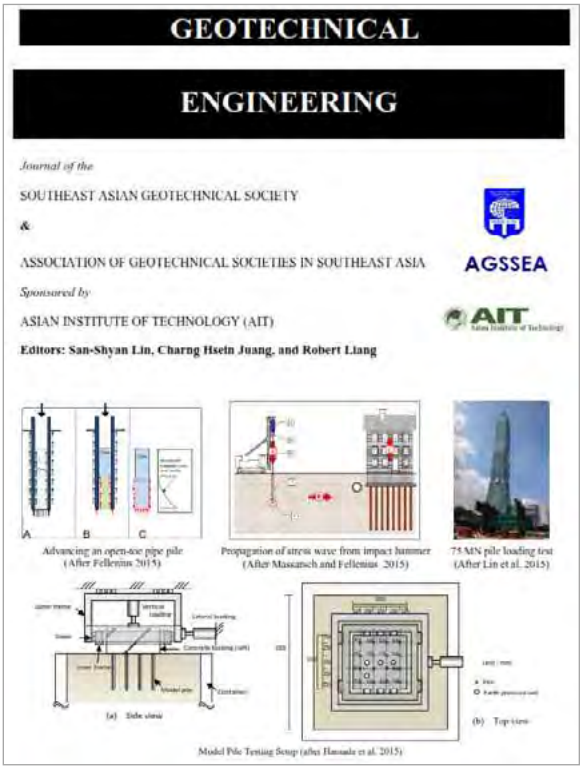
Deep Barrette Pile Capacity with Aging Effect *By W. Teparaksa*



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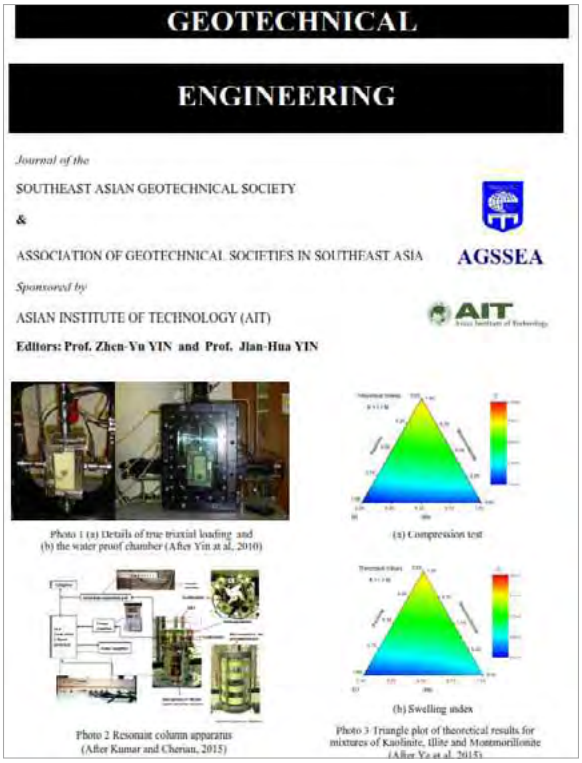

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SPECIAL FEATURE STORY ON "Ground Improvement Methods for Port Infrastructure Expansion"
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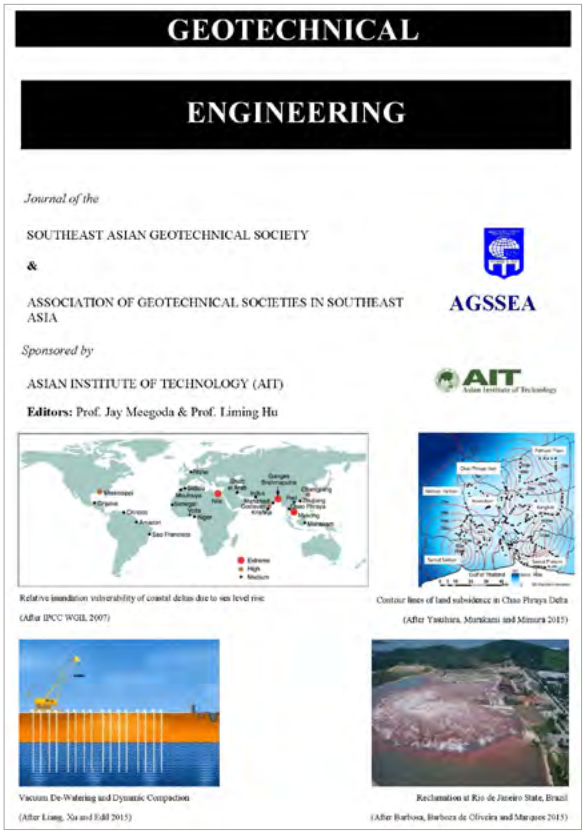

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Soft Ground Improvement by Deep Cement-Mixing Technique in Southern Vietnam *By Dinesh Raj Shiwakoti and Ryuji Manai*

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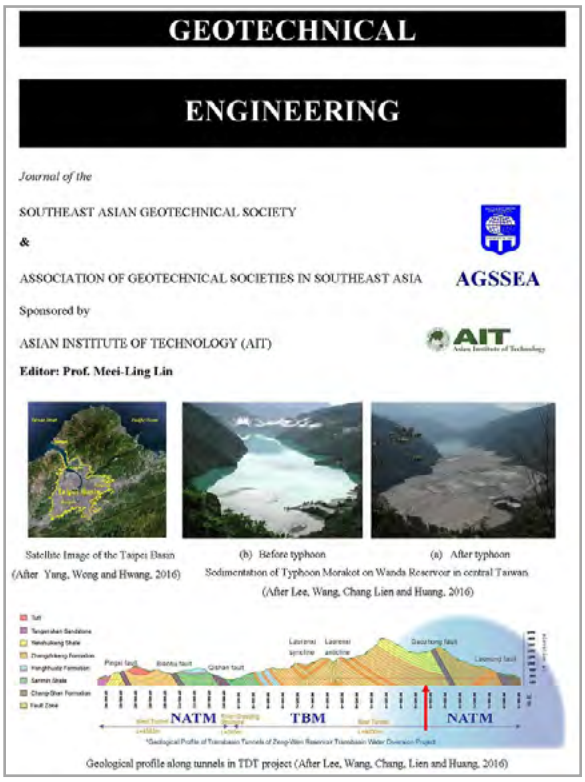

