



# SC ENGINEERING

## CONFERENCE & TRADE SHOW

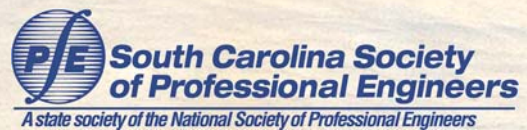
**Hilton Myrtle Beach Resort**  
**Myrtle Beach, South Carolina**  
**June 8-10, 2017**



The SC Engineering Conference is in its tenth year as a combined effort of three key engineering organizations. Its mission remains "timely presentations on various engineering subjects, keynote presentations and enough professional development hours to substantially meet the state's annual requirements." Additionally, the conference offers a trade show where products and services engineers use directly or specify are offered with knowledgeable representatives to assist you.

Conferences are always about more than technical programs and trade shows; the 2017 SC Conference also realizes the importance of opportunities to meet and converse with fellow professionals. An exhibitor reception Thursday evening serves as networking opportunity between engineers and exhibitors. Networking is encouraged during the sessions, breaks, lunch and the Banquet.

Engineers attending the conference June 8-10 at the Hilton Myrtle Beach Resort may gain up to 15 PDHs and choose from a variety of more than 40 programs.



**EDUCATIONAL SPONSOR**  
SC State Board of Registration for  
Professional Engineers and Surveyors







**SC ENGINEERING**  
CONFERENCE & TRADE SHOW

The 2017 SC Engineering Conference is offering 15 PDHs. For attending a program in every time slot you can accumulate 15 PDHs of the 15 required annually.

**THURSDAY - June 8, 2017**

4 PDHs Available for the Day

8:00 AM - 5:00 PM ..... Registration

8:15 AM - 10:15 AM ..... ACEC-SC Board & Annual Meetings

10:20 AM - 12:15 PM ..... SCSPE Board & Annual Meetings

10:30 AM - 12:00 PM ..... ASCE-SC Board Meeting

11:30 AM-1:00 PM ..... Lunch

12:00 PM - 6:00 PM ..... Trade Show

12:30 PM - 2:00 PM (1.5 PDHs)

**Engineers Registration Board Panel Discussion and Registration Board Updates**

SC Board of Professional Engineers and Land Surveyors

2:00 PM - 2:30 PM (.5 PDH)

**SCDHEC Update**

Myra Reece, Director of Environmental Affairs, SCDHEC

2:40 PM - 3:40 PM (1 PDH)

**SCDOT Update**

Christy A. Hall P.E., Secretary for Transportation, SCDOT

3:50 PM - 4:50 PM (1 PDH)

**Columbia Canal Update**

John Walsh, Michael Baker

5:00 PM - 6:00 PM ..... Trade Show Reception

6:00 PM ..... Trade Show Ends

6:30 PM - 8:30 PM ..... ASCE-SC Reception

Dinner on Your Own

**FRIDAY LUNCHEON  
SPONSOR**





**FRIDAY - June 9, 2017**

7 PDHs Available for the Day

7:30 AM – 5:00 PM .....Registration

8:00 AM – 4:00 PM .....Trade Show

8:00 - 8:50 AM (1 PDH) ..... **CONCURRENT SESSIONS**

## **CIVIL/STRUCTURAL TRACK**

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

Zach Falkner, Smartvent

Floods are the #1 natural disaster in the United States. All 50 states have experienced floods or flash floods. Due to climate change and other factors, flood events are increasing in number and intensity. To protect the health, safety, and welfare of homes and their occupants during a flood event, homes must be built into compliance with local, state, and federal codes and regulations. This course describes floodplains and the potential hazards to buildings. Unless there are flood openings that allow floodwaters to flow into and out of enclosures below the Base Flood Elevation, hydrostatic pressure builds up on the foundation walls and can cause major damage. The course also defines the differences in engineered and non-engineered flood openings and their ability to ensure resilient structures. It explains the differences between wet floodproofing and dry floodproofing techniques, and when they are applicable. It also clarifies the regulations, codes, and standards as they relate to sustaining foundations in flood hazard areas. This course analyzes the role of building compliance in lowering flood insurance rates and what mitigation solutions are available to existing structures.

