

# GEOTECHNICAL

# ENGINEERING

*Journal of the*

SOUTHEAST ASIAN GEOTECHNICAL SOCIETY

&

ASSOCIATION OF GEOTECHNICAL SOCIETIES IN SOUTHEAST ASIA

*Sponsored by*

ASIAN INSTITUTE OF TECHNOLOGY



**AGSSEA**

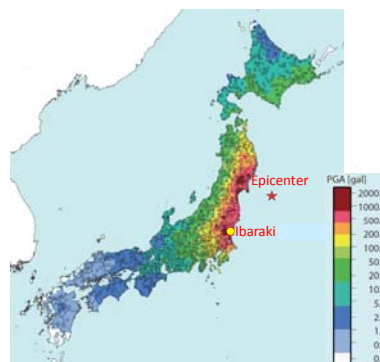


**AIT**  
Asian Institute of Technology

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

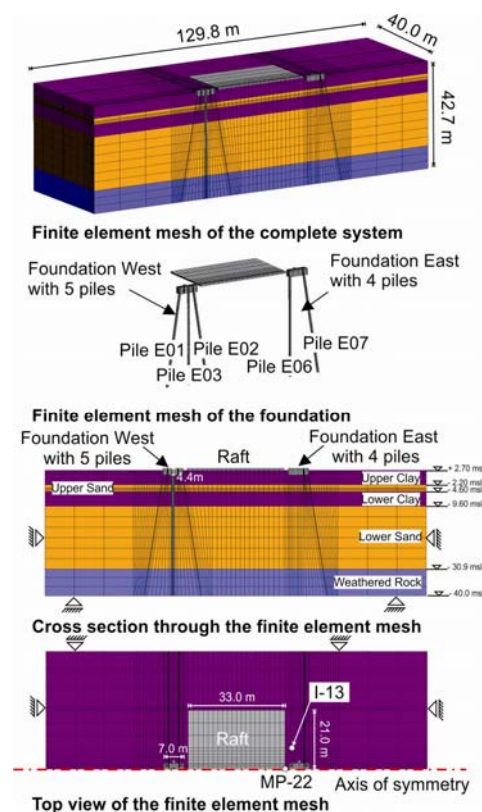


(a) Ground subsidence along building



(b) PGA map derived from strong motion records (Kunugi et al., 2012)

Piled Raft Foundation subjected to Strong Seismic Motion  
(After K. Yamashita *et al*, 2014)



Numerical study on pile groups subjected to lateral soil movements (After O. Reul *et al*, 2014)

# GEOTECHNICAL ENGINEERING

Published by the:

SOUTHEAST ASIAN GEOTECHNICAL SOCIETY &  
ASSOCIATION OF GEOTECHNICAL SOCIETIES IN SOUTHEAST ASIA

---

## EDITOR-IN-CHIEF

**A.S. Balasubramaniam**

## EDITORS

**Teik Aun Ooi**

**Noppadol Phienwej**

## CO-EDITORS

**Der Wen Chang**

**D.T.Bergado**

**Jian Chu**

**Darius Wanatowski**

---

## EDITORIAL ADVISERS

A.S. BALASUBRAMANIAM, *Australia*  
E.W. BRAND, *U.K.*  
WEN HUI TING, *Malaysia*  
KWET YEW YONG, *Singapore*  
CHUNG TIEN CHIN, *Taiwan*  
DENNES T. BERGADO, *Philippines*

ZA-CHIEH MOH, *Taiwan*  
CHIN-DER OU, *Taiwan*  
JOHN CHIEN-CHUNG LI, *Taiwan*  
H.G. POULOS, *Australia*  
PEDRO SECO E PINTO, *Portugal*

---

## SEAGS GENERAL COMMITTEE 2013 - 2016

DR. TEIK AUN OOI (*President*)  
DR. ZA-CHIEH MOH (*Founding President*)  
PROF. KWET YEW YONG (*Past President*)  
DR. WEN HUI TING (*Past President*)  
DR. CHIN DER OU (*Past President*)  
IR. YEW WENG YEE  
IR. ENG CHOY LEE  
PROF. HUNG-JIUN LIAO  
PROF. MEEI-LING LIN  
PROF. T. LIANG