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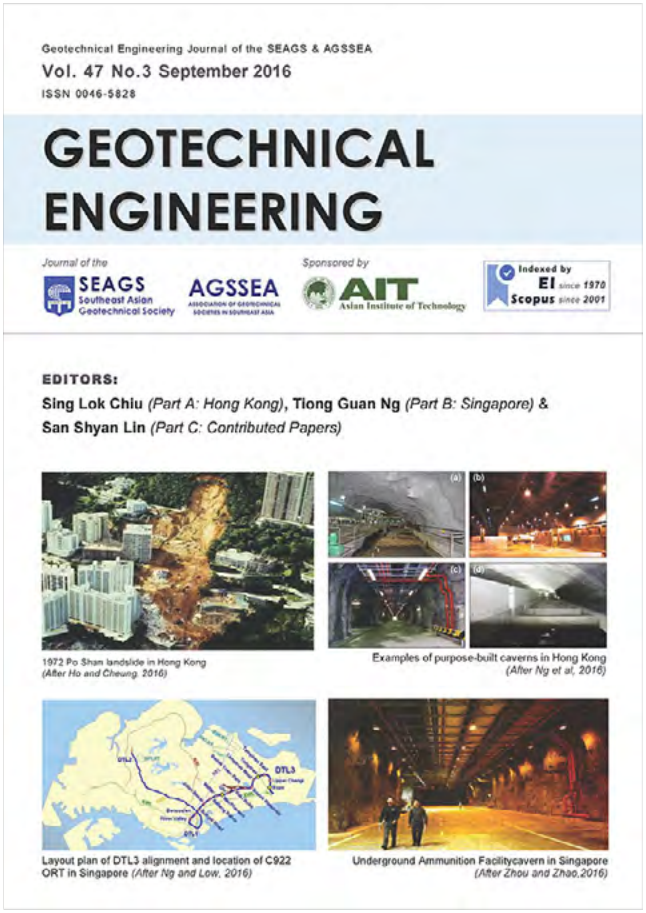

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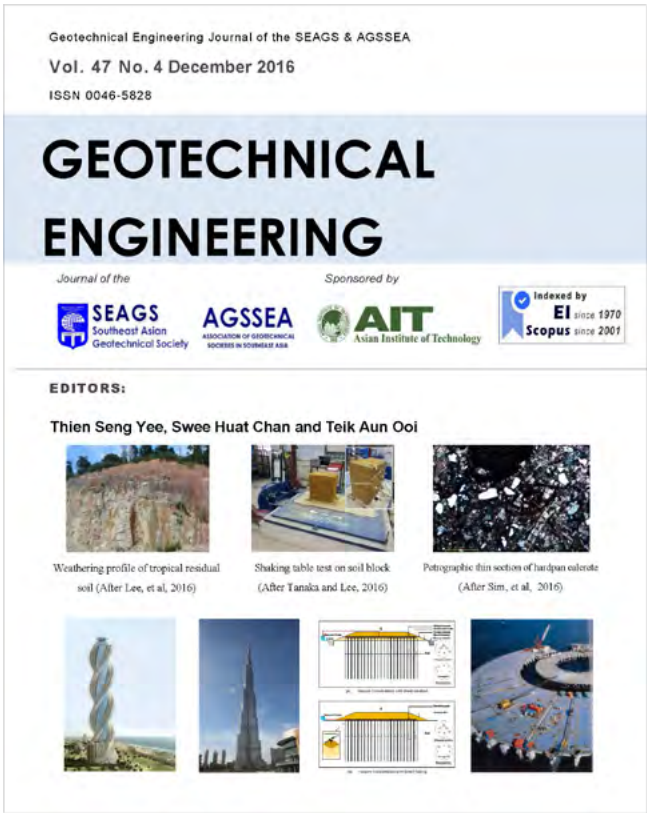

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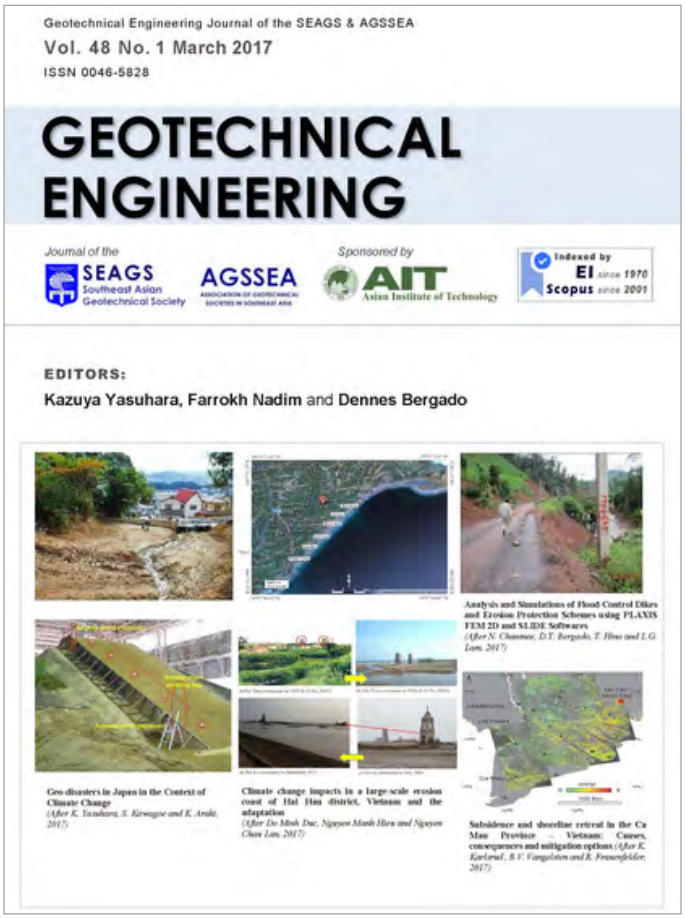

