



# DRIVER

## Message from our President

I am pleased to bring you the 2009 Winter Edition of the *Driver*!!

It has been an exciting year for SCSITE and one for the history books. We stole the show at the Southern District Meeting again this year by winning the "Group 2 Outstanding Section Award" and by Clemson taking home the "Best Student Chapter Award." Our awards didn't stop at the district level – at the International Meeting in San Antonio, TX, our section newsletter won the District and Section Newsletter award for circulation under 250. I applaud you all as none of this would have been possible without the hard work and dedication from our section members.

In an effort to increase student involvement in our section, we held our Spring and Summer meetings on the campuses of SC State University and USC. We had crowds of over 40 at each meeting which was a big improvement over the participation in years past. Our scholarship golf tournament exceeded all expectations again this year with 16 teams and 35 sponsors. During these tough economic times, I was overwhelmed with the support we received from the sponsors. We were able to raise almost \$7,000 for our scholarship funds and will award 3 scholarships at our Christmas party. Our first Vendor Day was held this Fall and was a huge success. We had 28 vendors participate and had over 165 people in attendance. Many thanks to Liz Carpenter, Patti Langland, Carol Jones, and Susan Ruinen for all their hard work behind the scenes helping plan this event.

Please join us in Columbia on Thursday, December 3rd for our annual Christmas Party. This will be our last meeting of the year. You will find more information about this event inside this newsletter.

It has been a pleasure serving as an officer for the section for the past few years. I have met so many new people and have come to know many of you on a personal level. In my tenure, I have seen our section improve each year and we have accomplished many great things. I have been motivated by our successes and I hope that many of you share in this motivation. I plan to continue to be heavily involved with our section long after I pass the gavel to Bryan Webb at the Christmas party next month.

As always, I challenge you to reach out to other transportation professionals and invite them to become active in our section. Also, encourage student involvement wherever possible so that we can continue to reach our younger membership.

In the economic climate we have faced in 2009, our profession has suffered some hardship; but, for the most part, we have endured. As the Holidays draw near, let's not get so caught up in the day to day that we forget to take time to give thanks for all that we have and remember those that are less fortunate.



Jae H. Mattox, III, P.E.



Y'all Drive Safely,

*Jae*

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**2009 Dues  
are now  
overdue.  
Please pay  
Jeff  
Ingham  
ASAP.**

**SCSITE ANNUAL CHRISTMAS PARTY—DEC. 3**



The SCSITE Annual Christmas Party will be held on Thursday December 3rd at MacDougall's Restaurant and Bar in The Vista (902 Gervais St Ste F, Columbia, SC 29201-3191) from 6:00pm to 9:00pm.

Food will consist of a small buffet with a salad bar, hot wings, chicken fingers, collard green egg rolls, sweet potato fries, and cheese quesadillas.

Social hour begins at 6 followed by a short program which will commence with the presentation of the student scholarships. The cost of the party will be \$15 per member or \$25 per couple (spouses are welcome) which includes food and drinks (tea, soft drinks, and beer).

Please RSVP for the party by November 25 by emailing Jeff Ingham at [ingham.j@thomas-hutton.com](mailto:ingham.j@thomas-hutton.com). This event is always a lot of fun so don't miss out!



**Bryan Webb, PE, PTOE**



**SCSITE By-Laws Revisions Approved** *Bryan Webb*

The proposed revisions / updates to the By-Laws of the South Carolina Section of the Institute of Transportation Engineers have been approved by the section members! The Section's original By-Laws, approved in 1989 just after our Section Charter was granted, have now been updated to include Article IX which details the eligibility, application, selection, and award processes for Section's yearly scholarships. Updating the By-Laws was a major accomplishment and could not have been done without the hard work and dedication of the Board members and, most importantly, the Section members for supporting these changes.



**Jeff Ingham, PE, PTOE**



**Treasurer's Report** *Jeff Ingham*

Several successful events have added to the ITE scholarship funds this year. The annual golf tournament was the largest fund raiser, thanks again to all the sponsors. Vendor Day was also a success, thanks to all the Vendors.

The scholarship balance at the end of last year was approximately \$16,600 in the Rowe fund and \$19,400 in the Stafford Clark fund. We did not make a contributions in 2008, so we're catching up this year – we will be adding approximately \$7,000 to each scholarship fund.

**SCSITE's Four Filthy Engineerds Compete in Marine Corps Ultimate Challenge Mud Run**

On September 20, 2009, Berry Mattox, Jae Mattox, Mike Ridgeway, and Wil Ravenhorst represented SCSITE in the U.S. Marine Corps's Ultimate Challenge Mud Run at Fort Jackson. The course was over 4.2 miles, consisting of 30 obstacles to be crossed by each team requiring team work and a lot of determination. The all-terrain course was staged on dirt roads, and wooded trails including mud pits, walls, trenches and other obstacles requiring swimming, crawling, climbing, and jumping.

With a heroic effort, the Four Filthy Engineerds finished the course in 53 minutes and 17 seconds which placed them in the top 10% of the field.



**Jae Mattox, Wil Ravenhorst, Mike Ridgeway, and Berry Mattox pose for a quick shot after completing the Mud Run**



## SCSITE 1st Vendor Day = Success *Liz Carpenter*

The 1<sup>st</sup> SCSITE sponsored Vendor Day, October 8, 2009 was a great Success. SCSITE is very thankful for all of you who took the time to come and participate. The event was held at Brookland Banquet and Conference Center; the staff was very helpful and friendly. The facility accommodated the 28 Vendors and 165 guests comfortably. The guests included City, State and County Engineers, Technicians, Supervisors and Field crews; Consulting Engineers; and University staff. The door prizes were more than we expected; shirts, hats, golf balls, a remote control truck, a large cooler, 3-D Clemson/Carolina Posters, MP3 player, flash lights, digital camera, cordless drill, jumper cables and others. Lunch on site was very good, it was a full buffet with all the fixins'; did anyone get to try the oxtail :) ?



Liz Carpenter, PE



The Technical Sessions, held after lunch, were fantastic. SCSITE is very appreciative of the following presenters:

**Vegetation Control for Safety**

Dr. Burati - Clemson University

**ADA Mobility Accesibility**

Dr. Jennifer Ogle - Clemson University

**Improving Corridor Operations with Super Streets**

Lori Mahany - Stantec

**Congestion Management Plan for Malfunction Junction**

Dipak Patel - SCDOT

I believe everyone went home with not only fun prizes and a full tummy; but new knowledge of Signal Systems, Signs & Markings, Safety, Software, and ITS equipment. Thank you all for making our 1<sup>st</sup> Vendor Day a success and we look forward to the next Vendor Day.

Here is a breakdown of our costs and profits. As you can see, we were able to raise over \$900 which will go into our general fund to cover our organizational expenses.

