



**Virtual Conference
August 13 - 14, 2020**



After a decade of successful SC Engineering Conference and Trade Shows, COVID-19 has challenged us to overcome and adapt. This year, we are excited to offer the same quality programs for professional engineers virtually. Registrants will have the opportunity to earn up to 15 PDH's through diverse tracks such as environmental/geotechnical, structural transportation, general/business and civil engineering.

The mission of the SC Engineering Conference continues to be to provide “timely presentations on various engineering subjects, keynote presentations and enough professional development hours to substantially meet the annual requirement.”





The 2020 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 by South Carolina and other states.

Thursday, August 13

General/Business

8:00 - 8:50 AM 1 PDH
Coincidental Cost Curves – Litigation and New Product Development
 Jon Tirpak, Sabattis, LLC

In 2019 when reviewing cost curves for court cases AND new product development, it was noted that both processes, although designed for different domains, are remarkably similar. For both client driven processes information is “purchased” along the way, and pre-established decision points serve as Go/No Go milestones. By following documented processes, engineers working with their clients (lawyers for litigation and OEMs or relevant manufacturing tiers for new products) manage cost and risk while seeking an optimal outcome. During this presentation, attendees will gain insight into both processes and will see the application of select tools from a metallurgical engineer’s perspective as applied to these processes. Upon further review of these processes in 2020 with another case involving litigation and new product development, it was observed how the two processes intersect.

9:00 - 9:50 AM 1 PDH
SCDOT Update
 Leland Colvin, PE, Deputy Secretary of Transportation, SCDOT

10:00 - 10:50 AM 1 PDH
The Liberty Trail
 Chris Haynes, Davis & Floyd, Inc.

Many historians consider the Revolutionary War to have been decided in the swamps, fields, woods and mountains of South Carolina, won by the resilience and determination of Continental soldiers and Patriot militia. Although the full story of the Southern Campaigns is not widely known, the events of 1779-1782 in the Carolinas directly led to an American victory in the war.

Soon, The Liberty Trail will be a unified path of preservation and interpretation across South Carolina, telling this remarkable story. These important battlefields, still largely unspoiled, deserve to be preserved. Since early 2016, Davis and Floyd has been working with the South Carolina Battleground Preservation Trust and the American Battlefield Trust to design immersive historic interpretation parks across the state.

More than 200 battles and skirmishes occurred in South Carolina during the war. Working with a panel of historians and archaeologists to select the most significant of these actions, the Battleground Trust developed plans to form The Liberty Trail, an innovative driving route designed to connect these battlefields. With Davis and Floyd’s help, The South Carolina Battleground Preservation Trust and the American Battlefield Trust are now working toward the launch of the initial phase of The Liberty Trail.

This presentation will provide attendees with an overview of the project and historic sites identified across the state to be a part of the larger trail network. Davis & Floyd will also present the master plans for the first two sites on the Trail: Fort Fair Lawn located in Moncks Corner, SC and the Camden Battlefield and Longleaf Pine Preserve located in Camden, SC.

11:00 - 11:50 AM 1 PDH
The Seven Deadly Sins of Email
 Karen McCabe, and Anita Rogers, IMCI

11:50 AM - 12:25 PM Lunch Break

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12:30 - 1:30 PM.....KEYNOTE ADDRESS

Ports Update

Barbra Melvin, COO, South Carolina Ports Authority

1:40 - 2:30 PM..... 1 PDH

Professional Ethics – Right or Wrong: You Decide

Rick Guerra, National Society of Professional Engineers

Ethics is often referred to as the right or wrong way of doing things. But how do we act when no one is watching? This presentation begins with a brief review of the NSPE Code of Ethics and an introduction to the NSPE Board of Ethical Review as a valuable ethics resource. Attendees will then together explore and analyze several case studies that will help them strengthen their own professional ethics by discussing common dilemmas facing engineers in today's work environment.

2:40 - 3:30 PM 1 PDH

Legal & Ethical Aspects of Practice for Engineers & Their Employers

Sam Wellborn, Robinson Gray Stepp & Laffitte, LLC

This session will equip you and your firm with an understanding of what ethical and legal issues to avoid in your practice as an engineer. The session will also cover what to expect after you have received a notice of complaint, how to navigate the complaint process, and how to protect your firm from liability.

3:40 - 4:30 PM 1 PDH

Business Planning and Protection and Legal Compliance

Kim Raber, Law Office of Kimberly A Raber, PA

Everyone is forming their own business entity, such as LLCs, but they often do not have everything they need to save taxes and protect their personal assets from the debts and liabilities of their business. They also do not know the steps they have to take to maintain their business or what happens if another owner becomes incapacitated or disabled, dies, quits, or wants to sell his or her interest in the business. In this segment, we will discuss how to set up and maintain your business properly, how to deal with a business owner that wants to sell his interest in the company, and how to deal with issues such as incapacity and death of a business owner.