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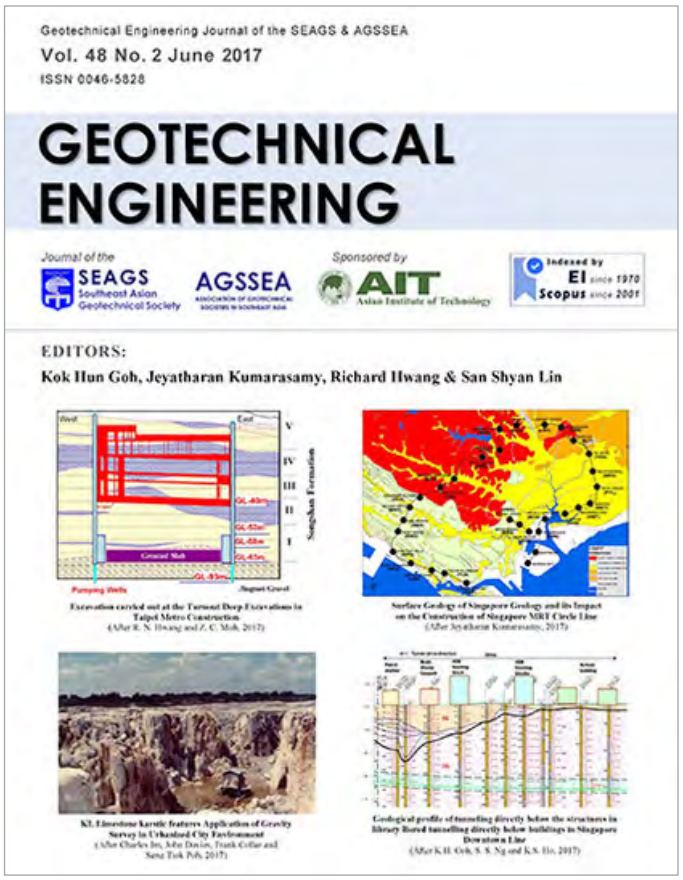

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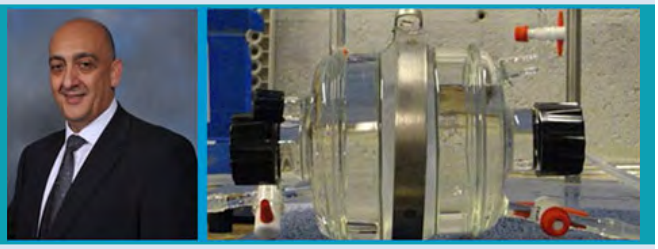

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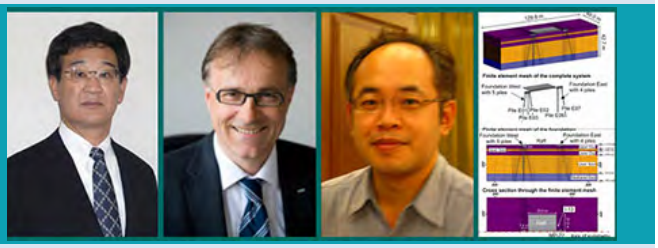

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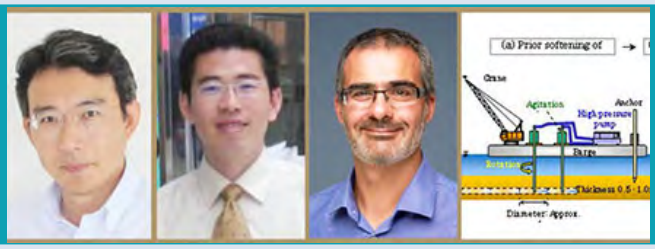

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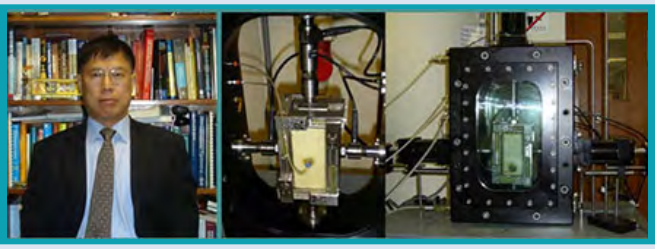

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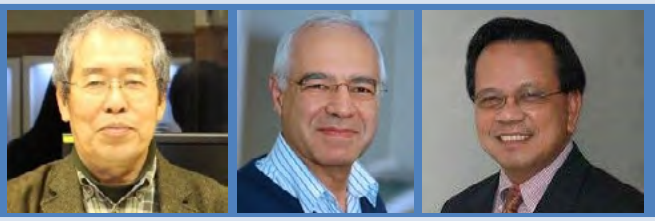

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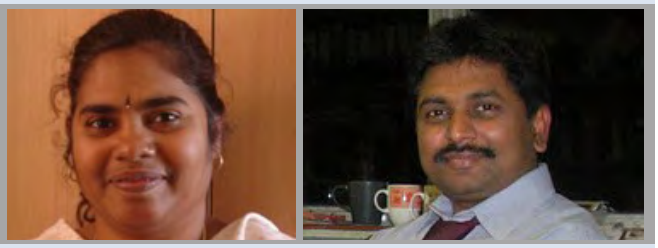

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Contact person: **Ir Dr. Ooi Teik Aun, IEM Training Centre Sdn.Bhd., Malaysia**

Details of the arrangements and themes will be announced shortly;

Dr. Ooi Teik Aun

Meanwhile The Bergen WTC in 2017 had the themes: Innovations in rock support and water proofing technology; Case histories – lessons learnt;Underwater tunnels (strait crossings for road and railway, utility tunnels); Urban tunnelling (planning, design and construction); Site investigation, ground characterization; Strategic use of underground space for resilient city growth; Utilization of underground for hydropower projects (unlined tunnels and shafts, underwater piercing, air cushion chambers); Mechanized excavation (hard rock, soft rock and soil); Innovations in drill and blast excavation; Large caverns (planning, design and construction); Tunnelling for mining purposes; Underground waste storage and disposal; Operation and maintenance; Safety management of complex underground excavations; Stability assessment, risk analysis and risk management; Seismic design of tunnels and underground excavations.

