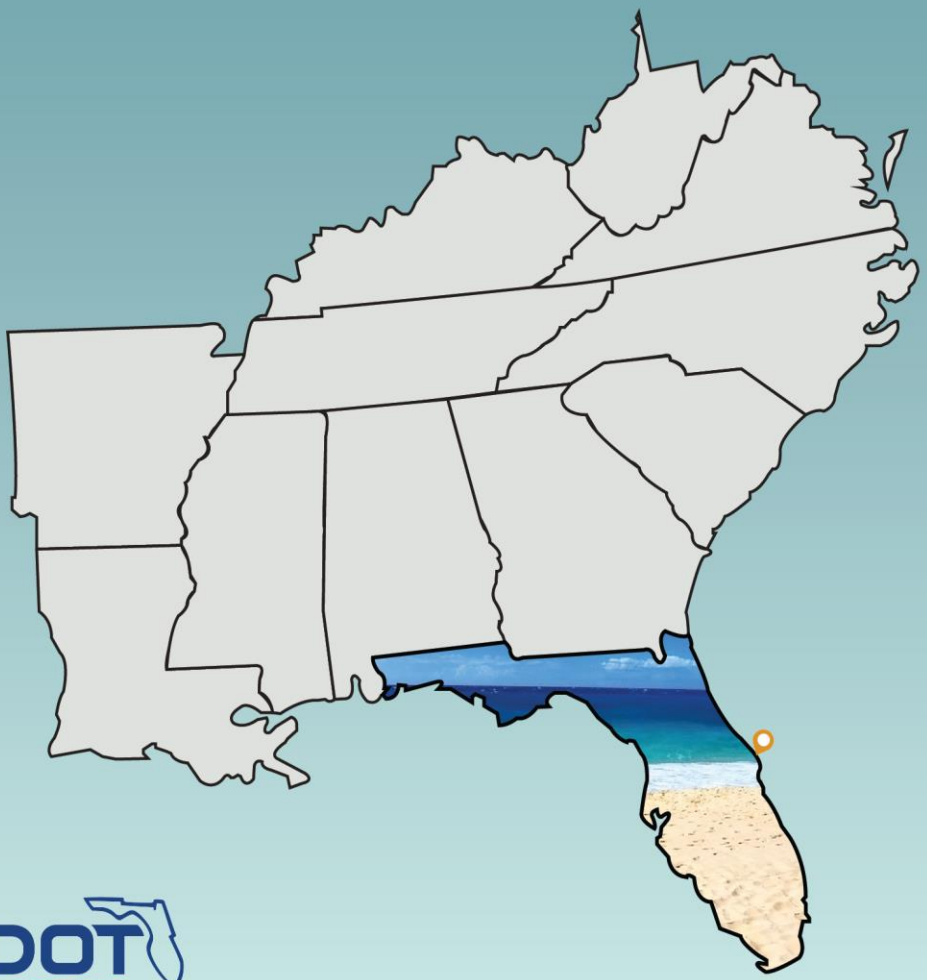
Southeastern Transportation Geotechnical Engineering Conference

October 17-20, 2022
Daytona Beach, Florida



Hosted by: FDOT


STGEC Welcomes
You To
Daytona Beach
Florida

TABLE OF CONTENTS

DID YOU KNOW THIS ABOUT FLORIDA?

Nickname: The Sunshine State

Statehood: 1845, the 27th State

Population: ~22 million

State Capital: Tallahassee

Largest City: Jacksonville

State Animal: Panther

State Bird: Mockingbird

State Flower: Orange Blossom

WELCOME

STGEC 2022
Southeastern Transportation
Geotechnical Engineering Conference

Dear 2022 STGEC Attendees,

Welcome! It has been 3 years since we have been able to enjoy each other face-to-face at the 50th annual conference in Tennessee, and we are excited to have you join us here in Florida for the 51st Southeastern Transportation Geotechnical Engineering Conference (STGEC) in Daytona Beach. Please take full advantage of this chance to spend time with each other once again, to explore new perspectives on our profession and the lessons learned we all have to share.

Our agenda this year includes 32 presentations on topics ranging from landslide repairs to deep foundations for bridges. In addition to our presentations, we hope that you will attend our Ice Breaker on Monday night, banquet on Wednesday night and Thursday's field trip to the Daytona International Speedway.

I would like to personally thank the conference staff for working so hard to prepare for this conference. I would specifically like to thank Ellen Sliger and Brian Martin whom many of you have contacted for assistance, and of course Bill Broyles, our perpetual source of light and stability. We thank all of you for attending this conference. Please make sure you spend time with our exhibitors. They are true innovators. Chances are that as you wonder through the exhibit hall, you will find something new that will make your job easier. We hope your experience this week is both enjoyable and informative. Your technical experience and expertise is truly appreciated and I thank you for coming here to share it with us.

Have a blessed week,

Larry Jones
2022 STGEC Chair
Florida Department of Transportation
Assistant State Structures Design Engineer &
State Geotechnical Engineer

Monday October 17th	
10:00am-5:00pm	**Registration Open & Vendor Setup**
6:00pm-8:00pm	**Opening Reception in Exhibit Hall**
Tuesday October 18th	
7:00am-4:30pm	Registration
7:00am-8:00am	Breakfast
8:00am-9:00	**Welcome** *Larry Jones - FDOT* **Opening Remarks** *Jared W. Purdue, P.E. - FDOT Secretary*
9:00am-9:30am	**Breaking Cylinder Piles – Rodanthe Bridge, Rodanthe, North Carolina** *Thomas G. Santee, P.E. - NCDOT*
9:30am-10:00am	**Outcomes on improving geotechnical site characterization for constructability and construction decisions** *Benjamin S. Rivers, P.E. – FHWA-Resource Center*
10:00am-10:30am	Break in the Exhibit Hall
10:30am-11:00am	**Case Study: SR 24 Widening Slope Failure, Washington County GA** *Mary Cooley - GDOT*
11:00am-11:30am	**US-701 Bridge Damage due to Landslide Emergency Response, Movement Monitoring, and Stabilization** *Michael Valiquette - ICE Engineers*
11:30am-12:00pm	**Design-oriented Characterization of Uncertainty in Computed Axial Capacities of Deep Foundation Members** *Michael Davidson, PhD, PE – University of Florida*
12:00pm-1:00pm	Lunch in the Exhibit Hall
1:00pm-1:30pm	**In-service Assessment of Road Sinkholes with 2D Ambient Noise Tomography** *Dr. Khiem Tran – University of Florida*
1:30pm-2:00pm	**Automated Assessment of Statistic Features to Facilitate Geotechnical Site Characterization and Design in Large Transportation Projects in Louisiana** *Xin Peng and Jesse Rauser – Louisiana Department of Transportation and Development (LADOTD)*
2:00pm-2:30pm	**TDOT SR-108 Landslide Repair – Anchored Soldier Pile and Tie Back System** *Sam Sternberg III, P.E., D.GE & Benjamin Turner, Ph.D, P.E., G.E. – Dan Brown and Associates*
2:30pm-3:00pm	Break in the Exhibit Hall
3:00pm-3:30pm	**Assessing Axial Capacities of Auger Cast Piles from Measuring While Drilling** *Dr. Mike Rodgers – University of Florida*
3:30pm-4:00pm	**Value Engineering Geotechnical Design – Surfside Beach Fishing Pier Replacement** *Mike Simpson, P.E. - Infrastructure Consulting & Engineering*
4:00pm-4:30pm	**Compaction – A Critical Component in the Construction of Embankments, Roads, and Foundations** *John Godfrey Jr., P.E. – ECS Limited*

TUESDAY ABSTRACTS

Breaking Cylinder Piles – Rodanthe Bridge, Rodanthe, North Carolina

Thomas G. Santee, P.E. - North Carolina Department of Transportation

The Rodanthe Bridge is a recently completed design build project on the Outer Banks of North Carolina. The bridge is approximately 2.5 miles long and reroutes NC 12 over the Pamilco Sound just north of Rodanthe. Foundations included a few transitions bents on 30 inch square prestressed concrete piles with the remaining bents on 54 inch diameter concrete cylinder piles. Very deep minimum pile tip elevations combined with dense to very dense sands above the minimum tip elevation and unique permit requirements made the installation of the 54 inch cylinder piles very challenging. Ten of them were damaged within the middle third of the pile during installation and had to be abandoned. The presentation will provide an overview of the project focusing on installation methods, the observed pile damage, and the repairs chosen for the piles which had to be abandoned.

Outcomes on improving geotechnical site characterization for constructability and construction decisions

Benjamin S. Rivers, P.E. - FHWA-Resource Center

The presentation would summarize the actions identified during the fourth and final "Owners Only" session of the A-GaME Summer Super Sessions on "Making It Happen: Improving Site Characterization for Constructability and Construction Decisions," while highlighting some important takeaways from the first three sessions.

Case Study: SR 24 Widening Slope Failure, Washington County GA

Mary Cooley - GDOT

On March 15, 2016, the Georgia Department of Transportation's (GDOT) Geotechnical Bureau was contacted by District 2 Area 1- Milledgeville Office about extensive cracking that had appeared on an unopened section of Georgia State Route 24. The project was under construction, over 90 feet of fill was placed, the divided highway was paved, and the guard rail was installed. The asphalt near Stations 311+00± to 315+00± in the west bound travel lanes, coming from Sandersville were showing signs of a slope failure arc forming. Over the next 23 days the slope failure progressed to all travel lanes and began spreading at the toe of the slope. The crest of the slope would fall approximately 40 ft. after a heavy rain event, the weekend of April 3rd & 4th, 2016. The arc eventually spanned 1000', from Station 308+00+ to 318+00+. The slope also showed signs of creep and debris left GDOT's Right-of-Way.

The slope failure became one of the largest, most documented, and fastest progressing failures observed by GDOT on an active construction project. Many factors contributed to this failure including: improper geotechnical investigation, contractor & construction issues, and lack of understanding of local geology and hydrology. GDOT's Geotechnical Bureau began the investigation but many other state offices as well as consultants helped investigate and develop remediation for this failure. This presentation covers the lessons learned, procedures developed, and discussion of the final report for this slope failure.

