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Message to ISSMGE Members

Prof. Kyriazis Pitilakis, TC203 (Earthquake) Chairman

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EDITORIAL BOARD

It is a pleasure, through this short article in the Bulletin to provide members of the ISSMGE some insight into the activities of the technical committee "Geotechnical Earthquake Engineering and Associated Problems" (TC 203).

The Technical Committee TC203 (ex TC-4) on Geotechnical Earthquake Engineering and Associated Problems started up in 1985, reflecting the increasing need and interest of earthquake engineering among the geotechnical engineering community. Professor Kenji Ishihara was the first chairman, followed by Professor Pedro Seco e Pinto, Professor Liam Finn, Professor Takaji Kokusho and Professor Atilla Ansal (co-chairman). For more than 25 years TC203 has provided the main forum for ISSMGE members in the area of earthquake geotechnical engineering and made significant contributions in responding to the needs and challenges posed by the major earthquakes.

Following the restructuring of ISSMGE and its committees for the current period 2009-2013, the organization scheme of the TC203 is the following: Chairperson: Professor Kyriazis Pitilakis (GR), Vice-chairperson: Professor Ross Boulanger (USA), Secretary: Assistant Professor Anastasios Anastasiadis (GR). The Technical Committee has today 63 members from 32 countries throughout the world, representing academia, consulting and construction industry. It covers a wide spectrum of earthquake-associated geotechnical problems, without neglecting more general topics associated with earthquake engineering, engineering seismology, risk assessment and management. Plenary meetings are organized during the International Conferences, normally every two years.

ISSMGE Webinar on geotechnical earthquake engineering will take place on November 20 at 12h00 (noon) UTC. For more info, please read President 1090 Days Report in page 14 of this issue.

Message to ISSMGE Members (Continued)

Prof. Kyriazis Pitilakis, TC203 (Earthquake) Chairman

INSIDE THIS ISSUE (CONTINUED)

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Unambiguously, it is well recognized that Earthquake Geotechnical Engineering ensures a critical link between all scientific disciplines involved in earthquake engineering. Its important role and contribution in the seismic design of any civil engineering structure and the resilience of the society is widely recognized and respected. Moreover, the outstanding progress that has been achieved during the last three decades in the Geotechnical Earthquake Engineering and Soil Dynamics has seriously contributed to the fundamental and applied Soil Mechanics and the Geotechnical Engineering in general. The exponential increase of high quality strong motion records and well-documented data and field studies after numerous important earthquakes that unfortunately hit many countries around the world provided valuable information and knowledge, improving considerably the know how in our field. Observation, field and laboratory techniques have been further improved while the modern hardware possibilities have seriously improved the computation and design capacities. Large scale experimental facilities like centrifuge and shaking table tests, sometimes of important dimensions like the E-Defense facility, provided valuable insights to better understand the phenomena and calibrate our numerical models and design tools. All this progress is reflected in a certain degree, not as much as it is wished, in modern seismic codes namely IBC2000, EC8. Publications in peer review journal have been exponentially increased covering a very wide range of interesting subject not strictly related to the traditional Soil Mechanics and Geotechnical Engineering like for example studies related to the vulnerability and risk assessment of different assets and systems (i.e. gas, oil, water systems etc). Finally Geotechnical Earthquake Engineering has been now introduced in most civil engineering under and post graduated curricula in all major universities in the world. In a few words Geotechnical Earthquake Engineering is now a well-established branch in engineering science and technology.

Recent strong earthquakes, like the mega Tohoku 2011 earthquake in Japan and the sequence of large devastating earthquakes in New Zealand (2011) have shown despite our progress how vulnerable is still our built environment and our societies. We learned more on the earthquake-induced liquefaction effects on lifeline systems, highway bridges, and residential structures to better validate and improve the existing methods, criteria and loading provisions. However, much effort is needed to make our built environment safer and our societies more resilient to face major and catastrophic natural hazards. We should invest more on the prevention and the development of better and more economic mitigation measures. Geotechnical Earthquake Engineering has an important role to play in this common and interdisciplinary effort. Our endeavor and challenge are also to prepare the future generation of researchers and civil engineers to face the new complex problems associated with the new modern and very complex and demanding societies constructing more and more complex infrastructure and utility systems, which are more and more vulnerable without proper seismic design qualifications.

