GEO-CONGRESS 2024
Vancouver, British Columbia, February 25–28, 2024

Bridging Government, Industry, and Academia for Resilient Mega-Communities

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Welcome to **Geo-Congress 2024**

### Schedule at a Glance *(Subject to change)*

#### Sunday, February 25
- **6:30 a.m. – 8:30 p.m.** Coat Check, Lobby
- **7:00 – 11:00 a.m.** Registration Open, Lobby
- **8:00 a.m. – 11:00 a.m.** Committee Meetings, See page 19
- **8:00 a.m. – 5:00 p.m.** Short Course: Characterization and Dynamic Performance of Gravelly Soils, EM7
- **8:00 a.m. – 5:00 p.m.** Short Course: Introduction to Coastal Geotechnics, EM15
- **8:00 a.m. – 12:00 p.m.** Short Course: Best Practices for Characterizing Cyclic Response of Silts, EM16
- **11:00 a.m. – 12:30 p.m.** Registration Closed for Lunch, Lobby
- **11:00 a.m. – 12:30 p.m.** Poster Session & Happy Hour
- **12:30 – 7:00 p.m.** Registration Open, Lobby
- **1:00 – 5:00 p.m.** Short Course: Design of Ground Improvement in Seismic Areas, EM9
- **1:00 - 5:00 p.m.** Short Course: Numerical Modeling of Dams and Seismic Responses with Emphasis on Liquefaction, EM16
- **10:00 a.m. – 12:00 p.m.** Technical and Special Sessions, See pages 10-11
- **11:00 a.m. – 12:30 p.m.** Registration Closed for Lunch, Lobby
- **12:00 – 1:00 p.m.** Lunch, Exhibit Halls ABC
- **12:00 – 1:00 p.m.** Registration Closed for Lunch, Lobby
- **12:15 – 12:45 p.m.** Vendor Demo – Campbell Scientific, Exhibit Halls ABC, Geo-Institute Theatre, Booth 600
- **1:00 – 2:30 p.m.** Technical and Special Sessions, See pages 14-15
- **1:00 – 6:00 p.m.** Registration Open, Lobby
- **2:30 – 3:45 p.m.** Vendor Demo – BGC Engineering / Cambio Earth, Exhibit Halls ABC
- **2:30 – 3:30 p.m.** Morning Networking Break, West Exhibit Hall B
- **2:30 – 3:00 p.m.** Closing Ceremony, Ballrooms AB
- **2:45 – 3:15 p.m.** Vendor Demo – Geosetta, Exhibit Halls ABC, Geo-Institute Theatre, Booth 600
- **5:00 – 6:30 p.m.** Shanmher Prakash Lecture, Ballrooms AB
- **6:30 – 9:00 p.m.** Offsite Event, Vancouver Aquarium
- **6:30 – 7:00 p.m.** Exhibit Hours, Exhibit Halls ABC
- **6:30 – 8:00 p.m.** Opening Reception, Exhibit Halls ABC
- **7:00 – 8:00 p.m.** Exhibit Hours, Exhibit Halls ABC
- **8:00 – 9:00 p.m.** Awards Presentation & Karl Terzaghi Award Lecture, Ballrooms AB
- **8:00 – 10:00 p.m.** Committee Meetings, See page 19
- **8:30 p.m.** Welcome, Conference Opening and Geo-PIT, Exhibit Halls ABC

#### Monday, February 26
- **6:00 – 7:00 a.m.** Yoga – Pacific Rim II, Pan Pacific Hotel
- **6:30 a.m. – 7:00 p.m.** Coat Check, Lobby
- **7:00 a.m. – 12:00 p.m.** Registration Open, Lobby
- **8:00 – 10:00 a.m.** Welcome, Conference Opening and Geo-PIT, Ballrooms AB
- **9:00 a.m. – 5:00 p.m.** Exhibit Hours, Exhibit Halls ABC
- **10:00 a.m. – 10:30 a.m.** Morning Networking Break, Exhibit Halls ABC
- **10:00 a.m. – 3:00 p.m.** Student Competitions, Exhibit Halls ABC
- **10:00 a.m. – 9:00 p.m.** Committee Meetings, See page 19
- **10:30 a.m. – 12:00 p.m.** Technical and Special Sessions, See pages 10-11
- **12:00 – 1:00 p.m.** Lunch, Exhibit Halls ABC
- **12:00 – 1:00 p.m.** Registration Closed for Lunch, Lobby
- **12:15 – 12:45 p.m.** Vendor Demo – ASCE Foundation, Exhibit Halls ABC, Geo-Institute Theatre, Booth 600
- **1:00 – 5:00 p.m.** GI Student Program: Organizational Members/ Student Career Fair, Exhibit Halls ABC
- **1:00 – 7:00 p.m.** Technical and Special Sessions, See pages 10-11
- **1:00 – 7:00 p.m.** Registration Open, Lobby
- **2:30 – 4:30 p.m.** Poster Session & Happy Hour, Exhibit Halls ABC
- **2:45 – 3:15 p.m.** Vendor Demo – Geosetta, Exhibit Halls ABC, Geo-Institute Theatre, Booth 600
- **5:00 – 6:30 p.m.** Shanmher Prakash Lecture, Ballrooms AB
- **6:30 – 9:00 p.m.** Offsite Event, Vancouver Aquarium

