

FINAL PROGRAM



GEO-CONGRESS 2019

8th International Conference on Case Histories in Geotechnical Engineering
Philadelphia, Pennsylvania | March 24-27

Case Histories – Capturing the Accomplishments of Our Profession



Pennsylvania Convention Center/Loews Philadelphia Hotel

www.geocongress.org

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Welcome to **Geo-Congress 2019**

Schedule at a Glance *(Subject to change)*

All functions take place in the Pennsylvania Convention Center, unless otherwise noted.

Sunday, March 24, 2019

- 7:00 a.m. – 1:30 p.m. Short Course Registration Only – *Loews Philadelphia Hotel, 2nd floor*
- 8:00 a.m. – 12:00 p.m. Short Course 1: Geotechnical Earthquake Engineering, with Emphasis on the Central and Eastern U.S. – *Loews Philadelphia Hotel, Commonwealth A1*
- 8:00 a.m. – 12:00 p.m. Short Course 5: Soil Shear Strength – *Loews Philadelphia Hotel, Commonwealth C*
- 8:00 a.m. – 12:00 p.m. Short Course 7: Foundation Cost Estimating for Geotechnical Engineers – *Loews Philadelphia Hotel, Commonwealth D*
- 8:00 a.m. – 4:30 p.m. Short Course 11: 2D/3D Slope Stability and Seepage – *Loews Philadelphia Hotel, Washington C*
- 12:00 – 7:00 p.m. Conferencer Registration Open – *Broad Street Entrance*
- 1:00 – 5:00 p.m. Short Course 4: Introduction to Tunneling – *Loews Philadelphia Hotel, Commonwealth C*
- 1:00 – 5:00 p.m. Short Course 6: Geotechnical Site Characterization – *Loews Philadelphia Hotel, Commonwealth A1*
- 1:00 – 5:00 p.m. Short Course 8: Practical, Qualitative Risk Evaluation for Geotechnical Projects – *Loews Philadelphia Hotel, Commonwealth D*
- 1:00 – 5:00 p.m. Short Course 10: Ethics in Geotechnical Engineering – *Loews Philadelphia Hotel, Commonwealth B*
- 1:00 – 5:00 p.m. **Exhibitor Setup** – *Exhibit Hall E*
- 2:00 – 2:30 p.m. G-I Student Orientation – *Room 122B*
- 2:30 – 3:30 p.m. G-I Student Professional Development Workshop – *Room 122A*
- 3:30 – 4:30 p.m. G-I Geo-Wall Captains Meeting – *Room 123*
- 4:30 – 5:00 p.m. AGP Induction Ceremony – *Terrace Ballroom IV*
- 5:00 – 6:30 p.m. Opening Remarks and H. Bolton Seed Award Lecture – *Terrace Ballroom IV*
- 6:30 – 8:00 p.m. **Welcome Reception** – *Exhibit Hall E*

Monday, March 25, 2019

- 7:00 a.m. – 6:30 p.m. Registration Open – *Broad Street Entrance (12:15 – 1:15 p.m. Registration Closed for lunch)*
- 8:00 – 8:30 a.m. Welcoming Remarks from the Honorable Edward G. Rendell – *Terrace Ballroom IV*
- 8:30 – 10:00 a.m. Geo-PIT: Powerful, Informative Talks on Geotechnical Topics – *Terrace Ballroom IV*
- 10:00 – 10:30 a.m. **Morning Networking Break** – *Exhibit Hall E*
- 10:30 a.m. – 12:00 p.m. Special Session: History of Case Histories in Geotechnical Engineering; Legacy of Dr. Shamsheer Prakash – *Room 120B*
- 10:30 a.m. – 12:00 p.m. Panel Session: Deep Foundations in Urban Environments – *Room 126A*
- 10:30 a.m. – 12:00 p.m. Technical Sessions – *See pages 12-13*
- 10:00 a.m. – 3:00 p.m. **Student Competitions** – *Exhibit Hall E*
- 12:00 – 1:30 p.m. **Lunch** – *Exhibit Hall E*
- 1:00 – 2:30 p.m. Panel Session: MSE Walls – Milestone Case Histories that Changed the Profession – *Room 126A*
- 1:30 – 3:00 p.m. Special Session: A 50-Year Tribute to Ralph Peck and the Observational Method, Part I – *Room 120B*
- 1:30 – 3:00 p.m. Technical Sessions – *See pages 14-15*
- 3:00 – 3:30 p.m. **Afternoon Networking Break** – *Exhibit Hall E*
- 3:30 – 5:30 p.m. Special Session: A 50-Year Tribute to Ralph Peck and the Observational Method, Part II – *Room 120B*
- 3:30 – 5:00 p.m. Panel Session: State Department of Transportation Executives (Invitation Only) – *Room 126A*
- 3:30 – 5:30 p.m. **Poster Session** – *See pages 16-18*
- 6:00 – 7:30 p.m. Organizational Member Executive Leadership Dinner and Workshop (Invitation Only) – *Loews Philadelphia Hotel – Lescaze Room, 33rd Floor*
- 6:30 – 9:00 p.m. Surprise Offsite Special Events – *Depart from Pennsylvania Convention Center*
- 7:45 – 8:45 p.m. G-I Student Program: Organizational Members and Student Travel Grant Winners Career Fair (Invitation Only) – *Room 122B*
- 8:45 – 9:45 p.m. G-I Student Program: Organizational Member and Student Reception – *Room 122B*

CONFERENCE APP



Be sure to download the mobile app to create a personalized schedule, see all the session details and speakers, last minute changes, and contact other attendees.

To download the app, visit: https://attendify.com/attendify_app/download and search for 'GeoCon 2019'.



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Tuesday, March 26, 2019

- 7:00 a.m. – 5:30 p.m. Registration Open – *Broad Street Entrance*
(12:15 – 1:15 p.m. Registration Closed for lunch)
- 8:00 – 8:30 a.m. Inspiring Remarks from Bibop G. Gresta –
Terrace Ballroom IV
- 8:30 – 10:00 a.m. Geo-PIT: Powerful, Informative Talks on
Geotechnical Topics – *Terrace Ballroom IV*
- 10:00 – 10:30 a.m. **Morning Networking Break** – *Exhibit Hall E*
- 10:30 a.m. – 12:00 p.m. Panel Session: Panel: GBA: Events That Changed
Our Practice – *Room 120B*
- 10:30 a.m. – 12:00 p.m. Panel Session: Fostering Innovation in Tunneling
and Underground Construction – *Room 126A*
- 10:30 a.m. – 12:00 p.m. Technical Sessions – *See pages 19-20*
- 12:00 – 1:30 p.m. **Lunch** – *Exhibit Hall E*
- 12:30 – 1:30 p.m. Geo-Institute Business Meeting – *Room 126A*
- 1:30 – 3:00 p.m. Panel Session: Urban Excavation Support –
Room 126A
- 1:30 – 3:00 p.m. Technical Sessions – *See pages 21-22*
- 3:00 – 3:30 p.m. Afternoon Networking Break – *Exhibit Hall E*
- 3:30 – 5:00 p.m. Panel Session: 7 Year Itch: What Have We
Learned from Hurricane Sandy – *Room 126A*
- 3:30 – 5:30 p.m. **Poster Session** – *See pages 23-25*
- 5:30 – 6:00 p.m. Professional and Student Competition Awards
Presentation – *Terrace Ballroom IV*
- 6:00 – 7:00 p.m. Karl Terzaghi Award Lecture –
Terrace Ballroom IV
- 7:30 – 10:00 p.m. Terzaghi Dinner (Invitation Only) – *Loews
Philadelphia Hotel – Lescaze Room, 33rd Floor*

Wednesday, March 27, 2019

- 7:30 a.m. – 1:00 p.m. Registration Open – *Broad Street Entrance*
- 8:00 – 9:30 a.m. Geo-PIT: Powerful, Informative Talks on
Geotechnical Topics – *Terrace Ballroom IV*
- 9:30 – 10:00 a.m. **Morning Networking Break** – *Exhibit Hall E*
- 10:00 – 11:30 a.m. Panel Session: Changing the Paradigm for
Large Landslides: Forecasting Time-to-Failure –
Room 126A
- 10:00 – 11:00 a.m. Special Session: Robert M. Koerner Lecture
- Lessons Learned: An Adventure in 4 Decades of
Geosynthetics Engineering – *Terrace Ballroom III*
- 10:00 – 11:30 a.m. Technical Sessions – *See pages 26-27*
- 11:30 a.m. – 1:00 p.m. **Lunch** – *Exhibit Hall E*
- 1:00 – 2:00 p.m. Ralph B. Peck Award Lecture –
Terrace Ballroom IV
- 2:00 – 2:30 p.m. Closing Ceremony – *Terrace Ballroom IV*



GEO-INSTITUTE
ASCE Metropolitan Section Chapter



GEO-INSTITUTE
Delaware Valley Chapter



Pennsylvania Convention Center Floor Plans

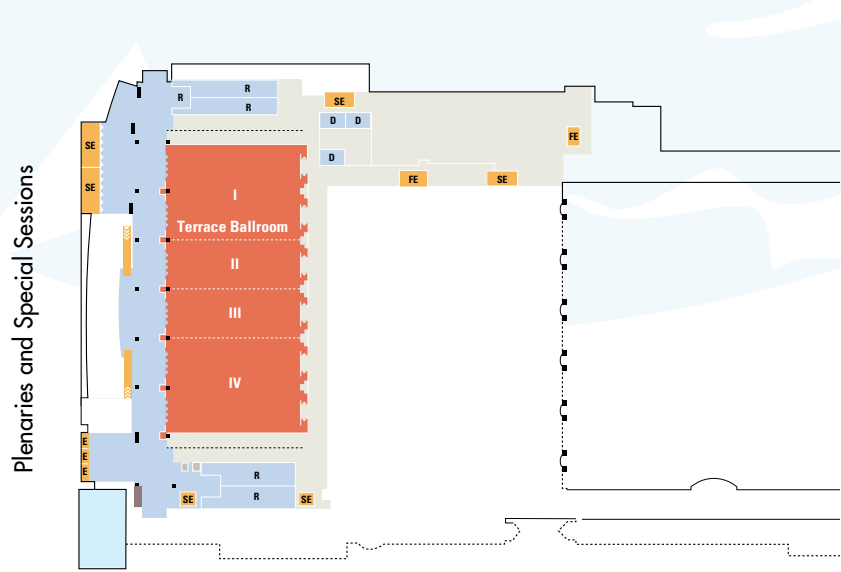
First Floor



Second Floor

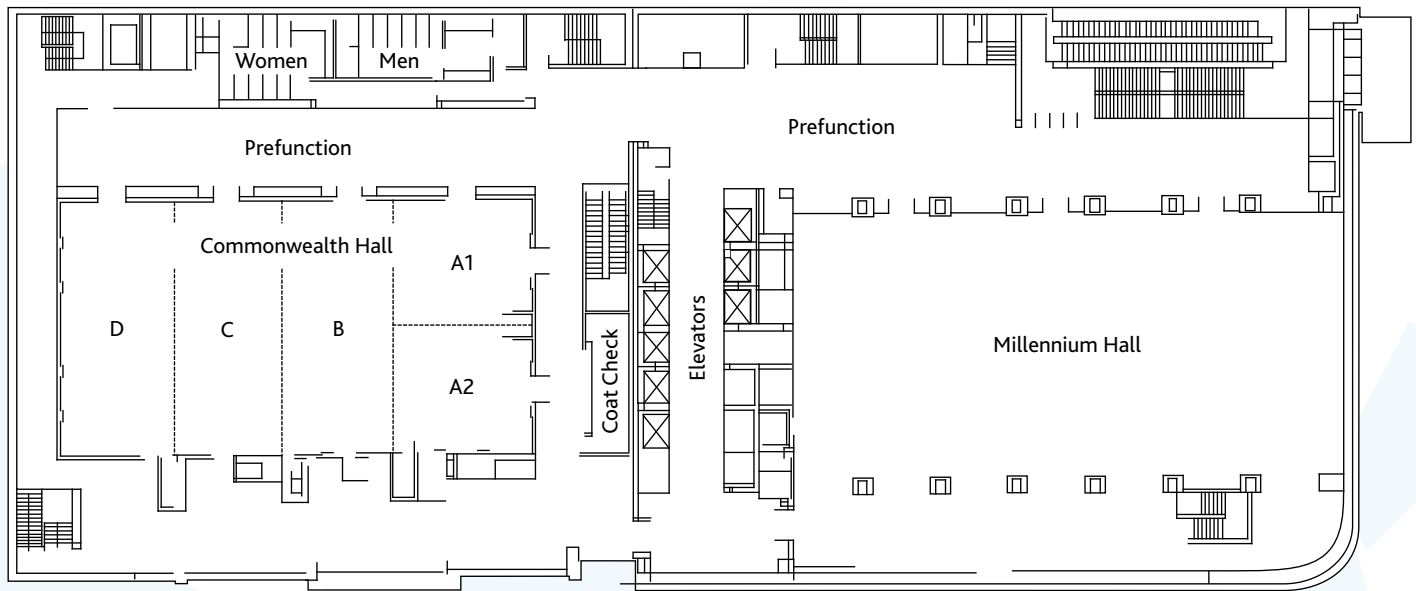


Fourth Floor



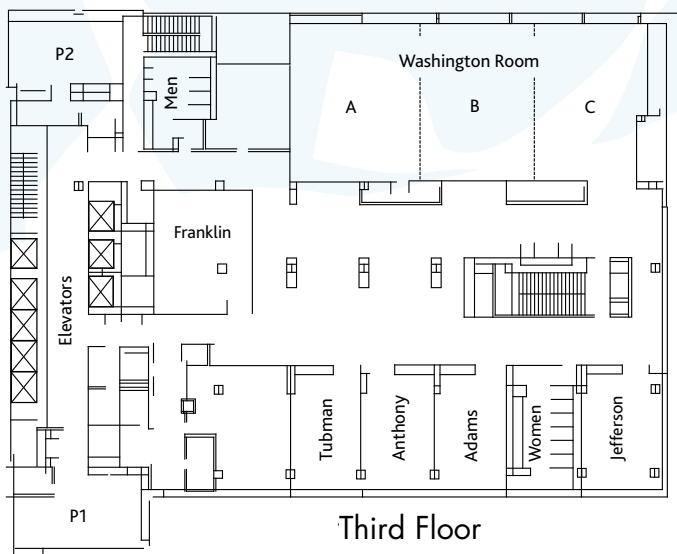
- KEY**
- Entrances
 - Exhibit Halls
 - Meeting Rooms
 - Ballrooms
 - Public Areas
 - Shops
 - Stair, Elevator, Escalator
 - Loading Dock
 - House Storage
 - Offices
 - Back of House
 - C Concession Stand
 - D Dressing Rooms
 - E Elevator
 - FE Freight Elevator
 - F Fire Hose Connection
 - SE Stairs/Emergency Exit
 - R Restrooms
 - T Ticket Offices
 - Columns
 - Telephone
 - Water Fountain

Loews Philadelphia Hotel **Floor Plans**



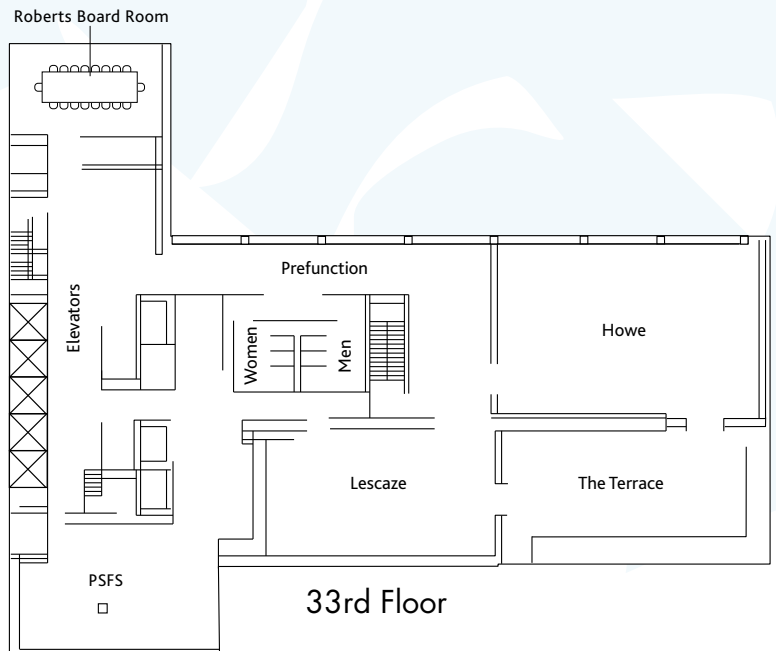
**Short Courses 1-10 and
Committee Meetings**

Second Floor



**Short Course 11 and
Committee Meetings**

Third Floor



33rd Floor

**Organizational Member Executive
Leadership Dinner and Workshop
and Terzaghi Dinner**

Welcome & Program Committee

Welcome from the Conference Co-Chairs

The Program Committee hopes you enjoy your experience here at the *Geo-Congress 2019: The Eighth International Conference on Case Histories in Geotechnical Engineering* and the wonderful experiences the City of Philadelphia has to offer.

From the early days of modern geotechnical engineering, sharing field experiences of the performance of geotechnical structures – dams, foundations, tunnels, landfills – in the form of case histories has driven the advancement of knowledge for the geo-profession. Starting in 1984, Professor Shamsheer Prakash formalized this tradition and organized the First International Conference on Case Histories in Geotechnical Engineering. This conference brought together more than 190 engineers from 30 countries to share their experiences, learn from each other, and advance the profession. By 2013, the 7th conference in this series drew nearly 320 engineers from 40 countries spanning the globe, culminating in symposia to honor Ralph B. Peck and Clyde Baker. But the essence of the conference had not changed: to advance our profession through shared engineering judgment.

Geo-Congress 2019 continues this tradition and features experiences and observations from hundreds of geotechnical projects. The conference includes a wide range of informative technical and panel sessions, short courses, and workshops. Join us in celebration of our geo-accomplishments!



Scott M. Olson, Ph.D., P.E., M.ASCE
University of Illinois at Urbana-Champaign



Allen Cadden, P.E., D.GE, F.ASCE
Schnabel Engineering

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Southern Illinois University Carbondale
Joseph Thomas Coe, Jr., Ph.D., EIT, A.M.ASCE
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*Proud to be a
Platinum Sponsor of
Geo-Congress 2019
and the Karl Terzaghi
Award Lecture.*

*Congratulations to
this year's winner,
Dr. Izzat M. Idriss.*

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Short Courses

SUNDAY, MARCH 24, 2019

SHORT COURSE 1: Geotechnical Earthquake Engineering, with Emphasis on the Central and Eastern U.S.*

8:00 a.m. – 12:00 p.m., *Loews Philadelphia Hotel - Commonwealth A1*

Instructor: Russell A. Green, Ph.D., P.E., M.ASCE, Virginia Tech

SHORT COURSE 5: Soil Shear Strength*

8:00 a.m. – 12:00 p.m., *Loews Philadelphia Hotel - Commonwealth C*

Instructor: Dan Vanden Berge, Ph.D., P.E., M.ASCE, Tennessee Tech

SHORT COURSE 7: Foundation Cost Estimating for Geotechnical Engineers*

8:00 a.m. – 12:00 p.m., *Loews Philadelphia Hotel - Commonwealth D*

Instructor: Jeffrey D. Given, P.E., M.ASCE, Loftus Construction; Todd Culp, Hayward Baker; Michael Cowell, P.E., M.ASCE, GeoStructures, Inc.; Robert Crawford, P.E., M.ASCE, James J. Anderson Construction; Dave Hicks, Richard Goettle, Inc.; with Moderator Archie Filshill, P.E., M.ASCE, Aero Aggregates

SHORT COURSE 11: 2D/3D Slope Stability and Analysis*

8:30 a.m. – 4:30 p.m., *Loews Philadelphia Hotel - Washington C*

Instructors: Murray D. Fredlund, Ph.D., P.E., President/CEO, SoilVision Systems Ltd.; Mitchell Bauche, B.Sc. Engineering, Sales Engineer, SoilVision Systems Ltd.

**Additional ticket purchase required*

SHORT COURSE 4: Introduction to Tunneling*

1:00 – 5:00 p.m., *Loews Philadelphia Hotel - Commonwealth C*

Instructor: Fulvio Tonon, Ph.D., P.E., M.ASCE, University of Colorado-Boulder

SHORT COURSE 6: Geotechnical Site Characterization*

1:00 – 5:00 p.m., *Loews Philadelphia Hotel - Commonwealth A1*

Instructor: Mark Styler, Ph.D., ConeTec

SHORT COURSE 8: Practical, Qualitative Risk Evaluation for Geotechnical Projects*

1:00 – 5:00 p.m., *Loews Philadelphia Hotel - Commonwealth D*

Instructor: Gregory Baecher, Ph.D., M.ASCE, University of Maryland; Scott Raschke, Ph.D., P.E., M.ASCE, Schnabel Engineering; Robert Patev, U.S. Army Corps of Engineers

SHORT COURSE 10: Ethics in Geotechnical Engineering*

1:00 – 5:00 p.m., *Loews Philadelphia Hotel - Commonwealth B*

Instructor: Victor R. Donald, P.E., M.ASCE, Terracon

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- ENVIRONMENTAL
- EARTHQUAKE ENGINEERING

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SUNDAY, MARCH 24, 2019

AGP Induction Ceremony – Terrace Ballroom IV

4:30 – 5:00 p.m.

Opening Remarks

5:00 – 5:30 p.m., *Terrace Ballroom IV*

Conference Co-Chairs: Scott M. Olson, Ph.D., P.E., M.ASCE, University of Illinois at Urbana Champaign; Allen Cadden, P.E., D.GE, F.ASCE, Schnabel Engineering



H. Bolton Seed Award Lecture Geotechnical Judgment and Risk

5:30 – 6:30 p.m., *Terrace Ballroom IV*

W. Allen Marr, Ph.D., P.E., D.GE, NAE, F.ASCE

Sponsored by **JACOBS**

Welcome Reception in the Exhibit Hall

6:30 – 8:00 p.m., *Exhibit Hall E*

Be among the first to see innovations in the industry by attending the Welcome Reception and touring the exhibits. Join colleagues and friends in the Exhibit Hall for this opportunity to network and make valuable future contacts.

Sponsored by



MONDAY, MARCH 25, 2019

Welcoming Remarks from The Honorable Edward G. Rendell

8:00 – 8:30 a.m., *Terrace Ballroom IV*



The Honorable Edward G. Rendell

News Analyst, NBC - Special Counsel, Ballard Spahr, LLP
Governor of Pennsylvania (2003-2011) –
Mayor of Philadelphia (1992-2000)

After 34 years of public service, including 24 years as an elected official, Governor Rendell continues to pursue many of the same issues he was passionate about while serving. His commitment to making America a cleaner, more efficient place and to fostering investment in our nation's crumbling infrastructure is as strong as it has ever been.

Geo-PIT: Powerful, Informative Talks on Geotechnical Topics

8:30 – 10:00 a.m., *Terrace Ballroom IV*

Speakers:

Lelio Mejia, Ph.D., P.E., M.ASCE, Geosyntec: *The Panama Canal: A Wonder of Engineering*

James Mitchell Sc.D, P.E, D.GE(Ret), NAE, Dist.M.ASCE, Virginia Tech: *Geotechnics Goes Out of This World*

Nina Stark, Ph.D., Virginia Tech: *Of Ice and Erosion: Geotechnics in the Arctic Coastal Zone*

Mary Ellen Large, P.E., D.GE, M.ASCE, DFI: *Non-Profit Profits*

Morning Networking Break

10:00 – 10:30 a.m., *Exhibit Hall E*

Student Competitions

10:00 a.m. – 3:00 p.m., *Exhibit Hall E*

Special Session: History of Case Histories in Geotechnical Engineering | Legacy of Dr. Shamsheer Prakash

10:30 a.m. – 12:00 p.m., *Room 120B*

Moderator: Sanjeev Kumar, Ph.D., P.E., F.ASCE, Southern Illinois University Carbondale

Speakers: I.M. Idriss, Ph.D., P.E., NAE, Dist.M.ASCE, University of California, Davis; James K. Mitchell Sc.D, P.E, D.GE(Ret), NAE, Dist.M.ASCE, Virginia Tech; Richard Woods, Ph.D., P.E., D.GE(Ret.), NAE, Dist.M.ASCE, R.D. Woods; Ahmad Elgamal, Ph.D. M.ASCE, University of California San Diego; Jonathan Bray, Ph.D., P.E., NAE, F.ASCE, University of California Berkeley; Dimitrios Zekkos, Ph.D., P.E., M.ASCE, Geoengineer; Vijay K. Puri, Ph.D. M.ASCE, Southern Illinois University Carbondale



Shamsheer Prakash, Ph.D., P.E., D.GE(Ret), Dist.M.ASCE

Shamsheer Prakash has been nationally and internationally recognized for his work in the area of earthquake engineering and soil dynamics, including pioneering work on liquefaction of fine-grained soils, seismic design of piles, and seismic analysis of rigid retaining walls. He revolutionized the use of geotechnical engineering case

histories in professional practice and education, chaired six international conferences on case histories in geotechnical engineering, and wrote several books. Prakash was elected Distinguished Member of the American Society of Civil Engineers in 2011 and was certified a Diplomate of the Academy of Geo-Professionals in 2010. Prakash received the Distinguished Alumnus Award from the Indian Institute of Technology, Roorkee in 2008.

Panel: Deep Foundations in Urban Environments

10:30 a.m. – 12:00 p.m., *Room 126A*

Moderator: George E. Leventis, P.E., F.ASCE, Langan

Panelists: Peggy Hagerty Duffy, P.E., D.GE, ADSC; Charlie Huynh, Case Foundation Company; Thomas Jousselein, Soletanche Bachy; Tony Mazzo, P.E., Urban Foundation Engineering; Silas Nichols, P.E., FHWA; Kathryn Petek, Ph.D., P.E., Shannon & Wilson, Inc.

