



The 2019 SC Engineering Conference & Trade Show is offering 15 PDH. For attending a program in every time slot, you will be able to accumulate 15 PDH of the 15 required annually.

## **Wednesday, June 5, 2019**

1:00 PM – 3:00 PM

\*\*\*OPTIONAL\*\*\*

If interested in this presentation, ***you must RSVP separately for this event/class***. Class size limited to 30 People. Blacksmithing with George McCall, PE of McCall and Son and James Mosley of The Heirloom Companies.

Transportation on your own

9 Stratton Place, Greenville, 29615

5:00 – 7:00 PM

Board Dinner for ACEC-SC, ASCE/SC, SCSPE and SC Engineering Conference & Trade Show Staff. Transportation on your own. Location sent through each individual association.

## **Thursday, June 6, 2019**

**4 PDH for the day**

Registration - 8:00 AM – 5:00 PM

8:30 AM – 10:15 AM – SCSPE Board and Annual Meeting

8:30 AM – 10:00 AM – ASCE-SC Board Meeting

10:30 AM – 12:15 PM – ACEC-SC Board and Annual Meeting

12:00 PM – 1:15 PM – Lunch

### **Program Descriptions:**

1:00 PM – 2:15 PM (1.5 PDH)

SC State Board of Registration for Professional Engineers and Surveyors Update

2:25 PM – 3:00 PM

SCDHEC Update, Jill Stewart

3:10 PM – 4:00 PM

SCDOT Update, Randall Young, PE

4:10 PM – 5:00 PM

Involvement by Registered Engineers in the Political Process

Panel Discussion

Gay Sprague, Sprague & Sprague Consulting Engineers

5:00 – 6:00 PM  
Trade Show Reception

Dinner on your Own

## **Friday, June 7, 2019**

**7 PDH for the day**

7:00 AM – 5:00 PM  
Registration

8:00 AM – 4:00 PM  
Trade Show

8:00 – AM – 4:50 PM  
Concurrent Sessions

9:50 AM – 10:25 AM  
Break  
Visit with Vendors

12:30 PM – 2:00 PM  
Lunch with Keynote Address  
Mayor Knox H. White, City of Greenville

2:00 PM – 2:25 PM  
Break  
Visit with Vendors

**8:00- 8:50 AM**

## **Business Track**

### *Introduction to Personal Liability (E&O)*

Karen McCabe & Anita Rogers, IMCI  
1 PDH

## **Civil Track**

### Floodplain Design, Construction, and Impacts on Flood Insurance

Zach Faulkner, SmartVent  
1 PDH

Floods are the #1 natural disaster in the United States as all 50 states have experienced floods or flash floods. To protect the health, safety, and welfare of residential and non-residential structures and their occupants during a flood event, these structures must be built into compliance with local, state, and federal codes and regulations.

This course will clarify the regulations, codes, and standards as they relate to sustaining foundations in flood hazard areas, as well as analyze the role of building compliance in lowering flood insurance rates and what mitigation solutions are available to existing structures.

In addition, this course will focus on the potential hazards to buildings located in floodplains, the differences between wet floodproofing and dry floodproofing techniques and when they are applicable, and the differences between engineered and non-engineered flood openings and their ability to ensure resilient structures.

## **Environmental Track**

### *Reedy River Basin Sewer Tunnel (RRBST)*

Jason Gillespie, Renewable Water Resources, REWA and Bill Mathews Bunnell-Lammons Engineering, Inc.