Geotech/Environmental

8:00 - 8:50 AM 1 PDH

When Good Buildings Go Bad

Mike Hammill, ECS Southeast, LLP

Topic Environmental Engineering/ Risk Management/; This presentation will be an overview of ECS experiences, lessons learned, and review of mold and moisture impact and remediation for new construction from an engineering/ industrial hygiene perspective. ECS is heavily involved in new construction as a construction materials testing firm. As such our environmental engineering group is frequently requested to evaluate, test, and monitor mold and moisture remediation in new construction in a variety of projects, ranging from single family homes to 600 unit apartment complexes, and from commercial department stores to hotels. This presentation will review assessment techniques, recommendations for remediation, and practical applications as it relates to mold/moisture abatement on various work sites, and also what is involved in post-remediation documentation of completion of work.

9:00 - 9:50 AM 1 PDH

The Environmental Evolution - "YOU GOT TO BE KIDDING ME!"

Thomas Jordan, PE, Davis & Floyd, Inc.

A look back at the evolution of environmental permitting and compliance over the past 4 decades. A discussion related to almost every area of progress and economic development including issues and hurdles related to industrial, air, storm water, wastewater, hazardous waste, transportation, solid waste management, educational facilities, asbestos, demolition, redevelopment, and public involvement.

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10:00 AM - 10:50 PM 1 PDH

Tumbling Creek Road – Mountainous Engineering Challenges

Marc Plotkin, PE, D.GE, Will Porter, PE, and Morgan Carden,
ECS Southeast, LLP

Tumbling Creek Road provides access to portions of the Clinch Mountain Wildlife Management Area (WMA), managed by the Virginia Department of Game and Inland Fisheries (DGIF) for fishing, hunting, and birding, as well as other recreational activities. The Clinch Mountain Wildlife WMA, a 25,477-acre mountain forest including Laurel Bed Lake, spans portions of Smyth, Washington, and Russell Counties. Elevations within the WMA range from 2,200 feet along Big Tumbling Creek to 4,700 feet on Beartop Mountain. Tumbling Creek Road was originally constructed as a rail bed accessing the mountainous area with approximately 1.3 horizontal to 1 vertical natural side slopes above and below. In February of 2018, a slope failure occurred within the road closing the road and a main access route to the WMA. The project had several unique construction and design challenges. Due to limited access and the active slope failure, only limited subsurface information could be collected during the project design phase. This resulted in many unknown issues that could have slowed construction and resulted in delays and costly change orders to the owner. In order to limit these construction related issues, a Shored Mechanically Stabilized Earth (SMSE) Wall was selected to reconstruct the failed roadway and stabilize the landslide. The shoring consisted of a permanent soil nail wall with shotcrete facing. Contingencies were included in the soil nail wall design to account for the variable rock depth while allowing the removal of fresh slide material. Since soil nail walls are top down construction, this single system would not allow for the required final road width. In order to widen the roadway, a wire basket faced Mechanically Stabilized Earth (MSE) Wall was constructed bearing on rock. The construction drawings allowed for multiple methods of attaching the MSE Wall reinforcing to either rock, soil nail wall or minimum embedment length in backfill. This facilitated the construction project with limited contractor down time as the rock surface was mapped and the soil nail wall was constructed. The use of a SMSE Wall with combined soil nail wall and MSE Wall allowed the DGIF to procure the landslide repair in a Design-Bid-Build contracting approach. The implementation of various design contingencies resulted in a construction plan that allowed for the necessary construction variations required while working in mountainous terrain. The various design contingencies implemented early in the project allow an anticipated on-time construction completion and with the project under budget.

11:00 AM - 11:50 PM 1 PDH

Geophysical Methods for Bedrock Characterization

Edward Billington, ESP Associates, Inc.

Geophysics can be a powerful tool for characterizing bedrock, utilizing methods such as seismic refraction, surface wave seismic, resistivity imaging, and borehole logging. Information that can be obtained from geophysical studies includes depth to bedrock, bedrock rippability, characterization of bedrock fractures, and mapping of karst features. This presentation will review various geophysical methods and show example applications from actual environmental and engineering projects. Participants should gain a better understanding of the use of geophysical methods for characterizing bedrock.