DR. NOPPADOL PHIENWEJ (*Hon. Secretary General*)  
DR. CHUNG TIEN CHIN (*Immediate Past President*)  
DR. JOHN CHIEN-CHUNG LI (*Past President*)  
PROF. A.S. BALASUBRAMANIAM (*Past President*)  
PROF. JIAN CHU  
IR. KENNY K.S. YEE  
PROF. DER-WEN CHANG  
DR. SOKTAY LIM  
PROF. Dennes T Bergado  
MR. V. SIVISAY

*Geotechnical Engineering* is the official journal of the Southeast Asian Geotechnical Society and the Association of Geotechnical Societies in Southeast Asia. It is published four times a year in March, June, September and December and is free to members of the Society. The annual subscription rate for non-members is US\$30 to individuals and US\$50 to libraries and companies. Back issues are available. Cheques or money orders should be made payable to the Asian Institute of Technology. Membership application forms and other details can be obtained from:

*The Secretariat, SEAGS  
Room 211, AIT Library  
Asian Institute of Technology  
P.O. Box 4, Klong Luang  
Pathumthani 12120, Thailand  
Website: <http://www.seags.ait.ac.th>*

***Ir. Kenny Yee  
Hon. Secretary General  
Association of Geotechnical Societies in Southeast Asia  
c/o Menard Geosystems Sdn Bhd  
No. 15-2 Jalan USJ 10/1E  
47620 Subang Jaya, Selangor, MALAYSIA  
Tel: (60) 03 5632 1581  
Fax: (60) 03 5632 1582  
E-mail: [kenny.yeeks@gmail.com](mailto:kenny.yeeks@gmail.com)  
<http://www.agssea.org>***

## GEOTECHNICAL ENGINEERING

### AGSSEA COUNCIL SESSION 2013 - 2016

Chairman  
Hon. Secretary-General  
Hon. Treasurer  
Immediate Past Chairman  
Hon. Founder Chairman  
Council Members

Southeast Asian Geotechnical Society (SEAGS)  
Vietnamese Society for Soil Mechanics and Geotechnical Engineering (VSSMGE)  
Hong Kong Geotechnical Engineering Society (HKGES)  
Geotechnical Society of Singapore (GeoSS)  
Thai Geotechnical Society (TGS)  
  
Chinese Taipei Geotechnical Society (CTGS)  
Indonesian Society for Geotechnical Engineering (HATTI)  
Malaysian Geotechnical Society (MGS)

Prof. Kwet-Yew YONG  
Ir. Kenny YEE  
Prof. Charles Wang-Wai NG  
Dr. Teik-Aun OOI  
Dr. Za-Chieh MOH  
Dr. Noppadol PHIENWEJ  
- Vacant -  
Prof. NGUYEN Truong Tien  
Mr. Mai Trieu QUANG  
Ir. Tony Chin-To CHEUNG  
Prof. George THAM  
Dr. Tiong Guan NG  
Prof. Chun-Fai LEUNG  
Prof. Suttisak SORALUMP  
Dr. Apiniti JOTISANKASA  
Prof. Yung-Show FANG  
Prof. San-Shyan LIN  
Prof. Masyhur IRSYAM  
Dr. Pinto Tua SIMATUPANG  
Dr. Sin-Fatt CHAN  
Ir. Yew Weng YEE  
Prof. Jian CHU  
Prof. Hung-Jiun LIAO  
Prof. Trinh Minh THU  
Dr. Wen-Hui TING  
Prof. A S BALASUBRAMANIAM  
Dr. John Chien-Chung LI  
Prof. Dennes BERGADO  
Ir. Raymond CHAN  
Dr. Jack PAPPIN  
Dr. Chung-Tien CHIN

Nominated Co-opted  
Members

Advisors

*Ir. Kenny Yee*  
*Hon. Secretary General*  
*Association of Geotechnical Societies in Southeast Asia*  
*E-mail: [kenny.yeeks@gmail.com](mailto:kenny.yeeks@gmail.com)*

*IEM Training Centre Sdn. Bhd.*  
*No. 33-1A, Jalan SS 52/18*  
*P.O. Box 224 (Jalan Sultan)*  
*46200 Petaling Jaya, Selangor Darul Ehsan, MALAYSIA*  
*Tel: (60) 03 7958 6851*  
*Fax: (60) 03 79582851*  
*E-mail: [choy.iemtc@gmail.com](mailto:choy.iemtc@gmail.com)*