Lunch

12:00 – 1:30 p.m., *Exhibit Hall E*

Panel: MSE Walls: Milestone Case Histories that Changed the Profession

1:30 – 3:00 p.m., *Room 126A*

Moderator: Barry R. Christopher, Ph.D., P.E., M.ASCE, Christopher Consultants

Panelists: John Sankey, P.E., M.ASCE, ReEngineering LLC; Ryan Berg, P.E., D.GE, M.ASCE, Ryan Berg and Associates; Robert D. Holtz, Ph.D., P.E., D.GE, Dist. M.ASCE, Professor Emeritus, University of Washington; Daniel Alzamora, P.E., M.ASCE, Senior Geotechnical Engineer, Federal Highway Administration

Special Session: A 50-Year Tribute to Ralph B. Peck and the Observational Method, Part I

1:30 – 3:00 p.m., *Room 120B*

Use of the Observational Method as the Sole Basis for Design

Speakers: J. Michael Duncan, Ph.D., P.E., D.GE(Ret.), Dist.M.ASCE, Virginia Tech; Thomas L. Brandon, Ph.D., P.E., M.ASCE, W.C. English Geotechnical Research Laboratory, Virginia Tech

Repairs to Whitehouse Lake Dam

Speakers: Garry H. Gregory, Ph.D., P.E., D.GE, M.ASCE, Gregory Geotechnical; Stephen R. Richards, P.E., M.ASCE, ETL Engineers and Consultants, Inc.

Program Highlights

Afternoon Networking Break

3:00 – 3:30 p.m., *Exhibit Hall E*

Special Session: A 50-Year Tribute to Ralph B. Peck and the Observational Method, Part II

3:30 – 5:00 p.m., *Room 120B*

An Irrefutable Case for Case Histories: Seismic Design of Municipal Solid Waste Landfills

Speakers: Edward Kavazanjian, Jr., Ph.D., P.E., D.GE, NAE, Dist.M.ASCE, Arizona State University

Two Observational Method Applications: An Ideal Solution for Geotechnical Projects with Uncertainty

Speakers: Suzanne M. Lacasse, D.Eng., P.E., D.GE(Ret.), F.ASCE, Norwegian Geotechnical Institute

Poster Session

3:30 – 5:30 p.m., *Exhibit Hall E*

See pages 16-18 for listing.

Organizational Member Executive Leadership Dinner and Workshop (Invitation Only)

6:00 – 7:30 p.m., *Loews Philadelphia Hotel – Lescaze Room, 33rd floor*

G-I Student Program: Organizational Members and Student Travel Grant Winners Career Fair (Invitation Only)

7:45 – 8:45 p.m., *Room 122B*

G-I Student Program: Organizational Member and Student Reception

8:45 – 9:45 p.m., *Room 122B*

TUESDAY, MARCH 26, 2019

Inspirational Remarks from Bibop G.Gresta

8:00 – 8:30 a.m., *Terrace Ballroom IV*



Bibop G. Gresta

Chairman, Co-Founder at Hyperloop Transportation Technologies - Founder Digitalmagics - TedX Speaker - WEF Tech Pioneer

As the Co-Founder and current Chairman of Hyperloop Transportation Technologies (HTT), Bibop Gresta leads a team of 800 professionals in 40 countries across six continents. HTT was the first company to begin development of the Hyperloop™ and is the largest company ever built upon a collaborative business ecosystem. HTT, under Gresta's leadership, has been revolutionizing both mobility and the outdated business models. In 2018 HTT has been declared Technology Pioneer by the World Economic Forum.

Geo-PIT: Powerful, Informative Talks on Geotechnical Topics

8:30 – 10:00 a.m., *Terrace Ballroom IV*

Speakers:

Harry Poulos, Ph.D., P.E., D.Eng., Dist.M.ASCE: *Tall Building Foundations – Challenges, Solutions, and the Future*

Jennifer Nicks, P.E., M.ASCE: *Leap Not Creep: A Case History of a Technology Gone Rogue*

Paul Schmall, P.E., D.GE., F.ASCE: *Moretrench, Sharing the Underground Experience*

Menzer Pehlivan, Ph.D., P.E., M.ASCE: *Inclusion starts with I*
Silas Nichols M.ASCE: *Could we have known?*

Morning Networking Break

10:00 – 10:30 a.m., *Exhibit Hall E*

Panel Session: GBA: Events That Changed Our Practice

10:30 a.m. – 12:00 p.m., *Room 120B*

Moderator: Victor R. Donald, P.E., M.ASCE, Terracon

Panelists: Michael Yost, P.E., Esq., Terracon; James Hamilton, P.E., Esq., GAI

Panel Session: Fostering Innovation in Tunneling and Underground Construction

10:30 a.m. – 12:00 p.m., *Room 126A*

Moderator: Elizabeth M. Dwyre, P.E., D.GE, M.ASCE, WSP

Panelists: Conrad W. Felice, Ph.D., P.E., P.Eng., D. GE., F.ASCE, C.W. Felice, LLC; Debra F. Laefer, Ph.D., M.ASCE, New York University; Tom Pennington, P.E., M.ASCE, McMillen Jacobs Associates; Frank Pepe, P.E., M.ASCE, WSP; Zuzana Skovajsova, P.E., M.ASCE, COWI Tunnel

Lunch

12:00 – 1:30 p.m., *Exhibit Hall E*

Panel Session: Urban Excavation Support

1:30 – 3:00 p.m., *Room 120B*

Moderator: Andrew Burns, P.E., M.ASCE, Skanska

Panelists: Arthur Alzamora, P.E., M.ASCE, Langan Engineering; Theodore Civetta Jr., P.E., M.ASCE, John Civetta & Sons; Joseph A. Sopko, Ph.D., P.E., M.ASCE, Moretrench; Greg Sanchez, Treviicos; Andrew Burns, Underpinning & Foundation Skanska; Toben Jerry, GFL Infrastructure

Afternoon Networking Break

3:00 – 3:30 p.m., *Exhibit Hall E*

Poster Session

3:00 – 5:00 p.m., *Exhibit Hall E*

See pages 23-25 for listing.

Panel Session: 7-Year Itch: What Have We Learned from Hurricane Sandy

3:30 – 5:00 p.m., *Room 126A*

Hurricane Sandy affected metropolitan New York in ways that no storm previously had. In this panel discussion, 3 Geo-Institute members involved in Sandy reconnaissance and 3 local public officials will present their experiences during and after the 2012 superstorm. The discussion will focus on engineering aspects of the immediate aftermath, as well as resilience, mitigation, and adaptation strategies employed in the years since. Each panelist will give a brief prepared presentation followed by discussion and Q&A.

Moderator: Nadine M. Post, ENR

Panelists: Aspasia Nikolaou, WSP USA; Youssef Hashash, University of Illinois at Urbana-Champaign; Thomas O'Rourke, Cornell University; Michael Moriarty, Federal Emergency Management Agency; Carter Strickland, The Trust for Public Land; Anthony Fevola, NJ Transit (invited)

Professional and Student Competition Awards Presentation

5:30 – 6:00 p.m., *Terrace Ballroom IV*

Conference Co-Chairs: Scott M. Olson, Ph.D., P.E., M.ASCE, University of Illinois at Urbana-Champaign; Allen Cadden, P.E., D.GE, F.ASCE, Schnabel Engineering



Karl Terzaghi Award Lecture Response of Soil Sites During Earthquakes A 60-Year Perspective

6:00 – 7:00 p.m., *Terrace Ballroom IV*

Speaker: Izzat M. Idriss, Ph.D., P.E., NAE,
Dist.M.ASCE, University of California, Davis

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ENGINEERING

Terzaghi Dinner (Invitation Only)

7:30 – 10:00 p.m., *Loews Philadelphia Hotel – Lescaze, 33rd Floor*

WEDNESDAY, MARCH 27, 2019

Geo-PIT: Powerful, Informative Talks on Geotechnical Topics

8:00 – 9:30 a.m., *Terrace Ballroom IV*

Speakers:

Michelle L. Barry, Ph.D., P.E., M.ASCE, *University of Arkansas*

Kevin Franke, P.E., M.ASCE, *Brigham Young University: Drones: An
Engineering Reconnaissance Tool of Tomorrow - Here Today!*

Jason DeJong, Ph.D., M.ASCE, *University of California at Davis*

Kord Wissmann, Ph.D., P.E., D.GE, M.ASCE, *Geopier Foundation Co.,
GeoTransformation – Getting it All Back Again*

Scott Anderson, P.E., M.ASCE, *BGC Engineering: We All Saw It the Same Way*

Morning Networking Break

9:30 – 10:00 a.m., *Exhibit Hall E*

Special Session: Robert M. Koerner Lecture Lessons Learned: An Adventure in 4 Decades of Geosynthetic Engineering

10:00 – 11:00 a.m., *Terrace Ballroom III*

Speaker: Barry R. Christopher, Ph.D., P.E., M.ASCE, *Christopher Consultants*

Panel: Changing the Paradigm for Large Landslides: Forecasting Time-to-Failure

10:00 – 11:30 a.m., *Room 126A*

Moderator: Joseph Wartman, Ph.D., P.E., M.ASCE, *University of Washington*

Panelists: Siobhan Whadcoat, UBC ; Paolo Mazzanti, *Sapienza Università
di Roma*; Steve Borron, *IDS GeoRadar*

Lunch

11:30 a.m. – 1:00 p.m., *Exhibit Hall E*



Ralph B. Peck Award Lecture Observations and Findings from Christchurch Case Histories on Soil Liquefaction

1:00 – 2:00 p.m., *Terrace Ballroom IV*

Speaker: Misko Cubrinovsky, Ph.D.

Sponsored by



Closing Ceremony

2:00 – 2:30 p.m., *Terrace Ballroom IV*



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Technical Program

Monday, March 25, 2019

8:00 – 8:30 a.m.	Welcoming Remarks from the Honorable Edward G. Rendell, <i>Terrace Ballroom IV</i>						
8:30 – 10:00 a.m.	Geo-PIT: Powerful, Informative Talks on Geo-Topics, <i>Terrace Ballroom IV</i>						
10:00 – 10:30 a.m.	Morning Networking Break, <i>Exhibit Hall E</i>						
10:30 a.m. – 12:00 p.m.	Special Session: History of Case Histories in Geotechnical Engineering; Legacy of Dr. Shamsher Prakash, <i>Terrace Ballroom III</i>						
10:30 a.m. – 12:00 p.m.	Panel Session: Deep Foundations in Urban Environments, <i>Room 126A</i>						
10:30 a.m. – 12:00 p.m.	Technical Sessions						
Track A Room 122A	Track B Room 125	Track C Room 123	Track D Room 124	Track E Room 121B	Track F Room 120C	Track G Room 121A	
Shallow Foundations Moderators: Xiong Zhang, A.M.ASCE, Hosam Salman, P.E., F.ASCE	Embankments, Dams, and Slopes: Dams and Levees Moderators: Ben A. Leshchinsky, A.M.ASCE, Michael R. Simac, P.E., M.ASCE	Earthquake Engineering and Soil Dynamics: Soil-Structure Interaction Moderators: Shideh Dashti, Ph.D., A.M.ASCE, Deepankar Choudhury, Ph.D., M.ASCE	Soil Improvement: Case Histories Moderators: Michael P. McGuire, Ph.D., P.E., M.ASCE, Brian C. Metcalfe, Ph.D., P.E., M.ASCE	Rock Mechanics Moderators: Joseph F. Labuz, Ph.D., P.E., F.ASCE, Martin Woodard, Ph.D., P.G., P.E.	Geosynthetics Moderators: Marco Isola, P.E., M.ASCE, Melissa S. Beauregard EIT, A.M.ASCE	Engineering Geology and Site Characterization: Part I Moderators: David A. Saffner, Ph.D., A.M.ASCE, Ara G. Mouradian, P.E., M.ASCE	
Comparing Direct Cone Penetration Testing Foundation Designs and Traditional Foundation Designs , Ryan Dagger S.M.ASCE, <i>University of Minnesota Duluth</i> ; David Dassenbrock, P.E., F.ASCE, <i>Minnesota DOT</i> ; Paul Mayne, Ph.D., P.E., M.ASCE, <i>Georgia Institute of Technology</i> ; David Saffner, A.M.ASCE, <i>University of Minnesota Duluth</i> Analysis of Differential Settlement of Circular Tank Foundations on Multilayered Soil , Suranga Guneratne, Ph.D., <i>East Carolina University</i> ; Hoyoung Seo, Ph.D., P.E., <i>Texas Tech University</i> ; William Lawson, Ph.D., P.E., <i>Texas Tech University</i> ; Priyantha Jayawickrama, Ph.D., <i>Texas Tech University</i>	Capacity Restoration and Slope Stabilization of the Gull Island Confined Disposal Facility , Tse-Wei 'Jerry' Chen, P.E., M.ASCE, <i>WSP USA Inc.</i> ; Ragui Wilson-Fahmy, Ph.D., P.E., M.ASCE, <i>WSP USA Inc.</i> ; Matthew Lunemann, <i>WSP USA Inc.</i> ; Scott Douglass, <i>NJDOT</i> Effects of Load History on Seepage-Induced Deformation and Associated Performance in Terms of Probability of Exceeding Limit States - Case Study of Princeville, Levee Rowshon Jadid MS , S.M.ASCE, <i>North Carolina State University</i> ; Brina Montoya, Ph.D., <i>North Carolina State University</i> ; Victoria Bennett, Ph.D., <i>Rensselaer Polytechnic Institute</i> ; Mo Gabr, Ph.D., F.ASCE, <i>North Carolina State University</i>	Hazard-Resistant Steel Pipeline Response to Large Fault Rupture , Brad Wham, Ph.D., A.M.ASCE, <i>University of Colorado Boulder</i> ; Blake Berger, <i>Cornell University</i> ; Thomas O'Rourke, Ph.D., Dist.M.ASCE, <i>Cornell University</i> Large Scale Liquefaction-Induced Lateral Spreading Shake Table Testing at the University of California San Diego , Ahmed Ebeido M.S., S.M.ASCE, <i>University of California, San Diego</i> ; Ahmed Elgamal, Ph.D., M.ASCE, <i>University of California, San Diego</i> ; Muhammad Zayed, M.S., S.M.ASCE, <i>University of California, San Diego</i>	Rockin' the Foundations at the Hard Rock Casino , Jeffrey Hill, P.E., M.ASCE, <i>Hayward Baker, Inc.</i> ; Nicolas Syriopoulos M.ASCE, <i>Hayward Baker, Inc.</i> ; Jeremiah Filjones, A.M.ASCE, <i>Hayward Baker, Inc.</i> ; Andres Baquerizo, P.E., <i>HJ Foundation, Inc.</i> ; Dustin Walkenhorst, P.E., A.M.ASCE, <i>Hayward Baker, Inc.</i> Decades of Engineering Experiences with Sinkholes , M. Ayub Iqbal, Ph.D., P.E., <i>Applied Geoscience & Engineering, Inc.</i>	Stability Assessment of Large Caverns in Horizontally Bedded Strata Considering Time-Dependent Response , Mohammad Moridzadeh, Ph.D. Candidate, S.M.ASCE, <i>Stantec</i> ; Mohammad Djavid, Ph.D., P.E., <i>Stantec</i> ; Barry Doyle, P.E., <i>Stantec</i> Rock Slope Remediation at the Penobscot Narrows Bridge , Bryan Steinert, P.E., <i>Haley & Aldrich, Inc.</i> ; Laura Krusinski, P.E., <i>MaineDOT</i> ; Amber Granger, P.G., <i>Haley & Aldrich, Inc.</i> ; Wayne Chadbourne, P.G., <i>Haley & Aldrich, Inc.</i>	Mechanical Properties of Recycled Concrete Aggregates and Recycled Asphalt Pavements Reinforced with Geosynthetics , Ali Soleimanbeigi, Ph.D., P.E., <i>University of Wisconsin-Madison</i> ; William Likas, Ph.D., <i>University of Wisconsin-Madison</i> Utilization of Pond Ash as Structural Fill Material in Reinforced Soil Structures , Aali Pant, M.Tech, <i>Indian Institute of Technology Delhi</i> ; Manoj Datta, Ph.D., <i>Indian Institute of Technology Delhi</i> ; Gunturi Ramana, Ph.D., <i>Indian Institute of Technology Delhi</i> ; Abinash Mahanta M.Tech, <i>Indian Institute of Technology Delhi</i>	Developing a Calibration Model for Moisture Content Determination Utilizing a Hybrid Nuclear-Electric Gauge , William Baker E.I., S.M.ASCE, <i>University of Delaware</i> ; Christopher Meehan, Ph.D., P.E., F.ASCE, <i>University of Delaware</i> Uppermost Subaqueous Soil Variability in Front of the Situk River Inlet, Alaska, from Portable Free Fall Penetrometer , Dennis Kiptoo Msc, <i>Virginia Tech.</i> ; Nina Stark, Ph.D., <i>Virginia Tech.</i> ; Ali Albatal, Ph.D., <i>Virginia Tech.</i> ; Cagdas Bilici, Ph.D., <i>Virginia Tech</i>	

Track A Room 122A	Track B Room 125	Track C Room 123	Track D Room 124	Track E Room 121B	Track F Room 120C	Track G Room 121A	
10:30 a.m. – 12:00 p.m	Technical Sessions						
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Inspection Protocol for Investigating Structures Subjected to Distress Due to Expansive Soils , Muawia Dafalla, Ph.D., A.M.ASCE, <i>King Saud University</i> ; Mosleh Al-Shamrani, Ph.D., <i>King Saud University</i> Comparison of Estimated Soil Settlements Using Strain-Dependent and High-Strain Elastic Moduli , John Davie, Ph.D., P.E., CEng, M.ASCE; Tyler Liao; Michael Lewis; Jose Clemente, <i>Bethel</i> Conical Load Test-Induced Settlement in Central Florida Soils: Class A Prediction of Field Performance with Advanced Soil Models , A. Felipe Uribe-Henao, <i>University of Central Florida</i> ; Luis Arboleda-Monsalve, Ph.D., <i>University of Central Florida</i> ; Sergio Savater, <i>University of Central Florida</i> ; Manoj Chopra, Ph.D., P.E., <i>University of Central Florida</i> ; Larry Jones, <i>Florida DOT</i> A New Analysis of Circular Raft on Layered Elastic Soil , Hesham Elhuni, <i>University of Waterloo</i> ; Bipin Gupta, <i>University of Waterloo</i> ; Dipanjan Basu, Ph.D., C. Eng, M.ASCE, <i>University of Waterloo</i>	Multi-Decadal Earth Dam Deformation Monitoring using Airborne LiDAR and Structure from Motion at Lago Guajataca, Puerto Rico , Andres Villarreal Arango, <i>University of Puerto Rico at Mayaguez</i> ; Alesandra Morales-Velez, Ph.D., I.T., <i>University of Puerto Rico at Mayaguez</i> ; Stephen Hughes, Ph.D., <i>University of Puerto Rico at Mayaguez</i> Case History: Rapid Drawdown Analysis of Village Creek Plant Levee , Daniel VandenBerge, Ph.D., P.E., <i>Tennessee Tech</i> ; Garry Gregory, Ph.D., P.E., D.GE., <i>Gregory Geotechnical</i> ; Prince Turkson, <i>Tennessee Tech</i> Brownsville Levee Instability , Lucas Walshire, P.E., <i>U.S. Army Corps of Engineers</i> ; Joseph Dunbar, Ph.D., R.P.G., <i>U.S. Army Corps of Engineers</i> ; Isaac Stephens, P.E., <i>U.S. Army Corps of Engineers</i> ; Maureen Corcoran, Ph.D., R.P.G., <i>U.S. Army Corps of Engineers</i> Deformation Analysis of Ritschard Dam: A Case Study of Rockfill Compression Induced Movements , Masood Kafash, Ph.D., P.E., <i>AECOM</i> ; Tiffany Adams, Ph.D., P.E., <i>AECOM</i> ; Richard Davidson, P.E., <i>AECOM</i> ; Ray Tenney, P.E., <i>Colorado River Water Conservation District</i> ; Don Meyer, <i>Colorado River Water Conservation District</i>	Centrifuge Investigation of the Effects of Liquefiable Soil Interlayering and Structural Strength on the Seismic Performance of Soil-Structure Systems , Balaji Paramasivam, <i>University of Colorado Boulder</i> ; Shideh Dashti, <i>University of Colorado Boulder</i> ; Abbie Liel, <i>University of Colorado Boulder</i> Seismic Performance of Buildings at CentrePort Wellington , Jonathan Bray, Ph.D., P.E., NAE, F.ASCE, <i>Univ. of California, Berkeley</i> ; Misko Cubrinovski, Ph.D., <i>University of Canterbury, Christchurch, NZ</i> ; Christopher de la Torre, P.E., <i>University of Canterbury, Christchurch, NZ</i> ; Ribu Dhakal, <i>University of Canterbury, Christchurch, NZ</i> Numerical Simulation of Dynamic Centrifuge Tests on Concrete Faced Rockfill Dam , Muhsin Acar S.M.ASCE, <i>University of Illinois at Urbana-Champaign</i> ; Ozgun Numanoglu S.M.ASCE, <i>University of Illinois at Urbana-Champaign</i> ; Youssef Hashash, Ph.D., P.E., F.ASCE, <i>University of Illinois at Urbana-Champaign</i> Assessing the Significance of Dynamic Soil-Structure Interaction in Bridges by Using Large-Amplitude Mobile Shakers , Shareef Farrag MSc, M.ASCE, <i>Rutgers University</i> ; Nenad Gugunski, <i>Rutgers University</i> ; Brady Cox, <i>The University of Texas, Austin</i> ; Faryuh Meng, <i>The University of Texas, Austin</i> ; Franklin Moon, <i>Rutgers University</i> ; John Devitis, Ph.D., <i>Rutgers University</i>	A Study on the Quality of Improved Bodies Constructed by Jet Grouting Utilizing a Cutting Condition Monitoring System , Takasi Shinsaka, Dr.Eng, P.E.Jp, Sen. Pro.C.E., <i>Sanshin Corporation</i> ; Junnichi Yamazaki, P.E.Jp, <i>Sanshin Corporation</i> ; Yasuharu Nakanishi, N.I.T. Inc.; Kazuhito Komiya, <i>Chiba Institute of Technology</i> Sand and PV Drains – Historical Developments, Some Early Research and Case Histories , Robert Holtz, Ph.D., P.E., D. GE., Dist. M.ASCE, <i>University of Washington</i> Rigid Inclusions Ground Improvement for A New Energy Facility: Design, Construction and Full-Scale Embankment Load Testing and Results , David Mazzei, P.E., <i>Hayward Baker, Inc.</i> ; Ken Kniss, P.E., <i>Hayward Baker, Inc.</i> ; Fathey Elsaid, Ph.D., P.E., <i>Mueser Rutledge Consulting Engineers</i> ; Yan Zhang, Ph.D., <i>Hayward Baker, Inc.</i> Case Study: Design, Installation and Analysis of Column Supported Embankment Systems at I-295/I-76/Route 42 Direct Connection Contracts 1 & 2 , Nina Carney, P.E., M.ASCE, <i>Menard USA</i> ; Sarah Ramp, P.E., M.ASCE, DGI, <i>Menard USA</i> ; Dylan Davis, A.M.ASCE, DGI, <i>Menard USA</i>	A Non-Stationary Power Law Model to Predict the Secondary Creep Rate of Rocks , Ruofan Wang M.Eng., <i>École Polytechnique de Montréal</i> ; Li Li, Ph.D., <i>École Polytechnique de Montréal</i> Analysis and Comparison of Measured Static and Dynamic Moduli of a Dolostone Specimen , KC Bijay, M.S., S.M.ASCE, <i>University of Vermont</i> ; Maziar Foroutan, M.S., S.M.ASCE, <i>University of Vermont</i> ; Ehsan Ghazanfari, Ph.D., M.ASCE, <i>University of Vermont</i> Numerical Study on Thermally-Induced Displacement Ratcheting of a Thin Rock Slab , Sihyun Kim, Ph.D., <i>Bradley University</i> ; Ethan Druszkowski, <i>Bradley University</i> ; Jingtao Zhang, <i>University of Nebraska-Lincoln</i> ; Seunghee Kim, Ph.D., <i>University of Nebraska-Lincoln</i> Thermal Effects on Reservoir-Sealing Rock Interactions during Injection Operations , Xinle Zhai, <i>University at Buffalo</i> ; Kamelia Monfared, Ph.D., <i>University at Buffalo</i>	Numerical Study of the Behavior of a Fully Encased Stone Column Bearing on a Non-Rigid Layer , Ali Al Saadi, <i>University of Delaware</i> ; Christopher Meehan, <i>University of Delaware</i> ; Victor Kaliakin, <i>University of Delaware</i> Case Histories of Multi-Layer Interface Tests for Composite Liners and Comparison to Single Interface Tests , Thevachandran Shenthann, Ph.D., P.E., G.E., <i>Advanced Earth Sciences, Inc.</i> ; Kris Khilnani, P.E., G.E., <i>Advanced Earth Sciences, Inc.</i> ; Timothy Stark, Ph.D., P.E., D.GE., <i>University of Illinois at Urbana-Champaign</i> Evaluation of GCL and Geomembrane Characteristics on Failure Modes and Critical Shear Strength of GCL/Geomembrane Composite System , Shahin Ghazizadeh, <i>Colorado State University</i> ; Christopher Bareither, Ph.D., P.E., <i>Colorado State University</i> Lessons Learned Regarding Exit Strategies from Geosynthetic Drainage Composites , Robert Koerner, Ph.D., P.E., <i>Drexel University</i>	On-Site Particle Size Distribution by FieldSed , Andrea Ventola S.M.ASCE, <i>University of Michigan</i> ; Roman Hryciw, Ph.D., M.ASCE, <i>University of Michigan</i> Site Variability Characterization Using Cone Penetration Test Data , Eshan Ganju, S.M.ASCE, <i>Purdue University</i> ; Rodrigo Salgado, Ph.D., P.E., D.GE., F.ASCE, <i>Purdue University</i> ; Monica Prezzi, <i>Purdue University</i> Comparison of Dispersion-Based Analysis of Surface Waves and Full Waveform Inversion in Characterizing Unknown Foundations , Siavash Mahvelati, <i>Temple University</i> ; Joseph Coe, Ph.D., <i>Temple University</i> Interpretation of Distribution of Ancient Rivers in Singapore using 3D Geological Model , Xiaohua Pan, Ph.D., <i>Nanyang Technological University</i> ; Zarli Aung, <i>Nanyang Technological University</i> ; Aung Nyo, <i>Nanyang Technological University</i> ; Kiefer Chiam, <i>Building and Construction Authority, Singapore</i> ; Defu Wu, <i>Building and Construction Authority, Singapore</i> ; Jian Chu, Ph.D., <i>Nanyang Technological University</i>	