## **FIRE, LIFE AND SAFETY TRACK**

### **Overview of Seismic Protection for Sprinkler Systems**

Ralph Foster

NFPA 13 contains all of the requirements needed to comply with the seismic requirements of ASCE 07 and the International Building Code. NFPA 13 has a simplified approach that is easy to follow and apply. Most of South Carolina is subject to seismic requirements and knowing the requirements can save you a lot of heartaches! This class will provide a high level overview of things an engineer need to know to prepare design drawings or review shop drawings.

## **GENERAL/BUSINESS TRACK**

### **Planning to Exit Your Business? Finding the Right Value for Your Firm**

Matthew K. Fultz, Matheson Financial Advisors

This program will focus on the impact of exit strategies on engineering firm valuations above and beyond the effect on revenue, profits, backlog, and staff size. Specifically, we will review the impact on the different valuation methodologies, including market and income approaches. This presentation will help owners and managers understand firm valuation and the issues associated with transition. An awareness of these issues is key to the ongoing success and continued vitality of an engineering firm. We will make the connection between what has been occurring in the general market and its impact on the valuation process. The focus will be from the perspective of an industry firm appraiser showing attendees how to increase the attractiveness of their firms and how to maximize shareholder value.

## **GEOTECHNICAL TRACK**

### **Using Structural Lightweight Aggregate for Geotechnical Applications**

Imani Brodie Surratt, Castrodale Engineering and Consulting

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**Terracon**



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## MECHANICAL/FORENSIC TRACK

### BIM & THE MEP World

Mike Bronson and Brian Bates, DWG, Inc.

- What is BIM?
- How can it help me in my business?
- What are its advantages over traditional 2D drafting?
- What are the benefits of a virtual 3D model?
- How BIM is being used in the MEP world.
- What are the current market trends in the BIM industry?
- Q & A - Examples, demonstrations

## TRANSPORTATION TRACK

### Inland Port in Pee Dee

Matt Genham TransSystems

8:00 AM - 9:50 AM ..... (2 PDH)

## ENVIRONMENTAL TRACK

### NEPA – A Case Study

M.K. Bladwin, PE

*This presentation delves into the National Environmental Policy Act (NEPA) and its application to a realworld event. The event was the relocation of Marine Corps aviation assets due to the 1993 and 1995 Base Realignment and Closure Commissions recommendations pursuant to Public Law 101-510. The presenter was involved with the process for approximately two years. The location was in Southern California.*

9:00 AM – 9:50 AM (1 PDH) ..... CONCURRENT SESSIONS

## CIVIL/STRUCTURAL TRACK

### Introduction to Design of Reinforced Concrete Structures for Blast Loads

D. Baren Talukdar, PhD, PE, M.SEI, F.ACI, F.ASCE, F.IE

*The design of concrete structures for blast resistant has been of great interest to the Army and other federal agencies for several decades. In addition, certain specialized segments within the engineering community have also had to consider blast loads on structures as a result of potential accidents, e.g. Petrochemical Industry. Even though there is considerable history in the design of structures to resist blast effects resulting from accidents or intentional acts, it is only recently that the general structural engineering community has shown strong interest in the response of structures subjected to explosions and other high-rate loading phenomena, such as impact.*

*Following the attacks on World Trade Center, the vulnerability of nation's infrastructures to terrorism became a top priority for many state and federal governments, as well as private consulting engineers.*

*At that time, American Concrete Institute (ACI) did not have any Standard/Code to address Blast Loads for structural Concrete design. In 2014, ACI published a Report (ACI-370)*

## FIRE, LIFE AND SAFETY TRACK

### Challenges of Fire Alarm System Installation for the USS Yorktown

George McCall, McCall & Son

*This presentation delves into the challenges of designing a replacement fire alarm system for the USS Yorktown, Charleston Harbor. The collaboration of two firms to provide a design for the fire alarm system. Working within the South Carolina Procurement Procedures. Architectural preservation ... don't stand out. Provide a multi-function mass communication tool as well as interconnection with phones. Provide a robust brand that is reliable and supported by multiple vendors. Keeping the old system limping along until the end. Challenging installation issues and conditions. The presenters were involved with the process for approximately five years.*