# GEOTECHNICAL ENGINEERING

## EDITORIAL PANEL

Prof. D.T. Bergado  
Asian Institute of Technology  
Bangkok Thailand

Dr. R.P. Brenner  
Weinfelden  
Switzerland

Prof. D.W. Chang  
Tamkang University  
Tamsui Taiwan

Prof. Jian Chu  
Iowa State University  
Iowa U.S.A

Prof. Fuping Gao  
Institute of Mechanics  
Chinese Academy of Sciences  
Beijing China

Dr. Ivan Gratchev  
Griffith University Gold Coast Campus  
Gold Coast Queensland Australia

Dr. Wei-Dong Guo  
University of Wollongong  
Wollongong  
Australia

Dr. Abuel-Naga Hossam  
The University of Manchester  
Manchester U.K.

Prof. Dong-Sheng Jeng  
Griffith University Gold Coast Campus  
Gold Coast  
Queensland Australia

Prof. A (Malek) Bouazza  
Monash University  
Melbourne Australia

Prof. Jin-Chun Chai  
Saga University  
Saga, Japan

Prof. Y.K. Chow  
National University of Singapore, NUS  
Singapore

Prof. Roger Frank  
Université Paris-Est  
École des Ponts ParisTech  
Laboratoire Navier-geotechnical team  
(CERMES)  
Marne-la-Vallée cedex 2 France

Prof. Christophe Gaudin  
University of Western Australia  
Perth Australia

Prof. Jürgen Grabe  
Karlsruhe University  
Germany

Prof. Jie Han  
The University of Kansas  
Lawrence, Kansas  
USA

Prof. B. Indraratna  
University of Wollongong  
Wollongong Australia

Dr. Apinit Jotisankasa  
Department of Civil Engineering  
Kasetsart University  
Bangkok Thailand

Prof. C. H. Juang  
Clemson University  
U.S.A.

Dr. Eng Choon Leong  
Nanyang Technological University  
Singapore

Prof. Robert Liang  
Akron University  
U.S.A.

Prof. San-Shyan Lin  
Taiwan Ocean University  
Keelung Taiwan

Prof. Tatsunori Matsumoto  
Kanazawa University  
Kakuma-machi, Kanazawa Japan

Prof. Fusao Oka  
Kyoto University, Kyoto Japan

Prof. Charles W. W. Ng  
The Hong Kong University of Science  
and Technology  
Kowloon Hong Kong

Dr. T.A. Ooi  
The Institution of Engineers, Malaysia  
Kuala Lumpur Malaysia

Prof. C.Y. Ou  
National Taiwan University of Science and  
Technology  
Taipei, Taiwan

Prof. Anand J. Puppala  
The University of Texas at Arlington  
Texas U.S.A  
Professor Paulus P. Rahardjo  
Parahyangan Catholic University  
Indonesia

Prof. Helmut F. Schweiger  
Graz University of Technology  
Graz  
Austria

Prof. Poul V. Lade  
The Catholic University of America  
Washington, D.C., U.S.A.

Prof. Chun-Fai Leung  
National University of Singapore  
Singapore

Prof. Meei-Ling Lin  
Department of Civil Engineering  
National Taiwan University  
Taipei, Taiwan

Mr. Tom Lunne  
Norwegian Geotechnical Institute  
Oslo, Norway

Prof. Akira Murakami  
Kyoto University  
Kyoto Japan

Dr. Farrokh Nadim  
Technical Director  
Norwegian Geotechnical Institute (NGI)  
Oslo, Norway

Dr. Erwin Oh  
Griffith University Gold Coast Campus  
Gold Coast  
Queensland Australia

Prof. Zhen-Yu Yin  
Shanghai Jiao Tong University  
China

Dr. N. Phienwej  
Asian Institute of Technology  
Bangkok Thailand

Prof. Harianto Rahardjo  
Nanyang Technology University  
Singapore

Dr. Shinji Sassa  
Port and Airport Research Institute  
Nagase Yokosuka Japan

Prof. Shui-Long Shen  
Shanghai Jiao Tong University  
Shanghai China

Prof. D. N. Singh  
Indian Institute of Technology Bombay  
Powai, Mumbai, India

Prof. Mitsutaka Sugimoto  
Nagaoka University of Technology  
Nagaoka Japan

Prof. Ikuo Towhata  
University of Tokyo  
Tokyo Japan

Prof. B.V.S. Viswanadham  
Indian Institute of Technology Bombay  
Powai, Maharashtra, India