11:50 AM - 12:25 PM **Lunch Break**

12:30 - 1:30 PM **KEYNOTE ADDRESS**

Ports Update

Barbra Melvin, COO, South Carolina Ports Authority

1:40 - 2:30 PM 1 PDH

Historic Railroad Cut – Aiken, SC

Will Porter, PE, and Marc Plotkin, PE, D.GE, ECS Southeast, LLP

Aiken, SC is known for its many historical sites including the historic railroad cut. William Aiken, President of the Railroad Company hired an engineer to build the railroad which was constructed around 1830 running from Charleston to Hamburg, SC. Utilizing slave labor in 1855, some of the track in Aiken was trenched or cut out leaving steep sloped, cut sides and the track under passing several downtown bridges. There are many homes and businesses that were built along the railroad including the Willcox Inn which was built in the late 19th century in downtown Aiken. The City of Aiken received a two phased Federal Hazard Mitigation Grant from FEMA to stabilize the railroad cut slope to prevent the foundation of the Willcox from being compromised. The first phase of the project was to consist of completing a geotechnical evaluation of the embankment; completing the design of the stabilization project; developing project specifications and a bid specification; and completing a bid of the project to determine the actual costs for FEMA consideration of a Phase 2 award consisting of construction of the soil stabilization design. During the first phase of the project, ECS provided Geotechnical Engineering consultation and subsurface exploration services as a sub-consultant to under Johnson, Laschober & Associates, P.C. who was the project Civil Engineering firm. As part of the initial phase, ECS developed three (3) conceptual alternatives to stabilize the slope and hotel. The conceptual design phase and alternates considered cost, schedule, and constructability concerns and were presented to the City of Aiken for approval. ECS developed a detailed design for the selected stabilization system and then developed construction drawings to allow for the repair. With all geotechnical systems, the performance is highly dependent on the means and methods employed during construction. Crowder Construction Company was awarded the repair project, and Wurster Engineering and Construction was selected as the specialty geotechnical contractor. Post award, ECS worked with the specialty geotechnical contractor to collect additional subsurface data and refine the design to preferred means and methods to reduce overall project cost. The City of Aiken directly benefited from this value engineering and reduction in project cost. During construction, ECS also performed a condition assessment of the Historic Wilcox Hotel, limited vibration monitoring of the Hotel and materials testing services.

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THE FULLER PILE



2:40 - 3:30 PM 1 PDH
Tunnels in Greenville and Charleston
Jonathan Ard, Black & Veatch

3:40 - 4:30 PM 1 PDH
I-85/385 Interchange Improvement – A Design Build Project
Maher Almassri, CECS, Inc.

Structural design challenges and Lessons learned.

Friday, August 14

Civil/General

8:00 - 8:50 AM 1 PDH
PFAS
Rick Welch, SCDHEC

One class of these emerging contaminants is per- and polyfluoroalkyl substances (PFAS), a group of more than 4,000 man-made chemicals that have been used since the 1940s for their heat resistance and water, oil, and dirt-repellence. Because of their stability, PFAS resist breakdown by natural processes and persist in the environment indefinitely, earning them the nickname “forever chemicals.” The most common exposure route is from swallowing food or water that contains PFAS.

9:00 - 9:50 AM 1 PDH
Floodplain Design, Construction, and Impacts on Flood Insurance
Zach Faulkner, Floodproofing.com

This session provides insight into the importance of proper foundation flood vents and dry floodproofing techniques for buildings located in a flood zone. It will identify FEMA, NFIP, ASCE, ICC, and Building Code regulations, codes, and standards as they relate to sustaining foundations and overall business continuity in flood hazard areas and analyze the role of building compliance in securing lowering flood insurance rates and what mitigation solutions are available. After the session, participants will have a thorough understanding of floodproofing options and the important role they play in designing a sustainable structure.

10:00 - 10:50 AM 1 PDH
Energy Savings Using Infrared Heat in Aircraft Hangars
Henry Hessing

Description: The use of radiant heat is applicable to aircraft hangars with the primary benefit being efficient heat distribution at an affordable cost. Energy saving radiant tube heaters are designed for industrial and commercial buildings and have been used for years. They are easy to install, require minimal maintenance and deliver great fuel savings throughout the winter. The presentation will describe how these energy savings may be achieved.

11:00 - 11:50 AM 1 PDH
Ductile Iron- Innovation
John Walsh, American Cast Iron Pipe

Discussion on restrained joint gaskets, protective linings, V-Bio polyethylene wrap and zinc coating for ductile iron pipe.

11:50 AM - 12:25 PM **Lunch Break**

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12:30 - 1:20 PM..... 1 PDH

Drum Island Marsh Restoration

Jonathan Sigman, Collins Engineers, Inc.