1 PDH

The Reedy River Basin Sewer Tunnel (RRBST), or also known as Dig Greenville, is a wastewater project to alleviate the current risks of backups in the City of Greenville's wastewater collection system during peak wet-weather events. Dig Greenville is ReWa's largest wastewater conveyance project that will address some of the county's 100-year sewage needs. It will feature a gravity sewer tunnel, 100 feet below ground, 11 feet in diameter, spanning from Westfield Street to Cleveland Park in Downtown Greenville. The RRBST receives flow upstream at Riley Street, near the Kroc Community Tennis Center, and delivers flow westward to the existing system in Cleveland Park. The hard rock tunnel excavation is approximately 11 feet in diameter, approximately 6,000 feet long, and will house a 7-foot diameter fiberglass reinforced carrier pipe to convey peak wet-weather flows

## **Fire, Life and Safety Track**

### *Best Practice in Fire Protection*

Brian Berkley, Viking Corporation

1 PDH

Will cover the proper storage of fire sprinkler heads, pipe and valves prior to installation and during installation of a system. How to properly install the system to meet requirements of the listings. This will cover all manufactures

## **Geotechnical Track**

### *Revitalization of Three Downtown Greenville Properties: Environmental / Geotechnical Case Study*

Dan Osbourne and Rex Brown, Bunnell Lammons Engineering

1 PDH

Greenville continues to be recognized as one of the fastest growing towns in the US. At the center of that growth is a revitalized downtown with its signature Main Street, Falls Park and Liberty Bridge. The former Greenville News property, the Bowater building and the Wyche building properties are located on the eastern boundary of the Reedy River from the Liberty Bridge to Main Street. The redevelopment of these three contiguous properties will redefine the Greenville skyline for the next 50 years. This presentation reviews some of the environmental and geotechnical challenges associated with these three projects.

## **Structural Track**

### *Steel Fiber Reinforced Concrete – Reinforcing the Future*

Joshua Lee, PE and Danny Godinez, Bekaert Corporation

1 PDH

In today's market, the demand for a cost effective, yet high performing concrete floor is pushing structural engineers to provide a strong solution. In this presentation, we will be discussing how fiber reinforced concrete can be that strong

solution by providing ductility, post crack strength, high fatigue and impact resistance, and optimized crack control, resulting in a high performing floor. We will discuss various design approaches used by structural engineers in the industry to design concrete slabs-on-ground, slabs-on-piles and mat slabs. We will focus on the yield line design approach, often used in the fiber reinforced concrete industry to determine a more economical solution. Lastly, we will discuss how the performance of steel fiber reinforced concrete is determined per industry standard ASTM beam test methods. The tested performance insures that the fiber reinforced concrete floor meets or exceeds the engineer's design, ultimately leading to a long-term, high-performing floor.

## **Transportation Track**

### ***Enhancing Corridor Safety and Efficiency with Alternative Intersection and Corridor Treatments***

Richard Fangmann, PE, PTOE, Pond  
1 PDH

We face many challenges today with the operation of arterial corridors. These corridors provide direct access to businesses, provide connections to local roads and streets, and serve as major thoroughfares for long distance travel. In addition, they serve multiple travel modes. This combination of uses has resulted in increasing levels of traffic congestion and corresponding increases in crashes. Congestion and high speeds are combined with large numbers of turning vehicles, resulting in more vehicle conflicts.

The traditional solution of widening these corridors is increasingly difficult in urban areas due to physical constraints of development, environmental and social considerations, and fiscal constraints. The most cost effective and least disruptive way to address congestion is by increasing efficiency and safety at the intersections, which are the constraint points of the corridor. Intersection improvements have been around as long as roads. However, there is a need to identify alternatives to traditional improvements that will provide increased efficiency along high volume corridors.

**9:00 – 9:50 AM**

## **Business Track**

TBD  
1 PDH

## **Civil Track**

### ***Integrating Survey and Mobile GIS to Update Municipal Sewer Inventory***

James C. Gray Jr, PLS, Stewart Engineering  
1 PDH

The City of Durham, NC, Department of Water Management, contracted Freese & Nichols Inc., and their team of subcontractors, to develop a comprehensive hydraulic model for the South Durham Basin to support increasing growth in the area. The initial project tasks focus on increasing the accuracy of the City's GIS data. The City's existing sewer GIS inventory will be updated using a combination of conventional survey and Collector for ArcGIS to provide seamless integration of survey data into the hydraulic model. Stewart also developed a dashboard using Web AppBuilder for ArcGIS to provide real-time status reporting for the City and schedule tracking for the project team. This presentation will focus on Stewart's data collection methodology, the City's SOP for integration of the new data and the benefits and importance of this project for the City of Durham.