Site Fees	
Facility	\$800.00
Audio Visual Support	\$350.00
Table rental	\$100.00
Service	\$250.00
<b>Total</b>	<b>1,500.00</b>
Vendor Registration	
profit organizations (\$100 each)	\$2,500.00
non-profit organ. (\$25 each)	\$50.00
<b>Total</b>	<b>\$2,550.00</b>
Other Cost	
Supplies	\$35.50
snacks/drinks for Vendors	\$88.12
<b>Total</b>	<b>-\$123.52</b>
<b>SCSITE Total Profit</b>	<b>\$926.48</b>

## VENDOR DAY 2009



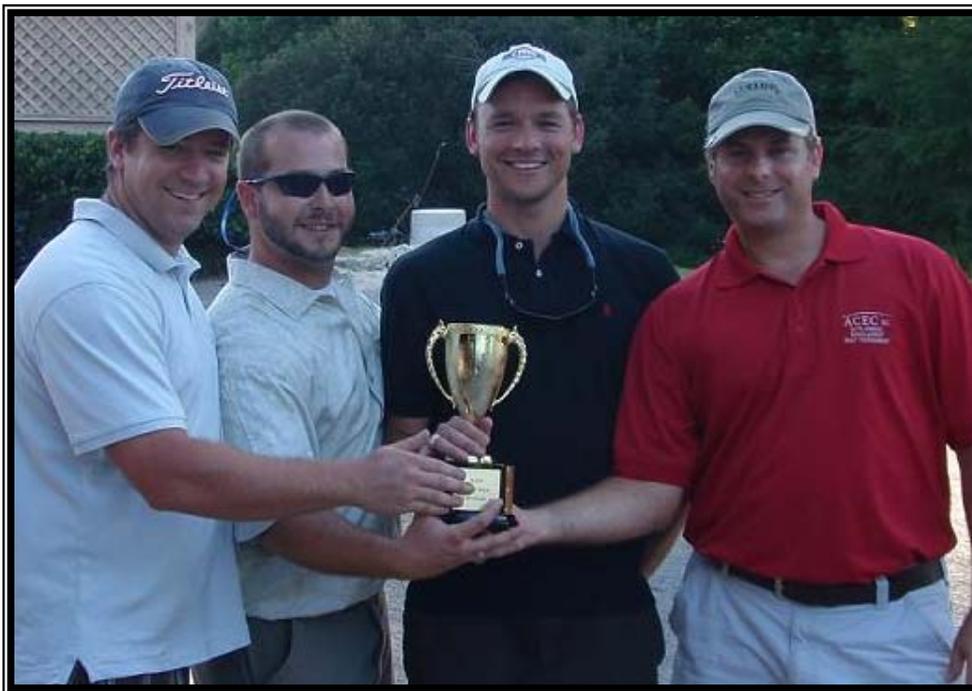
**Record Setting Year for Scholarship Golf Tournament** *Mike Ridgeway*

September 3<sup>rd</sup> was a record setting day for our golf tournament. This year we had a net profit of almost \$7,000. The weather was beautiful and we had a record 16 teams and 35 sponsors. This tournament just seems to get better every year; LET'S KEEP IT GOING! I know everyone had a great time. Secretary of Transportation, Buck Limehouse, was our guest speaker during lunch before the round. We also were able to give two awards: Howard Chapman presented a Life Membership Certificate to Fred McGary and Heshia Gamble presented the ITE Newsletter award to Jae Mattox.

There are so many people that help make this tournament special each year. I would like to specifically thank Don Turner, Jae Mattox, & Byron Hood for helping get things in motion for the tournament each year. Thanks again to our lovely cart girls Susan Ruinen, Renee Tison, Brenda Farren, Heshia Nesbitt, and Dipak Patel. Thanks to Terry Sharp and Jeff Ingham for helping collect money at the course. A very special thanks to Bill Dubose with the SC Concrete Paving Association for picking up the tab on all the "refreshments" on the course. We simply couldn't be so successful without Bill's generosity each year! If you helped out and I forgot you; Thank you too!

On a special note I would like to thank Don Turner for his hard work over the years. As many of you know, Don will be retiring next month after 38 years with SCDOT. Don has been a true friend to so many of us and to the SC Section in general. Each year I have been able to count on Don and his "people skills" to round up sponsors that have made this tournament what it is today. We have some really big shoes to fill here, folks. Thanks Don for all you have meant to this tournament. I hope you play in this tournament for many years to come. This year we introduced the Don Turner Championship Jug that will be engraved with the winners names each year.

First Place Winners of the Tournament (pictured left to right) was made up of John Carroll (Collins Engineering), Tucker Creed (SCDOT), Jae Mattox (SCDOT), and Jim O'Connor (Collins Engineering). Their names will be etched in the Don Turner Jug.



**2009 Tournament Champions**





# 8 Thanks to our Tournament Sponsors

## Traffic Data Connection

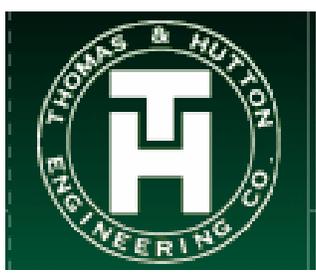


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## Short Counts



*Sprague & Sprague*  
CONSULTING ENGINEERS



## Campeo Engineering



Civil Engineering  
Consulting Services, Inc.

# Thanks to our Tournament Sponsors

9



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**AECOM**



**Howard Chapman, PE**

**DAVIS  
&  
FLOYD**



**Rivers Edge Traffic Data**



**PBSJ<sup>®</sup>**

**J Moore Electrical**



## GAITE/ SCITE Technology Exchange – Intersection Design Issues

### Summary *Carl Gosline*

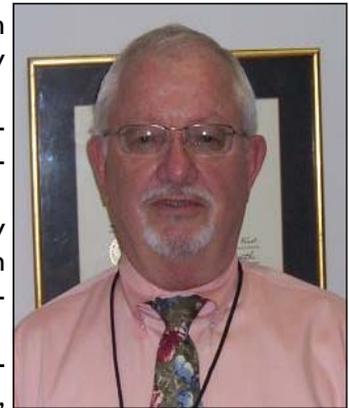
The Exchange was held in the office of W. R. Toole Engineers in a historic building in downtown Augusta, GA on September 25, 2009. The Toole office space was very crisp and quiet with hardwood floors and historic artifacts and art work throughout.

The Toole staff handled all the arrangements with great efficiency. The meeting space was well designed and properly equipped. The lunch was excellent barbeque with the normal sides.

Nine of the 40 attendees were from SC including Lori Mahany and Rick Day from Stantec; Fred McGary and Quazi Masood from LPA Group; Sadrul Ula from DRMP; and myself. The remaining 30+/- attendees were from all over eastern Georgia, including 6 from the GDOT.

With two exceptions, several attempts to get some of the presentation materials from the GAITE website, or directly from the presenters, have failed. Therefore, this summary is somewhat incomplete without the presentation graphics.

Lori Mahany's presentation regarding "Superstreets" was repeated at the Vendor's Session a couple of weeks ago and is likely available directly from her. See page 20 of this newsletter for a summary of her presentation. My presentation about "Driveways Are Intersections Too" is available at [goslinec@rcgov.us](mailto:goslinec@rcgov.us).