Technical Program

Monday, March 25, 2019 (continued)

10:00 a.m. – 3:00 p.m.		Student Competitions, <i>Exhibit Hall E</i>					
12:00 – 1:30 p.m.		Lunch, <i>Exhibit Hall E</i>					
1:30 – 3:00 p.m.		Panel Session: MSE Walls – Milestone Case Histories that Changed the Profession, <i>Room 126A</i>					
1:30 – 3:00 p.m.		Special Session: A 50-Year Tribute to Ralph Peck and the Observational Method, Part I, <i>Room 120B</i>					
1:30 – 3:00 p.m.		Technical Sessions					
Track A Room 122A	Track B Room 125	Track C Room 123	Track D Room 124	Track E Room 121B	Track F Room 120C	Track G Room 121A	Track H Room 121C
Deep Foundations: Piles Moderators: Sarah L. Gassman, P.E., M.ASCE, Sam Sternberg, III, P.E., D.GE, M.ASCE	Embankments, Dams, and Slopes: Embankment and Slope Stability Moderators: Bernardo A. Castellanos, A.M.ASCE, Peter A. Narsavage, P.E., M.ASCE	Earthquake Engineering and Soil Dynamics: Numerical Modeling Moderators: Ashly Cabas Mijares, Ph.D., A.M.ASCE, Zia Zafir G.E., P.E., M.ASCE	Soil Improvement: Biopolymers Moderators: Michael G. Gomez, A.M.ASCE, Maria Chrysochoou, A.M.ASCE	Soil Properties and Modeling Moderators: Michelle L. Bernhardt, Ph.D., A.M.ASCE, Inthuorn Sasanakul, P.E., M.ASCE	Sustainability In Geotechnical Engineering Moderators: Boo Hyun Nam, Ph.D., A.M.ASCE, Krishna R. Reddy, Ph.D., P.E., D.GE, ENV SP, F.ASCE	Engineering Geology and Site Characterization: Part II Moderators: Paola Bandini, Ph.D., P.E., M.ASCE, Eric S. Backlund, P.E., M.ASCE	Data and Software for Geotechnical Engineering Moderators: Robert C. Bachus, P.E., D.GE, M.ASCE, Jan Cermak, P.E., M.ASCE
A Continuum Based Nonlinear Analysis of Laterally Loaded Piles, Bipin Gupta, Ph.D. Candidate, <i>University of Waterloo</i> ; Dipanjan Basu, Ph.D., CEng., M.ASCE, <i>University of Waterloo</i> Coupled Numerical Analysis of Variations in the Capacity of an Energy Pile in Clay Soil, Arvin Farid, Ph.D., P.E., M.ASCE, <i>Boise State University</i> ; Daniel Zimmerman, <i>Boise State University</i> Pile Design for Use in High-Tension Cable Median Barriers, Mojdeh Asadollahi Pajouh, Ph.D., P.E., M.ASCE, <i>University of Nevada Las Vegas</i> ; Karla Lechtenberg, <i>University of Nebraska-Lincoln</i> ; Robert Bielenberg, <i>University of Nebraska-Lincoln</i> ; Ronald Faller, <i>University of Nebraska-Lincoln</i>	Primary and Post-Surcharge Secondary Settlements of a Highway Embankment Constructed over Highly Organic Soils: A Case History, Liang Chern Chow, P.E., M.ASCE, <i>American Engineering Testing, Inc.</i> ; Joseph Bentler, P.E., M.ASCE, <i>American Engineering Testing, Inc.</i> ; Richard Lamb, P.E., M.ASCE, <i>MinnesotaDOT</i> Surcharge Embankment on Marine Clayey Silt Case Study and Lessons Learned, Steven Halcomb, P.E., G.E., M.ASCE, <i>CRW, Engineering Group LLC</i> ; Sean Sjostedt, P.E., M.ASCE, <i>PND Engineers, Inc.</i> Application of Instrumentation Monitoring and Observational Methods in Construction of a Large Embankment on Soft Ground, Jiaer Wu, Ph.D., P.E., G.E., M.ASCE, <i>China Harbour Engineering Company USA Ltd</i>	Soil-Structure Interaction Analysis of a Large Diameter Tank on Piled Foundations in Liquefiable Soil, Frederick F Tajirian, Ph.D., P.E., F.ASCE, <i>Chevron Energy Technology Company</i> ; Mansour Tabatabaie, Ph.D., P.E., M.ASCE, <i>MTR and Associates</i> ; Pramod Rao, Ph.D., P.E., M.ASCE, <i>Chevron Energy Technology Company</i> Validation of a Bounding Surface Plasticity Model against the Experimental Response of (Bio-) Cemented Sands, Maya El Kortbawi, <i>University of California, Davis</i> ; Katerina Ziotopoulou, <i>University of California, Davis</i> ; Michael G. Gomez, <i>University of Washington, Seattle</i> ; Minyong Lee, <i>University of Washington, Seattle</i> Impact of Hysteretic Damping on Nonlinear Dynamic Soil-Underground Structure-Structure Interaction Analyses, Yuamar Imarrazan Basarah, S.M.ASCE, <i>University of Illinois at Urbana-Champaign</i> ; Ozgun A. Numanoglu S.M.ASCE, <i>University of Illinois at Urbana-Champaign</i> ; Youssef M.A. Hashash, Ph.D., P.E., F.ASCE, <i>University of Illinois at Urbana-Champaign</i> ; Shideh Dashti, Ph.D., M.ASCE, <i>University of Colorado Boulder</i>	Filler-Stabilized Xanthan Gum for Soil Improvement, Justin Antonette S.M.ASCE, <i>Stony Brook University</i> ; Karam Jaradat, <i>Stony Brook University</i> ; Johnny Donza, <i>Stony Brook University</i> ; Zubin Darbari, <i>Stony Brook University</i> ; Sherif Abdelaziz, Ph.D., <i>Stony Brook University</i> Case Study: Use of Geopolymers to Evaluate the Swell-Shrink Behavior of Native Clay in North Texas, Rinu Samuel, EIT, S.M.ASCE, <i>University of Texas at Arlington</i> ; Oscar Huang, <i>Texas A&M</i> ; Aritra Banerjee, <i>University of Texas at Arlington</i> ; Jasaswee Das, <i>University of Texas at Arlington</i> ; Anand Puppala, <i>University of Texas at Arlington</i> ; Miladin Radovic, Ph.D., <i>Texas A&M University</i> Shear behavior of Hydrogel-Type Biopolymer-Treated Coarse Soils Evaluated by Laboratory Tri-Axial Test, Sojeong Lee, M.S., <i>University of New South Wales (UNSW)</i> ; Jooyoung Im, <i>Korea Advanced Institute of Science and Technology (KAIST)</i> ; Gye-Chun Cho, Ph.D., <i>Korea Advanced Institute of Science and Technology (KAIST)</i> ; Ilhan Chang, Ph.D., A.M.ASCE, <i>University of New South Wales (UNSW)</i>	Influence of Temperature Variation on Complex-Impedance Measuring Instrument Test Results, Jason S. Hertz, P.E., M.ASCE, <i>Skanska</i> ; Christopher L. Meehan, Ph.D., P.E., F.ASCE, <i>University of Delaware</i> Electrical Resistivity Measurements in Advanced Triaxial Tests, Wing Shun Kwan, Ph.D., P.E., M.ASCE, <i>California State University, Los Angeles</i> ; Mark Tufenkjian, <i>California State University, Los Angeles</i> ; James Tuazon, <i>California State University, Los Angeles</i> ; Niccolas Peralta, <i>California State University, Los Angeles</i> ; Kenny Khov, <i>California State University, Los Angeles</i> ; Freddy Garcia, <i>California State University, Los Angeles</i> Frequency Effects on Low-Strain Shear Modulus and Damping for Natural Clays and Silts, Pitak Rutithivaphanich, <i>University of South Carolina</i> ; Inthuorn Sasanakul, Ph.D., PE, M.ASCE, <i>University of South Carolina</i>	Role of Water Absorption on Rainsplash Erosion Performance of Natural Fiber RECPs, Jennifer L Smith, Ph.D., <i>John P. Stopen Engineering Partnership</i> ; Shobha K. Bhatia, Ph.D., <i>Syracuse University</i> Innovative and Sustainable Uses of Volcanic Ash as a Natural Pozzolan for Dust Abatement and Unpaved Roadway Improvement, Matthew Sleep, Ph.D., <i>Oregon Institute of Technology</i> ; Morgan Masley, <i>Oregon Institute of Technology</i> Application of Triple Bottom Line Sustainability Framework to Select Remediation Method at Industrial Contaminated Site, Krishna R Reddy Ph.D., P.E., D.GE, F.ASCE, ENV SP, <i>University of Illinois at Chicago</i> ; Girish Kumar, S.M.ASCE, <i>University of Illinois at Chicago</i>	Karst Topography Risks – Investigation, Design, and Construction with Case Studies, Jeremy J. Brown, P.E., M.ASCE, <i>Schnabel Engineering</i> ; Mia Painter P.G., <i>Schnabel Engineering</i> ; B. Philip Shull, P.E., <i>Schnabel Engineering</i> Shear Behavior of Weathered Compacted Shales, Lindsey Sebastian Bryson, Ph.D., P.E., M.ASCE, <i>University of Kentucky</i> ; Faisal S. Ahmed, M.ASCE, <i>University of Kentucky</i> Sinkhole Stability Charts in Central Florida Soils, Moataz Soliman, <i>University of Central Florida</i> ; Luis Arboleda, <i>University of Central Florida</i> ; David Horhota, <i>Florida Department of Transportation</i> ; Boo Hyun Nam, <i>University of Central Florida</i>	Case Histories in the Evolution of Geotechnical Data and How it is Changing Our Industry, Allen Cadden, P.E., D.GE, F.ASCE, <i>Schnabel Engineering, Inc.</i> ; Johanna Mikitka Simon, P.E., M.ASCE <i>Schnabel Engineering, Inc.</i> ; Todd Roberts P.G.; <i>Sensemetrics</i> The Value of Data – The Qatar Geological Mapping Project, Joseph T. Krupansky, P.G., <i>Gannett Fleming Inc.</i> ; Michael A. Knight, P.G., <i>Gannett Fleming Inc.</i> ; Randall C. Orndrff, <i>U.S. Geological Survey</i> ; Khaled M. Al-Akhras, Ph.D., P.E., <i>Ministry of Municipality & Environment</i> ; Ara G. Mouradian, P.E., <i>Gannett Fleming Inc.</i> ; Ali F. Saleh, <i>Ministry of Municipality & Environment</i> GIS-Based Geotechnical Engineering Data Management: A Case Study at the Alabama DOT, Andrew J. Graettinger, Ph.D., M.ASCE, <i>The University of Alabama</i> ; Kaye Chancellor Davis, P.E. M.ASCE, <i>Alabama Department of Transportation</i> ; Randy K. Smith, Ph.D., <i>The University of Alabama</i> ; Rachel Robinson, <i>The University of Alabama</i>

1:30 – 3:00 p.m. Technical Sessions							
Track A Room 122A	Track B Room 125	Track C Room 123	Track D Room 124	Track E Room 121B	Track F Room 120C	Track G Room 121A	Track H Room 121C
Deep Foundations: Piles Moderators: Sarah L. Gassman, P.E., M.ASCE, Sam Sternberg, III, P.E., D.GE, M.ASCE	Embankments, Dams, and Slopes: Embankment and Slope Stability Moderators: Bernardo A. Castellanos, A.M.ASCE, Peter A. Narsavage, P.E., M.ASCE	Earthquake Engineering and Soil Dynamics: Numerical Modeling Moderators: Ashly Cabas Mijares, Ph.D., A.M.ASCE, Zia Zafir G.E., P.E., M.ASCE	Soil Improvement: Biopolymers Moderators: Michael G. Gomez, A.M.ASCE, Maria Chrysoschoou A.M.ASCE	Soil Properties and Modeling Moderators: Michelle L. Bernhardt, Ph.D., A.M.ASCE, Inthurn Sasanakul, P.E., M.ASCE	Sustainability In Geotechnical Engineering Moderators: Boo Hyun Nam, Ph.D., A.M.ASCE, Krishna R. Reddy, Ph.D., P.E., D.GE, ENV SP, EASCE	Engineering Geology and Site Characterization: Part II Moderators: Paola Bandini, Ph.D., P.E., M.ASCE, Eric S. Backlund, P.E., M.ASCE	Data and Software for Geotechnical Engineering Moderators: Robert C. Bachus, P.E., D.GE, M.ASCE, Jan Cermak, P.E., M.ASCE
Comparison of Settlement Response of Piled-Raft Foundation Subjected to Combined Loads Computed from Finite Element and Analytical Models, Nadarajah Ravichandran, Ph.D., Clemson University; Shweta Shrestha, Clemson University The Reaction of CPT to Excavation Unloading and its Effect on Laterally Loaded Piles; Jongjiang Li, Southeast University of China; The University of Western Australia; Songyu Liu, Ph.D., M.ASCE, Southeast University; Liyuan Tong, Ph.D., Southeast University; Tao Yang, Southeast University Load Transfer Mechanism of Micropiles in Weathered Rock, Ed 'Auda' Theinat E.I.T, M.ASCE, Purdue University; Ronaldo Luna, Ph.D., P.E., F.ASCE, Saint Louis University	Unmanned Aircraft System (UAS) Photogrammetry for Tracking Streambank Erosion and Geomorphic Change Along a Protected River Corridor, Scott D Hamshaw, Ph.D., P.E., University of Vermont; Kristen L Underwood, University of Vermont; Donna M. Rizzo, Ph.D., University of Vermont; Jarlath O'Neil-Dunne, University of Vermont; Mandar M. Dewoolkar, Ph.D., P.E., University of Vermont Rupture Failure Modes in Analyses of Stability of Soil and Rock Slopes, Dawon Park M.Sc., University of Michigan; Radoslaw L. Michalowski, Ph.D., F.ASCE, University of Michigan Load Displacement Compatibility Method for Design of Column-Supported Embankments: Comparison to Case Histories, Joel A. Sloan Ph.D., P.E., M.ASCE, U.S. Air Force Academy; Michael P. McGuire Ph.D., P.E., M.ASCE, Lafayette College; Aaron P. Gallant Ph.D, P.E., M.ASCE, University of Maine	An Experimental and Numerical Study of Prefabricated Vertical Drains as a Liquefaction Countermeasure for Mat-Founded Structures, Jenny Ramirez, University of Colorado Boulder; Shideh Dashti, Ph.D., University of Colorado Boulder; Abbie Liel, University of Colorado Boulder; Balaji Paramasivam, University of Colorado Boulder Cyclic Behavior and Liquefaction Resistance of Fine Coal Refuse – Experimental and Numerical Modeling; Sajjad Salam, Pennsylvania State University; Ming Xiao, Ph.D., P.E., Pennsylvania State University; Arash Khosravifar, Ph.D., P.E., Portland State University; Jintai Wang, Pennsylvania State University Propagation of Seismic Settlements at Depth to the Ground Surface – A Case History, Jose L.M. Clemente, Ph.D., P.E., D.GE, F.ASCE, Bechtel National, Security & Environmental; Michael R. Lewis, P.E., F.ASCE, Bechtel Infrastructure; Tainfei "Tyler" Liao, Ph.D., P.E., M.ASCE, Bechtel NS&E; Michael D. McHood, P.E., M.ASCE, Bechtel NS&E; Michael Boone, P.E., M.ASCE, Black & Veatch	Reducing Soil Permeability Using In-Situ Biofilm-Forming Bacteria: Overcoming Testing Apparatus Challenges, Mary J.S. Roth, Ph.D., P.E., M.ASCE, Lafayette College; Laurie Caslake, Ph.D., Lafayette College A Study on Thermal Consolidation of Fine Grained Soils Using Modified Consolidometer, Mohammad Joshaghani S.M.ASCE, University of Louisville; Omid Ghasemi-Fare, A.M.ASCE, University of Louisville Effect of Molarity of Geopolymers on CKD and UGCC Admixed BC Soil, Prathap Kumar M T, Ph.D., RNS Institute of Technology; Sapna Devendra M.E., Ghousia College of Engineering	Visualizing the Role of Particle Shape on 2D Inter-Particle Fluid Flow Using a Transparent Soil, Surrogate, Linzhu (Lynn) Li M.Sc., New York University; Mehdi Ormidvar, Ph.D., A.M.ASCE, Manhattan College; Stephan Bless Sc.D., F.APS, F.IBS, NYU; Maqeed Iskander, Ph.D., P.E., F.ASCE, New York University Impact of Biology on Particle Crushing in Offshore Calcareous Sediments, Ryan D Beemer, Ph.D., A.M.ASCE, University of Western Australia; Aleksey Sadekov, Ph.D., University of Western Australia; Ulysse Lebre, Norwegian Geotechnical Institute – Perth; Jeremy Shaw, Ph.D., University of Western Australia; Alexandre Bandini-Maeder, Ph.D., University of Western Australia; Mark J Cassidy D.Phil., The University of Melbourne Accounting for Strain Rate Dependent Behavior during Consolidation of Saturated Clay, Ross W. Boulanger, Ph.D., P.E., F.ASCE, University of California, Davis; Scott J. Brandenburg, Ph.D., P.E., M.ASCE, University of California at Los Angeles	Performance of a Field-Scale Shallow Horizontal Thermal Energy Storage System, Tugce Baser, Ph.D., University of Alberta; Candice Hanna, University of California San Diego; John S McCartney, Ph.D., P.E., M.ASCE, University of California San Diego Use of Repurposed Fibers to Decrease Hydraulic Conductivity without Compromising Load Restrictions in Urban Roof Farms, Ivan L. Guzman, Ph.D., M.B.A., P.E., M.ASCE, New York City College of Technology; Sandra M. Torres M.ASCE, New York City College of Technology Geotechnical Resilience Engineering Guidelines for Upland Confined Disposal Facilities: A Case Study Approach, Matthew M Lunemann, P.E., ENV. S.P., M.ASCE, WSP USA; W. Scott Douglas, New Jersey Department of Transportation	Rockfall in New Jersey: A Proactive and Collaborative Approach, Amber B. Granger P.G., Haley & Aldrich; Edward M. Zamiskie, P.E., Haley & Aldrich; Scott J. Deek, P.E., New Jersey Department of Transportation; John P. Jamerson, New Jersey Department of Transportation Mill Creek: Efficient Characterization and Development of 200-Acre Site Underlain by Karst Geology, Ryan T. Walters, P.E., Maser Consulting P.A.; Alexander Ross P.G., Maser Consulting P.A.; Philip E. Gauffreau, P.E., M.ASCE, Maser Consulting P.A.	Slope Stability Monitoring and Early-Warning System for Kariba Dam South Bank Slope Prospect, Kudakwashe Motsi, MSc (candidate), University of Cape Town; Denis Kalumba, University of Cape Town; Lunga Mapekula, University of Cape Town; Charles Chibvura, University of Southern Queensland Preliminary Results from a Continuous Compaction Control Data Set Recorded During Active Earthwork Construction, William J. Baker, III E.I., S.M.ASCE, University of Delaware; Christopher L. Meehan, Ph.D., P.E., F.ASCE, University of Delaware Distributed Fiber Optic Sensing of Land Deformation: Methods and Case Studies, Cheng-Cheng Zhang, University of California, Berkeley; Bin Shi, Ph.D., Nanjing University; Kenichi Soga, Ph.D., M.ASCE, University of California, Berkeley
3:00 – 3:30 p.m. Afternoon Networking Break, Exhibit Hall E							
3:30 – 5:30 p.m. Special Session: A 50-Year Tribute to Ralph Peck and the Observational Method, Part II, Room 120B							
3:30 – 5:30 p.m. Poster Session I, Exhibit Hall E (see pages 16-18)							
6:00 – 7:30 p.m. Organizational Member Executive Leadership Dinner and Workshop (Invitation Only), Loews Philadelphia Hotel – Lescaze Room, 33rd Floor							
7:45 – 8:45 p.m. G-I Student Program: Organizational Members and Student Travel Grant Winners Job Fair (Invitation Only), Room 122B							
8:45 – 9:45 p.m. G-I Student Program: Organizational Member and Student Reception, Room 122B							

Technical Program

Monday Poster Session

3:30 – 5:30 p.m., Exhibit Hall E

Deep Foundations: Piles

PB02 | **Experimental and Numerical Analysis of Bearing Capacity of Large Diameter Open-Ended Pipe Piles**, Yuan Guo, Ph.D., *Case Western Reserve University*; Jiale Li, Ph.D., *Case Western Reserve University*; Xiong Yu, Ph.D., P.E., FASCE, *Case Western Reserve University*

PB03 | **Geotechnical Centrifuge Experiments on Bearing Capacity of Pipe Piles**, Jiale Li, Ph.D., *Hebei University of Technology*; Yuan Guo, Ph.D., *Case Western Reserve University*; Xiong Yu, Ph.D., P.E., FASCE, *Case Western Reserve University*

PB04 | **Analysis & Assessment of the Exiting Deep Foundation and Design of Supplemental Deep Foundation for Dolphin Tower**, Said Irvani, Ph.D., P.E., FASCE, *Irvani P. A.*

PB05 | **Performance of Osterberg Cell (O-cell) Load Tests on High-Capacity Production Drilled Shafts at the Kosciusko Bridge**, Matteo Ferrucci, P.E., *WSP USA*; Daniela Zellers, *WSP USA*; Sherif Hanna, *WSP USA*; Bob Adams, *NYSDOT*; Jeff Moryl, *NYSDOT*

Deep Foundations: Drilled Shafts

PB06 | **Sinkhole Development and Propagation During Drilled Shaft Construction in West-Central Florida during the 2017 Atlantic Hurricane Season**, Christopher Benjamin Stryffeler, P.E., M.ASCE, *University of South Carolina*; Inthum Sasanakul, Ph.D., P.E., *University of South Carolina*

PB07 | **Effects of Cavities on the Mechanical Behavior of Pile Foundations in Weak Rock**, Thao Van Thi Nguyen, *Muroran Institute of Technology*; Shima Kawamura, A.M.ASCE, *Muroran Institute of Technology*; Satoshi Matsumura, *Port and Airport Research Institute*

PB08 | **Numerical Study of Quasi-Static to Dynamic Pullout Capacity of Anchors in Sand**, Bahman Sheikh, M.S., Ph.D. Candidate, *Pennsylvania State University*; Tong Qiu, Ph.D., P.E., *Pennsylvania State University*

Deep Foundations: Other

PB09 | **A Case History of Installation and Load Testing Challenges for Auger-Cast Piles in the Piedmont Geology**, Bradford Drew, P.E., *Willmer Engineering Inc.*; Sujit K. Bhowmik, Ph.D., P.E., M.ASCE, *Willmer Engineering Inc.*; Jim L. Willmer, P.E., FASCE, *Willmer Engineering Inc.*

PB10 | **Complexities of Mixed Foundation Systems for Boston Highrise**, Kelvin Wong, M.S.C.E., P.E., *Haley & Aldrich, Inc.*; Damian Siebert, P.E., M.ASCE, *Haley & Aldrich, Inc.*; Sandra Iberg, M.S.C.E., P.E., *Haley & Aldrich, Inc.*

PB11 | **High-Capacity Micropiles in Edmonton Shale**, Onur Kacar, Ph.D., P.E., M.ASCE, *Arup*; Andrew Cushing, P.E. *Arup*

PB12 | **Studies on Cyclic Behaviors of Unit Bucket for Tripod Foundation System under Various Loadings via Centrifuge Model Tests**, Yeong-Hoon Jeong, *Korea Advanced Institute of Science and Technology (KAIST)*; Jae-Hyun Kim, *Korea Advanced Institute of Science and Technology (KAIST)*; Heon-Joon Park, *Korea Advanced Institute of Science and Technology (KAIST)*; Dong-Soo Kim, *Korea Advanced Institute of Science and Technology (KAIST)*

PB21 | **Hydraulic Fracturing in Widely-Graded Dam Core Material**, Ross D. Waters, B.E. (Hons), P.E., *University of Canterbury*; Kaley Crawford-Flett, B.E. (Hons), Ph.D., *University of Canterbury*; Mark Stringer, Ph.D., *University of Canterbury*; Jennifer Haskell, Ph.D., *University of Canterbury*

Embankments, Dams, and Slopes: Dams and Levees

PB22 | **Finite Element Modeling of Partial Penetration Well Uplift Factors**, Andrew M. Keffer, P.E., *U.S. Army Corps of Engineers, Huntington District*; Erich D. Guy, Ph.D., P.G., *U.S. Army Corps of Engineers, Huntington District*; Elisabeth M. Chang, *U.S. Army Corps of Engineers, Huntington District*

PB23 | **Safety Evaluation and Rehabilitation for Buxi High CFRD with Face Slab Rupture**, Yao Xu, *China Institute of Water Resources and Hydropower Research*; Yang Wang, Ph.D., *China Institute of Water Resources and Hydropower Research*; Rong Li, *China Institute of Water Resources and Hydropower Research*

PB24 | **Geotechnical Health Assessment of Roadway Embankment Using Airborne Lidar**, Ahmed H. Elmekati, Ph.D., P.E., M.ASCE, *Maser Consulting, P.A.*; Robert Dannenberg, R.P., *Maser Consulting, P.A.*; Nabil Ghanem, P.E., *Maser Consulting, P.A.*

Embankments, Dams, and Slopes: Embankment and Slope Stability

PB25 | **Reliability-Based Stability Analysis of Fiber-Reinforced Infinite Slopes**, Assile Abou Diab, Ph.D., *Dar Al Uloom University*; Shadi Najjar, Ph.D., A.M.ASCE, *American University of Beirut*; Salah Sadek, Ph.D., M.ASCE, *American University of Beirut*

PB28 | **Design and Repair of a Reinforced Steep Slope, Pinnacle at Tutwiler Farms, Birmingham, Alabama**, Robert L. Goehring, P.E., D.GE., FASCE, *ECS Southeast*