US-701 Bridge Damage due to Landslide Emergency Response, Movement Monitoring, and Stabilization

Michael Valiquette – ICE Engineers

NCDOT Bridge 16 along US 701 over Cape Fear River experienced an emergency stability assessment and mitigation in late 2019. The 1,200-foot long bridge was damaged during Hurricane Dorian due to scour and subsequent slope failure and was closed to traffic. A movement monitoring system for the failed slope and both the damaged bridge and adjacent in-service bridge was implemented while a design solution was being developed. Landslide monitoring system incorporated vertical slope inclinometers and well type piezometers. The bridge monitoring system consisted of MEMS tilt meters and survey prism targets. Several bathymetry surveys were performed to aid in analysis of the landslide mitigation. Several structural and geotechnical repair solutions were prepared along with construction cost estimates for the project. A FEMA hydraulic model of Cape Fear River was prepared to evaluate the impact of the proposed landslide repair solutions to the Base Flood Elevation. During bridge construction, a full-scale foundation load test was performed using the bi-directional test method on a non-production test drilled shaft.

Design-oriented Characterization of Uncertainty in Computed Axial Capacities of Deep Foundation Members

Michael Davidson, PhD, PE - University of Florida

Soil and rock properties vary spatially across bridge sites, where such variability is reflected in measurements obtained during geotechnical site investigations. When empirical methods are utilized to correlate site measurements to unit resistances as part of foundation design, additional bias and uncertainty are introduced. In current practice, uncertainty due to spatial variability and "method error" are either not directly accounted for or are prescriptively incorporated in a simplified manner. Consequently, non-uniform levels of conservatism may arise across foundation members of bridges. Direct characterizations of spatial variability and method error phenomena can lead to improved uniformity in conservativism of bridge foundation designs and thereby improve cost effectiveness. Focused upon in the current presentation are methodologies for characterizing uncertainty when computing axial capacities of deep foundation members (piles, drilled shafts). The assembled methodologies are presented in the form of a design-oriented geostatistical tool that allows practicing engineers to compute:

1. axial resistances of deep foundation members over a range of candidate embedment lengths;
2. corresponding elevation profiles of variability;
3. site specific (or zone-specific) estimates of LRFD resistance factors; and,
4. the associated profiles of factored axial resistance.

An illustrative case is also presented to highlight the practicality of integrating the statistical methods into geotechnical design applications.

In-service Assessment of Road Sinkholes with 2D Ambient Noise Tomography

Dr. Khiem Tran - University of Florida

The presentation will showcase a novel application of a recently developed 2D ambient noise tomography (2D ANT) method for imaging of voids under roadways. The method requires recording of vehicle-induced traffic noise using a linear array of geophones placed along a roadway. The cross-correlation function (CCF) is then extracted from traffic noise recordings and inverted to obtain subsurface images. Experimental results from 4 Florida sites (Wekiva highway, Wekiva bridge, US-441 highway, Miami bridge) will be presented to demonstrate the 2D ANT method's capabilities in detecting voids buried at various depths from 30 ft to 100 ft.

Automated Assessment of Statistic Features to Facilitate Geotechnical Site Characterization and Design in Large Transportation Projects in Louisiana

Xin Peng - Geosyntec Consultants and Jesse Rauser - Louisiana Department of Transportation and Development

Spatial variability of subsurface conditions and uncertainty regarding geotechnical methods and models used for geotechnical site characterization are critical factors that impact financial and safety risks in typical transportation infrastructure construction projects. As advanced data-rich exploration techniques are developed for geotechnical site characterization and as advanced design and analysis methodologies are implemented, there are opportunities for the profession to advance. A web-based platform will be introduced to provide innovative techniques to automate and optimize the process of interpreting and characterizing geotechnical site condition. Specifically, the platform allows engineers to interactively visualize, efficiently evaluate and rapidly interpret statistical measures of the geotechnical data to facilitate developing appropriate soil design models. This web-based platform can incorporate multiple types of geotechnical and geoenvironmental data for data visualization and interpretation. Typical data types that can be captured and utilized on the platform include lab testing data from soil borings, cone penetration testing (CPT), field vane shear test (VST) data, Lidar data, geophysical testing data, instrumentation data, and deep foundation field load testing data. This platform also incorporates and automates geotechnical site characterization methods based on data statistics, as well as certain deep foundation design methods recommended by Federal Highway Administration's (FHWA) existing design guidelines. The web-based platform was developed for and implemented by the Louisiana Department of Transportation and Development (LADOTD) for several large-scale highway and bridge design and construction projects. The presentation will introduce the web-based platform and prototype projects will be described, focusing on the ability to facilitate evaluating the site variability and quantifying the uncertainty of site conditions.

Compaction – A Critical Component in the Construction of Embankments, Roads, and Foundation

John Godfrey, Jr., PE – ECS Limited

This presentation will discuss the importance of compaction as a critical component of the construction of embankments, roads, and foundations. Compaction can be defined as the process of mechanically densifying soil or rock. As we have learned in our first Soil Mechanics class, the soil model is made up of Solids, Water, and Voids (voids can be air or water). Compaction reduces the number of voids in soils thus densifying the soil model thus increasing bearing capacity and shear strength of the soil. Soil or rock properties, including settlement, shear strength, movement of water or the permeability, and volume change from shrinking or swelling, are all affected by compaction. Soils have different compaction characteristics which must be determined to understand which mechanical compaction method will achieve the desired result. Other factors that affect density to some degree include temperature and soil sensitivity to manipulation. Laboratory testing helps the Engineer in identifying the soil or rock characteristics which allows the Engineer to make the appropriate decision in regard to the adequate compaction equipment and moisture content range to reach the specified compaction. The strength and stability of a structure are related to the success of proper soil or rock compaction. The presentation will conclude with real life examples of how the failure of infrastructure can often be attributed to the failure to achieve proper compaction and how to avoid such pitfalls.

TDOT SR-108 Landslide Repair – Anchored Soldier Pile and Tie Back System

Sam Sternberg III, P.E., D.GE, Benjamin Turner, Ph.D, P.E., G.E. – Dan Brown and Associates

This project case study involves a landslide located along SR-108 near the town of Whitwell, Marion Co, Tennessee. The Tennessee Department of Transportation (TDOT) engaged consultants for site characterization and engineering evaluation which resulted in the selected stabilization method, an anchored soldier pile (ASP) wall. Landslides along this stretch of SR 108 have been documented since at least the early 1970's, particularly at the contact between the Warren Point Sandstone unit of the Gizzard Formation and the underlying weaker, shale-rich Pennington Formation. TDOT implemented several temporary treatments over the years to mitigate the creeping landslide, including a 1992 shift of the alignment to place the roadway closer to the uphill sandstone cut and away from the downhill slope, and drainage improvements. However, recent increases in the rate of movement made it clear that a permanent solution was needed.

A multi-phase field investigation was performed included soil/rock drilling, installation of standpipe piezometers and inclinometers, and a geophysical investigation including electrical resistivity, SASW and MASW methods. Design of the ASP wall was based on determining the amount of tieback anchor resistance needed to meet the target global stability factor of safety. The design also includes resistance provided by the embedded portion of the soldier piles using the method described in the recent DFI-funded research report "Guidance for Factoring Structural Resistance in Stability Analysis."

This presentation will include an overview of the project and field investigation, followed by a summary of the ASP wall design methodology and proposed wall schematic.

Assessing Axial Capacities of Auger Cast Piles from Measuring While Drilling

Dr. Mike Rodgers – University of Florida

Assessing Axial Capacities of Auger Cast Piles from Measuring While Drilling – in particular, the analysis spreadsheet relating specific energy to rock socket QA during construction & selecting candidate pile for verification testing.

Value Engineering Geotechnical Design – Surfside Beach Fishing Pier Replacement

Mike Simpson, PE - Infrastructure Consulting & Engineering

The Surfside Beach (South Carolina) Fishing Pier was irreparably damaged during Hurricane Matthew in 2016. A replacement pier is currently being constructed as the centerpiece to the Town of Surfside Beach. The project design and construction limitations included complex wave/seismic loading, town mandated aesthetics for the foundations, a highly corrosive marine environment, and most critically for the geotechnical shallow hard limestone/marlstone layers.

This presentation will detail the value engineering (VE) geotechnical design of the replacement fishing pier including significant reduction in total foundation elements, change from drilled pile to driven pile foundations, and change from battered to non-battered piles. The major foundation design changes were based on soil-structure interaction modeling using FB-MultiPier and pile drivability analyses using wave equation analysis program GRLWEAP. The final foundation type chosen for the project was a vertical driven open-ended steel pipe pile foundation. Several different tip treatments for the pipe piles were considered based on the anticipated driving conditions through the potentially shallow hard limestone/marlstone layer. Construction design verification was performed using dynamic pile testing and signal matching analyses

Notes

WEDNESDAY AGENDA

Wednesday October 19th	
7:00am-4:00pm	Registration
7:00am-8:00am	Breakfast
8:00am-8:30am	**Can Bridge Designers Benefit from Performing Site-Specific Ground Motion Response Analysis (SSGMRA) ARDOT TRC1901: Spatial Analysis of SSGMRA Benefits** *ASHRAF ELSAYED, Ph.D., P.E., D.GE – Geotechnology, Inc.*
8:30am-9:00am	**Puerto Rico Geotechnical Asset Management Efforts** *Ricardo J. Romero Ramírez and María Elena Arroyo Caraballo – Puerto Rico Highway and Transportation Authority*
9:00am-9:30am	**US 421 in Harlan County Kentucky Slope Stabilization on Pine Mountain Using A Tieback Wall** *Aaron Wallace, P.E. – Kentucky Transportation Commission*
9:30am-10:00am	**Concrete Integrity Anomalies above the Mudline in River Bridge Drilled Shafts** *David Graham, P.E. – DBA*
10:00am-10:30am	Break in the Exhibit Hall
10:30am-11:00am	**Geotechnical Asset Management** *Ahmad Alhasan and Jerry DiMaggio - ARA*
11:00am-11:30am	**Case Studies: Isolated Bridge Abutment and Bridge Foundation – Geotechnical and Structural Design Considerations** *Bon Lien, Ph.D., P.E. / Principal Geotechnical Engineer & John M. Broadus, P.E. / Associate Bridge Engineer - Wood Environment & Infrastructure Solutions, Inc.*
11:30am-12:00pm	**Site Characterization and Sinkhole Potential Evaluation for Central Florida's Karst Terrain Using CPT-Based Index Analysis** *Dr. Ryan Shamet - University of North Florida*
12:00pm-1:00pm	Lunch in the Exhibit Hall
1:00pm-1:30pm	**Scour Case history presentation on MI and NC DOT bridges** *Daniel Alzamora, P.E. - FHWA Resource Center*
1:30pm-2:00pm	**Top-Loaded Bidirectional Test, A New Approach to Deep Foundations Load Testing** *Rozbeh B. Moghaddam, P.E., Ph.D. - RBM Consulting Group, Inc.*
2:00pm-2:30pm	**Evolving Project Delivery with Advanced Geotechnical Data Management Practice with DIGGS Implementation** *Xin Peng and Robert Bachus - Geosyntec Consultants*
2:30pm-3:00pm	Break in Exhibit Hall
3:00pm-3:30pm	**Case History: Karst Challenges on the Wekiva Parkway (Section 6) Design-Build Project** *Michael B. Woodward, P.E. / Principal Geotechnical Engineer - Wood Environment & Infrastructure Solutions, Inc./Michael W. Byerly, P.E. / District Geotechnical Materials Engineer - FDOT District 5*
3:30pm-4:00pm	**Howard Frankland Bridge** *Kisan Patel – FDOT District 1* *Keith Bennett – FDOT District 7/Terracon*
6:00pm-8:00pm	**Banquet in Exhibit Hall**