## **Environmental Track**

*Ongoing Program to Develop a New Wet Weather Standard to Control Infiltration and Inflow Impacts to the ReWa Transport and Treat Infrastructure from 18 Connected Sewer Systems within our Service Territory*

Greg Wright Renewable Water Resources, REWA  
1 PDH

## **Fire, Life and Safety Track**

*Flammable and Combustible Liquid Hazards*

William “Will” Cosey, Savannah River Nuclear Solutions, LLC  
1 PDH

Flammable and combustible liquids are used in many different ways within both workplace and home situations. Flammable and combustible liquids deserve a healthy respect for their dangers. They present unique hazards to the people that use them. Careless mistakes and safety shortcuts lead to serious problems when it comes to flammable and combustible liquids. Their hazards are deadly. Flammable and combustible liquids can cause a fire or explosion, and like many other substances, they can also cause serious health effects from overexposure. When and where you use them, be on guard against the hazards. This presentation will define flammable and combustible liquids and their hazards, identify regulations for their governance, and explain controls.

## **Geotechnical Track**

TBD  
1 PDH

## **Structural Track**

American College of Building Arts Wood in Modern Construction or Timber Framing  
Wade Razzi, American College of Building Arts  
1 PDH

## **Transportation Track**

*Remote Sensing Acquisition of Data and Merging of LiDAR*

Paul Badr, GPI Geospatial, Inc.  
1 PDH

Case Study – I-526 from North Rhett Ave. to US 17 – Remote Sensing Acquisition of Data and Merging of LiDAR using Aerial, Mobile and Static Platforms

**9:50 AM – 10:25 AM**

***Break***

**Visit with Vendors**

**10:30 – 11:20**

## **Business Track**

### *Engineering Your Contract*

Allen West and Tracy James, Hamilton, Stephens, Steel and Martin

1 PDH

## **Civil Track**

### *Using Permeable Interlocking Concrete Pavers to Meet Stormwater Treatment Objectives*

Scott Vollmer, Oldcastle/Belgard

1 PDH

This program begins with a summary of the evolution of stormwater management beginning with conveyance and transitioning to water quantity management, and most recently stormwater treatment. Stormwater Control Measures using Low Impact Development and Green Infrastructure design that can accomplish both stormwater quantity and stormwater quality objectives that are now desired in many municipalities that deal with flooding or have environmentally sensitive waterways. This presentation will compare surface-based BMPs to manufactured treatment system options, and highlight Permeable Interlocking Concrete Pavement (PICP) as a viable solution to address conveyance, water quantity and quality objectives. A summary of the academic and industry research to date on using PICP for water treatment will be presented, along with strategies for combining the benefits of PICP with manufactured treatment systems. We will also review PICP design guidance from the recently published ASCE Standard 68-18 "Permeable Interlocking Concrete Pavement". We will review key design parameters needed and the process used to design the PICP system to meet structural loading requirements as well as stormwater design requirements.

## **Environmental Track**

### *New Hazardous Waste Generator Improvement Rule: South Carolina Adopts Federal Changes*

Ethan Ware, Attorney, Williams Mullen

1 PDH

In 2015, EPA revised Federal hazardous waste generator requirements by adopting the Hazardous Waste Generator Improvements Rule (HWGIR). The new regulations allow small quantity generators (SQG) and conditional exempt small quantity generators, which are renamed very small quantity generators (VSQG) under the new rule, to exceed classification generation levels under certain circumstances, provides for transportation/storage of VSQG wastes at other facilities without permits, revises the satellite accumulation rules, and provides for a comprehensive recordkeeping and cleanup program for closing large quantity generator storage units. The HWGIR were adopted by the DHEC Board in November, 2018, and will become state law in South Carolina in June, 2019.