PB39 | **Seismic Bearing Capacity Factor Nye for Shallow Strip Footing Using Modified Pseudo-Dynamic Method**, Kshitija Nadgouda, S.M.ASCE, M.S., *Indian Institute of Technology Bombay*; Deepankar Choudhury, Ph.D., M.ASCE, *FNASC Indian Institute of Technology Bombay*

Earthquake Engineering and Soil Dynamics: Soil-Structure Interaction

PB40 | **Shake Table Test of Railway Embankment Consisting of LWA and TDA**, Arezoo Sadrinezhad, Ph.D., P.E., *California State University Fresno*; Fariborz M. Tehrani, Ph.D., P.E., *ENV SP, California State University Fresno*; Bhavesh Jeevanlal, *California State University Fresno*

PB41 | **Numerical Assessment of Seismic Earth Pressure for Integral Abutment Bridges**, Mahmood Seid-Karbasi, Ph.D., *Golder Associates Ltd.*

PB42 | **Seismic Behavior or Buried Pipelines in Mexico City Valley**, Raul Flores-Berrones Ph.D., P.E., FASCE, *Mexican Institute of Water Technology*

PB43 | **Comparison of Seismic Response of Gravity and Cantilever Retaining Wall Backfilled with Dirty Coarse-Grained Material**, Faiza Khan, *Southern Illinois University Edwardsville*; Siavash Zamiran, *Marino Engineering Associates, Inc.*; Abdolreza Osouli, Ph.D., P.E., M.ASCE, *Southern Illinois University Edwardsville*

PB44 | **Effects of Soil-Structure Interaction of FRP Confined Reinforced Concrete Structure under Lateral Cyclic Loading**, Vivek B., Ph.D., *BITs Pilani Dubai Campus*; Prishati Raychowdhury, Ph.D., *Indian Institute of Technology Kanpur*

PB45 | **Seismic Retrofit Design of a 110-year Old Railway Bridge Founded on Liquefiable Soils Using Large Diameter Driven Piles**, Ali Ghandeharion, Ph.D., P.Eng., *Klohn Crippen Berger Ltd.*; James Williams, M.Sc., P.E., *Klohn Crippen Berger Ltd.*; Bruce Hamersley, P.E., *Klohn Crippen Berger Ltd.*

PB46 | **Seismic Soil-Structure Interaction Response of Tall Buildings**, Jaime A. Mercado, M.Sc., S.M.ASCE, *University of Central Florida*; Luis G. Arboleda-Monsalve, Ph.D., M.ASCE, *University of Central Florida*; Vesna Terzi, Ph.D., *California State University Long Beach*

PB47 | **Measured and Predicted Dynamic Horizontal Sliding and Rocking Response of an Embedded Footing at TAMU NGES Site**, Patrick W. Dunn, Ph.D., P.E., *Duke Energy*; Dennis R. Hiltunen, Ph.D., P.E., M.ASCE, *University of Florida*

PB48 | **Dynamic Numerical Evaluation of Landfill Perimeter Levee on Liquefiable Subgrade Mitigated with Cement Deep Soil Mixing**, Alan F. Witthoef, P.E., G.E., M.ASCE, *Geo-Logic Associates, Inc.*; Robbie M. Warner P.E., G.E., M.ASCE, *Geo-Logic Associates, Inc.*; Neven Matasovic, Ph.D., P.E., G.E., FASCE, *Geo-Logic Associates, Inc.*

Earthquake Engineering and Soil Dynamics: Numerical Modeling

PB49 | **Numerical Investigation on the Displacements and Failure Mechanism of Soil-Nailed Structures in Seismic Conditions**, Hamed Dashtara, M.S., *Iran University of Science and Technology*; Amirhossein Kolahdoozan, *Iran University of Science and Technology*; Alireza Saedi Azizkandi, Ph.D., *Iran University of Science and Technology*; Mohammad Hasan Baziar, Ph.D., *Iran University of Science and Technology*

PB50 | **Pore Water Response of Seabed Soils During Multi-Hazards: Model Validation**, Yingqing Qiu, *Oregon State University*; H. Benjamin Mason, Ph.D., *Oregon State University*; Michael H. Scott, Ph.D., *Oregon State University*

PB51 | **Finite Element Studies of an Earthquake-induced Landslide using Different Plastic Flow Rules**, Chih-Hsuan Liu, *National Cheng Kung University*; Ching Hung Ph.D., *National Cheng Kung University*; Huabei Liu, Ph.D., *Huazhong University of Science and Technology*

PB52 | **Fully Non-Linear Numerical Simulation of a Shaking Table Test of Dynamic Soil-Pile-Structure Interactions in Soft Clay Using Abaqus**, Alaa Al-Isawi, Msc., *Brunel University London*; Philip Collins, Ph.D., *Brunel University London*; Katherine Cashell, *Brunel University London*

PB53 | **The Effect of Varying Fluid Injection Activities on Induced Earthquakes through Joint-Enriched Finite Element Analyses**, Danilo Zeppilli, *Rowan University*; Amade Pouya, Ph.D., *Université Paris-Est*; Cheng Zhu, Ph.D., *Rowan University*

PB54 | **Effects of Rock Layering on Dynamic Response of A Gravity Dam**, Yunwei Dan, MS, *University at Buffalo, SUNY*; Kamelia Atefi Monfared, Ph.D., *University at Buffalo, SUNY*; Cemal Basaran, Ph.D., *University at Buffalo, SUNY*

PB55 | **Seismic Liquefaction of Sand at High Confining Pressures**, Min Ni, *Rensselaer Polytechnic Institute*; Tarek Abdoun, Ph.D., *Rensselaer Polytechnic Institute*; Ricardo Dobry, Ph.D., *Rensselaer Polytechnic Institute*

Earthquake Engineering and Soil Dynamics: Laboratory Testing

PB56 | **The Propagation Mechanics of Liquefied Sand Lenses Due to Cyclic Loading**, Luis E. Vallejo, Ph.D., M.ASCE, *University of Pittsburgh*

PB57 | **Elevation of Dynamic Pore Water Pressure Acting on Quay Walls Using 1-g Shaking Table Model Test**, Salman Rahimi, *University of Arkansas*; Abbas Ghalandazadeh, *University of Tehran*; Ali Kavand, *University of Tehran*

PB58 | **Effect of Plasticity on Liquefaction of a Selected Fine Grained Soil**, Sandip Uprety, P.E., M.ASCE, *Rhea Engineers & Consultants*; Vijay Puri, Ph.D., *Southern Illinois University*; Rakam Lama Tamang, P.E., M.ASCE, *Tetra Tech*; Prabir Kolay, Ph.D., P.E., M.ASCE, *Southern Illinois University Carbondale*

PB59 | **Static Liquefaction Response of Medium Dense Silty-Sand of Chang Dam**, Majid Hussain, *Indian Institute of Technology Gandhinagar, India*; Debayan Bhattacharya, *Indian Institute of Technology Gandhinagar, India*; Ajanta Sachan, Ph.D., *Indian Institute of Technology Gandhinagar, India*

PB60 | **Stress-Strain Behaviour of Adelaide Industrial Sand Under Monotonic Loading**, Reena Hora, Ph.D., *University of South Australia*; Mizanur Rahman, *University of South Australia*; Simon Beecham, *University of South Australia*; Rajibul Karim, *University of South Australia*

PB61 | **Experimental Evaluation of Spatial Variability Effects on Liquefaction-Induced Settlements**, Milad Jahed Orang, *University of Nevada Reno*; Sam Brukett, *University of Nevada Reno*; Ramin Motamed, Ph.D., P.E., M.ASCE, *University of Nevada Reno*

PB62 | **Effect of Smear, Well Resistance, and Stiffness on the Performance of Stone Column During Soil Liquefaction**, Suravi Pal, M.Tech, *Indian Institute of Technology*; Kharagpur Kousik Deb II, Ph.D., *Indian Institute of Technology Kharagpur*

Earthquake Engineering and Soil Dynamics: Seismic Hazard Analysis, Site Response, Liquefaction

PB63 | Assessment of Lateral Spreading Estimations through the Lens of Centrifuge Modeling, Mona Doostmohammadi, North Carolina State University; Ashly Cabas Ph.D., North Carolina State University; Brina Montoya Ph.D., P.E., North Carolina State University

PB101 | A First Step in Building on a Mine Tailings Superfund Site Part 2: Full-Scale Footing Load Tests, Byron Foster, Kleinfelder, Inc.; Bret N Lingwall, Ph.D., P.E., M.ASCE, South Dakota School of Mines and Technology; Trent Parkhill, P.E., Kleinfelder, Inc.; Matt Moriarty, P.E., Kleinfelder, Inc.

Engineering Geology and Site Characterization: Part I

PB102 | Inferring Drainage Conditions During In-Situ Cone Penetration, Mark Anthony Styler, Ph.D., ConeTec Investigations; Jim Greig, MASc, ConeTec Investigations; Mary Nguyen, ConeTec Investigations

PB103 | Development of a Probabilistic Spatio-Magnitude Sinkhole Hazard Model, Yong Je Kim, University of Central Florida; Boo Hyun Nam, University of Central Florida; Heejung Youn, Hongik University

PB105 | A Centrifuge Study on the Effects of Soil Gradation on CPT Tip Resistance, Alexander P. Sturm, M.S., University of California, Davis; Greg M. Shepard, M.S., University of California, Davis; Jason T. DeJong, Ph.D., University of California, Davis; Daniel W. Wilson, Ph.D., University of California, Davis

PB106 | Effect of Acid Rain on the Structure Integrity of Red Clay, Xiong Zhang, Ph.D., P.E., Missouri University of Science and Technology; Shanmei Li, Missouri University of Science and Technology

PB107 | A First Step in Building on a Mine Tailings Superfund Site Part 1: Large Test Fills, Byron Foster, Kleinfelder, Inc.; Bret N. Lingwall Ph.D., P.E., M.ASCE, South Dakota School of Mines and Technology; Trent Parkhill P.E., Kleinfelder, Inc.; Matt Moriarty P.E., Kleinfelder, Inc.

PB108 | Design of a Deep Basement in Atypically Complex Boston Ground Conditions, Kelvin Wong M.S.C.E, P.E., Haley & Aldrich, Inc.; Damian Siebert, P.E., M.ASCE, Haley & Aldrich, Inc.; Taylor LaBrecque, M.S., Haley & Aldrich, Inc.

PB91 | Theoretical Study on the Seepage Field of Single-Well Recharge in Confined Aquifer Considering Permeability Degradation, James L. Hanson, Ph.D., P.E., M.ASCE, California Polytechnic State University; Nazli Yesiller, Ph.D., California Polytechnic State University

PB92 | In situ Characteristics of Fine Coal Refuse, Cyrus Jedari, M.ASCE, University of Tennessee; Angelica M. Palomino, Ph.D., M.ASCE, University of Tennessee; Eric C. Drumm, P.E., Ph.D., M.ASCE, University of Tennessee; Daniel Boles, P.E., M.ASCE, S&ME, Inc.

PB96 | Improved Prediction of Permeability Rates and Performance for Green Infrastructure using Standard Penetration Testing, Erica A. Vigliorolo, E.I.T., M.ASCE, Mott MacDonald; Vatsal A. Shah, P.E., Ph.D., P.P., Mott MacDonald

PB97 | Determination of Sand Void Ratio Using CPT and SPT, Sherif Wissa Agaiby, Dar Al-Handasah; Sayed Mohamed Ahmed, Ain Shams University

PB109 | Sinkhole Vulnerability Assessment Using Groundwater Monitoring and Internal Soil Raveling Analysis – A Central Florida Case Study, Ryan Shamet, University of Central Florida; Boo Hyun Nam, Ph.D., University of Central Florida; David Horhota, Florida Department of Transportation; Ton Tu, University of Central Florida

Engineering Geology and Site Characterization: Part II

PB110 | Enhanced Analysis of Landslide Failure Mechanisms in the Ozark Plateau Region with Near Surface Geophysics, Weston J. Koehn, S.M.ASCE, Kansas State University; Stacey E. Tucker-Kulesza, Ph.D., P.E., M.ASCE, Kansas State University; Vanessa Lebow, S.M.ASCE, University of Arkansas; Salman Rahimi, S.M.ASCE, University of Arkansas; Michelle L. Bernhardt-Barry, Ph.D., P.E., M.ASCE, University of Arkansas; Clinton M. Wood, Ph.D., P.E., M.ASCE, University of Arkansas

PB111 | In Situ Seismic Investigations of Coal Tailings, Min Liew, The Pennsylvania State University; Ming Xiao, Ph.D., P.E., The Pennsylvania State University

PB112 | Spatial and Temporal Variations in Moisture Content at a Sandy Beach and the Impact on Sediment Strength, Julie Paprocki, S.M.ASCE, Virginia Tech; Nina Stark, Ph.D., M.ASCE, Virginia Tech; Jesse E. McNinch, U.S. Army Corps of Engineers; Heidi Wadman, U.S. Army Corps of Engineers

PB113 | Investigating the Yield Anisotropy of Resedimented Nile Silty Clay, Sherif A. Y. Akl, Ph.D., Aff.ASCE, Cairo University; Karim M. Salaheldin, Cairo University; Hani A. Lotfi, Ph.D., Cairo University

PB114 | Surface Wave Testing and Analyses at a Gravelly site near Jackson Wyoming for Transportation Infrastructure, Shawn C. Griffiths, Ph.D., University of Wyoming; Joshua D. Frazier, B.S., University of Wyoming

PB100 | Electromagnetic Soil Heating Using Magnetic Nanoparticle-Coated Geotextiles, Ijung Kim, Ph.D., Western New England University; Caroline Best, Western New England University; Seunghye Kim, Ph.D., University of Nebraska-Lincoln

Geosynthetics

PB93 | Block Resonance Test on Geosynthetics Reinforced Foundation Beds, Hasthi Venkateswarlu, Indian Institute of Technology Patna; Amarnath Hegde, Ph.D., Indian Institute of Technology Patna

PB94 | Applicability of Mobile Photogrammetry to Measure Facing Displacement of Reinforced Soil Walls, Tomohiro Fujita, Public Works Research Institute; Hiroaki Miyatake, Public Works Research Institute; Yoshihisa Miyata, National Defence Academy

PB95 | SEM Analyses on the Long-term Performance of H2Ri Wicking Geotextile, Xiong Zhang, Ph.D., P.E., Missouri University of Science and Technology; Jianhua Yin, Missouri University of Science and Technology

PB98 | Influence of Footing Interference on Bearing Capacity Improvement for Geogrid-Reinforced Sand Bed Underlain by Soft Clay, Subinay Saha Roy, M.E., Uttar Banga Krishi Viswavidyalaya, Indian Institute of Technology Kharagpur; Kousik Deb, Ph.D., Indian Institute of Technology Kharagpur

PB99 | Influence of Long-Term Stiffness of Geogrid on the Reinforcement Load of Reinforced Soil Retaining Wall, Huabei Liu, M.ASCE, Huazhong University of Science and Technology

PB80 | Evaluation of the Material Durability and Classification of Rocks Used in the Anzali Port Breakwater, Vahideh Tohid Karandagh, Washington State University; Mohammad Reza Nikudel, Tarbiat Modarres University of Tehran; Gholam Reza Lashkaripour, Ferdowsi University of Mashhad; Balasingam Muhunthan, Washington State University

Rock Mechanics

PB81 | Study on the Geochemical Characteristics and Weathering Behavior of Black Shale, Jian Li, Ph.D., Chongqing Jiaotong University; Xin Liao, Ph.D., Southwest Jiaotong University; Kangji Wang, Southwest Jiaotong University; Xiyong Wu, Ph.D., Southwest Jiaotong University; Jiannan Chen, Ph.D., Southwest Jiaotong University; Yingwei Xi, Sichuan Environmental Monitoring Center

PB13 | Settlement of 16 Story Office on Raft Foundation Situated on Piedmont Residuum, Paul W. Mayne, Ph.D., P.E., M.ASCE, Georgia Institute of Technology

Shallow Foundations

PB14 | Strength of Model Footing Resting on Treated Coir Mat Reinforced Sand, Prathap Kumar, M. T., Ph.D., RNS Institute of Technology; Sridhar, Sri Venkateshwara College of Engineering

PB15 | Interference of Two Closely Spaced Strip Footings Embedded in Cohesionless Fibre-Reinforced Foundation Soil Bed, Anupkumar G. Ekbote, Indian Institute of Technology (ISM); Lohitkumar Nainegali, Ph.D., Indian Institute of Technology (ISM)

PB19 | Concrete Slab-on-Grade Reinforced by Geogrids, Xiaochao Tang, Ph.D., P.E., M.ASCE, Widener University; Mohamad Jilati, Ph.D., Widener University; Isaac Higgins, Widener University

PB20 | Multivariate Global Sensitivity Analysis of Shallow Foundations Response under Controlled Rocking, Aria Fathi, MSCE, The University of Texas at El Paso; Mehran Mazari, Ph.D., A.M.ASCE, California State University Los Angeles; Mahdi Saghaei, MSCE, The University of Texas at El Paso

PB68 | Optimal Deformation Modes for Estimating Soil Properties, Anastasia Nally, Northwestern University; Zhenhao Shi, Ph.D., A.M.ASCE, Northwestern University; James P. Hambleton, Ph.D., A.M.ASCE, Northwestern University

Soil Properties and Modeling

PB69 | Progressive Change in Shear Strength of Yazoo Clay Soil, Mohammad Sadik Khan, Ph.D., P.E., Jackson State University; John Ivake, Jackson State University; Masoud Nobahar, Jackson State University

PB70 | Effect of Wet Dry Cycle on the Void Ratio of Expansive Yazoo Clay Soil, Mohammad Sadik Khan, Ph.D., P.E., Jackson State University; John Ivake, Jackson State University; Masoud Nobahar, Jackson State University; Golam Kibria, Ph.D., P.E., Arias Geoprosessionals

PB71 | Permanent Deformation Characteristics of Coarse Grained Subgrade Soils using Repeated Load Triaxial Tests, Md Mostaqur Rahman, Ph.D., E.I.T. S&ME, Inc.; Sarah L. Gassman, Ph.D., P.E., University of South Carolina

PB72 | Fatigue Crack Propagation in Stiff Clays Forming Part of Earth Dams and Natural Slopes, Luis E. Vallejo, Ph.D., M.ASCE, University of Pittsburgh; Mahiru Shettima, Ph.D., M.ASCE, Zell Engineers Inc.

PB73 | Scale Effects in the Indirect Tensile and Unconfined Compressive Strength Tests of Cement-Stabilized Base Materials, Mohammad Rashidi, University of Texas at El Paso; Reza S. Ashtiani, Ph.D., University of Texas at El Paso

PB74 | Bayesian Probabilistic Approach to Assess the Compression and Recompression Indices of Over-Consolidated Expansive Clays, Yasser Soltanpour, Ph.D., A.M.ASCE, E.I.T., WSP USA; Hosam Salman, M.Sc., P.E., F.ASCE, WSP USA

PB75 | Estimating Optimal Additive Content for Soil Stabilization Using Machine Learning Methods, Amit Gajurel, BSCE, Boise State University; Partha Sarathi Mukherjee, Ph.D., Boise State University; Bhaskar C. S. Chittoori, Ph.D., P.E., M.ASCE, Boise State University

PB76 | Oedometric Behavior of a Diatom-Kaolin Mixture, Hend H. Al Shatnawi, S.M.ASCE, New Mexico State University; Paola Bandini Ph.D., P.E., M.ASCE, New Mexico State University

Soil Properties and Modeling

PB78 | Development of a 1-D Heat Soil Test Cell for Coupled Hydro and Thermal Process, Gang Lei, S.M.ASCE, University of Texas at Arlington; Nice Kaneza, University of Texas at Arlington; Xinbao Yu, Ph.D., P.E., University of Texas at Arlington; Teng Li Omid Habizadeh-Bigdarvish, The University of Texas at Arlington

Technical Program

Monday Poster Session *(continued)*

3:30 – 5:30 p.m., Exhibit Hall E

PB79 | Prediction of Unconfined Deformation Behavior of Soils Using Electrical Properties, Majid Mahmoodabadi, M.ASCE, *University of Kentucky*; Lindsey Sebastian Bryson, Ph.D., P.E., M.ASCE, *University of Kentucky*

PB82 | Potential of Tire Waste as Infill Material in Geocells for Soil Retention Systems, Sreevalsa Kolathayar, Ph.D., *Amrita Vishwa Vidyapeetham*; Rajesh Kumar C., *Amrita Vishwa Vidyapeetham*

Sustainability In Geotechnical Engineering

PB83 | Numerical Simulation of Cellular Reinforced Fly Ash Slopes, Maheboosab Babusab Nadaf, Ph.D., *IIT Bombay*; Jnanendranath Mandal II, Ph.D., *IIT Bombay*

PB84 | Evaluation of Composite Subgrade Reaction Modulus of Geosynthetic-Stabilized Recycled Subbase over Subgrade, Tanya N. Walkenbach, EIT, M.ASCE, *Chancellor's Fellow University of Kansas*; Jie Han, Ph.D., P.E., F.ASCE, *University of Kansas*; Zexia Li EIT, M.ASCE, *University of Kansas*; Robert L. Parsons, Ph.D., P.E., *University of Kansas*

PB85 | Experimental Studies on Bottom Ash and Blast Furnace Slag Based Geomaterial under Compressive Loading, Ram Rathan Lal Birali, Ph.D., *Kavikulguru Institute of Technology and Science*; Vicky Hinge, M.Tech. K.I.T.S., *Ramtek*; Sonali Nawkhare, M.E., *Priyadarshini College of Engineering*; Shanker Kandukuri, Ph.D., K.I.T.S., *Singapuram*

PB86 | Strength and Deformation Characteristics of Bottom-Ash Reinforced with Single eocell Mattress Made of Waste PET Bottles, Anil Kumar Choudhary, Ph.D., *National Institute of Technology Jamshedpur*; Jagdanand Jha, *Government of Bihar*; Sujata Fulambarkar, NIT, *Jamshedpur*

PB87 | Experimental Study of Load and Settlement Behaviour of Bamboo Grid Reinforced Sand, Sunil Kumar Ahirwar, M.Tech., *Indian Institute of Technology Bombay*; Jnanendra Nath Mandal, Ph.D., *Indian Institute of Technology Bombay*; Aditya Kumar Bhoi, M.Tech., *Indian Institute of Technology Bombay*

PB88 | Evaluation of Waste Foundry Sand and Blast Furnace Steel Slag as Geomaterials, Bhargav Kumar K. P., Ph.D., *Indian Institute of Technology Hyderabad*; Geethakrishna K. II, M.Tech, *Indian Institute of Technology Hyderabad*; Umashankar Balunaini, Ph.D., *Indian Institute of Technology Hyderabad*

PB89 | Performance Evaluation of Municipal Solid Waste as a Sustainable Backfill Material in RE Wall, Kinjal Gajjar, B.E. CIVIL ENGG, L.D. *College of Engineering*; Manish V Shah, Ph.D., L.D. *College of Engg*; Alpha Shah MSCE, L.D. *College of Engineering*

PB90 | From Sky to Sea: Geotechnical Challenges of Transforming a Former Philadelphia Airfield into Future Marine Terminal, Eric Pauli, P.E., M.ASCE, *Mott MacDonald*; Vatsal Shah, Ph.D., P.E., M.ASCE, *Mott MacDonald*