Bergen: WTC 2017

San Francisco: WTC 2014

Malaysia's Bid to Host the ITA-AITES World Tunnel Congress (WTC) 2020

Kuala Lumpur, Malaysia, 15-21 May 2020

https://tunneltalk.com/images/article-0669/WTC2020-Malaysia.pdf

Contents

Host City
Kuala Lumpur, Malaysia

Host Organisation
The Institution of Engineers, Malaysia

Nominated Organising Chairman
Ir. Dr. Ooi Teik Aun

Expected Participation
1,200 delegates

Proposed Dates
15th – 21st May 2020

The Contact
The Institution of Engineers, Malaysia
Bangunan Ingenieur, Lot 60/62,
Jalan 52/4, Peti Surat 223 (Jalan Sultan),
46720 Petaling Jaya,
Selangor Darul Ehsan, Malaysia.

Tel : (603) 7968 4001/4002
Fax : (603) 7957 7678
email : drtaooi@gmail.com

16ARC
Asian Regional Conference on Soil Mechanics and Geotechnical Engineering

Asian Regional Conference on Soil Mechanics and Geotechnical Engineering

October 14-18, 2019

Taipei International Convention Center (TICC), Taipei, Taiwan

The 16th Asian Regional Conference on Soil Mechanics and Geotechnical Engineering (16ARC) will be held on **October 14-18 in 2019** in **Taipei International Convention Center (TICC)**, Taipei, Taiwan.

The main theme of the 16ARC is **Geotechnique for Sustainable Development and Emerging Market Regions**.

A number of subjects on modern geotechnical technologies and activities will be covered up to match up the main theme. In a roll of 60 years, we sincerely hope that the 16ARC will continue to bring great success following the glories of past ARCs (New Delhi 1960, Tokyo 1963, Haifa 1967, Bangkok 1971, Banglore 1975, Singapore 1979, Haifa 1983, Kyoto 1987, Bangkok 1991, Beijing 1995, Seoul 1999, Singapore 2003, Kolkata 2007, Hong Kong 2011, Fukuoka 2015).

Website ▸▸ ***http://www.16arc.org/***

16th ARC Secretariat

Tel: +886-2-2798-8329 ext. 35

Fax: +886-2-2798-6225

Email: secretariat@16arc.org

The conference is organized by Indonesian Society for Geotechnical Engineering (HATTI), under the auspices of International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE), and Ministry of Public Works and Housing, Government of Indonesia.

CONFERENCE THEMES

- Foundation and its Problems
- Deep Excavation, Basement, and Tunnels
- Unsaturated Soil Mechanics
- Sedimentary and Residual Soils
- Soft Soils and Marine Foundation
- Geotechnical and Earthquake Engineering for Dams
- Geotechnical Instrumentation
- Ground Subduction and Sea-Water Intrusion
- Vibration and Earthquake Effect to the Structure
- Soil Improvement
- Soil Stability
- Geo-environmental Engineering

KEYNOTE SPEAKERS

- Ir. Basoeki Hadimoeljono, M.Sc., Ph.D.
- Prof. Charles Wang Wai Ng
- Prof. Askar Zhussupbekov
- Prof. Masyhur Irsyam
- Prof. Ikuo Towhata
- Prof. Eun Chul Shin
- Prof. Paulus P. Rahardjo
- Prof. Chu Jian
- Prof. Chang-Yu Ou
- Dr. Noppadol Phien-wej
- Dato' Dr. Ir. Gue See Sew
- Ir. Kenny Yee

IMPORTANT DATES

Deadline for Abstract Submission	: November 15, 2017
Abstract Notification	: December 15, 2017
Deadline for Paper Submission	: March 15, 2018
Notification of Paper Acceptance	: May 30, 2018
Revised Paper for Publication	: July 30, 2018
Pre-conference Workshops	: November 5, 2018
International Conference	: November 6-7, 2018
Post Conference Tour	: November 8, 2018

INFORMATION

Email: secretariat@seagc2018.com
Website: https://www.seagc2018.com/

17th African Regional Conference On Soil Mechanics And Geotechnical Engineering (XVII ARCSMGE 2019)

Innovation and Sustainability

in Geotechnics for Developing Africa.

The South African Institute of Civil Engineering (SAICE) cordially invites all our colleagues from Africa and beyond, to attend the 17th African Regional Conference on Soil Mechanics and Geotechnical Engineering.

CALL FOR ABSTRACT SUBMISSIONS OPENS OCTOBER 2017.

Hosted in one of the world's best cities, this wide-ranging and inclusive technical conference will suit professionals, practitioners and students of all types.

It will have extensive opportunities for **Technical Committee Meetings**, **Workshops**, **Seminars**, **Exhibitions** and **Sponsorships**.

Exciting technical visits, including tours to famous **Robben Island**, await.

To be added to the database and receive updates for the conference, send an email to info@selahproductions.co.za

Date: 6 - 10 October 2019

Venue: Cape Town International Conference Centre, Cape Town, South Africa.

