

**Minutes for 22nd ISSMGE TC304 Meeting
(APSSRA 2016)**

Date: 28 May 2016 (Sat)

Time: 7:30 PM

Venue: No. 1 Meeting Room, Kingswell Hotel (near Tongji university)

Attendees: KK Phoon (chair), Zeynep Aslay, Zijiun Cao, J Ching, Paul Cools, Vaughan Griffiths, Hongwei Huang, Jinsong Huang, Dianqing Li, Zhongqiang Liu, Dagang Lu, BK Low, Farrokh Nadim, Shin-ichi Nishimura, Ikumasa Yoshida, Jie Zhang, Limin Zhang

Guests: Jinbo Chen, Wen-ping Gong, Shuihua Jiang, Qing Lü, Dongming Zhang

Apologies: Yu Wang

1. Introduction

Members and guests introduced themselves.

2. Approval of the 21st meeting minutes (email meeting, 22-26 Feb 2016)

Minutes are approved.

3. Updates and matters arising from the previous meeting

- Joint TC205/TC304 Working Group on “Discussion of statistical/reliability methods for Eurocodes” (Brian, KK)

KK noted that 10 discussion groups have been formed. Each group has submitted a 1-page abstract to provide an outline of its objectives and scope. KK reiterated that the purpose of this joint working group is to discuss the value of statistical/reliability methods for design codes, rather than to advance research ideas. A longer 10-page report should be submitted before Aug 2016 to allow various groups to better coordinate their efforts, including merging groups that share common interests or sun-setting groups that did not make progress. The full reports should be submitted before Mar 2017 so that there is sufficient time to compile a joint TC205/TC304 report for the 19ICSMGE. Discussion leaders would be invited to present in a session in Georisk 2017.

KK invited lead discussers and members in various groups to report their progress. Details are given below and in Annex A.

- Group 1: Limits of reliability analysis (Malcolm Bolton)
 - Malcolm updated through email (Annex A).
 - Limin mentioned that human errors are covered in a PhD thesis by Dr Robert G. Bea at the University of Western Australia. Two of his representative publications are as follows:
 - RG Bea. 2002. Human and organizational factors in reliability assessment and management of offshore structures. Risk Analysis, 2002 - Wiley Online Library
 - Robert G. Bea. Human and organization factors: engineering operating safety into offshore structures .Reliability Engineering &

- Group 2: Transformation uncertainties & multivariate soil data (Jianye)
 - Jianye reported that work in Group 2 is carried out in 5 steps (details in Annex A). Step 1 (select transformation models for clays and sands) is finished. Step 2 (gathering databases for clays and sands) is partially finished. At this time, the databases are limited to parameters related to index tests, shear strengths, stress histories, and some in-situ tests. Steps 3 & 4 (re-application of existing transformation models & forward application of best-practice models) will kick off soon. Zhongqiang commented about the importance of database quality and suggested to evaluate the quality of database before carrying out analyses.
- Group 3: Practical geotechnical design using reliability based design methods (Peter Day)
- Group 4: Evaluation and consideration of model uncertainties in reliability based design (Kerstin Lesny)
 - Kerstin updated through email (Annex A).
- Group 5: Incorporating spatial variability into geotechnical reliability based design (Dianqing)
 - Dianqing reported progress in meeting (details in Annex A). KK opined that Group 5 may be connected to Group 9 led by Yu Wang regarding selecting characteristic value.
- Group 6: EXCEL-based direct reliability analysis and its potential role to complement Eurocodes (BK)
 - BK reported progress in meeting (details in Annex A). The focus is the insights obtained from FORM and their applications to the partial factors now adopted in Eurocode 7. This group has 7 discussion sessions with 10 examples in total. Yu Wang will be in charge of the 6th session (subset simulation), and Jianye & KK will be in charge of the 7th session (role of statistical uncertainty). KK commented about the possibility of adopting partial factors in rock engineering design. Farrokh commented about the difficulty in obtaining characteristic values for rock properties. Hongwei emphasized the importance of engaging with the ISRM community that focuses more on risk management than reliability-based design.
- Group 7: Imprecise probabilistic and interval approaches applied to partial factor design (Sonia)
 - Sonia updated through email (Annex A).
- Group 8: Robustness (Brian)
 - Brian updated through email (Annex A).
 - HW commented that at present the focus for Group 8 is the definition of robustness.
 - Wenping commented that in the face of uncertainty in input parameters, the robust geotechnical design (RGD) concept can be implemented. The idea is to adjust easy-to-control design parameters such that the system response could be robust against, or insensitive to, the variation of hard-to-control or hard-to-characterize input parameters (or noise factors). In future, we would like to extend RGD to more complex systems consisting of many elements. KK commented that RGD may be an alternative way of dealing with robustness in the case where we do not have enough data.
- Group 9: Selection of characteristic values for rock and soil properties using Bayesian statistics and prior knowledge (Yu Wang)
 - Yu Wang conveyed his apologies due to flight delay (details in Annex A).