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Technical Program

Tuesday, March 26, 2019

8:00 – 8:30 a.m.	Inspirational Remarks from Bibop G. Gresta, <i>Terrace Ballroom IV</i>						
8:30 – 10:00 a.m.	Geo-PIT: Powerful, Informative Talks on Geo-Topics, <i>Terrace Ballroom IV</i>						
10:00 – 10:30 a.m.	Morning Networking Break, <i>Exhibit Hall E</i>						
10:30 a.m. – 12:00 p.m.	Panel Session: GBA: Events That Changed Our Practice, <i>Room 126A</i>						
10:30 a.m. – 12:00 p.m.	Panel Session: Fostering Innovation in Tunneling and Underground Construction, <i>Room 120B</i>						
10:30 a.m. – 12:00 p.m.	Technical Sessions						
Track A Room 122A	Track B Room 125	Track C Room 123	Track D Room 124	Track E Room 121B	Track F Room 120C	Track G Room 121A	Track H Room 121C
Deep Foundations: Driven Piles Moderators: Muhannad T. Suleiman, A.M.ASCE, Jared M. Green, P.E., M.ASCE	Embankments, Dams, and Slopes: Landslides Moderators: William K. Petersen, P.E., M.ASCE, Daniel R. Vanden Berge, P.E., M.ASCE	Earthquake Engineering and Soil Dynamics: Laboratory Testing Moderators: Majid Ghayoomi, Ph.D., P.E., M.ASCE, James Kaklamanos, Ph.D., EIT, A.M.ASCE	Soil Improvement: Microbially Induced Calcite Precipitation Moderators: Bret N. Lingwall, P.E., M.ASCE, Leon A. Van Paassen Aff.M.ASCE	Unsaturated Soils Moderators: Kalehiwat Nega Manahiloh, Ph.D., P.E., M.ASCE, Tugce Baser A.M.ASCE	Earth Retaining Structures: Top-Down Construction Moderators: J. Tanner Blackburn, Ph.D., P.E., M.ASCE, Burak F. Tanyu C.Eng, M.ASCE	Geophysical Engineering Moderators: Clinton M. Wood, Ph.D., P.E., M.ASCE, Barbara Luke, Ph.D., P.E., D.GE, FASCE	Pavements: Part I Moderators: Reza S. Ashtiani, Ph.D., P.E., Ahmed Faheem A.M.ASCE
Optimizing the Design of Driven Pile Foundations with Instrumented Static Load Tests , Peter A. Narsavage, P.E., M.ASCE, E.L. Robinson Engineering Validation of Pile Design Methods for Closed-Ended Driven Pipe Piles , Fei Han, Ph.D., M.ASCE, Purdue University; Vibhav Bisht S.M.ASCE, Purdue University; Monica Prezzi, Ph.D., M.ASCE, Purdue University; Rodrigo Salgado, Ph.D., P.E., D.G., FASCE, Purdue University New Technology Center Development Foundation System – A Case Study in Driven Pipe Piles , Frederick A. Brinker BSCE, MSCE, P.E., M.ASCE, DFI, ADSC, Engineers Club of Philadelphia, DVGI Pennoni	Case History Summaries of 5 Slope Failures, Missed Predictions and Lessons Learned , Garry H. Gregory, Ph.D., P.E., D.GE, M.ASCE, Gregory Geotechnical Influence of Hydrologic Behavior in Assessing Rainfall-Induced Landslides , Faisal S. Ahmed S.M.ASCE, University of Kentucky; Lindsey Sebastian Bryson, Ph.D., P.E., M.ASCE, University of Kentucky Effects of Particle Size on Impact Force from a Granular Sliding Mass on a Rigid Obstruction , Andrew W Grant, The Pennsylvania State University; Amir Ahmadipour, The Pennsylvania State University; Tong Qiu, Ph.D., The Pennsylvania State University	The Effect of Shaking History on Liquefaction Resistance of Sand Deposit Using Shake Table Testing , Jintai Wang S.M.ASCE, Geosyntec Consultants; Sajjad Salam, The Pennsylvania State University; Ming Xiao, The Pennsylvania State University Liquefaction Mitigation of Silty Sands via Microbial Induced Partial Saturation , Sayedmasoud Mousavi, University of New Hampshire; Majid Ghayoomi, Ph.D., P.E., University of New Hampshire Cyclic Behavior of a Reconstituted Gulf of Mexico Clay , Vashish Taukoor S.M.ASCE, University of Illinois at Urbana-Champaign; Cassandra J. Rutherford, Ph.D., P.E., M.ASCE, Iowa State University; Scott M. Olson, Ph.D., P.E., M.ASCE, University of Illinois at Urbana-Champaign	Nonlinear Failure Envelope for Microbial Induced Calcium Carbonate Precipitation Treated Sand , Ashkan Nafisi E.I., North Carolina State University; Brina Montoya, Ph.D., P.E., North Carolina State University Microbial Induced Calcite Precipitation of Dune Sand using a Surface Spray Technique , Raphael Crowley, Ph.D., P.E., M.ASCE, University of North Florida; Matthew Davies M.S., University of North Florida; Terri N. Ellis, Ph.D., University of North Florida; Nick Hudyma, Ph.D., P.E., M.ASCE, University of North Florida; Paige Ammons, University of North Florida; Christian Matemu B.S., University of North Florida Minimizing Wind Erosion using Microbial Induced Carbonate Precipitation , Pierre Bick, Lehigh University; Hridaya Bastola, Lehigh University; Muhannad T. Suleiman, Ph.D., Lehigh University; Jianbo Gu, Lehigh University; Panayiotis Diplas, Ph.D., Lehigh University; Derick Brown, Ph.D., Lehigh University; Nabil Zouari, Ph.D., Qatar University	Evaluation of Unsaturated Soil Seepage and Protection of Basement Slab During Flooding , Ajay Shastri, Ph.D., P.E., AASCE, Distinct Engineering Solutions Inc; Ram Kasturi, P.E., Distinct Engineering Solutions Inc; Ram Tirumala, P.E., Distinct Engineering Solutions Inc Effect of Lime Stabilization on the Unsaturated Hydraulic Conductivity of Clayey Soil in Texas , Puneet Bhaskar M.S., University of Texas at Arlington; Burak Boluk, University of Texas at Arlington; Aritra Banerjee, Ph.D., A.M.ASCE, University of Texas at Arlington; Ali Shafikhani, University of Texas Arlington; Anand Puppala, Ph.D., P.E., FASCE, D.GE, University of Texas at Arlington Measuring Thermal Conductivity of Unsaturated Sand under Different Temperatures and Stress Levels Using a Suction-Controlled Thermo-Mechanical Method , Jun Yao, Ph.D., DMY Engineering Consultants Inc.; Tengfei Wang, Beijing Jiaotong University; William Likos, Ph.D., M.ASCE, University of Wisconsin-Madison	One Dalton Hotel & Residences: Implementation of a Ground Movement Control Measure for a Deep Excavation in Boston Blue Clay , Mark X. Haley, P.E., Haley & Aldrich; Jean Louis Z. Locsin, P.E., Ph.D., Haley & Aldrich; Jesse D. Siegel, P.E., Haley & Aldrich Design and Performance of a Temporary Concrete Diaphragm Wall Excavation Support System in South Boston , Wylan Carswell, Ph.D., Haley & Aldrich; Damian Siebert, P.E., M.ASCE, Haley & Aldrich Numerical Analysis of a TBM Retrieval Shaft Construction Using Deep Soil Mixing , Onur Kacar, Ph.D., P.E., Arup USA; Chu Ho, Sc.D., P.E., Arup USA	Updated Reference Shear Wave Velocity Curves for Near-Surface Site Characterization , Salman Rahimi, University of Arkansas at Fayetteville; Clinton M. Wood, A.M.ASCE, University of Arkansas at Fayetteville; Michelle L. Bernhardt, A.M.ASCE, University of Arkansas at Fayetteville; Ashraf Kamal Himel, University of Arkansas at Fayetteville Long-Term Monitoring of a Slow Moving Landslide before and after Remediation Using Ground-Based Radar Interferometry , Francisco Gomez, Ph.D., R.G., University of Missouri; Brent L. Rosenblad, Ph.D., P.E., M.ASCE, University of Missouri; J. Erik Loehr, Ph.D., P.E., FASCE, University of Missouri; Jared Smoot, University of Missouri; Ben Lowry, Colorado School of Mines Theoretical Evaluation of the Interval Method Commonly Used for Downhole Seismic Testing , Mohamad M. Hallal, B.E., S.M.ASCE, University of Texas at Austin; Brady R. Cox, Ph.D., P.E., A.M.ASCE, University of Texas at Austin	Plate Load Testing on Layered Pavement Foundation System to Characterize Mechanistic Parameters , David J. White, Ph.D., P.E., M.ASCE, Ingios Geotechnics, Inc.; Pavana Vennapusa, Ph.D., P.E., M.ASCE, Ingios Geotechnics, Inc.; Jeffery R. Roesler, Ph.D., P.E., University of Illinois Urbana-Champaign; William Vavrik, Ph.D., P.E., M.ASCE, Applied Research Associates Long-Term Field Performance of Geosynthetics in Pavement Subgrades in Virginia , M. Shabbir Hossain, Ph.D., P.E., M.ASCE, Virginia Department of Transportation; Edward J. Hoppe, Ph.D., P.E., M.ASCE, Virginia Department of Transportation; Chaz Weaver, P.E., FASCE, Virginia Department of Transportation Using Soil-Moisture Active Passive Satellite Data to Evaluate the Performance of Transportation Infrastructure Foundations – A Feasibility Study , Simon Packman, S.M.ASCE, California State University Los Angeles; Sonya R. Lopez, Ph.D., California State University Los Angeles / NASA Data Intensive Research and Education Center for STEM; Aria Fathi, S.M.ASCE, The University of Texas at El Paso; Mehran Mazari, Ph.D., A.M.ASCE, California State University Los Angeles

10:30 a.m. – 12:00 p.m.		Technical Sessions					
Track A Room 122A	Track B Room 125	Track C Room 123	Track D Room 124	Track E Room 121B	Track F Room 120C	Track G Room 121A	Track H Room 121C
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Development of Axial Load Transfer (T-Z) Analytical Model for the PSC Piles, <i>Md. Nafiu Haque, Louisiana State University; Murad Abu-Farsakh, Louisiana State University</i> A Numerical Study of Pre-Boring Impacts on Side Friction of Piles, <i>Shengli Chen, Ph.D., Louisiana State University; Lin Li, Ph.D., Louisiana State University; Zhongjie Zhang, Ph.D., P.E., Louisiana Department of Transportation and Development</i> Evaluation of Direct CPT Methods for Estimating the Ultimate Capacity of Driven Piles, <i>Murad Abu-Farsakh, Ph.D., P.E., F.ASCE, Louisiana State University; Mohsen Amirmojahedi, Louisiana State University</i>	Hydrological Behavior of an Infiltration Induced Landslide in Colorado, USA, <i>Alexandra Waylance, Ph.D., P.E., Colorado School of Mines; Ning Lu, Ph.D., F.ASCE, Colorado School of Mines; Barbara Thunder M.S., Civil and Environmental Engineering Hart Crowser</i> Stabilization of Rainfall-Induced Slope Failure and Pavement Distresses using Recycled Plastic Pins and Modified Moisture Barrier, <i>Anuja Sapkota, The University of Texas at Arlington; Asif Ahmed, Ph.D., The University of Texas at Arlington; Pratibha Pandey, The University of Texas at Arlington; Md. Sahadat Hossain, Ph.D., P.E., The University of Texas at Arlington; Nicasio Lozano, Texas Department of Transportation</i> Investigation, Monitoring and Design of an Anchored Retaining Wall at the Base of a Moving Slope, <i>Jason D. Ross, P.E., M.ASCE, S&ME, Inc.; Michael G Rowland, P.E., M.ASCE, S&ME, Inc.; Brett A Dregar, P.E., M.ASCE, American Electric Power; Charles A. Nutt, P.E., Varo Engineers, Inc.</i>	Evaluating Seismic Behavior of Intermediate Silty Sands of Low Plasticity from Emilia Romagna, Italy, <i>Daniela Dominica Porcino, University Mediterranea of Reggio, Calabria</i> <i>Paola Monaco, University of L'Aquila; Laura Tonni III, University of Bologna</i> On the Effects of Inadequate Height Control in Constant Volume Monotonic and Cyclic Direct Simple Shear Test, <i>Kaveh Zehtab, Geocomp Corp.; Seda Gokyer, Ph.D., Geocomp Corp.; Salim K Werden, Geocomp Corp.; W. Allen Marr, Ph.D., P.E. F.ASCE, NAE, Geocomp Corp.; Artur Apostolov, Geocomp Corp.</i> Centrifuge Modeling and Analysis of Level Site Liquefaction Subjected to Biaxial Dynamic Excitations, <i>Omar Elshafee, Ph.D., Rensselaer Polytechnic Institute; Tarek Abdoun, Ph.D., Rensselaer Polytechnic Institute; Mourad Zeghal, Ph.D., Rensselaer Polytechnic Institute</i>	Microbiologically Induced Calcite Precipitation using Surfactants for the Improvement of Organic Soil, <i>Matthew Davies M.S., University of North Florida; Raphael Crowley, Ph.D., P.E., M.ASCE, University of North Florida; Terri N. Ellis, Ph.D., University of North Florida; Nick Hudyma, Ph.D., P.E., M.ASCE, University of North Florida; Paige Ammons, University of North Florida; Christian Matem B.S., University of North Florida; Scott Wasman, Ph.D., University of Florida; Mohammed Yahaya B.S., University of Florida; Jennifer Ford B.S., University of Florida; Andrew R. Zimmerman, University of Florida</i> Evaluating Shallow Mixing Protocols as Application Methods for Microbial Induced Calcite Precipitation Targeting Expansive Soil Treatment, <i>Bhaskar C. S. Chittoori, Ph.D., P.E., M.ASCE, Boise State University; Tasria Rahman, Boise State University; Malcolm Burbank, Ph.D., CDM Smith; Arif Ali Baig Moghal, Ph.D., M.ASCE, NIT Warangal</i> Investigating Ammonium By-Product Removal Following Stimulated Ureolytic Microbially-Induced Calcite Precipitation, <i>Minyong Lee, University of Washington; Colin M. Kolbus, University of Washington; Andres D. Yeppez, University of Washington; Michael G. Gomez, Ph.D., A.M.ASCE, University of Washington</i>	Characterizing the Unsaturated Strength Behavior of a Native Transition Soil Used as Backfill in the Construction of US 301, Section 3, <i>Mehdi Kadivar, Ph.D., Candidate University of Delaware; Kalehiwot Nega Manahiloh, Ph.D., P.E., University of Delaware; Victor N. Kaliakin, Ph.D., University of Delaware</i> Stability of Unsaturated Sand Beds in the Intertidal Zone during Tsunami Loading, <i>Babak Mahmoodi, University of Maine; Aaron P Gallant, Ph.D., P.E., M.ASCE, University of Maine; Benjamin Mason, Ph.D., Oregon State University</i> Large-Scale Cyclic Plate Loading Tests of Wicking Geotextile-Stabilized Bases with Rainfall Simulation, <i>Jun Guo, Shenzhen University; Jie Han, University of Kansas; Xiong Zhang, Missouri University of Science and Technology</i>	Deep Excavations in Central Jakarta Area: A Case History and Numerical Simulations, <i>Fuchen Teng, Ph.D., National Taiwan University of Science and Technology; Melisa Kosasi, National Taiwan University of Science and Technology; Benson Hsiung, Ph.D., P.E., National Kaohsiung University of Science and Technology</i> Restoring RW5 at Yeager Airport: Design and Construction of a Tall Retaining Wall on the Side of a Mountain, <i>Johanna Simon, P.E., M.ASCE, Schnabel Engineering; Allen Cadden, P.E., D.GE, F.ASCE, Schnabel Engineering; Phil Shull, P.E., M.ASCE, Schnabel Engineering; Michael Senior E.I.T., M.ASCE, Schnabel Engineering</i> Ultimate Limit State Design Using FEM and Advanced Soil Model – A Case History of a 30m Deep Excavation in London UK, <i>Hoe-Chian Yeow, Ph.D., CEng, MICE COWI UK Ltd.</i>	Detection of Voids in Karst Terrain With 3D Full Waveform Tomography, <i>Khiem Tran, University of Florida; Michael McVay, Ph.D., University of Florida; Majid Mirzanejad, University of Florida; Scott Wasman, Ph.D., University of Florida</i> Geophysical Study of Natural Bridge, Virginia: A Comparison of Methods, <i>Warren T. Dean, P.G., Draper Aden Associates; Christopher M. Printz, P.G., Draper Aden Associates; Johanna M. Vaughan, Draper Aden Associates; Ethan T. Truman, Draper Aden Associates</i>	Performance Evaluation of Pavement Subgrade by In-Situ Moisture and Matrix Suction Measurement, <i>Pratibha Pandey, The University of Texas at Arlington; Asif Ahmed, Ph.D., E.I.T., State University of New York (SUNY) Polytechnic Institute; Anuja Sapkota, The University of Texas at Arlington; Sahadat Hossain, Ph.D., P.E., The University of Texas at Arlington; Boon Thian, Texas Department of Transportation</i> Assessment of Geotextile Effectiveness in Decreasing Subgrade Pumping and Increasing Service Life in Rigid Pavements, Using Scaled Model Mobile Load Simulator, <i>Behnoud Kermani, S.M.ASCE, GSI Fellow, The Pennsylvania State University; Shelley Marie Stoffels, DE, M.ASCE, The Pennsylvania State University; Ming Xiao, Ph.D., P.E., M.ASCE, The Pennsylvania State University</i> Mechanistic Assessment of Layered Pavement Foundation System using Validated Intelligent Compaction Measurements, <i>David White, Ph.D., P.E., Ingios Geotechnics, Inc.; Pavana Vennapusa, Ph.D., P.E., Ingios Geotechnics, Inc.; Erol Tutumluer, Ph.D., University of Illinois at Urbana-Champaign; Maziar Moaveni, Ph.D., P.E., University of Illinois at Urbana-Champaign</i>
12:00 – 1:30 p.m.		Lunch, Exhibit Hall E					

1:30 - 3:00 p.m.	Panel Session: Urban Excavation Support, Room 126A						
1:30 - 3:00 p.m.	Technical Sessions						
Track A Room 122A	Track B Room 125	Track C Room 123	Track D Room 124	Track E Room 121B	Track F Room 120C	Track G Room 121A	Track H Room 121C
Deep Foundations: Drilled Shafts Moderators: Michael B. Fritzges, P.E., M.ASCE, Jose Luiz Machado Clemente, Ph.D., P.E., D.GE, F.ASCE	Lessons Learned from Embankments, Dams, and Slopes: Case Histories Moderators: Timothy D. Stark, Ph.D., P.E., D.GE, F.ASCE, Rafael A. Prieto	Earthquake Engineering and Soil Dynamics: Seismic Hazard Analysis, Site Response, and Liquefaction Moderators: Menzer Pehlivan, Ph.D., P.E., M.ASCE, Ramin Motamed, Ph.D., P.E., M.ASCE	Soil Improvement: Fiber Reinforcement and Soil Stabilization Moderators: Prabir Kumar Kolay, Ph.D., P.E., M.ASCE, Jonathan F. Hubler A.M.ASCE	Computational Geotechnics Moderators: Marta Miletić, Victor N. Kialiakin, Ph.D., M.ASCE	Earth Retaining Structures: Bottom-Up Construction Moderators: James A. McKelvey, III, P.E., D.GE, F.ASCE, Miguel A. Pando, P.E., M.ASCE	Geotechnics of Soil Erosion Moderators: Stacey E. Tucker-Kulesza, P.E., M.ASCE, Junliang Tao A.M.ASCE	Pavements: Part II Moderators: Reza S. Ashtiani, Ph.D., P.E.; Bora Cetin, Ph.D.
Modulus of Elasticity Impact on Equivalent Top-Loaded Curves from Bi-Directional Static Load Tests , Rozbeh B Moghaddam, P.E., Ph.D., M.ASCE, GRL Engineers, Inc.; Van E. Komurka, P.E., D.GE, F.ASCE, GRL Engineers, Inc.™. Behavior of Rock-Socketed Drilled Shaft under Uni-Axial Loading – A Parametric Study , Saidur M. Rahman, P.E., Gannett Fleming, Inc.; Shafiq I. Siddiqui, Ph.D., P.E., Gannett Fleming, Inc.; Kimberly Sharp, NJDOT Hudson Yards: A New Look at High-Capacity Caissons to Bedrock in Manhattan , Michael Paquette, P.E., Langan; Saul Shapiro, P.E., Langan; Marc Gallagher, P.E., LEED AP, Langan A Robust Approach for Selecting LRFD Characteristic Values of Uncertain Soil Parameters for Design of Drilled Shaft in Sand , Sara Khoshnevisan, Ph.D., A.M.ASCE, Clarkson University; Xiaohui Tan, Ph.D., Hefei University of Technology; Mengfen Shen, Clemson University; Chang Hsein Juang, Ph.D., F.ASCE, P.E., Clemson University; Yongjie Zhang, Ph.D., Changsha University of Science & Technology Hunan	Case Study – Settlement of a Hydropower Dam Structure during 2015 Gorkha Earthquake , Binod Tiwari, Ph.D., P.E., MSCE, California State University, Fullerton; Beena Ajmera, Ph.D., California State University, Fullerton; Vivek Kumar Timbadiya MSCE, California State University, Fullerton Deformation Analysis of the 233m Shuibuya Rockfill Dam Using Breakage Mechanics , Xiang Zhou, University of Colorado Boulder; Yida Zhang, Ph.D., University of Colorado Boulder; Gang Ma, Ph.D., Wuhan University MSE Wall Global Stability and Lessons Learned , Michael T. Lustig, P.E., Iowa State University; Timothy D. Stark, Ph.D., P.E., F.ASCE, University of Illinois at Urbana-Champaign; Richard L. Handy, Ph.D., Iowa State University La Conchita Landslide, Case History and Remedial Measures , Daniel Pradel, Ph.D., P.E., G.E., D.GE., F.ASCE, The Ohio State University	Mexico City Basin Effects: Past, Present, and Future , Domniki Asimaki Sc.D., A.M.ASCE, Caltech; Juan Manuel Mayoral Villa, Instituto de Ingeniería de la UNAM; Peyman Ayoubi, Caltech; Kevin Franke, Brigham Young University; Tara Hutchinson, University of California, San Diego In-Situ Investigation of False-Positive Liquefaction Sites in Christchurch, New Zealand: Palinurus Road Case, History , Kaleigh A. McLaughlin M.S., E.I., Langan Engineering and Environmental Services, Inc.; Brady R. Cox, Ph.D., P.E., University of Texas at Austin; Liam Wotherspoon; Ross W. Boulanger; Sjoerd van Ballegooy; Misko Cubrinovski The Importance of Quantifying Spatial Variability in Assessing the Risk of Liquefaction in a Recently Reclaimed Site , Ahmad Kahiel, Ph.D., American University of Beirut; Shadi Najjar, A.M.ASCE, American University of Beirut; Salah Sadek M.ASCE, American University of Beirut Generating Synthetic Borehole Data for Applications in Site-Specific and Regional Evaluation of Liquefaction Consequences , Zach Bullock, University of Colorado Boulder; Shideh Dashti, University of Colorado Boulder; Abbie B. Liel, University of Colorado Boulder; Keith A. Porter, University of Colorado Boulder	Drained Triaxial Response of Clay Reinforced with Hemp fibers , Mohamad ElAhmad B.E., American University of Beirut; Salah Sadek, Ph.D., M.ASCE, American University of Beirut; Shadi Najjar, Ph.D., A.M.ASCE, American University of Beirut Stabilization of Expansive Soil Using Injection of Liquid Ionic Soil Stabilizer: A Case Study Between Field and Laboratory Treatment , Sandeh Gautam, University of Texas at Arlington; Shi He, University of Texas at Arlington; Xinbao Yu, Ph.D., P.E., University of Texas at Arlington Effect of Lime Sludge, Polypropylene Fiber on Unconfined Compressive Strength And Shrinkage Behavior of Kaolinite Clay , Sandeep G. Burra M.S., Southern Illinois University Carbondale; Prabir K. Kolay, Ph.D., P.E., M.ASCE, Southern Illinois University Carbondale; Sanjeev Kumar, Ph.D., P.E., F.ASCE, Southern Illinois University Carbondale; Vijay K. Puri, Ph.D., Southern Illinois University Carbondale Strength Characteristics of Lime and Bottom Ash Reinforced Expansive Soils , Thang Minh Le M.S., University of Technology Sydney; Liet Chi Dang M.Eng., University of Technology Sydney; Hadi Khabbaz, Ph.D., University of Technology Sydney	Simulation of the Cutting Process in Softening and Hardening Soils , Zhefei Jin, Northwestern University; James Paul Hambleton, Ph.D., Northwestern University Numerical Modeling of a Free Fall Penetrometer Deployment Using the Material Point Method , Luis E. Zambrano-Cruzatty, M.Sc., Virginia Polytechnic Institute and State University; Alba Yerro, Ph.D.; Virginia Polytechnic Institute and State University; Nina Stark, Ph.D., Virginia Polytechnic Institute and State University Thermo-Mechanical Behavior of Saturated Clays Using Discrete Element Modelling , Karam A. Jaradat, M.Sc., Stony Brook University; Sherif L. Abdelaziz, Ph.D., A.M.ASCE, Stony Brook University Effect of Particle Size on the High Strain Rate Response of Sand , Sudheer Sudhakaran Prabhu, Pennsylvania State University; Tong Qiu, Ph.D., P.E., Pennsylvania State University	Observational Design Approach: Foundation Construction beneath the Philadelphia Museum of Art , Timothy S. Becker, P.E., M.ASCE, Haley & Aldrich, Inc.; R. Scott Goldkamp, P.E., Haley & Aldrich, Inc.; Mark X. Haley, P.E., Haley & Aldrich, Inc. Numerical Simulation of Stress Distribution Beneath the Foundation of a Geosynthetic Reinforced Soil Bridge Abutment Using Parametric Studies , Majid Talebi, Ph.D., P.E., M.ASCE, Marino Engineering Associates, Inc.; Christopher Meehan, Ph.D., P.E., F.ASCE, University of Delaware Perimeter Gabion MSE Wall of a New Combined Cycle Power Plant in Massachusetts , Marco Isola, Ph.D., P.E., M.ASCE, Maccaferri Inc.; Andrew Woodward, Bond; Richard Prejs, Maccaferri Inc. A Simple and Rigorous Approach for Probabilistic Internal Stability Analysis and Design of Reinforced Soil Walls , Richard J. Bathurst, Ph.D., M.ASCE, Royal Military College of Canada	Influence of Shear Strength and Moisture Content on Aeolian Sand Erosion , Luis E Zambrano-Cruzatty, M.Sc., Virginia Polytechnic Institute and State University; Alba Yerro, Ph.D., Virginia Polytechnic Institute and State University; Nina Stark, Ph.D., Virginia Polytechnic Institute and State University A GIS-Based Platform for Near Real Time Bridge Scour Risk Assessment Using the HYRISK Model , James Curra, S.M.ASCE, Manhattan College; Mehdi Omidvar, Ph.D., A.M.ASCE, Manhattan College; Brent Horine, Ph.D., Manhattan College Soil Deformation and Mechanical Behavior Induced by Internal Erosion under Complex Stress States , Chen Laura Chen, Hong Kong University of Science and Technology; Limin Zhang, Ph.D., F.ASCE, Hong Kong University of Science and Technology Monitoring Stream Bank Geometry at Headwaters in a Densely Developed Watershed , James D. Kugel, S.M.ASCE, Villanova University; Emily E. Caramelas, S.M.ASCE, Villanova University; Andrea L. Welker, Ph.D., P.E., M.ASCE, Villanova University; Stanley J. Kemp, Ph.D., University of Baltimore	Case History of a Geosynthetic-Stabilized Base Roadway Founded Over Expansive Clay Subgrade , Liming Zheng, University of Texas at Austin; Gholam Hossein Roodi, University of Texas at Austin; Jorge G. Zornberg, University of Texas at Austin Laboratory Testing of an Externally Heated Bridge Deck Subjected to Wind, Mark Timothy Hurley , University of Texas at Arlington; Xinbao Yu, Ph.D., P.E., University of Texas at Arlington; Gang Lei, S.M.ASCE, University of Texas at Arlington Cyclic Plate Load Testing for Assessment of Asphalt Pavements Supported on Geogrid Stabilized Granular Foundation , David J. White, Ph.D., P.E., M.ASCE, Ingios Geotechnics, Inc.; Pavana Vennapusa, Ph.D., P.E., M.ASCE, Ingios Geotechnics, Inc.; John Siekmeier, P.E., M.ASCE, Minnesota DOT; Heath Gieselman, M.S., Ingios Geotechnics, Inc. Assessment of Tactile Pressure Sensors for Measuring Interface Pressures in Mechanically Stabilized Layers , Madan Neupane, Ph.D., Gannett Fleming, Inc. – Marlton Office; Jie Han, University of Kansas; Robert L. Parsons, Ph.D., University of Kansas; Mike Horton, Tensor International

