

NC STATE UNIVERSITY
COLLEGE OF ENGINEERING

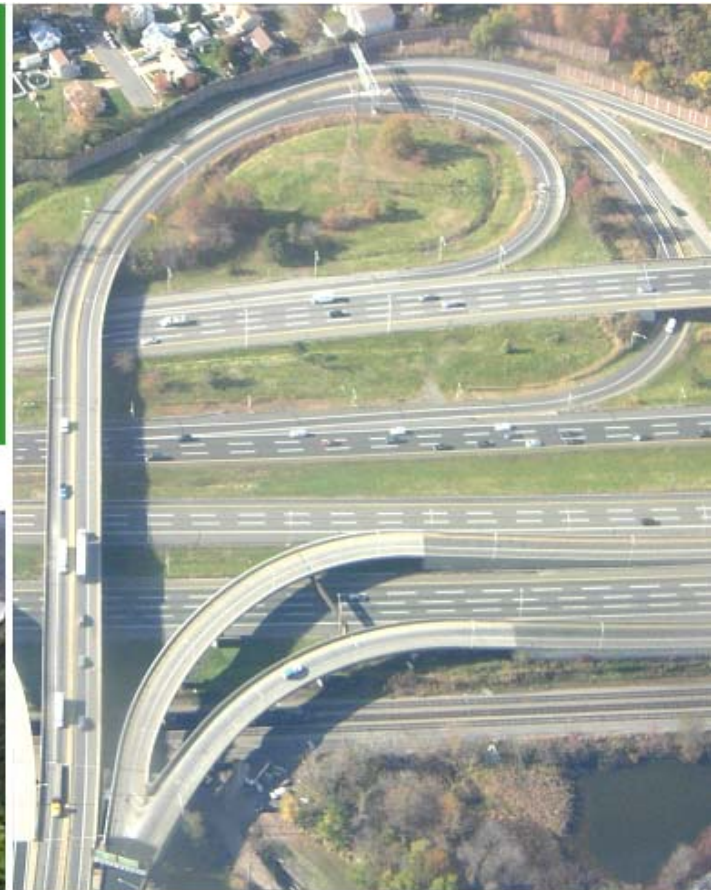
March
2011

CCEE NEWS

Civil, Construction, and Environmental Engineering
www.ce.ncsu.edu



NCSU Presents 50 Papers at TRB
Hummer on ABC News
Spotlight: Water Resources &
Environmental Engineering
Infrastructure, Water & Energy
Students & Chapters Win Awards
ASCE Chapter to Host Conference





Department Head's Message



Welcome to the first newsletter of 2011. The Spring semester is in full swing. Let's start with the good news. Drs. **Detlef Knappe** and **Abhinav Gupta** were recognized as outstanding teachers by the College of Engineering. They join Drs. **Roy Borden, Mo Gabr, David Johnston, Paul Khosla, Vernon Matzen, Jim**

Nau, and **Akhtar Tayebali** in the NC State Academy of Outstanding Teachers. Dr. **Joe DeCarolis** has received a prestigious NSF CAREER AWARD for his research and teaching in energy economy optimization modeling. The student chapter of the American Concrete Institute has received an **ACI Excellent University** award from the national institute. I am also personally pleased that **Annette Maynard**, my Administrative Assistant, has received the December 2010 Pride of the Wolfpack Award in recognition of her tireless yet cheerful efforts on behalf of the department.

Next, I am thrilled to announce that three outstanding candidates will be joining our faculty next year. Dr. **Edward J. Jaselskis** will serve as the inaugural Jimmy D. Clark Distinguished Professor in Construction Engineering and Management, beginning June 1. Dr. Jaselskis comes to NC State from Iowa State University, and he conducts research on construction project success, innovative construction technologies and engineering public policy. Dr. **Emily Zechman**, currently an assistant professor at Texas A&M, has expertise in sustainable and resilient built and natural systems. **Mohammad Pour-Ghaz** is completing his doctorate at Purdue University and has expertise in cementitious materials. Mohammad works on structural health monitoring. We will introduce all of our new faculty in more detail in the fall.

On a more sobering topic, each department in the College of Engineering has been asked to prepare for a 15% budget reduction scenario for 2011/12. At this time, it is a planning exercise, but it is apparent that we will be forced to absorb a budget cut. All that is in question is the severity. We are planning to the extent possible and working to minimize the impact on our mission, but it is not realistic for our department to absorb a severe budget reduction

without adverse effects. In addition to the short-term impacts on our students, faculty and staff, I fear that a severe budget cut could set us back ten to twenty years in our march to increasing excellence. The simplest solution is a stronger economy which will benefit everyone.