## **Fire, Life and Safety Track**

### *The Paper Chase: Documenting Life Safety Compliance*

Robert O'Neill, SRS

1 PDH

The presentation explores the voluminous nature of the explicit and implicit documentation requirements of the Life Safety Code. This once small matter that seemed to be mainly about doorways, hallways and exits has become one of the most daunting challenges for anyone tasked with documenting the code compliance of the egress system. Whether its drawings, reports, calculations, special studies, cut sheets, product listing requirements, exemptions, equivalencies, fire models or sequence of operation, door schedules, or engineering judgments, the paper trail of compliance is ever growing. The various pertinent portions of the code that directly or indirectly call for evidence of compliance will be explored along with the issues associated with assembling this diverse compendium of information pertaining to the Life Safety issues associated with an egress system.

## **Geotechnical Track**

### *Building Clemson University – One Foundation at a Time*

Bryan Howard, Bunnell Lammons Engineering

1 PDH

This presentation will discuss BLE's experience having performed approximately 85 geotechnical explorations across the campus of Clemson University over the past 18 years. We will cover the diverse subgrade conditions that exist across the campus; from relatively firm Piedmont residual soils on the north side of campus, to bedrock at Clemson Memorial Stadium, to alluvial floodplains along the Seneca River on the south side of campus. This discussion will include the types of soil testing performed to evaluate subsurface conditions and provide recommendations for foundation design, seismic evaluation, etc. In addition, we will discuss the varying types of deep foundations and ground improvement systems that have been used to support the newer structures on campus: shallow foundations, timber piles, auger cast piles, micropiles and rammed aggregate piers.

## **Structural Track**

### *First South Carolina Super Load*

David Chao, Chao & Associates

1 PDH

Chao & Associates was retained to inspect, evaluate and provide load rating services of highway bridges for a "super-load" heavy-haul project. The payload was an 880,000 lb. electrical generator component transported on an 800,000 lb. transportation assembly, making for a nearly 1.8 million pound, net weight, transportation vehicle including the payload. The move of approximately 200 miles, spanning across the State of South Carolina from Hardeeville, SC and terminating in North Carolina at the Duke Energy, Cliffside Generating Station, required the evaluation of thirty highway bridges.

The move was completed without any noted permanent damage sustained by the bridges traversed by the "super-load". Chao performed a during-crossing observation and post-crossing evaluation to conform the conclusion. This super-load was the first ever in the State of South Carolina. This project helped to set the Superload Bridge Load Rating Protocol for SCDOT. This project had won the Hauling Job of the Year over 160,000 lbs category by the Specialized Carriers and Rigging Association (SC&RA).

## **Transportation Track**

### *PNG Connector Road*

Clink Link, City of Greenville

1 PDH

11:30 – 12:20

## **Business Track**

### *How to Engage Top Talent and Prevent Burnout*

Peter C. Atherton, PE, ActionsProve, LLC

1 PDH

The best engineers and client servers are fully engaged, growing, and excelling. More and more, engineering firm leaders need to confront the growing epidemic of burnout and disengagement in the workplace. Leaders must understand all the factors that contribute and then design and implement solutions to prevent and reverse them in order to be best positioned to serve and grow in the marketplace.

## **Civil Track**

### *Hooper Storage Design and Construction*

Durk Krone, PE and Don Clayton, PE

1 PDH

## **Environmental Track**

### *“Our Client Just Received a Notice of Violation: Now What?”*

Ethan Ware, Attorney, Williams Mullen

1 PDH

Environmental regulations are complex and comprehensive. Fines and penalties for non-compliance can be significant and the after-shock can be worse: debarment from State or Federal contracts and employment ramifications.

This program is designed to educate engineers on the process and potential outcomes of enforcement actions of all kinds. State administrative actions involve informal conferences, final review by the DHEC Board, and State Administrative Law Court procedures and actions. Enforcement by Federal agencies like the Corps or EPA are more complex; they require answers be filed, relief from cease and desist orders to restart “violating businesses”, and appeal to Federal Administrative Law Judges in Washington, Atlanta, or local Federal Courts. All of these proceedings offer opportunities and pitfalls. They should not be navigated without legal guidance and participation. This course will provide direct guidance from experienced professionals on what the best steps may be for your clients when the inevitable happens.