Can Bridge Designers Benefit from Performing Site-Specific Ground Motion Response Analysis (SSGMRA) ARDOT TRC1901: Spatial Analysis of SSGMRA Benefits

ASHRAF ELSAYED, Ph.D., P.E., D.GE – Geotechnology, Inc.

The general procedure of the American Association of State Highway and Transportation Officials (AASHTO) LRFD Bridge Design Specifications, 9th Edition, or AASHTO Guide Specifications for Load and Resistance Factor Design (LRFD) Seismic Bridge Design is sufficient to determine seismic hazard and site response. However, it may be necessary to perform site-specific hazard analyses for cases involving certain aspects of seismic hazard such as long duration earthquakes, critical or essential bridges, specific soil and near-fault conditions. Site-specific hazard analysis results may be used as justification for reducing spectral accelerations determined from the general procedure representing uniform seismic hazards.

The main objective of the project was to perform site-specific ground motion response analyses (SSGMRA) at 51 sites in Northeast Arkansas. An SSGMRA consists of evaluating the hazard and its effects on bridges being analyzed or designed by (1) characterizing the subsurface soils, (2) determining probabilistic seismic hazard analysis at the rock level, (3) determining the site effects, and (4) obtaining ground motions of a design response spectrum. According to AASHTO LRFD Bridge Design Specifications, the intent of conducting a site-specific hazard study is to develop ground motions and response spectra that are more representative of local seismic and site conditions than can be determined from the United States Geological Survey hazard maps. This project also provides information for possible cost savings if a SSGMRA is performed. A series of Geographic Information System (GIS) maps were generated that can be used by the Arkansas Department of Transportation engineers to the potential for cost-saving if SSGMRA is performed.

Another objective of this research project was to develop a set of guidelines to be used in the consultant procurement process. The research team developed an approach for ARDOT to select qualified consultants to perform SSGMRA studies and guidelines to be included in the consultants' Request for Qualifications when an SSGMRA is desired.

Site Characterization and Sinkhole Potential Evaluation for Central Florida's Karst Terrain Using CPT-Based Index Analysis

Dr. Ryan Shamet - University of North Florida

Site Characterization and Sinkhole Potential Evaluation for Central Florida's Karst Terrain Using CPT-Based Index Analysis – in particular, the revised sinkhole raveling index using CPT data that he developed as grad student at UCF (similar to what I presented to GMEC a few years ago)

US 421 in Harlan County Kentucky Slope Stabilization on Pine Mountain using a Tieback Wall

Aaron Wallace, P.E. – KYTC

The Kentucky Transportation Cabinet (KYTC) is administering a $6 million construction contract that includes a permanent tieback retaining wall to stabilize an earth slope on US 421 near the base of Pine Mountain in southeastern Kentucky. The KYTC Geotechnical Branch completed the subsurface exploration, tested soil and bedrock samples, monitored slope displacements and groundwater levels, and performed engineering analyses.

Contract documents included geotechnical data, wall geometry, design loads, and performance-based specifications that require a qualified specialty contractor to design and construct the 650 ft. long wall. It has a maximum design height of about 50 ft. and factored earth pressures up to approximately 2000 psf. In order to provide resistance along the entire sliding mass, most of which is several feet below the wall facing, the specified design loads consider arching between the soldier piles. The contractor's design includes grouted permanent rock anchors with up to 12 strands and maximum factored design loads of nearly 400 kips. Drilled soldier piles are designed to be embedded up to 18 ft. into bedrock with maximum socket diameters of 3.5 ft.

Concrete Integrity Anomalies above the Mudline in River Bridge Drilled Shafts

David Graham, P.E. - Dan Brown and Associates

Large diameter, permanently cased drilled shafts have become an attractive and economical foundation type for major river bridges. However, with this type of foundation, concrete integrity anomalies are often encountered during post-construction, non-destructive testing above the mudline, where river water flows around the shaft. Thermal integrity profiling (TIP) results can be affected by the dynamic thermal environment of the flowing water above the mudline. Effects of the flowing water can also influence crosshole sonic logging (CSL) results in the form of exacerbated tube debonding and possibly concrete bleed. Further investigation by concrete coring occasionally finds bleed water channels. In most cases, these types of concrete integrity anomalies are not indicative of a flawed or a defective shaft. Examples of concrete integrity anomalies observed in river shafts above the mudline in TIP, CSL, and coring from recent projects in Arkansas and New Jersey are presented, including discussion on the causal mechanisms. Recommendations on how to limit the potential for these types of anomalies and suggestions for further research will be presented.

Geotechnical Asset Management

Ahmad Alhasan and Jerry DiMaggio - Applied Research Associates Inc.

Challenges with asset management and performance measures

Case Studies: Isolated Bridge Abutment and Bridge Foundation – Geotechnical and Structural Design Considerations

Bon Lien, Ph.D., P.E., John M. Broadus, P.E - Wood Environment & Infrastructure Solutions, Inc.

Caltrans Memo to Designers (MTD) 5-1 issued in 2017 and WSDOT Bridge Design Manual (2019) provided recommendations of utilizing isolated abutments for bridge substructure designs, which are further discussed in a NCHRP (2020) publication. By providing a maximum of six-foot gap between the approach fill soil and the bridge abutment wall, the isolated abutment significantly reduces the mobilized static and seismic lateral earth pressures acting on the abutment and demands on bridge foundation pile loads. In addition, having flexibility in construction sequence, e.g., having the approach fill constructed first, it allows a majority of approach fill foundation subgrade settlements to occur prior to construction of the bridge foundation and abutment wall; subsequently mitigates potential pile downdrag and excessive post-construction settlements.

Two case studies will be presented: one is at a major interchange bridge site of an ongoing design-build project in Seattle, Washington; another one is at a bridge site in North Carolina. Specific topics presented will include:

- Different types of bridge approach embankments for isolated abutments
- Effects on bridge pile foundation designs and construction; such as LRFD governing limiting
- state and criteria for dynamic load testing (PDA/CAPWAP)
- Effects on soil-structure interaction and dampening in bridge structural designs
- Construction sequence associated with cut and fill approach embankment
- Mobilized movements of approach fill embankment subject to static, seismic (pseudostatic), and
- post-earthquake loading conditions
- Minimum required gap dimensions of isolated abutment
- Maximum allowable gap with DOT standardized bridge approach structural slab

Puerto Rico Geotechnical Asset Management Efforts

Ricardo J. Romero Ramírez & María Elena Arroyo Caraballo - Puerto Rico Highway and Transportation Authority
The Puerto Rico Highways and Transportation Authority (PRHTA) have been developing a Geotechnical Asset Management (GAM) program for the last seven years. The inventories include small bridges, culverts, retaining structures, rock and soil slopes, and both a georeferenced geotechnical report database and a boring log database. The methodologies used for the inventories, some of the challenges faced during the last seven years, and some next steps for the upcoming years will be presented.

Scour Case history presentation on MI and NC DOT bridges

Daniel Alzamora, P.E. - Federal Highway Administration Resource Center

FHWA has partnered with several State departments of transportation (DOTs) to provide soil and erosion testing services for bridge scour evaluations, which provided several excellent case studies for the NextScour initiative. This presentation summarizes two bridge replacement projects in Michigan and North Carolina. It will provide an overview of the two case studies and provides a summary of the hydraulic and geotechnical testing conducted to derive at scour recommendations which are consistent with the NextScour initiative.

Top-Loaded Bidirectional Test, A New Approach to Deep Foundations Load Testing

Rozbeh B. Moghaddam, P.E., Ph.D. – BRM Consulting Group, Inc.

The Top-Loaded Bi-Directional Test ("TLBT") is a new method to apply bi-directional loads to a deep foundation element with the loading source located above the foundation head. In the TLBT reusable load assembly, loads are applied to the foundation using the R-System which consists of two stacked steel plates located at the geotechnical resistance balance point or at the foundation base connected to the load assembly via vertical elements. The top plate or the Shaft Bearing Plate ("SBP") will transfer loads to the foundation upper portion, and the bottom plate or the Base Bearing Plate ("BBP") will transfer loads to the foundation lower portion as well as the foundation base. At the surface, above the foundation head, a hydraulic jack is located between a Top ("TLA") and Bottom ("BLA") load assembly. The TLA and BLA are connected to vertical elements which are consequently connected to the R-system. As the jack is pressurized and expanded at the surface, the R-System plates are separated, and the foundation is bi-directionally loaded.

Like the conventional Bi-Directional Load Tests ("BDLT"), from instrumentations, strains within the foundation element, the R-System upward and downward movement, and the jack pressures are measured. From the measured values, loads and displacements are calculated. Due to the test method practical constructability, the TLBT provides a foundation testing system with lower risk of creating challenges during the foundation construction and installation. This paper presents the description of the TLBT method including benefits and challenges during the foundation testing.

