SEAGS & AGSSEA Newsletter

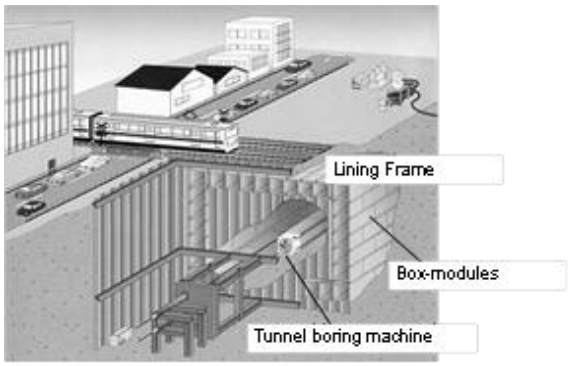
February 2013

SOUTHEAST ASIAN GEOTECHNICAL SOCIETY

ASSOCIATION OF GEOTECHNICAL SOCIETIES IN SOUTHEAST ASIA

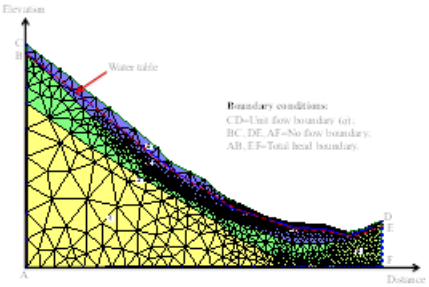
AGSSEA

Tunnelling under Shanghai "Chongsi"
(after Ge et. al, 2013)



Box Jacking Tunnelling
(after Komiya and Nakayama, 2013)

Pipe Jacking *(after Le et. al, 2013)*



Rainfall and Stability of Slope *(after Xu et. al, 2013)*

What's inside

Editors
Prof. Dennes T. Bergado SEAGS Hon. Secretary General
Ir. Kenny Yee AGSSEA Hon. Secretary General

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14	Mr. Viengvisa Nguen	Laos
15	Prof. Toe Laing	Myanmar
16	Dr. S. Lim	Cambodia
17	Dr. Nappadol Phienwej	Thailand - Editor of Geotechnical Engineering Journal
18	Ir. Kenny Yee	Malaysia (Co-opted Member)
19	Ir. Yew Weng Yee	Malaysia (Co-opted Member)
20	Dr. Jian Chu	Singapore (Co-opted Member)
21	Prof. Mei-Ling Lin	Taiwan (Co-opted Member)
22	Prof. Der-Wen Chang	Taiwan (Co-opted Member)

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SEAGS / AGSSEA NEWS

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SEAGS/AGSSEA E-Journal

March 2013 Issue

The SEAGS - AGSSEA Journal of Geotechnical Engineering has been growing tremendously since the SEAGC in Taipei in 2010. Thanks to all our Guest Editors and also the Editorial Team with Dr. Ooi and IEM Team from Malaysia, and Prof. Bergado and Team from AIT and Prof. Charles NG from the HK Society in using the HKUST Web. In 2010~2012, many important and representative topics had been selected and successfully presented. Apart from a series of special issues on subjects in geotechnical engineering, a considerable amount of contributed papers with wider spectrum have been received.

As a consequence, the 1st issue in 2013 collects eleven excellent papers on the fundamentals of soil behaviours and the lessons learned from different construction technologies. There are papers discussing the deep excavation in clay by Mabrouk and Rowe, a historical overview on consolidation and strength for Taipei clay made by Hwang et al.. Lime stabilization and the acid effects on organic clay was brought by Mohd Yunus et al.. Settlements of the compacted soils and the compaction for mudstones were discussed by Leong et al. and Puttiwonggrak et al., respectively. On the other hand, small-strain behaviour of sand was presented by Lai et al. considering the effects of stress paths.

Additionally, four papers discussing the observations from on-site construction technologies and/or relevant numerical simulation can be found. They are: Joint effect on Pipe Jacking method by Le et al., FE modelling on Box-Jacking tunnel work induced ground behaviours by Komiya and Nakayama, Deformations of historic building due to tunnelling by Ge et al., and Monitoring technology on slope with rainfall infiltration by Xu et al.. Papagiannakis discusses an overview of the state of the art of mechanistic-empirical pavement design, as established by NCHRP Study 1-37A in the United States. It is our belief that all the papers presented in this issue are highly valuable and useful to the engineering work. The editors would like to express their sincere gratitude towards the authors and the reviewers who make this publication possible.

Editors:
Der-Wen Chang
Dariusz Wanatowski

ACKNOWLEDGEMENT

We are fortunate to have all the material ready for the March 2013 Issue of the Journal. This Issue is on contributed papers as received from many authors worldwide. It is the intention of the editorial team to have a balanced between those papers which are directly contributed and those published under specific themes. We are most graterful, this issue in 2013 is made feasible with the contributions from Ahmed B. Mabrouk and R. Kerry Rowe (Canada); Richard N. Hwang, Za-Chieh Moh and I-Chou Hu (Taiwan); N.Z. Mohd Yunus, D. Wanatowski and L.R. Stace (UK); E.C. Leong, S. Widiastuti and H. Rahardjo (Singapore); A. Puttiwongrak, H. Honda, T. Matsuoka and Y. Yamada (Japan); Yong Lai, Jian-yong Shi, Xiao-jun Yu and Qiu-rong Cao (China); L.G. Le, M. Takise, M. Sugimoto and K. Nakamura (Japan); K. Komiya and T. Nakayama (Japan); Shi-ping Ge, Dong-wu Xie, Wen-qi Ding, Ya-fei Qiao, Jin-chun Chai (China & Japan); and Dongsheng Xu, Fei Tong, Huahu Pei, and Jianhua Yin(China) and Papagiannakis of United States. The number of papers has also increased to eleven in this Issue.

The geotechnical Engineering Journal has lately been published spot on time since 2010 and this is due to the untiring efforts of our inhouse technical editors, particularly Prof. Der Wen Chang of the Taiwan Geotechnical Society and Dr. Dariusz Wanatowski of University of Nottingham in UK; the Editorial team of IEM under Dr. Ooi; the Ediitorial team of SEAGS at AIT under Prof. Beregado; and last but not least the help of Prof. Charles Ng of the Hong Kong Geotechnical Society and HKUST in using their web.
The June and September Issues of 2013 will be under the Leadership of Prof. Akira Murakami and Prof. Fusao Oka repectively. Their editorial teams will include Prof. Muhunthan, Dr. Hossam Abuel-Naga, , Dr. Suched Likitlersuang, and Prof. Helmut F. Schweiger. Finally, the December Issue containing papers to honour Prof. Bergado is expected to have fourteen papers and edited by Prof. Chai Jin-Chun and Prof. Dr. Shui-Long Shen.

It is a great pleasure to note that we now have papers and commitments till mid 2015 Issue.

K.Y. Yong
D.T. Bergado
T.A.Ooi
A.S.Balasubramaniam

E-Journal GUEST EDITORS

We acknowledge with thanks to the following guest editors for the journal:-

Prof. Jie Han (March 2011)

Prof. Tatsunori Matsumoto (June 2011)
Prof. Der Wen Chang

Prof. Chang Yu Ou (September 2011)

Dr. Dariusz Wanatowski (December 2011)

Prof. Charles W W Ng (March 2012)
Dr. Apiniti Jotisankasa

Prof. Ikuo Towhata (June 2012)
Prof. Der Wen Chang
Dr. Ivan Gratchev

Prof. Abdelmalek Bouazza (September 2012)

Tom Lunne (December 2012)
Prof. Don de Groot

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www.seags.ait.ac.th
http://www.agssea.org

AGSSEA NEWS

MARCH 2013

18 – 21
February 2013

FEATURE ARTICLE:
Visits and Touring Lectures by ISSMGE President to Hanoi and Bangkok

The visits and touring lectures by Prof. Jean-Louis Briaud, ISSMGE President to Hanoi and Bangkok in February 2013 coincided with the celebration of the Chinese New Year (aka Lunar New Year) which started on the 9th February (Chinese New Year' Eve) and ended on the 15th day which was on the 24th February. 2013 is the year of the black Snake. In the Chinese culture, snakes are associated with tenacity and cleverness. Hence, it was most befitting to begin the year with a 2-day seminar held at the National University of Civil Engineering in Hanoi from 18 – 19 February 2013 followed by a 1-day seminar at the Chaphya-park Hotel in Bangkok on 21 February 2013. Both events were attended by more than 100 participants.

The visits and touring lectures in Hanoi and Bangkok was mooted by Prof. Jean-Louis Briaud himself. He wrote to Prof. A. S. Balasubramaniam in October 2012. Subsequently, Dr. Ooi Teik Aun promoted the idea to VSSMGE (Vietnam) and TGS and SEAGS (Thailand). Prof Tien of VSSMGE, Drs. Suttisak and Apiniti of TGS and Prof Bergado of SEAGS, all responded positively to the idea. With the combined effort from all parties, the visits and touring lectures went on smoothly and successfully.
As the ancient Chinese wisdom says a Snake in the house is a good omen because it means that your family will not starve. Indeed, all the invited lecturers and guests were treated to a sumptuous feast and the President himself acknowledged that it was hard for him to say good-bye.
This newsletter gives an account of the event that took place in Hanoi and Bangkok.

2-DAY SEMINAR ON "GEOTECHNICAL ENGINEERING FOR GREEN DEVELOPMENT – GEGD 2013" in VIETNAM

The 2-day seminar was held at the National University of Civil Engineering (NUCE) in Hanoi on 18th and 19th February 2013. It was organized by the Vietnam Society of Soil Mechanics and Geotechnical Engineering (VSSMGE), National University of Civil Engineering (NUCE), AA-Corp and Roscience. It was supported by the International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE), Association of Geotechnical Societies in Southeast Asia (AGSSEA) and Southeast Asian Geotechnical Society (SEAGS).
The 2-day programme included the following lectures:-
Day 1:

- "State of the Art Application of Geotechnical Centrifuge Modeling in Research, Design and Forensic Engineering" by Prof. Charles W W Ng (Hong Kong University of Science and Technology, Hong Kong).
- "An Analysis on Behaviour of a Raft on Piles in CPRF by program PRAB" by Cao Hoa
- "A Study of Effectiveness of Cleaning and Grouting Bored Pile Toe at Some Locations in Ha Noi, Vietnam" by Dr. Pham Quang Hung
- "Roscience Product for Geotechnical Engineering" by Prof. John Curran & Dr. Hoang Kien (Rocscience, Canada)

Day 2:

- "Behaviour of Large Mats under High Loads: Two Case Histories" by Prof. Jean-Louis Briaud (President of ISSMGE / Texas A&M University, USA)
- "Geotechnical Engineering in Vietnam: Achievements, Challenges and Opportunities" by Prof. Nguyen Truong Tien (President, VSSMGE)
- "Green Slope Engineering for Hong Kong" by Prof. Charles W W Ng (Hong Kong University of Science and Technology, Hong Kong)
- "Pile Raft Foundation for High-rise Buildings – Recent Development" by Dr. Phung Duc Long (VSSMGE)
- "MSE Wall Design to Resist Barrier Impact" by Prof. Jean-Louis Briaud (President of ISSMGE / Texas A&M University, USA)
- "Three-dimensional Centrifuge and Numerical Investigations of Pile Performance Subjected to Stress Relief due to Deep Excavation" by Prof. Charles Ng (Hong Kong University of Science and Technology, Hong Kong)
- "Dispute Management" by Ir. C K Khoo (Wan Mohamed & Khoo Sdn Bhd, Malaysia)
- "Alternative Foundation for a Sustainable Construction" by Ir. Kenny Yee (AGSSEA / Menard)
- "Foundation Engineering Method for Houses on Slope of Son Tra, Da Nang" by Dr. Trinh Viet Cuong
- "Amendment to the Engineers' Act and Mitigation of Natural Disasters in Malaysia" by Dr. T A Ooi (President SEAGS)

1-DAY SOIL AND FOUNDATION INTERNATIONAL SEMINAR IN BANGKOK, THAILAND

The 1-day seminar was held at the Chaphya-park Hotel in Bangkok on 21st February 2013. It was organized by the Engineering Institute of Thailand (EIT) and Thai Geotechnical Society (TGS). It was supported by the International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE), Association of Geotechnical Societies in Southeast Asia (AGSSEA) and Southeast Asia Geotechnical Society (SEAGS).

The following lectures were delivered during the one day programme:-

- "Behaviour of Large Mats under High Loads: Two Case Histories" by Prof. Jean-Louis Briaud (President of ISSMGE / Texas A&M University, USA)
- "Amendment to the Engineers' Act and Mitigation of Natural Disasters in Malaysia" by Ir. Dr. Ooi Teik Aun (President of SEAGS)
- "Performance and Behaviour of Deep Barrette Pile in Bangkok Subsoils" by Dr. Wanchai Teparaksa (Chulalongkorn University, Thailand)
- "Centrifuge and Numerical Investigations of Pile Performance Subjected to Stress Relief due to Deep Excavation" by Prof. Charles W W Ng (Hong Kong University of Science and Technology, Hong Kong)
- "Unsaturated Soil Mechanics and Slope Engineering in Thailand" by Dr. Apiniti Jotisankasa (Kasetsart University, Thailand)
- "Levees and Overtopping Erosion" by Prof. Jean-Louis Briaud (President of ISSMGE / Texas A&M University, USA)
- "Analyses of Reinforced Embankment on Soft and Hard Foundation by K-Stiffness Method: Further Modification" by Prof. Dennes T. Bergado (Asian Institute of Technology, Thailand)
- "Tunnelling and Deep Excavations in Bangkok" by Dr. Noppadol Phienwej (Asian Institute of Technology, Thailand)
- "Alternative Foundation Technique for a Sustainable Construction" by Ir. Kenny Yee (Hon. Sec-Gen AGSSEA / Menard)
- "Dispute Management in Construction Contracts: Red Sea, Blue Ocean or Green Valley" by Ir. C K Khoo (Wan Mohamed & Khoo Sdn Bhd, Malaysia)
- "Landslide Risk Management in Thailand" by Dr. Suttisak Soralump (Kasetsart University, Thailand).