## **Fire, Life and Safety Track**

### *Fire Protection Considerations for the Lodging Industry*

Byron L. Briese, PE, Coffman Engineers

1 PDH

The economic value of tourism in South Carolina is significant; the latest estimate provided by the State calculates \$22.6B of annual economic impact. In the hotel industry, guest and worker safety/security continues to be a consistent concern for hotel owners, operators and Authorities Having Jurisdiction.

Mr. Briese will review the evolution of fire protection requirements in the industry, cover basic fire dynamics, overview the concept of “Brand Standards” and discuss current trends.



## **Geotechnical Track**

### ***Geosynthetics in Erosion and Sediment Control***

Joel Sprague, TRI Environmental, Inc.

1 PDH

Historically, fugitive sediment produced from storm induced erosion in agricultural, industrial, and construction operations has been a major contributor to pollution of waterways in the United States. In response, government agencies, such as the Environmental Protection Agency, have developed regulations to limit, under law, the amount of fugitive sediments produced in such operations. In response, erosion and sediment control systems have been developed to help reduce the amount of sediment reaching US waterways, and satisfy the aforementioned regulations. Generally, natural materials such as straw, rock, brush and soil have been used in developing the erosion and sediment control systems and technologies commonly utilized to achieve the regulatory goals set forth. However, the exclusive use of natural materials in erosion and sediment control systems does have limitations with regards to quantifiable performance and the specification of use in the field. Intuitively, this can be understood by recognizing the non-quantifiable differences in natural materials that may be used in an erosion or sediment control system. Gradation of a rock medium for filtration or the weight per acre coverage of straw for hillside erosion control can be greatly affected by the source of the material, handling by the party tasked with installing the system, or any number of issues that may affect the uniformity and installation requirements of the associated specification. The inclusion of geosynthetics in erosion and sediment control systems has proven to provide significant advantages when used in place of, or in combination with, these “traditional” natural materials by helping to perform unique and quantifiable functions in erosion and sediment control applications. For instance, dry and hydraulic mulching techniques; straw, soil, wood, or other natural material spread over a soil surface in either dry form or mixed with water, lack appreciable tensile and shear strength making them ineffective when exposed to substantial storm water runoff. However, when either of these techniques is coupled with a geosynthetic net that helps form a continuous, mechanically connected matrix anchored to the soil surface through pinning or stapling, a quantifiably stronger system can be created. In another example, a traditional sediment barrier comprised of loose straw or brush, or piles of gravel or crushed stone are often ineffective at slowing, ponding, or filtering sediment laden water due to inadequate structural integrity, unanticipated leakage, or insufficient storage capacity. However, when these materials are contained within a layer of geosynthetic fabric or mesh, a system can be created that provides greater structural integrity, and both uniform and quantifiable flow rates and storage capacity.

## **Structural Track**

### ***Extensive Overnight Inspection of the 4.4 Mile Long JR Bridge***

Philip Quillin, PE, PMP, Deanna Nevling, PhD, PE, Michael Baker International

1 PDH

The 4.4 mile long James River Bridge in southeastern Virginia underwent an extensive field evaluation to develop repair recommendations and estimate maintenance costs to prolong the service life of the 302 prestressed concrete approach spans. Rebar cover measurement, sounding, half-cell potential, chloride profile sampling, impulse response, impact echo, ultrasonic shear wave tomography, and petrographic analysis tests were conducted on a small random sample of decks and beams to estimate repair areas for the 302 spans. This information was then used to correlate and confirm data from Ground Penetrating Radar and Laser Crack Measurement Scans performed on the entire bridge, overnight, to accurately locate deficient deck areas. The approach proved to be very reliable and useful, highly cost-effective, and greatly increased safety.

