Vancouver Geotechnical Society
A Local Section of the Canadian Geotechnical Society

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NOTICE OF UPCOMING TECHNICAL PRESENTATION
Thursday, 17 October 2019

TOPIC: **Tailings-Specific Liquefaction Assessment**

SPEAKER: **Mason Ghafghazi, PhD, PEng. – University of Toronto**
Mason is an assistant professor at the Department of Civil & Mineral Engineering at University of Toronto. His career includes working as a post-doctoral scholar, lecturer, and project scientist at the University of California Davis, and a geotechnical engineer at BC Hydro. Mason came to Canada in 2004 to work on his PhD at the University British Columbia. His PhD work focused on estimating the in-situ state parameter by modelling the CPT. Evaluation of seismic performance, liquefaction consequences, and internal erosion susceptibility in embankment dams and their foundations, development of the instrumented Becker Penetration Test, and numerical modelling of mining activities are some of Mason's past experiences. Mason's areas of research are liquefaction assessment in tailings and gravelly soils, CPT testing and modelling, and advanced constitutive modelling of soil behaviour.

CONTENT: Tailings dams are man-made earth structures used for storing mining waste, comprised of water and fine minerals left behind from the extraction process. Tailings are usually non-plastic fine sand-and-silt-sized soils with angular particles that are often deposited in a loose state. The geotechnical engineering practice currently relies on an empirical case-history-based approach for predicting the susceptibility of non-plastic granular soils to cyclic liquefaction due to earthquake loading. These case-histories are dominated by natural soils at shallow depth, in flat or gently sloped ground, whereas tailings dams involve manmade deposits, often tens of metres deep, and near steep dam slopes. Empirical correlations also dominate static liquefaction assessment through the state parameter. These empirical correlations are largely based on CPT calibration chamber data on clean quartz sands, which are also inherently different from most tailings.

Research done over the past few years at University of Toronto investigating the dependency of critical state parameters, cyclic resistance, and residual strength on fines content and fabric of tailings will be presented. The influence of these parameters on the relation between the state parameter and CPT measurements is discussed. It is shown that while empirical methods are generally adequate in estimating properties of natural sands, they have significant shortcomings in estimating in-situ properties of tailings. Other ongoing and future research including calibration chamber testing and analysis of tailings liquefaction case histories with Norsand will be discussed.

DETAILS:
Location: Centennial Room, Executive Inn, 4201 Lougheed Highway, Burnaby, BC V5C 3Y6
Social Hour: 5:30 to 6:30 pm (drinks available at the hotel bar)
Technical Presentation: 6:30 to 7:30 pm (No need to RSVP)
Dinner: 8:00 pm ($20 will be charged for dinner). If you would like to stay for dinner, please RSVP to Intisar Ahmed via email (iahmed@thurber.ca) or at the door.