Dr. Dariusz Wanatowski  
The University of Nottingham  
Ningbo  
China

Prof. Li-zhong Wang  
Zhejiang University  
China

Dr. Albert T. Yeung  
University of Hong Kong (HKU)  
Hong Kong

Prof. Jian-Hua Yin  
Hong Kong Polytechnic University  
Hong Kong

# **GEOTECHNICAL ENGINEERING**

## **GUEST EDITORS**

**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**

**Prof. Der-Wen Chang (March 2013)**  
**Dariusz Wanatowski**

**Prof Akira Murakami (June 2013)**  
**Dariusz Wanatowski**

**Prof. Fusao Oka (September, 2013)**  
**Prof. Helmut F. Schweiger**  
**Prof. Muhunthan Balasingham**

**Prof Jinchun Chai (December, 2013)**  
**Prof Shuulong Shen**

## **PAST EDITORS**

**Dr. E.W. Brand (1970 – 1973)**

**Dr. E.W. Brand, Prof. A.S. Balasubramaniam (1974 – 1976)**

**Dr. E.W. Brand, Dr. V.K. Campbell (1977 – 1978)**

**Dr. V.K. Campbell (1978 – 1980)**

**Mr. J.S. Younger (1980 – 1985)**

**Mr. D.R. Greenway (1986 – 1987)**

**Mr. P.G.D. Whiteside (1988 – 1989)**

**Mr. C.A.M. Franks (1990 – 1995)**

**Prof. D.T. Bergado (1996 – 2001)**

**Dr. N. Phienwej ( 2002 -2010)**



# GEOTECHNICAL ENGINEERING

## FORWARD

The theme of the 2014 June issue is Deep Foundations. Prof. Tatsunori Matsumoto at Kanazawa University, Japan and Prof. Jurgen Grabe at Hamburg University of Technology, Germany are the guest editors while Prof. Der-Wen Chang at Tamkang University, Taiwan is the in-house editor. Prof. Der Wen Chang also undertook all the administrative works related to the review of the articles and co-ordinating with the Guest Editors, Authors and Reviewers. After 18-month of preparations, thirteen papers were finally selected and are published in this Issue.

The content of this issue covers up mainly the task force studies 1~5 of ISSMGE TC212. More than half of the technical papers are based on observations of the experimental works. Axial Bearing Capacity and Static Cyclic Loading Behaviours of the Model Piles and/or Pile Group are respectively examined by Aoyama *et al.*, Hwang *et al.* and Ünsever *et al.* Case studies on Response of Laterally Loaded Nonlinear Piles are shown by Wei Dong Guo. Seismic Performance of the Piles from Field Measurements is discussed by Yamashita *et al.* Seismic Soil-structure-foundation Behaviours with Liquefaction concerns from the Shaking Table Test with Numerical Comparisons are discussed in the study made by Zhang *et al.*. An Overview of the Deep Foundation Systems of the High-rise Buildings can be found by Katzenbach and Dr. Leppla.

On the other hand, a number of numerical studies can be found on simulating the pile foundation behaviors. The topics include: Energy Pile with Feasible Material Modeling by Ma *et al.*, Passive Loading Effects on Piles by Moormann and Aschrafi, Dynamic Load Testing on Pipe Piles Compared to Case Study by Phan Ta *et al.*, Laterally Loaded Nonlinear Piles by Wei Dong Guo, Seismic Performance of the Piles using Reliability Method by Chang *et al.*, and Bearing Behaviours of Pile Group and/or Piles respectively discussed by Wu and Yamamoto, Reul *et al.* and Ünsever *et al.*

It is the sincere wish of the editors that this issue can provide a good record for the advanced works on deep foundation research. Sincere gratitude is expressed by the editors to the delegates and the reviewers who have contributed tremendous time and efforts in making this Remarkable Issue feasible and to complete the work within very strict timelines.

