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Title of the Theme Lecture
Field and laboratory assessment of liquefaction potential of crushable volcanic soils

Abstract
Pumice-rich soils originating from volcanic eruptions are deposited in various parts of the world, such as in the Waikato Plains, NZ. Since they are often encountered in engineering projects, their geotechnical characterisation is very important. Due to the highly crushable nature of pumice sands, there are concerns on the applicability of current empirical correlations, derived primarily from hard-grained sands, to pumice-rich soils. To understand their liquefaction characteristics, undisturbed soil samples were obtained from various pumice-rich sites in the Waikato Plains using diverse sampling techniques. The samples were tested in the laboratory using cyclic triaxial apparatus and bender elements. At the same time, various field tests, such as CPT and Vs profiling, were conducted at the same sampling sites. The results clearly showed that crushable volcanic soils do not fit existing frameworks for liquefaction assessment and alternate methods are necessary to characterise them.

Bio
Dr Rolando P. Orense is an Associate Professor and the Geomechanics Group Leader in the Department of Civil & Environmental Engineering, University of Auckland, New Zealand. He received his BSc (cum laude) and MSc degrees in Civil Engineering from the University of the Philippines and Doctor of Engineering degree from the University of Tokyo (Japan). Before joining the University of Auckland, he also served as Instructor at the University of the Philippines and as Associate Professor at the University of Tokyo and Yamaguchi University (Japan). Moreover, while working with top-notched geotechnical consulting firms in Tokyo and Manila, he worked on a variety of soil engineering projects in Japan, Singapore and the Philippines. His research and professional practice are primarily related to geotechnical earthquake engineering and liquefaction-associated problems, slope movements and landslide risk mitigation and site/soil characterisation. Over the past 25 years, he has produced more than 400 technical reports and publications. He has sat on the Editorial Board of Soils and Foundations and of the ICE Geotechnical Research Journal. He was the recipient of the Best Paper Award, Technical Development Award and Business Plan Award, all from the Japanese Geotechnical Society.