At the end of each seminar, copies of the 2012 issues of SEAGS-AGSSEA "Geotechnical Engineering" journals were presented to the national societies and some of the local universities.

ACKNOWLEDGEMENT

AGSSEA would like to express sincere thanks to Prof. Jean-Louis Briaud for the excellent lectures and taking the time to share his work with us. Also, AGSSEA would like to thank Professor A S Balasubramaniam of Griffith University, Australia for his kind effort to initiate the whole event together with Dr. Ooi Teik Aun.

COMING EVENTS

The 18th Southeast Asian Geotechnical and Inaugural AGSSEA Conference will be held in Singapore on 29 – 31 May 2013. Registration for the conference is now open by logging in to http://18seagc.com/regist.html.

- There will be the SEAGS Council Meeting and AGSSEA Council Meeting tentatively scheduled for the afternoon of 29th May 2013 (Wednesday). Confirmation of time, venue and agenda for meeting will be notified in due course.
- There will be the SEAGS General Meeting tentatively scheduled for the afternoon of 31st May 2013 (Friday).

Prepared by: Kenny Yee (10 March 2013) and vetted by Dr. T A Ooi

FEATURE PHOTOGRAPHS

Prof. J-L Briaud with Prof. N T Tien

Prof. Charles Ng with Prof. N T Tien

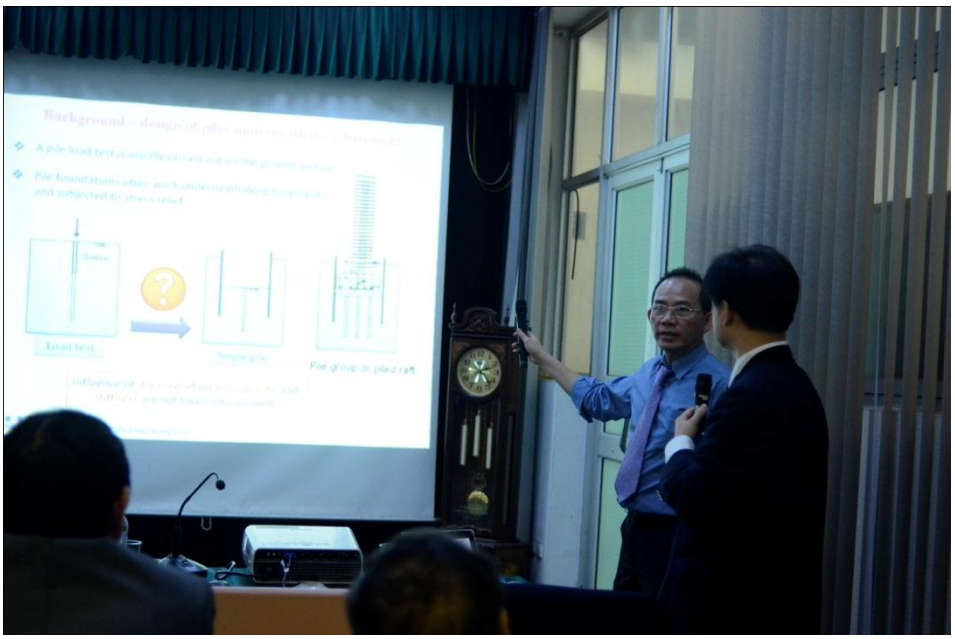
Prof. J-L Briaud delivering his opening speech

Prof. Charles Ng delivering his lecture on centrifuge and numerical investigation of pile performance.

Ir. Kenny Yee delivering his lecture on alternative foundation for sustainable construction

Ir. Dr. Ooi Teik Aun delivering his lecture on amendment to the Engineers' Act and mitigation of natural disasters

Ir. C K Khoo delivering his lecture on dispute management in construction



Dr. Phung Duc Long with Prof. Charles Ng

Ir. Kenny Yee at the presentation of SEAGS-AGSSEA journals ceremony

Presentation of Geotechnical Engineering Journals to the local universities in Hanoi

Presentation of Geotechnical Engineering Journals to the 5 local universities in Hanoi (NUCE, UCT, WRU, Transportation Technology College, and Military Technical Academy)

Presentation of memento to the speakers

Presentation of ISSMGE tie to Prof. Tien from the President

Part of the participants in Hanoi

Part of the participants in Hanoi

Ir. C K Khoo, Ir. Dr. Ooi Teik Aun and Dr. Phung Duc Long

Group photograph at the end of the 2-day seminar in Hanoi

Dr. Suttisak Soralump (President, TGS), Prof. Jean-Louis Briaud (President, ISSMGE) and Dr. Ooi Teik Aun (President, SEAGS) at the Opening Ceremony of the 1-day international Soil and Foundation Seminar in Bangkok

Prof. J-L Briaud delivering his speech at the Opening Ceremony in Bangkok

Prof. Charles Ng delivering his lecture on Centrifuge Testing in Bangkok

Dr. Apiniti Jotisankasa delivering his lecture on Unsaturated Soils in Bangkok

Dr. Noppadol Phienwej delivering his lecture on Tunnelling and Deep Excavation

Dr. Suttisak Soralump delivering his lecture on Landslide Risk Management in Thailand

Presentation of memento to Ir. Kenny Yee by Dr. Apiniti Jotisankasa after his lecture on Alternative Foundation for Sustainable Construction

Group photograph of the speakers after the end of the seminar

MALAYSIA

Landslides: Physical and Numerical Modelling of Large Ground Movements – 30 June 2012

A lecture on "Landslide-Physical And Numerical Modelling Of Large Ground Movements" was delivered by Prof. Kenichi Soga of Cambridge University, United Kingdom. The event was organized by CESIG, IEM and supported by UTM, GETD, TUSTD, ICE, SEAGS and AGSSEA.

Prof. Soga began the lecture by showing the debris flow of Colorado in 1997 and the submarine landslide in Hawaii in 2003. He then proceeded to show how the debris flow and submarine landslide can be modeled using centrifuge and numerical methods.

Landslides are known to cause loss oflives and properties. It is also known that these landslides can move rapidly (such as debris flow) and travel at long distances. The traditional way of evaluating the risk of landslide is by slope stability analysis and it's Factor of Safety. However, this method does not assess the extent and speed of ground movements. Prof. Soga, using advanced computational and physical modeling demonstrated how the initial state of soil influences the movement of landslides.

Initially, Prof. Soga presented some animations of large-scale model tests of sand embankment that failed from seepage in two different manners. The sand levee that was initially wet or damp failed rather abruptly and more extensive as compared to the dry embankment where gradual failure occurred near its toe. Submarine landslide is known to move at massive volume and can travel at distance of up to 400km with surface gradient of only 0.1 degree. Such landslide can cause significant damages to marine environment and facilities (e.g. seabed pipelines). The key question in understanding submarine landslide impact is how to model the mass velocity and travelling distance correctly.

To further elaborate about it, Prof Soga presented the latest research work at Cambridge, using mini-drum centrifuge to model the submarine landslide flows. Actual flow velocity in the field can be predicted and factored using suitable gravitational scaling laws. It should be noted that the submarine landslides are more complicated to model due to the fact that the flow is also affected by water entrainment, frontal shear and hydroplaning, basal shear, flow thickness, water viscosity and etc.

Advances in numerical methods to solve continuum problems were introduced in the second half of the lecture. While many audiences may have accustomed to the commercially available programmes such as Finite Element Method (FEM) or Finite Difference Method (FDM) which are all mesh-based type technique, conventional methods have limitations in simulating very large ground deformation. Particle or mesh-free methods, or in this case called Material Point Method (MPM) can be used to model large ground deformation and simulate the landslide flow. Complex MPM consolidation formulation was developed to couple the effect of multi-phase soil and water movements. The model can also include partially saturated ground conditions.

An intriguing note was made in examples of levee failure experiment, in that, the mode of failure not only influenced by the shear strength properties of the soil, but also sensitive to the angle of dilation. Remarkably, the MPM method is able to replicate various types of landslide movements, that is, from gradual retrogressive sliding to a more catastrophic failure (larger mass movements).

In the case of modelling submarine landslide, water entrainment that affects the flow viscosity was included in the constitutive model. Prof. Soga also highlighted some examples of new opportunities of slope monitoring technique using distributed optical fibre strain sensing. The sensor is known as Brillouin Optical Time Domain Reflectometry (BOTDR) is said to be capable of measuring continuous strain profile (e.g. every 10 cm) along a standard 10km long telecommunication optical cable.

Apart from that, some field instrumentations conducted by Cambridge Geotechnical Research Group on slopes near coastal area of UK were also presented. An interesting point to note is that the fibre optics can be configured into various types of sensors depending on its applications. For example, for slope monitoring purposes, it can be used to monitor lateral displacements such as inclinometer, measure axial strain in soil nails and detect subsurface shallow movement of an embankment. Surprisingly, topic on field instrumentation using BOTDR has drawn the largest

interests from the audience during the question and answer session. Indeed, this lecture has greatly benefited all the participants.

Prof. Soga delivering his lecture

Prof. Soga with organising members

Workshop on Performance Based Design of Coastal Geotechnical Structures in Japan - 27 August 2012.

On 27 August 2012 one day workshop on Performance Based Design of Coastal Geotechnical Structures was organized by Consulting Engineering Special Interest Group of IEM, the ICE and SEAGS-AGSSEA at the Prof Chin Fung Kee Auditorium of the Wisma IEM. Professor Hemanta Hazarika, who is a Professor of Civil Engineering in Kyushu University, Fukuoka, Japan was the invited speaker. In the first session, Prof. Hazarika described the March 11, 2011 Great East Japan Earthquake and Tsunami (GEJET) disaster. Many examples of damaged structures were shown and discussed. He then discussed the strategies adopted by the Central Disaster Management Council of the Government of Japan in the aftermath of GEJET disaster. According to the new plan, major coastal civil engineering structures such as breakwater, seawalls, sea dikes, etc. need to be designed considering two different types of tsunami, namely Level 1 (L1) tsunami and Level 2 (L2) Tsunami. L1 Tsunami is the one that is likely to occur during the design life of the structures and has the probability of occurrence once in every 10 to 100 years. On the other hand, L2 Tsunami is the maximum predicted tsunami that may attack the structure and has the probability of occurrence once in every thousand years. Whilst L1 consideration gives importance to mitigation, L2 focuses on prevention. Prof Hazarika also discussed the directions of restoration and reconstruction of damaged structures due to the GEJET disaster, and the future disaster prevention and mitigation measures.

Prof. Hazarika started the second session by introducing the concept of a new design philosophy called Performance-based Design (PBD). In the PBD, appropriate levels of design earthquake motions would be defined and the corresponding acceptable levels of structural damage would be identified. Dual approach is adopted in this design in which, L1 and L2 earthquake motions are typically used as the design reference ground motions. In the past, the trend was to adopt the past major historical earthquake records as the design ground motions. The design reference ground motions, however, will be different depending on the local seismological and soil characteristics of the site, where the target structure is intended to design or to retrofit. Consequently, the trend these days is towards creating a site-specific scenario motion based on the small motion records at the particular site. The effect of site characterization was very much evident in the March 11, 2011 earthquake as well.

Prof. Hazarika continued the Workshop with the third session after lunch. In this session, some case studies from the 1995 Hyogoken-Nanbu earthquake were discussed from the view point of their performances during the earthquake. Kobe is one of the largest ports and serves as a hub for the Japanese economy. The Hyogoken-Nanbu earthquake hit Kobe and its vicinity in the pre-dawn hours on January 17, 1995. At the time of the 1995 Hyogoken-Nanbu earthquake, Kobe Port had 186 quay walls, about 90% of which are caisson type quay walls. The 1995 Hyogoken-Nanbu earthquake caused severe damage and destroyed more than 90% of the waterfront structures. During that earthquake, three quay walls however did not suffer any damage. Two of them were caisson type and one was trestle pier type. These quay wall, called high seismic resistant quay wall, were specifically designed to resist the maximum credible earthquake motion in this area in order to provide a key function for Kobe Port immediately after a major earthquake for unloading medical, food and other emergency supplies to the areas devastated by the earthquake. There were active discussions from the participants. Dr. Ooi Teik Aun presented a memento.

Prof Hazarika Delivering his Lecture

Dr. Ooi Teik Aun Presenting a Memento to Prof Hazarika

Think Beyond Standard Code of Practice Rules – Mobilizable Strength Design – 9 December 2012

The 1-day workshop entitled "Performance-based Design in Geotechnical Engineering" was conducted by Prof Malcolm Bolton and Prof Charles W.W. Ng on 9 December (Sunday) 2012 at the Auditorium Tan Sri Prof. Chin Fung Kee of Wisma IEM. It was attended by about 45 participants. This workshop was supported by the Institution of Civil Engineers (ICE), Malaysia, Southeast Asian Geotechnical Society (SEAGS) and Association of Geotechnical Societies in Southeast Asia (AGSSEA).