## TRADESHOW PARTICIPANTS





## GENERAL/BUSINESS TRACK

### Back to Basics

Karen McCabe, IMCI

## GEOTECHNICAL TRACK

### PaveXpress: A Simplified Pavement Design Tool

Jayson Jordon, PE, SC Asphalt Pavement Association

## MECHANICAL/FORENSIC TRACK

### Zinc Coated Ductile Iron Pipe

John Walsh, American Ductile Pipe

## TRANSPORTATION TRACK

### BrIM

Rob McKenna, HDR

10:00 AM – 10:50 AM (1 PDH) ..... CONCURRENT SESSIONS

## CIVIL/STRUCTURAL TRACK

### Port Access Project

Michael Ulmer, S & ME

The new Port Access Road will provide a direct connection from I26 to the Hugh Leatherman Container Terminal under construction on the former Charleston Navy Complex in North Charleston, South Carolina. The project is exposed to a high seismic hazard, and it will construct some eight miles of large bridge structures and associated roadway embankments through highly variable subsurface conditions that include significant uncontrolled fill deposits, liquefying sand strata, and highly compressible clay strata. The geotechnical and bridge designers collaborated closely to develop cost effective foundations that meet the stringent SCDOT performance requirements in very adverse soil conditions with a large seismic hazard. The presentation will present the site conditions, geotechnical and structural challenges, and how they were addressed.

## ENVIRONMENTAL TRACK

### Beyond Your Fenceline: Air Quality and Risk

Asheluy Sapyta and Mike Marcus, S&ME

Personal air quality sensor technology is advancing rapidly and sensors capable of accurately measuring fence line data are becoming more economical. As this data becomes readily available, the general public will likely be less interested in whether or not a manufacturing facility meets its regulatory limits than whether the emissions from that facility, either alone or combined with those around it, result in concentrations in air that are potentially harmful to those living near the facility. Owners and operators of manufacturing facilities should be proactive in addressing potential issues. This session will demonstrate how a facility can predict their impact on the surrounding community through a combination of the current environmental practices of air dispersion modeling and human health risk assessment.

## FIRE, LIFE AND SAFETY TRACK

### Fire Protection Engineering's Amazing Founder

Robert O'Neill, PE, Savannah River Site

## TRADESHOW PARTICIPANTS





## GENERAL/BUSINESS TRACK

### How to Choose the Best Survey Methods for Different Engineering Needs

Dustin Manning, Stewart

## GEOTECHNICAL TRACK

### Geophysics and Mobile LiDAR for Roadway Settlement and Voids

Edware (Ned) Billington, ESP Associates

*Subsurface voids and roadway settlement can have a number of causes, such as broken or blocked storm drains, limestone dissolution (karst), inadequately compacted fill, or poor fill materials. This presentation will provide examples of geophysical applications and, more recently, mobile LiDAR, used in North Carolina to evaluate voids and settlement issues. Methods discussed will include ground-penetrating radar (GPR), 2D resistivity imaging, micro-gravity, surface wave seismic, and mobile LiDAR.*

## MECHANICAL/FORENSIC TRACK

### Industrial Control Valves

Brad Laing and Jim Benkert, Fluor

*On/off and modulating automated control valves are critical for control in industrial plants for process and utility systems. This presentation will provide an overview of industrial control valves to provide attendees with a general foundation of knowledge of control valves.*

## TRANSPORTATION TRACK

### Study of I-85 Corridor and Park and Ride

Emily Swearigen, AECOM

11:00 AM – 11:50 AM (1 PDH) ..... CONCURRENT SESSIONS

## CIVIL/STRUCTURAL TRACK

### The Volvo Design Build Project

Jim O'Connor, PE, JMT

## ENVIRONMENTAL TRACK

### Converting Clemson University WWTP Digesters from Anaerobic to Aerobic

Keith Overstreet, PE, Design South Professionals

*Clemson University undertook the conversion of one of the digesters at their wastewater treatment plant from the anaerobic process to an aerobic digestion process. The plan was to later convert the second anaerobic digester to aerobic operation. From the time it was commissioned, Digester 1 did not perform as expected. This presentation summarizes the causes of the poor performance, the evaluation process used, the short term solution as well as the design and commissioning of the project that fully converted the University's sludge digestion from anaerobic to aerobic operation.*

## FIRE, LIFE AND SAFETY TRACK

### Sprinkler System Corrosion

Robert O'Neill, PE, Savannah River Site

## TRADESHOW PARTICIPANTS





## GENERAL/BUSINESS TRACK

### Large Project Planning

Brian Bonds, Glenn Associates Surveying, Inc.