### Tuesday, February 27
- **6:00 – 7:00 a.m.** Yoga – Pacific Rim II, Pan Pacific Hotel
- **6:30 a.m. – 7:30 p.m.** Coat Check, Lobby
- **7:00 a.m. – 12:00 p.m.** Registration Open, Lobby
- **8:00 – 10:00 a.m.** Plenary Session, Geo-PIT, Student Competition Awards, Ballrooms AB
- **9:00 a.m. – 5:00 p.m.** Exhibit Hours, Exhibit Halls ABC
- **10:00 – 10:30 a.m.** Morning Networking Break, Exhibit Halls ABC
- **10:00 – 10:30 a.m.** Vendor Demo – GeoTechTools/IDEA, Exhibit Halls ABC, Geo-Institute Theatre, Booth 600
- **10:00 – 9:00 p.m.** Committee Meetings, See page 19
- **10:30 a.m. – 12:00 p.m.** Technical and Special Sessions, See pages 14-15
- **12:00 – 1:00 p.m.** Lunch, Exhibit Halls ABC
- **12:00 – 1:00 p.m.** Registration Closed for Lunch, Lobby
- **12:15 – 12:45 p.m.** Vendor Demo – Campbell Scientific, Exhibit Halls ABC, Geo-Institute Theatre, Booth 600
- **1:00 – 2:30 p.m.** Technical and Special Sessions, See pages 14-15
- **1:00 – 6:00 p.m.** Registration Open, Lobby
- **2:30 – 4:30 p.m.** Poster Session and Happy Hour, Exhibit Halls ABC
- **2:45 – 3:15 p.m.** Vendor Demo – TabLogs., Exhibit Halls ABC, Geo-Institute Theatre, Booth 600
- **3:30 – 4:00 p.m.** Vendor Demo – BGC Engineering / Cambio Earth, Exhibit Halls ABC, Geo-Institute Theatre, Booth 600
- **5:30 – 7:00 p.m.** Awards Presentation & Karl Terzaghi Award Lecture, Ballrooms AB

### Wednesday, February 28
- **6:00 – 7:00 a.m.** Yoga – Pacific Rim II, Pan Pacific Hotel
- **6:30 a.m. – 3:30 p.m.** Coat Check, Lobby
- **7:00 a.m. – 12:00 p.m.** Registration Open, Lobby
- **8:00 – 10:00 a.m.** Plenary Session and Geo-PIT, Ballrooms AB
- **9:00 a.m. – 1:00 p.m.** Exhibit Hours, Exhibit Halls ABC
- **10:00 – 10:30 a.m.** Morning Networking Break, West Exhibit Hall B
- **10:00 – 10:30 a.m.** Vendor Demo: Get Involved with Geo-Institute Technical Committees, Exhibit Halls ABC, Geo-Institute Theatre, Booth 600
- **10:00 – 12:00 p.m.** Exhibit Hours, Exhibit Halls ABC
- **10:00 – 12:00 p.m.** Committee Meetings, See page 9
- **10:30 a.m. – 12:00 p.m.** Technical and Special Sessions, See pages 18-19
- **12:00 – 1:00 p.m.** Lunch, Exhibit Halls ABC
- **1:00 – 2:30 p.m.** Ralph B. Peck Award Lecture, Ballrooms AB
- **1:00 – 6:00 p.m.** Exhibitor Move Out, Exhibit Halls ABC
- **2:30 – 3:00 p.m.** Closing Ceremony, Ballrooms AB
- **6:00 – 7:00 a.m.** Yoga – Pacific Rim II, Pan Pacific Hotel
- **6:30 a.m. – 7:30 p.m.** Coat Check, Lobby
- **7:00 a.m. – 12:00 p.m.** Registration Open, Lobby
- **8:00 – 10:00 a.m.** Plenary Session and Geo-PIT, Ballrooms AB
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- **2:30 – 3:00 p.m.** Closing Ceremony, Ballrooms AB

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Program Committee

Conference Chair:
Menzer Pehlivan, Ph.D., P.E., M.ASCE, MPERA Group

Technical Co-Chair:
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Technical Co-Chair:
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Proceedings Co-Editor:
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Local Chapter Liaison:
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Tatiana Vlasova, Digital Content and Program Manager
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Award Lectures

Karl Terzaghi Lecture
Andrew J. Whittle, Sc.D., P.E., P.Eng., NAE, M.ASCE

"Soil Models in Prediction, Design and Geotechnical Problem Solving"
Dr. Andrew Whittle has been chosen by the Geo-Institute to deliver the prestigious Terzaghi Lecture for his pioneering work in soil mechanics. His research focuses on advanced constitutive models and numerical analysis techniques, revolutionizing predictions for foundation and underground projects. Whittle’s contributions redefine geotechnical engineering, setting new standards in the field.

H. Bolton Seed Award Lecture
Kyle M. Rollins, Ph.D., M.ASCE

"Insights on Seismic Soil-Structure Interaction for Bridges from Large-Scale Field Tests"
The Geo-Institute has selected Dr. Rollins to present the Seed Lecture in recognition of his creative, unique and implementable contributions to geotechnical earthquake engineering, which include, but are not limited to, liquefaction testing and analysis and ground and pile response analysis.

Ralph B. Peck Lecture
Jorge G. Zornberg, Ph.D., P.E., F.ASCE

"Roadways on Expansive Clays: Characterizing the Problem and Solving it with Geosynthetics"
The Geo-Institute has selected Dr. Zornberg to present the Peck Award Lecture in recognition of his unique insight through carefully researched case histories that significantly widen the portfolio of options to remediate an old, yet persistent problem in geotechnical engineering: The distress in roadways associated with the presence of expansive clays.

Shamsher Prakash Lecture
Brady R. Cox, PhD, P.E.