Knowing the complexity of these goals on one hand and the professional and academic needs of our members on the other hand, it has been decided to establish a few working groups on specific subjects representing research-academia and profession and we are currently planning TC203-related activities for the upcoming conferences. A new TC203 website and portal (**www.earthquake-issmge.org**) has been created. It will exhibit the practice of geotechnical earthquake engineering aiming to run as a source of information relevant to TC actions that is available to all members and geotechnical engineers and at the same time an achievement of the TC history and actions.

For the period 2010-2013 the following actions have been agreed, which constitute the suggested challenges and terms of reference.

Message to ISSMGE Members (Continued)

Prof. Kyriazis Pitilakis, TC203 (Earthquake) Chairman

Challenge A: Disseminate knowledge and practice in the field

- Encourage the participation of TC203 members in regional workshops and conferences and organize specialized workshops (i.e. after large earthquakes, code initiatives etc).
- Encourage the participation of TC203 members in international survey committees or coordination of survey committees after large earthquake.
- Creation of a web page and portal.
- Propose an award prize for outstanding young researcher(s) after adequate and severe selection process.
- Continue the already established and very successful activities such as the International Conferences of Earthquake Geotechnical Engineering, the Satellite Conferences in Geotechnical Earthquake Engineering in World Conferences, and the Performance Based Design Conference in Geotechnical Earthquake Engineering
- Actively support the Bulletin of Geotechnical Engineering and the Journal of Case Histories
- Encourage and support the production of high level monographs on specific subjects

Challenge B: Improve knowledge and establish technical recommendations and guidelines through the following actions:

- Dissemination (mainly through web) of high quality experimental data, observations surveys, reconnaissance reports and design-construction reports on significant structures
- Definition of topics for future TC generic activities like: (i) Performance Based Design in Earthquake Geotechnical Engineering, (ii) Liquefaction and associated phenomena, (iii) Site characterization, Site Effects and Design ground motion, (iv) Large Scale Facilities in Geotechnical Earthquake Engineering, (v) Numerical and physical procedures, (vi) Seismic codes, (vii) Soil Structure Interaction, etc.
- Establishment of permanent links with global activities (in particular with GEER and GEM) and between research-academia and profession.

Challenge C: Interact with other Technical Committees and organizations through the following actions:

- Improve the link and the participation of the construction industry in Technical Committee activities.
- Use the website as a source of information and interaction.
- Endeavour to get all national representatives to recommend published papers and reports that they consider represent best current practice in their region or particular field of expertise.
- Encourage national representatives to submit case history data showing recent examples of good practice.

Recent and upcoming conferences:

- Following the most successful 4th International Conference on Earthquake Geotechnical Engineering hosted in Thessaloniki Greece, on January 2011, we have had the 5th International Conference on Earthquake Geotechnical Engineering (www.5icege.cl) in 2011 in Santiago, Chile. The TC203, the Chilean Geotechnical Society and the Civil Engineering Department of the University of Chile organized the Conference jointly. More than 200 papers and more than 400 people from 35 countries attended the conference. The third Ishihara Lecture was successfully delivered by Professor Ricardo Dobry of the Rensselaer Polytechnic Institute (USA) with the following title “An Investigation into Why Liquefaction Charts Work: A Necessary Step Toward Intergrading the State of the Art and Practice”.
- Pushing forward the most successful Performance Based Design (PBD) Conference held in Tokyo in 2009 and the 5th International Conference on Geotechnical Earthquake Engineering held in Santiago (Chile) in 2011, the Taormina PBD 2012 Conference offered an ideal forum to present and discuss the most recent advances and progresses in Geotechnical Earthquake Engineering and in particular the Performance Based Design. This conference was organized by Prof. Michele Maugeri under the auspices of ISSMGE, TC203, and AGI (Italian Geotechnical Association).