Evolving Project Delivery with Advanced Geotechnical Data Management Practice with DIGGS Implementation

Xin Peng and Robert Bachus - Geosyntec Consultants

Geotechnical engineering practice involves proper selection of engineering parameters and design methods, coupled with a heavy dose of engineering judgement. How engineers and consultants identify the most appropriate design parameters and design methodologies often starts with the interpretation of data collected during the initial geotechnical site characterization activities. As advanced data-rich techniques and methodologies are developed for geotechnical site characterization, the subsequent design and analysis activities and corresponding project delivery is expected to evolve. However, this goal can only be achieved by improving current practice and incorporating efficient geotechnical data management strategies. This technical presentation will focus on innovative practices to improve geotechnical data management, highlighting the use of a digital toolkit package and service to facilitate visualizing and interpreting geotechnical data that will eventually facilitate project delivery. Data Interchange for Geotechnical and Geoenvironmental Specialists (DIGGS), has been implemented into this data management practice for standardized geotechnical data exchange. The benefits of implementing DIGGS in geotechnical data management, visualization and geotechnical design process has been "preached" for years, but specific implementation strategies have been lacking…. until now. DIGGS is an open-source, extensible, and standardized digital format to facilitate geotechnical data management and Interoperability. The implementation of DIGGS can also efficiently increase the quality of geotechnical data deliverables as a digital asset. Techniques are now available to facilitate generation of DIGGS files and validation against its schema and schematron. Once this transition to efficient geotechnical data managements is complete, geotechnical data owners and engineers can manage, visualize, and interpret geotechnical and geoenvironmental data in an efficient and reliable manner. The presentation will demonstrate how geotechnical engineers and consultants can develop reliable soil design models that accurately reflect subsurface stratigraphy and characterization with efficient geotechnical data management practice. This is accomplished by accounting for geospatial variability and model uncertainty using advanced geotechnical exploration methods and analysis techniques incorporated into the Federal Highway Administration's (FHWA's) Geotechnical Engineering Circular (GEC) No. 5. Existing geotechnical design practices and workflows can also be effectively and efficiently

optimized and automated using a web-based platform. Several case histories will be introduced to demonstrate how to efficiently visualize and interpret "dense" geotechnical datasets that include cone penetration testing (CPT) data and soil boring data. Ultimately, the goal of efficient geotechnical data management practice is to help project managers and engineers efficiently manage and visualize data while optimizing project tasks that are tedious and time-consuming. As a result, engineers and scientists will be able to spend more time on developing, evaluating, and formulating reliable engineering solutions to complex problems. Eventually, the overall long-term project costs will be reduced, and project delivery will be improved once the presented techniques are implemented.

Case History: Karst Challenges on the Wekiva Parkway (Section 6) Design-Build Project

Michael B. Woodward, P.E. - Wood Environment & Infrastructure Solutions, Inc.

Michael W. Byerly, P.E. - District Geotechnical Materials Engineer (FDOT District 5)

The Wekiva Parkway (Section 6) is a design-build project located in Lake and Seminole Counties, Florida. This project encompassed approximately 6 miles of new limited-access toll road (a continuation of the SR 429/SR 417 beltway that is being constructed around the Orlando metropolitan area), largely along the existing State Road 46 corridor. The project included three new parallel cast-in-place segmental box bridges over the Wekiva River (each 2,068 feet long), as well as several wildlife-crossing bridges (with lengths ranging from 100 to 3,870 feet) to allow animals to pass safely beneath the new expressway.

This area of Florida has karst geological conditions that can provide challenges to contractors, structural engineers, and geotechnical engineers. The solutions are not a quick fix when dealing with these challenging conditions. The process in dealing with unforeseen conditions requires additional subsurface exploration and often redesign. Because of the extreme variability in the subsurface conditions, it can be difficult to predict pile lengths in order to complete successful installations. Such uncertainties result in time delays impacting costs and the construction schedule.

This presentation will discuss the challenges faced by the design-build team on the Wekiva Parkway (Section 6) project when karst conditions were encountered during the design-phase geotechnical exploration and during construction. These challenges included two pile-supported bridges that required partial or complete redesign (one prior to construction, and one during construction) to overcome the karst conditions. In addition, two sinkholes developed during construction within roadway areas, one of which was handling active traffic, and the other was in an embankment area that was being constructed. Extensive compaction grouting programs were required to mitigate these sinkholes.

Howard Frankland Bridge

Kisan Patel - FDOT District 1 & 7 Material Office
Keith Bennett - Terracon

Howard Frankland bridge is a large-scale design build project which has a high variable bearing layer. We had to determine how much information to provide to the design-build teams without knowing the exact alignment or span arrangements. We will cover the project details, site conditions, existing data, proposed investigation plan, and effectiveness of data. We will also include how effective the geophysical data was to determine pile lengths. Currently, the project has completed approximately 50 percent of all foundations on the project.

Thursday October 20th	
7:00am-12:00pm	Registration
7:00am-8:00am	Breakfast
8:00am-8:30am	**Earthen Dams and Highway Infrastructure** *James Devereaux, PE – USA Nova*
8:30am-9:00am	**High-Capacity Lateral Load Testing for Auger Cast In Place Piles** *Mike Batten & Omkar Jambotkar - HDR, Reinaldo Villa - UES*
9:00am-9:30am	**ACIP Piles for Bridge Foundations** *Morgan NeSmith – Berkel and Co.*
9:30am-10:00am	**Dynamic Load Testing of Non-Uniform Piles** *Thai Nguyen, Ph.D., P.E – H2R Corp.*
10:00am-10:30am	Break in the Foyer
10:30am-11:00am	**I-395 Signature Bridge Project – An overview of the first Florida Department of Transportation (FDOT) project utilizing Auger Cast in Place (ACIP) foundations for a Major Bridge Structure** *Adrian Albert Viala, P.E. - FDOT District 4 & 6 Materials Office*
11:00am-11:30am	**Landslide Stabilization Using Ground Anchor Blocks** *Robert Jowers – Tennessee DOT*
11:30am-12:00pm	**Technical Tour Logistics and Speedway showcase** *Larry Jones - FDOT*
12:00pm-1:00pm	Lunch
1:00pm-4:00pm	**Technical Tour – Daytona International Speedway**

FLORIDA TRANSPORATION FACTS

Public Road Miles: 123,488

Highway System Miles: 12,136

FDOT Bridges: 7,079

Earthen Dams and Highway Infrastructure

James Devereaux, PE – NOVA USA

Earthen dams are not often designed as highway infrastructure. Yet, DOT's are usually assumed to own them or bear responsibility for repairing them when they are damaged. Lessons learned from the 2015 South Carolina flooding as they apply to State Departments of Transportation.

High Capacity Lateral Load Testing for Auger Cast In Place Piles

Mike Batten & Omkar Jambotkar – HDR

Reinaldo Villa, Universal Engineering Sciences

The FDOT I-395/SR 836/I-95 Connecting Miami Design-Build project was awarded to a construction joint venture of Archer Western and The de Moya Group, with HDR as their lead designer for the Signature Bridge on I-395. This is a cable stayed, post-tensioned, precast concrete arch bridge with approximately a 1,000 ft span constructed in the heart of downtown Miami. Universal Engineering Services performed the geotechnical investigation and engineering for this structure. This bridge is a novel structure for FDOT due to its use of 36-inch diameter auger cast in place pile (ACIP) foundations, and very large permanent lateral loading on the foundations. Arch bridges are typically founded in competent bedrock due to the large permanent lateral loading on the foundations, but Miami's subsurface conditions consist primarily of very loose sands and highly variable vuggy Limestone. These conditions are well suited to ACIP foundations based on the fact that the grout is pumped under pressure into the voids in the limestone, creating a very stiff foundation element.

The Signature Bridge utilizes nearly 500 ACIP foundation elements, with relatively large cast in place pile caps that are to be constructed up to approximately 20 feet below existing grade. Considering that the ground water table is near existing grade for most of the day, conducting a lateral load test with a test load applied at the proposed bottom of pile cap elevation would have been excessively difficult. Conversely, trying to mobilize a considerable amount of pile displacement below the proposed bottom of cap elevation was not feasible without breaking the test pile if using the production pile design, a dense reinforcement cage using No. 18 bars. A prototype pile design was selected, which replaced the No. 18 bar cage with a 30-inch diameter 1.25 inch wall thickness steel pipe pile that was lowered into the fresh grout.

The prototype pile allowed for a maximum lateral test load of approximately 400 kips with approximately 9 inches of pile head displacement. Significant soil displacement was observed below the bottom of pile cap elevation as intended. Two lateral load tests were performed on the prototype piles, with one lateral load test performed on a test pile constructed using the production pile design with the No. 18 reinforcing bar cage to better evaluate the structural behavior of a production pile with a sustained lateral load. The maximum test loads were held for 24 hours to evaluate potential for creep. Multiple levels of strain gages and shape arrays were installed to help evaluate pile stresses and the deflected shape of the pile during the load tests. The load tests concluded that the predicted lateral pile deflections using FB MultiPier were very accurate, and long-term soil creep was determined to be unlikely based on the results of the 24-hour hold periods

ACIP Piles for Bridge Foundations

Morgan NeSmith – Berkel and Company

A summary of recent advances with ACIP Piles for bridge foundations including DFI Committee research with Florida DOT, current availability of Monitoring While Drilling for QA/QC and design, and recently completed bridge support projects.

Dynamic Load Testing of Non-Uniform Piles

Thai Nguyen, Ph.D., P.E. – H2R Corp.

Dynamic Load Test (DLT) on driven piles has been performed routinely all over the world. Recently, 100% testing has become a norm in several projects where every single pile is dynamically load tested. Most piles are of uniform sections, making the data analysis straight forward. The CASE method, which has been used for the last 50 years, is only applied to uniform piles. Until 2021, this method had been the only available method in the field, due to the lack of a rigorous instant signal matching analysis for non-uniform piles. The field monitored pile driving stresses are also inclusively relied upon the CASE method. This shortcoming can lead the field engineers to incorrectly monitor the wrong values for driving stresses as well as the ultimate bearing resistances for non-uniform piles. However, when the pile is highly non-uniform, the data analysis is much more challenging. The presentation highlights recent advances in instant Signal Matching Analysis on non-uniform piles, allowing field engineers to correctly monitor stresses and resistances of non-uniform piles in real time.