## **Transportation Track**

## *DOT Asphalt Spec Update and Review of All of the Updates to the Specs in Last Year*

Kimberly Lyons, SCAPA  
1 PDH

12:30 – 2:00 PM

Lunch with Keynote Speaker from 1:00 – 2:00 PM

### ***Downtown Development, City of Greenville***

Mayor Knox H. White, City of Greenville  
1 PDH

2:00 – 2:25 PM

### ***Break***

Visit With Vendors

## **Business Track**

### ***Licensing Issues in the Design Build Era***

Jay Matthews, Haynesworth, Sinkler & Boyd  
1 PDH

## **Civil Track**

### ***NRCS Hydrology – State of the Practice and Applications to SC Stormwater Management***

Ryne C. Phillips, PE, Davis & Floyd  
1 PDH

National Resource Conservation Service (NRCS) curve number hydrology methods have become standard practice in most stormwater management design and retrofit applications throughout South Carolina. Originally developed in the 1950s, the curve number methodology has undergone relatively few updates since its inception. Development of these methods were not accompanied with clear guidance on application and have led to cases of misapplication. Misapplication, research, and high-usage of the methodology have proven a need for updates. Proposed updates to NRCS curve number hydrology and hydrologic design criteria will be explored and reviewed. Applications to management of existing and proposed stormwater facilities will be presented to explore the impacts of proposed updates and methodologies.

## **Environmental Track**

### ***Nobody's Perfect: The Why, When and How of Voluntary Disclosure***

Ashley Sapyta, Civil & Environmental Consultants, Inc  
1 PDH

At least once in their career, most environmental managers will find themselves out of compliance with an environmental regulation or permit requirement. Fines related to these oversights can be costly and management may be tempted to take a wait and see attitude hoping that the regulatory agency will not notice. This response could increase the penalty and, in some cases could even result in criminal charges.

It is important to understand which program applies to the noncompliance issues and to ensure that the appropriate criteria are met. This session will outline the requirements and exclusions of both programs and discuss common mistakes and misconceptions.

## **Fire, Life and Safety Track**

### *In-Rack Sprinkler options in NFPA 13 and FM Data Sheet 8-9*

Alan Larson, Reliable Automatic Sprinkler Co., Inc

1 PDH

Taller buildings, increased combustibility of commodities and compact arrangements of storage present daunting challenges for the fire protection professional. This presentation highlights protection methods that have recently been included in NFPA Standard 13 as well as Factory Mutual Data Sheet 8-9, and compares the differing system types, including required water supplies and end-sprinkler pressures.

## **Geotechnical Track**

### *Evaluation of Anchor Systems Through Full Scale Pullout Testing*

Joel Sprague, TRI Environmental, Inc.

1 PDH

This presentation discusses the testing methodology and results of a research program that evaluated the pullout resistance of several commonly used turf reinforcement mat (TRM) anchoring systems. The testing was full-scale and used soils with known mechanical properties. The results provide quantitative performance differences based on the design, size, and embedment depth of the chosen anchor(s). The paper describes the design, construction, and use of the test apparatus; details the performance characteristics of the anchor systems evaluated; recommends further research; and encourages the adoption of a standardized full scale anchor system pull out test for the evaluation of anchor systems designed to be used in turf reinforcement matting installations.

## **Structural Track**

### *I-10 Mississippi River Bridge Rehabilitation*

Durk Krone, PE and John Richard, PE, TRC Engineers

1 PDH

The I-10 Mississippi River Bridge in Baton Rouge, Louisiana, carries multiple highway lanes over the Mississippi River. The bridge was constructed in 1968 with an overall length of 4,550 feet. The main span of the bridge, a three span steel cantilever through truss, is 2,423 feet in length. The center portion of the cantilever through truss, a suspended span, is 618 feet in length. The suspended span facilitates expansion and contraction of the structure by structural elements called false chords. The false chords expansion devices moved out of alignment and overtime experienced excessive deterioration. The false chords and the roadway expansion (finger) joint at panel point 35 would jam at temperatures above 85 degrees Fahrenheit. This presentation will discuss the innovative method of retrofitting the false chords and associated expansion devices and the jacking scheme that facilitated jacking of the suspended span under traffic into new alignment.