**Carl Gosline, AICP, PTP  
Richland County Planning**

### Roundabouts in Roswell, GA – Andrew Antwiller – [aantwiller@roswellgov.com]

- Roswell is installing roundabouts in numerous intersections
- They pay special attention to have signage in both English and Spanish
- They advertise new roundabouts on the city website
- On July 10, 2008, FHWA issued a notice that roundabouts must be considered in intersection projects
- GDOT requires a roundabout analysis for any intersection improvement with 2000 AADT, or less

### Unconventional Intersection Design, Management & Operational Strategies – Jonathan Reid – [reid@pbworld.com]

- Jonathan showed numerous innovative intersection designs, especially for grade separated interchanges
- One of the more unusual designs showed a conventional diamond interchange with roundabouts at the ramp/cross road intersections
- I think he said some of the intersections presented were from an article entitled "Quadrant Roadway Intersections" in the June 2002 ITE Journal

### Traffic Safety Evaluation – Koushik Arunachalam – [koushik.arunachalam@arcadis-us.com]

- Koushik provided some interesting data about crashes, etc. For example, the leading cause of death in the 4 to 34 age group is motor vehicle crashes
- He discussed several different traffic analysis tools, each of which had unique advantages for certain situations
- They have developed a Surrogate Safety Assessment Model (SSAM) which can predict future safety conditions

### Arterial ITS Applications – Bayne Smith – [bayne.smith@URScorps.com]

- This discussion concerned various specific applications of ITS systems in several locations

### Planning For the Masters Golf Tournament – Steven Cassell – City of Augusta

- Steven talked about the immense effort and details involved in handling the Masters Golf Tournament traffic, most of which is on two-lane roads



## Driveways Are Intersections Too – Carl Gosline, Richland County (SC) Planning Department

- Since I was last on the agenda, my presentation includes lots of cartoons
- Nationally, 60% of ALL highway fatalities are on rural roads, mostly due to inadequate driveway ( technically an intersection) separation
- The NCHRP found “...There is a consistent increase in accident rates as access density increases...”) [NCHRP Report # 420]
- Most local governments have abdicated their responsibility to control access to highways by saying that’s SCDOT problem because it is a state road. **TRUE BUT...**
- Local government make the land use decisions that create the traffic
- In two 2007 access management cases, the SC Supremes ruled “...a landowner on a partially closed road whose land is on the opened portion, cannot claim damages if he still has reasonable access to the general road system...instead, these cases involve alterations to the road system which have not disturbed the landowners’ easements of access...” [See [www.sccourts.org/opinions/htmlfiles/SC/26262](http://www.sccourts.org/opinions/htmlfiles/SC/26262)]

### **Lessons Learned**

- Be careful about definitions – driveways are intersections – use the term access points because it is all-inclusive
- Be vigilant about rural development activity, especially access point design and spacing
- Be sure your regulations have some language the specifically describes the criteria for granting a variance to the access management requirements – do not use the generic criteria in the zoning ordinance or land development code
- Be brave in your application of access management – the Supreme Court seems to be on your side

Happy holidays all

Carl. D. Gosline, AICP, PTP –Richland County Transportation Planner

**Many thanks to the Georgia Section for setting up this meeting and to those in SC that participated.**

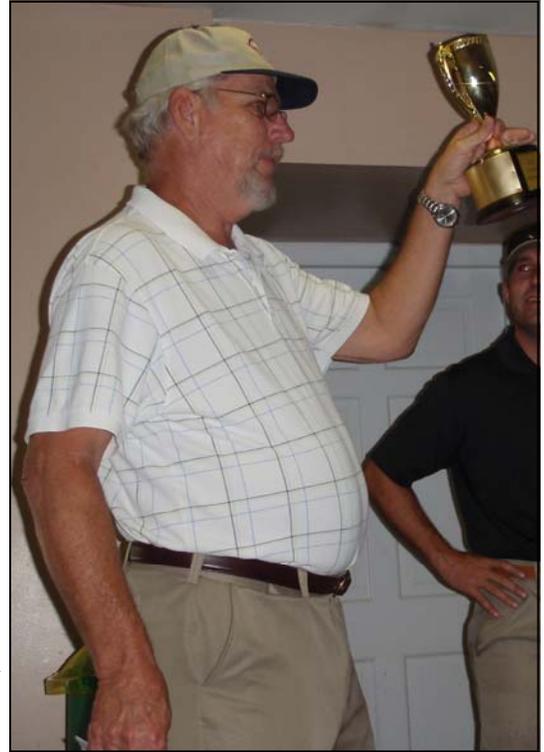
## Don Turner Retirement Dinner

*SCDOT Traffic Engineering is pleased to host a dinner for Don on Tuesday, November 17 at Rockbridge Club, 4135 Rockbridge Road, Columbia. A social hour will begin at 6 PM with a buffet dinner following at 7 PM. Dress is casual.*

*The cost is \$20 per person. Please RSVP by Friday, November 13. Checks should be made payable to Don Turner Retirement. Please send your check along with the information form below to:*

*SCDOT  
Traffic Engineering, Room 501  
955 Park Street  
Columbia, SC 29201*

*You may contact Phyllis Hughes at either (803) 737-1462 or HughesPS@scdot.org for more information. If you are unable to attend but would like to contribute to a gift for Don, please send your contribution to the address above.*



## SCSITE SHIRTS FOR SALE

**Please find the  
order form at  
the end of this  
newsletter.  
Contact Jeff  
Ingham with  
your order.**



## ITE Southern District (5) Report *William J. Davis*

I am honored to serve as your SC Section representative to the ITE Southern District (5) Board. The District's Executive Board have scheduled their year-end meeting for December 12-13, 2009, in Lafayette, LA, which is the 2011 annual meeting site. Both International ITE and District 5 are engaged in a wide array of initiatives and activities on behalf of ITE members. Please let me know if you have any issues or ideas you would like me to bring before the Board for discussion on behalf of SC Section ITE. The current officers for District 5 ITE are as follows:



**William J. Davis, PhD, PE**  
The Citadel

### 2009 District Officers

- President: Karen Mohammadi (KY)
- Vice-President: Jim Westmoreland (NC)
- Secretary-Treasurer: Becky White (AL)
- Past President: Craig Hanchey (TN)
- International Director: Bob Stammer (TN)

**News From The District** – Please take time to visit the redesigned District website at <http://www.sdite.org/> The site contains a link to the District's Fall 2009 Newsletter (containing 3 SCSITE stories), includes the Fall 2009 edition "The Chevron" publication highlighting student accomplishments, and outlines the SDITE 2010 – Southern District ITE Strategic Plan.

