

# GEOTECHNICAL

# ENGINEERING

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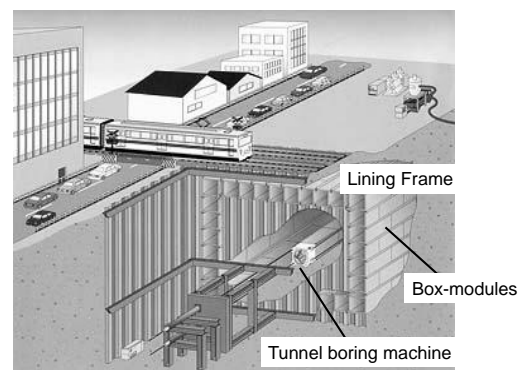
**AIT**  
Asian Institute of Technology

**Editors:**

**Der-Wen Chang & Dariusz Wanatowski**



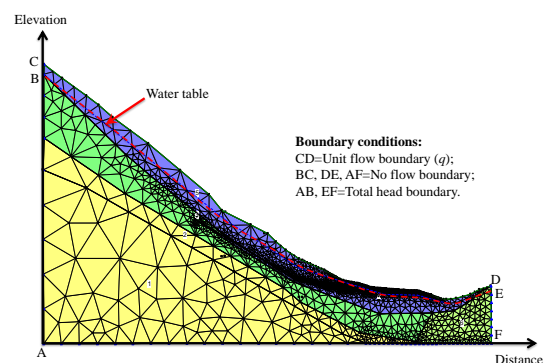
Tunnelling under Shanghai "Chongsi"  
(after Ge et. al, 2013)



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)

## **GEOTECHNICAL ENGINEERING**

### **MARCH 2013 SPECIAL ISSUE ON CONTRIBUTED PAPERS**

**Editors: Prof. Der-Wen Chang and Dr. Dariusz Wanatowski**

This issue has articles from researchers in Australia, Bangkok, Japan, Nottingham, UK, Singapore, Taiwan and many other countries. From Japan, Prof. Satoru Shibuya's group also made contributions.

Prof. Der-Wen Chang is a faculty member at The Department of Civil Engineering of Tamkang University (TKU), Taipei, Taiwan for over 21 years. He received his Ph.D. in Civil Engineering at The University of Texas, Austin in 1991 and MS in Civil Engineering at Michigan State University in 1987. Prof. Chang has supervised the research work of over 60 Master Thesis and 3 Ph.D. Thesis at TKU, and published more than 160 articles in Journal, Conference proceedings and reports. Nearly all his research studies are related to numerical modelling and dynamic analyses for the geotechnical structures. His research experiences include NDT methods on pavements, seismic behaviours of the pile foundation, constitutive modelling of soils, and recent study on the performance based design for the earth structures. Prof. Chang is also the visiting Professor at University of Washington at Seattle, US in 2008 and LN Gumilyov Eurasian National University at Astana, Kazakhstan for research studies in 2010 and 2011. Other than the research works, Prof. Chang devotes himself a great deal to serve the communities. He involves heavily and indeed shows his good performance in the public service related to education and constructions. Other than the Secretary General at Chinese Taipei Geotechnical Society (2009~2011), Prof. Chang is the current GC member of SEAGS, Editorial Panel for SEAGS/AGSSEA J. of Geotechnical Engineering, Committee members for Public Construction and Hazard Prevention in Taipei City and New Taipei City governments. He is also a TC212 member at ISSMGE who puts a lot of research efforts on seismic behaviours and performance of the pile foundations.

Dr Dariusz Wanatowski is a Lecturer in Geomechanics in the Department of Civil Engineering at the University of Nottingham, United Kingdom. He graduated in Civil Engineering from Poznan University of Technology, Poland in 1999. Between 1999 and 2001 he worked as a teaching and research assistant at the same university where he was lecturing soil mechanics and foundation engineering courses. He was also involved in several research projects, including effects of various improvements of subgrade on its bearing capacity and experimental investigation of engineering properties of various organic soils. He obtained his PhD from Nanyang Technological University in 2006. Prior to joining the Nottingham Centre for Geomechanics in February 2006 Dr Wanatowski also worked as a researcher at NTU on effects of strength and stiffness anisotropy of geomaterials on the stability and deformation of tunnels. Dr Wanatowski's general research interests are focused on experimental geomechanics, particularly strain softening and instability behaviour of granular soils, strain localization in sands, strength and stiffness anisotropy of geomaterials, and effects of intermediate principal stress on the strength and deformation characteristics of soils. He has consulting experience in the areas of laboratory and in situ testing of soils. He is also an Honorary Secretary for East Midlands Geotechnical Group in the UK.

# **GEOTECHNICAL ENGINEERING**

## **FOREWORD**

The SEAGS and 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 Puttiwongrak 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**

## **GEOTECHNICAL ENGINEERING**

### **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 grateful, 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 Editorial team of SEAGS at AIT under Prof. Bergado; 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 respectively. 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**

# GEOTECHNICAL ENGINEERING

**March 2013: Contributed papers**

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

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