## GEOTECHNICAL TRACK

### Ground Improvement - Opening the Black Box

Doug Chappell, Wurster Engineering

*The acceptance and use of ground improvement for foundation support and liquefaction mitigation are growing by the day. However, conflicting design theories and guarded proprietary techniques can often create confusion for designers, owners, and general contractors when approaching projects involving ground improvement. This presentation is intended to shed light on the design and field application of these techniques. Starting with the origin of vibrocompaction in the 1930's, the history of both the theory and construction of these techniques will be discussed, with a primary focus on liquefaction mitigation techniques and foundation settlement control. A mixture of history, technical theory, and practical construction case studies, this presentation aims to open the "black box" that is ground improvement and provide the listener not only with tools better navigating projects with techniques of this sort, but to provide a true theoretical understanding of them as well.*

## MECHANICAL/FORENSIC TRACK

### Designing Roof and Decks to Avoid Ponding

Scott Coffman, PE, SECB, Construction Science Engineering

*For decades the building code has required a minimum roof slope of 1/4 inch per foot to provide positive drainage. However, this slope is significantly reduced along the valley of two (2) intersecting roof areas and for members optimized for deflection. Manufacturers will warrant roofs with lower roof slopes, which violates the referenced code minimum. HVAC units, solar panels and other roof loads serve to cause deflection of wood roof framing, reducing (or completely eliminating) the positive drainage required by the building code. This presentation will offer design solutions to provide long-term positive drainage for minimum slope assemblies supported by wood framing.*

#### Learning Objectives

- Describe the minimum building code requirements for roof slope and positive drainage.
- Understand the properties of wood that contribute to long-term deflection.
- Discuss the mechanisms that can cause initial roof slopes to be reduced during the service life of a typical wood frame building.
- Understand the design details that will help avoid ponding of water on roofs, decks, water intrusion and/or roof collapse.

## TRANSPORTATION TRACK

### Thin Is In: Thin Overlays for Pavement Preservation

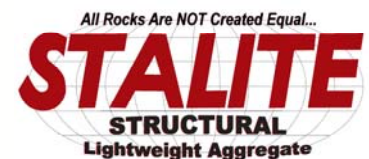
Jayson Jordan, SCAPA

**12:15 PM - 1:45 PM** (1 PDH) ..... Lunch/Keynote Address

### Engineering Innovation and Entrepreneurship in South Carolina

Tony Ambler

## TRADESHOW PARTICIPANTS





2:00 PM – 2:50 PM (1 PDH) ..... CONCURRENT SESSIONS

## CIVIL/STRUCTURAL TRACK

### Bridge Culvert Rehabilitation

Paul Detray, Contech

When drainage infrastructure reaches the end of a useful service life, the decision to excavate and replace is commonplace. Rehabilitation or relining of culverts, storm sewers and small bridges can be faster and less expensive option that imparts little to no impact on traffic maintenance. In this technical presentation we will cover the following topics: What if? – Advantages of Reline, Real World Savings, Products Available in our Industry, Design Considerations, Projects of Interest.

## ENVIRONMENTAL TRACK

### An Investigation into the Scientific Engineering Rationale for Wider Riparian Buffer Widths for Orange County, NC

John Dorney, Jan Gay, Michael Harvey, Michael Calhoun and Jerry McCrain,  
Vaughn & Melton

## FIRE, LIFE AND SAFETY TRACK

Topic TBA

Rob Olonski, PE, Savannah River Site

## GENERAL/BUSINESS TRACK

### Project Management for High Tech Projects

Lee Stogner, IEEE

## GEOTECHNICAL TRACK

### How Can Rocks with Holes Make Durable (Lightweight) Concrete

Ken Harmon, Castrodale Engineering Consultants

Many engineers are reluctant to use lightweight concrete in bridge and marine projects because they are skeptical about the durability of lightweight concrete. However, laboratory and field experience demonstrate that lightweight concrete can provide excellent durability for bridges and marine structures.

This presentation discusses the process used to manufacture lightweight aggregate from shale, clay and slate raw materials. Factors that contribute to making the durability of lightweight concrete equal to or better than normal weight concrete will then be discussed, including internal curing, elastic compatibility of lightweight aggregates with the paste, a lower modulus of elasticity, a lower coefficient of thermal expansion, resistance to freezing and thawing, and reduced permeability of concrete. Several bridges and marine structures, including a few ships built during the World Wars, will be described as examples of the good long-term performance of lightweight concrete.