**Trails, Rails, and Sails...Turning the Tide on Multi-Modal Transportation** – The 2010 Annual Meeting will be hosted by the Virginia Section and will be held April 11-14, 2010, at Renaissance Portsmouth Hotel & Waterfront Conference Center in Portsmouth, Virginia. For more information please refer to the annual meeting website at <http://www.sdite2010.org/>

### Future SDITE Annual Meetings

- 2010 Portsmouth, Virginia (April 11-14, 2010)
- 2011 Lafayette, Louisiana
- 2012 Lexington, Kentucky
- 2013 Charlotte, North Carolina
- 2014 Georgia
- 2015 Mississippi
- 2016 Tennessee
- 2017 South Carolina



## ITE Policy Recommendations—Authorization of the US Surface Transportation Program

ITE has chosen to focus on several recommendations related to safety, transportation, operations, financing/funding, research, and workforce development

- Establish national safety standards to cut surface transportation fatalities in half from current levels by 2025.
- Support funding for low-cost operational approaches to alleviate congestion, improve safety and reduce energy consumption and greenhouse gas emissions.
- Require performance measurement to document benefits of investment
- Include funding support for the strategies identified in the National Unified Goal for Traffic Incident Management.
- Develop a federal freight policy that includes a dedicated source of funds to address critical freight infrastructure and mobility needs, including critical commerce corridors and improvements related to ports of entry and intermodal supply chains.
- Support mechanisms that will better diversify revenue generation. Taxes on vehicle miles traveled, tolling, congestion pricing, public-private partnerships, bonds, infrastructure banks, carbon-based taxes and use of general fund resources are all viable options.
- Support the National Surface Transportation Policy and Revenue Study Commission recommendation that transportation funding investments must be performance based and focused on cost-beneficial outcomes and accounting for economic, environmental and social costs.
- Develop performance standards, metrics and reporting processes to enable performance-based monitoring and funding for all projects.
- Increase federally funded research to determine the most effective combination of measures to mitigate the effect of transportation on climate change and to adapt transportation facilities and systems to the impacts of climate change.
- Continue support for federally funded fellowships and grants and state education and training programs.
- Continue flexibility of federal surface transportation program funds to be eligible for use by state and local transportation agencies for education and training activities.
- Authorize and fund a 2nd National Transportation Workforce Summit. Provide funding for National Transportation Week and direct the program to be spearheaded by the Office of the Secretary.

Read more at <http://www.ite.org/government/ITEPolicyPaper.pdf>



## ITE 2010 Technical Conference and Exhibit

*Meeting Transportation's 21st Century Challenges*

March 14-17, 2010

Savannah International Trade & Convention Center  
Savannah, Georgia, USA

## Berry Mattox Joins SCDOT District I as Assistant District Traffic Engineer *Monica Scott*

Mr. Berry Mattox, a former employee of Dennis Corporation, joined the SCDOT as the Assistant District Traffic Engineer for District I on September 1. Mr. Mattox is a 2006 Graduate of The Citadel and a 2007 Graduate of the Georgia Institute of Technology where he received his Masters in Civil Engineering.

Mr. Mattox previously worked for Dennis Corporation as Traffic Engineering Manager and accepted the position at the SCDOT to continue to pursue his professional goals. While at Dennis Corporation, Mr. Mattox's work included managing traffic data collection projects for the SCDOT, performing residential and commercial traffic impact studies, traffic signal design, and several corridor analysis studies.

Prior to joining Dennis Corporation, Mr. Mattox earned his Masters degree in Transportation Systems. While studying at the Georgia Institute of Technology, his research interests included traffic operations, safety, and sustainable transportation. In addition, Mr. Mattox's experience includes transportation research for the Texas Department of Transportation at the University of Texas at Austin's Center for Transportation Research.



T. Berry Mattox, EIT



## Ryan Eckenrode Joins AECOM

Mr. Ryan Eckenrode joined AECOM (Formally EarthTech) on August 31st. AECOM's transportation division consists of a global network of engineers and technical specialists that specialize in aviation, transit and rail, highways and bridges, planning and ports and marine. AECOM is ranked #1 in transportation in Engineering News-Record's 2009 list of top design firms.

Mr. Eckenrode attended Clemson University between 2000 and 2006 receiving Bachelors and Masters of Science degrees in Civil Engineering. At AECOM, Mr. Eckenrode works on traffic corridor studies, signal systems, and provides construction management services of roadway paving for public sector clients. AECOM has provided an excellent environment for him to flourish and to continue develop as a traffic engineer.

Prior to joining AECOM, Mr. Eckenrode worked for a consulting firm in Durham, North Carolina conducting traffic impact studies for private developers in the Carolinas. While studying at Clemson University for his graduate degree, he worked on the SCDOT "Better Management for Speed Control in Work Zones" project. His Master's thesis was based on this project and involved determining the effectiveness of drone radar to achieve speed reduction on rural and interstate work zones. In addition, Mr. Eckenrode's experience includes several internships working for a consulting firm in Columbia, South Carolina between 2001 and 2003 conducting traffic counts and performing traffic impact studies in the Carolinas.



Ryan Eckenrode, EIT





**Sunny Nandagiri, PE, PMP**

**AECOM**

Quality control and quality assurance are important concepts, yet most project managers/project engineers have only a vague understanding of the meanings and the differences between these terms. Before we learn those differences, let us understand some basics.

**What is quality?** In a simplistic sense, quality can be defined as conformance to requirements and fitness of use. Project Management Institute (PMI) defines quality as the degree to which a set of inherent characteristics fulfill requirements. All of us are aware that if we have poor quality, we have:

- Increased costs
- Low morale
- Lower customer satisfaction
- Increased risk
- Erosion of client/customer base

### Quality Control (QC)

Monitoring specific project results to determine the compliance with relevant quality standards and eliminating causes of unsatisfactory performance. It should be performed throughout the project. Quality standards include project processes and product goals. Project results include deliverables and project management results, such as cost and schedule performance. While performing quality control, the items that “roll off the line” are measured against the approved standards. The five core challenges during project QC are: controlling project processes, approximating Six Sigma standards, using test results to correct deficiencies, having the project team endorse the deliverables, and having the customer accept the deliverables.

#### *Salient Points-QC:*

- QC is a process that monitors specific project results to determine if they conform to specifications and identify ways to eliminate the causes of unsatisfactory results.
- QC results provide feedback to quality assurance; results disclose effectiveness of assurance activities.
- In-process inspection plays a key role in QC. Inspection activities may include measuring, examining, or testing.
- QC tools are generally well defined.

## Quality Assurance (QA)

It is the application of planned, systematic quality activities to ensure that the project will employ all processes needed to meet requirements. It is not testing of everything that is created; it is a random sampling of items created to verify a desired level of acceptability. The five core challenges during project QA are: manage external customer quality assurance, manage internal customer quality assurance, perform ongoing review of process adequacy, conduct and report results of quality audits, and manage feedback changes.

### *Salient Points-QA:*

- QA is the application of planned, systematic quality activities to ensure that the project will employ all processes needed to meet requirements identified during quality planning.
- QA addresses the program; it is the combined set of activities that the project team will perform to meet project objectives.
- QA activities are based on specifications and operational definitions. They include identified resources and responsible entities.
- The QA plan lists all assurance activities in one place to assist in managing project quality.

### **An Example to Illustrate the Difference between QC and QA:**

AECOM (as a Consultant) is currently providing construction management services for a Client on a construction project. As part of that project, Contractor (working directly for the Client) is required to perform QC tests such as asphalt density, concrete testing others. These test results are to be in conformance with the State's "Quality Management Standards". AECOM is required to monitor the QC tests for accuracy and adequacy and also perform QA on the project by conducting at least 10% of the tests, similar to the ones conducted by the Contractor. AECOM is to provide a monthly QA report on the project summarizing the quality control and quality assurance tests, and documenting the results of QC and QA tests.

.....  
 Author of this article is a licensed Professional Engineer in Eight States (including South Carolina) and is also a certified "Project Management Professional" (PMP). He is an active member of the South Carolina Section of ITE (SCSITE) and is currently serving as a Technical Committee chair for the SCSITE.

