The Canadian Geotechnical Society

La Société Canadienne de Géotechnique

CGS Dinner Presentation

Evaluating the Drainage Performance of a Conventional Nonwoven Geotextile with a Custom-Built Laboratory Device

Presented by:

Md. Zahid Hassan

University of Manitoba

CGS Travel Award Recipient & Neil Burgess Award Recipient

Presentation Abstract:

Excess moisture in pavement systems is a major factor contributing to long-term structural deterioration. It can result in reducing strength and service life of pavement layers. Geosynthetics have long been used to improve drainage and reinforcement in roadway applications. This study investigates the drainage performance of a staple fiber polypropylene non-woven geotextile when placed in direct contact with a soil layer, in comparison with the natural gravity-driven drainage of the soil without geotextile inclusion. A laboratory-scale model test was conducted using sand within a custom-built soil box to measure vertical and lateral drainage. Moisture sensors were embedded at multiple locations to monitor moisture movement over time. The non-woven geotextile significantly reduced soil moisture relative to untreated conditions.

About the Presenter:

Md. Zahid Hassan is an M.Sc. graduate student in the Department of Civil Engineering at the University of Manitoba, specializing in Geotechnical Engineering. His graduate research focuses on the experimental and numerical investigation of geosynthetic drainage performance for moisture control in both saturated and unsaturated soils. His research is conducted under the supervision of Dr. Jamie Bartz and Dr. Marolo Alfaro.

Zahid received his B.Sc. in Civil Engineering from Sylhet Engineering College, Shahjalal University of Science and Technology, Bangladesh, with distinction. Before beginning his graduate studies in Canada, he worked as a Lecturer in Civil Engineering at the University of Creative Technology Chittagong, Bangladesh, where he taught courses in geotechnical engineering, engineering materials, and finite element methods. His academic interests include unsaturated soil mechanics, geosynthetics, pavement drainage, soil behaviour, and geotechnical instrumentation.

He has contributed to five conference publications, with his most recent research work accepted for publication in the GeoQuebec 2026 Conference Proceedings. He is also actively involved with the Canadian Geotechnical Society and currently serves as Treasurer of the CGS Student Chapter–Manitoba Section.

CGS Dinner Presentation

Artificial Thawing of Frozen Soil: Pre-Test Numerical Simulation of Thermal Behaviour

Presented by:
Daniiar Omurbekov
University of Manitoba

Presentation Abstract:

Artificial Ground Thawing (AGT) is a ground improvement method for northern transportation infrastructure constructed over ice-rich, thaw-sensitive permafrost. The soil conditions can be improved by reducing excess ice content through controlled thawing to ensure long term stability. Various techniques of AGT exist but have not been fully characterized for field applications. Evaluating these techniques requires numerical modelling and validation through laboratory testing, which may be costly and time consuming. Developing a pre-test simulation allows for efficient design of the testing setup. Here, we present a numerical simulation of a laboratory test for artificial thawing using vertical heating pipes. The finite-element software TEMP/W was used to evaluate thermal behaviour across four heating scenarios. The obtained temperature distribution contours were used to optimize sensor placement. The numerical simulation serves as a predictive framework to guide the physical testing phase.

Date: **Thursday, September 10, 2026**
Time: **Dinner Begins at 5:00 pm, with Presentation to Follow**
Location: **Trans Canada Brewing Co.; 1290 Kenaston Blvd #1**
RSVP: **12:00 PM, Tuesday, September 8, 2026**
Registration Fee (debit, credit, PayPal):

Membership	Price ($)	Registration and Payment Link[1,2]
CGS Member/Non-Members	25	Buy Now
Students	20	Buy Now

[1]This will redirect you to pay via debit, credit, or PayPal.
[2]Receipts are automatically sent to your email address.

For event information, please visit:
http://www.cgsmanitoba.ca/lunch-seminars/upcoming/
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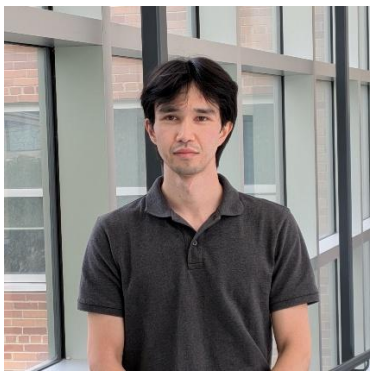
About the Presenter:



Daniiar Omurbekov is an undergraduate civil engineering student at the University of Manitoba, with a focus on geotechnical engineering. He recently completed a research project under Dr. Marolo Alfaro, where he investigated a ground improvement method for cold regions applications. In addition to his academic work, Daniiar serves as the Student Liaison for CGS Manitoba and leads the UofM Climbing Club.

- This event qualifies for 1 Professional Development Hour. The event is classified as 'Informal Activity' under EGM's CPD Program.
- Please note that if you are unable to attend, someone else can be sent in your place. We are accepting walk-ins depending on seating availability.
- If you wish to be added to the mailing list, please send an email to cgs.manitoba@gmail.com