Prof. Malcolm Bolton is the Professor of Soil Mechanics at Cambridge University, and has been Director of the Schofield Centre for Geotechnical and Construction Modelling since 1995. He is a Fellow of the Royal Academy of Engineering and holds various prizes of the UK Institutions of Civil and Structural Engineering, the British Geotechnical Association and the Canadian Geotechnical Society. With the assistance from Prof Charles Ng of Hong Kong University of Science and Technology, the GETD managed to grasp Professor Bolton for this workshop amidst his busy tours to Asian countries delivering the 52nd Rankine Lecture.

He firstly provided an overview of small strain stiffness of soil. He assessed the relationship between normalised shear modulus (G/G_o) and shear strain from the 520 selected static and dynamic tests of coarse-grained and fine-grained soils. G is the secant shear modulus at any strain. G_o is the elastic shear modulus at very small strain (G at γ = 0.0001%). The observed relationship could be predicted using the modified hyperbolic equation $\frac{G}{G_0} = \frac{1}{\left[1+\left(\frac{\gamma}{\gamma_r}\right)^a\right]}$ where γ_r is reference strain value at which $G/G_o = 0.5$ and a is called the curvature parameter. Both of them could be correlated to simple soil properties as follows: $a = 0.74$ and $\gamma_r = 1.25 W_L 10^{-4}$ for clays and $a = \underline{U}c^{-0.075}$ and $\gamma_r = 8\, e\, I_D 10^{-4} + U_C^{-0.3}\, p' 10^{-6}$ where W_L =liquid limit, U_c =uniformity coefficient, e = void ratio, I_D=relative density and p'= effective mean stress. The reliability of prediction has factor of ±1.3 (2 std. dev.).
Interestingly, the rate of deterioration of stiffness with strain was similar for clays and sands as pointed out by Prof Bolton.

He shared that the quasi-hyperbolic backbone curve, its hysteresis loops due to cycling, the "S-shaped curve" of G/G_0 versus log □, were all reflections of the development of a strong force network revealed by Discrete Element Mechanics (DEM).

He went further to present the observed relationship between the degree of strength mobilization (1/M) and shear strain from 115 triaxial tests on clays, see Figure 1.
The trend line could be approximated using a power curve as follows:-

$$\frac{\tau_{mob}}{c_u} \approx 0.5 \left(\frac{\gamma}{\gamma_{M=2}}\right)^b$$

where $\gamma_{M=2}$ is mobilised strain at $0.5c_u$ and b is a coefficient related to overconsolidated ratio (OCR). The tests on Kaolin clays revealed that $b = 0.011(OCR) + 0.371$ and $\log_{10}(\gamma_{M=2}) = 0.680 \log_{10}(OCR) - 2.395$.

He also verified the above approximation for London clays from triaxial and self-boring pressuremeter (SBP) tests. Typically, the stress history of a stratum would offer increase of c_u and reduction of $\gamma_{M=2}$ with increasing depth.

Before the lunch break, Prof Bolton stirred up the audiences by pointing out what had been taught in the conventional textbooks and standard Code of Practice (EC7) for shallow foundation in clays was wrong in terms of control of settlement by applying factor of safety of 2 to 3, deformation based on oedometer stiffness, specification based on limit stage design framework of ultimate limit state (ULS) and serviceability limit state (SLS).

Prof Bolton presented Asraf Osman's deformation mechanism for a shallow foundation then utilised the Mobilised Strength Design (MSD) to capture its load-settlement behaviour. The accuracy of MSD method in estimating settlement was as good as that predicted by the finite element method using advanced constitutive soil model. Thus the curve of mobilised strength versus shear strain exhibited in undrained triaxial test could be used for predicting settlement. This was validated through field tests as well.

He then showed the footing settlement pattern observed in centrifuge tests by Brendan McMahon, see Figure 3. The 4 phases of settlement were undrained indentation, undrained creep, continuing creep with additional consolidation and drained creep at a reduced rate after consolidation nearly completed. He excited the floor that what had been observed in an oedometer was completely misleading. The creep settlement would take place from the undrained stage. Based on the theory of elasticity, the consolidation settlement could be 1.4 times of undrained settlement.

He examined the limit state of footing using MSD in the light of allowable differential settlement (SLS: $\Delta w = 1/1000$ for onset of cracks and ULS: $\Delta w = 1/400$ for gaping cracks). In order to achieve the desirable differential settlement, the required mobilised factor, M (c_u/τ_{mob} or safety factor) is 3.8 and 1.46 for SLS and ULS states, respectively. This

was much greater than the conventional FOS of 2 to 3 for shallow foundation. He stressed that the soil deformed a lot prior to failure.

Prof Charles Ng took over the floor in the afternoon. He presented a series of centrifuge test programs modelling twin tunnelling effects on pile and pile group by his research students. The scenario considered were the 4 probable tunnelling sequences (TT, SS, ST& TS) of twin tunnels bored through near the locations of pile toe (T) and shaft(S). The clear distance between the single pile and tunnels was 1.52m. The apparent loss of pile capacity (ALPC) was benchmarked with the reduction of capacity to the pile capacity at FOS=1.5 based on the failure criterion proposed by Ng et al (2001). The tests showed that APLC could be as high as 36%. The induced pile head settlement by ST was found about 30% higher than that by TS. The induced total ground movement was about the same by TS and ST. The pile group modelled in the centrifuge tests were four numbers. The tunnelling sequence for twin tunnels was G-ST, G-SB, G-TT and G-BB, respectively where G, S, T B denotes pile group, pile shaft, pile toe and pile base. The clear distance between tunnels and the pile group was 2.2m and the clear distance between the pile toe and the crown of tunnels was 3m. The results showed that ALPC in pile group of G-ST was smaller than that of G-SB but the transverse tilting of pile cap was 67% higher. He highlighted that the tilting of pile cap in longitudinal direction of tunnels was 10 times higher than that of transverse direction for both G-ST and G-SB. For G-TT, the transverse tile is more critical during construction than that of end of twin tunnelling but this was vice versa for G-BB.

The last part of workshop was a forum session by the speakers and 4 invited panellist namely Ir. Tan Yang Kheng , Ir. Yee Thien Seng, Ir. Liew Shaw Shong and Ir. Dr. Chin Yaw Ming and the moderator, Ir. Dr. Chan Swee Huat. It meant to engage audiences to exchange opinions with the speakers and panellist on the existing ways of handling ground investigation, choice of design parameters, numerical procedure, adoption of a Code of Practice, prediction of deformation and risk management. The forum went off the track turning into a seeking-free-consultation session. Nonetheless there was long and heat discussion on the awareness of “apparent” slope failure mechanism and the level of risk-taking approach in managing hill-site development.

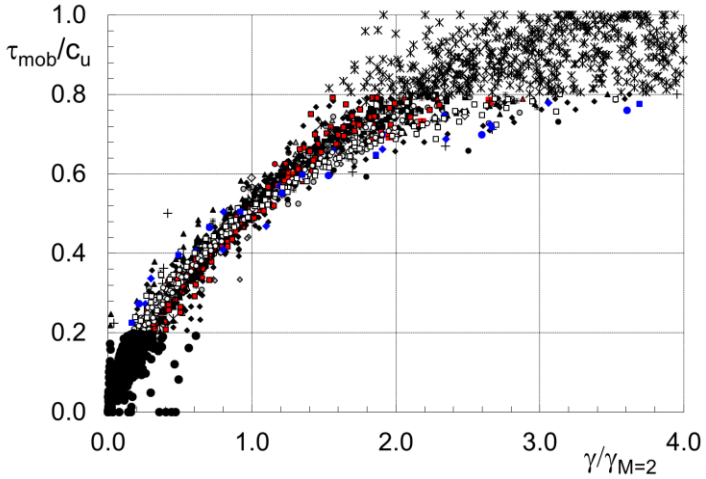


Figure 1- Shear Stress Mobilization versus Normalised Shear Strain (Vardanega & Bolton,2011)

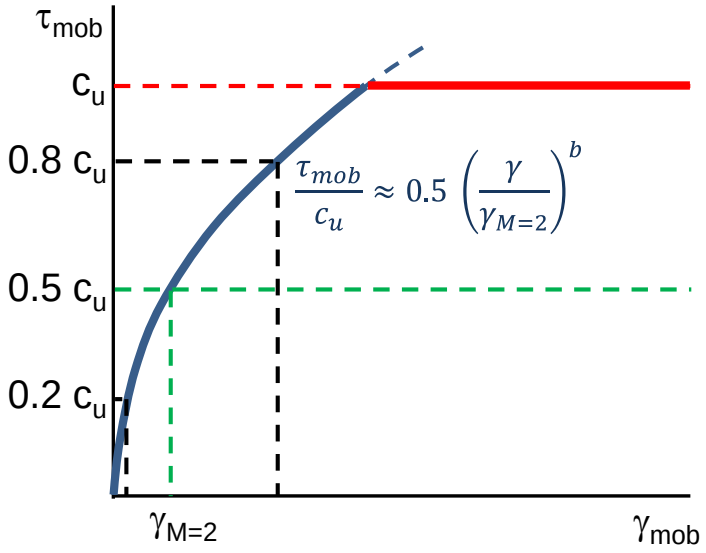


Figure 2- The idealised mobilised strength curve using a power curve through the origin

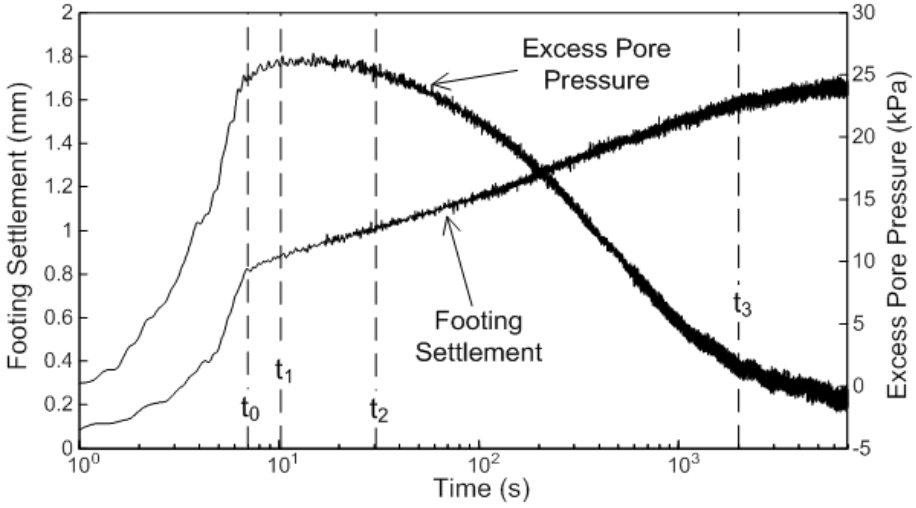


Figure 3 – Observed footing settlement versus time in centrifuge

Applied Course on Engineering Geology And Rock Engineering - 15 & 16 July 2013

The course is jointly organized by Association of Geotechnical Societies in Southeast Asia (AGSSEA) and Tunnelling & Underground Space Technical Division, IEM. The 2-day workshop will present an overview of the engineering behaviour of various rock types, look at important design parameters, and cover challenges that arise during tunnelling and dam constructions. Attending this workshop will benefit a variety of practitioners, including geologist and geotechnical engineers, mining managers and academics.

Professor Paul G. Marinos

Professor of Engineering Geology at The National Technical University of Athens
Past President of The International Association of Engineering Geology And The Environment
Independent Consulting Engineer

Dr Paul Marinos received a Mining Engineering degree from the School of Mines of the National Technical University of Athens, Greece in 1966, a postgraduate degree in Applied Geology from the University of Grenoble, France, and his Doctorate in Engineering Geology from the same University in 1969. He worked for French and Greek design and construction companies until 1977 and then was elected as Professor at Democritus University in Northern Greece. Since 1988 Dr Marinos has been Professor of Engineering Geology in the School of Civil Engineering in the National Technical University of Athens and has served as head of the Geotechnical Section of the School for several years. From 2001 to 2004 and from 2006 to 2008 he was the Director of a Graduate Course in Tunneling and Underground Construction. He was a visiting Professor in the Geology Department of the University of Grenoble (1987) and of the School of Mines in Paris (2003).

Dr Paul Marinos is a member of AEG and GSA and fellow of the Geological Society of London. He is a past President of the International Association of Engineering Geology and the Environment (IAEG), past President of the Geological Society of Greece, past president of the Greek Tunnelling Society and honorary member of the International Association of Hydrogeologists (IAH).