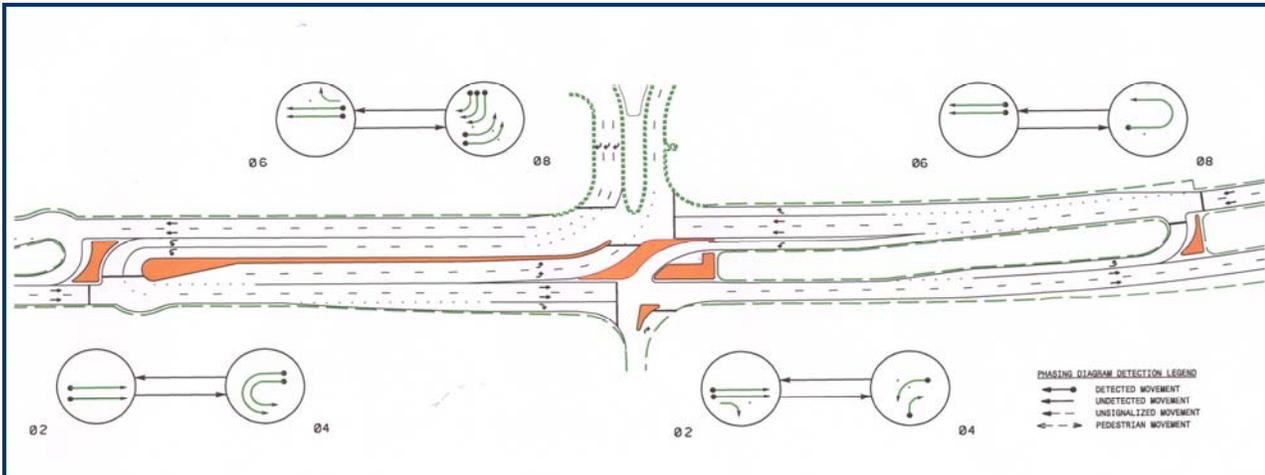
**Sources for this Article:** *Project Management Institute's "Project Management Body of Knowledge" (PMBOK), 2007 Edition, PMP Exam Prep, Rita Mulcahy, PMP, RMC Publications, 2005, [www.builderau.com](http://www.builderau.com), "Managing Project Quality", Timothy J. Kloppenborg and Joseph A. Petrick, "Project Quality Control and Quality Improvement", Kenneth H. Rose.*

**Innovative Intersection Designs: Superstreets** *Lori Mahany*

The use of the “superstreet” is a relatively recent trend in the United States. Developed as a variation of the median U-turns widely used in Michigan, the North Carolina Department of Transportation and Stantec have taken the lead in implementing the superstreet as a more streamlined, efficient, and safe alternative to traditional traffic management techniques.

A superstreet is a type of intersection in which minor cross-street traffic is prohibited from traveling straight through or turning left at a divided highway at-grade intersection. Cross street traffic must turn right at the intersection but then can access a U-turn to proceed in the desired direction.

**Figure 1: Superstreet Schematic and Signal Phasing**



Superstreets offer several benefits over more traditional design options including improvements in capacity, reduction in delays, enhanced intersection safety, and potentially lower costs.

**Capacity/Delay Improvements**

Superstreets offer increases in roadway capacity and reduction in travel delays by creating a series of two-phase signalized intersections along each side of a divided corridor. By replacing large multi-phased intersections with two two-phase intersections (one at the U-turn location and one at the main intersection) in each direction, the percent of the signal cycle that is allocated to main street green time is maximized. See Figure 2 for a comparison of the percent green time for signalized intersections with 2, 3 and 8 phases, respectively.

Additionally, each direction of the main street can be timed independently allowing the corridor to function as a one-way pair with different cycle lengths in each direction, if desired. This allows for maximum optimization of traffic signal timings.

**Safety Improvements**

By requiring all side street traffic to make right turns, the number of conflict points at the intersection is dramatically reduced. Moreover the likelihood of high speed angle crashes so common at divided intersections is lowered as most conflicting maneuvers are merging or diverging rather than crossing. A traditional intersection has a total of 32 conflict points, half of which involve crossing movements. By comparison, a superstreet has only 14 conflict points, with only 2 involving crossing vehicles as shown in Figure 3.

**Figure 2: Percent Green Time per Cycle**

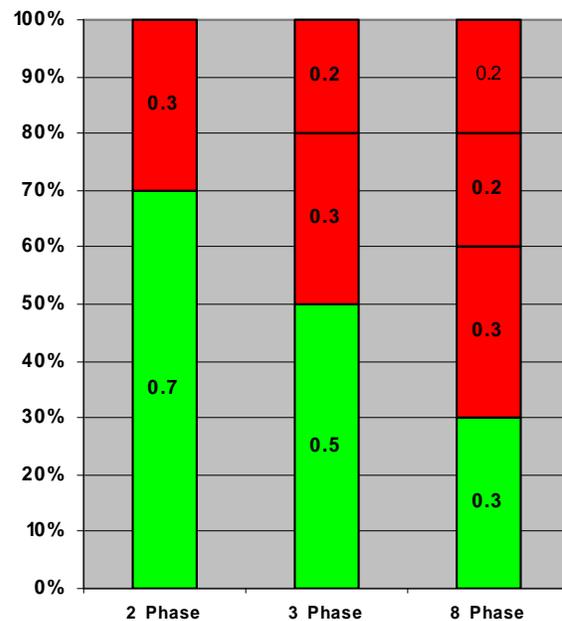
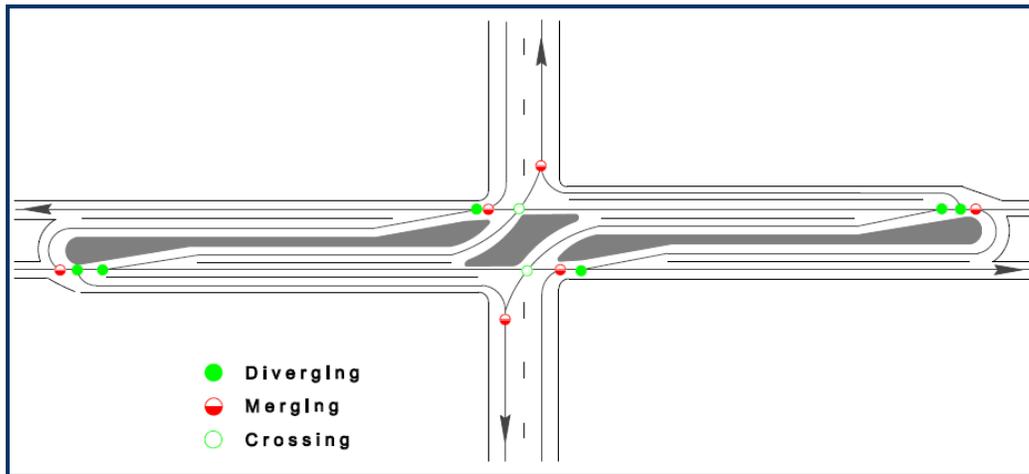


Figure 3: Superstreet Conflict Points



**Economical Alternative**

Because a superstreet can typically be constructed within the existing rights-of-way, it can be an economical alternative to widening of the main line or construction of turn lanes. Also, when roadway capacity is at its limit or main line progression is a major consideration, superstreets can be an alternative to the construction of grade separated interchanges. Superstreets also provide access to the main line for adjacent property owners while maintaining control of access along the corridor, reducing impact considerations paid to nearby businesses.