Message to ISSMGE Members (Continued)

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The Conference organized around 5 State-of-the-Art, 21 Keynote Lectures, 4 Invited Lectures given by distinguished international experts and 100 presented papers on different topics over 141 selected ones; 3 Special Sessions were devoted to the mega Tohoku 2011 earthquake in Japan, and the two large devastating earthquakes in New Zealand (2011) and the Abruzzo 2009 earthquake in Italy (totally 14 speakers). Furthermore, one Workshop was organized on RRTT, Round Robin Tunnel Centrifuge Test and one Symposium in honour of Prof. S. Prakash. Finally, a replication of Rankine Lecture was delivered by Prof. Malcom Bolton (University of Cambridge, UK) on the Performance-Based Design on Geotechnical Earthquake Engineering.

- International Conference on Earthquake Geotechnical Engineering from Case History to Practice – In Honor of Professor Kenji Ishihara, Istanbul, 2013 (co-organized by Professor A. Ansal and M. Sakr).
- Sixth International Conference on Geotechnical Earthquake Engineering (6ICEGE), Christchurch, New Zealand, 2015.
- Third International Conference on the Performance Based Design in Geotechnical Earthquake Engineering. (Place and date to be defined, among candidates is USA and Canada).
- Special session during the 18th International Conference on Soil Mechanics and Geotechnical Engineering, Paris, France, September 2-5, 2013.
- Special Session in the 2nd European Conference on Earthquake Engineering and Seismology (2ECEES), Istanbul, Turkey, 2014.

Last but not least I should express from this step my gratitude and recognition to all present and past members of the Technical Committee and in particular the past core members and founders of our committee. The progress achieved so far and the promising excellent future, always under the auspices and permanent interest of ISSMGE, is due to their enthusiasm, devotion and certainly their precious works.

Finally, I would like to encourage even more all national associations and geotechnical engineers to participate in our Technical Committee works.

Please take a look at photographs below that introduce recent activities of TC203.

Message to ISSMGE Members (Continued)

Prof. Kyriazis Pitilakis, TC203 (Earthquake) Chairman

Delegates of 5ICEGE - January 10-13, 2011, Santiago-Chile

Delegates of the 2nd PBD – May 28-30, 2012, Taormina-Italy

Message to ISSMGE Members (Continued)

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Publications and Conference Proceedings of the TC203 (and the ex-TC4).
At the bottom left is the "Manual for Zonation on Seismic Geotechnical Hazards", prepared by the Technical Committee for Earthquake Geotechnical Engineering, TC4, and published by the Japanese Geotechnical Society (JGS), December 1993 and revised in March 1999.

Message to ISSMGE Members (Continued)

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Overturned RC-building with shallow foundation. (Motoki Kazama, Tohoku University from Japanese Geotechnical Society (JGS) website : first results of its activities after the occurrence of the 11th March, 2011 Tohoku earthquake, http://www.jiban.or.jp/e/disaster-survey-information-of-2011-tohoku-earthquake-2/)

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Girder of bridge washed away (Motoyoshi) (Motoki Kazama, Tohoku University from Japanese Geotechnical Society (JGS) website : first results of its activities after the occurrence of the 11th March, 2011 Tohoku earthquake, http://www.jiban.or.jp/e/disaster-survey-information-of-2011-tohoku-earthquake-2/)

Message to ISSMGE Members (Continued)

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Evidence of liquefaction before the tsunami struck. (Motoki Kazama, Tohoku University from Japanese Geotechnical Society (JGS) website : first results of its activities after the occurrence of the 11th March, 2011 Tohoku earthquake, http://www.jiban.or.jp/e/disaster-survey-information-of-2011-tohoku-earthquake-2/)

Message to ISSMGE Members (Continued)