"What Spatial Area Influence Seismic Site Response"
The Geo-Institute has selected Dr. Cox in recognition for his significant contributions to soil dynamics and geotechnical earthquake engineering, including: development of dynamic in-situ tests for advanced soil liquefaction evaluations, efforts to quantify uncertainty in surface wave methods, and investigating the spatial area that influences seismic site response.

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Program: Monday, February 26, 2024

Technical Program (continued)

Technical Sessions

Geotechnical Site Characterization: Moderators: Ethan Cargill, Diane Moug

10:30 – 12:00 p.m.

Soil & Site Characterization

Moderators: Ethan Cargill, Diane Moug

10:30 – 12:00 p.m.

Soil Properties: Experimental

Moderators: Ethan Cargill, Diane Moug

10:30 – 12:00 p.m.

Soil Properties: Observational

Moderators: Ethan Cargill, Diane Moug

10:30 – 12:00 p.m.

Soil Properties: Experimental

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10:30 – 12:00 p.m.

Soil Properties: Observational

Moderators: Ethan Cargill, Diane Moug
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Automated Quality checks across lab data

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Tuesday, February 27, 2024

**Technical Program**

**Transportation Infrastructure Modernization**: Li Song

**Geosynthetics & Geosensing Modernization**: Got Held, Sam Ali

**Sustainability & Geospatial Modernization**: Mila Wu

**Program**: Tony Canale, Francisco Ciruela-Ochoa

**Deep Foundations**: Childs, Gurpreet Bala, Brent McAfee

**Revisiting Old Sill Structure and Lock and Permafrost**: Luke Penner

**Downdrag Analysis on Piles by Cyclic Biswas, Anand Puppala, Navid Jafari after Storm Surge Events**: Usama El Shamy


**Deep Foundations Moderators**: Tony Canale, Francisco Ciruela

**Soil Properties**: Imaging, Monitoring, Geotechnics: Alina Kopylova, Max Foussard, Gijs ten Brinke

**Pavement Geotechnics**: Moderators: Nikhil Barj, Jeni Jutla

**Liquefaction Modernization**: Moderators: Aziz Reza Pour, Saeed Zarani

**Computational Geotechnics**: Moderators: Robes Kav, Ehsan H. Shokri

**From Seismic Hazard Models to Earthquake Policy Modernization**: Modarri: N. L. M. Steinke

**Recent Developments in Soil Improvement Modernization**

**Panel Discussion**

**Energy Geotechnics Modernization**: Tegan Huiz, Marka Sarwini

**Panel Discussion**

**Energy Geotechnics**:房福昌（Fang Fuchang）

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Visit us at booth 613 at Geo-Congress 2024!
Wednesday, February 28, 2024

Foundations
Moderators: Rudy Bonaparte, Sanjeev Malhotra

Risk Assessment & Resilience
Moderators: Roberta Oliva, Michael McDowell

Geosynthetics
Moderators: Melissa Brewer, Kaivan Delgadillo

Cold Regions
Moderators: Derrick Stearns, John Tennyson

Next Generation Liquefaction (NGL) Model Development
Moderator: Rishi Verma

Earthquake Early Warning (EEW) systems are growing in popularity throughout the world, as more and more countries leverage new technologies to rapidly detect earthquake ground motion and distribute alerts to the public and to technical users. This session will focus on several aspects of EEW, which is now active on the US West Coast (under the name ShakeAlert) and will be coming soon to parts of Canada. Science and technology behind EEW in North America will be discussed, and the methods through which alerts are delivered to the public, a series of case studies will be presented, exploring practical ways through which EEW can be used to trigger automated actions across a range of sectors.

Panel Discussion
Modeling teams in the Next Generation Liquefaction (NGL) project are using a common database of liquefaction case histories to develop new liquefaction models. Members of the modeling teams will present progress updates and participate in a panel discussion to solicit community feedback.

Armin Seyboldt, Sanjeev Malhotra
Russell Green, Jordan Bell
Scott Brandeisberg, USA

Deep Foundation Effects
Moderators: Caroline Silins, Greg Siemens, Andy Tariaga Bheemasetti

Up Close and Personal with Flood Protection Systems: What Does it Mean to Be Built for This?
Speaker: Greg Siemens, Miami University

The Grain Size Distribution of Photos: How Soil and Rock are a Jewel in the Geohazards Community
Moderator: Jennifer Lind, Geosyntec

Panelists:

Climate Change Puzzle
Panel Discussion – The Role of Geotechnical Engineers in Responding to Climate Change
8:00 – 10:00 a.m.

Adda Athanasopoulo-Lekkis, University of California Berkeley

Wednesday, February 28

8:00 – 10:00 a.m.

Geo-Legends Live with Ed Kavazanjian
Dive into the captivating world of geotechnical engineering with Geo-Legends! Join Matt Evans as he interviews renowned expert Ed Kavazanjian from Arizona State University. Delve into Kavazanjian’s groundbreaking career, from devastating container systems to biogeotechnical engineering. Discover the mind behind prestigious awards, and a National Academy of Engineering induction. Don’t miss this exclusive peek into the forefront of geotechnical innovation!

1:00 – 2:30 p.m.