**Superstreet Case Study**

The first fully-signalized superstreets in the nation were designed and constructed along US 17 in Leland, North Carolina. Several developments were planned along US 17, which NCDOT has designated as a “Strategic Corridor” with mainline progression being a priority. In an effort to provide access to these developments while preserving corridor operations, NCDOT required the developers to construct superstreets. The project involved the design, construction, and coordinated signal system timing of three superstreet intersections.

Because this innovative project was the first of its kind, the design team had no design standards to follow and public involvement was critical. The team developed unique signage and pavement markings for the project. In order to provide adequate direction to motorists along the corridor the team included an abundance of signs and markings. After construction was complete, the team worked with NCDOT officials, to make modifications to the design to reduce the amount of signage and prevent “information overload.” NCDOT has now developed standards for superstreet signage based partly on the lessons learned from the Leland superstreet project.

NCDOT has implemented both signalized and unsignalized superstreet designs throughout the state with more locations planned. The Texas Department of Transportation is planning on implementing a superstreet design in San Antonio and the Arizona and Ohio Departments of Transportation are investigating superstreet implementation in their jurisdictions.



**Stantec**

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**Lori Mahany, PE**

## SCSU ITE Student Chapter News *Yuanchang Xie*



**Yuanchang Xie, PhD**  
**SCSU ITE Student**  
**Chapter Advisor**

On Thursday October 1, 2009, the Oregon Department of Transportation (ODOT) visited South Carolina State University and conducted several class visits and an information session on career opportunities within ODOT. Over 100 students from the College of Engineering, Math & Science participated in the information session and class visits. Mr. Edward Starks, a graduate student in the Master of Science in Transportation program and also a SCSUITE student chapter member, interned with ODO during the summer 2009. At the ODOT reception, Mr. Starks was awarded a Book scholarship for his excellent work during the summer.

On October 8, 2009, a group of SCSUITE student chapter members attended the SCDOT Vendor's Day. They were very excited and enjoyed the trip. The student chapter is also planning for several other field trips. Among them are the trips to the UPS distribution center in Orangeburg and a weigh station on Interstate 26.



From left to right: Edward Starks, Sherry Michael (SCSU Career Center), Liz Hunt (ODOT), and Blake Dye (ODOT).



Mr. Blake Dye presents Edward Starks with a Book scholarship



## Citadel ITE Student Chapter News *William J. Davis*

Student Membership – As of October 2009 there are 26 ITE student members at The Citadel, including 13 cadets and 13 evening school students, all of whom are undergraduates. There are a total of 21 new members for the 2009-2010 academic year who are learning about the field through a junior level course in transportation engineering. Seniors are working to complete the Isle of Palms Marina project. Several graduating seniors are interesting in finding jobs in transportation engineering and two are considering pursuing transportation graduate degrees.

2009 ARTBA National Convention – 30 Citadel students attended the American Road & Transportation Builders Association (ARTBA) National Convention held October 6-9 at Charleston Place Hotel. The program theme was “Leading in a Tough Market.” In addition to attending the keynote address and awards banquet, students participated in the Contractors Division meeting in which a multitude of issues were discussed including; work zone safety, project labor agreements for stimulus funded construction, and innovative bridge fabrication methods on US 17 Washington Bypass in Beaufort County, NC. Citadel alumnus Charles Potts served as Chair of the convention and Lt. General John W. Rosa, President of The Citadel, provided the keynote address on “Leadership Under Adversity.”



**William J. Davis, PE, PhD**  
**Citadel ITE Student Chapter Advisor**



Three tables of cadets enjoyed a 5-star meal at Charleston Place Hotel during the keynote address given by Lt. General John Rosa, President of The Citadel.



Students enjoyed talking with ARTBA Convention Chair, Mr. Charles Potts, 1966 graduate of The Citadel and CEO of Heritage Construction & Materials based in Indianapolis, IN.



## News from the Clemson Student Chapter Wayne Sarasua



**Wayne Sarasua, PhD, PE**  
**Clemson University**  
**ITE Student Chapter**  
**Advisor**

The Clemson ITE student chapter has had a busy fall. Our membership drive has added several new members and we have a new slate of officers. The new officers are Lee Tupper, President; Kat Bartman Vice-President, and Sara Familiar, Treasurer. After our kick-off meeting in early September, a social was held on Lake Hartwell. Several students tried water skiing with mixed success but everyone had fun. After a cookout, the evening ended with roasting marshmallows and enjoying s'mores.

In October, the chapter found the time to schedule our adopt-a-river program. We enjoyed a trip down a 5 mile section on the Saluda River in canoes. A pick-up truck load of garbage was removed from the river. The weather was great and no students fell into the river. The only mishap happened during the drive to the river. A tie down snapped and a canoe fell off of the trailer onto the shoulder of U.S. 123. Luckily, no car crashes were caused and there was minimal damage to the canoe. Our chapter would like to thank Boy Scouts Troop 235 for the use of the their canoes and trailer.

Clemson ITE recently participated in homecoming activities during Halloween weekend. The Chapter sponsored a table of games that were visited by trick-or-treating area children. Kids enjoyed racing hot wheels and receiving treats. Kat Bartman dressed up as a traffic signal.

Other fall activities include doing ride checks on Clemson Area Transit busses and planning for upcoming pedestrian counts in downtown Greenville. The chapter is also involved in a fund raiser assisting the athletic department with traffic management before football games.

The chapter looks forward to socializing with SCSITE at the Christmas party in Columbia. Also, planning is underway for the annual trip to TRB in January.



## USC Student Chapter Back to Business *Megan Hyman*

A meeting to jump start the University of South Carolina chapter of ITE was held on October 14, 2009. Mike Ridgeway of SRS Engineering spoke to those in attendance about ITE, how he is involved in ITE both locally and with the Southern Region, and the opportunities we would receive by joining ITE. Dr. Nathan Huynh has agreed to be our chapter advisor. Officers were elected and it was decided that a monthly meeting would be held. Officers are:

President: Megan Hyman

Co-Vice Presidents: Greg Moore and Adam Payne

Secretary/Treasurer: Beth Quattlebaum



Nathan Huynh, PhD  
University of South Carolina  
ITE Student Chapter  
Advisor



From left to right, Secretary/Treasurer: Beth Quattlebaum, President: Megan Hyman, Co-Vice Presidents: Greg Moore and Adam Payne.





The Technology



## The New Standard For Vehicle Detection

Sensys™ Networks is the world's leading provider of wireless traffic detection and integrated traffic data systems, providing a universal platform that delivers the most dependable, flexible, and cost-effective solution on the market.

### Accurate Vehicle Detection

The Sensys™ Wireless Vehicle Detection System uses pavement-mounted magnetic sensors to detect the presence and movement of vehicles. The magneto-resistive sensors are wireless, transmitting their detection data in real-time via low-power radio technology to a nearby access point that then relays the data to one or more local or remote traffic management controllers and systems.

The recommended distance between sensors depends on the range of expected speeds to be measured: for typical freeway applications, a separation of approx. 20 to 24 feet / 6.1 to 7.3 meters is recommended; for typical arterial applications, a separation of 10 to 12 feet / 3.1 to 3.7 meters is preferred.