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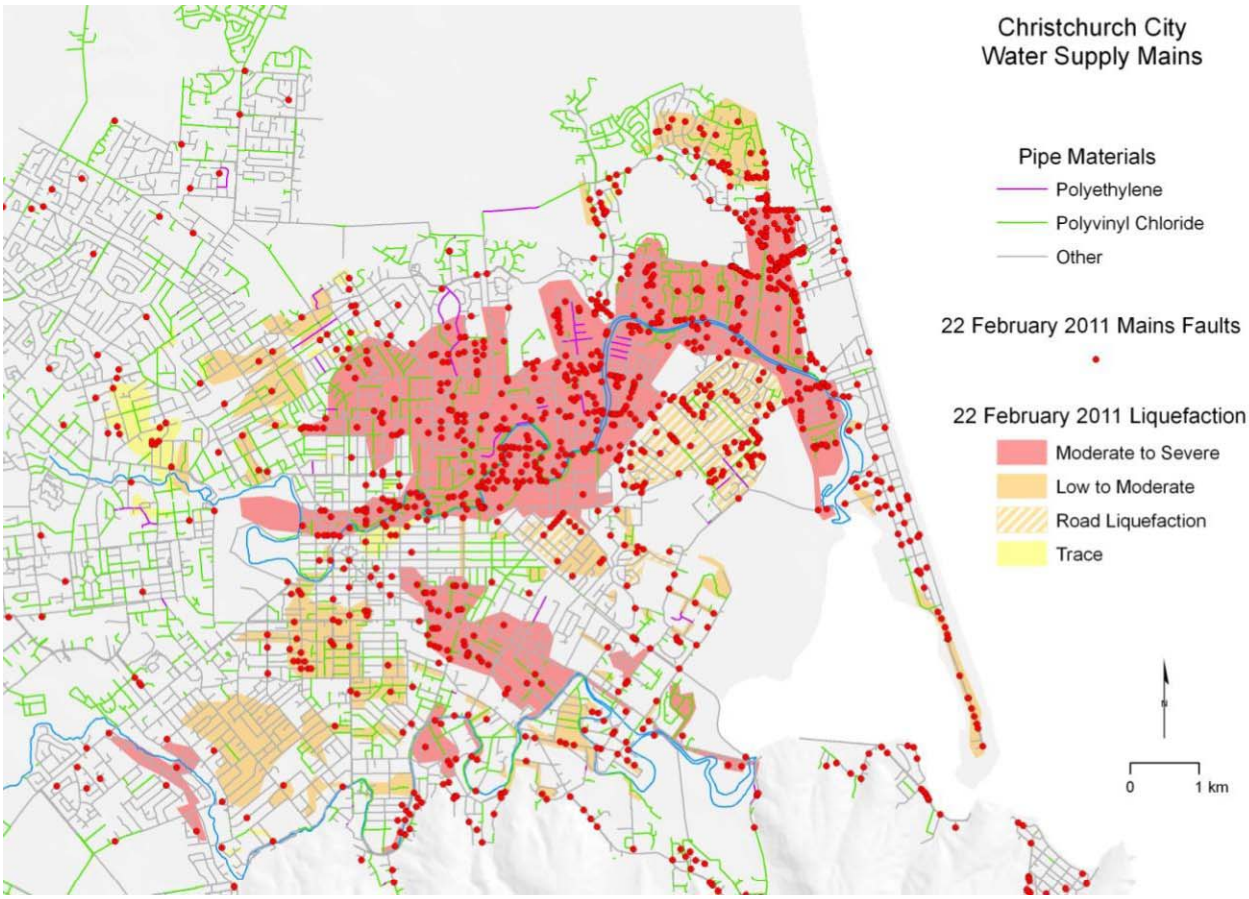
Christchurch



Water mains pipe network and location of breaks (faults) caused by the 22 February 2011 earthquake; colored lines indicate pipe materials; colored areas indicate liquefaction severity. (http://www.geerassociation.org/GEER_Post%20EQ%20Reports/Darfield%20New%20Zealand_2010/Cover_Darfield_2010.html).

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Example of severe liquefaction near the intersection of Shortland St and Rowses Rd in the eastern suburb of Aranui. Note the high water marks on the car door window. (http://www.geerassociation.org/GEER_Post%20EQ%20Reports/Darfield%20New%20Zealand_2010/Cover_Darfield_2010.html).

Photo showing slight movement of upper part of gabion behind house at base of cliff in the suburb of Redcliffs. Gabion performed well in stopping rockfall and talus from impacting house (http://www.geerassociation.org/GEER_Post%20EQ%20Reports/Darfield%20New%20Zealand_2010/Cover_Darfield_2010.html).