1:30 – 3:00 p.m.	Technical Sessions						
Track A Room 122A	Track B Room 125	Track C Room 123	Track D Room 124	Track E Room 121B	Track F Room 120C	Track G Room 121A	Track H Room 121C
Deep Foundations: Drilled Shafts Moderators: Michael B. Fritzges, P.E., M.ASCE, Jose Luiz Machado Clemente, Ph.D., P.E., D.GE, F.ASCE	Lessons Learned from Embankments, Dams, and Slopes: Case Histories Moderators: Timothy D. Stark, Ph.D., P.E., D.GE, F.ASCE, Rafael A. Prieto	Earthquake Engineering and Soil Dynamics: Seismic Hazard Analysis, Site Response, and Liquefaction Moderators: Menzer Pehlivan, Ph.D., P.E., M.ASCE, Ramin Motamed, Ph.D., P.E., M.ASCE	Soil Improvement: Fiber Reinforcement and Soil Stabilization Moderators: Prabir Kumar Kolay, Ph.D., P.E., M.ASCE, Jonathan F. Hubler A.M.ASCE	Computational Geotechnics Moderators: Marta Miletic, Victor N. Kaliakin, Ph.D., M.ASCE	Earth Retaining Structures: Bottom-Up Construction Moderators: James A. McKelvey, III, P.E., D.GE, F.ASCE, Miguel A. Pando, P.E., M.ASCE	Geotechnics of Soil Erosion Moderators: Stacey E. Tucker-Kulesza, P.E., M.ASCE, Junliang Tao A.M.ASCE	Pavements: Part II Moderators: Reza S. Ashtiani, Ph.D., P.E.; Bora Cetin, Ph.D.
Lateral Load Test for Large Diameter Drilled Shafts for the Kosciuszko Bridge Replacement , Daniela Bastos Zellers, P.E., WSP; Sherif Hanna, P.E., WSP; Matteo Ferrucci, P.E., WSP; Robert Adams, P.E., New York State Department of Transportation; Jeffrey Moryl, P.E., New York State Department of Transportation Foundation Design Case Study – 1800 Arch Street High Rise Tower , Daniel P. Marano Jr. MS, P.E., M.ASCE, Pennoni	Evaluation of the Mechanical Behavior of Shirin-Dare Earth Dam by the Numerical Analysis and Monitoring , Mohammad Rashidi, University of Texas at El Paso; Reza S. Ashtiani, Ph.D., University of Texas at El Paso; Habib Rasouli, University of Technology Sydney Column-Supported Embankment: Failure and Remedy , Radoslaw L. Michalowski, Ph.D., F.ASCE, University of Michigan; Andrzej Wojtasik, Ph.D., Poznan University of Technology; Adam Duda M.Sc., Poznan University of Technology; Antoni Florkiewicz, Ph.D., Poznan University of Technology; Dowon Park, Ph.D., University of Michigan	Influence of Gaps in Capping Clay Layer on Liquefaction – Induced Settlement , Sara Khoshnevisan, Ph.D., M.ASCE, Clarkson University; Lei Wang, Ph.D., M.ASCE, University of District of Columbia; Wei Wang, Ph.D., Institute of Disaster Prevention; Chang Hsein Juang, Ph.D., F. ASCE, Clemson University An Analysis of Liquefaction-Induced Free-Field Ground Settlement Using 1,000+ Case-Histories: Observations vs. State-of-Practice Predictions , Mertcan Geyin, M.S., S.M.ASCE, University of Washington; Brett W. Maurer, Ph.D., A.M.ASCE, University of Washington	Behaviors of Expansive Soils Mixed with Polymeric Stabilizing Foams , Xijin Zhang, S.M.ASCE, Case Western Reserve University; Xiong Yu, Ph.D., P.E., F.ASCE, Case Western Reserve University; Yuan Guo, Ph.D., Case Western Reserve University; Xudong Fan, Case Western Reserve University Effect of Moulding Water Content and Dry Density on Performance of Treated Coir Fiber Reinforced BC Soil , Jai Raj M.E., Nitte Meenakshi Institute of Technology; Prathap Kumar M. T., Ph.D., R N S Institute of Technology	The Effects of Stress Redistribution on the Propagation of Stress Waves beneath the Bottom of Drilled Shaft Excavations , Alireza Kordjazi, Temple University; Joseph Thomas Coe, Ph.D., Temple University Coupled Analysis of Wave, Structure, and Sloping Seabed Interaction: Response and Instability of Seabed , Amin Rafiei, North Carolina State University; M.S. Rahman, Ph.D., North Carolina State University; M.A. Gabr, Ph.D., P.E., F.ASCE, D.GE, North Carolina State University	Use of Tactile Pressure Sensors to Measure Lateral Pressures at the Face of Geosynthetic Reinforced Soil , Jennifer E. Nicks, Ph.D., P.E., M.ASCE, Federal Highway Administration; Michael T. Adams, M.ASCE, Federal Highway Administration; Jan Li, ESCINC Excessive Deformation of a Mechanically Stabilized Earth Wall Embankment Constructed on Soft Ground , Stanley R. Boyle, Ph.D., P.E., M.ASCE, Shannon & Wilson, Inc.	Field Performance of Reinforced Dunes for Improving Coastal Resilience , Brian Maggi, P.E., M.ASCE, U.S. Coast Guard Academy; Christopher Baxter, Ph.D., P.E., M.ASCE, University of Rhode Island; Annette Grilli, Ph.D., University of Rhode Island; Stephen Licht, Ph.D., University of Rhode Island; Paolo Stegagno, Ph.D., University of Rhode Island Observation of Piping Erosion Initiation in a Centrifuge Model , William Ovalle-Villamil, M.Sc., S.M.ASCE, University of South Carolina; Inthorn Sasanakul, Ph.D., P.E., A.M.ASCE, University of South Carolina	Soil Freezing and Its Effects on Pavement Engineering by Random Finite Element Simulation , Dong, Ph.D., S.M.ASCE, Case Western Reserve University; Xiong Yu, Ph.D., P.E., F.ASCE, Case Western Reserve University Impact of Stabilization of Expansive Clay with Corex Slag and Lime , Radha J. Gonawala, S. V. National Institute of Technology; Rakesh Kumar, Ph.D., S. V. National Institute of Technology; Krupesh A. Chauhan, Ph.D., S. V. National Institute of Technology
3:00 – 3:30 p.m.	Afternoon Networking Break, Exhibit Hall E						
3:30 – 5:00 p.m.	Panel Session: 7-Year Itch: What Have We Learned from Hurricane Sandy, Room 126A						
3:30 – 5:30 p.m.	Poster Session II, Exhibit Hall E						
5:30 – 6:00 p.m.	Professional and Student Competition Awards Presentation, Terrace Ballroom IV						
6:00 – 7:00 p.m.	Karl Terzaghi Award Lecture, Terrace Ballroom IV						
7:30 – 10:00 p.m.	Terzaghi Dinner (Invitation Only), Loews Philadelphia Hotel, Lescaze Room, 33rd Floor						

Visit Booth 501: The Heart of It All

Make sure to plan plenty of time for your visit to booth 501: that's where you'll find the **Geo-Institute** – and much, much more. Start at the G-I booth to learn more about programs and upcoming activities, and how you can get more involved. You can meet the staff and connect with fellow members, including members from

the **Delaware Valley G-I Chapter**. Then stop by the **ASCE Bookstore** to see what's new and to build your professional library. Learn more about professional certification from the **Academy of Geo-Professionals (AGP)**, and how it can benefit you. **ASCE Member Services** will also be available: join ASCE and G-I, manage your

membership, update your address, subscribe to a journal, or even make a quick donation to the Voluntary Fund for student activities. **ASCE Government Relations** can help you serve the public by advocating for the care and improvement of our infrastructure (ask about PR and GR Universities.)

Tuesday Poster Session

3:30 – 5:30 p.m., Exhibit Hall E

Computational Geotechnics

PB47 | Mesh Size Sensitivity and Effect of Perturbation Intensity on coupled Undrained Instability Analysis in Sands, Debayan Bhattacharya, B.E., S.M.ASCE, *Indian Institute of Technology Gandhinagar*; Amit Prashant, Ph.D., *Indian Institute of Technology Gandhinagar*

PB48 | Numerical Modeling of Structural Backfills for Transportation Infrastructure, Meysam Mashayekhi, A.M.ASCE, *University of Delaware*; Victor N. Kaliakin, Ph.D., M.ASCE, *University of Delaware*; Christopher L. Meehan, F.ASCE, *University of Delaware*; Michael T. Adams, M.ASCE, *Turner-Fairbank Highway Research Center, Federal Highway Administration*; Jennifer E. Nicks, M.ASCE, *Turner-Fairbank Highway Research Center, Federal Highway Administration*

PB49 | Influence of Particle Rolling and Rotation on the Shearing Response of Clean Sand, Nick Barnett, *University of South Australia*; Md. Mizanur Rahman, *University of South Australia*; Md. Rajibul Karim, *University of South Australia*; Hoang Bao Khoi Nguyen, *University of South Australia*

PB50 | The Phase Transformation under Undrained and Drained Triaxial Condition by the Discrete Element Method, Hoang Bao Khoi Nguyen, Ph.D., *University of South Australia*; Md. Mizanur Rahman, Ph.D., *University of South Australia*; Md. Rajibul Karim, Ph.D., *University of South Australia*

PB51 | Models for Estimation of Moduli of Unbound Materials with Lightweight Deflectometer, Aria Fathi, M.SCE, S.M.ASCE, *The University of Texas at El Paso*; Cesar Tirado, Ph.D., *Center for Transportation Infrastructure Systems (CTIS), The University of Texas at El Paso*; Mehran Mazari, Ph.D., A.M.ASCE, *California State University Los Angeles*; Soheil Nazarian, Ph.D., P.E., F.ASCE, *Center for Transportation Infrastructure Systems (CTIS), The University of Texas at El Paso*

PB52 | Performance of Bounding Surface Constitutive Models in Predicting Cyclic Behavior of Low-Plasticity Fine-Grained Soils, Mohammad Eslami, Ph.D., *University of California Los Angeles*; Mohammad Zarrabi, *Polytechnique Montréal*; Samuel Ynista, Ph.D., *Polytechnique Montréal*

PB53 | Numerical Analysis of Radial Consolidation with Discharge Capacity Reduction Using Finite Strain Theory, Ba-Phu Nguyen IV, *Pukyong National University*; Yun-Tae Kim, *Pukyong National University*

PB54 | Numerical Analysis on Feasibility of Thermally Induced Pore Fluid Flow in Saturated Soils, Mohammadreza Mir Tamizdoust, S.M.ASCE, *University of Louisville*; Omid Ghasemi-Fare, A.M.ASCE, *University of Louisville*

PB55 | Modeling the Impact Force from a Dry Granular Flow Using Smoothed Particle Hydrodynamics Method, Bahman Sheikh, MSc, Ph.D. Candidate, *Pennsylvania State University*; Tong Qiu, Ph.D., P.E., *Pennsylvania State University*

PB56 | Nonlinear Dynamic Analysis of Track Embankments for High-Speed Trains, Negin Yousefpour, Ph.D., P.E., *Arup*; Eden Almog, *Arup*

PB57 | Numerical Insight into the Geotechnical Mechanisms Triggering Failure at the Winter Park Sinkhole in Florida, Mostafaz Hesham Soliman, *University of Central Florida*; Luis Arboleda-Monsalve, Ph.D., *University of Central Florida*; Boo Hyun Nam, Ph.D., *University of Central Florida*

PB58 | Bearing Capacity of a Strip Footing Situated on Reinforced Cohesionless Soil Slope Using Non-Associated Flow Rule, Koushik Halder, M.E., *Indian Institute of Technology Kharagpur*; Debarghya Chakraborty, Ph.D., *Indian Institute of Technology Kharagpur*

PB59 | Flat Plate Dilatometer and Finite Element Analysis in Evaluation of Settlement Induced Effects on Utilities, Dylan Sky Brancato, M.S., P.E., *Parsons*; Edmund Gregory McNulty, Ph.D., P.E., P.G., *Parsons*; Bill Little, P.E., *Parsons*; Timothy M. Williams, P.E., *Walsh Group*

PB60 | Probabilistic Analysis of a MSE Wall Considering Spatial Variability of Soil Properties, Sina Javankhosdel, Ph.D., EIT, *Rocscience Inc.*; Brigid Cami, B.Sc., *Rocscience Inc.*; Thamer Yacoub, Ph.D., *Rocscience Inc.*; Richard Bithurst, P.Eng., Ph.D., FEIC, FCAE, *Geo-Engineering Center at Queen's-RMC*

PB61 | Three-Dimensional Finite Element Analysis of Reinforced Concrete Box Culverts Using Infinite Elements, Christy L. Bugher, S.M.ASCE, *University of Delaware*; Kalehiwot Nega Manahiloh, Ph.D., P.E., M.ASCE, *University of Delaware*; Victor N. Kaliakin, Ph.D., M.ASCE, *University of Delaware*; Harry W. Shenton III, Ph.D., P.E., M.ASCE, *University of Delaware*

Earth Retaining Structures: Top-Down Construction

PB86 | Three-Dimensional Finite Element Analysis of Soil-Nailed Walls: Effects of Wall Configuration and Soil Properties, Amir M. Mamon, *Cairo University*; Manal A. Salem, Ph.D., *Cairo University*; Hani A. Lotfi, Ph.D., *Cairo University*

PB91 | Investigating Nonlinear and Time-Dependent Response of Concrete on the Performance of Urban Cofferdams, A. Felipe Uribe-Henao, S.M.ASCE, *University of Central Florida*; Luis G. Arboleda-Monsalve, Ph.D., M.ASCE, *University of Central Florida*; David G. Zapata-Medina, Ph.D., *Universidad Nacional de Colombia, Sede Medellin*

Earth Retaining Structures: Bottom-Up Construction

PB100 | Supporting Community Health: Foundations and Excavation Support for Brooklyn Methodist Hospital's Center for Community Healthcare, Samuel W. Singer, M.S., P.E., M.ASCE, *Langan*; Kenneth A. Huber, M.S., P.E., LEED AP, *Langan*

PB92 | Passive Force-Deflection Curves for Controlled Low-Strength Material (CLSM) and Lightweight Cellular Concrete (LCC), Kyle M. Rollins, Ph.D., *Brigham Young University*; Rebecca Black, M.ASCE, *Brigham Young University*; Kevin Wagstaff, M.ASCE, *Wagstaff Crane*

PB93 | Low-Density Cellular Concrete in MSE Structures with Steel Strip Reinforcements – Design and Construction Considerations and Case Histories, Nicolas Deni, P.E., M.ASCE, *The Reinforced Earth Company*; Robert A. Gladstone, P.E., M.ASCE, *Association for Mechanically Stabilized Earth*

PB94 | Deployment of the Geosynthetic Reinforced Soil (GRS) Integrated Bridge System (IBS) From 2011 to 2017, Brian H. Zelenko, P.E., M.ASCE, *WSP USA*; Daniel Alzamora, *Federal Highway Administration*; Jennifer E. Nicks, Ph.D., P.E., *Federal Highway Administration*

PB95 | Replacement of the Brooklyn Queens Expressway (BQE) Connector for the Kosciuszko Bridge in New York, New York, Paul B. Pizzimenti, P.E., *Haley & Aldrich*; Edward M. Zamiskie, P.E., *Haley & Aldrich*; Matthew D. Riegel, P.E., Ph.D., *HNTB*; Britain Materek, P.E., *HNTB*

PB96 | Construction and Monitoring of Alabama's First Geosynthetic Reinforced Soil-Integrated Bridge System, Randall Jonathan Hogan, S.M.ASCE, *Auburn University*; Robert Pirando, P.E., *Marshall County Commission*; J. Brian Anderson, Ph.D., P.E., M.ASCE, *Auburn University*; Jack Montgomery, Ph.D., P.E., A.M.ASCE, *Auburn University*

PB97 | Design Optimization of Flood Walls Using Evolutionary Algorithms, Siavash Sajedi, Ph.D., *AECOM*; Pooya Allahverdizadeh Sheykhlou, Ph.D., P.E., *AECOM*; Amanda Lopez, P.E., *AECOM*

PB98 | Everything but the Kitchen Sink: Use of Multiple Foundation Types to Allow for Construction on a Boston Hillside, Michael J. Weaver, P.E., *Haley & Aldrich*

PB99 | Using Numerical Model To Evaluate Performance of Geogrid-Reinforced Slope with High Embankment on Top, Hua Xu, Ph.D., *Southwest Jiaotong University*; Xin Ren, *Southwest Jiaotong University*; Jiannan Chen, Ph.D., A.M.ASCE, *Southwest Jiaotong University*; Lei Xia, *Sichuan Surveying & Design Institute of Transportation*; Ziyun Cheng, *Sichuan Surveying & Design Institute of Transportation*

Geoenvironmental Engineering

PB67 | Evaluation of Field Scale Unsaturated Soil Behavior of Landfill Cover through Geophysical Testing and Instrumentation, Md. Jobair Bin Alam, Ph.D., *University of Texas at Arlington*; Md. Sahadat Hossain, Ph.D., P.E., *The University of Texas at Arlington*; Linkan Sarkar, *The University of Texas at Arlington*; Naima Rahman, Ph.D.

PB68 | Dialysis Method to Measure Diffusion in Sodium and Enhanced Bentonites, Shan Tong, M.S., *Villanova University*; Kristin M. Sample-Lord, Ph.D., P.E., M.ASCE, *Villanova University*; Gretchen L. Bohnhoff, Ph.D., P.E., M.ASCE, *University of Wisconsin-Platteville*; Andrew B. Balken, *University of Wisconsin-Platteville*; Mustaki Ahmed, *Villanova University*

PB72 | Bioremediation of High Saline Soil through the Home-Made Collective Microorganisms, Md. Azizul Moqsd, Ph.D., M.ASCE, *University of California Berkeley*; Kenichi Soga, Ph.D., *UC Berkeley*; Md. Azizul Moqsd, Ph.D., A.M.ASCE

PB73 | Mechanism Study of Borehole Instability in Carbonate Reservoir through Discrete Element Modeling, Chao Zeng, *Missouri University of Science and Technology*; Wen Deng, *Missouri University of Science and Technology*

PB75 | Stabilization of Hazardous Solid Waste Landfill on Sloping Ground with Variable Base Inclination, Abinash Mahanta, M.E., M.IGS, *Indian Institute of Technology Delhi*; Riya Bhowmik, M.E., M.IGS, *Indian Institute of Technology Delhi*; Manoj Datta, Ph.D., M.IGS, *Indian Institute of Technology Delhi*

PB76 | Monitoring Seasonal Variation of Soil Hydraulic Conductivity for an Evapotranspiration Cover System, Lucas Hoyos, B.S.C.E., *University of Texas at Arlington*; Md. Jobair Bin Alam, Ph.D., *University of Texas at Arlington*; Md. Sahadat Hossain, Ph.D., P.E., M.ASCE, *University of Texas at Arlington*; Brenda A. Haney, P.E., *City of Irving*

PB78 | Velocity and Drag Force Distribution of Fluid Flow in Mono- and Binary- Sized Particulate Porous Media, Bahman Sheikh, M.S., Ph.D. Candidate, *Pennsylvania State University*; Tong Qiu, Ph.D., *Pennsylvania State University*

PB79 | Field Hydrologic Performance of Water Balance Cover in North Texas, Md. Jobair Bin Alam, Ph.D., *University of Texas at Arlington*; Brett DeVries, Ph.D., P.E., *SCS Engineers*; Md. Sahadat Hossain, Ph.D., P.E., *University of Texas at Arlington*; Naima Rahman, Ph.D., *SCS Engineers*

PB80 | Migration of Aqueous Benzene through a Subsurface Concrete Utility Pipe under Saturated Soil Conditions, Sultan Alhomain, *North Carolina State University*; Payam Hosseini, *North Carolina State University*; Mohammed Gabr, Ph.D., P.E., F.ASCE, D.GE, *North Carolina State University*; Mohammad Pour-Ghaz, Ph.D., *North Carolina State University*; Detlef Knappe, Ph.D., *North Carolina State University*

PB81 | Life Cycle Analysis as a Tool to Assess the Sustainability of Waste Management Practices in Bangalore City, Sugghosh P. M.Tech, *Indian Institute of Science*; Anusree N. B.E.; Sivakumar Babu G. L., Ph.D., FIE, ACCE, ASCE, IGS, IRC, IGS, KGC, *Indian Institute of Science*

PB82 | Effect of Moisture Content on CO2 Sequestration by BOF Slag in Landfill Cover, Jyoti K Chetri, S.M.ASCE, *University of Illinois at Chicago*; Krishna R. Reddy, Ph.D., P.E., F.ASCE, *University of Illinois at Chicago*; Dennis G. Grubb, Ph.D., P.E., *Phoenix Services, LLC*

PB83 | Synthesis of Friedel's Salt for Application in Halide Sequestration using Paste Encapsulation Technology, Abhisek V. Manikonda, M.S., S.M.ASCE, *University of North Carolina at Charlotte*; Vincent O. Ogunro, Ph.D., A.M.ASCE, *University of North Carolina at Charlotte*; Kirk M. Ellison, M.S., *Electric Power Research Institute*; Keith Moo-Young, Ph.D., F.ASCE, *Washington State University*

PB62 | Geophysical Engineering to Identify Seepage Channels in the Hager Slough Levee, Md Zahidul Karim, S.M.ASCE, *Kansas State University*; Stacey E. Tucker-Kulesza, Ph.D., P.E., M.ASCE, *Kansas State University*; Cassandra Rutherford, Ph.D., P.E., M.ASCE, *Iowa State University*; Michelle L. Bernhardt-Barry, Ph.D., P.E., M.ASCE, *University of Arkansas*

Geotechnics of Soil Erosion

PB87 | Using Case Studies of Bridge Scour in Rhode Island to Evaluate Simplified Scour Equations, Aaron S. Bradshaw, Ph.D., P.E., *University of Rhode Island*; Wendy K. Laurent, *Taylor Engineering, Inc.*; Christopher D.P. Baxter, Ph.D., P.E., *University of Rhode Island*; M. Reza Hashemi, Ph.D., *University of Rhode Island*; Paul Sauco, P.E., *University of Rhode Island*; Monique LaFrance Bartley, *University of Rhode Island*; Brian Caccioppoli, *University of Rhode Island*; John King, *University of Rhode Island*

PB88 | Tracking Piping Phenomenon in Earth Dams, Fadi Saliba, *Notre Dame University-Louaize*; Ronald Bounassar, *Notre Dame University-Louaize*; Najj Khoury, Ph.D., P.E., *Notre Dame University-Louaize*; Yara Maalouf, *Notre Dame University-Louaize*

PB89 | Erosion Mechanism of Claypan Soils in Southeastern Kansas, Mark A Mathis II, S.M.ASCE, *Kansas State University*; Tri V. Tran, S.M.ASCE, *Kansas State University*; Stacey E. Tucker-Kulesza, Ph.D., M.ASCE, *Kansas State University*; Gretchen F. Sassenrath, Ph.D., *Kansas State University*

PB90 | Experimental and Analytical Studies on the Root Reinforcement Effect of a Grass Species, *Spartina alterniflora*, Sujana Baral, M.S., *Louisiana Tech University*; Jay Xingran Wang, Ph.D., P.E., *Louisiana Tech University*; Shaourav Alam, Ph.D., *Louisiana Tech University*; William Brown Patterson, Ph.D., *Louisiana Tech University*

Pavements

PB17 | Development of a Strength Prediction Model for Recycled Base Materials with Soil Intrusion, Prabesh Bhandari, *The University of Texas at Arlington*; Sita Timsina, *ECS Southwest, LLP-Dallas*; Asif Ahmed, Ph.D., E.I.T., *State University of New York (SUNY) Polytechnic Institute*; Sahadat Hossain, Ph.D., P.E., *The University of Texas at Arlington*; Boon Thian, *Texas Department of Transportation*

PB12 | Enhanced Lateral Drainage Geotextile to Mitigate the Effects of Moisture Migration from a High Water Table, Jorge Zornberg, Ph.D., P.E., F.ASCE, *The University of Texas at Austin*; Anthony El Hachem, M.S., *The University of Texas at Austin*

PB16 | Subgrade Soil Stabilization Using Low-Quality Recycled Concrete Aggregate, Masoumeh Tavakol, Ph.D. Candidate, S.M.ASCE, *Kansas State University*; Mustaque Hossain, Ph.D., P.E., F.ASCE, *Kansas State University*; Stacey E. Tucker-Kulesza, Ph.D., P.E., M.ASCE, *Kansas State University*

PB17 | Mechanical Concrete for Enhancing the Properties of Pavement Base/Subbase, PV Vijay, Ph.D., P.E., M.ASCE, *West Virginia University*; Justin Smith, *West Virginia University*

PB21 | Parametric Study of Modified Subgrade Reaction Model Using Artificial Neural Network Approach, Sajib Saha, Ph.D., *Texas A&M Transportation Institute*; Fan Gu, Ph.D., A.M.ASCE, *National Center for Asphalt Technology, Auburn University*; Xue Luo, Ph.D., A.M.ASCE, *Zhejiang University*; Robert L. Lytton, Ph.D., P.E., F.ASCE, *Texas A&M University*

PB22 | Sustainable Design of Rigid Pavements Using a Hybrid GP and OLS Method, Abbasali TaghaviGhalesari, S.M.ASCE, *University of Texas at El Paso*; Carlos M. Chang Albitres, Ph.D., P.E., *University of Texas at El Paso*

PB23 | Development of the Virtual Load Method by Applying the Inverse Theory for the Analysis of Geosynthetic-Reinforced Pavement on Expansive Soils, Debojit Sarker, B.Sc., *Louisiana Tech University*; Jay X. Wang, Ph.D., P.E., M.ASCE, *Louisiana Tech University*; Md Adnan Khan, Ph.D., M.ASCE, *Shannon & Wilson, Inc.*

PB24 | Use of Pervious Concrete in Developing Countries for Stormwater Management, Louis Junior Saad, *Notre Dame University-Louaize*; Najj Khoury, Ph.D., P.E., *Notre Dame University-Louaize*; Charles Saad, Ph.D., *Notre Dame University-Louaize*