**Tatsunori Matsumoto  
Jurgen Grabe &  
Der Wen Chang**

## **GEOTECHNICAL ENGINEERING**

### **ACKNOWLEDGEMENT**

This special Issue on Deep Foundations as edited by Prof. Tatsunori Matsumoto, Prof. Jurgen Grabe and Prof. Der Wen Chang have thirteen excellent papers. Each paper being reviewed by at least two reviewers and some by more than two. The authors of the papers as per the Table of Contents and in that order are: C. Moormann and J. Aschrafi; Xiaolong Ma, Gang Qiu and Jürgen Grabe; L. Phan Ta , T. Matsumoto and H. Nguyen Hoang; K. Yamashita, T. Hashiba, H. Ito and T. Tanikawa; Y.S. Unsever, T. Matsumoto, S. Shimono and M.Y. Özkan; J.H. Hwang, Z.X. Fu, P.Y. Yeh and D.W. Chang; D.W. Chang, Y.H. Lin, H.C. Chao, S.C. Chu and C.H. Liu; Wei Dong Guo; Y. Wu and H. Yamamoto; F. Zhang, R. Oka, Y. Morikawa, Y. Mitsui, T. Osada, M. Kato and Y. Wabiko; S. Aoyama, L. Danardi, L. Bangan, W. Mao, S. Goto and I. Towhata; O. Reul, J. Bauer and C. Niemann; and R. Katzenbach and S. Leppla

Indeed the papers are excellent and deal with: Numerical Investigation of Passive Loads on Piles in Soft Soils; Simulation of an Energy Pile using Thermo-hydro-mechanical Coupling and a Visco-hypoplastic Model; Studies on Dynamic Load Testing of an Open-ended Pipe Pile with a Case Study; Performance of Piled Raft Foundation Subjected to Strong Seismic Motion; Static Cyclic Load Tests on Model Foundations in Dry Sand; Axial Bearing Behaviour of a Model Pile in Sand under Multiple Static Cycles; Seismic PBD of Piles from Monte Carlo Simulation using EQWEAP Analysis with Weighted Intensities; Case Studies on Response of Laterally Loaded Nonlinear Piles; Analysis of the Effect of Pile Tip Shape on Soil Behaviour Around Pile; Shaking Table Test on Superstructure-foundation-ground System in Liquefiable Soil and its Numerical Verification; Model Loading Tests on the Bearing Behaviour of a Group Pile and Ground Deformation; the Bearing Behaviour of Pile Groups Subjected to Lateral Pressure due to Horizontal Soil Movements; Deep Foundation Systems for High-rise Buildings in Difficult Soil Conditions.

Thus this Issue is unique in its own way in covering, theory, and practice via laboratory and field tests on model piles and under full scale conditions. Both static and dynamic loading conditions as well as earthquake type of loading; also the laboratory tests also include shaking table tests.

The authors of the papers and the editors are to be congratulated for this master-piece of work . Both Prof Tatsunori Matsumoto and Prof Der Wen Chang are also the guest editors of our June 2011 Issue of the journal and this Issue have seen the contributions of Prof. Jurgen Grabe as well as a Guest Editor.

We hope this Issue of the Journal will be of immense value to researchers and practitioners.

**K. Y. Yong  
N . Phienwej  
T. A. Ooi  
A. S. Balasubramaniam**

## **GEOTECHNICAL ENGINEERING**

### **. JUNE 2014 SPECIAL ISSUE ON DEEP FOUNDATION**

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

#### **Prof. Tatsunori Matsumoto**

Prof. Matsumoto is now with Kanazawa University in Japan for nearly 34 years. He was educated at the Kanazawa University and received his Doctoral Degree from Kyoto University for his work on steel pipe piles in 1989. He has extensive research and practical experience on piled foundations and piled raft foundations. Prof. Matsumoto has a Shake Table Facility for the study of dynamic and earthquake type of behaviour of piled foundations. He has also worked on the centrifuge with pile groups and piled raft foundations in collaboration with Taisei Corporation. Prof. Matsumoto also has wide experience in the seismic design of raft and piled raft foundations. Prof. Matsumoto is one of the authors of the computer software PRAB—Piled Raft Analysis with Batter Piles. With this software piled raft foundation can be analyzed with vertical and horizontal loads as well as moment.

