

# Developments in Seismic Geotechnical Design

by Gordon A. Fenton

**Tuesday 25 June, 13.45-14.30, Room 2.62, Faculty CEG**

## **Abstract:**

The next edition (2019) of the Canadian Highway Bridge Design Code will contain a table of geotechnical resistance factors to be used for seismic design. The values are typically less conservative than the existing static resistance factors and the reason for this doesn't seem to be clear. The seminar will discuss recent research into required seismic geotechnical resistance factors, considering the random nature of seismic loading over the design lifetime of the system. The research suggests that the seismic resistance factors need to be more conservative in order to achieve reliability indices similar to those targeted for static design. However, regardless of the seismic research results, foundations in Canada have not been experiencing abnormally high levels of foundation failure under seismic loading. It is believed that this is due to redundancy in foundation systems and so the seminar will also discuss recent research in target reliabilities for redundant foundation systems.

## **Bio:**

Dr. Fenton is a Professor cross-appointed to the Civil Engineering and Engineering Mathematics Departments at Dalhousie University. His research interests include probabilistic modeling of geotechnical systems and the development of geotechnical reliability-based design codes. He has authored over 140 peer-reviewed papers and is currently Chair of the Canadian Highway Bridge Design Code (CHBDC) Foundations and Geotechnical Systems Subcommittee, chair of the National Building Code of Canada (NBCC) Task Group on Reliability-Based Geotechnical Design, and a member of the NBCC Standing Committee on Structural Design. He is also the North American Managing Editor for the international journal "Georisk", past chair and current member of the ASCE Geo-Institute Risk Assessment and Management Committee, and past chair and current member of the ISSMGE TC304 Engineering Practice of Risk Assessment and Management Committee. For his research efforts, Dr. Fenton was selected by the Canadian Geotechnical Society to deliver the Cross-Canada Lecture Tour in the fall of 2015, by the Canadian Society of Civil Engineering to deliver the CHBDC lecture tour in Eastern Canada in the spring of 2016, has received the C. Allin Cornell Award from the International Civil Engineering Risk and Reliability Association, the Thomas C. Keefer Award from the Canadian Society for Civil Engineering, the George Stephenson Medal from the Institution of Civil Engineers, UK, the Gzowski Medal from the Engineering Institute of Canada, and was elected a Fellow of both the Canadian Academy of Engineering and the Engineering Institute of Canada. His research work is summarized in his textbook "Risk Assessment in Geotechnical Engineering", Wiley (2008).