In closing, I want to focus on the positive manner in which our education, research, and outreach work impacts society:

- ◆ The **Engineers Without Borders Student Chapter** is providing potable drinking water to a town in Sierra Leone.
- ◆ Dr. **Joe Hummer** has received media attention throughout the U.S. for his work on safer strategies for making left turns.
- ◆ Dr. **Francis de los Reyes** is interested in the development of low technology wastewater treatment in underdeveloped regions in NC and outside the United States.
- ◆ Dr. **Billy Edge** is leading an effort to develop the technology required to harness wave energy with potential for more renewable energy, economic opportunity and jobs for the State.
- ◆ Dr. **Min Liu** and Dr. **Mike Leming** are working with the Raleigh-based firm **McDonald York** to implement state-of-the-art construction management practices.
- ◆ The advice of Dr. **Chris Frey** is widely sought by the U.S. Environmental Protection Agency and others on national and international science and policy issues pertaining to air pollution and risk management.

So much of what we do is ultimately aimed at improving our infrastructure through reduced costs, more efficient energy use, reduced emissions and longer lasting materials. As engineers, our service and beneficial impacts are all too often a well kept secret, and we will try to highlight some of what we do through the newsletter.

Thanks again for your interest and continued support; it means a lot to us.

Morton A. Barlaz
Professor & Head

About the cover: The cover illustrates several themes of this issue of *CCEE News*. The complex interchange on the New Jersey Turnpike represents transportation (see pages 3-5), energy use and emissions (see pages 13-14), and infrastructure (see page 15). The water basin, power plant, and wastewater treatment plant represent aspects of water resources and environmental engineering (see pages 13-14), with the latter two also illustrative of infrastructure, energy, and water reuse (see pages 15-16).



CCEE Has Broad Impact at Transportation Research Board Annual Meeting

The history of the Transportation Research Board (TRB) traces back to President Lincoln's establishment of the National Academy of Sciences in 1863. As a division of the National Research Council (NRC), the stated mission of TRB is "to provide leadership in transportation innovation and progress through research and information exchange, conducted within a setting that is objective, interdisciplinary, and multimodal." The cornerstone of this mission is the TRB Annual Meeting held each January in Washington, DC. The meeting is massive in scale.

This year's meeting was held on January 23-27 with 10,900 participants from around the world, and over 4,000 presentations in hundreds of sessions and workshops. Although it would be easy to get lost in an event of this magnitude, CCEE was front and center, significantly contributing to TRB's mission of leading transportation innovation and progress. This participation was broad as well as deep, including students, alumni and supporters, and faculty.

Twenty-seven current members of the department's **student chapter** of the **Institute of Transportation Engineers** (ITE) made the trip. Thanks to support from the Transportation Founder's Fund and the Southeastern Transportation Center (STC) and the chapter members' own fundraising efforts, the students were able to attend at very little personal cost. This was no vacation with all the students managing full schedules. Five NCSU students presented posters at the STC reception's student poster competition on Sunday, January 23, with master's student **Hassan Swidan** garnering second place. ITE events targeted for student members included a luncheon on Monday, January 24, featuring distinguished speaker Steve Elkins of the Bloomington, Minnesota City Council. A reception was also held on Monday at ITE Headquarters, providing an opportunity for students to meet International ITE President, Robert Wunderlich. Chapter president **Zachary Bugg** oversaw the planning and execution of the student trip and made sure the chapter was well-represented at these and other events.

CCEE students also had strong representation in TRB podium and poster sessions. Selection to present in these sessions is based on rigorous peer review of submitted research papers. The success of CCEE students to participate in presentation sessions is a testament to the quality of our students and the quality and importance of the research they conduct. In total, nearly fifty papers were presented by researchers affiliated with the department with nearly half of these co-authored by students.

NCSU students, staff, and faculty delivered presentations on topics such as transportation and air pollution, pavement damage from overweight vehicles, assessment of the NC ferry system, highway operations measurement and modeling, travel demand modeling, pavement design, signal control strategies, traveler information strategies, pedestrian safety, bridge foundations, livability and sustainability, locomotive emissions, work-zone impacts on freeways, stream-flow alterations from infrastructure and climate change, emissions from hybrid electric vehicles, micro-simulation of roundabouts, and others.