I-395 Signature Bridge Project – An overview of the first Florida Department of Transportation (FDOT) project utilizing Auger Cast in Place (ACIP) foundations for a Major Bridge Structure

Adrian Albert Viala, P.E. - FDOT District 4 & 6 Materials Office

Prior to the I-395 project, the Florida Department of Transportation (FDOT), limited the use of ACIP for consideration as foundations support only for structures other than Bridges. Efforts had been made to develop the necessary design and construction criteria for use of ACIP foundation in Bridges, but it wasn't until the I-395 design build project that a formal FDOT approval was given for the use of ACIP for a major bridge project. This presentation discusses the unique project subsurface conditions and design requirements that prompted FDOT to allow the use of ACIP for the first time on such a unique and major bridge structure. It highlights the various foundation testing methods employed on the project during construction to validate the design, the quality control measures, such as Measuring While Drilling and Thermal Integrity Testing, which were employed to assure the integrity of the ACIP foundations and resolve challenges faced during construction of the auger cast foundations for the project.

Landslide Stabilization Using Ground Anchor Blocks

Robert Jowers - Tennessee Department of Transportation

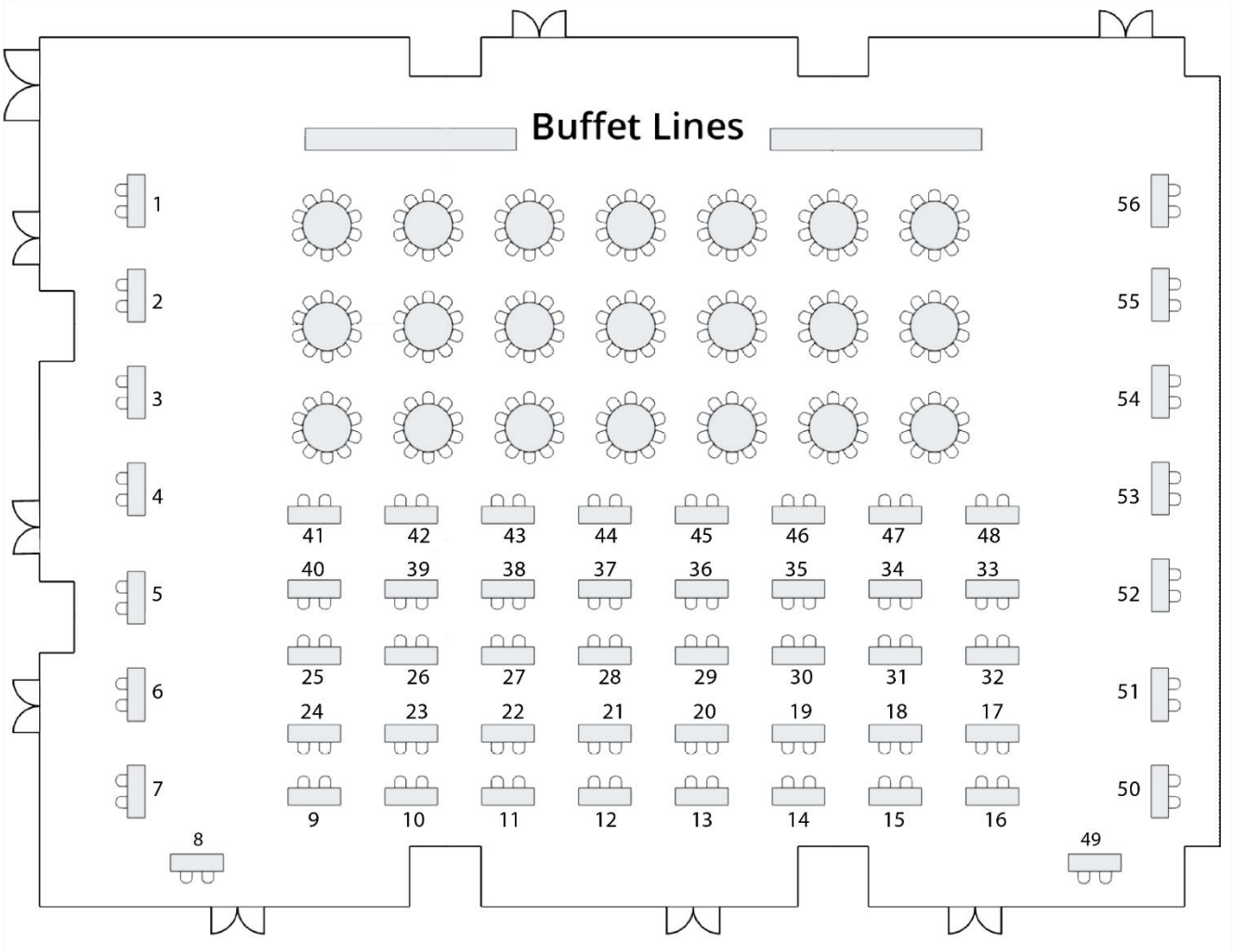
DFI S3 presentation

Technical Tour Logistics and Speedway showcase

Larry Jones - FDOT

Technical Tour Logistics and Daytona Speedway showcase

NOTES



1	Elastizell Corp of America	15	CJGeo	29	Favor Steel & Fabricating, Inc.	43	Geopier Foundation Company
2	Foundation Technologies, Inc – Sonitec	16	The Reinforced Earth Company	30	UMA Geotechnical Construction, Inc.	44	Pile Dynamics/ GRL Engineers, Inc.
3	A H Beck Foundation Co.	17	Willmer Engineering	31	Platipus Anchors, Inc.	45	Berkel & Company
4	Rocscience, Inc.	18	Propex	32	Goble Pile Check	46	Geobrugg
5	Menard USA	19	TenCate Geosynthetics	33	Rite Geosystems	47	Williams Form Engineering, Corp.
6	Central Mine Equip. Co.	20		34	Carolina Stalite	48	CMEC
7	Simco Drilling Equip, Inc.	21		35	Access Ltd. Construction	49	Flexamat
8	Keller	22	Huesker	36	NOVA Engineering	50	Concrete Canvas US
9	Arcosa Lightweight	23	Humboldt Mfg. Company	37	Mobil Drill	51	Goettle
10	Sigicom Inc.	24	Geo Instruments	38	Wurster Betterground	52	American Excelsior Co.
11	Smart Structures	25	MixOnSite	39	ECS Florida, LLC	53	Aerix Industries
12	Geostablization International	26		40	Geokon	54	Diedrich Drill
13	Aero Aggregates of North America	27		41	The Loren Group	55	Redi Rock
14	Acker Drill Company	28		42	Durham Geo Slope Indicator	56	American Spiral Weld Pipe

A H Beck Foundation Company, Inc.

Booth: 3

ScottCarroll
scott.carroll@ahbeck.com

9014 Green Road, Converse, Texas 78109
(210) 342-5261

ahbeck.com

Acker Drill Company

Booth: 14

Michael DiCindio
mdicindio@ackerdrill.com

P.O. Box 830, Scranton, PA 18501
800.752.2537

ackerdrill.com

Aero Aggregates of North America LLC

Booth: 13

John Ratiu
321.295.1445
tloux@aeroaggregates.com

Doug Brown
484.724.1113
dbrown@aeroaggregates.com

11611 SW 147th Ct., Dunnellon, FL 34432

aerofga.com

American Spiral Weld Pipe

Booth: 56

Mark Gwynn
mgwynn@american-usa.com

P.O. Box 2727, Birmingham, AL 35202
866.442.2797

american-usa.com

Access Limited Construction

Booth: 35

Simon Boone
info@accesslimitedconstruction.com

1102 Pike Lane, Oceano, CA 93445
(805)592-2230

accesslimitedconstruction.com

Aerix Industries

Booth: 53

Nico Sutmoller
nsutmoller@aerixindustries.com

702 Snowdrift Rd, Allentown, PA 18106
484-223-0279

aerixindustries.com

America Excelsior Company

Booth: 52

Eric Marsal
marketing@americanexcelsior.com

850 Avenue H East, Arlington, Texas 76011
800.777.7645

americanexcelsior.com

Arcosa Lightweight

Booth: 9

Jack Moore
jack.moore@arcosa.com

14885 South Interstate 45, Streetman, Texas 75859
(800) 870-3397

arcosalightweight.com

Berkel & Company

Booth: 45

Clay Davis
cdavis@berkelapg.com

2649 S. 142nd Street, Bonner Springs, KS 66012
913.422.5125

berkelapg.com

Central Mine Equipment Company

Booth: 6

Therrell Hannah
info@cmeco.com

4215 Rider Trail North, St. Louis, Missouri, 63045-1106
800.325.8827

cmeco.com

CMEC

Booth: 48

David Savage
davesavage@cmec.org

2779 Apopka Boulevard, Apopka, Florida 32703
407.628.3682

cmec.org

Diedrich Drill

Booth: 54

Bill Siar
bill.siar@diedrichdrill.com

5 Fisher Street, Laporte, IN 46350
800.348.8809

diedrichdrill.com

Carolina Stalite Company

Booth: 34

Charles Friedrich
cfriedrich@stalite.com

205 Klumac Road, Salisbury, NC 28144
704.637.1515

stalite.com

CJGeo

Booth:15

Kirk Roberts
kirk@cjgeo.com

3402 Acorn Street #202, Williamsburg, VA 23188
800.428.5690

cjgeo.com

Concrete Canvas US

Booth:50

Melanie Fuhrman
info@concretecanvas.us

1350 NASA Rd 1, Suite 120, Houston, TX 77058
832.864.2946

concretecanvas.com

Durham Geo Slope Indicator

Booth:42

Rudy Saavedra
RSaavedra@dgeslope.com

4561 Greer Circle, Suite 100, Tucker, GA 30083
770.465.7557

durhamgeo.com

ECS Florida, LLC

Booth: 39

Joe Champion
jchampion@ecslimited.com

318 Seaboard Lane, Suite 208, Franklin TN 37067
615.885.4983

ecslimited.com

Favor Steel & Fabricating

Booth: 29

William Hawkins
sales@favorsteel.com

4301 Coalburg Rd, Birmingham, AL 35207
205.426.3288

favorsteel.com

Foundation Technologies, Inc. – Sonitec

Booth: 2

Nick Milligan
michele@foundationtechnologies.com

1400 Progress Industrial Blvd, Lawrenceville, GA 30043
888.452.1248

foundationtechnologies.com

Geobrugg

Booth: 46

Bob Lyne
bob.lyne@geobrugg.com

22 Centro Algodones, NM 87001
505.771.4080

geobrugg.com

Elastizell Corp. of America

Booth: 1

Trevor Towery
Trevor@Elastizell.com
P.O. Box 1462, Ann Arbor, MI 48106
734.761.6900