Geo-PIT
A Geotech in Avalanche Terrain
Erik Jensen, University of Colorado Boulder

Statistics Cannot Create Data: A Call for More Raw Field Data Collection in the Geohazards Communities
Scott McDougall, University of British Columbia

Technical Program (continued)
A Comparison of In-Situ Unit Weight and Moisture Content Measurements Made Using a Traditional Nuclear Density Gauge and a Hybrid Nuclear-Density Gauge from: Christoffer Meurath, William Bokar

A Discrete Element Method-Based Simulation of a Block Toppling Failure on an Inclined Surface: Hossein Dabiriannehad, Attila Zsoki

A Laboratory Examination of the Undrained Cyclic shear Behavior of Pyrodacitic Sands: Kyle Law, Bret Lingwall

A Proper Methodology to Characterize the Associated Variability of UCS Data for the Metamorphic Rocks Based on Outlier Detection Methods: Behzad Dadpaye, Ali Soadit, Shokhihuizar Hadiarzahreh

A Review of the NorSand Constitutive Model's Capabilities in Representing Common Loading Modes in Soil Mechanics: Wiyat Handspaker, Macon Ghadgadzai

A Semi-Analytical Framework to Simulate the Motion of Creeping Landslides: Xiang Li, Giuseppe Bioncani

A study of laterally loaded piles after failure: Rabea Forro, Arne Lemnitzer

An Analytical Approach to Determine Point-of-Failure of Deep Foundation Utilizing Nonlinear Response from p-y Analysis: Fahim Bhuiyan, Ramin Motamed, Raj Saldanha

An Automated Image-Based Approach to Derive Beach Grain Size Characteristics: Julie Popovic

An Investigation of Sources of Asymmetric Thermal Expansion Behavior in Semi-integrated Bridges: Behzad Dadpaye, Jeremy Zongberg

Analysis of the Load-Sharing Behavior of Disconnected Piled Raft Foundation Using Non-linear Soil-Structure Interaction: Vincent Zarjani, Soheilkhehreza Ah, Rob Smith

Application of Deep Reinforcement Learning to Control Drainage in a Lab-Scale Geosystem: Aryan Biyani, Zhan Liu

Assessment of Seismic Ground Response Analysis Modeling Uncertainty at Christchurch Hospital, New Zealand: James Disnakette

Assessment of Soil Classification from Synthetic Aperture Radar: Tess Priest, Julie Popovic

Atterberg Limits of Two Crushed and Unreduced Glacial Cosloils: Danilo Zappelli, Emma Dienis, Zachary Westgate, Sujing Zhang, Don Degroot, Kenneth Miller, James Browning, Ryan Beemer


Case Study: Correlation between Becker and SPT Blow Counts: Ali Jahandari, Viat Tran, Nepal Danoy, Uthaya Uthayakumar, Tyler Trudel, Daniel Brignac, Ryan Porter, Felix Pei

Climate-Induced Multimodality of Soil Moisture Distribution of Water Balance Cover: Md Jabur Bin Alam, Naima Rahman

Comparison of DEM Software with Polyhedral Particle Shapes: Travis Shoeemaker, Estefanita Tanasa, Younok Hwang


Estimating Shear Strength of Residual Soil and Saprilege in South Carolina for Evaluation of Shear Modulus Reduction Models: Ali Sadeghi, Roland Ar drums, Hossein Golshani, Nader Rezaeezandeh, Glenn Rix, Clinton Carlson

Estimating Thaw-Settlement of Highly Organic Permafrost: Zohreh Mohammadi, Jocelyn L. Hoyday

Evaluating Slope Stability of an Embankment Dam using Three- Dimensional Limit Equilibrium Analysis: Tyler Quick


Evaluating Biocor as a soil improvement additive to mitigate tidal marsh expansion: Koljewehi Mobahadi, Victor Kolakin, Kyle Vardi

Evaluating of crushing resistance and hydraulic conductivity of propagants under high closure stress: Hobabstool Ghermezn, Majid Ghasemi

Evaluating Dynamic Properties of Sand Treated with Natural Rubber Latex for Seismic Isolation: Yvonn U., Naven James

Evaluation of Time History-based Models for Validating Nonlinear Deformation Analyses of Liquefiable Geosystems: Marziori Nekhechi, Katerina Zoutopoulou

Experimental Evaluation of Additional Shear Strength for Vetiver Root Reinforced Soil: Forouhah Badman, Md Azizul Islam, Mohammad Shariful Islam

Experimental Setup for Complex Electrical Resistivity Measurements on Unsaturated Soils: Ballast Fouling Materials: Kyle Pan, Stacy Kulcasz

Exploring the Use of Geothermal piles as an Environmental Sustainable Method to Drive-bridge Decks through Field-Scale Experiment: Armin Mohammadianzad, Omid Ghanem-Far, Zhibin Sun, Mark McGuire

Field trial of DFC reinforced break slope against coastal erosion: Shifan Wu, Wotong Wang, Zheng Zhang, Chen Ju, Kang Pong Lin

Geosynth-reinforced capping layer in rail tracks subjected to cyclic loading: Laboratory and Numerical Modelling Studies: Trung Ngo

High Strain Rate Effects on a Clayey Sandy Mixtures: Abdelaziz Al, Naghed Iskander, Stephan Bless, Mahdi Omidi

Impact of Multiple Cyclonic Loads on the Cyclic and Post-Cyclic Behavior of Fine-Grained Soils: Yenacossi Kiaro, Beno Ajmern, Binod Tiwari

Implementation of a Thermomechanical Clay Constitutive Model in Fine-Grained Soils: Laboratory and Numerical Modelling Studies: Trung Ngo, Yenacossi Kiaro, Beno Ajmern, Binod Tiwari

Improved Estimation of California Bearing Ratio value from Dynamic Cone Penetrometer Test Data Using Hierarchical Bayesian Modeling: Lohit Sadjik, Sara Khamoshwain, Lei Wang

Improved Predictions of Liquefaction-Induced Lateral Spreading with SANISAND-MSC: Incorporating Effects of Static Shear Stress: Andrea Reyes, Massenah Anggrojo, Mohdi Omid