Dr. **Nagui Rouphail** of CCEE and ITRE Director, and Dr. **Bastian Schroeder** of ITRE, received the **TRB D. Grant Mickle Award** for their paper on "Mixed-Priority Pedestrian Delay Models at Single-Lane Roundabouts." The award is presented annually to the authors of the best national paper submitted to TRB in the area of operation, safety, and maintenance. Dr. **Joe Hummer** and co-authors received national media attention for their TRB paper on "Operational Effects of Signalized Superstreets in North Carolina," including coverage on ABC World News with Diane Sawyer ([see companion story on 5](#)).

In addition to conducting and mentoring research presented at TRB, CCEE faculty serve as active members of numerous standing technical committees. These committees provide leadership in focused research areas by preparing research needs statements, publishing research circulars, publishing calls for papers and reviewing paper submissions, and conducting research workshops.

(continued on next page)



TRB Annual Meeting (cont'd)

The CCEE Department and the Institute for Transportation Research and Education hosted a reception for alumni, friends, and supporters on Monday, January 24 from 5:30 to 7:30 pm in the Marriott Wardman Tower Lobby.

The TRB reception serves as a way for us to say thank you, strengthen existing collaborations, create new collaborative opportunities, and meet new potential research sponsors. The reception also increases the national and international visibility of NC State University and its transportation-related programs. The

Department and ITRE renewed this annual tradition in 2007, but the difficult economic conditions forced a suspension of the reception in 2010. With the help of our generous sponsors, however, we were able to again host this important event this year.



Participants and Guest enjoying the 2011 TRB Reception



C. Michael Walton
(MCE '69; PhD '71)

The 2011 reception sponsors were **McKim & Creed, Econolite, HNTB, Longistics, Moffatt & Nichol, Mulkey, Open Roads, Parsons Brinkerhoff, Ramey Kemp Associates, Stantec, Traffax, Thomas Built Buses, VHB, Kittelson & Associates, RK&K, R.M. Clarke Consulting, Troxler, UNC Charlotte, Kimley-Horn and Associates, and TransTech Management.**

Over 100 guests joined current faculty, staff, and students at this year's reception. Event sponsors were represented along with many guests from the North Carolina Department of Transportation (NCDOT) and the Federal Highway Administration. Among the distinguished guests were department alumnus Dr. **C. Michael Walton**, the Ernest H. Cockrell Centennial Chair of Engineering at the University of Texas at Austin and Chair of the TRB Executive Committee's Subcommittee for NRC Oversight, and the Honorable **Gene Conti**, North Carolina Secretary of Transportation and former Assistant Secretary of Transportation for the U.S. Department of Transportation.



Gene Conti, NC Secretary
of Transportation

The Transportation Founders Found (TFF) will host a keynote speaker and panel discussion this spring on the role of transportation as an enabler of economic development. TFF is an outreach activity of the Institute for Transportation Research and Education (ITRE) at NCSU and the Department of Civil, Construction, and Environmental Engineering. The 2011 edition of the TFF Speakers Series will take place on **Thursday, April 14** from 5:30 to 7:00 PM in the Monteith Research Center, Room 136, located on NCSU's Centennial Campus. The event is free and open to the public.

The keynote speaker will be Ms. **Janet F. Kavinoky**, Director of Transportation Infrastructure at the U.S. Chamber of Commerce. The keynote speech will be followed by a panel discussion featuring N.C. Lieutenant Governor **Walter Dalton**, N.C. Secretary of Transportation **Gene A. Conti, Jr.**, and **Joseph Stephens**, Director of FedEx's air cargo hub at the Piedmont Triad International Airport. The panel will be moderated by Dr. **George F. List**, professor in CCEE.

TFF awards graduate fellowships annually through the CCEE Department. TFF is the only transportation-dedicated student scholarship program at NCSU. For more information on the event or membership in TFF, please contact **Christie Vann** of ITRE at 919-515-8896 or cdvann@ncsu.edu.



No Left Turn: 'Superstreet' Traffic Design Improves Travel Time, Safety



Joe Hummer

The so-called "superstreet" traffic design results in significantly faster travel times and leads to a drastic reduction in automobile collisions and injuries, according to North Carolina State University researchers who have conducted the largest-ever study of superstreets and their impacts. Superstreets are thoroughfares where the left-hand turns from side streets are re-routed, as is traffic from side streets that needs to cross the thoroughfare. In both instances, drivers are first required to make a right turn and then make a U-turn around a broad median. While this may seem time-consuming, the study shows that it actually results in a significant time savings since drivers are not stuck waiting to make left-hand turns or for traffic from cross-streets to go across the thoroughfare. Locally, the nearest superstreet is on US 15-501 between Durham and Chapel Hill.