During construction of South Carolina Ports Authority's Hugh K. Leatherman Sr. Terminal in North Charleston, 11 acres of salt marsh were filled in. To offset the loss of those 11 acres, 22 acres of marsh were restored on the southern tip of nearby Drum Island in Charleston Harbor. Collins Engineers, Inc. provided coastal and marine engineering services for the intertidal marsh restoration. The goal was to recreate the natural grade of affected areas by removing dredge material, providing an inlet and creek system to nourish the marsh, and replanting the area with indigenous species. It's central location in Charleston Harbor ensures that its function as an intertidal marsh provides an ecosystem to help maintain water quality and provide a habitat for juvenile fish and other local marine and avian species. Additionally, the tidal marsh acts as an attenuator of the destructive wave forces that accompany large storms.

1:30 - 2:20 PM 1 PDH

Update from the Board of Registration

John Peebles, PhD, PE, SC State Board of Professional Engineers and Surveyors

2:30 - 3:20 PM 1 PDH

SC811 Law and Updates

Misty Wise, SC811

This session covers SC811 Dig Law, compliance, enforcement, useful resources and tools for engineers, and how we can better partner on large projects in SC.

Structural/Transportation

8:00 - 8:50 AM 1 PDH

US 76 over Wateree: Applications of Changing Flood Distributions and 2D Hydraulic Modeling

Ryne Phillips, Davis & Floyd, Inc.

Natural flow regimes throughout South Carolina have been significantly altered by dams and other man-made structures. In some cases, USGS regression equations cannot be implemented, therefore requiring adoption of non-stationary flood frequency techniques. Couple these issues with a 4-mile wide floodplain, a 2,300-foot main span bridge, three 600-foot overflow bridges, and backwater effects from the Congaree River, and you have US 76 over Wateree. Applications of stationary and non-stationary flood frequency techniques are implemented to better evaluate peak flood flow predictions. Flood modeling using GIS techniques and advanced 2-D hydraulic models are executed to quantify flow splits and hydraulic losses through existing bridge structures. Herein, historical and current stochastic hydrology techniques and 2-D hydraulic modeling will be presented to explore the good, the bad, and the ugly as applied to US 76 over the Wateree River.

9:00 - 9:50 AM 1 PDH

Steel Fiber Reinforced Concrete

Claire Gandee, Bekaert Corporation

Yearly, millions of square feet of concrete floors are reinforced with fibers globally. Discover why more and more engineers are designing concrete floors with this innovative replacement of traditional reinforcement. Steel fibers are the perfect reinforcement for stronger, safer, cost-effective, and higher performing concrete floors.

10:00 - 10:50 AM 1 PDH

Bridge Load Rating: Who, What, Where, When, Why (& How)

Philip Quillin, Michael Baker International

FHWA mandated that bridges be analyzed and assigned an appropriate rating for trucks expected to cross. If necessary, these would also translate to restrictions by posting load limit signs at the bridge. This presentation will be a brief primer on who performs these ratings, what is the basis, where are they applied, when they are required, why they must be done, and how they are analyzed. A few examples from South Carolina and across the country will be highlighted.

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11:00 AM - 11:50 AM 1 PDH
Laser Scanning and 3D Building Information Modeling for Airport Design, Construction and Facilities Management Projects
W. Allen Brock, GPI Geospatial

11:50 AM - 12:25 PM Lunch Break

12:30 - 1:20 PM 1 PDH
Cold-In-Place Recycling (CIR) and Stone-Matrix-Asphalt (SMA): Could These Two Special Applications of Asphalt be the Answer to Improving South Carolina's Roadway Infrastructure?
Kimberly Lyons, South Carolina Asphalt Pavement Association

This presentation is an overview of CIR and SMA; and their application in South Carolina during the paving season of 2019. These two technologies were used on several projects in SC in 2019. This presentation will go in depth on each technology and how it was used successfully in SC in 2019 to improve some of our roadway infrastructure.

1:30 - 2:20 PM 1 PDH
SCDOT Transportation Specifications Update
Kimberly Lyons, South Carolina Asphalt Pavement Association

This presentation is an overview of all the updates to the technical specs in the transportation track since the summer of 2019.

2:30 - 3:40 PM 1.5 PDH
How Inclusion drives the success of major urban infrastructure projects
Joy Riley, SC DOT

Learn how SCDOT is using inclusion strategies to develop the largest infrastructure project in SCDOT history. The I-526 Lowcountry Corridor Project is a major project in the fastest growing urban area in SC. SCDOT is taking new approaches to find solutions that will drive success for the state as well as the local communities.

REGISTRATION INFORMATION

Registration Rates

Full Conference \$275.00

Thursday Only \$165.00

Friday Only \$165.00

REGISTRATION DEADLINE - **AUGUST 3**

To register for the Conference click on the link below:

[Conference Registration](#)

SAVE THE DATE FOR THE 2021



June 3 – 5, 2021

**Embassy Suites Myrtle Beach
at Kingston Plantation**

CONTACT INFORMATION

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