### Fast, Easy Installation

Installation of each Sensys™ wireless sensor takes less than 10 minutes. For a flush-mount sensor, installation simply requires boring a 4-inch / 10-cm diameter hole approximately 2 ¼ inches / 5.7 cm deep at the desired sensing location, placing the sensor into the hole so that it is properly aligned with the direction of traffic, and sealing the hole with fast-drying epoxy. A hammer drill is recommended, but a core drill can alternatively be used. No lead-in cabling or long saw cuts are required, and the circular pavement hole produces the least amount of damage and stress to the roadway.

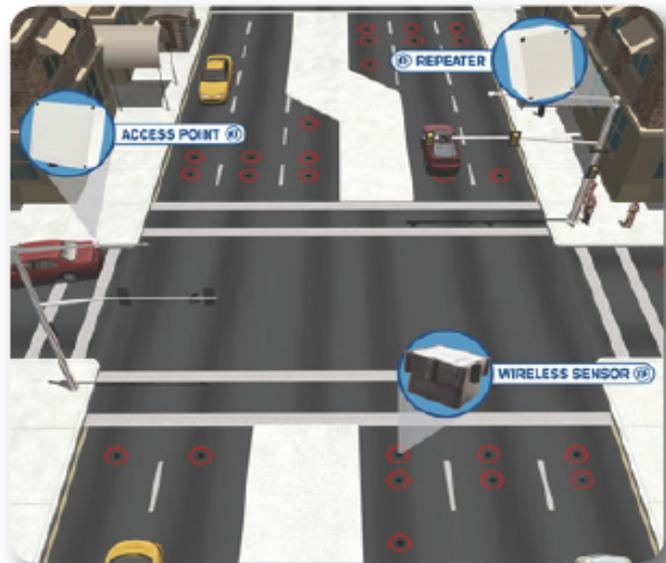
Installation of a surface-mount Sensys™ wireless sensor is similarly fast and easy – just orient and epoxy the sensor to its desired position on the roadway. Beaufort County, SC Traffic Engineering is set to begin the installation on several locations along a strategic corridor in the coming months; please contact them to find out information regarding their planned installation if you'd like to see the system in operation or check out the installation and assist.

### Advanced Magnetometer-Based Vehicle Detection

The state-of-the-art magneto-resistive sensing devices employed in each Sensys™ wireless sensor measure the zone's x-, y-, and z-axis components of the Earth's magnetic field at a 128 Hz sampling rate. As vehicles come within range, changes in the x, y, or z axes of the measured magnetic field become apparent. When no vehicles are present, each sensor continually measures the background magnetic field to estimate a reference. Each sensor automatically self-calibrates to the specific installation site and to any long-term variations of the local magnetic field by allowing this reference value to change over time.

To detect the passage and presence of vehicles, Detect and Undetect thresholds are configurable relative to the reference value. An ON event occurs when the absolute value of the measured magnetic field exceeds the Detect threshold, and an OFF event occurs when the value returns below the Undetect threshold. These detection events are then communicated to the Sensys™ access point for relay and further processing.

The Sensys™ Wireless Vehicle Detection System can be used in all traffic detection applications, including bicycle detection, and is deployed in more than 10 countries and 30 U.S. States. The system supports both 170/2070 and NEMA TS1 and TS2 traffic controllers. For demo videos and more information, go to <http://www.sensysnetworks.com/intersection>



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## ROADWAY DESIGN PROJECT MANAGER—LPA Group, Columbia, SC

### Position Description:

We currently have an opening for a Project Manager to oversee roadway design projects in our Columbia, South Carolina office. The position is responsible for managing roadway design projects for the SCDOT and other county and municipal clients. Duties include team development, project delivery, administrative supervision, technical guidance and advice.

### Qualifications:

Registered PE and approximately 8 years of experience in roadway design, with a minimum of 2 years in project management required. Background in traffic control, pavement marking, and signing design a plus. General knowledge of Microstation and GEOPAK needed.



THE LPA GROUP INCORPORATED has an outstanding reputation in our industry. We are ranked by *Engineering News Record* in the top 20 in Airport Design Services and in the top 50 in Transportation Design Firms in the U.S. Consider the possibilities of sharing in our success.

Apply online at <http://www.lpagroup.com/index.cfm>

## CIVIL CONSTRUCTION ENGINEER—URS Washington Division, Aiken, SC

### Minimum Experience/Qualifications/Requirements:

BS degree in civil engineering with 5+ years experience or Associates degree with 7+ years experience or HS diploma with 10+ years experience in the civil arena. Proficient in computer base work planning, i.e. Passport or equivalent. Proficient in concrete testing. Proficient in rigging and critical lift calculations.

Due to the nature of this position, US Citizenship is required.

### Job Description :

We believe that success is ultimately determined by what you help your customers achieve. A company should be measured by what it accomplishes, not by what it promises. Creating an environment that encourages talented individuals to collaborate and solve complex problems attracts the best people. The more you can explore the diversity and potential of your people, capabilities and geographies, the more solutions you are equipped to provide. We believe that every opportunity comes with a collective responsibility to perform. Being profitable should be a result of doing what you do safely, ethically and better than anyone else. And we believe that the potential for growth is limitless. It is why we come to work. We are URS Washington Division.

The Savannah River Site in Aiken, South Carolina is seeking a Civil Construction Engineer.



### Responsibilities:

Provide civil design constructability reviews/support. Perform field material take-off. Develop work execution plans, Work Packages. Provide work execution field coverage, inspection and support. Develop turnover packages and support turnover activities. Perform rigging calculations and develop critical lift plans.

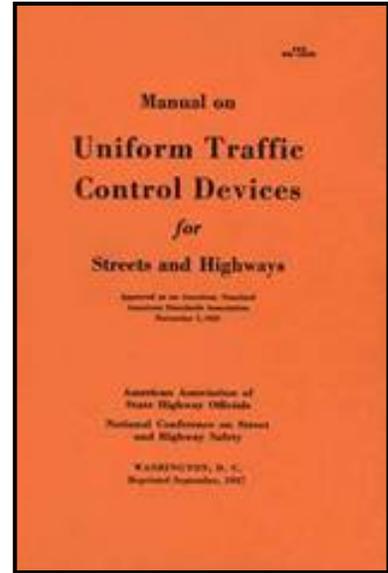
### Other Information:

Capable of climbing and spending extended periods of time in the field. Capable of obtaining qualifications to work in radiation/contamination areas.



## Transportation History

- 1- What year were the first traffic signals installed?
- 2- What year was the first recorded auto accident in the United States, and in what city?
- 3- What year was the first traffic fatality?
- 4- When was the first centerline pavement marking installed?
- 5- What year was the first stop sign installed, and where?
- 6- What year was the first MUTCD published?
- 7- What year did the stop sign color change from yellow to red?