SIMSG ISSMGE

International Society for Soil Mechanics and Geotechnical Engineering

GEOTECHNICAL DIVISION
South African Institution of Civil Engineering

ICSMGE 2017

19th International Conference on
SOIL MECHANICS AND GEOTECHNICAL ENGINEERING

17 – 22 September 2017
Seoul, Korea

Theme: ***'Unearth the Future, Connect beyond [ ]'***

19th ICSMGE in Seoul: Excellent Conference Perfect Host: Korean Geotechnical Society

Chairman Conference Committee
DONG SOO KIM

Download PDF Files:

ISSMGE Conference Report: http://bit.ly/19ICSMGE-report
More Photos: http://bit.ly/19ICSMGE-photos

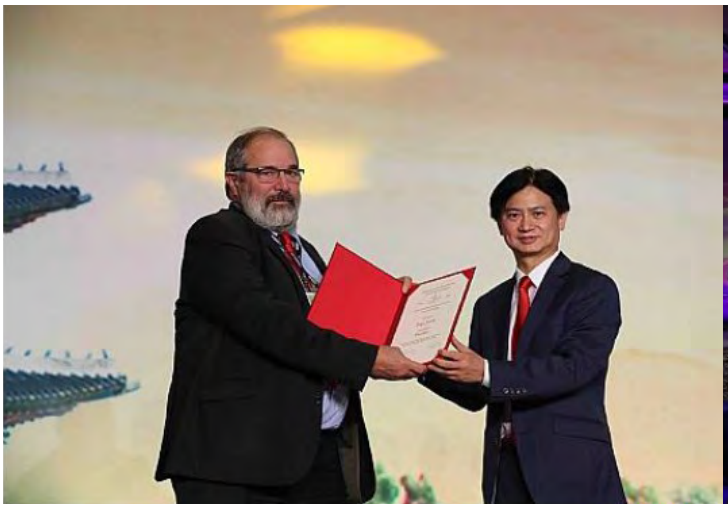
ISSMGE COUNCIL MEETING

ISSMGE PRESIDENT ROGER FRANK ADDRESS

PROF KIM SANG KYU: AIT ALUMNI AND SENIOR MOST PERSONALITY IN KOREA

OPENING ADDRESS BAN KI-MOON

OPENING CEREMONY



CLOSING CEREMONY

iYGEC6 DINNER

Download PDF Files: *ISSMGE Conference Report: http://bit.ly/19ICSMGE-report*
More Photos: http://bit.ly/19ICSMGE-photos

The 21st Indonesian Annual National Conference on Geotechnical Engineering, PIT XXI - 2017

The **21st Indonesian Annual National Conference on Geotechnical Engineering**, **PIT XXI - 2017**, was held from **7 - 8 November 2017**, in **Jakarta, Indonesia**. The theme for the conference is "**Geotechnical Challenges in Responding to Rapid Development of Mega Infrastructures in Indonesia**". The conference was attended by more than 500 participants. The conference was started with welcome speeches from Dr. Idrus Alatas, the chairman of the organizing committee, Prof. Masyhur Irsyam, the President of Indonesian Society for Geotechnical Engineering, Prof. F.G. Winarno, the Chairman of Engineering Science Commission of Indonesian Academy of Science, and Adang Saf Ahmad, representative of Ministry of Public Work and People Housings. After the welcome speeches, the conference was opened by ringing a gong (a traditional Javanese drum).

Read more ⏩ *http://bit.ly/PITXXI-2017*

Welcome speech by (from left to right): Dr. Idrus Alatas, Prof. Masyhur Irsyam, Adang S. Ahmad, Prof. F.G. Winarno

Prof. Eun Chil Shin ringing a gong to open the conference

Invitation for 20th Southeast Asian Geotechnical Conference and 3rd Association of Geotechnical Societies in Southeast Asia Conference

Download PDF File

ISSMGE Conference Report: http://bit.ly/PITXXI-2017

Vice President for Asia

Professor Eun Chul Shin

Department of Civil and Environmental Engineering

Incheon National University

119 Academy-ro, Yeonsu-gu, Incheon Metropolitan City

Republic of Korea

Tel: 82-32-835-8466, Fax: 82-32-835-077 Email: <ecshin@inu.ac.kr>

Hong Kong Geotechnical Society	**Hong Kong**
Bangladesh Society for Geotechnical Engineering	**Bangladesh**
CISMGE-CCES	**China**
Chinese Taipei Geotechnical Society	**Chinese Taipei**
Indian Geotechnical Society	**India**
Indonesia Society for Geotechnical Engineering	**Indonesia**
Iranian Geotechnical Society	**Iran**
Iraqi Scientific Society for Soil Mechanics and Foundation Engineering	**Iraq**
Japanese Geotechnical Society	**Japan**
Kazakhstan Geotechnical Society	**Kazakhstan**
Kyrgyzstan Geotechnical Association	**Kyrgyzstan**
Lebanese Geotechnical Engineering Society	**Lebanon**
Malaysian Geotechnical Society	**Malaysia**
Nepal Geotechnical Society	**Nepal**
Pakistan Geotechnical Engineering Society	**Pakistan**
Geotechnical Society of Singapore	**Singapore**
Southeast Asian Geotechnical Society	**South East Asia**
Korean Geotechnical Society	**South Korea**
Sri Lankan Geotechnical Society	**Sri Lanka**
Order of Syrian Engineers and Architects	**Syria**
Tajikistan Geotechnical Society	**Tajikistan**
Thai Geotechnical Society	**Thailand**
Uzbekistan Geotechnical Society	**Uzbekistan**
Vietnam Society for Soil Mechanics and Geotechnical Engineering	**Vietnam**

The advantages in joining the SEAGS, AGSSEA and ISSMGE are as follows:

Southeast Asian Geotechnical Society

1 Receive updated activities, current events and important information regarding geotechnical engineering around the world through the bi-annual SEAGS / AGSSEA Newsletter and 4 issues of Journals annually.

2 The opportunity to submit papers for publication and to read up-to-date technical papers through the 4 issues of Geotechnical Engineering Journal annually.

ISSMGE & ARC

3 The ability to attend, participate, and avail of state-of-the-art lectures and papers in the local, regional, and international geotechnical conferences at discounted registration fees.

4 The chance to network with other geotechnical engineers, academics, and practitioners around the world as SEAGS member automatically becomes member of ISSMGE.

5 The opportunity to fraternize with professionals of related fields of geology, geophysics, and rock mechanics through the association of ISSMGE with the International Society for Rock Mechanics (ISRM) and International Association of Engineering geology (IAEG).