Improving Student Engagement, Achievement and Motivation using Game-Design Based Learning in Undergraduate Geotechnical Engineering: Classes: Justin Sabrowsky, Beena Ajmera, Cassandra Rutherford, Alenka Poplin, Alyssa Emery

Indirect Assessment of Mechanical Behavior of Varved Clays under Freezing-Thawing Cycles using SWCC and SFC of Constituent Minerals: Deepali Arora, Minidam De, Ravi K

Infiltration Testing, Design and Mounding Analysis for Effective Stormwater Management for a New Link Light Rail Extension Project in Washington State.: Roy Jensen, Blake Lytle-Goldstein, William Hickey, Madan Karki, Garry Horvitz

InSAR-based Assessment of Seasonal Ground Heave and Settlement: Yusheng Jiang, Zhihui Sun, Xiaoyu Xu

Investigating Student Perceptions of Engineering Judgment through Exploratory Learning: Ryan Carkin, Victoria Bennett, Yogendra Zatkowker, Abigail Snyder, Alyssa Richert, Casper Hartved, Tarek Abdel

Investigating the Impact of Particle Migration Phenomena on Drilling Mud Filtrates during Injection through Porous Media: Jithin S Kumaran, Ramesh Kannan Kumar

Investigating the Influence of Water Salinity Concentrations on Thermal Conductivity of Soils for Buried Infrastructure Systems Relevant on Heat Transfer: ; Saaid Khalimutthi, Oudayhn Khaledi, Youbel Shah

Investigating the Potential of the Material Point Method to Model the Run-out Behavior Observed in Centrifuge Experiments: Mengchun Wang, Yuting Zhao, Sirkarn Wataburo, Jihun Cho

Investigating the Effect of Geosynthetics on Climate-Induced Changes in Unsaturated Soil Behavior Using Non-Parametric Measures: Md Jabur Bin Alam, Mahdi Omidi, Naima Rahman

Investigating the Warming Effects of Creek Bed of Piles Foundations in a Frozen Sandy Soil Using Laboratory-scale tests: Mohammad Alwewey, Sajjad Xiao

Laboratory Assessment for Utilizing Eggshell Waste on Iowa Soil Stabilization: Bo Yang, Zai Yi, Hail Ceylan, Sung-Hwan Kim

Laboratory Measurements of Hydraulic and Compressibility Characteristics of Fertilizer Treated Sandy Soils: Haya Qatoob, Latoo Ola

Large-Deformation Simulation of the 1972 Lower San Fernando Dam Flow Slide Using the Material Point Method: Laurent Tahbat, Joel Given, Wang Long, Enzo Tjung, Khalid Chowdhury, Raymond Seed, Kenichi Saga

Liquefaction Resistance of Fibre Reinforced Pond Aids Us: Sugiy Tell, Ajanta Suchan


Mechanical and Deformation Behaviors of Wyoming Shales: Kam Ng, Lakandro Kheeti, Ehsan Alirazi

Models for Predicting the Maximum and Minimum Index Void Ratios for Sand-Ground Mixtures: Camille Pinto, Jay Grossman, Tyler Skinner

MPM Cosismic Slope Runout Prediction Using the Intergranular Strain Anisotropy Hypoplastic Model: Abdullah Akram, Abo Yero

Nano-assisted Enzyme Induced Calcium Precipitates (EIPC) for Acidic Soil Improvement: Amran Akhtab, Mohamed Abu, Mustaq Oman, Mustafa, Manoran Nazeem

Near Surface Soil Moisture Estimation through Fusion of UAV-Enabled Thermal, Optical, and Multispectral Hyperspatial Imagery at the Oak Ridge Earthflows: Drowsi Gombargh, Dimitris Zekkos

Numerical analysis of Two-Dimensional Tunnel Experiment of Microbiological Induced Desorbtinn (MID) in Layered Silts and Sands: Patrick Kwon, Deepesh Karmacharya, Leon Van Paassen, Edward Kavazanjian

Numerical Modelling of NATM Tunnels Pre-supported with Umbrella Arch Method: Comparison with Field Measurements: Erman Ergincan, Tolga Gunes

Numerical Simulation of High-Speed Penetration of Munitions in Clay: Boules Morok, Rachel White, Mahdi Omidvar, Mahdi Iskander, Stephan Bless


Utilization of Quay Fines as a Sustainable Admixture for Suppressing Etruding-Induced Heaving: Ajayu Alkukhney, Istnejad Justin, Soyannt Chukrakudy, Nipaguty Bows, Anand Puppala, Umam Raj


Zinc Biopolymer for Enhancing Erosion Resistance of Sand: Quotdi Bobohunje, Dong Geon San, Dong-Ju Kim, Yooy-Geon Hoo, Samuel Aresebola, Yang-Hoon Byun

Poster Session 2

3D Slope Stability Analysis by Finite Element Methods: Edward Wei Hao Gu

A Case Study on a New Collaboration Model for Producing a Visualizing AER Laboratory Textbook: Ivan Guzman, Sara Gomez Woolley

A Coupled Finite Element Method in Slope Stability Analysis: Edward Wei Gu

A deep learning model to evaluate cracks in the underground structure of the new domes: Jin Kim, Seungbo Shin, Hyeon-Jong Hwang, Joo-Hyun Seong, Gye-Chun Cho


An Agent-based Modeling Perspective of Bio-mediated Urbanisation: Murheli Rov infl, Emily Bergland, Brian Mays

An Experimental Study of the Saturation Effect on Soil Erodibility using Rotating Testing Apparatus: Yu Tian Li, Cheng Lin

An integrated framework for the probabilistic evaluation and multivariate mapping of liquefaction-induced settlement exceedance rates: Qishen Chen, Changfeng Wang

