The Canadian Society for Civil Engineering

The Canadian Geotechnical Society

London & District Section **2023/2024 Program**

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GREAT PRICES!

Pricing to attend an individual meeting (cash only):

- ***CSCE/CGS Member*** ***$35***
- ***Non-member*** ***$40***
- ***Student*** ***$30***

Contact Khalid Backtash @ 519-495-6043, (Email: mbacktas@uwo.ca) for more details.

Notes about Meetings *(starting Oct. 18/23)*

- *Events are held in Chaucer's Pub/Fireplace Room at Marienbad Restaurant, located at 122 Carling Street in downtown London (see map below).*
- *Plenty of parking at adjacent paid lots, or at city parking metres (free after 6pm or 2 hours free parking using the HonkMobile app code "CORE").*
- *Cash bar is available.*
- *Networking opportunity starts at 5:45 pm.*
- *Dining at 6:30 pm.*
- *Presentation at 7:00 pm, followed by Q & A.*
- *Meetings qualify for PEO's PEAK program.*

Program Theme: ***Adapting to Climate Change***

Wednesday September 20th, 2023

WindEEE Research Facility Site Tour
Site tour followed by pizza dinner & presentation by Dr. Tibebu Birhane

Wednesday October 18th, 2023

Determination of Wind Speeds in Tornadoes
Presenter: Dr. G. Kopp, P.Eng.; Professor, Western University

Wednesday November 15th, 2023

Introduction to Manufacturing of Mass Timber and the E5 Affordable Housing Typology
Presenter: Chris Latour;
V.P. of Manufacturing Engineering, Element5 Co.

Wednesday January 24th, 2024

Innovation in Wind Turbine Foundation Design
Presenter: Dr. H. El Naggar, P.Eng.; Professor, Western University

Wednesday February 28th, 2024

Non-Destructive Testing to Determine Pavement Condition and Optimize Repairs
Presenter: Mick Prieur, P.Eng., PMP; Director of Operations, eNGLOBe

Wednesday March 20th, 2024

Western University Civil and Environmental Engineering Design Project Winners

Presenters: Winning teams of 4th Year Western Engineering Students

Wednesday April 17th, 2024

City of London Climate Emergency Action Plan

Presenters: Jay Stanford and Mike Fabro;
City of London

Wednesday, September 20th, 2023: WindEEE Research Facility Site Tour (2535 Advanced Avenue, London, ON)

The Wind Engineering, Energy, and Environment (WindEEE) Dome is the world's first hexagonal wind tunnel, featuring 106 individually controlled fans on its six walls and ceiling. With a large-scale structure (25m inner dome, 40m outer return dome), it recreates complex local wind systems like tornadoes and large systems like hurricanes at large scales under controlled conditions. WindEEE allows study of extreme wind's impact on infrastructure.

The event includes a facility tour, followed by a pizza dinner and a presentation by Dr. Tibebu Birhane to showcase the Dome's workings and recent projects.

Wednesday, October 18th, 2023: Dr. Greg Kopp, P.Eng.; Professor, Western University

Determination of Wind Speeds in Tornadoes

The intensity and paths of tornadoes are assessed based on the damage that they cause. This is because tornadoes are relatively small such that they rarely hit weather stations. Wind speeds in tornadoes are determined by the Enhanced Fujita Scale, which provides estimates for typical buildings and structures and typical damage observations. The Northern Tornadoes Project was formed because it was believed that the true tornado occurrence rate for Canadian tornadoes was low, with many of the "missing" tornadoes occurring expected to be in regions with low population density and limited infrastructure, such as in forests. The presentation will focus on recent developments for assessing wind speeds based on advanced tools, including observed flight paths of wind-borne debris (such as vehicles) and treefall patterns in forests.