Dr Paul Marinos has received several awards, including the Hans Cloos medal of IAEG, and the Andre Dumont medal of the Geological Society of Belgium. He was selected for the presentation of named lectures, including the 6th Glossop Lecture in London (2002), the 19th Rocha Lecture in Lisbon (2002), the 33rd Cross Canada Lectures Tour (2005), the Rock Mechanics annual Lecture in Madrid (2006), an invited lecture tour in Australia, by the Australian Geomechanics Society and as the 2010 Jahns distinguished Lecturer of the Geological Society of America and the Association of Engineering Geologists In 2013 he was awarded by the French Republic as “Chevalier de l’Orde des Palmes Academiques”

Dr Paul Marinos and his team conduct research on a variety of applications of geology to engineering, mainly rock mass characterization, weak rock properties and behavior, and karstic terrain, with special emphasis to engineering

design and construction of tunnels and underground works. His work also covers landslides and dam geology. His other significant interest is the protection of historic monuments and archeological sites. Dr Marinos has authored or co-authored over 300 papers in journals or major conference proceedings. He was a key or invited lecturer in more than 50 conferences or special events. He has given lectures to University Courses or Workshops, among them the Federal Technical University (EPFL) in Lausanne, Switzerland, the Polytecnico of Turin, Italy, the University of Durham, U.K., the University of Coimbra, Portugal, the University of Kobe, Japan, the Black Sea University Romania, the Aristotle University of Thessalonica, Greece, and the Griffiths University, Australia. He has edited proceedings published by international publishers. Dr Marinos is editor in chief of the journal "Geotechnical and Geological Engineering" and also a member of the Editorial Board of a number of prominent journals as "Engineering Geology", "Bulletin of the International Association of Geology", Landslides", "Environmental Geology", "Rock Mechanics" and from 2009 "Environmental and Engineering Geosciences".

Dr Paul Marinos has extensive industrial experience having served as consultant, independent reviewer and member of consulting boards or panel of experts on major civil engineering and water resources projects in Albania, Chile, Ecuador, Ethiopia, Greece, France, India, Iran, Jordan, Lebanon, Morocco, Nigeria, Papua New Guinea, Portugal, Peru, Saudi Arabia, Laos, Spain, Sweden, Tajikistan and Turkey.

THAILAND

Touring Lecture – 21 February 2013- Bangkok, Thailand by Prof. Jean-Louis Briaud

The touring lecture by Prof. Jean-Louis Briaud in Bangkok was organised by Engineering Institute of Thailand and Thai Geotechnical Society and supported by Association of Geotechnical Societies In Southeast Asia (AGSSEA), Southeast Asia Geotechnical Society (SEAGS) and International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE). Other invited speakers were Prof. Charles W.W. Ng, Ir. Dr. Ooi Teik Aun, Ir. Kenny, Ir. C.K. Khoo, Prof. Dennes Bergado, Dr. Wanchai Teparaksa, Dr. Apinti Jotisankasa, Dr. Noppadol and Dr. Suttisak Soralump.

Behavior of Large Mats Under High Loads: Two Case Histories by Prof. Jean-Louis Briaud

The lecture investigates the geotechnical behavior of two large mat foundations over several decades of time. The first case history is the foundation of the Washington Monument in Washington DC completed in 1885 and the second case history is the foundation of the San Jacinto Monument in Houston, Texas completed in 1936. Both mats are about 38 m by 38 m and settlement records are available. Calculations performed with respect to depth of influence, stress increase with depth, consolidation settlement, and ultimate bearing capacity are presented. Additional considerations include the influence of soil heterogeneity and underpinning. Lessons learned from the behavior of these two mats are drawn and recommendations are made for the geotechnical aspect of mat design.

Levees and Overtopping Erosion by Prof. Jean-Louis Briaud

The lecture starts with a review of fundamental concepts on soil erosion including elementary phenomena, basic laws, laboratory tests, important soil properties, and natural evidence. It then goes on to discuss the overtopping of the levees in New Orleans when it was hit by hurricane Katrina. During this disaster 1500 people died and 120 billion dollars was lost. In a last part, the overtopping of the levees and associated failures during the 2008 Midwest flood along the Mississippi River is presented. Lessons learned from these two very large scale case histories are outlined and a levee overtopping design chart is proposed.

Professor Jean-Louis Briaud

Professor Jean-Louis Briaud is Professor and Holder of the Spencer J. Buchanan Chair in the Zachry Department of Civil Engineering at Texas A&M University and the President of Briaud Engineers. He received his Bachelor's degree from the Ecole Speciale des Travaux Publics in France in 1972 and his Ph.D. degree from the University of Ottawa in Canada in 1978. His expertise is in foundation engineering and more generally geotechnical engineering. He is the President of ISSMGE (2009-2013) He has served as President of the Association of Geotechnical Engineering Professors in the USA, President of the Geo-Institute of the American Society of Civil Engineers, and is the current President of the International Society for Soil Mechanics

and Geotechnical Engineering. Among other awards, he has received the ASCE Ralph Peck Award, the CGS Geoffrey Meyerhof Foundation Engineering Award, the ASTM Hogentogler Award, the ASCE Huber Research Prize, and the ASCE Martin Kapp Award. Over the last 30 years, Dr. Briaud has conducted about 8.5 million dollars of research most of which was on foundations and retaining walls. He has supervised 37 PhD students and 81 Master students. He is the author of a book on the pressuremeter and has published about 300 articles and reports in geotechnical engineering.

Centrifuge And Numerical Investigations Of Pile Performance Subjected To Stress Relief Due To Deep Excavation by Professor Charles W. W. Ng

Pile foundations are commonly used to support tall buildings with a deep basement underneath in major cities such as Bangkok, Shanghai, Singapore and London. The design of these pile foundations is often based on load tests carried out at the ground surface, prior to basement excavations. In such conventional load tests, however, the effects of stress relief due to basement excavation on pile performance cannot be captured. Systematic research investigating and comparing the capacity and stiffness of piles with and without considering stress relief effects due to excavation simply cannot be found in the literature. Also there is no specific design code such as EC7 that deals with this type of unloading issue specifically. In this lecture, three-dimensional centrifuge model tests carried out to investigate the capacity and stiffness of single piles with and without subjecting to stress relief will be presented and discussed. Two different soil-pile interfaces, namely non-dilatant and dilatant interfaces, representing loose sands/normally consolidated clays and dense sands/overconsolidated clays respectively, will be studied. Computed results using the Discrete Element Method will be used to explain mechanisms observed from centrifuge model tests. Design implications will be explored and discussed.

Professor Charles W.W. Ng

Dr Charles Ng is Chair Professor at the Department of Civil and Environmental Engineering and the Director of Geotechnical Centrifuge Facility at the Hong Kong University of Science and Technology. He is an appointed Board Member of the International Society of Soil Mechanics and Geotechnical engineering. He was elected as an Overseas Fellow at Churchill College, Cambridge University in 2005 and Changjiang Scholar (Chair Professorship) by the Ministry of Education in China in 2010. Professor Ng is a Chartered Civil Engineer (CEng) and a Fellow of the Institution of Civil Engineers (FICE), the American Society of Civil Engineers (FASCE) and the Hong Kong Institution of Engineers (FHKIE). He is the youngest Fellow of the Hong Kong Academy of Engineering Sciences (FHKEng).

Professor Ng has published about 300 international journal and conference papers. He is the main author of two reference books including *Advanced Unsaturated Soil Mechanics and Engineering, and Soil-Structure Engineering of Deep Foundations, Excavations and Tunnels.* Also he has co-edited five conference proceedings and delivered many keynotes, special lectures and general reports at various major conferences and symposia.

Dispute Management In Construction Contracts: Red Sea, Blue Ocean Or Green Valley by Ir. C K Khoo

Construction Contracts are often bedevilled by disputes over Quality of Work, Payment, Time and Cost Issues. In serious cases Parties are so mired in disputes that they lose sight of the objective of the Contract, viz : to carry out the proper construction of the Works, and with each Party honouring its commitments in accordance with the Contract. Disputes may be resolved mainly by Negotiation, Mediation, Adjudication, Arbitration or Litigation, and variants of such methods such as Dispute Resolution Advisors, Dispute Adjudication Boards, Fast Track Arbitration, Arb-Med or Med-Arb. The range of methods is ever-growing, as the construction industry finds the existing (contentious) methods to be unsatisfactory and wasteful in time and cost. In many instances a culture of conflict begins to grow soon after the commencement of work, and the participants in the Contract are soon immersed in a Red Sea. Can the Industry move forward to adopt more amicable and less contentious customs and conditions of contract? Can it sail into halcyon waters in the Blue Ocean? Can we develop Green Valley Contracts, i.e. those which will minimise energy input in disputes and dispute resolution? In this short presentation the speaker hopes to raise awareness of the need to tackle such issues. Industry Experts may contribute towards mitigating disputes by adopting positive and objective approaches to problem solving, and refrain from taking on adversarial and advocacy roles. The speaker will cite case histories to show the important role of Experts in dispute management.

Ir. C K Khoo

Ir. C.K. Khoo is a Civil Engineering graduate of the University of Glasgow. He has more than 45 years of experience as an Engineer in both the Government Sector and private practice. He is Managing Director of Wan Mohamed & Khoo Sdn Bhd, Consulting Engineers. His fields of experience include dams; tunnels; water supply; sewerage; drainage & irrigation; flood control; highways; structures; residentials; commercial & industrial buildings; aquaculture; reclamation; and project management. Khoo is a Professional Engineer, Chartered Arbitrator, Fellow and past Vice-President of IEM, past Vice-President of Malaysian Invention and Design Society, past Chairman of Chartered Institute of Arbitrators (CIArb), Malaysia Branch and Past President of Malaysian Institute of Arbitrators (MIArb). He is a Fellow of CIArb, Fellow of MIArb and holds a Diploma in International Commercial Arbitration of the CIArb. Since 1984, Khoo has been regularly engaged in arbitration of more than 50 construction industry disputes. He has been visiting lecturer on Arbitration Law, Practice and Procedure at the Law Faculty of University Malaya, and Mentor for the University's International Moot Teams. Khoo is listed on the Panel of Arbitrators of IEM, CIArb, World Intellectual Property Organisation and several other international arbitral organisations in Hong Kong, Singapore and Korea. He is a Trustee of Yayasan Reka Cipta Malaysia (Invention Foundation of Malaysia).

Alternative Foundation Technique for Sustainable Construction by Ir. Kenny Yee

Due to rapid economic development, construction of infrastructures and buildings are focused on capacity expansion to meet the needs. While standard construction practices are guided by short term economic considerations, sustainable construction is based on long term affordability, quality and efficiency. Sustainable construction aims at reducing the environmental impact of a construction project over its entire lifetime, while optimizing its economic viability and the comfort and safety of its occupants and users. The call for wider use of green technology and environmental friendly solution has led to the research and development of Controlled Modulus Columns (CMC). The development of CMC results in an improved construction method that uses low-carbon technology and minimum environmental impact during construction. The refined design methodology meets the increasingly demanding requirements for ground improvement technology to take higher imposed loads and more stringent settlement criteria. In principle, CMCs are vertical semi-rigid inclusions or columns designed to obtain an improved composite mass of soil and columns when they are installed in the ground. These columns are made of low-strength cement grout injected under low pressure through a hollow stem equipped with an auger unit which causes lateral soil displacement and hence, minimum spoil obtained during installation. CMCs are installed without surface vibration. The construction method does not involve water jetting or the use of compressed air. Hence, CMCs are most suitable for environmentally sensitive applications as in the case of highly urbanised areas. Further potential developments of CMCs are now being studied to serve as Energy Columns. Energy columns can be used to heat or cool the building using geothermal energy from the ground besides, acting as foundation system. This paper will present details on the installation method, design philosophy and case histories

Ir. Kenny Yee

Ir. Kenny Yee is the Hon. Secretary-General of the Association of Geotechnical Societies in Southeast Asia (AGSSEA), member of the General Committee of the Southeast Asian Geotechnical Society (SEAGS), member of the American Society of Civil Engineers (ASCE) and member of The Institution of Engineers, Malaysia (IEM). He is a member of the Technical Committee TC211 on Ground Improvement for the International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE). He was the past chairman of the Geotechnical Engineering Technical Division of The Institution of Engineers, Malaysia. He is a registered Professional Engineer with the Board of Engineers, Malaysia. He is currently the Regional Director of Menard Geosystems. He has 28 years of post-graduate working experience in the field of ground improvement after returning home from the University of New South Wales, Australia in 1984. He has published more than 50 technical papers in local and overseas conferences, seminars and journals. In 2005, he received the Tan Sri Haji Yusoff Award from The Institution of Engineers, Malaysia for the best technical papers published in conferences.

Amendments to Engineers' Act and Mitigations of Some Natural Disasters in Malaysia by Ir. Dr. Ooi Teik Aun

Amendments to the Engineers' Act Malaysia will be briefly discussed in relation to incidences of earthworks and building failures. The impact of the GATS and Global Liberalization on Engineers' Act Malaysia will be explained.