## MECHANICAL/FORENSIC TRACK

Topic TBA

Jason Smith, AIA, Construction Science Engineering

TRADESHOW  
PARTICIPANTS



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## TRANSPORTATION TRACK

**PennDOT Rapid Bridge Replacement Project**  
Scott Gallagher, TRC

*Construction quality assurance for the project, which was over 500 bridge replacements over three years.*

**3:00 PM – 3:50 PM (1 PDH) ..... CONCURRENT SESSIONS**

## CIVIL/STRUCTURAL TRACK

**Structural Health Monitoring for Effective and Efficient Bridge Management**  
Richard “Lee” Floyd, PE, SCDOT

## ENVIRONMENTAL TRACK

**Cultural Resources**  
Sean Norris, TRC

## FIRE, LIFE AND SAFETY TRACK

TBD

## GENERAL/BUSINESS TRACK

**Internet of Things**  
Lee Stogner, IEEE

## GEOTECHNICAL TRACK

**The Importance of Full Scale and Accelerated Pavement Testing of Geogrids in Pavement Applications**  
Jack Moore, Tensar

*Considerable rigor is necessary to properly test and evaluate in-ground performance of geogrids. The interaction between geogrid and aggregate in a pavement structure is very complex and is influenced by many factors. Therefore, properly quantifying the benefit of geogrid can only be accomplished by full scale and accelerated pavement testing performed to relevant and appropriate industry standards. This presentation will reinforce the importance of this type of testing to establish performance criteria for geogrids in pavement designs. Additionally, we'll briefly explore the common use of geogrids for subgrade stabilization along with the potential use in pavement enhancement (increased ESAL's) applications. The subjects covered will include a review of pertinent reinforcement mechanisms identified by the USCOE with video demonstrations of these concepts. We'll also discuss the geogrid market today along with tools available to geotechnical engineers to craft sound geogrid solutions.*

## MECHANICAL/FORENSIC TRACK

**Topic TBA**  
Robert Lyles, Attorney, Lyles & Lyles, LLC

## TRANSPORTATION TRACK

**Transportation Submission**  
John Walsh, Michael Baker

## TRADESHOW PARTICIPANTS



If you are interested in becoming a Tradeshow Exhibitor, please use the link below:

[Tradeshow Exhibitor](#)



4:00 PM ..... Trade Show Closes

6:30 PM - Dunes Ballroom ..... Reception

6:50 PM - Dunes Ballroom ..... Awards Banquet

## SATURDAY - June 10, 2017

4 PDHs Available for the Day

7:30 AM - 12:00 PM ..... Registration

8:00 AM - 12:00 PM (4 PDH)

### MILITARY ENGINEERING

Marquerite McClam, SC State Guard

8:00 AM - 12:00 PM (4 PDH)

### HUGO MODEL

Paul T. Gayes, Coastal Carolina University

Director, Burroughs and Chapin Center for Marine and Wetland Studies

Palmetto Professor of Coastal and Marine Systems Science



## REGISTRATION INFORMATION

### Registration Fees

Thursday Only .....	\$108.00
Full Conference .....	\$350.00
Thursday/Friday .....	\$265.00
Friday/Saturday .....	\$288.00
Friday Only .....	\$175.00
Saturday Only .....	\$96.00
Spouse/Guest .....	\$150.00
Banquet Only .....	\$85.00

### REGISTRATION

## DEADLINE - JUNE 2

To Register for the Conference click on the link below:

[Conference Registration](#)

## HOTEL INFORMATION

The Hilton block for the SC Engineering Conference is full. They will still sell rooms, but not at our group rate. If you still wish to stay at the Hilton, please click below.

Hilton Myrtle Beach Resort  
10000 Beach Club Drive  
Myrtle Beach, SC 29572-5304  
Phone: 843.449.5000

[Hilton Registration](#)

### Alternate Hotel

Marriott Courtyard Barefoot Landing  
1000 Commons Boulevard  
Myrtle Beach, SC 29572  
843-361-1730

[Marriott Registration](#)

## CONTACT INFORMATION

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