elastizell.com

Flexamat

Booth: 49

John Slupecki
john@flexamat.com

3153 Madison Rd, Cincinnati, OH 45209
513.772.6689

flexamat.com

Geo Instruments

Booth:24

Kenneth Campbell
Kenneth.Campbell@geo-instruments.com

24 Celestial Drive, Narragansett, RI 02882
401.829.4081

geo-instruments.com

Geokon

Booth: 40

Greg Dutson

Spencer Street, Lebanon, NH 03766
603.448.1562

www.geokon.com

Geopier Foundation Company

Booth: 43

Bruce Bush
bbush@geopier.com

130 Harbour Place Drive, Suite 280, Davidson, NC 28036
800.371.7470

geopier.com

Goble Pile Check

Booth: 32

David Rancman
drancman@h2rcorp.com

3921 76th Avenue N. Pinellas Park, FL 33781
727.541.3444

h2rcorp.com

Humboldt Mfg. Company

Booth: 23

Brandon Wilson
brandon@humboldtmfg.com

875 Tollgate Road, Elgin, IL 60123
708.468.6315

humboldtmfg.com

Keller

Booth: 8

Nick Syriopoulos
nick.syriopoulos@keller-na.com

7550 Teague Road, Suite 300, Hanover, MD 21076
800.456.6548

keller-na.comv

GeoStabilization International

Booth: 12

Steve Poole
steve@gsi.us

4475 E 74th Ave, Suite 100, Commerce City, CO 80022
855.579.0536

geostabilization.com

Goettle

Booth: 51

Mike Abruzzo
mabruzzo@goettle.com

12071 Hamilton Avenue, Cincinnati, OH 45231
513.825.8100

goettle.com

Huesker

Booth: 22

Shandie Zimmerman
szimmerman@huesker.com

3701 Arco Corporate Drive, Suite 525, Charlotte, NC 28273
800.942.9418

huesker.com

The Loren Group

Booth: 41

Samuel Kosa
sam@thelorengrp.com

807 West 20th Street, Wilmington, DE 19802
256.622.7751

thelorengrp.com

Menard USA

Booth:5

Venkata Prashanth Muppana
mpascal@menardusa.com

150 East Main St, Suite 500, Carnegie, PA 15106
813.519.0067

menardusa.com

MixOnSite

Booth: 25

Nathan Hackney
nhackney@mixonsite.com

1501 Abbott Court, Buffalo Grove, IL 60089
800.559.3511

mixonsite.com

Mobile Drill International

Booth: 37

John Walker
john.walker@mobiledrill.net

3807 Madison Avenue, Indianapolis, IN 46227
800.766.3745

mobiledrill.net

NOVA Engineering

Booth: 36

Eric Tay
etay@usanova.com

3900 Kennesaw 75 Pkwy, Suite 100 Kennesaw, GA 30144
770.796.4534

usanova.com

Pile Dynamics/GRL Engineers

Booth: 44

Tom Tutolo
ttutolo@pile.com

30725 Aurora Rd, Cleveland, OH 44139 USA
216.831.6131

pile.com

Platipus Anchors Inc.

Booth: 31

Andy Constantine
andy@platipus.us

1902 Garner Station Boulevard, Raleigh, NC 27603
919.662.0991

platipus.us

Propex Geosolutions

Booth: 18

Adam Pierce
Adam.pierce@propexglobal.com

4019 Industry Drive, Chattanooga, TN 37416
800.621.1273

propexglobal.com

Redi-Rock

Booth: 55

Laura Helbling
laura.helbling@asterbrands.com

2940 Parkview Drive Petoskey, MI 49770
866.222.8400

www.redi-rock.com

The Reinforced Earth Company

Booth: 16

Frank Fordham
reinforcedearth.com/contact/

25 Technology Pkwy South, Suite 100, Norcross, GA 30092
770.242.9415

fsaunders@reinforcedearth.com

reinforcedearth.com

Rocscience

Booth: 4

Clarissa Aguiar
headoffice@rocscience.com

54 St Patrick Street, Toronto, ON M5T 1V1

rocscience.com

Simco Drilling Equipment, Inc.

Booth: 7

Ryan Gross
rgross@simcodrill.com

802 Furnas Drive, PO Box 448, Osceola, IA 50213
800.338.9925

simcodrill.com

TenCate Geosynthetics

Booth: 19

Jake Pope
jpope@solmax.com

365 South Holland Drive, Pendergrass, Georgia 30567
706.693.2226

www.tencategeo.us

Rite Geosystems

Booth: 33

Melih Demirkan
melih@ritegeosystems.com

1653 McFarland Rd., Pittsburgh PA 15216, USA
412.745.8300

ritegeosystems.com

Sigicom Inc.

Booth: 10

Nichole Rodriguez
nichole.rodriguez@sigicom.com

2636 Midpoint Drive Ste B, Fort Collins, CO 80525
970.493.1552

sigicom.com

Smart Structures

Booth: 11

Kumar Allady
info@smartstructures.com

4152 W Blue Heron Blvd, Ste #1114, West Palm Beach, FL 33404
561.988.0070

smart-structures.com

UMA Geotechnical Construction Company

Booth: 30

Ken Pasols
kpasols@team-uma.com

8815 Neville Road • Colfax, NC 27235
336.992.0746

team-uma.com

Williams Form Engineering Corp.

Booth: 47

Erik DenBroeder
edenbroeder@williamsform.com

8165 Graphic Dr., Belmont, MI 49306
616.866.0815

williamsform.com

Wurster Betterground

Booth: 38

Will Degen
will.degen@wbgvibro.com

34 Carrie Dr, Greenville, SC 29615
864.627.7751

wbgvibro.com

Willmer Engineering

Booth: 17

Patrick Palmer
ppalmer@willmerenigineering.com

3772 Pleasantdale Road, Suite 165, Atlanta, GA 30340
844.945.5637

willmerengineering.com

NOTES

STEERING COMMITTEE

Alabama

Kaye Chancellor Davis, P.E.

Asst. M&T Bureau Chief- Geotechnical ALDOT- Bureau of Materials and Tests

3700 Fairground Rd
Montgomery, AL 36110

Phone:334-206-2277

Email: chancellork@dot.state.al.us

Arkansas

Paul Tinsley

Staff Geotechnical Engineer

Arkansas Department of Transportation

10324 Interstate 30
Little Rock, AR 72203

Phone: 501-516-2496

Email: paul.tinsley@ardot.gov

Florida

Larry Jones

Assistant State Structures Design Engineer/
State Geotechnical Engineer

Florida Department of Transportation

605 Suwannee St. MS 33
Tallahassee, FL 32399-0450

Phone: 850-414-4305

Email: Larry. Jones@dot.state.fl.us

Georgia

Adebola Adelakun, P.E.

Geotechnical Branch Chief

Georgia Department of Transportation
Office of Materials and Testing

15 Kennedy Dr
Forest Park, GA 30297

Phone: 404-608-4773

Email: aadelakun@dot.ga.gov

Kentucky

Bart Asher P.E., P.L.S.

Director

Kentucky Transportation Cabinet
Division of Structural Design

200 Mero Street

Frankfort, KY 40622

Phone: 502-782-3812

Email: bart.asher@ky.gov

Louisiana

Chris Nickel

Pavement & Geotechnical Engineering Administration

Louisiana DOT

201 Capital Access Road, Room 606Y
Baton Rouge, LA 70802

Phone: 225-379-1016

Email: chris.nickel@la.gov

Mississippi

Mike Stroud, P.E

State Geotechnical Engineer

Mississippi Department of Transportation

P.O. Box 1850
Jackson, MS 39215-1850

Phone: 601-359-1613

Email: mstroud@mdot.ms.gov

North Carolina

Thomas G. Santee, P.E.

Eastern Region Geotechnical Ops Engineer

North Carolina Department of Transportation

3301 Jones Sausage Road. Suite 100
Garner, NC 27529

Phone: 919-662-4710 x 220

Email: tgsantee@ncdot.gov

South Carolina

Nicholas Harman, P.E.

Geotechnical Design Policy Engineer

South Carolina Department of Transportation

955 Park St. Room 409
Columbia, SC 29201

Phone: 803-737-1431

Email: harmanne@scdot.org

Tennessee

Robert Jowers, P.E.

Manager- Geotechnical Engineering Section Tennessee Department of Transportation

Materials and Tests Division

Building A, 1st Floor
6601 Centennial Blvd
Nashville, TN 37243-0360

Phone: 615-350-4133

Email: Robert.jowers@tn.gov

Virginia

William Bassett, P.E.

Geotechnical Engineering Program Manager
Structure & Bridge Division
Virginia Department of Transportation

1401 East Broad St.
Richmond, VA 23219

Phone: 804-729-6355

Email: william.bassett@vdot.virginia.gov

West Virginia

Mark Nettleton, P.E

Acting Geotechnical Group Leader

West Virginia Department Of Highways

190 Dry Branch Dr.
Charleston, WV 25306

Phone: 304-414-6641

Email: mark.a.nettleton@wv.gov

Puerto Rico

Ricardo J. Romero Ramirez, PhD CE, PhD GE, PE

Puerto Rico Department of Transportation & Public Works

Phone: 787-201-0557

Email: RRomero@dtop.pr.gov

FHWA

Benjamin S. Rivers, P.E.