#### **Univ.-Prof. Dr.-Ing. Jürgen Grabe**

Prof. Grabe was educated in civil engineering at Hannover University/Germany and received his Doctoral Degree from Karlsruhe University/Germany for his work “Experimental and theoretical investigation of entire area compaction control using vibratory rollers” in 1992. Afterwards he worked in geotechnical consulting and construction companies for six years. In 1998 he became head of the Institute of Geotechnical Engineering and Construction Management at Hamburg University of Technology in Germany. He has extensive research and practical experience in physical, theoretical and numerical modelling in geotechnical engineering, especially in pile foundations, and marine geotechnics. Prof. Grabe has a complete soil mechanics laboratory and worked also on physical modelling in centrifuge in collaboration with University of Western Australia.

Prof. Grabe’s main research topics are geotechnical engineering in general, and marine geotechnics in particular. His methodical background covers physical modelling (1g model tests and ng model tests in collaboration with UWA), theoretical modelling (single and multiphase models for saturated and unsaturated soils based on continuum approach), numerical modelling (grid and mesh-based methods like FDM, FVM and FEM for continuum approach; meshfree methods like SPH for continuum approach, and DEM for discontinuum approach). Prof. Grabe and his research group produced 257 publications in national and international journals and conferences since 1998. From 2011 Prof. Grabe is vice president of Hamburg University of Technology, and is responsible for research in this function.

## **Prof. Der-Wen Chang**

Prof. Chang has been the Geotechnical faculty member at The Department of Civil Engineering of Tamkang University (TKU), Taipei, Taiwan for over 22 years. He received Ph.D. in Civil Engineering at The University of Texas at Austin in 1991 and MS in Civil Engineering at Michigan State University in 1987. Prof. Chang has supervised the research work of over 60 Master Thesis and 3 Ph.D. Thesis at TKU, and published more than 190 articles as the Journal, Conf. papers and reports. Nearly all his research studies are related to numerical modeling and dynamic analyses for the geotechnical structures. His research experiences include NDT methods on pavements, seismic behaviors of the pile foundation, constitutive modeling of the soils, and recent study on the performance based design for the earth structures. Prof. Chang is also the visiting Professor at University of Washington at Seattle, US in 2008 and LN Gumilyov Eurasian National University at Astana, Kazakhstan for research studies in 2010 and 2011. Other than the research works, Prof. Chang devotes himself a great deal to serve the communities. He involves heavily and indeed shows his good performance in the public works related to education and constructions. Prof. Chang is currently serving as the Int. Secretary General of Chinese Taipei Geotechnical Society, GC member at SEAGS and Editorial Panel for SEAGS/AGSSEA J. of Geotechnical Engineering, and TC212 member at ISSMGE.

# GEOTECHNICAL ENGINEERING

## JUNE 2014: SPECIAL ISSUE ON DEEP FOUNDATION

Editors: Tatsunori Matsumoto, Jurgen Grabe & Der Wen Chang

### TABLE OF CONTENTS

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

#### Cover Photographs:

1. Piled Raft Foundation Subjected to Strong Seismic Motion (After K. Yamashita *et al*, 2014)
2. Numerical Study on Pile Groups Subjected to Lateral Soil Movements (After O. Reul *et al*, 2014)

## **GEOTECHNICAL ENGINEERING**

### **Paper Contribution, Technical notes and Discussions**

SEAGS & AGSSEA encourage the submission of scholarly and practice-oriented articles to its journal. The journal is published quarterly. Both sponsors of the journal, the Southeast Asian Geotechnical Society and the Association of Geotechnical Societies in Southeast Asia, promote the ideals and goals of the International Society of Soil Mechanics and Geotechnical Engineering in fostering communications, developing insights and enabling the advancement of the geotechnical engineering discipline. Thus the publishing ethics followed is similar to other leading geotechnical journals. Standard ethical behaviour of the authors, the editor and his editorial panel, the reviewers and the publishers is followed.

Before you submit an article, please review the guidelines stated herein for the manuscript preparation and submission procedures. Paper template is available upon request.