SGI - Line

- http://www.swedgeo.se/templates/SGIStandardPage____184.aspx?epslanguage=EN
- http://www.swedgeo.se/templates/SGIStandardPage____186.aspx?epslanguage=EN

The SGI-Line is a literature database containing references to international geotechnical and geoenvironmental literature in a broad context, from practical solutions to theoretical analysis. The database is one of a small number in the world specialized in geotechnical and goenvironmental engineering. The database contains some 70,000 references from 1976 up to present. The database is continuously updated and expanded with about 2,000 references a year. Several references added during the recent years links to further information, full-text documents or abstracts/table of contents.

SGI-Line is produced by the Swedish Geotechnical Institute, Sweden. Most of the documents, books, articles in journals, papers in conference proceedings, reports, theses, ets, referred to in the database are available in the SGI Library.

Link to more information on the Database (Information sheet):

- http://www.swedgeo.se/upload/SGI-tjanster/pdf/SGILine-english-2007.pdf

QuadSearch

- http://delab.csd.auth.gr/~lakritid/index.php?lan=1&s=2

QuadSearch are metasearch engines that are web services designed to transfer the user's queries to multiple existing search engines. A metasearch engine does not maintain its own index of documents.

It collects and reorganizes the result lists (top-k lists), then it returns the processed data to the user. Compared to a classic single search engine, a metasearch engine offers increased web coverage, improved retrieval effectiveness, effortless invocation of multiple search engines.

ICE Virtual Library

The ICE Virtual Library hosts all the content from ICE Publishing, the publishing division of the Institution of Civil Engineers (ICE).

This site is an online journal service. It provides the opportunity to stay on top of cutting-edge issues in all aspects of civil engineering with papers and articles. It contains large amount of civil engineering journals. All Proceedings of the Institution of Civil Engineering journals are listed on this site. Abstracts and table of contents are freely available to all.

- http://www.icevirtuallibrary.com/content/journals

Geotechnical software sites

The following sites contain geotechnical software's indispensable to geotechnical engineers.

http://www.usucger.org

This site's mission is to provide advocacy for the continued development and expansion of high quality geomechanical, geotechnical and geo-environmental engineering research and education which will enhance the welfare of humankind.

http://alert.epfl.ch

The Alliance of Laboratories in Europe for Research and Technology (ALERT) "Geomaterials" has been created to develop a European School of Thinking in the field of the Mechanics of Geomaterials. The generic name "Geomaterials" is viewed as gathering together materials, whose mechanical behaviour depends on the pressure level, which can be dilatant under shearing and which are multiphase because of their porous structure.

http://www.geoengineer.org

The site started as a personal effort to provide useful information for engineers, students, and academia by taking advantage of the opportunities provided by the internet. Consecutively, it provides a cost-free resource for the engineers to learn about the latest news in their field and keep up with the progress of research.

http://www.ascelibrary.org

In this site you can find and download full-text civil engineering research and applications-oriented articles. You can choose only the content you need from across a universe of 260,000 pages of content; journal papers from 1993 to present, proceedings papers from 2003 to present, 28,000 articles-4,000 new articles added each year. You can quickly have the information thru Research Library gold Card.

Other Links:

The Engineer Explains http://engineerexplained.com/VincentChuColumn/#T1

Ask An Expert http://engineeringcivil.com/ask-an-expert

Ask a Civil Engineer http://aboutcivil.com/answers/

RockWare http://www.rockware.com/home/lobbyMod.php?id=3&mod=industry

SoilVision Systems http://www.soilvision.com/

GAEA Technologies http://www.gaea.ca/

TAGAsoft http://www.tagasoft.com/TAGAsoft

GEO-SLOPE http://www.geo-slope.com/

Geotechnical Software Resources http://www.ejge.com/GVL/soft-gvl.htm

PROCEEDINGS & JOURNALS FOR SALE					
No.	Please tick choice	TITLE	Discounted Price in Surface Mail (US$)	Additional for Air Mail Charge (US$)	
				Asian Zones	Other Zones
1.		Proceedings of the International Symposium, Exhibition and Short Course on Geotechnical and Geosynthetics Engineering: Challenges and Opportunities on Climate Change, Conference CD, 7 to 9 December 2010.	50	10	15
2.		Proceedings of the International Symposium on Geotechnical Engineering. Ground Improvement and Geosynthetics for Sustainable Mitigation and Adaptation to Climate Change including Global Warming. Conference CD, 3 to 4 December 2009	50	10	15
3.		Proceedings of the 16th Southeast Asian Geotechnical Conference, 8 to 11 May 2006, Kuala Lumpur (Vol. 1 = 964 pages)	150	21	29
4.		Proceedings of the International Symposium on Geotechnical Aspects of the Suvarnabhumi Airport Thailand	50	10	20
5.		Proceedings of the 15th Southeast Asian Geotechnical Conference, 22 to 26 November, 2004, Bangkok (Vol. I = 1,000 pages/ Vol.2 = 210 pages)	100	21	29
6.		Proceedings of the Malaysian Geotechnical Conference 2004, The Institute of Engineering Malaysia, 16-18 March 2004 (524 pages)	100	14	21
7.		Proceedings of the 14th Asian Regional Conference on Geotechnical Engineering Meeting Society's Needs, Hong Kong, 10-14 December 2001 (2 Volumes)	100	10	15
8.		Proceedings of the GEOTECH-YEAR 2000, Developments in Geotechnical Engineering, Bangkok, Thailand, November 2000. All Volumes.	100	16	22
		Volume I (452 pages) Hard Bound	55	10	15
		Volume II (734 pages) Hard Bound	65	15	20