Geotechnical Engineer

Federal Highway Administration Resource Center

61 Forsythe St. SW

Atlanta, GA 30303

Phone: 404-562-3926

Emial: Benjamin.rivers@fhwa.dot.gov

TRB

Nancy M. Whiting, MSCE

Senior Program Officer – Soils, Geology, & Foundations

Technical Activities Division
Transportation Research Board

500 Fifth St. NW Room 488
Washington, DC 20001

Phone: 202-334-2956

Email: nwhiting@nas.edu

Standing Officers

William Broyles, Treasurer

4206 Brownsboro Glen Road
Louisville, KY 40241

Phone: 502-418-8800

Email: bill.boryles2011@gmail.com

Jesse Rauser, Assistant Treasurer

Phone: 502-418-8800

Email: 225-379-1935

STGEC 2022 PLANNING COMMITTEE

Larry Jones – Florida DOT	STGEC Conference Chair
Ellen Sliger – Florida DOT	STGEC Conference Coordinator
Brian Martin – Florida DOT	STGEC Speaker Coordinator
Ashleigh Smith – Florida DOT	STGEC Onsite Registration
Michael Robertson – Florida DOT	STGEC Program, Signage, & Audio/Visual Support
Bill Broyles	STGEC Treasurer

NOTES

STGEC History

The Southern Transportation Geotechnical Engineering Conference (STGEC) is an annual meeting that has been taking place since 1969 when the Federal Highway Administration proposed that the southeastern states should meet to discuss landslide problems along I-40 near Rockwood, Tennessee along I-75 in northern Georgia, and settlement problems with high interstate embankments.

The first STGEC meeting was held in Atlanta, Georgia, near the Georgia Tech campus from December 5-7, 1969. Professor George Sowers was the guest speaker. There were approximately 50 attendees to the meeting. This event was such a success, interest spread quickly and an annual conference was soon established. A steering committee was formed to be a governing body consisting of one member of each state transportation agency involved as well as one member each from the Federal Highway Administration and the Transportation Research Board. The committee also established a set of by-laws to assist in governing the group. The main objective in these meetings is to discuss the transfer of technology concerning the rapidly advancing technology of soil mechanics and to share success or problems in the geotechnical field to meet the demands for economical and successful transportation systems.

The previous name of this conference was, until 1976, the Southeastern Soil Engineering Conference. The steering committee chaired by the host member selects the time, place, duration of each conference for the following year. The conference rotates among member states and this method ensures that each state involved has hosted multiple times since the conference's existence.

STGEC HISTORY

Number	Year	Location	Date
1.	1969	Atlanta, Georgia	Dec. 5-7
2.	1970	Jackson, Mississippi	Dec. 2-4
3.	1971	New Orleans, Louisiana	Dec. 7-9
4.	1972	Montgomery, Alabama	Nov. 13-16
5.	1973	Orlando, Florida	Nov. 26-30
6.	1974	Covington, Kentucky	Sept. 16-19
7.	1975	Gatlinburg, Tennessee	Sept. 22-25
8.	1976	Raleigh, North Carolina	Sept. 21-23
9.	1977	Hot Springs, Arkansas	Oct. 25-28
10.	1978	Wheeling, West Virginia	Oct. 9-12
11.	1979	Charleston, South Carolina	Oct. 29-Nov.1
12.	1980	Atlanta, Georgia	Nov. 3-6
13.	1981	Virginia Beach, Virginia	Oct. 12-15
14.	1982	Jackson, Mississippi	Oct. 18-21
15.	1983	Montgomery, Alabama	Oct. 18-21
16.	1984	Winter Park, Florida	Oct. 2-5
17.	1985	Gatlinburg, Tennessee	Sept. 30-Oct. 4
18.	1986	Louisville, Kentucky	Oct. 6-10
19.	1987	Hot Springs, Arkansas	Oct. 5-8
20.	1988	Raleigh, North Carolina	Oct. 3-6
21.	1989	Charleston, West Virginia	Oct. 7-11
22.	1990	New Orleans, Louisiana	Oct. 29-Nov. 1
23.	1991	Charleston, South Carolina	Oct. 7-11
24.	1992	Williamsburg, Virginia	Nov. 9-13
25.	1993	Natchez, Mississippi	Oct. 4-8
26.	1994	Atlanta, Georgia	Oct. 24-28
27.	1995	Huntsville, Alabama	Oct. 23-27
28.	1996	Cocoa Beach, Florida	Oct. 21-25
29.	1997	Chattanooga, Tennessee	Oct. 27-31
30.	1998	Louisville, Kentucky	Oct. 13-16
31.	1999	Asheville, North Carolina	Oct. 4-8
32.	2000	Little Rock, Arkansas	Oct. 2-6
33.	2001	Roanoke, Virginia	Oct. 16-19
34.	2002	Baton Rouge, Louisiana	Oct. 7-11
35.	2003	Charleston, South Carolina	Oct. 20-24
36.	2004	Biloxi, Mississippi	Oct. 18-22
37.	2005	Lake Lanier Islands, Georgia	Oct. 31-Nov. 4
38.	2006	Florence, Alabama	Oct. 30-Nov. 3
39.	2007	Bowling Green, Kentucky	Oct. 8-12
40.	2008	Pigeon Forge, Tennessee	Oct. 27-31
41.	2009	Wilmington, North Carolina	Nov. 2-5
42.	2010	Charleston, West Virginia	Oct. 4-7
43.	2012	Richmond, Virginia	Oct. 22-25
44.	2013	Baton Rouge, Louisiana	Dec. 2-5
45.	2014	Mobile, Alabama	Oct. 27-30
46.	2015	Greenville, South Carolina	Oct. 19-23
47.	2016	Biloxi, Mississippi	Nov. 7-10
48.	2017	Savannah, Georgia	Dec. 11-15
49.	2018	Louisville, Kentucky	Oct. 8-11
50.	2019	Chattanooga, Tennessee	Nov. 4-7
	2020	Postponed (Covid)	
	2021	Postponed (Covid)	
51.	2022	Daytona Beach, Florida	Oct. 17-22

51st STGEC Attendees

Last Name	First Name	Organization
Abbett	Stephanie	ALDOT
Abruzzo	Mike	Goettle
Adamo	Anthony	TTL, Inc.
Adelakun	Adebola	Georgia Department of Transportation
Aguiar	Clarissa	Rocscience
Alhasan	Ahmad	Applied Research Associates Inc.
Allady	Kumar	Smart Strutures
Alyousef	Hend	LA DOTD/LTRC
Alzamora	Dan	DOT - Federal Highway Administration
Armstrong	Brad	Mississippi Department of Transportation
Arroyo	Maria	Puerto Rico Highway and Transportation Authority
Bailey	Joseph	Infrastructure Consulting & Engineering
Bailey	Warren	Ranger Consulting Inc
Barnes	Robert	ECS Southeast, LLP
Barnwell	Molly	ALDOT
Bassett	William	Virginia Department of Transportation
Batts	Jamey	North Caroline DOT
Bennett	Keith	Terracon Consultants, Inc.
Bhusal	Sudha	Virginia Department of Transportation
Blake	Vince	Florida Department of Transportation
Blanton	Jamie	Thompson Engineering
Bonner	Cameron	ALDOT
Boone	Simon	Access Limited Construction
Borders	Stephen	HDR
Bray	Darren	Oasis Consulting Services
Brown	Doug	Aero Aggregates of North America LLC
Broyles	William	STGEC - Treasurer
Bruce	Zach	HDR
Bush	Bruce	Geopier Foundation Company
Byerly	Michael	FDOT District 5 Materials and Research Office
Campbell	Kenneth	Geo Instruments
CAMPBELL	KENNETH	Geo Instruments
Carmona	Kelly	Florida Department of Transportation
Carroll	Scott	A H Beck Foundation Company, Inc.
Caruso	Melissa	NOVA Engineering & Environmental, LLC
Champion	Joe	ECS Florida, LLC
Chiboucas	Peter	Willmer Engineering
Chittenden	Devin	HDR
Clark	Edward	Samuel Roll Form Group
Combs	Josh	Truemont Materials
Cone	Dustin	FDOT District 5 Materials and Research Office

Constantine	Andy	Platipus Anchors Inc.
Cooley	Mary	Georgia Department of Transportation
Coxe	Dan	Earth Tech, LLC
Cranston	Jonathan	Infrastructure Consulting & Engineering
Crocker	Kyle	Favor Steel & Fabricating, Inc.
Cummins	Sean	Mississippi Department of Transportation
Daily	Joey	S&ME, Inc.
Dave	Nitin	FDOT District 4 & 6 Materials Office
Davis	Clay	Berkel & Company
Davis	Michael	Thompson Engineering
Degen	Will	Wurster Betterground
Degen	Wilhelm	Wurster Betterground
Demirkan	Melih	Rite Geosystems
DenBroeder	Erik	Williams Form Engineering Corp.
DiCindio	Michael	Acker Drill Company
Dorsey	Renardo	ALDOT
Dossaji	Ammar	Infrastructure Consulting & Engineering
Dulaney	Bennett	S&ME, Inc.
Dutson	Greg	Geokon
Edwards	Brian	HDR
Elliott	Graham	Schnabel Engineering, LLC
Elsayed	Ashraf	Geotechnology, LLC
Epstein	Aaron	Geocomp Consulting
Fanara	Peter	Geo-Terrain Organization, Inc.
Ferguson	Nicholas	LA D.O.T.D
Fiorentino	Lori	TN Department of Transportation
Fisher	Anthony	The Reinforced Earth Company
Fordham	Frank	The Reinforced Earth Company
Foster	Glen	Georgia Department of Transportation
Fox	Jordan	MC Squared
Frederick	Erick	S&ME, Inc.
Friedrich	Charles	Carolina Stalite Co.
Fuhrman	Melanie	Concrete Canvas US
Gasiecki	Eric	ECS Southeast, LLP
Gautam	Biraj	Virginia Department of Transportation
Gautreau	Gavin	LA D.O.T.D
Gisondi	Matthew	FDOT District 4 & 6 Materials Office
Godfrey	John	ECS Southeast, LLP
Goins	Gregory	RK&K
Gonzales III	Rafael	Southern Earth Sciences, Inc.
Graham	David	Dan Brown and Associates, PC
Grau	Francisco	Geocimientos
Gross	Ryan	Simco Drilling Equipment, Inc.
Gwynn	Mark	American Sprial Weld Pipe
Hackney	Nathan	MixOnSite