Wednesday, November 15th, 2023: Chris Latour; Element5 Co., V.P. of Manufacturing Engineering

Introduction to Manufacturing of Mass Timber and the E5 Affordable Housing Typology

Presentation will highlight the newest manufacturing site located in St. Thomas and some solutions that involve industrializing the supply of off-the-shelf, repeatable solutions for modifiable multi-unit residential, commercial, and institutional buildings, manufactured off-site in high-tech, highly automated manufacturing facilities. Mass timber combines the benefits of offsite construction and sustainable materials to increase construction speed and affordability while at the same time creating healthy living environments for occupants and helping to tackle climate change.

Wednesday, January 24th, 2024: Dr. Hesham El Naggar, P.Eng.; Professor, Western University

Innovations in Wind Turbine Foundation Design

Green energy resources are essential to meet the world growing energy demands while reducing the effects of global warming. Wind energy being one of the main efficient renewable energy sources, drives the ever-increasing expansion of both onshore and offshore wind farms globally. In addition, wind energy technologies are improving and wind turbines capacity continues to grow, making energy production more affordable. For example, new offshore wind turbine projects with capacity more than 315GW will be added over the next decade (2022-2031), which will result in total offshore wind energy of 370GW by 2031 (Global Wind Energy Council, 2022). However, one of the main challenges for wind projects is the cost of foundation construction, especially for offshore installations, which can be as high as 40% of the total cost. This presentation presents recent innovations in wind turbine foundation design accomplished by the presenter research group and collaborators. It introduces innovative hybrid foundation system for onshore and offshore installations, which has the potential to reduce the foundation cost and satisfy the performance and capacity criteria for large wind turbines. The presentation also discusses tripod suction buckets foundation system that offers many advantages as foundations for offshore wind turbines including fast and economic installation and high overturning resistance. The dynamic response of offshore wind turbine supported on large diameter monopile in sands and clays is also discussed. Finally, the presentation evaluates the uplift criteria for design of gravity base foundations for onshore wind turbines and offers some guidance for more efficient design that may allow re-purposing of foundations of existing wind turbines and optimizing the design of shallow foundations for new wind turbines.

Wednesday, February 28th, 2024: Mick Prieur, P.Eng., PMP; Director of Operations, eNGLOBe

Non-Destructive Testing to Determine Pavement Condition and Optimize Repairs

The use of non-destructive testing on pavement has been around for over 30 years with good success. By utilizing Falling Weight Deflectometers, Ground Penetrating Radar and other testing programs, Pavement Engineers are able to evaluate the current condition of the roadways and remaining life; provide optimized rehabilitation schedules for Municipal road networks; optimize rehabilitation treatments to reduce the uncertainty when developing the tender quantities; check for construction deficiencies and variability; and, evaluate subdivisions to provide confidence to Agencies that the pavement condition will meet their future needs and the pavement will meet the service life.

Wednesday, March 20th, 2024: 4th Year Engineering Students; Western University

Civil and Environmental Engineering Design Project Winners

For more than 20 years the City of London and Western Engineering have partnered to engage 4th year students in a capstone design competition. Student teams work on real-world projects proposed by the City with the support of Faculty and external advisors. The final designs highlight innovative materials and construction techniques while providing value and aesthetic benefit to the City. In this presentation, winning teams from this year's City of London Competition will present their designs.

Wednesday, April 17th, 2024: **Jay Stanford**, Director, Climate Change, Environment & Waste Management, and **Mike Fabro**, Manager, Climate Change Planning; City of London

City of London Climate Emergency Action Plan

London's first Climate Emergency Action Plan (CEAP) charts a course for London to achieve net zero emissions by 2050, be more resilient to the impacts of climate change, and bring everyone along. The plan includes ten areas of focus with actions that touch on all parts of life in London. CEAP uses science-based targets, adopted by many municipalities and business, with the first milestone target set for 2030. Efforts from all segments of society are required to achieve the goals of the plan so this presentation will include a list of potential actions and leadership needs from the local chapter of CSCE.