No.	Please tick choice	TITLE	Discounted Price in Surface Mail (US$)	Additional for Air Mail Charge (US$)	
				Asian Zones	Other Zones
9.		Proceedings of the Civil and Environmental Engineering Conference – New Frontiers and Challenges, 8-12 November 1999. All Volumes. Soft bound.	200	37	50
		Volume 1 – Environmental Engineering (506 pages of 57 papers)	50	10	16
		Volume 2 – Geotechnical and Geo-environmental Engineering (700 pages of 78 papers).	50	13	19
		Volume 3 – Structural Engineering and Construction (634 pages of 72 papers).	50	13	19
		Volume 4 – Transportation Engineering (428 pages of 47 papers).	50	10	16
		Volume 5 – Water Engineering and Management (598 pages of 67 papers).	50	13	19
		Volume 6 - Keynote and Special Lectures. (274 pages of 23 papers)	50	7	10
10.		Proceedings of the 13th Southeast Asian Geotechnical Conference, Taipei, Taiwan, R.O.C,16-10 November, 1998. Vol. 1 (851 pages), Vol. 2 (212 pages), Hard bound.	100	22	30
11.		Proceeding of the 30th Year Anniversary Symposium on Deep Foundations, Excavations, Ground Improvements and Tunneling, Bangkok, Thailand, 03-07 November, 1997. 645 pages.	100	16	22
12.		Proceedings of the 12th Southeast Asian Geotechnical Conference and the 4th International Conference on Tropical Soils, Kuala Lumpur, Malaysia, May 1996. Vol. 1 (618 pages), Vol.2 (332 pages).	80	21	29
13.		Proceedings of the 11th Southeast Asian Geotechnical Conference, Singapore, March 1993. Hard bound (864 pages).	80	16	22
14.		Proceedings of the Symposium on Developments in Geotechnical Engineering (From Harvard to New Delhi, January 1936-1994) Bangkok, Thailand. (694 pages).	80	10	15

No.	Please tick choice	TITLE	Discounted Price in Surface Mail (US$)	Additional for Air Mail Charge (US$)	
				Asian Zones	Other Zones
15.		Proceedings of the Symposium on Prediction versus Performance in Geotechnical Engineering, Bangkok, Thailand, December 1992. Soft bound (645 pages)	80	10	15
16.		Handouts of the Short Course on Earthquake Resistant Design, Landslides, Slope Stability and Embankment Dams. 28 July – 1 August, 1997 (931 pages)	60	16	22
17.		Handouts of the Short Course on Geotechnical Analysis for Design and Construction Using Finite Element Program – CRISP. 3-6 February, 1997 (441 pages)	60	16	22
18.		Handouts of the Short Course on Estimation of Design parameters for Soils and Rocks from Laboratory and In-situ Tests. 10-14 June, 1996 (1086 pages)	60	21	29
19.		Handouts of the Short Course on Deformation of Soils and Rocks and Displacement of structures - Soil and Rock structure Interaction. 4-8 November, 1996 (1165 pages)	60	26	37
20.		Handouts of the Short Course on Slope Failures and Their Remedial Measures. July 1994 (500 pages)	40	10	15
21.		Proceedings for the One-Day Short Course on Geosynthetic Applications and PLAXIS Numerical Applications. Short Course CD.	30	10	15
		Sub-total			

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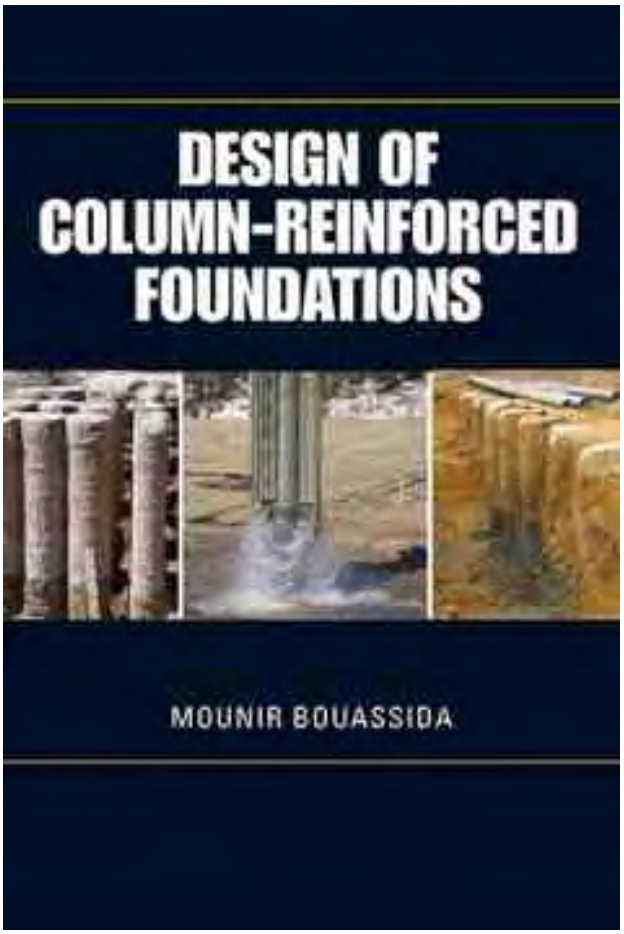
- *http://seags.ait.asia/books-for-sale/*



Prof. Mounir Bouassida (University of Tunis El Manar, Tunisia), member of the editorial committee of the SEAGS journal published the book referenced:

Bouassida M. (2016). Design of Column-Reinforced Foundations. J. Ross Publishing (FL, USA), August. 224 pages. ISBN: 978-1-60427-072-3.

This book addresses the design of foundations on reinforced soil by columns within a general framework where several aspects are taken into consideration: modeling of reinforced soil, bearing capacity, settlement, acceleration of consolidation, and improvement of soil characteristics with selected case histories. Unlike existing books on unique improvement techniques (deep soil mixing, stone columns, sand compaction piles) that focus on installation and equipment issues, this one-of-a-kind guide details design purpose. It is an important work for all in the geotechnical field, including practitioners, academics, and students.