Flooding, Landslides, Debris Flow and Tsunami are some of the disasters experienced in Malaysia. The flooding of Kuala Lumpur in the 1970s caused serious damages to lives and properties and called for the flood mitigation scheme in Kuala Lumpur. Over the years despite the repeated dredging and canalization of the rivers in Kuala Lumpur, there were repeated incidences of severe flooding of the city centre. As part of the overall solution to the frequent flooding problem, the diversion tunnel project known as SMART was constructed and completed in June 2007. The tunnel is dual-purpose designed to cater to flow of water and ease traffic congestion in the Kuala Lumpur city. In recent times, there was severe flooding in many parts of Malaysia with increased frequencies. The Landslide that caused the collapse of Block 1 of the Highland Towers condominium in December 1993 claimed 48 lives. The landslide occurred during 10 days of incessant rainfall. In November 2002, another landslide occurred and buried the bungalow at the foothill within the vicinity of the Highland Towers site. The incidence also occurred during the period of incessant rainfall and 8 people were killed. Drainage of the Highland Towers area has been unsatisfactory as there were numerous complaints from the residents to the local authorities prior to the disastrous landslides. Debris flow occurred at the Genting Highlands area emerging from the mountainside flanking the access road and causing debris to flow onto the highway on 30th June 1995 and caused temporary closure of Kuala Lumpur- Karak highway. In the incidence 20 people were killed and 23 people were injured. Debris flow also occurred in the GunungTempurung area along the North-South highway, causing debris-comprising boulders, timber logs and mud to impact on the beams of a bridge, necessitating closure of a stretch of the highway. This lecture reports 3 cases of un-compacted tip-fill landslide including the rehabilitation of a massive landslide of a tip-fill slope that was unstable since construction

Ir. Dr. Ooi Teik Aun

Ir. Dr. Ooi Teik Aun graduated in Civil Engineering in 1966 from Auckland University, New Zealand and obtained his Master degree from the same University in 1968. He obtained his Doctor of Philosophy from Sheffield University in 1980. He is a Hon. Fellow of The Institution of Engineers, Malaysia (Hon. FIEM), Fellow of The Malaysian Institute of Arbitrators (FMIArb) and Member of The Institution of Civil Engineers, United Kingdom (MICE). He is an ASEAN Engineer, APEC Engineer, International Professional Engineer, ASEAN Chartered Professional Engineer, Professional Engineer (Malaysia), Accredited Checker (Geotechnical) and Chartered Engineer (C.Eng.), United Kingdom. He is a Practicing Specialist Engineering Consultant, an Arbitrator, an Accredited Checker and Expert Witness. Ir. Dr. Ooi is an active and a long serving member of IEM since 1970s. He was IEM Council Member in 1981 -1984, Vice President in 1988 - 1990 and is a Director of IEM Training Centre SdnBhd since 1991. He has been ICE Country Representative for Malaysia since 2000. He was President of the Southeast Asian Geotechnical Society (SEAGS) in 1993 - 1996, President of MIArb in 2008, Chairman of IEM Geotechnical Engineering Technical Division in 1991 - 1992. Chairman of IEM Tunnelling and Underground Space Technical Division in 2002 - 2003 and 2006 – 2009. He was the Organizing Chairman for the Annual Professor Chin Memorial Lecture 1995 – 2008, Organizing Chairman for the 12SEAGC in 1996, MGC2004 in 2004, 16SEAGC in 2007, and Organizing Chairman for the International Tunnelling Conferences in 2006 and 2011 and ICE Asia Convention in 2011. He was Chairman of Pro-Tem Committee to set up the Association of Geotechnical Societies in Southeast Asia (AGSSEA) and was Chairman of AGSSEA from 2007 – 2010. He was also Chairman of Pro-Tem Committee to set up the IEM Engineering Consultancy Practice Special Interest Group (CESIG) and became its founding Chairman in 2009. He was a member of the Technical Committee set up by the Government to investigate the collapse of the Highland Towers in 1993. He lectured at UPM, UNITEN and UNMC and conducted touring lectures in Thailand, Philippines, Vietnam, Cambodia, Laos and Myanmar. He is a principal interviewer for the IEM Professional Interview and conducts Chartered Professional Reviews for ICE in Hong Kong and India. He has formed ICE Student Chapters at the Universiti Tenaga Nasional and University of Nottingham Malaysia Campus. Ir. Dr. Ooi is currently President of the Southeast Asian Geotechnical Society. He is Chairman of CESIG and Dispute Resolution Practice Subcommittee and Organizing Chairman for the 2nd International Green Workshop on Sustainable Infrastructures and Buildings in October 2012.

Performance and Behavior of Deep Barrette Pile in Bangkok Subsoils by Dr. Wanchai Teparaksa

Dr. Wanchai Teparaksa

Dr. Wanchai Teparaksa is an associate professor in Geotechnical Engineering, Department of Civil engineering, Chulalongkorn University. He obtained doctoral degree in Geotechnical engineering from Kyoto University, Japan in 1988. He has more than 25 years experience in both academic and professional engineering. His interest is deep excavation, deep pile foundation and tunnelling.

Currently, He is a member of the Engineering Institute of Thailand (EIT) board as well as an advisor of the Geotechnical Committee of the EIT. He is an Editor of the Asean Engineering Journal (Civil engineering section) under AUN/SEED-Net.

He was a Theme Speaker on Underground Construction in Urban Areas at 13th Asian Regional Conference on Soil Mechanic and Geotechnical Engineering, Kolkata, India. In 2008, he was a Keynote Lecture at Fall Korean Geotechnical Conference, Wgangju, Korea and a Guest Speaker at International Seminar on Mega Foundation ATC18, Souel, Korea. In 2011, he was a Guest speaker at International Seminar on Mega Foundation ATC18 and Asian Regional Conference on Soil Mechanic and Geotechnical Engineering in Hongkong.

Unsaturated Mechanics and Slope Engineering in Thailand by Dr. Apinti Jotisankasa

Unsaturated soil mechanics is considered a relatively new subject in Thailand while there is a wide range of application possibilities in geotechnical engineering in the country such as rainfall-induced landslide, slope stability, embankment construction and maintenance, shallow foundation as well as assessment of possible climate change effects on infrastructure. This lecture is intended to explain the on-going development of unsaturated soil mechanics research in Thailand in the areas of shear strength characterisation of residual soils, slope stability, assessment of desiccation-induced crack problems along highway slopes. Also presented will be the application of unsaturated soil mechanics for green slope technology such as vetiver grass system and other bio-slope engineering technique.

Dr. Apinti Jotisankasa

Dr. Apiniti Jotisankasa is currently an Assistant Professor at Department of Civil Engineering, Kasestsart University Bangkok. After obtaining his BEng degree in Civil Engineering from Kasetsart University in 1999, he went on to pursue his MSc and PhD in Soil Mechanics at Imperial College London with the generous support of the Anandamahidol Scholarship from Thailand. After awarded the PhD degree in 2005, he started working for Kasetsart University as a lecturer in geotechnical engineering, focusing his main research area on application of unsaturated soil mechanics on practical geotechnical engineering problems, such as rainfall-induced landslide, embankment stability, bio-slope engineering etc. In 2011, he received the Young Technologist Award from the Foundation for the Promotion of Science and Technology under the Patronage of His Majesty the King of Thailand. Dr. Apiniti has been secretary general of the Thai Geotechnical Society since 2009 and currently a member of the TC106 (Unsaturated soils) of the International Society of Soil Mechanics and Geotechnical Engineering.

Ecological Erosion Control and Mitigation of Geo-Disasters on Infrastructures by Professor Dennis T. Bergado

In this lecture, the ecological methods of erosion control measures will be presented including the use of vegetation and natural fibers from coconut, kenaf and water hyacinth and their combinations.The occurrence and causes of geo-disasters including rainfall induced landslides, road embankment failures, flooding, ground deformations, etc. will be also be discussed together with their mitigations using geosynthetics.

Professor T. Dennes Bergado

Professor Bergado started his research on probabilistic and reliability analyses of geotechnical properties and structures. Subsequently, he branched out to Ground Improvement and Geosynthetics. He established the Asian Center for Soil Improvement and Geosynthetics (ACSIG) Research Center as well as published 2 books, more than 100 journal articles, and more than 200 conference papers mainly in this area. He pioneered the use of prefabricated vertical drain (PVD) in soft Bangkok clay with subsequent combinations of vacuum and heat preloading with notable application in the Second Bangkok-International Airport. He also did sustainable research work on recycled and lightweight geomaterials such as rubber tire chips mixed with sand for reinforced embankment construction on soft Bangkok clay. Currently, his research projects involve new and creative ideas regarding deep cement mixing method (DMM) such as optimum cement contents, fundamental parameters as well as reinforced DMM called SDCM piles. For the near future, his research works will consist of risk reduction, vulnerability assessment and sustainable mitigation of rain-triggered landslides, debris flow and soil erosions besides topics on ground improvement and limited life geosynthetics.

Tunnelling and Deep Excavations in Bangkok by Dr. Noppadol

Dr. Noppadol Phienwej is a senior faculty of Geotechnical Engineering and Geo-resources Field, School of Engineering and Technology of Asian Institute of Technology. He holds a doctoral degree in Civil Engineering from University of Illinois at Urbana-Champaign, U.S.A. He has 25 years of experience in geotechnical engineering as an academician and consultants. His areas of interest and expertise are underground excavations, tunneling, dam engineering and slope stability. He is also heavily involved with professional society and community service activities for instances, twice as advisors to the Minister of Transport of Thailand, advisors to a number of state enterprises responsible for infrastructure and utitilities development. He used to serve as a liaison person of Thailand National Group of the International Tunnelling and Underground Space Association and was the past chairman of the group. He is also the editor of the Geotechnical Engineering Journal of the Southeast Asian Geotechnical Society and serves on editorial board of two leading international journals, i.e. Tunnelling and Underground Space Technology and Tunnelling and Geomechanics. He was also the past chairman of the Geotechnical Committee of the Engineering Institute of Thailand and was also a member of its Executive Committee. He has been involved with a number of major infrastructure development projects in Thailand and Southeast Asian countries (building foundations, hydropower dams, irrigation dams, transport and utilities tunnels, MRT projects, airport, etc.). Recently, he served on two important committees for development of the new Bangkok International Airport project (Suvarnabhumi Airport). On research front he has been recently conducting research on application of advanced numerical computation to gain better understandings on problems related to piled raft foundation and urban tunneling.

Landslide Risk Management in Thailand by Dr. Suttisak Soralump

Landslide hazard is a serious threat in Thailand. Large landslide mostly caused by excessive rainfall and affected people who live at hilly area. While the landslide zoning seems to be far from reality in this country, other mitigation need to be implemented to avoid loss of live. Sophisticate geotechnical prediction model and warning equipment, even though good but may not practical for landslide warning, especially in the large area. Simplification the sophisticated model of warning and finding the right way to communicate just a few hours before the hazard is the missing link for landslide hazard management. This lecture will discuss about the overview of the rainfall-induced landslide situation in Thailand, the trend of landslide warning in large area and the geotechnical model for near-real time landslide susceptibility mapping developed by the speaker.

Dr. Suttisak Soralump

Dr Suttisak Soralump is currently an Associate Professor in Geotechnical Division, and the director of Geotechnical Engineering Research and Development centre (GERD), Civil Engineering Department, Kasetsart University, Bangkok. He has received his Ph.D. (Geotechnical Engineer) from Utah State University, USA in 2002 and obtained M.Eng(Soil Engineer) and B.Eng (Civil) from Asian Institute of Technology (AIT) and Chulalonkorn University, respectively. His researches focus mainly on engineering behaviour of natural and recompacted residual soil in both static and dynamic loading, probabilistic analysis in geotechnical engineering, landslide risk assessment, behaviour of earth dam during earthquake and dam safety risk assessment. He has been involving, as a team leader, in various large dam re-evaluation and rehabilitation projects. He also involved as a principal designer of various large foundation works on the hill slope and also slope stabilization projects. He is actively developing the near-real time landslide warning system and landslide mitigation program for Thailand. Dr Suttisak has received an Excellent Civil Servant Award from the Prime Minister in 2010. He is now a committee member of National Research Council of Thailand, a secretary treasure of International Geosynthetics Society (Thailand) and the President of Thai Geotechnical Society.

SINGAPORE

18SEAGC – 1AGSSEAC in Singapore – 29 – 31 May 2013

The 18th Southeast Asian Geotechnical Conference (18SEAGC) and the Inaugural Association of Geotechnical Societies in Southeast Asia Conference (1AGSSEAC) will be held in Singapore from 29 – 31 May 2013. The theme of the conference is “Challenges in Sustainable Geotechnical Infrastructures”. It is organized by the Geotechnical Society of Singapore (GeoSS) under the auspices of SEAGS and AGSSEA. The organizing chairman is Prof. C F Leung.

There will be a Young Geotechnical Engineers' session (YSEAGC). It will be held one day prior to the main conference on 28th May 2013 at the National University of Singapore. They will then join the main conference on 29 – 31 May, 2013 at a leading hotel within the vicinity of National University of Singapore. Tentative key dates are as follows:

- Call for abstracts – March 2012
- Submission of abstracts – August 2012
- Acceptance of abstracts – October 2012
- Submission of full paper – December 2012
- Acceptance of full paper – Jan 2013
- YSEAGC – 28 May 2013
- 18SEAGC – 1AGSSEAC – 29 – 31 May 2013

International Symposium On Advances In Foundation - 5 & 6 December 2013

International Symposium on Advances in Foundation Engineering will be held on 5 & 6 December 2013 in Singapore.

Please refer to www.isafe2013.sg for details and online submission of abstracts.

CHINESE TAIPEI GEOTECHNICAL SOCIETY (CTGS)

1. The 5th Taiwan-Japan Joint Workshop on Geotechnical Hazards from Large Earthquakes and Heavy Rainfall was held in Tainan, Taiwan on November 12 to 15, 2012. The theme Lectures include：

   Liquefaction of Non-plastic Silty Sand
   Prof. CHEN, Jin Wen / National Cheng Kung University

   Geotechnical Problems in relation to the Revival from the Gigantic Earthquake in 2011
   Prof. MORI, Tomohiro / Tohoku University

   Report on Geo-disasters in Northern Kyushu Area Caused by Heavy rainfall in July 2012
   Prof. YASUFUKU, Noriyuki / Kyushu University

   Bridge Scour- Testing, Monitoring, and Analysis
   Prof. CHEN, Chen-Hsin, / National Taiwan University
   Prof. LEE, Wei F. / National Taiwan University of Science and Technology

2. Professor Malcolm Bolton, the 2012 Rankine lecture recipient, was invited to come to Taiwan on November 23, 2012. A special lecture, Performance-Based Design in Geotechnical Engineering, was given by Prof. Bolton at National Taiwan University of Science and Technology in Taipei. Around 100 audiences joined this important lecture.