## **Transportation Track**

### *Stone Matrix Asphalt – A New Tool Added to the Toolbox*

Kimberly Lyons, SCAPA

1 PDH

**3:30 – 4:20 PM**

## **Business Track**

### *2017 Tax Bill Changes*

Daniel L. Crowson, CPA, Burkett, Burkett, Burkett

1 PDH

## **Civil Track**

### *Challenges and Progress on Spring/Fishburn Drainage Improvements Projects*

Michael V. Horton, PE, CFM

1 PDH

A briefing of overall design, function, and construction to date for City of Charleston's largest drainage improvement project. Outfalling to the Ashley River, the Spring / Fishburne Drainage Improvement Project will serve approximately 20% of the Charleston Peninsula, including a vital stretch of US Highway 17, terminus of I-26, and primary routes serving critical use facilities including Charleston's Medical District. Learn from challenges encountered and observe progress to date on atypical drainage infrastructure that includes vortex structures, drop and access shafts, deep conveyance tunnels, and a 360,000 GPM pump station and submerged outfall to the tidal Ashley River. Funded by multiple grants with 5 primary project phases and a schedule extending more than 10 years in construction, this project is well on its way to alleviate flooding and function independent of tidal conditions and rising seas.

## **Environmental Track**

### *An Alternative Solution Brings Collection System Success*

Jill Davis, Environment One Corporation

1 PDH

Gravity sewers are typically utilized for collection system rehabilitation and septic tank abandonment projects. This presentation describes an alternative approach utilizing grinder pumps and low pressure sewer mains to replace a failing gravity sewer main. In addition to comparing the lower upfront capital costs and minimal impact to the environment, this case study also describes the lower operation and maintenance costs as compared to the costs of a gravity sewer system.

## **Fire, Life and Safety Track**

### *These Are Not Your Grandfather's Fire Sprinklers!*

Cary Webber, CFPS, Reliable Automatic Sprinkler Co., Inc

1 PDH

NFPA 13 (2016) section 8.4.8 outlines the requirements for “special sprinklers” that allows manufacturers to develop fire sprinklers to address specific protection needs. Among the special sprinklers that will be discussed:

- Attic Sprinklers
- Combustible Concealed Space Sprinklers
- Deck/hall & Corridor Sprinklers
- Institutional Sprinklers

## **Geotechnical Track**

### ***Stabilization of the Bluffs at Pointe du Hoc, Normandy, France***

John R. Wolosick, PE, D.GE, Hayward Baker

1 PDH

On D-day, June 6, 1944, an Army Ranger battalion led by Colonel James Earl Rudder was tasked with taking Point du Hoc in Normandy, France. It was a tough battle, with about 100 Rangers losing their lives while scaling the cliff and capturing the remaining Germans. The site is now a highly visited landmark, with about 750,000 people visiting per year.

Due to the harsh weather and rough seas in this area, the cliffs have receded about 10 meters since 1944. This erosion threatened the stability of an historic German Observation Post, which had to be closed to the public due to the danger of its immediate proximity to the cliffs.

A team of engineers headed by Texas A&M University performed geotechnical and geological investigations, recommended fixes with cost estimates and established instrumentation to monitor the OP and the cliff. The presentation presents the history of the site along with the results of the investigation, repair recommendations and a presentation of the final construction works.

## **Structural Track**

### ***I-49 Design, Load Rating, and Construction***

Durk Krone, PE and Mike Paul, PE, TRC Engineers

1 PDH

The project begins at its proposed interchange with I-220, and ends at the proposed interchange with Martin Luther King, Jr. Drive. The project includes a total of seven (7) structures. A bridge architect was included on the team to incorporate aesthetic concepts with the bridge design. Attendees will observe the approach/results of the dual superstructure design, Post-Tensioned Segmental Concrete and Trapezoidal Steel Box Girders, which promoted competitive bidding. The presentation will also highlight the construction phase services that have been conducted to date with photographs showing the progress of construction. This project was awarded the Louisiana Transportation Excellence Award in 2016.