Key features of this book and authors information are available via the link:
http://www.jrosspub.com/design-of-column-reinforced-foundations.html

Key Features:

- Introduces a novel methodology of design for all columnar-techniques, via an optimized improvement area ratio determined by combining the bearing capacity and settlement verifications that constitute an original result
- Provides case histories that show this optimized design is cost effective compared to existing methods based either on bearing capacity or settlement considerations
- Shows the value of the optimized design achieved by elaborated columns through software already in use by geotechnical engineers
- Analysis of the behavior of reinforced soil by columns, carried out by finite element and finite difference codes, subjected to various vertically loaded structures, shows the effectiveness of floating columns that can be adopted for reinforcement of thick compressible deposits
- Rationally handles the design of column-reinforced foundations from modeling up to the study of behavior predicted by numerical analysis and assessed by field test results

Download:

- Key features and authors information
- Review article of this book

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- *http://seags.ait.asia/submission-services/template-preparation-full-paper/*

CONTRIBUTION OF ARTICLES / INFORMATION

SEAGS / AGSSEA Newsletters are published bi-annually by Southeast Asian Geotechnical Society and Association of Geotechnical Societies in Southeast Asia. Contributions on the information related to the professional advancement, member profile, and other news of SEAGS and AGSSEA members are invited.

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http://agssea-seags.ait.asia

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Internet: http://www.seags.ait.ac.th

PAYMENT AND MEMBERSHIP APPLICATION FORM 2018

☐ **Prof.** ☐ **Dr.** ☐ **Mr.** ☐ **Ms.** ☐ _____
First Name **Middle Initial** **Last Name**

Title/Position: _____

Company/Institution: _____

Address: _____

_____ **Fax:** _____

_____ **Tel:** _____

Country: _____ **E-mail:** _____

PART I : FEES FOR YEAR 2018

1. INDIVIDUAL MEMBER (ANNUAL)*

- ⌘ SOIL ENGINEERING [US$ 50/year] ☐
- ⌘ ENGINEERING GEOLOGY [US$ 55/year] ☐
- ⌘ ROCK MECHANICS AND MINING ENGINEERING [US$ 60/year] ☐

2. INDIVIDUAL LIFE MEMBER

1) 60 years old and above, five times of original annual membership fee. ☐

2) 55 but less than 60 years old, [(60-present age) +5] times annual regular membership fee. ☐

3) Less than 55 years old, ten times of the original annual membership fee. ☐

3. INSTITUTION MEMBER [US$ 2,000/year] ☐

4. COMPANY MEMBER [US$ 600/ year] ☐

5. GEOTECHNICAL SOCIETY MEMBER [US$500/year] ☐

6. LIBRARIES – Only Hard Volume (US Dollar 200/year) ☐
– Online Journal Subscription [US$ 500/year] ☐

SUB-TOTAL *(CURRENT YEAR)* US $ _____

***Multiple section member are entitled to the following discounts:**

- Choose any two sections (discount) = US $ 10
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TOTAL PAYMENT *(CURRENT YEAR/LIFE MEMBER)* **US $** _____

PART II: TOTAL AMOUNT PAYABLE US $ _____

Note for Members:

⌘ *INSTITUTION MEMBER AND COMPANY MEMBER - The Institution Member refer to professional association or organization while the Company Member refer to private firms. Up to 10 members and up to 2 members, respectively, from Institution Member and Company Member, can enjoy SEAGS member privileges.*

⌘ *SOIL ENGINEERING - SEAGS Members are entitled for the Group Memberships in International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE) and subscriptions of "Geotechnical Engineering Journal" Current Volume No:* 49 Year: 2018 *(4 issues per year), and "SEAGS Newsletter" (two issues per year - February and August) are included.*

⌘ *ENGINEERING GEOLOGY - SEAGS Members are entitled for the International Association of Engineering Geology and subscriptions of "Geotechnical Engineering Journal" Current Volume No: 49 Year: 2018 (4 issues per year), and "SEAGS Newsletter" (two issues per year - February and August) are included.*

⌘ *ROCK MECHANICS AND MINING ENGINEERING - SEAGS Members are entitled for the International Society for Rock Mechanics, subscriptions of "Geotechnical Engineering Journal" Current Volume No:* 49 Year: 2018 *(4 issues per year), and "SEAGS Newsletter" (two issues per year - February and August) are included.*

PAYMENT METHOD

For your convenience, we have arranged ways for you to pay your membership fee, ranging from payment by personal Cheque, Banker's Draft and International Money Order to payment by Telegraphic Bank Transfer or credit card. If payment is made by credit card, please add 4% for processing fee and VAT. In summary, you can make payments follows:

I. Cheque/ Bank draft /Money order (*Add US$ 3 for foreign check*) made payable to

"ASIAN INSTITUTE OF TECHNOLOGY"

and deliver to the SEAGS Secretariat as stated below.

II. Telegraphic Bank Transfer *(Please send the Bank Receipt to SEAGS Secretariat for confirmation of payments)*

Account Name:	**Asian Institute of Technology**
Account Number:	**468-046301-2**
Bank:	**Siam Commercial Bank Pcl, Ltd**
Branch:	**Thammasat University Hospital**
Address:	**95 Moo 8, Khlongnueng, Khlongluang, Pathumthani 12120 Thailand**
Swift code:	**SICOTHBK**
Phone:	**662-516-3470-1**
Fax:	**662-516-3472**

III. Credit Card *((amount payable + 4% US$/Baht _____)*

○ **Visa Card** ○ **Master Card** ○ **American Express*** Please add the Card ID for American Express.
(Card ID is a four digit code printed on the face of the Card).

Credit Card Number:_____ Expiration Date: _____

Cardholder's Name: _____Cardholder's Signature: _____

……

IMPORTANT: RETURN THIS APPLICATION TOGETHER WITH REMITTANCE/ PAYMENT ADVICE TO:

Secretary-General
Southeast Asian Geotechnical Society
c/o Asian Institute of Technology
Room no: N117, SET Building
P.O. Box 4, Klong Luang
Pathumthani 12120, Thailand
Fax: (66) 02 516 2126 Tel: (66) 02 524 5864
E-mail: seags@ait.ac.th

SOUTHEAST ASIAN GEOTECHNICAL SOCIETY (SEAGS)

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