Geotechnical Engineering Journal accepts submissions via electronic. The manuscript file (text, tables and figures) in both words and pdf format together with the submission letter should be submitted to the Secretariat and copied to the Editor-in-Chief, Geotechnical Engineering Journal, c/o School of Engineering and Technology, Asian Institute of Technology, Room no. 211, AIT Library, Asian Institute of Technology, P.O. Box 4, Klong Luang, Pathumthani 12120, Thailand. Email: seags@ait.ac.th. Papers under review, accepted for publication or published elsewhere are not accepted. The guidelines for author are as follows:-

1. The manuscript including abstract of not more than 150 words and references must be typed in Times New Roman 9 on one side of A4 paper with a margin of 25 mm on each side. The abstract should be written clearly stating the purpose, scope of work and procedure adopted together with the major findings including a summary of the conclusions.
2. The paper title must not exceed 70 characters including spaces.
3. The maximum length of papers in the print format of the Journal is 12 two-column pages in single-spaced in Times New Roman 9 including figures and tables. A Journal page contains approximately 1,040 words. Authors can approximate manuscript length by counting the number of words on a typical manuscript page and multiplying that by the number of total pages (except for tables and figures). Add word-equivalents for figures and tables by estimating the portion of the journal page each will occupy when reduced to fit on a 160 mm x 240 mm journal page. A figure reduced to one-quarter of a page would be 260 word-equivalents. When reduced, the figure must be legible and its type size no smaller than 6 point font (after reduction).
4. Figures: Line art should be submitted in black ink or laser printed; halftones and color should be original glossy art. Figures should be submitted at final width i.e. 90 mm for one column and 185 mm for two columns. The font of the legends should be in Times New Roman and should use capital letters for the first letter of the first word only and use lower case for the rest of the words. Background screening and grids are not acceptable.
5. Each table must be typed on one side of a single sheet of paper.
6. All mathematics must be typewritten and special symbols identified. Letter symbols should be defined when they first appear.
7. The paper must have an introduction and end with a set of conclusions.
8. Practical applications should be included, if appropriate.
9. If experimental data and/or relations fitted to measurements are presented, the uncertainty of the results must be stated. The uncertainty must include both systematic (bias) errors and imprecisions.
10. Authors need not be Society members. Each author's full name, Society membership grade (if applicable), present title and affiliation and complete mailing address must appear as a footnote at the bottom of the first page of the paper.
11. Journal papers submitted are subject to peer review before acceptance for publication.
12. Each author must use SI (International System) units and units acceptable in SI. Other units may be given in parentheses or in an appendix.
13. Maximum of five keywords should be given.

#### 14. REFERENCES

- American Petroleum Institute (API) (1993). Recommended Practice for Planning, Designing and Constructing Fixed Offshore Platforms – Working Stress Design, API Recommended Practice 2AWS (RP 2A-WSD), 20th edition, 1993, p191
- Earth, J.B., and Geo, W.P. (2011) "Asian Geotechnical amongst Authors of Conference Publications", Proceedings of Int. Conference on Asian Geotechnical, publisher, city, pp 133-137.
- Finn WDL and Fujita N. (2002) "Piles in liquefiable soils: seismic analysis and design issues," Soil Dynamics and Earthquake Engineering, 22, Issues 9-12, pp731-742
15. Discussions on a published paper shall be made in the same format and submitted within six months of its appearance and closing discussion will be published within twelve months.

For additional information, please write to:

***The Secretariat, SEAGS  
Room 211, AIT Library  
Asian Institute of Technology  
P.O. Box 4, Klong Luang  
Pathumthani 12120, THAILAND  
Email: [seags@ait.ac.th](mailto:seags@ait.ac.th)  
Website: <http://www.seags.ait.ac.th>***

***Ir. Kenny Yee  
Hon. Secretary General  
Association of Geotechnical Societies in Southeast Asia  
E-mail: [kenny.yeeks@gmail.com](mailto:kenny.yeeks@gmail.com)***

y  
***Website: <http://www.agssea.org>***

***IEM Training Centre Sdn. Bhd.  
No. 33-1A, Jalan SS 52/18  
P.O. Box 224 (Jalan Sultan)  
46200 Petaling Jaya, Selangor Darul Ehsan, MALAYSIA  
Tel: (60) 03 7958 6851  
Fax: (60) 03 79582851  
E-mail: [choy.iemtc@gmail.com](mailto:choy.iemtc@gmail.com)  
Website: <http://www.iemtc.com>***