3. The annual membership meeting of CTGS will be held in Taipei on March 16, 2013. New council members will also be elected during the meeting. Subsequently, the newly elected council members will vote for the new president of the society on March 23.

4. The 1st Taiwan-Kazakhstan Joint Workshop in Geotechnical Engineering will be held in Taipei on May 27 2013. The Workshop is organized by Taiwan Geotechnical Society and Kazakhstan Geotechnical Society. Also, the co-organizers include Tamkang University and LN Gumilyov Eurasian National University. The Asia VP of ISSMEG. Professor Askar Zhussupbekov, is the leader of the Kazakhstan group. Special guests, such as Prof. Tadatsugu Tanaka, Prof. Yoshi Iwasaki and Prof. Tatsunori Matusmoto all from Japan will also come to Taiwan for this special workshop.

VIETNAM

Touring Lecture – 19 February 2013 - Hanoi, Vietnam by Professor Jean-Louis Briaud

The touring lecture by Professor Jean-Louis Briaud in Hanoi was organized by the Vietnam Society of Soil Mechanics & Geotechnical Engineering (VSSMGE) and University of Hanoi (Civil Engineering University) and supported by Association of Geotechnical Societies In Southeast Asia (AGSSEA), Southeast Asia Geotechnical Society (SEAGS) and International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE). Other invited speakers were Prof. Charles W.W. Ng, Ir. Dr. Ooi Teik Aun, Ir. Kenny, Ir. C.K. Khoo, Prof. Dennes Bergado, Prof. Tien and Dr. Phung Duc Long.

Behavior of Large Mats Under High Loads: Two Case Histories by Professor Jean-Louis Briaud

The lecture investigates the geotechnical behavior of two large mat foundations over several decades of time. The first case history is the foundation of the Washington Monument in Washington DC completed in 1885 and the second case history is the foundation of the San Jacinto Monument in Houston, Texas completed in 1936. Both mats are about 38 m by 38 m and settlement records are available. Calculations performed with respect to depth of influence, stress increase with depth, consolidation settlement, and ultimate bearing capacity are presented. Additional considerations include the influence of soil heterogeneity and underpinning. Lessons learned from the behavior of these two mats are drawn and recommendations are made for the geotechnical aspect of mat design.

MSE Wall Design to Resist Barrier Impact by Proessor. Jean-Louis Briaud

The lecture investigates the geotechnical behavior of two large mat foundations over several decades of time. The first case history is the foundation of the Washington Monument in Washington DC completed in 1885 and the second case history is the foundation of the San Jacinto Monument in Houston, Texas completed in 1936. Both mats are about 38 m by 38 m and settlement records are available. Calculations performed with respect to depth of influence, stress increase with depth, consolidation settlement, and ultimate bearing capacity are presented. Additional considerations include the influence of soil heterogeneity and underpinning. Lessons learned from the behavior of these two mats are drawn and recommendations are made for the geotechnical aspect of mat design.

Professor Jean-Louis Briaud

Professor Jean-Louis Briaud is Professor and Holder of the Spencer J. Buchanan Chair in the Zachry Department of Civil Engineering at Texas A&M University and the President of Briaud Engineers. He received his Bachelor's degree from the Ecole Speciale des Travaux Publics in France in 1972 and his Ph.D. degree from the University of Ottawa in Canada in 1978. His expertise is in foundation engineering and more generally geotechnical engineering. He is the President of ISSMGE (2009-2013) He has served as President of the Association of Geotechnical Engineering Professors in the USA, President of the Geo-Institute of the American Society of Civil Engineers, and is the current President of the International Society for Soil Mechanics and Geotechnical Engineering. Among other awards, he has received the ASCE Ralph Peck Award, the CGS Geoffrey Meyerhof Foundation Engineering Award, the ASTM Hogentogler Award, the ASCE Huber Research Prize, and the ASCE Martin Kapp Award. Over the last 30 years, Dr. Briaud has conducted about 8.5 million dollars of research most of which was on foundations and retaining walls. He has supervised 37 PhD students and 81 Master students. He is the author of a book on the pressuremeter and has published about 300 articles and reports in geotechnical engineering.

Green Slope Engineering for Hong Kong by Professor Charles W. W. Ng

There has been an increasing demand from the public for environmentally friendly designs and for upgrading of slopes in Hong Kong in recent years. With Hong Kong's rugged topography and frequent rainstorms, landslides have always been an alarming problem. A joint research project has been carried out by the Hong Kong University of Science and Technology (HKUST), the University of Hong Kong and the Chinese University of Hong Kong to investigate and improve our fundamental understanding of root-soil-water interactions and to develop an innovative and environmentally friendly reliability-based preliminary design framework for an "integrated bioengineered live slope cover" for reducing shallow slope failures in Hong Kong. This live cover is expected to be self-regenerative and sustainable (almost maintenance free). Five major research tasks are being carried out including field monitoring and root system characterization, centrifuge and numerical modelling of bioengineered slopes, development of an integrated quality assurance scheme and a preliminary reliability-based design methodology for bioengineered slopes. In this presentation, details of the methodology adopted for this joint project will be described. Results from

a comprehensive field and laboratory test program conducted to investigate and quantify the magnitude and distribution of suction induced by grasses and shrubs will be described and reported. Effects of wetting-drying cycles on suction responses will be highlighted. Design implications of some findings from this project will be discussed.

Professor Charles W.W. Ng

Professor Charles Ng is Chair Professor at the Department of Civil and Environmental Engineering and the Director of Geotechnical Centrifuge Facility at the Hong Kong University of Science and Technology. He is an appointed Board Member of the International Society of Soil Mechanics and Geotechnical engineering. He was elected as an Overseas Fellow at Churchill College, Cambridge University in 2005 and Changjiang Scholar (Chair Professorship) by the Ministry of Education in China in 2010. Professor Ng is a Chartered Civil Engineer (CEng) and a Fellow of the Institution of Civil Engineers (FICE), the American Society of Civil Engineers (FASCE) and the Hong Kong Institution of Engineers (FHKIE). He is the youngest Fellow of the Hong Kong Academy of Engineering Sciences (FHKEng).

Professor Ng has published about 300 international journal and conference papers. He is the main author of two reference books including *Advanced Unsaturated Soil Mechanics and Engineering, and Soil-Structure Engineering of Deep Foundations, Excavations and Tunnels.* Also he has co-edited five conference proceedings and delivered many keynotes, special lectures and general reports at various major conferences and symposia.

Piled Raft for High-Rise Buildings - Recent Developments by Dr. Phung Duc Long

During the last two decades, piled raft foundations have been more and more widely applied for tall buildings. In conventional pile foundations the piles are designed to take the full load from superstructure. In piled raft foundations, piles are designed to reduce the settlement to an allowable level, and therefore the piles take only a part of load, while the raft takes a considerable part of the load from superstructure. New achievements in piled-raft foundation area are reviewed. Some recent high-rise buildings both on piled raft and conventional pile foundations are discussed and compared. Application areas for piled-raft are suggested, as well as the design advices.

Dr. Phung Duc Long

Dr. Phung has more than 35 years of international experience. He received his Bachelor's degree from the National University of Civil Engineering in Hanoi in 1974 and his Ph.D. degree from the Chalmers University of Technology in Sweden in 1993. His expertise areas are: deep foundations, temporary and permanent support for deep excavations, soil improvement, pile dynamics, cut & cover tunneling, and numerical analysis. He has spent a major part of his profesional life in the industry and business area. He worked for Skanska Sweden for 8 years, and for WSP Asia for 9 years. Has has worked with projects in many countries, among other, Sweden, Norway, Denmark, USA, England, Russia, Germany, India, Hong Kong, China and Vietnam, etc. Some of his high-light projects are: Uni-Storebrand Headquarter in Oslo with foundation on steel-core piles into rock; SL-10 South Link in Stockholm with sheet pile wall for cut & cover tunnel in soft clay; Fredriksberg Metro Station in Copenhagen, the largest drilled-pile wall project in the world; Soil stabilisation with lime-cement columns for Highway I15, Salt Lake Ctity, Utah, USA; Öresund Bridge Link between Sweden and Denmark; Årsta Bridge in Stockholm with pile foundation and sheet pile wall in deep water and soft clay; and peer-review of foundation for ICC Tower, 118 floors, 490m high in Hong Kong, the No. 4 tallest high-rise in the world. He has authored and co-authored about 100 technical papers and books in Vietnamese, English and Swedish for different national, regional and international seminars, conferences, and technical journals. Dr. Phung has also more than 20 year exprience with different numerical analysis codes, as Plaxis, FLAC.

Dispute Management in Construction Contracts: Red Sea, Blue Ocean Or Green Valley by Ir. C K Khoo

Construction Contracts are often bedevilled by disputes over Quality of Work, Payment, Time and Cost Issues. In serious cases Parties are so mired in disputes that they lose sight of the objective of the Contract, viz : to carry out the proper construction of the Works, and with each Party honouring its commitments in accordance with the Contract. Disputes may be resolved mainly by Negotiation, Mediation, Adjudication, Arbitration or Litigation, and variants of such methods such as Dispute Resolution Advisors, Dispute Adjudication Boards, Fast Track Arbitration, Arb-Med or Med-Arb. The range of methods is ever-growing, as the construction industry finds the existing (contentious) methods to be unsatisfactory and wasteful in time and cost. In many instances a culture of conflict

begins to grow soon after the commencement of work, and the participants in the Contract are soon immersed in a Red Sea. Can the Industry move forward to adopt more amicable and less contentious customs and conditions of contract? Can it sail into halcyon waters in the Blue Ocean? Can we develop Green Valley Contracts, i.e. those which will minimise energy input in disputes and dispute resolution? In this short presentation the speaker hopes to raise awareness of the need to tackle such issues. Industry Experts may contribute towards mitigating disputes by adopting positive and objective approaches to problem solving, and refrain from taking on adversarial and advocacy roles. The speaker will cite case histories to show the important role of Experts in dispute management.

Ir. C K Khoo

Ir. C.K. Khoo is a Civil Engineering graduate of the University of Glasgow. He has more than 45 years of experience as an Engineer in both the Government Sector and private practice. He is Managing Director of Wan Mohamed & Khoo Sdn Bhd, Consulting Engineers. His fields of experience include dams; tunnels; water supply; sewerage; drainage & irrigation; flood control; highways; structures; residentials; commercial & industrial buildings; aquaculture; reclamation; and project management. Khoo is a Professional Engineer, Chartered Arbitrator, Fellow and past Vice-President of IEM, past Vice-President of Malaysian Invention and Design Society, past Chairman of Chartered Institute of Arbitrators (CIArb), Malaysia Branch and Past President of Malaysian Institute of Arbitrators (MIArb). He is a Fellow of CIArb, Fellow of MIArb and holds a Diploma in International Commercial Arbitration of the CIArb. Since 1984, Khoo has been regularly engaged in arbitration of more than 50 construction industry disputes. He has been visiting lecturer on Arbitration Law, Practice and Procedure at the Law Faculty of University Malaya, and Mentor for the University's International Moot Teams. Khoo is listed on the Panel of Arbitrators of IEM, CIArb, World Intellectual Property Organisation and several other international arbitral organisations in Hong Kong, Singapore and Korea. He is a Trustee of Yayasan Reka Cipta Malaysia (Invention Foundation of Malaysia).

Alternative Foundation Technique for Sustainable Construction by Ir. Kenny Yee

Due to rapid economic development, construction of infrastructures and buildings are focused on capacity expansion to meet the needs. While standard construction practices are guided by short term economic considerations, sustainable construction is based on long term affordability, quality and efficiency. Sustainable construction aims at reducing the environmental impact of a construction project over its entire lifetime, while optimizing its economic viability and the comfort and safety of its occupants and users. The call for wider use of green technology and environmental friendly solution has led to the research and development of Controlled Modulus Columns (CMC). The development of CMC results in an improved construction method that uses low-carbon technology and minimum environmental impact during construction. The refined design methodology meets the increasingly demanding requirements for ground improvement technology to take higher imposed loads and more stringent settlement criteria. In principle, CMCs are vertical semi-rigid inclusions or columns designed to obtain an improved composite mass of soil and columns when they are installed in the ground. These columns are made of low-strength cement grout injected under low pressure through a hollow stem equipped with an auger unit which causes lateral soil displacement and hence, minimum spoil obtained during installation. CMCs are installed without surface vibration. The construction method does not involve water jetting or the use of compressed air. Hence, CMCs are most suitable for environmentally sensitive applications as in the case of highly urbanised areas. Further potential developments of CMCs are now being studied to serve as Energy Columns. Energy columns can be used to heat or cool the building using geothermal energy from the ground besides, acting as foundation system. This paper will present details on the installation method, design philosophy and case histories

Ir. Kenny Yee

Ir. Kenny Yee is the Hon. Secretary-General of the Association of Geotechnical Societies in Southeast Asia (AGSSEA), member of the General Committee of the Southeast Asian Geotechnical Society (SEAGS), member of the American Society of Civil Engineers (ASCE) and member of the Institution of Engineers, Malaysia (IEM). He is a member of the Technical Committee TC211 on Ground Improvement for the International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE). He was the past chairman of the Geotechnical Engineering Technical Division of the Institution of Engineers, Malaysia. He is a registered Professional Engineer with the Board of Engineers, Malaysia. He is currently the Regional Director of Menard Geosystems. He has 28 years of post-graduate working experience in the field of ground improvement after returning home from the University of New South Wales, Australia in 1984. He has published more than 50 technical

papers in local and overseas conferences, seminars and journals. In 2005, he received the Tan Sri Haji Yusoff Award from the Institution of Engineers, Malaysia for the best technical papers published in conferences.