Analysis of abrasive resealability performed with different energy parameters in rock drilling using waterjet: Hyun-Jong Cho, Jun-Sik Park, Eun-Soo Hong, Tan-Min Oh

Analysis of Laterally Loaded Large Diameter Rigid Pipes Considering Vertical and Horizontal Soil Displacements: Abhisek Paul, Dipanjan Bhowmik

Anisotropic Dynamic Loading Effects on Undrained Sand Shear Module Prepared at Different Compaction Water Contents: Manishir Khokon, Adil Ahmadzadeh, Farhad Jahandari, Alireza Khorasemi, Mohammad Khosravi

Applicability Of Mic As Casm Based Structured Soil Models: Babaji Bandari, Ramiz Kannon, Robinson Romain-Gay

Application of Machine Learning within an Asset Management Framework for Realizing the Impact of Trenching in Urban Environments: Arpan Parijat, Reza Movahedifar, Mahran Eskandari Tushagehan

Application of Metal-organic-Bromopolymer for Eco-Friendly Stabilization of Coastal Soils: Jeyangun Jang, Nipaguty Bows, Anand Puppala, Suraj Seth Chandras Congress, Akibdul Radoke, Oszcar Huang

Assessment of Sinkhole Vulnerability Indices using a Probabilistic Approach of Cover Collapse and Solution Type Sinkholes in Florida: Shivangi Jain, Ryan Shastit, Timothy Copeland, Jannarn Chen, Jinmei An

Assessment of the Relationship Between Undrained Shear Strength and Geotechnical Parameters for Sensitive Clays of Eastern Canada: Sarah Jacob, Ali Sosati, Vania Rana Prais Chavadi, Abouzre Badakchin

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Assessment of the Relationship Between Undrained Shear Strength and Geotechnical Parameters for Sensitive Clays of Eastern Canada: Sarah Jacob, Ali Sosati, Vania Rana Prais Chavadi, Abouzre Badakchin


Bio-Cementation via Microbially Induced Calcium Carbonate Precipitation for Surface Applications: The Effects of Sand Particle Size on Uniformity and Strength: Sabrineh Oush, Huiton Daron, Adrienne Phillips, Mohram Khosravi, Catherine Kirkland, Alfred Cunningham, Lauren Ashbaugh, Randy Hummel

Centrifuge Modeling of Coke Penetration Testing and Dewetting of Coal Combustion Product Deposits: Jana Chen, Brian Roman, Alejandro Martinez, Benjamin Gullaghan

Characterization of Vetiver Root Cohesion for Improvement in Stability of Tropical Hill Slopes: Uyewakuma Parid, Myangsuo Ye Heo, That Nguyen, Aruna Bansalwari, Surya Santh Chandras Congress

Comparative Investigation of Different Plant Species for the Heavy Metal Removal through Phytoremediation: Dhimashiba Dake, Row K. Archana Nair

Comparison of Shear Stress in Erosion Function Apparatus (FEA) and Portable Scouring Device Testing (PSTDP): Manjiri Eshwaru, Abhakumar Osuli, Heather Shoup, Harmil Matekukthik, Rooholah Farzalizadeh

Continuous-Based Modeling of Earthquake Fault Rupture Propagation through Layered Soils: Julie Copano, Fernando Garcia

Correlation Between Resilient Modules, Permanent Strain, and Damping Coefficients for Undisturbed Subgrade Soils: Md Nazrour Rahman, Kazim Mohsin Islam, Sarah L. Gossman

Co-seismic landslide Mobility Assessment Using Machine Learning Models: Bhijn-Roy Huang, Dimitris Zeikos, Marle Clark


Damping Response of Cohesionless Soils from Thermo-Controlled Resonant Column Testing: Royo Denvoi Biliskos, Leaornn Hoyes

Deep Excavation in Clayey Soils for a Sanitary Sewer Pump Station in Maple Ridge, British Columbia: Adam McIntyre, Ulfina Uthiyouhythm, Rano Fietzner, Negar Zarepour

Determination of Elongated Aggregates through Computer Vision Based Technique: Prashob Singh, Ank Pard

Developing a Correlation Method to Determine Gross Intake Volume of Reused Soil: Timothy Copeland, Ryan Shastit, Jinnarn Chen, Bao Hyeon Nam

Development and Preliminary Field Testing of Cyclic Borehole Soil Shear Test Devices: Hwang Jeong, Jeremy Ashlock, Roger Falsmeijer

Development of a Highways Slope Failure Warning System using Field Instrumentation: Farrahon Rahim, Arief Nasrab, Sadle Khan, Masoud Nahavar

Development of a Soil-Borehole Heat Exchanger System for an In-Service Bridge: Gang Iai, Aditya Deshmukh, Mohamal Hannabrecht-Bigand, Md Ahsanuzzaman Khan, Xinbo Ya, Annad Puppala

Development of ground motion input in 2D finite difference analysis of the case history of CentrePort, Wellington, in the Kaikoura 2016 Mw 7.8 Earthquake: Botke Xi, Abhishek Manasapattu-Lazews

Dynamical sodium alginate modified Emulsion Induced Calcium Precipitation (EICP) treated sand: Mohammad Reza, Emeto Amboli, Mohamal Reza, Mohsen Omari

Effect of anisotropic consolidation on shakebox behaviour of granular sub-freezes: Aycha N. Lekki, Sukru, Sivakumar R. Boba

Effect of EICP Treatment on the Unconfined Compressive Strength and Water Sorptivity Characteristics of a Clayey Sand Material: Shwagit Jain, Salim Altheriet, Claudia Zapata, Edward Kavanazian

