



# The Institution of Engineers, Malaysia

Bangunan Ingenieur, Lots 60/62, Jalan 52/4, Peti Surat 223, 46720 Petaling Jaya, Selangor Darul Ehsan  
Tel: 03-79684001/2 Fax: 03-79577678 E-mail: sec@iem.org.my IEM Homepage: <http://www.myiem.org.my>

## 55th Rankine Lecture - Hazard, Risk and Reliability in Geotechnical Practice

Organised by the Geotechnical Engineering Technical Division, IEM

BEM Approved CPD/PDP Hours: 2 Ref No: IEM15/HQ/154/T

Date/Day : 14 December 2015 (Monday)

Time : 5.30 pm – 7.30 pm

Venue : Tan Sri Prof. Chin Fung Kee Auditorium, 3rd Floor, Wisma IEM, PJ

Speaker : Dr Suzanne Lacasse

### SYNOPSIS

More and more, society requires to know the risk which people, property and the environment are exposed to. The geotechnical engineer should increasingly contribute to reducing exposure to threats, reducing risk and protecting people. The objective of the 55<sup>th</sup> Rankine Lecture is to convince the profession that one can implement, with benefit, concepts of hazard, risk and reliability to assist in design and engineering recommendations. After a brief overview of basic concepts, the lecture illustrates the advances of hazard, risk and reliability in geotechnical engineering through several "real life" case studies. In these examples, specific engineering questions had to be answered, and the risk and reliability applications provided insight for informed decision-making. The factor of safety remains the main indicator of safety in practice, and its significance and that of key design parameters, such as the characteristic strength, are discussed. The examples come from a wide realm of geotechnical problems, including selection of soil properties, hazard and risk assessment associated with slope stability, tailings dams, offshore installations and code calibration. The contributions of risk assessment and management to geotechnical engineering, the strengths and drawbacks of the approach and emerging issues such as acceptable risk and cascading hazards are discussed. The lecture suggests that interaction with other disciplines helps provide an improved and soundly engineered solution. The geotechnical engineer's role is not solely to provide judgment on parameters, methods of calculations and resulting safety, but also to take an active part in the evaluation of hazard, vulnerability and risk.

### PROFILE OF SPEAKER



**Dr Suzanne Lacasse** is a Canadian living in Norway. She is Technical Director at the Norwegian Geotechnical Institute (NGI). She was Managing Director of NGI from 1991 to 2011. Dr Lacasse focused first on laboratory techniques, in-situ testing and soil behaviour modelling studies. She then worked on foundation design, slope stability and the development of calculation procedures offshore. She excelled at combining mathematical and numerical analyses with engineering design in practice. She developed and applied probability, reliability and risk concepts to assist foundation design and decision-making. She has given keynote lectures in 30 countries, and is author of 300 papers. She gave ASCE's 37<sup>th</sup> Terzaghi Lecture on Offshore Geotechnics (2001) and ISSMGE's 8<sup>th</sup> Terzaghi Oration on Slope Stability (2013). Dr Lacasse has two PhDs Honoris Causa (University of Dundee and Norwegian University of Science and Technology). She is a member of the US National Academy of Engineers (2001), and received, among others, the Legget Award (Canadian Geotechnical Society) and the 1<sup>st</sup> MIT Effective Teaching Award in Civil Engineering. She is member of the Royal Society of Canada, the Canadian Academy of Engineers, l'Académie des Sciences Technologies (France), and three Academies of Engineering, Sciences and Letters in Norway. She is Honorary Professor at Zhejiang University, China.

Ir. Yee Thien Seng  
Chairman  
Geotechnical Engineering Technical Division, IEM

### ANNOUNCEMENTS TO NOTE

1. Preferential admission to talk shall be accorded to IEM members (pre-registration and online registration are NOT required). Telephone and/or fax reservation will NOT be entertained.
2. **Non members** may also attend the talk but will need to pay a registration fee of **RM 50** and an administrative fee of **RM 15**. GST is inclusive.
3. For members of affiliated organisations, there will be no registration fee payable. However, they are requested to produce their membership card as proof of membership. For the list of affiliated organisations, please refer to IEM website at [www.myiem.org.my](http://www.myiem.org.my) under International / MoU.
4. Limited seats are available on a "first come first served" basis (maximum 100 participants).
5. IEM members are required to produce membership cards for confirmation of attendance (CPD purpose).
6. Latecomers will not be allowed to enter if the lecture hall is full nor be entitled to CPD.
7. **IEM members who fail to produce their membership cards will be charged a fee of RM 25. GST is inclusive.**

### ADMINISTRATIVE FEE

1. Kindly be informed that an administrative fee of RM 15 is payable for talks organized by IEM.
2. The fee would be used to cover overhead costs, building maintenance expenses as well as to contribute to Wisma IEM Building Fund.
3. All contributions will be deeply appreciated by IEM.
4. Student Members are however exempted.

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