Hannah	Therrell	Central Mine Equipment Company
Harman	Nicholas	South Carolina Department of Transportation
Hawkins	William	Favor Steel & Fabricating, Inc.
Heath	Brian	LA D.O.T.D
Helbling	Laura	Redi-Rock
Henderson	Heath	Florida Department of Transportation
Henkel	Thomas	UMA Geotechnical Construction, Inc. - Colfax, NC
Hernando	Jose	Florida Department of Transportation
Herrera	Rodrigo	Florida Department of Transportation
Horhota	David	Florida Department of Transportation
Horton	James	Wood Environment & Infrastructure, Inc.
Hu	Zhihong	Florida Department of Transportation
Ivy	Nathan	Concrete Canvas US
Jameson	Dino	Florida Department of Transportation
Jewsbury	Colin	Ardaman & Associates, Inc.
Johnson	Johnny	ICE of the Carolinas
Johnson	Michael	Propex
Johnson	W. Martin M.	Subterra Exploration
Johnson, Ph.D., P.E.	Kevin	Earth Tech, LLC
Jones	Larry	Florida Department of Transportation
Jowers	Robert	TN Department of Transportation
Keaney	Brian	HDR Engineering Inc. of the Carolinas
Kim	Mingu	Terracon Consultants, Inc.
King	Robert	TenCate Geosynthetics
Kistner	Eric	Stantec Consulting Services Inc.
Kosa	Samuel	The Loren Group
Kotas	Anna	Geocomp Corporation
Kreider	Christopher	Infrastructure Consulting & Engineering
Kunzen	Thomas	FDOT District 5 Materials and Research Office
LaCour	Ian	Mississippi Department of Transportation
Lane	Kaitlin	GeoStabilization International
Lien	Bon Hsiang	Wood Environment & Infrastructure, Inc.
Lin	Guoming	Terracon Consultants, Inc.
Luskin	Mark	ECS Southeast, LLP
Lyne	Bob	Geobrugg
Marsal	Eric	American Excelsior Company
Martin	Brian	Florida Department of Transportation
McClure	Dusty	Piedmont Precast
McDonald	Michael	Stantec Consulting Services Inc.
McDonald	Robert	KYTC Geotechnical Branch
McNerney	Samantha	Aerix Industries
Merlihan	Rocio	FDOT District 4 & 6 Materials Office
Mertz	Christopher	LA DOTD/LTRC
Milchuck	Jacob	GeoSpec INC.

Miller	Dru	GeoStabilization International
Milligan	Nick	Foundation Technologies, Inc. - Sonitec
Moghaddam	Rozbeh B.	RBM Consulting Group, Inc.
Mondello	Brian	GRL Engineers, Inc.
Moore	Jack	Arcosa Lightweight
Moran	Jordan	Infrastructure Consulting & Engineering
Mulla	Mohammed	ECS Southeast, LLP
Muppana	Venkata Prashanth	Menard USA
Nelson	Jordan	Goble Pile Check
Nelson	Jordan	H2R Corp
Neupane	Ramesh	Virginia Department of Transportation
Newman	Andrew	FDOT District 1 Materials Office
Nguyen	Thai	Goble Pile Check
Nichols	Silas	DOT - Federal Highway Administration
Palladino	Rich	Aerix Industries
Palmer	Patrick	Willmer Engineering
Palmer	Patrick	Willmer Engineering
Parker	Jason	Ardaman & Associates, Inc.
Pasols	Ken	UMA Geotechnical Construction, Inc. - Colfax, NC
Patel	Kisan	FDOT District 1 Materials Office
Perkins	Miranda	LA D.O.T.D
Petersen	Ryan	GEC
Petrella	Mandi	Geopier Foundation Company
Pierce	Adam	Propex
Plaskett, P.E.	Mark	Earth Wall Products
Poole	Steve	GeoStabilization International
Pope	Jake	TenCate Geosynthetics
Rancman	David	Goble Pile Check
Rancman	David	Goble Pile Check
Ratiu	John	Aero Aggregates of North America LLC
Rauser	Jesse	LA D.O.T.D
Revell	Matt	GeoStabilization International
Rivers	Ben	DOT - Federal Highway Administration
Roberts	Kirk	CJGeo
Robertson	Michael	Florida Department of Transportation
Rodriguez	Nichole	Sigicom Inc.
Romero	Ricardo	Puerto Rico Highway and Transportation Authority
Ropain	Sebastian	Menard USA
Saavedra	Rudy	Durham Geo Slope Indicator
Sak	Tony	Keller
Santee	Thomas	North Caroline DOT
Savage	David	CMEC
Siar	Bill	Diedrich Drill

Simfukwe	Phillip	Samuel Roll Form Group
Simpson	Michael	Infrastructure Consulting & Engineering
Sinharoy	Santanu	United Consulting
Sizemore	Jeff	South Carolina Department of Transportation
Sliger	Ellen	Florida Department of Transportation
Slupecki	John	Flexamat
Smith	Andrew	Piedmont Precast
Smith	Ashleigh	Florida Department of Transportation
Smith	Elizabeth	Terracon Consultants, Inc.
Smith	Travis	TN Department of Transportation
Speck	Jeff	Arcosa Lightweight
Stephenson	Austin	Williams Form Engineering Corp.
Sternberg III	Sam	Dan Brown and Associates, PC
Stroud	Michael	Individual
Sutmoller	Nico	Aerix Industries
Sweitzer	Margaret	RK&K
Syriopoulos	Nick	Keller
Tavera	Eduardo	NOVA Engineering & Environmental, LLC
Tay	Eric	NOVA Engineering
Thomson	Sally	Infrastructure Consulting & Engineering
Towery	Trevor	Elastizell Corp. of America
Truzman	Miguel	NOVA Engineering & Environmental
Tutolo	Tom	Pile Dynamics, Inc. / GRL Engineers, Inc.
Ulmer, PE	Michael	ESP Associates, Inc.
Utsalo	Eugene	Georgia Department of Transportation
Valiquette	Michael	Infrastructure Consulting & Engineering
Venkatesan	Ramasamy	FDOT District 1 Materials Office
Viala	Adrian	FDOT District 4 & 6 Materials Office
villa	Reinaldo	Universal Engineering Sciences
Walker	John	Mobile Drill Intl
Walker	Kevin	HDR
Wall	Jody	Carolina Stalite Co.
Wallace	Aaron	KYTC Geotechnical Branch
Wilson	Brandon	Humboldt Mfg Co.
Winans	Joe	Acker Drill Company
Woodward	Michael	WSP USA Inc.
Zhang	Jim	Skanska
Zimmerman	Shandie	HUESKER

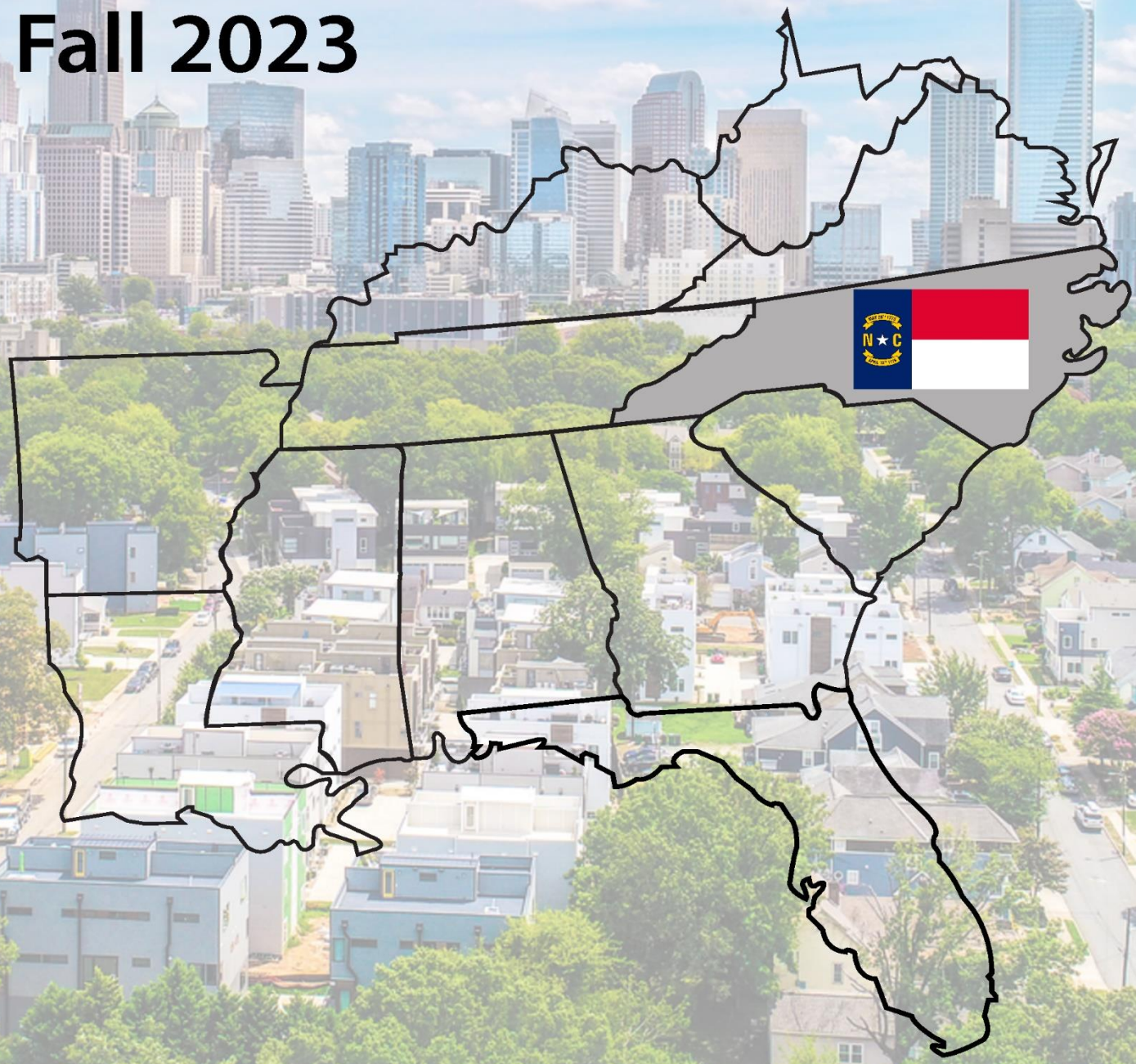
NOTES

Save The Date

52nd STGEC

Charlotte, North Carolina

Fall 2023



Southeastern
Transportation
Geotechnical
Engineering
Conference