Effect of fines on thermal conductivity of dry sand-kiln mixture: Ayut Suphassanee, Porsrit Buse

Effect of Inherent Fabric on Cyclic Resistance of Granular Materials with Static Shear: a 3DEA Study: Ali Sales, Ming Yang, Mahdi Taiseht

Effect of Initial Osmotic Suction on the Volume Change Behavior of Saturated Soil: Srikam Yoosu, Mohammadreza Jabei, William Baken, Christopher Meehan

Effect of Specimen Size and Boundaries on the Results of Direct Simple Shear Tests: Mohammad Zareh Shamsabadi, Abouzre Badakchin


Effects of creep and pore pressure diffusion on shear strength of saturated clay: Yael Duffles, Ross Bouekague

Effects of Sands on Thickened Diffused Double Layer around Clay Particles Using Molecular Dynamics: Shijun Wei, Sherif Abdelaziz

Element and System Level Impact of Strength Loss on Cyclic Performance of Sensitive Clays: Tyler Dthon, Tiuan Carey
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**Monday, February 26**
12:15 p.m.

**ASCE Foundation**

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Discover the ASCE Foundation’s recent achievements and initiatives in supporting civil engineers. Learn how your support can help create lasting impact and join us in building a stronger tomorrow for the geo-industry through innovation, collaboration, and investment.

**Monday, February 26**
2:45 p.m.

**Geosetta**

“Advancing Your Practice, Education, and Profession with Open and Shared Geotechnical Data”

Presented by Ross Cutts, P.E., M.ASCE, of Geosetta, and Allen Cadden, P.E., D.GE, M.ASCE of Schnabel Engineering

Discover Geosetta, a groundbreaking platform that utilizes over 200,000 historic data points from more than 22 DOTs, revolutionizing the use of public geotechnical data in geotechnical projects. Geosetta leverages the DIGGS standard, an open and interchangeable format for geotechnical data transfer, ensuring seamless integration and broad accessibility. In this demo, we’ll showcase how easy access to this comprehensive data, enriched with advanced machine learning models, significantly enhances project planning and accurately predicts subsurface conditions. Join us to see how Geosetta’s open APIs and commitment to the DIGGS standard are driving a new era of efficiency and reliability in geotechnical investigations, enabling more informed and data-driven decision-making in the industry.

**Tuesday, February 27**
12:15 p.m.

**Campbell Scientific**

“Campbell Scientific: Static and Dynamic Vibrating Wire Measurements”

Presented by Kevin Randall, a Technical Sales Manager at Campbell Scientific. He has a bachelor’s degree in Geological Engineering and a Master’s degree in Hydrogeology, both from Utah State University.

Campbell Scientific, a leading innovator in measurement and control solutions, will provide attendees with an overview of the company’s expertise and commitment to cutting-edge technology. They will provide a hands-on demonstration with instrumentation, offering a comprehensive exploration of field zero procedures for vibrating wire piezometers and an interactive demonstration showcasing static and dynamic vibrating wire measurements of strain gages embedded in concrete. This segment concludes with insights into best practices in automated instrumentation design. They will then present a real-world application with a case study on the Rend Lake Dam. This case study details troubleshooting experiences related to noisy vibrating wire piezometers and introduces the audience to the innovative VSPECT solution. This presentation promises a valuable blend of theoretical knowledge and practical applications, making it a must-attend event for industry professionals seeking insights into advanced instrumentation technologies and its real-world implementation.

**Tuesday, February 27**
2:45 p.m.

**TabLogs**

“Modern Borehole Logging and Geotechnical Data Management”

Presented by Declan Vanderhor, B.E Geotechnical and Mining Engineering, Director/Founder of TabLogs

Join Declan Vanderhor, Director of TabLogs, at Geo-Congress 2024 for an enlightening presentation on their groundbreaking SaaS product designed for geotechnical and environmental engineers. In this presentation, explore how TabLogs tackles the pervasive issue of inconsistent data logging practices within the industry. TabLogs’ seamless integration into both field and office workflows will be shown as well, breaking down silos and empowering geotechnical professionals to harness the full potential of their data. For those eager to revolutionize their approach to geotechnical data management, learn how TabLogs not only streamlines operations but also transforms data into a powerful asset, opening up new avenues for analysis, reporting, and decisionmaking. Join us at this must-attend event and position yourself at the forefront of the next era in geotechnical engineering.
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Exhibit Floor Plan

Exhibitors:

Booth #  Exhibitor
620  JD Fields & Co
317  Superior North America, Inc.
719  Soblogs
506  Iancor, A Division of CMC
901  Terra Insights*
722  Torra Sonic International
802  The Reinforced Earth Co.*
520  S Universal Schubert Canada Ltd.
612  YI Tech Ltd
200  West Light Media
311  Western Equipment Solutions
103  Wills GeoTechnik
803  Williams Form Hardware & Rockbolt Ltd.
900  WSP*

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- Arizona State University
- Iowa State University
- Texas A&M University
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The Matt Evans Hot Sauce Challenge in Booth 600!
Watch competitors try to win a free registration to Geotechnical Frontiers 2025 in the Matt Evans Hot Sauce Challenge! Matt has lovingly made batches of hot sauce with varying degrees of spice. Whoever can handle the hottest sauce some money on their trip to Louisville next spring. In the Geo-Institute Theatre, Tuesday at 4:15 p.m.

Aquarium
Spend an evening with us at the largest aquarium in Canada! Stop by the registration desk and claim your ticket for a night under the sea. Food, drink, and all the sea life you can handle at the Vancouver Aquarium. Stop by and walk away with a career enhancing photo!