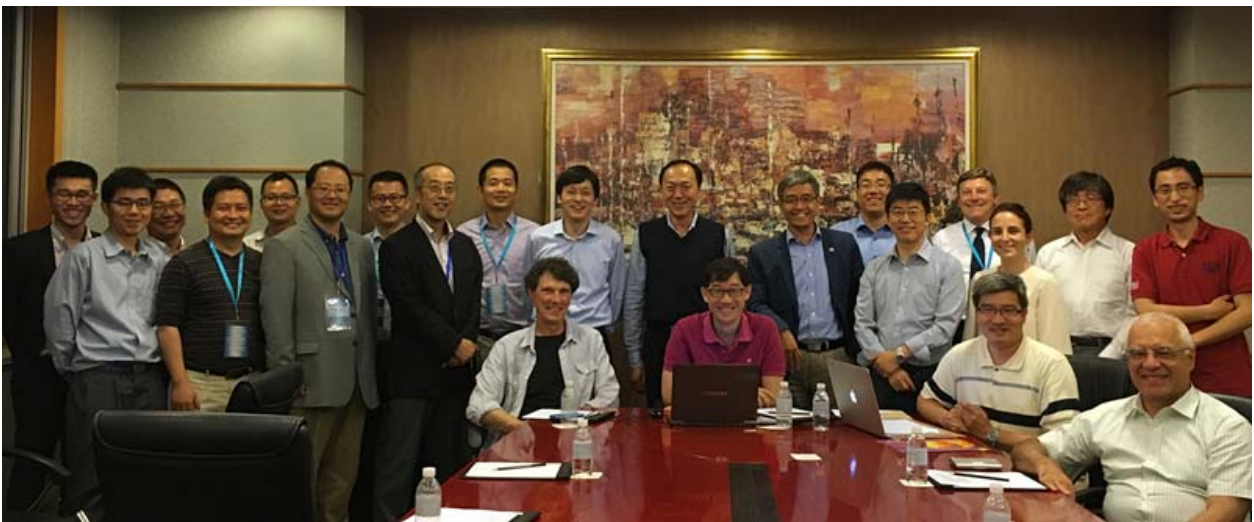
- Group 10: Bayesian method: a natural tool for processing geotechnical information (Jie Zhang)
 - Jie reported progress in meeting (details in Annex A). Jie has finished the 1st draft of the 10-page report. Group members are now discussing how to condense the report and also to communicate with TC205.
- Georisk Special Issue on “Distinctive and Critical Elements in Geotechnical Risk and Reliability” (Yu Wang, Dianqing, Zijiun)
 - Zijiun provided an update on behalf of Yu: 5 papers have been accepted thus far, 1 paper is under minor revision, and 1 paper is under review. This special issue is being scheduled for publication as Vol 10, issue 4, 2016 of Georisk.
 - Limin mentioned that Jinsong and Vaughan’s Georisk special issue on “Modelling Spatial Variability in Geotechnical Engineering” has been published as the Vol 10, Issue 1, 2016 of Georisk.
- Monograph for “Reliability of Geotechnical Structures in ISO2394”, CRC Press/Balkema (KK)
 - KK mentioned that this project is at the proof reading stage. It is scheduled for publication by end of 2016.
- ASCE GSP in honour of Professor Wilson Tang (ASCE GI-RAM; Eds.: Hsein Juang, Bob Gilbert, Limin Zhang, Jie Zhang, and Lulu Zhang)
 - Jie commented that this GSP would be published soon in 2016. Some of the contributions will be presented in a mini-symposium (2 sessions) in Geo-risk 2017.
- TC304 software demonstration session in APSSRA 2016 (KK, Jianye, Gordon)
 - KK mentioned that this session will take place tomorrow (May 29). The purpose is to encourage the development of user friendly software for geotechnical reliability/probabilistic analysis to broaden applications in practice. All members are invited to attend this session.
- TC304/TC205/TC212/TC302 joint meeting reported in ISSMGE Bulletin: Volume 10, Issue 1, pp. 21-22. (KK)
 - KK expressed his gratitude to Paul for hosting this joint meeting in the 5th International Symposium on Geotechnical Safety and Risk, 13-16 Oct 2015, Rotterdam, Netherlands.
- Gordon has been selected as the 5th Wilson Tang Lecture in Geo-Risk 2017/ISGSR2017 (KK)
- Revised ordering for the Second and Third Suzanne Lacasse Lectures (KK)
 - To correct the record, the Second and Third Suzanne Lacasse Lecturers are Greg and Farrokh, respectively, because Georisk 2017 precedes 19ICSMGE.