## **Transportation Track**

### ***Engineering Innovation and Autonomous Vehicles***

Lee Stogner, PE, Carolinas Alliance 4 Innovation

1 PDH

## **Saturday, June 8, 2019**

4 PDH available for the day

**7:00 AM – 12:00 PM**

Registration

**8:00 – AM – 11:50 PM**

Concurrent Sessions

**8:00- 8:50 AM**

### ***Electrical Leak Location (ELL) – Surveys & Testing***

Andrew Colby, Bunnell Lammons Engineering

1 PDH

This presentation will discuss the use of electronic leak location as a construction quality assurance (CQA) and forensic investigation tool for many types of containment structures and liquid conveyance systems. These include painted and coated concrete containment structures, geosynthetic covered soils, and piping systems. The discussion will include an introduction to electrical leak location, a guide to planning and preparing for testing, and a detailed review of ASTM test methods. We will provide a listing of method advantages and disadvantages of various test types and review case studies of with photographs of results and analysis from previous projects. Lastly, we will provide an understanding of the electrical leak location equipment and setup, reasons to consider electrical leak location, and how to obtain the best results during an electrical leak location survey on your project.

**9:00 – 9:50 AM**

### ***Nexans Wharf: The development of Berkeley County's Newest Marine Terminal***

Jim O'Connor, JMT

1 PDH

Nexans Wharf is a new private marine terminal being developed in Berkeley County by Nexans High Voltage. The project will be located on the Copper River adjacent to Nexans first North American Plant that opened in 2014 at the Bushy Park Industrial Complex. The addition of a marine terminal is part of a phased build-out that allows Nexans to now produce and load undersea high voltage cable directly from the plant to special cable laying vessels. JMT is providing all the required engineering including permitting, civil and structural design, MEP design, dredging design and construction management. Nexans currently operates two similar facilities and Norway and Japan

**10:00 – 10:50 AM**

### ***Russell Builds a Bridge***

Russell King, PE (Retired)

1 PDH

I combined detailed bridge construction photographs, that I took, with brief descriptions of each work item, to create a PowerPoint presentation to show how civil engineers are involved in construction. The presentation describes the engineering team that provides the documentation and shows how they are involved in minor items such as topsoil stripping, erosion control, and utility locates; more major items such as placing and compacting embankment and pavement removal; and major construction items such as retaining walls, piles, beams, and concrete decks. It shows how civil engineers test subgrade and embankment, pile depth, concrete, and beam fillets.

I believe civil engineers with field experience make better design engineers, many office engineers and younger engineers have not been exposed to these experiences, and I believe it is appropriate for this type of conference.

**11:00 – 11:50 AM**

## ***Infrared Aircraft Deicing Facility at John F Kennedy International Airport***

Henry Hessing, PE F ASCE, Retired

1 PDH

In 2002, Radiant Aviation Services, Inc. sent an unsolicited proposal to the Port Authority of New York and New Jersey offering to provide their patented Infra-Tek technology for use in an infrared radiant deicing facility at JFKIA. The Infra-Tek system was the only radiant deicing system approved by the FAA for deicing commercial aircraft and it had been installed for Continental Airlines at Newark Liberty International Airport.

Under the terms of the contract, Radiant designed and constructed a new state of the art deicing facility capable of deicing some Group 5 aircraft (up to the B747-300 size) as well as Group 2, 3 and 4 aircraft.

The infrared aircraft deicing facility (System 2500) consists of an open-ended hangar type structure housing the patented Infra-Tek technology that transforms natural gas into infrared radiant energy emitted through “energy processing units” (EPUs) configured to efficiently melt snow and ice from aircraft surfaces. The system is 262 feet long by 262 feet wide and approximately 82 feet high. It contains 440 EPUs each containing four (4) burners, and can treat ADG #5 aircraft up to the size of a 747-200/300.