PB25 | Case Study of Military Airfields Emphasizing Asset Management, Rehabilitation, and Implementation of New Technologies, Thomas M. Synovec, P.E., M.ASCE, *Mississippi State University*; Isaac L. Howard, Ph.D., P.E., F.ASCE, *Mississippi State University*; Lucy P. Priddy, Ph.D., P.E., M.ASCE, *U.S. Army Engineer Research and Development Center*

PB26 | Effect of Fine Clay Particles on the Strength Characterization of Cement Treated Flex-Base Materials, Sita Timsina, *ECS Southwest, LLP-Dallas*; Prabesh Bhandari, *The University of Texas at Arlington*; Nur Basit Zaman, *The University of Texas at Arlington*; Asif Ahmed, Ph.D., E.I.T., *State University of New York (SUNY) Polytechnic Institute*; Sahadat Hossain, Ph.D., P.E., *The University of Texas at Arlington*; Boon Thian, *Texas Department of Transportation*

PB27 | Mix Design of Roller Compacted Concrete Pavement Using Steel Slag By-Products, Charbel Khoury, Ph.D., P.E., M.ASCE, *KCI Technologies, Inc.*; Kofi Acheampong, Ph.D., P.E., ENV SP, M.ASCE, *KCI Technologies, Inc.*; Kwabena Ofofri-Awuah, P.E., D.GE, M.ASCE, *KCI Technologies, Inc.*

PB28 | Cyclic Triaxial Tests on Crushed Limestone for Base Layers, Pradip Adhikari, *SIUE*; Abdolreza Osouli, Ph.D., P.E., M.ASCE, *SIUE*

Risk Assessment and Management

PB39 | Quantitative Coseismic and Precipitation-Induced Landslide Risk Mapping for the Country of Lebanon, William Pollock, *University of Washington*; Joseph Wartman, *University of Washington*; Grace Abou-Jaoude, *Lebanese American University*; Alex Grant, *U.S. Geological Survey*

PB40 | An Adaptive Kriging-Based Approach with Weakly Stationary Random Fields for Soil Slope Reliability Analysis, Mehrzad Rahimi, *The Ohio State University*; Zeyu Wang, *The Ohio State University*; Abdollah Shafieezadeh, Ph.D., *The Ohio State University*; Dylan Wood, *The Ohio State University*; Ethan J. Kubatko, Ph.D., *The Ohio State University*

PB42 | Excavation-Induced Structural Responses Due to Inherent Spatial Variability of Soils, Zhe Luo, Ph.D., P.E., M.ASCE, *Tongji University*; Biao Hu, Ph.D., *Tongji University*; Youwen Wang, M.Sc., *Tongji University*

PB43 | Fuzzy Reliability Analysis for Elastic Settlement of Surface Footing, Rajarshi Pramanik, M.E., *Indian Institute of Technology Kharagpur*; Dilip Kumar Baidya, Ph.D., *Indian Institute of Technology Kharagpur*; Nirjhar Dhang, Ph.D., *Indian Institute of Technology Kharagpur*

Soil Improvement: Case Histories

PB06 | The Ground Improvement Toolbox for Liquefaction Hazard Mitigation: Three Case Histories, Tanner Blackburn, Ph.D., P.E., M.ASCE, *Hayward Baker, Inc.*; Jeffrey R. Hill, P.E., M.ASCE, *Hayward Baker, Inc.*

PB07 | Experimental Study and Evaluation on Surface Grouting in Shallow-Buried Section of Karst Tunnels, Hua Xu, *Southwest Jiaotong University*; Peng Zhang, *Southwest Jiaotong University*; Jiannan Chen, A.M.ASCE, *Southwest Jiaotong University*; Runfang Sun, *Southwest Jiaotong University*; Yiwei Liu, *Southwest Jiaotong University*

PB08 | Construction of Citizen's Drop-Off Ramp in South Louisiana by Soil Surcharging, Jonathan E. Fourrier, M.Sc., P.E., *Fourrier & de Abreu Engineers, L.L.C.*; Ricardo C. de Abreu, Ph.D., P.E., *Fourrier & de Abreu Engineers, L.L.C.*

PB09 | Ground Modification Techniques for the Christina River Bridge Approaches, Eric M. Klein, P.E., D.GE, F.ASCE, *RK&K, LLP*; Bibek B. Shrestha, P.E., *RK&K, LLP*

Soil Improvement: Biopolymers

PB01 | Examining the Behavior of Compacted Soil-Biochar Specimens, Renee S. Lamprinakos, S.M.ASCE, *University of Delaware*; Kalehiwot Negma Manahiloh, Ph.D., P.E., M.ASCE, *University of Delaware*

PB02 | Strengthening of Dune Sand with Sodium Alginate Biopolymer, Hadi Fatehi, M.Sc., *Isfahan University of Technology*; Maysam Bahmani, *Shahid Beheshti University*; Ali Noorzad, *Shahid Beheshti University*

PB10 | Unconfined Compressive Strength of Mine Tailings Amended with Fly Ash, Amin Benjamin Ghorbanpour, P.E., *Golder Associates*; Xinbao Yu, Ph.D., P.E., *University of Texas at Arlington*

Soil Improvement: MICP

PB13 | The Effect of Chemical Concentration on the Strength and Erodibility of MICP Treated Sands, Pegah Ghasemi, *North Carolina State University*; Atefeh Zamani, *North Carolina State University*; Brina M. Montoya, *North Carolina State University*

PB14 | Leaching Assessment of MICP-treated Coal Combustion Products in Roadways Embankment, Junke Zhang, *Jackson State University*; Kejun Wen, Ph.D., *Jackson State University*; Lin Li, Ph.D., P.E., F.ASCE, *Tennessee State University*

PB15 | Simulated Implementation Approach for Microbially Induced Carbonate Precipitation Improvement of Soil adjacent to Piles, Jinung Do, S.M.ASCE, *North Carolina State University*; Brina M. Montoya, Ph.D., P.E., M.ASCE, *North Carolina State University*; Mohammed A. Gabr, Ph.D., P.E., D.GE., F.ASCE, *North Carolina State University*

Soil Improvement: Fiber Reinforcement and Soil Stabilization

PB18 | Comparative Study of Sisal and PVA Fiber for Soil Improvement, Anil Kumar Sharma, Ph.D., *Amrita Vishwa Vidyapeetham*; Swetha Prasannan, *Amrita Vishwa Vidyapeetham*; Sreevalsa Kolathayar, Ph.D., *Amrita Vishwa Vidyapeetham*

PB19 | Strength Characterization of Expansive Soil Treated with Phosphogypsum and Crumb Waste Rubber, Babu R. Dayakar, *KITS Divil*; Raviteja KVNS II, Ph.D., A.M.ASCE, *Indian Institute of Technology Hyderabad*; Prasad LNVN, M.Tech., *KITS Divil*

PB20 | Stress- Strain Behaviour of Steel Fiber-Reinforced Sand, Jagadanand Jha, *Muzaffarpur Institute of Technology*; Kulbir Singh Gill, Ph.D., *Guru Nanak Dev Engineering College, Ludhiana*; Sanjay Kumar Shukla, Ph.D., *Edith Cowan University*; Anil Kumar Choudhary, Ph.D. NIT, *Jamshedpur*

Underground Engineering and Construction

PB29 | Through-Soil Wireless Communication System for Embedded Geotechnical Instrumentation, Omar Baltaji, MCE, Ph.D. Candidate, *University of Illinois at Urbana Champaign*; Sijung Yang, M.Eng, Ph.D.Candidate, *University of Illinois at Urbana Champaign*; Youssef M.A. Hashash, Ph.D., P.E., F.ASCE, *University of Illinois at Urbana Champaign*; Andrew Singer, Ph.D, *University of Illinois at Urbana Champaign*

Tuesday Poster Session *(continued)*

3:30 – 5:30 p.m., Exhibit Hall E

PB30 | Time-History Analysis of Earth Pressure Test on Soil Arching Effect Caused by Deep-Buried Tunneling in Soft Soil, Liu Shujia, Ph.D., *Shanghai SMI Water (Group) CO., LTD*; Bai Tinghui II, P.E., *Shanghai Water Authority*; Liao Shaoming III, P.E., *Tongji University*; Shen Pangyong IV, P.E., *Shanghai SMI Water (Group) CO., LTD*; Gu Yun V, P.E., *Shanghai SMI Water (Group) CO., LTD*; Bai Zhanwei, *Shanghai SMI Water (Group) CO., LTD*

PB32 | Effect of Segregation on the Geotechnical Properties Of Hydraulic Backfill, Jean Békét Dalcé Master, *École Polytechnique de Montréal*; Li Li, Ph.D., *École Polytechnique de Montréal*; Pengyu Yang, Ph.D., *École Polytechnique de Montréal*

PB33 | Correlating EPB Chengdu Metro Settlement Data with Analysis Predictions in Sandy Cobble Stratum, Xin Liao, Ph.D., *Southwest Jiaotong University*; Qingfeng Wang, *Southwest Jiaotong University*; Liang Feng, Ph.D., *University of Florence*; Xiyong Wu, Ph.D., *Southwest Jiaotong University*; Deping Guo, *Sichuan Railway Investment Group Co., LTD*; Yingwei Xi, *Sichuan Environmental Monitoring Center*; Jiannan Chen, Ph.D., *Southwest Jiaotong University*

PB34 | A Numerical Investigation of SSCB Analysis and the Possibility of Applying Arching Inducement Techniques, Islam Mamdouh Ezz, *Cairo university*; Sherif Adel Akl, Ph.D., *Cairo University*; Mohamed El-Kholy III, *Cairo university*

PB35 | Monitoring-Assisted Large-Diameter Shield Tunneling Control in Soft Ground: A Case Study of Bund Tunnel Project, Xuehui Zhang, Ph.D., M.Eng, *M.ASCE, Tongji University*; Xi Jiang, Ph.D., M.Eng, *Tongji University*; Wei Chen, *Tongji University*; Dilu Xu, *Tongji University*; Guodong Cai, M.Eng, *SGIDI Engineering Consulting(Group) Co., Ltd*; Yun Bai, Ph.D., *Tongji University*

PB36 | Overview of Typical Excavation Failures in China, Ye Lu, Ph.D., A.M.ASCE, *Shanghai University*; Yong Tan, Ph.D., A.M.ASCE, *Tongji University*

Unsaturated Soils

PB101 | A Procedure for Incorporating Climatic and Water Table Data in the Geotechnical Design of Driven Pile Subjected to Axial Load, Vahidreza Mahmoudabadi, *Clemson University*; Nadarajah Ravichandran, Ph.D., *Clemson University*

PB102 | Effect of Geotechnical Parameters on the Percolation Performance of an Established Rain Garden in Pennsylvania, Wessam Mohammed, *Villanova University*; Andrea L. Welker, Ph.D., P.E., M.ASCE, *Villanova University*; James Press, *Villanova University*

PB103 | Evaluation of Bimodal Water Retention Characteristics for Hydrating Chromium Ore Processing Residue (COPR), Mostafa Afzalani, *University of Nebraska-Lincoln*; Jongwan Eun, Ph.D., P.E., *University of Nebraska-Lincoln*; James Tinjum, *University of Wisconsin-Madison*

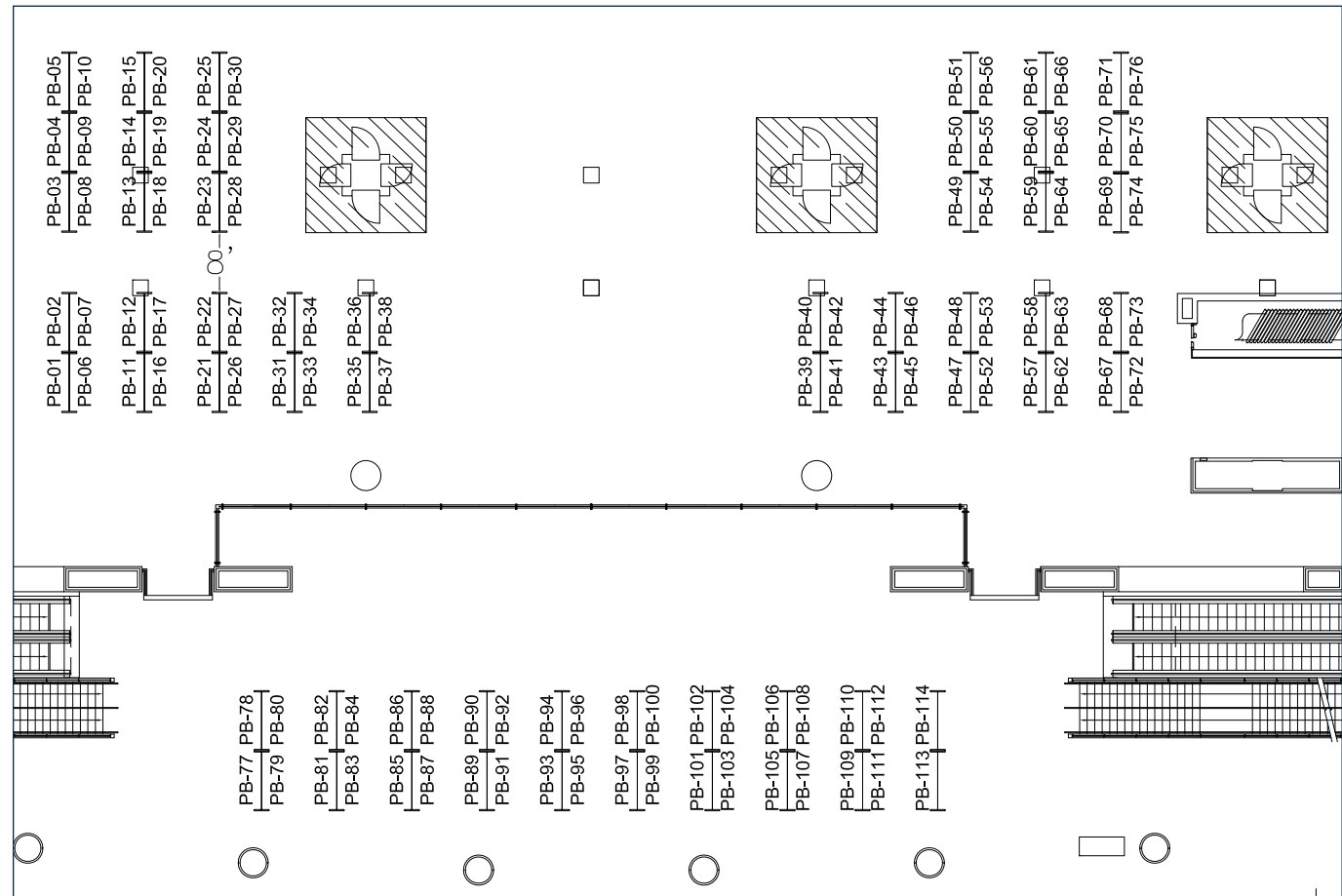
PB104 | Numerical Investigation of a Saturated/Unsaturated Soil-Atmosphere Model, Chuang Lin, *Missouri University of Science and Technology*; Xiong Zhang, Ph.D., P.E., *Missouri University of Science and Technology*

PB105 | Measurement of Thermal Conductivity and Suction for Sands Using a Modified Hanging Column Device, Xuelin Wang, *University of Texas at Arlington*; Xinbao Yu, Ph.D., P.E., *University of Texas at Arlington*; Nice Kaneza, *University of Texas at Arlington*; Shi He, *University of Texas at Arlington*

PB106 | A Bounding Surface Based Constitutive Model for Unsaturated Granular Soils, Mehdi Kadivar, S.M.ASCE, *University of Delaware*; Kalehiwat Nega Manahiloh, Ph.D., P.E., M.ASCE, *University of Delaware*; Victor N. Kaliakin, Ph.D., M.ASCE, *University of Delaware*

PB107 | Stability Analysis of an Unsaturated Silty Slope under Nonisothermal Conditions, Sannith Kumar Thota, *Mississippi State University*; Toan Duc Cao, *Mississippi State University*; Farshid Vahedifard, *Mississippi State University*; Ehsan Ghazanfari, *University of Vermont*

PB108 | Shear-Induced Matric Suction in Unsaturated Clayey Sand during Constant Water Content Triaxial Tests, Muwafaq A. Awad, *University of South Carolina*; Inthurn Sasanakul, Ph.D., P.E., *University of South Carolina*



Technical Program

Wednesday, March 27, 2019

8:00 – 9:30 a.m.	Geo-PIT: Powerful, Informative Talks on Geo-Topics , <i>Terrace Ballroom IV</i>			
9:30 – 10:00 a.m.	Morning Networking Break , <i>Exhibit Hall E</i>			
10:00 – 11:00 a.m.	Special Session: Robert M. Koerner Lecture Lessons Learned: An Adventure in 4 Decades of Geosynthetic Engineering , <i>Terrace Ballroom III</i>			
10:00 – 11:30 a.m.	Panel Session: Changing the Paradigm for Large Landslides: Forecasting Time-to-Failure , <i>Room 126A</i>			
10:00 – 11:30 a.m.	Technical Sessions			
Track A Room 122A	Track B Room 125	Track C Room 123	Track D Room 124	Track F Room 122B
Deep Foundations: Special Topics Moderators: Joseph Thomas Coe, Jr., P.E., Matteo Montesi, P.E., M.ASCE	Underground Engineering and Construction Moderators: John S. McCartney, Ph.D., P.E., FASCE; Sotirios Vardakos, Ph.D., C.Eng, M.ASCE	Risk Assessment and Management Moderators: Haitham M. Dawood, Ph.D., P.E., M.ASCE; Kallol Sett, Ph.D., EIT, A.M.ASCE	Education for Geotechnical Engineering Moderators: Andrea L. Welker, P.E., M.ASCE; Patricia M. Gallagher, P.E.	Geoenvironmental Engineering Moderators: Kristin Sample-Lord, P.E., M.ASCE; Ehsan Ghazanfari, Ph.D., P.E. M.ASCE
Verification Load Testing of Micropiles Under Combined Axial and Lateral Forces , John Montgomery Schultz, P.E., G.E., M.ASCE, <i>Petra Geosciences Inc.</i> ; Siamak Jafroudi, Ph.D., P.E., G.E., D.G.E., F.ASCE, <i>Petra Geosciences Inc.</i> ; Thang Van Nguyen, P.E. M.ASCE, <i>Hayward Baker Inc.</i> Emergency Bridge Abutment Repair with Pressed-in Pipe Piles , Takefumi Takuma, A.M.ASCE, <i>Giken America Corp.</i> ; Hiroyuki Nishimura, <i>Japan Press-in Association</i> ; Masashi Nagano, <i>Giken America Corp.</i> Quantifying the Influence of Construction Methods on Hollow-Bar Micropiles' Performance in Sand , Md Ahsanuzzaman, Ph.D., Third Year Student, <i>North Carolina State University</i> ; Alex Smith, P.E., <i>Subsurface Construction Co., LLC</i> ; Mohammed (Mo) Gabr, Ph.D., P.E., F. ASCE, D. GE, <i>North Carolina State University</i> ; Ray Borden, Ph.D., P.E., F.ASCE, <i>North Carolina State University</i>	Shallow Tunnel Not Aligned to the Geostatic Principal Stress Directions , Osvaldo P M Vitali, M.S., Civil Engineer, <i>Purdue University</i> ; Tarcisio B. Celestino, Ph.D., <i>University of Sao Paulo</i> ; Antonio Bobet, Ph.D., <i>Purdue University</i> Photogrammetry for the Characterization of Rock Masses Two Case Histories for Slopes and Caverns , Fulvio Tonon, Ph.D., P.E., M.ASCE, <i>Tonon USA: Engineering, Measurements, and Testing, LLC</i> Jet Grouting for Excavation Support, Underpinning, and Groundwater Control for the Construction of Sewage Treatment Plant Tanks , Russell W. Preuss, P.E. M.ASCE, <i>Gannett Fleming, Inc.</i> ; Daniel V. Cacciola, P.E., M.ASCE, <i>Gannett Fleming, Inc.</i> ; Carlos Medina, <i>Hayward Baker</i>	Landslide Susceptibility Updating Considering Real-Time Observations , Haojie Wang, BSc, <i>The Hong Kong University of Science and Technology</i> ; Limin Zhang, Ph.D., F.ASCE, <i>The Hong Kong University of Science and Technology</i> Geo-Hydro Forensic Investigation of an Earthen Dam Failure , Christopher J. Brown, Ph.D., P.E., <i>University of North Florida</i> ; Raphael Crowley, Ph.D., P.E., M.ASCE, <i>University of North Florida</i> ; Nick Hudyma, Ph.D., P.E., M.ASCE, <i>University of North Florida</i> George B. Stevenson Dam Rehabilitation – The Importance of Uncertainty and Confidence Evaluation in Quantitative Risk Assessments (QRA) , Scott A. Raschke, Ph.D., P.E., M.ASCE, <i>Schnabel Engineering</i> ; Gregory S. Paxson, P.E., D.WRE, <i>Schnabel Engineering</i> ; Edward (Woody) Raptosh, P.E., <i>Pennsylvania Department of Conservation and Natural Resources (DCNR)</i>	Developing An Engineering Geology Field Trip To Enhance Student Learning: A Case Study , Patricia M Gallagher, Ph.D., P.E., <i>Drexel University</i> ; Walter G. Yerk, <i>Drexel University</i> ; Philip S. Getty, P.G., <i>Boucher & James Inc.</i> ; Kristin M. Sample-Lord, Ph.D., P.E., <i>Villanova University</i> ; Loyc Vanderkluysen, Ph.D., <i>Drexel University</i> ; Robert H. Swan, Jr., <i>Drexel University</i> Advanced Geotechnical Education and Acquiring Good Engineering Judgement Through Project Experiences , Peter D. Scott, BSc, MSc, F.ASCE, FICE, CEng, FGS, <i>Buro Happold Limited</i> Monitoring of Full Scale Tieback Wall and How It Can Improve Student's Learning – Case History Paper , Matheus Barbosa Santos de Miranda, M.ASCE, <i>Rose-Hulman Institute of Technology</i> ; Kyle A. Kershaw, Ph.D., P.E., <i>Rose Hulman Institute of Technology</i>	Case History of an Exhumed Landfill Double Liner System , George Robert Koerner, Ph.D., P.E., CQA, M.ASCE, <i>Geosynthetic Institute (GSI)</i> ; Robert M. Koerner, Ph.D., P.E., F.ASCE, <i>Drexel University</i> Hydraulic Conductivity and Soil Water Retention of Waste Rock and Tailings Mixtures , Mohammad H. Gorakhi, <i>Colorado State University</i> ; Christoher A. Bareither, <i>Colorado State University</i> ; Joseph Scalia, <i>Colorado State University</i> ; Michael Jacobs, <i>Goldcorp Inc.</i> Factors Affecting the Kinetics of Urea Hydrolysis via Sporocarcina Pasteurii , Shahin Safavizadeh, Ph.D., <i>North Carolina State University</i> ; Brina Mortensen Montoya, Ph.D., P.E., <i>North Carolina State University</i> ; Mohammed A. Gabr, Ph.D., P.E., <i>North Carolina State University</i> ; Detlef R. U. Knappe, Ph.D., P.E., <i>North Carolina State University</i>