4. Future activities in 2015/2016+

- Georisk 2017/ISGSR 2017, June 4-6 2017, Denver, Colorado (Vaughan)
 - Vaughan mentioned that around 190 abstracts have been submitted. Abstracts are due June 1. There will be 2 named lectures (the 5th Wilson Tang Lecture hosted by GEOSNet and the 2nd Suzanne Lacasse Lecture hosted by ISSMGE) and 6 keynote lectures.
- Georisk 2017 session on “Reports from Joint TC205/TC304 working group on ‘Discussion of statistical/reliability methods for Eurocodes’” by KK Phoon, B Simpson, and J Ching
- TC304/TC205/GI-RAM/GEOSNet mini-symposium in 12th International Conference on Structural Safety and Reliability (ICOSSAR2017), 6-10 August 2017, Vienna, Austria (KK, Jianye, Gordon)
- TC304 session in 19th ICSMGE, Sep 17-22 2017, Seoul, Korea (Hyunki Kim)
- 5th International Symposium on Reliability Engineering and Risk Management (ISRERM 2016), August 17-20 2016, Seoul, Korea (<http://www.isrerm2016.org/>)

- Abstract due April 18 2016
- Full paper due May 31 2016
- KK is one of the keynote lecturers
- Special issue on "Probabilistic Site Characterization" in ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems: Part A (KK)
 - Twelve authors have been invited.
 - Full papers would be submitted by Oct 2016.
- Spotlight article project for Georisk (KK)
 - KK commented that the "Spotlight" article series was launched in 2013. The purpose is to invite distinguished scholars to provide an overview of an important topic, to highlight research gaps, and to point the way for future research. The first spotlight article was "Assessing SPT-Based Probabilistic Models for Liquefaction Potential Evaluation: A Ten-Year Update" by Hsein Juang, Jianye Ching, and Jerry Zhe Luo. The second spotlight article was "Uncertainty in Dam Safety Risk Analysis" by Greg Baecher.
 - Limin and KK are working to push out a series of 5 "Spotlight" articles on geotechnical RBD codes around the world for Georisk (Canada, USA, Japan, Europe, Africa). The intent of these Spotlight articles is to provide a broad overview rather than to focus on a deep technical topic. These articles can also go beyond reviewing what has been done. They could include a reflective section on challenges (can be scientific or practical) and highlight future directions for research or ideas for next revision of geotechnical RBD codes.
 - KK mentioned that several authors have been invited to write spotlight articles on development of geotechnical codes in Canada (Gordon Fenton), USA (Sam Paikowsky), Japan (Yusuke Honjo), and South Africa (Peter Day).
- Georisk 10th anniversary special issue (KK)
 - KK reported commented that 11 full papers have been submitted. Suzanne may prepare a short paper for this special issue as well. This special issue is scheduled for publication as 1st issue of Georisk in 2017.
- ASCE Workshop on Resiliency of Urban Tunnels and Pipelines, Sep 1 2016, Reston, VA (co-chaired by Hongwei)
- 4th China National symposium on Engineering Risk and Insurance, Aug 26-28 2016, Wuhan University, Hubei, China (Hongwei, KK & Dianqing)
 - 43 papers have been accepted (in Chinese)
 - One TC304 session is being organised (Jie Zhang, LuLu Zhang and Zijun Cao)

The meeting adjourned at 905PM.



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