Amendments to Engineers' Act and Mitigations of Some Natural Disasters in Malaysia by Ir. Dr. Ooi Teik Aun

Amendments to the Engineers' Act Malaysia will be briefly discussed in relation to incidences of earthworks and building failures. The impact of the GATS and Global Liberalization on Engineers' Act Malaysia will be explained. Flooding, Landslides, Debris Flow and Tsunami are some of the disasters experienced in Malaysia. The flooding of Kuala Lumpur in the 1970s caused serious damages to lives and properties and called for the flood mitigation scheme in Kuala Lumpur. Over the years despite the repeated dredging and canalization of the rivers in Kuala Lumpur, there were repeated incidences of severe flooding of the city centre. As part of the overall solution to the frequent flooding problem, the diversion tunnel project known as SMART was constructed and completed in June 2007. The tunnel is dual-purpose designed to cater to flow of water and ease traffic congestion in the Kuala Lumpur city. In recent times, there was severe flooding in many parts of Malaysia with increased frequencies. The Landslide that caused the collapse of Block 1 of the Highland Towers condominium in December 1993 claimed 48 lives. The landslide occurred during 10 days of incessant rainfall. In November 2002, another landslide occurred and buried the bungalow at the foothill within the vicinity of the Highland Towers site. The incidence also occurred during the period of incessant rainfall and 8 people were killed. Drainage of the Highland Towers area has been unsatisfactory as there were numerous complaints from the residents to the local authorities prior to the disastrous landslides. Debris flow occurred at the Genting Highlands area emerging from the mountainside flanking the access road and causing debris to flow onto the highway on 30th June 1995 and caused temporary closure of Kuala Lumpur- Karak highway. In the incidence 20 people were killed and 23 people were injured. Debris flow also occurred in the GunungTempurung area along the North-South highway, causing debris-comprising boulders, timber logs and mud to impact on the beams of a bridge, necessitating closure of a stretch of the highway. This lecture reports 3 cases of un-compacted tip-fill landslide including the rehabilitation of a massive landslide of a tip-fill slope that was unstable since construction

Ir. Dr. Ooi Teik Aun

Ir. Dr. Ooi Teik Aun graduated in Civil Engineering in 1966 from Auckland University, New Zealand and obtained his Master degree from the same University in 1968. He obtained his Doctor of Philosophy from Sheffield University in 1980. He is a Hon. Fellow of The Institution of Engineers, Malaysia (Hon. FIEM), Fellow of The Malaysian Institute of Arbitrators (FMIArb) and Member of The Institution of Civil Engineers, United Kingdom (MICE). He is an ASEAN Engineer, APEC Engineer, International Professional Engineer, ASEAN Chartered Professional Engineer, Professional Engineer (Malaysia), Accredited Checker (Geotechnical) and Chartered Engineer (C.Eng.), United Kingdom. He is a Practicing Specialist Engineering Consultant, an Arbitrator, an Accredited Checker and Expert Witness. Ir. Dr. Ooi is an active and a long serving member of IEM since 1970s. He was IEM Council Member in 1981 -1984, Vice President in 1988 - 1990 and is a Director of IEM Training Centre Sdn Bhd since 1991. He has been ICE Country Representative for Malaysia since 2000. He was President of the Southeast Asian Geotechnical Society (SEAGS) in 1993 - 1996, President of MIArb in 2008, Chairman of IEM Geotechnical Engineering Technical Division in 1991 - 1992. Chairman of IEM Tunnelling and Underground Space Technical Division in 2002 - 2003 and 2006 – 2009. He was the Organizing Chairman for the Annual Professor Chin Memorial Lecture 1995 – 2008, Organizing Chairman for the 12SEAGC in 1996, MGC2004 in 2004, 16SEAGC in 2007, and Organizing Chairman for the International Tunnelling Conferences in 2006 and 2011 and ICE Asia Convention in 2011. He was Chairman of Pro-Tem Committee to set up the Association of Geotechnical Societies in Southeast Asia (AGSSEA) and was Chairman of AGSSEA from 2007 – 2010. He was also Chairman of Pro-Tem Committee to set up the IEM Engineering Consultancy Practice Special Interest Group (CESIG) and became its founding Chairman in 2009. He was a member of the Technical Committee set up by the Government to investigate the collapse of the Highland Towers in 1993. He lectured at UPM, UNITEN and UNMC and conducted touring lectures in Thailand, Philippines, Vietnam, Cambodia, Laos and Myanmar. He is a principal interviewer for the IEM Professional Interview and conducts Chartered Professional Reviews for ICE in Hong Kong and India. He has formed ICE Student Chapters at the Universiti Tenaga Nasional and University of Nottingham Malaysia Campus. Ir. Dr. Ooi is currently President of the Southeast Asian Geotechnical Society. He is Chairman of CESIG and Dispute Resolution Practice Subcommittee and Organizing Chairman for the 2nd International Green Workshop on Sustainable Infrastructures and Buildings in October 2012.

Geotechnical Engineering in Vietnam: Achievements, Challenges and Opportunities by Professor Tien

Ecological Erosion Control and Mitigation of Geo-Disasters on Infrastructures by Professor Dennis T. Bergado

HONG KONG

AGSSEA website:
http://www.agssea.org/

AGSSEA Website is hosted by Professor Charles Ng at Hong Kong University of Science and Technology, HKUST.

INDONESIA

CAMBODIA

Seminar on Benefits and Concerns of New Geotechnical Engineering - 7 November 2012

The seminar was jointly organized by the Norton University, Southeast Asian Geotechnical Society and Association of Geotechnical Societies in Southeast Asia and supported by International Society for Soil Mechanics and Geotechnical Engineering.

The speakers were Prof. Pedro Simão Sêco e Pinto and Ir. Dr. Ooi Teik Aun. Prof. Pinto's lecture was on Building Foundations and Dr. Ooi Teik Aun delivered his lecture on "Amendment to Engineers' Act and Mitigations and Rehabilitations of Natural Disasters "

Prof. Pinto delivering his lecture

Dr. Ooi delivering his lecture

Prof. Pinto receiving his Certificate of Appreciation

Dr. Ooi Teik Aun receiving his memento

Group photo of speakers, guests and participants

LAOS

Seminar on Sustainable Infrastructures and Green Technology for Geo-Disasters – 19 November 2012

This seminar is organized by the Council of Sciences and Technology (CST), Ministry of Public Works and Transport (MPWT), the State Enterprise for Survey Design and Material Testing (SDMT) in association with the Association of Geotechnical Societies in Southeast Asia (AGSSEA) and the Southeast Asian Geotechnical Society (SEAGS) with the support of the International Society for Soil Mechanics & Geotechnical Engineering (ISSMGE).

This is the third time that such seminar is held in Vientiane. The seminar is part of the touring lecture covering Cambodia, Malaysia, Philippines and Laos. The first seminar was held in January 2009. The second seminar held in August 2011

In this 3rd seminar the lecturers are Ir. Dr. Ooi Teik Aun, President of SEAGS and Immediate Past Chairman of AGSSEA, Professor Dennes T Bergado, Secretary-General of SEAGS, Professor S. S. Lin, President of Chinese Taipei Geotechnical Society (CTGS), Dr. Tawatchai Tanchaisawat, Associate Professor of Chiangmai University, and Ir. Yee Tack Weng, Technical Manager of TenCate Geosynthetics Asia. CTGS is a member society of AGSSEA and a direct member of ISSMGE.

The purpose of holding this seminar on sustainable Infrastructure and Green Technology for Geo-Disasters is to create awareness amongst the practicing engineers, especially young engineers and students who will be leaders of tomorrow in geotechnical engineering.

Global warming and Climate Change is real and threatened our children's future. There are instances of extreme events such as severe rainfall, flooding and slope failures. The recent extreme earthquake and tsunami events in New Zealand and Japan are wake-up calls for the need to mitigate geo-disasters and review in design practices so that they are sustainable. We need to mitigate the extreme events and rehabilitate slope failures, soil erosions and damages to roads, buildings and retaining structures.

The causes of slope failure due to soil erosion and intense rainfall are the results of climate change conditions due in part to increase in carbon footprint. Geotechnical engineering in dealing with the resolution of natural disasters will be explained through the different lectures as well as discussions amongst the participants and the lecturers in the seminar.

The lectures will also include case histories and application of advance techniques and technologies regarding the application of geotechnical engineering consisting of the use of sophisticated construction materials and techniques. Where the uses of proper reinforcement/improved ground materials on affected areas are applied, the damages will be greatly reduced. In addition strict controls and supervisions on applied techniques and works are equally important to ensure quality products are materialized.

Through the lectures and discussions, we will appreciate the uses of appropriate materials like geosynthetics and other materials in the improvement to the soil conditions for sustainable construction. The need for proper ground characterization is also emphasized as a pre-requisite to a robust and sustainable geotechnical engineering solution. It is hoped that this seminar will help to generate greater interest amongst the engineers in Laos in the practice of geotechnical engineering and technology transfer.

Group Photo showing the Lecturers and the Organizing Committee

Prof San-Shyan Lin receiving his Memento from Mr. Viengvisa Nguen

PHILIPPINES

Seminar on Earthquake and Geotechnical Engineering – 12 November 2012, Manila

This seminar is organized by Angeles University Foundation (AUF), Angeles City—Host Institution, Holy Trinity University (HTU), Puerto Princesa City, Palawan and International Geosynthetics Society (IGS)—Philippines in association with the Association of Geotechnical Societies in Southeast Asia (AGSSEA) and the Southeast Asian Geotechnical Society (SEAGS) with the support of the International Society for Soil Mechanics & Geotechnical Engineering (ISSMGE).

The seminar was well attended by 103 participants.

The resource Speakers are:-

Prof. Pedro S. Sêco e Pinto of the National Laboratory of Civil Engineering (LNEC) and Portuguese Society for Geotechnique (SPG), Portugal, a renowned experts in Soil Mechanics and Geotechnical Engineering and former International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE) President. He is the co-chair of the Technical Committee TC4 of ISSMGE on Earthquake Geotechnical Engineering

Professor Dennes T. Bergado, BSCE, M.Eng, Ph.D. Professor, Asian Institute of Technology, Thailand with 25 years of consulting experience in geotechnical and geosynthetics in Asia and the Pacific.

Ir. Dr. Ooi Teik Aun is a consulting engineer with over 37 years of experience in design and construction in Malaysia, Singapore, Brunei, Hong Kong and New Zealand.

Professor Charles Wang Wai Ng, Chang Jiang Scholar (Chair Professor in Geotechnical Engineering), and Chair Professor of Civil and Environmental Engineering, Department of Civil and Environmental Engineering, The Hong Kong University of Science and Technology. He is also Board Member of International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE).

Nature of the Problem

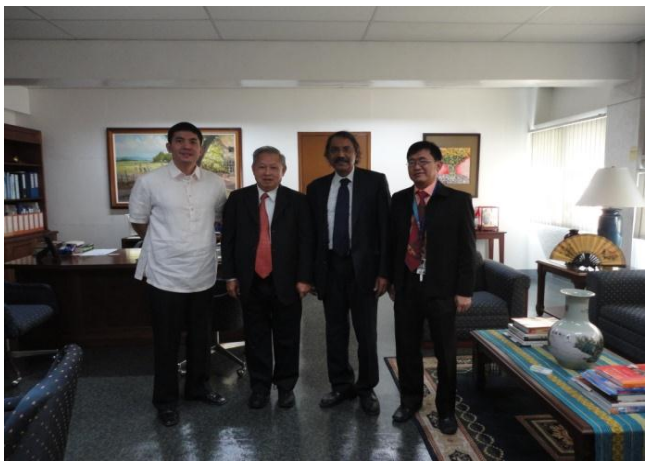
- Teach advanced topics on the earthquake and geotechnical engineering
- Conduct seminars for professional engineers and students on
- Railway Old Station Building: Enlargement and Underpinning
- Amendments to Engineer's Act and Mitigation and Rehabilitation of Some Natural Disasters in Malaysia

- Deformation and Failure Mechanisms of Loose Fill Slopes with and without Soil Nails
- Ecological Erosion Control and Mitigation of Geo-Disasters

Program

Date	Program Activities
Saturday, 10 November 2012	*2:05 PM—Arrival of Dr. Pedro Seco Pinto and Dr. Ooi Teik Aun* *Terminal 1,MH 704*
Monday, 12 November 2012	*7:30 – 8:00 AM Arrival of Dr. Dennes T. Bergado and Dr. Charles Wang Wai Ng from Manila* *8:00 – 8:30 AM—Courtesy Call to the AUF University President* *8:30 AM – 5:00 PM--International Seminar on Earthquake and Geotechnical Engineering—Angeles University Foundation, Angeles City* *7:00 PM—Departure of Dr. Charles Wang Wai Ng* *Terminal 1, CX 902*
Tuesday, 13 November 2012	*8:00 AM – 10:00 AM-- Cultural Trip: Calesa Ride around City, Clark Museum, Nayong Pilipino sa Clark, San Guillermo Church, Megadike in Bacolor, Pampanga* *3:05 PM—Departure of Dr. Ooi Teik Aun* *Terminal 1, MH 705* *4:00 PM—Deprture of Dr.Pedro Seco Pinto and Dr. Dennes T. Bergado for Puerto Princesa City,Ppalawan* *Terminal 3, 5J639*
Wednesday, 14 November 2012	*8:00 AM – 5:00 PM—International Seminar on Earthquake and Geotechnical Engineering—Holy Trinity University, Puerto Princesa City, Palawan*
Thursday, 15 November 2012	*8:30 AM – 5:00 PM—Cultural Trip: Puerto Princesa City, Palawan*
Friday, 16 November 2012	*2:15 PM—Departure of Dr. Pedro Seco Pinto and Dr. Dennes Bergado for Manila*

Some Photographs from the Seminar



Courtesy Call to Atty. Joseph Emmanuel L. Angeles,

Opening Ceremony

Welcome Remarks—Dr. Archimedes T. David

Statement of the Purpose
Engr. Paul N. Javier

Acknowledgment of Participants
Dr. Ruel V. Reyes

Seminar Proper

Railway Old Station Building: Enlargement and Underpinning
Dr. Pedro Seco e Pinto —Resource Speaker

Amendment to the Engineer's Act and Mitigation of Some Natural Disasters in Malaysia
Dr. Ooi Teik Aun--Resource Speaker

Deformation and Failure Mechanisms of Loose Fill Slopes with and without Soil Nails
Dr. Charles Wang Wai Ng—Resource Speaker

The Participants

Seminar on Earthquake and Geotechnical Engineering – 14 November 2012, Palawan

The seminar was repeated in Palawan by Prof. Pinto and Prof. Bergado.