Alan S. Davis, EIT



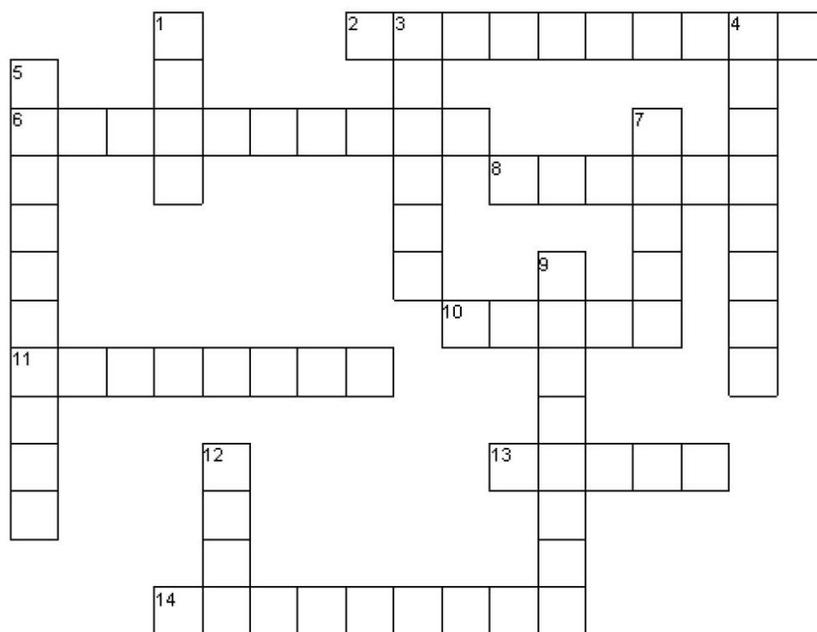
**Be the first to answer the questions correctly and you will be recognized in the spring newsletter and receive a \$5 discount at the Christmas party. Email your answer to [davisas@scdot.org](mailto:davisas@scdot.org).**

## Last Issue's Challenge

**Congratulations to Brent Dillon for solving the last edition's puzzle.**



**Brent Dillon, PE, PTOE**



www.CrosswordWriters.com

### ANSWERS

- 1 – Fine
- 10- drive
- 11 – overtake
- 13 – speed
- 3 – clutch
- 12 – lane
- 2 – accelerate
- 8 – petrol
- 6 – roundabout
- 14 – headlight
- 7 – brake
- 4 - tailgate
- 5 – crossroads
- 9 – signpost

Across	Down
2 increase speed	1 money paid as a penalty
6 circular turning point	3 transmission device in vehicles
8 fuel for vehicles	4 long line of traffic
10 operate a vehicle	5 intersection
11 go past another vehicle	7 slow down
13 rapidity	9 sign indication directions
14 light in front of vehicle	12 division of road for traffic



## *2009 Section Officers*

### President

**Jae H. Mattox, III, PE**

Program Manager  
SCDOT– Preconstruction  
955 Park Street  
Columbia, SC 29201  
Office: 803.737.1805  
mattoxJH@scdot.org

### Vice President

**Bryan D. Webb, PE**

Traffic Engineer  
Davis & Floyd  
P.O. Box 61599  
Charleston, SC 29419  
Office: 843.554.8602  
Bwebb@davisfloyd.com

### Secretary/Treasurer

**Jeff Ingham, PE**

Traffic Engineer  
Thomas & Hutton  
935 Houston Northcutt Blvd  
Mt. Pleasant, SC 29465  
Phone: 843-849-0200  
ingham.j@thomas-hutton.com

### Past President

**Hesha Gamble, PE, PTOE**

Infrastructure Engineer  
Greenville County  
301 University Ridge Suite 3800  
Greenville, SC 29601  
Office: 864.467.4612  
HGamble@greenvillecounty.org

### Section Representative

**W. Jeff Davis, PhD, PE**

Professor  
The Citadel—Civil Engineering  
171 Moultrie Street  
Charleston, SC 29409  
Phone: 843-953-7687  
jeff.davis@citadel.edu

### Affiliate Director

**Don Turner, PE**

State Traffic Safety and  
Design Engineer  
SCDOT  
955 Park Street  
Columbia, SC 29201  
Phone: 803.737.1455  
turnerd@scdot.org

## *2009 Committee Chairs*

**Technical:** Sunny Nandagiri, AECOM, sreekanth.nandagiri@earthtech.com

**Membership:** Carol Jones, SCDOT, jonesvc@scdot.org

**Nominations/Awards:** Hesha Gamble, Greenville County, HGamble@greenvillecounty.org

**Scholarship:** Gaye Sprague, Sprague and Sprague, gayerprague@cs.com

**Social:** Don Turner, SCDOT, turnerd@scdot.org

**Clemson Student Chapter Advisor:** Wayne Sarasua, sarasua@clemson.edu

**The Citadel Student Chapter Advisor:** Jeff Davis, jeff.davis@citadel.edu

**Newsletter:** Jae Mattox, SCDOT, mattoxjh@scdot.org

## About ITE

The Institute of Transportation Engineers is an international educational and scientific association of transportation professionals who are responsible for meeting mobility and safety needs. ITE facilitates the application of technology and scientific principles to research, planning, functional design, implementation, operation, policy development and management for any mode of transportation. Through its products and services, ITE promotes professional development of its members, supports and encourages education, stimulates research, develops public awareness programs and serves as a conduit for the exchange of professional information.

## JOIN SCSITE TODAY!!

Membership forms are available on our website. Dues are \$20.00 yearly.

**Update your Information on the website. Your username is your last name followed by your first initial and your default password is "traffic". Make sure you capitalize the first letter of your last name and first initial to login.**

We are on the web at  
[www.scs-ite.org](http://www.scs-ite.org)

## Newsletter Information

"DRIVER" is the official publication of the South Carolina Section Institute of Transportation Engineers, the professional society for transportation engineers in South Carolina. It is affiliated with Southern District 5 ITE, as well as the International ITE.

Any suggestions on format or content are welcome. News on members, the section, or the profession should be submitted to Jae Mattox at [mattoxjh@scdot.org](mailto:mattoxjh@scdot.org).



## 2009 T-SHIRT/POLO SHIRT ORDER FORM

(Order Deadline: September 11, 2009)

TYPE	SIZE/QUANTITY	UNIT COST	TOTAL COST
<input type="checkbox"/> Women's T-Shirt		\$15.00	
<input type="checkbox"/> Women's Polo		\$25.00	
<input type="checkbox"/> Women's Performance Polo		\$35.00	
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<input type="checkbox"/> Men's Performance Polo		\$35.00	
<b>TOTAL AMOUNT DUE</b>			

POLO COLOR COMBINATIONS	T-SHIRT COLOR COMBINATIONS
<input type="checkbox"/> White w/red logo	<input type="checkbox"/> Red w/white logo
<input type="checkbox"/> White w/royal blue logo	<input type="checkbox"/> Gray w/red logo
<input type="checkbox"/> Navy w/white logo	
<input type="checkbox"/> Black w/white logo	
<input type="checkbox"/> Red w/blue logo	
<input type="checkbox"/> Royal blue w/white logo	

***PLEASE SPECIFY SIZE- Women's sizes range from S-XL; Men's sizes range from S-3X, an additional \$2 charge applies to Men's 2X-3X sizes***

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**Payment Options (select one):**

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**All orders will be available for pick-up at the SCSITE Vendor Day on October 8, 2009.**

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**The screen-print t-shirts are red with a white logo, or gray with a red logo. All t-shirts are \$15, and are available in sizes S-3X.**