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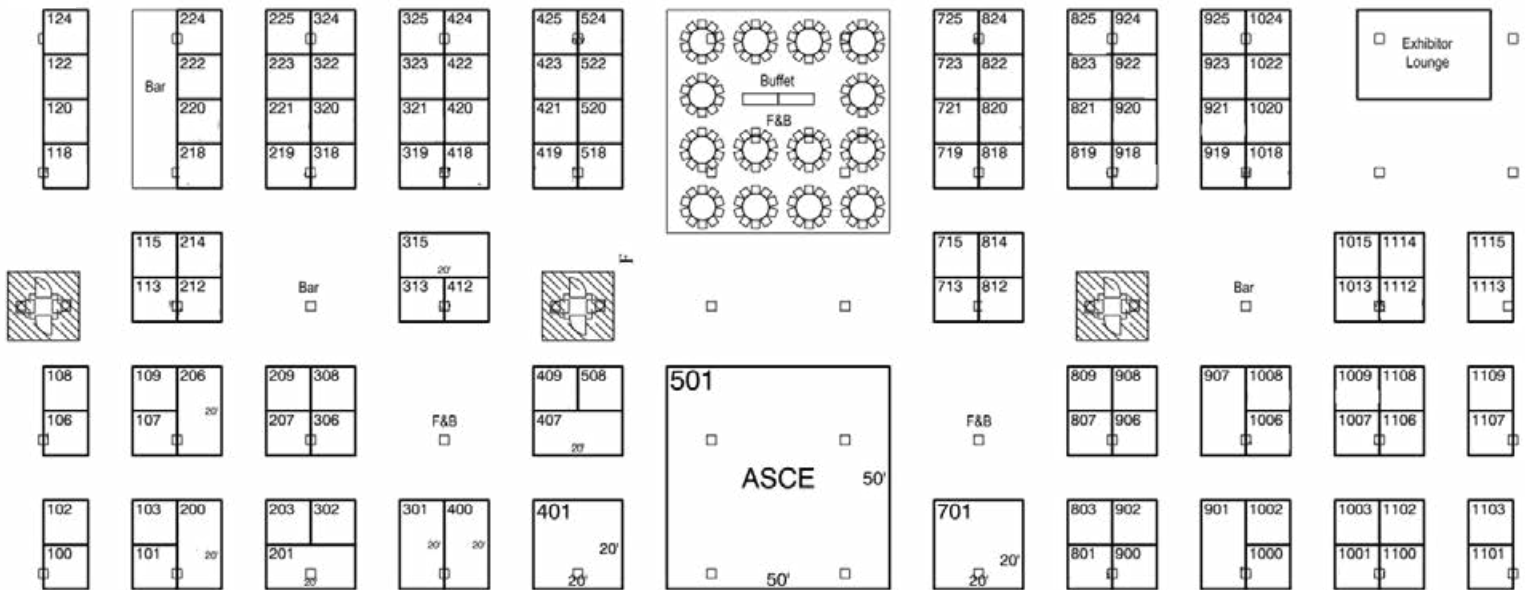
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10:00 – 11:30 a.m.	Technical Sessions						
Track A Room 122A	Track B Room 125	Track C Room 123	Track D Room 124	Track F Room 122B			
Deep Foundations: Special Topics Moderators: Joseph Thomas Coe, Jr., P.E., Matteo Montesi, P.E., M.ASCE	Underground Engineering and Construction Moderators: John S. McCartney, Ph.D., P.E., FASCE; Sotirios Vardakos, Ph.D., C.Eng, M.ASCE	Risk Assessment and Management Moderators: Haltham M. Dawood, Ph.D., P.E., M.ASCE; Kallol Sett, Ph.D., EIT, A.M.ASCE	Education for Geotechnical Engineering Moderators: Andrea L. Welker, P.E., M.ASCE; Patricia M. Gallagher, P.E.	Geoenvironmental Engineering Moderators: Kristin Sample-Lord, P.E., M.ASCE; Ehsan Ghazanfari, Ph.D., P.E. M.ASCE			
Visualization of Torpedo Pile Penetration and Pullout in Transparent Synthetic Soil Representative of Soft Marine Clays , Abdelaziz Aads, M.Sc., <i>New York University</i> ; Mehdi Omidvar, Ph.D., A.M.ASCE, <i>Manhattan College</i> ; Stephan Bless, Ph.D., <i>New York University</i> ; Magued Iskander, Ph.D., P.E., FASCE, <i>New York University</i> Assessment of Helical Anchor Capacity in Marine Clays for Aquaculture Applications , Leon D. Cortes-Garcia, S.M.ASCE, <i>University of Maine</i> ; Melissa E. Landon, Ph.D., P.E., A.M.ASCE, <i>University of Maine</i> ; Aaron P. Gallant, Ph.D., P.E., M.ASCE, <i>University of Maine</i> ; Kimberly Huguenard, Ph.D., A.M.ASCE, <i>University of Maine</i> 500 Walnut Street: High-Capacity Auger Pressure-Grouted Piles Used to Support 26-Story Multi-Family Tower Behind Independence Hall , Michael J. Kwiatkowski, P.E., M.ASCE, <i>Maser Consulting P.A.</i> ; Daniel S. Stevenson, P.E., <i>Berkel and Company Contractors, Inc.</i> ; Philip E. Gauffreau, P.E., M.ASCE, <i>Maser Consulting P.A.</i>	Overcoming Challenges for the Parallel Thimble Shoal Tunnel Site Investigation , Scott Kibby, P.E., M.ASCE, <i>Mott MacDonald</i> ; Frank Perrone, P.E., M.ASCE, <i>Mott MacDonald</i> ; Amanda Wachenfeld, EIT, A.M.ASCE, <i>Mott MacDonald</i> ; Jose Ballesta, <i>Dragados USA</i> Foundation Challenges for a Multi-Level Parking Structure in Boulder-Laden Fill: A Case Study , Aditya Bhatt, Ph.D., A.M.ASCE, <i>Willmer Engineering, Inc.</i> ; Daniel C. Pitts, P.E., M.ASCE, <i>Willmer Engineering, Inc.</i> ; Sujit K. Bhowmik, Ph.D., P.E., M.ASCE, <i>Willmer Engineering, Inc.</i> ; James L. Willmer, P.E., FASCE, <i>Willmer Engineering, Inc.</i> Case Study: Geotechnical Instrumentation and Monitoring of Alaskan Way Viaduct Replacement Project , Zhangwei Ning, Ph.D., M.ASCE, <i>Sixense Inc.</i> ; Loic Galisson, <i>Sixense Inc.</i> ; Philip Smith, <i>Sixense Inc.</i>	Predicting Multiple Hazards Under Extreme Rainstorms , Shengyang Zhou, <i>Hong Kong University of Science and Technology</i> ; Limin Zhang, <i>Hong Kong University of Science and Technology</i> ; Ping Shen, <i>Hong Kong University of Science and Technology</i> Geotechnical Risk Assessment and Back Analysis of Ground Movements Induced by Tunnel and Open-Cut Excavations , Mihail E. Popescu, Ph.D., P.E., D.GE, <i>HBK Engineering, LLC</i> ; Andrew J. Schwarz, S.E., P.E., LEED, <i>HBK Engineering, LLC</i> ; Naser Elsbih, P.E., <i>HBK Engineering, LLC</i> Geohazards, Extreme Weather Events and Climate Conditions – The Development of FHWA Guidance , Betsy Godfrey, P.E., M.ASCE, <i>WSP USA</i> ; Khalid T. Mohamed, P.E., PMP, U.S. Department of Transportation, <i>Federal Highway Administration (FHWA)</i> ; Brian H. Zelenko, P.E., M.ASCE, <i>WSP USA</i>	Increasing Collaboration among Geotechnical Engineering Faculty: A Case Study from the “Geotechnical Engineering Women Faculty: Networked and Thriving” Project , Patricia M. Gallagher, Ph.D., P.E., <i>Drexel University</i> ; Shobha K. Bhatia, Ph.D., <i>Syracuse University</i> ; Sharon W. Alestalo, <i>Syracuse University</i> ; Sucheta Soundarajan, Ph.D., <i>Syracuse University</i> ; Adda Athanasopoulos-Zekkos, Ph.D., <i>University of Michigan</i> Off-Site Implementation of GeoExplorer – A Game-Based Module for Geotechnical Engineering Education , Victoria Bennett, <i>Rensselaer Polytechnic Institute</i> ; Ifeanyi Mbah, <i>Rensselaer Polytechnic Institute</i> ; Casper Harteveld, <i>Northeastern University</i> ; Binod Tiwari, <i>California State University Fullerton</i> ; Beena Ajmera, <i>California State University Fullerton</i> ; Flora McMartin, <i>Broad-based Knowledge</i> ; Tarek Abdoun, <i>Rensselaer Polytechnic Institute</i> ; Usama El Shamy, <i>Southern Methodist University</i>	In Situ Compaction Characterization of Dry Stacked Coal Combustion Residues , David J. White, Ph.D., P.E., M.ASCE, <i>Ingios Geotechnics, Inc.</i> ; Pavana Vennapusa, Ph.D., P.E., M.ASCE, <i>Ingios Geotechnics, Inc.</i> ; Brendan FitzPatrick, P.E., M.ASCE, <i>Ingios Geotechnics, Inc.</i> ; Eric Hageman, <i>HDR Engineering</i> ; Jason F. Hill, <i>Tennessee Valley Authority</i> ; Nick McClung, P.E., <i>Tennessee Valley Authority</i> Shear Response of Interfaces in Liner System Under Accelerated Degradation of MSW in Bioreactor Landfill , Girish Kumar, S.M.ASCE, <i>University of Illinois at Chicago</i> ; Krishna R. Reddy, Ph.D., P.E., FASCE, <i>University of Illinois at Chicago</i> Stresses in Soil-Bentonite Slurry Trench Cutoff Wall , Daniel G. Ruffing, P.E., <i>Geo-Solutions, Inc.</i> ; Jeffrey C. Evans, Ph.D., P.E., D.GE., FASCE, <i>Bucknell University</i>			
11:30 a.m. – 1:00 p.m.	Lunch, Exhibit Hall E						
1:00 – 2:00 p.m.	Ralph B. Peck Award Lecture, Terrace Ballroom IV						
2:00 – 2:30 p.m.	Closing Ceremony, Terrace Ballroom IV						

Exhibit Hall Floor Plan



* denotes Geo-Institute Organizational Member

1003

A.H. Beck Foundation Co
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A.H. Beck Foundation Co., Inc. is a proven innovator in the deep foundation industry. Providing cost effective earth retention and ground improvement solutions since 1932.

1006

ACE Geosynthetics
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ACE Geosynthetics is the leading manufacturer of geosynthetics in Asia providing integrated, geosynthetic-related products and solutions for worldwide engineering projects including MSE Walls, environmental remediation, erosion control, shoreline protection, and coastal structure construction.

801

Aerix Industries*
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Aerix Industries is the world leading manufacturer of foam concentrate for the use in low density cellular concrete providing projects with a fast schedule cost saving alternative backfill material for roadways sub-base, bridge approaches backfill, and other pavement system solutions. Cellular concrete reduces soil loading while maintaining structural integrity.

212

Aero Aggregates
www.aeroaggregates.com

Foamed glass aggregates are ultra-lightweight and used on highways, bridge abutments and retaining walls. In addition, they provide drainage and insulation properties. Unit weights 10-20pcf.

222

Arizona State University: Center for Bio-Mediated and Bio-inspired Geotechnics
<https://cbbg.engineering.asu.edu>

CBBG, a consortium of ASU, UC Davis, Georgia Tech, and NMSU, develops nature-inspired solutions for hazard mitigation, infrastructure construction, environmental protection, and subsurface exploration.

906

Berkel*
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A specialty design-build contractor offering Augered Pressure Grouted (APG) and Drilled Displacement (APGD) Piles, Ground Improvement, Sheet piling & Shoring, Underpinning, Anchors, Driven Piles & Drilled Shafts. Full in-house engineering and design services are available.

1112

Campbell Scientific, Inc
www.campbellsci.com

Campbell Scientific works with cities, states, governments, research scientists and the military to monitor critical infrastructure. Our equipment is used to track changes, evaluate performance, meet regulatory obligations, alert maintenance when repairs are needed, and prevent catastrophic failures from occurring. Our products are keeping citizens of the world safe from infrastructure disasters.

407

ChemGrout
www.chemgrout.com

For 55 years, ChemGrout has manufactured the world's largest selection of grouting equipment. Their equipment remains an industry standard, offering reliability and durability.

809

CJGeo
www.cjgeo.com

CJGeo is a specialty contractor performing pipe abandonment and annular space grouting with low density cellular concrete.

124

Compaction Grouting Services
www.cgsinc.net

Compaction Grouting Services, Inc. is a geotechnical contracting firm that specializes in compaction grouting, micropiles (minipiles), sinkhole remediation, soil nail walls and shotcrete, and slabjacking.

219

ConeTec, Inc*
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ConeTec is a full service geotechnical and environmental site investigation contractor. We safely solve problems by generating high quality subsurface information used in geotechnical, environmental, and mining geotechnique. Our team of experts are dedicated to safe, quality, and efficient site investigations using the best possible equipment.

102

CZM
www.czm-us.com

CZM offers a comprehensive line of equipment engineered in the USA for a variety of drilling applications. Located in Savannah, GA, CZM is recognized for superior aftersales service and innovative design.

209

Danbro Distributors
www.danbro.com

Danbro distributes IDEAL Foundation Products in the Northeast and mid-Atlantic states. Danbro distinguishes itself by providing unparalleled customer support and quality engineering services to the professional community.

1013

Dataforensics*/Keynetix
www.dataforensics.net

Dataforensics and Keynetix geotechnical and geo-environmental data management software helps geologists, geotechnical and environmental engineers accomplish field and office work in less time, with greater accuracy and data quality.

721

Deep Excavation
www.deepexcavation.com

Great software for geotechnical & structural engineers for the design and analysis of deep excavations. User-friendly, high-quality with multiple accepted design methods, calculations and training sessions

823
Deep Foundations Institute
<http://www.dfi.org>
 DFI is an international association which brings together multi-disciplined individuals and organizations to find common ground and create a consensus voice for continual advancement in the deep foundations industry.

1009
Densification Inc*
www.densification.com
 Densification, Inc. is a nation-wide geotechnical contracting firm, specializing in dynamic compaction. Founded in 1994, our mission is to provide property owners and developers with an attractive construction alternative when poor soils or questionable fills are encountered. At the same time, we aim to provide geotechnical consultants with a personal and practical link to project owners.

922
DeWind One Pass Trenching
www.dewindonepasstrenching.com
 DeWind One Pass Trenching is the leader in trenching reaching depths to 125+ feet below grade, all across North America, installing environmental & civil trenching services.

923
DRW Associates
www.drwalter.com
 DRW Associates is an industry leader in the vibration and acoustical monitoring field. We are also a leading distributor of Instantel equipment for rental and sale.

901
Durham Geo Slope Indicator
<https://durhamgeo.com>
 DGSi designs, manufactures, and supplies a wide range of geotechnical/structural instrumentation, materials testing equipment, and environmental sampling equipment.

814
Duro Terra
www.duroterra.com
 DuroTerra is the distributor of Ductile Iron Pile products in North America. Ductile Iron Piles are highly effective, fast and versatile driven pile systems.

218
Dywidag Systems International
www.dsiamerica.com
 DYWIDAG-Systems International USA Inc. (DSI), is part of the international DYWIDAG-Systems International Group. DSI's scope of business is the development and application of Post-Tensioning and Geotechnical Systems for the Construction industry. We are a leading global supplier of earth retaining and foundation support systems including DYWI Drill Hollow Bar, Multi-strand ground anchors, DYWIDAG Threadbar for ground anchors, soil nails, micropiles and tie-rods. DSI also provides anchor force monitoring services, during installation and throughout the anchor's service life, using the DYNA Force® load monitoring system.

719
ECA
www.ecanet.com
 For more than 100 years, Equipment Corporation of America has been a leading supplier of Foundation Construction Equipment in the Eastern United States.

220
Elastizell Corporation of America
www.elastizell.com
 Producing lightweight cellular concrete for quality Engineered Fill. Solving load issues for over 40 years with a national network of qualified and approved applicators.

818
ELE International
www.ele.com
 ELE International specializes in the design, manufacture, and supply of high-quality construction materials testing equipment.

115
Ensoft
www.ensoftinc.com
 Experts in soil-structure interaction, Ensoft has been developing and providing computer-based solutions to complex geotechnical and structural engineering problems since 1985.

1021
Enviroprobe
www.enviroprobe.com
 Enviroprobe Service, Inc. is a state of the art geophysical exploration and drilling company offering modern approaches to investigative needs in civil, geotechnical, and environmental applications.

821
Expanded Shale, Clay and Slate Institute
<https://www.escsi.org>
 ESCSI is the international trade association for manufacturers of rotary kiln-produced expanded shale, expanded clay and expanded slate lightweight aggregate.

423
Exponent
www.exponent.com
 Exponent is a multi-disciplinary engineering and scientific consulting firm that brings together more than 90 different disciplines to solve important engineering, science, regulatory, and business issues facing our clients.

200
Foothills Drilling Equipment
www.foothillsequipment.com
 Our company is the East Coast distributor of TEI Rock Drills. We also provide sales of DTH Hammers and tooling, manufacturing of metal plates, sales of construction and mining materials, consumables and equipment. We now offer service and maintenance for TEI Rock Drills and DTH Hammers.

1002
Fugro Loadtest*
www.loadtest.com
 Fugro is the world's leading, independent provider of site characterization and deep foundations testing for large constructions, infrastructure and natural resources.

812
Gannett Fleming*
www.gannettfleming.com
 Gannett Fleming, an international planning, design, technology, and construction management firm, has been providing innovative engineering and consulting solutions for more than 100 years.

520
GCP Applied Technologies
www.gcpat.com
 GCP manufactures waterproofing solutions for construction projects. Over the past 50 years, our products have been used to waterproof virtually every type of building and structure. Commercial buildings. Infrastructure. If you build it, we'll protect it.

803
GCTS Testing Systems
www.gcts.com
 GCTS Testing Systems designs and delivers productive and precise solutions for the advanced material characterization of soils, rocks, and pavements.

713
GDS Instruments*
gdsinstruments.com
 GDS Instruments designs, develops and manufactures materials testing machines and software used for the computer-controlled testing of soils and rocks.

701
Geo-Instruments*
www.geo-instruments.com
 GEO-Instruments provides automated instrumentation for monitoring the safety and stability of buildings, excavations, bridges, railways, roads, tunnels, dams, embankments, and slopes. We help owners, infrastructure operators, and construction engineers identify and mitigate risk, optimize designs and methods, and document regulatory compliance.

101
Geo Products
www.geoproducts.org
 For more than 70 years HDPE has been the plastic of choice for products manufactured for long-term use and critical applications. In addition to our EnviroGrid®, HDPE is used to manufacture geomembrane liner for subtitle D sanitary landfills, pit liners, and mining leachate ponds as well as pipe and other industrial products.

302
Geocomp Corporation
www.geocomp.com
 Geocomp identifies, quantifies, and manages risk associated with design, construction and operation of infrastructure with Active Risk Management™, geotechnical engineering, instrumentation/monitoring, testing and products.

1000
Geokon, Inc*
www.geokon.com
 Geokon manufactures a full range of high quality geotechnical instrumentation suitable for monitoring the safety and stability of a variety of civil and mining structures.

908
Geopier Foundation Company*
www.geopier.com
 Geopier provides an efficient and cost-effective Intermediate Foundation® solution for the support of structures. Specializing in Rammed Aggregate Pier®, Rigid Inclusions, and slope reinforcement systems.

924
Geoprofessional Business Association
<https://www.geoprofessional.org>
 The Geoprofessional Business Association (GBA) helps members become more successful by creating unique business resources, programs, and services that help members and their clients confront risk and optimize business performance.

1007
Geosense
www.geosense.co.uk
 Geosense is one of Europe's leading manufacturers and suppliers of instruments to the geotechnical, civil engineering, structural health monitoring, mining and environmental industries.

902
Geo-Slope International
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 GEO-SLOPE develops, markets, and supports state-of-the-art software for geotechnical and geo-environmental modeling. Our customers include small engineering firms, large multi-nationals, government agencies, regulatory commissions, and leading universities throughout the world.

907
GeoStructures
www.geostructures.com
 GeoStructures provides design-build construction services for Foundation Support, Ground Improvement, and Engineered Earth Structures including, Diaphragm Walls and Tunnels. Design-Build delivery provides clients a seamless experience to estimate, design and build their projects.

424
Geosynthetics Magazine
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 The Industrial Fabrics Association International (IFA) is a not-for-profit trade association comprised of member companies representing the international specialty fabrics marketplace.

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 Giken has been a pioneer in the Press-in Piling Technology, which enables driving of sheet and tube piles with very low noise and no vibration.

225

Gilson

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Gilson is a leading manufacturer and distributor of high-quality construction testing equipment and laboratory testing equipment suited to your unique applications. Experienced Customer Service and Technical Support staff work with you to select products that meet even the most rigorous ASTM and AASHTO standards. Our materials testing equipment spans across many industries including construction, laboratory, pharmaceuticals, food services and much more!

419

GRL Engineers, Inc* / Pile Dynamics Inc

www.grlengineers.com

www.Pile.com

GRL Engineers, Inc. provide deep foundation testing and analysis services nationwide. Pile Dynamics, Inc. is the world's leading developer and manufacturer of quality assurance testing systems for the deep foundations industry.

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HUESKER, INC*

www.huesker.com

HUESKER is the world's leading manufacturer of geosynthetics, agricultural, and industrial textiles. Providing solutions for Earthworks and Foundations, Roads and Pavements, Environmental Engineering, Hydraulic Engineering, Industry and Agriculture.

120

Humboldt Mfg Co

www.humboldtmfg.com

Humboldt Mfg. Co., is a leading manufacturer and supplier of construction materials testing equipment for Soil, Concrete and Asphalt. Both Lab and Field Equipment.

401

IDEAL Manufacturing

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IDEAL manufactures the patented STELCOR Drilled-in Displacement Micropile (DDM), for new foundation support and foundation underpinning, as well as large capacity Helical Pipe Piles. IDEAL is ISO 9001-2015 certified and holds an ICC-ES report (ESR-3750) for our helical pipe piles.

106

IDS Geo Radar

<https://idsgeoradar.com>

IDS GeoRadar provides products and solutions for geophysical, mining, civil engineering and security applications. Founded in 1980 as part of IDS Ingegneria dei Sistemi in Pisa, Italy, the company was recently acquired by Hexagon.

825

JAFEC USA

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JAFEC USA, Inc. is a geotechnical construction company that provides ground improvement services for liquefaction mitigation, dam and levee stabilization, excavation support and seepage control.

701

Keller

www.kellerfoundations.com

Connected Companies: Anderson Drilling, Bencor, Case Foundation, Cyntech, GEO-Instruments, Hayward Baker, HJ Foundation, Keller in Canada, McKinney Drilling Company, Moretrench, Moretrench Industrial, and Suncoast Post-Tension.

318

Kessler Soils Engineering Products

<https://www.kesslerdcp.com>

World's leading manufacturer of Dynamic Cone Penetrometers. Distributors of Zorn Light Weight Deflectometers for compaction control and MIT pavement thickness gauge & dowel bar scanners.

1008

Kordata

www.Kordata.com

Our vision is to be the industry leader in mobile data collection by developing and deploying the most innovative, flexible, scalable, mobile data collection and workflow software available by solving the challenging technical issues and putting simple and elegant solutions in the hands of our valued clients.

Maccaferri*

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Maccaferri is a global leader of civil and geotechnical engineering applications that helps consultants, agencies and contractors with "Engineering a Better Solution."

1019

Magnum Piering

www.magnumpiering.com

Magnum Piering is an industry leader in manufacturing high capacity, high quality steel piling products for deep foundations and foundation repair applications.

418

Malcolm Drilling Company*

www.malcomlmdrilling.com

Malcolm has for 5 decades been an innovator and leader in the industry. Our services include deep foundations, retention systems, ground improvement and dewatering techniques

518

MARL Technologies

www.marltechnologies.com

MARL Technologies designs and manufactures technology and industry-leading drills for auger, rotary, geotechnical, environmental, sonic, geothermal, water well, CPT, mining and construction. We are also proud to supply the world's first digital electronic SPT system, the MARL eSPT®.

1020

Max Enterprises

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Max's New indoor hydraulic sampling units, crews can set up and continuously push 3-inch Shelby tube to a depth of 10 feet in less than one hour.

918

McCrossin Foundations

www.mccrossinfoundations.com

Deep foundations and support of excavation contractor; capabilities include large diameter shafts, driven and drilled piling, and small diameter drilling and grouting.

308

Menard Group USA*

www.menardgroupusa.com

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109

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315

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901

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1100

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122

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425

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822

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203

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207

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Assumption of Risk

All ASCE events and activities are purely voluntary activities, and attendees are fully responsible for their own conduct and well-being, including, and without limitation, determining their level of fitness to take part in any such event or activity. In participating in any event or activity, attendees shall be deemed to understand and accept all risk of possible physical injury that might occur as a result of such participation. Children under the age of 18 are not allowed in the exhibit hall.

Medical Emergencies – Loews Philadelphia Hotel

ASCE hopes that your visit to GeoCongress 2019 will be free from illness or injury, but in case you or a family member needs medical attention during your time at the event, contact the front desk. The closest hospital is Thomas Jefferson University Hospital:

Thomas Jefferson University Hospital

111 South 11th Street, Philadelphia, PA 19107, (215) 955-6000

Medical Emergencies – Pennsylvania Convention Center

If there is an injured person or someone who needs medical attention, identify yourself to the individual if possible and obtain as much information as possible from him/her. Contact the Command Station, via the beige house phone at ext. 4911. Relay information to the Command Station. The Command Station will either contact the show EMS or the Philadelphia Fire Department Rescue Unit. It is important that you know where you are so medical attention may be rendered as quickly as possible. Do Not Call 911.

No Smoking Policy

Smoking is not allowed at any ASCE event or in the Convention Center or hotel.

Meeting Room Overcrowding

ASCE 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 and the Pennsylvania Convention Center are REQUIRED to follow local fire regulations and may ask participants in rooms filled to capacity to choose another event.

Program and Session Cancellation

ASCE reserves the right to cancel programs and/or sessions. In the unlikely event of a cancellation, all registrants will be notified. Programs and sessions are subject to change, and ASCE reserves the right to substitute a program, session, and/or speaker of equal caliber to fulfill the educational requirements.

Pennsylvania Convention Center – Emergency Procedures

Evacuation Plan | Familiarize yourself with your surroundings. Note all emergency exits in your area.

The key to a successful evacuation is for everyone to remain calm. In the event that evacuation is necessary, you will be informed via a voice-recorded message advising you to proceed to the nearest exit. If you are assisting in the evacuation of your show attendees and exhibitors, make sure they are instructed to leave by way of the nearest exit in a calm and orderly fashion. Physically challenged guests should be escorted to the nearest fire exit and the command station must be notified via house phone at ext. 4911 or nearest security personnel with the exact location of the individual so that the Fire Department is notified for retrieval of the individual.

Fire – Code Red | If a fire is suspected, contact the Command Station at 215-418-4911 or via the beige house phones at ext. 4911. Give the location and extent of the suspected fire. The Command Station will dispatch Security and Engineering and will call the Fire Department. The Command Station will also notify the Emergency Response Leaders, who will be in touch with Show Management. If evacuation is necessary, see evacuation plan above.

Bomb Threat – Code Black | When a call is received, try to keep the caller on the line as long as possible in order to obtain as much information as possible. Try to be calm when speaking to the caller. After a threat has been made and the call has been terminated, call the Command Station at 215-418-4911. Do Not Use your Radio at this point since the frequency of a two-way radio could trigger the device. Pagers as well as cell phones should also be turned off. Command Station will call the police and notify the Emergency Response Team. The Emergency Response Team will be in touch with Show Management. If evacuation is necessary, see the evacuation plan above.

Civil Disturbances | If you see protestors or witness a civil disturbance, notify the PCCA Command Station via the beige colored house phone at ext. 4911. The Command Station will notify security personnel and the appropriate management staff to report to your location. Command Station will also notify the Philadelphia Police Department, Security Services, and will meet with appropriate Show Management and advise them of the situation.

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Photographs and Video of the event may be taken by ASCE, its agents, contractors, or representatives, and such photographs and video may be used for any purpose at ASCE discretion.

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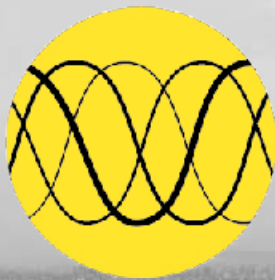
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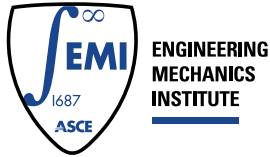


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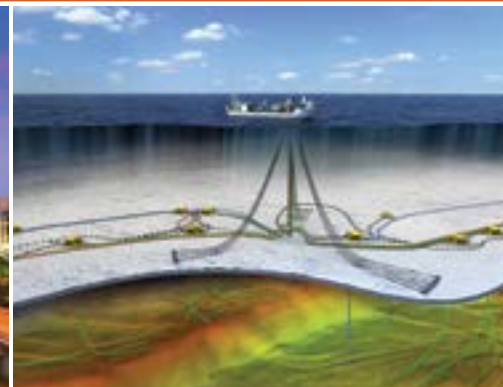
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