Booth #  Exhibitor
614  Exponent, Inc.*
121  Foundation Technologies, Inc.
622  Figaro
221  GPC - DE NEEF
902  GCTS Testing Systems
1018  GDS Instruments
721  Geomep, Inc.*
613  Geo-Instruments*
317  Geobrugg North America, LLC
818  Geomedia Geotechnics Inc
623  Geomil Equipment B.V.
402  Geophysical Survey Systems, Inc.
506  Geotek, A Division of CMC*
516  Geotrac/GeoTrax
520  Georesense Ltd
406  Geotech All. Engineering
812  Geotec Inc.
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Seequent, a Bentley company, is a world leader in the development of powerful geoscience analysis, modelling, and collaborative software to understand the subsurface for better engineering.

Booth #123  
Seismic Source Company  
www.seismicsource.com


Booth #801  
Senceive  
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Leaders in wireless remote condition monitoring technology. Smart sensors monitor ground and structural movement, landslides, rail track movement and provide real-time, automated alerts.

Booth #521  
Sigicom Inc  
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Sigicom is the leading supplier and manufacturer for autonomous and innovative measuring instrumentation for vibration, noise and Geotech with accompanying cloud software for presentation and reporting.

Booth #208  
Society of Exploration Geophysicists (SEG)  
www.seg.org

The Society of Exploration Geophysicists (SEG) is a global nonprofit organization with a mission of connecting the world’s applied geophysicists.

Booth #125  
Soil Instruments Ltd  
www.soilinstruments.com

Soil Instruments have been continuously developing ground breaking, innovative products that are able to meet the challenge of the demanding Geotechnical environment since 1962. www.soilinstruments.com

Booth #709  
Solmax*  
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Solmax is a leader in sustainable construction solutions for civil and environmental infrastructure. Its products separate, contain, filter and drain essential applications. Founded in 1981, Solmax has grown through acquisition into the world's largest geosynthetics company, with more than 2,000 employees.

Booth #220  
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Creating better environments for people to live and work. Sonitus Systems protect people and property in their living and working environments. We enable customers to make better decisions through insightful analytics, deep understanding and trustworthy products.

Booth #517  
Superior North America, Inc  
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Superior Foundation Equipment, a division of Superior North America, is the top distributor for Eskridge Hydraulic Drive Heads and CMI TORQ-Spool/Hub. They offer tooling, attachments, and exceptional customer service for utility, construction, and helical pile installation.

Booth #719  
TabLogs  
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TabLogs software provides geotechnical and environmental consultancies with digital field data collection, reporting and geodatabase management and links this with all modelling and design packages.

Booth #506  
Tensar, A Division of CMC  
www.tensarcorp.com

At Tensar, we love solving earthwork problems with innovative, resilient solutions and sharing that passion with others. We’re here to support you with proven technology, proven project successes, and greater total value that delivers proven savings.

Booth #901  
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Terra Insights is powered by the trusted and globally experienced brands RST Instruments, Measurand, 3vGeomatics, and Syscom Instruments. By Combining the unique strengths of each brand, Terra Insights has built a comprehensive platform of geotechnical, structural, and geospatial monitoring technology, along with purpose-built data delivery solutions.

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Booth #320
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Booth #311
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Booth #323
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INTELLIGENT RESOURCES INC.
304-975 Chilco Street
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Your name badge is your admission to the congress. Please wear your badge at all times while in the Vancouver Convention Centre. We do suggest removing it upon exiting the building.

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The ASCE/G-I policy of Diversity and Inclusion fosters a culture that encourages the free expression and exchange of engineering ideas by all members, regardless of gender, race, ethnic origin, religion, age, marital status, sexual orientation, disabilities, or any other reason not related to scientific or technical merit.

Health & Safety
ASCE strongly encourages you to be fully vaccinated against COVID-19, wear masks if desired or immunocompromised, and take safety precautions to protect yourself and fellow attendees.

Any attendee who is experiencing COVID-19 symptoms or any concerns they have been infected may not attend in-person activities, but instead should isolate in accordance with CDC protocols. ASCE will continue to monitor the CDC COVID-19 Community Levels and adjust protocols as necessary.

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Please be aware that an inherent risk of exposure to COVID-19 exists anywhere other people are present. Any person who chooses to travel to and/or participate in this conference:
- acknowledges that they are aware of the inherent risk of exposure to the COVID-19 virus while attending the conference;
- recognizes that COVID-19 is a highly contagious disease that can lead to severe illness and death;
- assumes all risks arising from their decision to attend, including but not limited to infection from other vaccinated or unvaccinated participants, hotel staff, hotel guests, or other persons; and
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By virtue of their attendance, all attendees agree to comply with all safety procedures established by ASCE as well as any other protocols put in place by the host sites, travel facilities, or any other applicable authorities.

Meeting Room Overcrowding
ASCE/G-I will make every effort to schedule popular events in rooms large enough to accommodate anticipated attendance. Since many events are extremely popular, it is wise to select alternative events as you plan your conference schedule. ASCE/G-I and the Vancouver Convention Centre are REQUIRED to follow local fire regulations and may ask participants in rooms filled to capacity to choose another event.

No Smoking Policy
Smoking is not allowed at any ASCE/G-I event

Yoga
6:00 - 7:00 a.m., Pacific Rim II, Pan Pacific Hotel
Join fellow early risers to take charge of your day with a clear, thoughtful, and activated intention. Feel fit and strong for whatever the day holds!
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Contributions from the following sponsors enable the Geo-Congress 2024 to carry out its commitment to excellence in programming and networking events for attendees.

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