Speakers and participants at the seminar in Palawan

INTERNATIONAL SOCIETY FOR SOIL MECHANICS AND GEOTECHNICAL ENGINEERING (ISSMGE)

ISSMGE President's Report

Distinguished Colleagues, Dear Friends,

This is my forty first progress report after 1245 days as your President. Note that previous reports are on the ISSMGE web site at http://www.issmge.org/en/the-society/the-president/progress-reports if you need them. In this report, I will talk to you about the **Paris ICSMGE conference**, the upcoming **webinar**, the **last two awards**, the results of the **VP elections**, the **new rules for the ISSMGE Foundation**, and a **special gift from the Japanese Geotechnical Society**.

Paris ICSMGE conference: registration open. The general web site for the Paris conference is http://www.issmge2013.org and you can now register on line at https://formulaire-lepublicsystemepco.imadiff.net/MECASOL/IP/register.php. I really hope to see all of you at the conference. It is going

to be a wonderful conference with activities from 31 Aug to 6 Sept 2013. The Young Engineers conference starts on Saturday and Sunday followed by two days of plenary sessions for the main conference on Monday and Tuesday with the Terzaghi Oration and many of the honor lectures from the Technical Committees. The ISSMGE awards will be given on Monday at lunch time. The gala dinner will be on Tuesday night. The concurrent sessions start on Wednesday morning until Thursday evening and Friday are the technical visits. Many other wonderful events are planned for you. See you all in Paris. This is the time where our professional family gets together, once every 4 years: **DO NOT MISS IT!**

Webinars. We just had another very successful webinar on **Ground Improvement** presented by our colleagues **Serge Varaksin** (France) and **Noel Huybrechts** (Belgium). If you missed it, you can simply access the ISSMGE web site at http://www.issmge.org/en/resources/recorded-webinars and listen to the recording. Our next free webinar will be on the topic of **Geophysics** and will be presented by **Sebastiano Foti** (Italy) in May2013. For further information check our web site http://www.issmge.org/en/conferences-and-events/upcoming-webinars or contact my assistant, Theresa Taeger, at ttaeger@civilmail.tamu.edu.

Awards. As you know we have dramatically increased the number of awards offered by ISSMGE. Two awards are yet to be decided: the **Outstanding Young Geotechnical Engineers Award** and the **Public Relations Award.** The deadline for these two awards has been extended to the end of March 2013. The nominations must come through the member societies. Please see the guidelines at http://www.issmge.org/en/awards/outstanding-achievement-awards and take the time to nominate a worthy colleague.

Vice Presidential Election results. The results of the elections for the 6 regional VPs are in and I wish to thank all those who competed for these very important positions. Your dedication to your profession is very much appreciated. The 2013-2017 Regional Vice Presidents will be

- Africa – Fatma Baligh
- Asia – Ikuo Towhata
- Australasia – Mark Jaksa
- Europe – Antonio Gens
- North America – Paul Mayne
- South America – Jarbas Milititsky

As you may know, we have three candidates for the presidential election which will be decided in Paris at the ISSMGE Council Meeting on 1Sept2013. The deadline for nominations is 14Mar2013 so you still have 4 days if you wish to be a candidate. The three candidates are in alphabetical order:

- Gabriel Auvinet (Mexico)
- Roger Frank (France)
- Askar Zhussupbekov (Kazakhstan)

ISSMGE Foundation. We are receiving a good number of requests for grants to attend the Paris conference and we **need more donations** to sustain the level of funding that we wish to achieve. So please consider contributing to the Foundation. **If you wish to make a gift to the Foundation, simply contact me**. Note that in order to properly handle the increase number of requests we have modified the rules for applications. Please check the rules before you apply for an ISSMGE Foundation grant (http://www.issmge.org/en/issmge-foundation).

Present from the Japanese Geotechnical Society. JGS has sent me the attached notice of Free Online Access for all of you to the Special Issue of the Soils and Foundations Journal on the topic of **Geotechnical Aspects of the 2011 Off the Pacific Coast of Tohoku Earthquake**, Vol. 52, Issue No.5, 2012. Thank you so much to JGS for your generosity in sharing with the world this extremely important issue of your Journal.

Best wishes,

Jean-Louis BRIAUD
President of ISSMGE
International Society for Soil Mechanics and Geotechnical Engineering
Professor and Holder of the Buchanan Chair

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TOURING LECTURES

Touring Lectures by Prof. Sêco e Pinto, Pedro Simão

Prof. Pedro Simão Sêco e Pinto is Full Professor of Geotechnical Engineering of University of Coimbra. Invited Professor of Master Courses "Soil Mechanics" and "Engineering Geology" of New University of Lisbon (1983-1995). He was ISSMGE President (2005-2009), ISSMGE Vice President for Europe (2001-2005), United Nations Consultant for Design and Instrumentation for Dams (1988-1992). Invited Lecturer of University of California, USA, (1992-1994). Chairman of TC4 " Earthquake Geotechnical Engineer " Committee of ISSMFE (1994-2000). President of Portuguese Society for Geotechnique (1996- 2000). Consulting Engineer of more than 350 major projects on Dams, Power plants, Bridges, Tunnels and Quay Walls, in Portugal, Argelie, Morocco, Tunisie, Angola, Mozambique, Senegal, Guinea, Brazil, Venezuela, Dominican Republic, Ecuador, India, China, Syria, covering field and laboratory testing, dynamic analyses, earthquake engineering, numerical analyses, ground improvement, slopes, special foundations, instrumentation and safety evaluation. He has presented more than 300 State-of-the Art Lectures and Special Lectures in 76 countries of the 5 Continents. He has received more than 50 international Awards including American Biographical Institute USA, "Special Volume for the Contributors of Earthquake Engineering, Nagadi Lecture by Indian Geotechnical Society, Széchy Lecture by Hungarian S M Society and Hungarian Academy of Sciences, Nonveiller Lecture- by Croatia Geotechnical Society, Sukle Lecture by Slovenia Soil Mechanics Society, Chin Lecture by Huanzhou University (China), Qian Jia Huan Lecture by Hohai University (China) and 20th Chin Fung Kee Memorial Lecture atThe Institution of Engineers ofMalaysia. He is Co-editor of Geotechnical and Geological Engineering Journal, Springer Publisher. Member of Editorial Board of several Journals, namely "Geotecnia", "Bulletin of Earthquake Engineering", Acta de Geotecnia, International Journal of Geotechnical Engineering and Editor of Proceedings of 4 International Conferences. He is author or co-author of 400 technical and scientific reports, more than 150 papers for national and international conferences and journals and has contributed for 10 books.

7 November 2012 – Phnom Penh, Cambodia

The lecture by Prof. Pinto was on Building Foundations and Ir. Dr. Ooi Teik Aun on Amendment to Engineer's Act and Mitigations and Rehabilitation of Natural Disasters.

9 November 2012 – Kuala Lumpur, Malaysia

The lecture by Prof. Pinto was on Dam Design, Safety and Associated Problems.

12 November 2012 – Manila, Philippines

Other invited guest speakers are Ir. Dr. Ooi Teik Aun, Prof. Charles W.W. Ng and Prof. Bergado.

14 November 2012 – Palawan, Philippines

Invited guest speakers are Prof Pinto and Prof. Bergado.

19 November 2012 – Vientiane, Laos

Invited speakers were Prof S S Lin, Prof Bergado, Dr. Ooi Teik Aun, Dr. Tawatchai Tanchaisawat and Mr. Yee Tack Weng

Applied Course on Engineering Geology And Rock Engineering by Professor Paul G. Marinos – July 2013

Professor Paul G. Marinos has kindly agreed to conduct a course on Engineering Geology and Rock Engineering. The course will present an overview of the engineering behaviour of various rock types, look at important design parameters, and cover challenges that arise during tunnelling and dam constructions. Attending this workshop will benefit a variety of practitioners, including geologist and geotechnical engineers, mining managers and academics. The course will be held in

1) Brisbane, Australia - 11 & 12 July 2013
2) Petaling Jaya, Malaysia - 15 & 16 July 2013
3) Singapore - 18 July 2013
4) Bangkok, Thailand - 22 & 23 July 2013
5) Hanoi, Vietnam - 25 & 26 July 2013
6) Danang, Vietnam - 29 July 2013
7) Ho Chi Minh City, Vietnam - 31 July 2013
8) Myanmar 2 August 2013

Professor Paul G. Marinos

Professor of Engineering Geology at The National Technical University of Athens
Past President of The International Association of Engineering Geology And The Environment
Independent Consulting Engineer

Dr Paul Marinos received a Mining Engineering degree from the School of Mines of the National Technical University of Athens, Greece in 1966, a postgraduate degree in Applied Geology from the University of Grenoble, France, and his Doctorate in Engineering Geology from the same University in 1969. He worked for French and Greek design and construction companies until 1977 and then was elected as Professor at Democritus University in Northern Greece. Since 1988 Dr Marinos has been Professor of Engineering Geology in the School of Civil Engineering in the National Technical University of Athens and has served as head of the Geotechnical Section of the School for several years. From 2001 to 2004 and from 2006 to 2008 he was the Director of a Graduate Course in Tunneling and Underground Construction. He was a visiting Professor in the Geology Department of the University of Grenoble (1987) and of the School of Mines in Paris (2003).

Dr Paul Marinos is a member of AEG and GSA and fellow of the Geological Society of London. He is a past President of the International Association of Engineering Geology and the Environment (IAEG), past President of the Geological Society of Greece, past president of the Greek Tunnelling Society and honorary member of the International Association of Hydrogeologists (IAH).

Dr Paul Marinos has received several awards, including the Hans Cloos medal of IAEG, and the Andre Dumont medal of the Geological Society of Belgium. He was selected for the presentation of named lectures, including the 6th Glossop Lecture in London (2002), the 19th Rocha Lecture in Lisbon (2002), the 33rd Cross Canada Lectures Tour (2005), the Rock Mechanics annual Lecture in Madrid (2006), an invited lecture tour in Australia, by the Australian Geomechanics Society and as the 2010 Jahns distinguished Lecturer of the Geological Society of America and the Association of Engineering Geologists In 2013 he was awarded by the French Republic as “Chevalier de l’Orde des Palmes Academiques”

Dr Paul Marinos and his team conduct research on a variety of applications of geology to engineering, mainly rock mass characterization, weak rock properties and behavior, and karstic terrain, with special emphasis to engineering design and construction of tunnels and underground works. His work also covers landslides and dam geology. His other significant interest is the protection of historic monuments and archeological sites. Dr Marinos has authored or co-authored over 300 papers in journals or major conference proceedings. He was a key or invited lecturer in more than 50 conferences or special events. He has given lectures to University Courses or Workshops, among them the Federal Technical University (EPFL) in Lausanne, Switzerland, the Polytecnico of Turin, Italy, the University of Durham, U.K., the University of Coimbra, Portugal, the University of Kobe, Japan, the Black Sea University Romania,

the Aristotle University of Thessalonica, Greece, and the Griffiths University, Australia. He has edited proceedings published by international publishers. Dr Marinos is editor in chief of the journal "Geotechnical and Geological Engineering" and also a member of the Editorial Board of a number of prominent journals as "Engineering Geology", "Bulletin of the International Association of Geology", Landslides", "Environmental Geology", "Rock Mechanics" and from 2009 "Environmental and Engineering Geosciences".

Dr Paul Marinos has extensive industrial experience having served as consultant, independent reviewer and member of consulting boards or panel of experts on major civil engineering and water resources projects in Albania, Chile, Ecuador, Ethiopia, Greece, France, India, Iran, Jordan, Lebanon, Morocco, Nigeria, Papua New Guinea, Portugal, Peru, Saudi Arabia, Laos, Spain, Sweden, Tajikistan and Turkey.

WHY JOIN SEAGS, AGSSEA & ISSMGE

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

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.
3. The ability to attend, participates, and avails to 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).

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CONTRIBUTION OF ARTICLES / INFORMATION

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