

The Canadian
Geotechnical Society



La Société Canadienne
de Géotechnique

CGS Dinner Presentation

Comparative Analysis of Helical Pile Capacity Methodologies in Local Glaciolacustrine Clay and Glacial Till Deposits

Presented by:
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Seequent

Presentation Abstract:

Helical piles have become an increasingly common foundation alternative in the Winnipeg region; valued for their versatility of installation, limited construction disturbance, and resistance to both uplift and compressive loading. Historically, a key aspect of their helical pile installation, is the use of installation torque to predict ultimate capacity. However, there is a lack of published, region-specific data validating these empirical relationships in local soil deposits. The study compares measured axial capacities from static load tests (ASTM D1143) with predicted capacities derived from both theoretical and empirical methods. Theoretical predictions utilized the Individual Bearing Plate Method (IBPM) and the Cylindrical Shear Method (CSM). Empirical predictions were based on the conventional Torque to Capacity Prediction (TCP) method ($P_u = KtT$) and the Simplified Energy Model (SEM), which incorporates additional geometric parameters. The analysis reveals that conventional torque-to-capacity predictions can significantly overestimate actual pile capacities, especially when piles feature a large helix on a slender shaft. It was found that the Simplified Energy Model (SEM) provides a more robust prediction by better accounting for the influence of pile geometry. This presentation will detail the comparative analysis from this speaker's graduate research and discuss the practical implications for selecting appropriate capacity prediction methods for helical piles in local practice.

About the Presenter:



Jenna Roadley serves as a Geotechnical Applications Engineer at Seequent, where she specializes in helping users with their numerical simulations using the geotechnical analysis programs – with a focus on GeoStudio. With experience as a geotechnical engineer in both the public and private sectors, Jenna has focused on heavy civil infrastructure projects and foundation design. Her technical interests span alternative foundation design, the behavior of sensitive clay soil, and numerical modeling. Jenna completed a Masters of Science in Geotechnical Engineering at the University of Manitoba. Her research is based on full-scale field testing of helical piles in local (Winnipeg, MB, Canada) soils.



Date: Wednesday, April 8, 2026

Time: Doors Open at 4:45 PM. Presentation 5:00 PM to 6:00 PM.

Location: Trans Canada Brewing Co.; 1290 Kenaston Blvd #1

RSVP: 12:00 PM, Monday, April 6, 2026

Registration Fee (debit, credit, PayPal):

Membership	Price (\$)	Registration and Payment Link ^{1,2}
Students	30	
All Other Registrants	35	

¹This will redirect you to pay via debit, credit, or PayPal.

²Receipts are automatically sent to your email address.

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- 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