"The study shows a 20 percent overall reduction in travel time compared to similar intersections that use conventional traffic designs," says Dr. **Joe Hummer**, professor in CCEE and one of the researchers who conducted the study. "We also found that superstreet intersections experience an average of 46% fewer reported automobile collisions - and 63% fewer collisions that result in personal injury."

A paper on the travel time research was presented Jan. 24 at the Transportation Research Board Annual Meeting in Washington, D.C. The paper is co-authored by Hummer, former NC State graduate students **Rebecca Haley** and **Sarah Ott**, and three researchers from NC State's Institute for Transportation Research and Education: **Robert Foyle**, associate director; **Christopher Cunningham**, senior research associate; and **Bastian Schroeder**, research associate.



Superstreet on US 15-501 in Durham, NC

Dr. Hummer was featured on **ABC World News** with **Diane Sawyer** on January 14 in a segment by ABC reporter **Jeremy Hubbard**, including an on-camera interview. ABC News emphasized the reduction in travel time, collisions, and personal injuries associated with turning right instead of left. ABC News also reported that UPS has implemented a fuel saving policy to reduce the number of left turns for its fleet. Additional information can be found at: abcnews.go.com/WNT/video/living-left-turns-safer-cheaper-travel-driving-faster-fuel-efficient-12620239

Annette Maynard Receives "Pride of the Wolfpack Award"

Annette Maynard, Administrative Assistant to the CCEE Department Head, received the "Pride of the Wolfpack Award" for the month of December. Ms. Maynard has worked in the department for over 31 years. She was nominated by several CCEE faculty members for the following reasons:

"Our ABET accreditation visit took place this fall, and Annette played a key role in organizing all of the documentation for three separate degrees (CE, ENE, CEM). She is very deserving of this recognition."

"Annette is one of the best. Besides being very efficient and helpful, she never gets upset and rarely even gets ruffled even in stressful situations. What really stands out, though, is her sunny disposition."

"Annette played a major role in the recent accreditation visit for our three undergraduate degree programs. This visit was a culmination of a six year effort, through which she provided excellent administrative support. For her effort in the ABET process, we owe her a great deal of gratitude, and I cannot honestly think of any one more deserving of the Pride of the WolfPack Award than Annette Maynard."



CCEE Professors Gupta and Knappe Receive Outstanding Teacher Awards

CCEE Professors **Abhinav Gupta** and **Detlef Knappe** have both received the **Outstanding Teacher Award** based on review of nominations by the College of Engineering Teaching and Advising Awards Committee. The award recognizes excellence in teaching at all levels. Recognition is given at commencement, the Honors Baccalaureate and Celebration of Academic Excellence, and the Celebration of Teaching and Learning. Recipients become members of the Academy of Outstanding Teachers for as long as they are NC State faculty. Other CCEE faculty in the Academy are Drs. **Roy Borden**, **Mo Gabr**, **David Johnston**, **Paul Khosla**, **Vernon Matzen**, **Jim Nau**, and **Akhtar Tayebali**.



Abhinav Gupta

In addition to being evaluated by students as excellent teachers, Gupta and Knappe have each made significant programmatic contributions to the CCEE teaching mission. Dr. **Gupta** has directed the undergraduate CE 324 laboratory on Structural Behavior and Measurements, and has significantly revised three graduate courses in structural dynamics (CE 527), advanced structural dynamics (CE 723), and probabilistic methods in structural engineering (CE 724). He has mentored NC State undergraduate Park Scholars, some of whom have obtained National Science Foundation (NSF) graduate fellowships. Dr. Gupta has participated in advanced teaching workshops and incorporated modern tools and methods, such as MATLAB and Webassign, into teaching. He received a Courses, Curriculum, and Laboratory Improvement (CCLI) grant from NSF to incorporate laboratory visual demonstrations into class.

Dr. **Knappe** has substantially revised or developed several new courses at the undergraduate and graduate levels, including undergraduate courses in environmental chemistry and microbiology (CE 378), fundamentals of environmental engineering (CE 373), environmental engineering laboratory (CE 374), and water and wastewater treatment (CE 484), and graduate courses in physical-chemical processes (CE 771) and environmental behavior of organic contaminants (CE 796C). He chairs the department's Education and Technology Fee (ETF) committee and facilitates the distribution of funds to improve teaching facilities and resources. Dr. Knappe has been instrumental in coordinating environmental engineering process-related graduate courses pertaining to water and wastewater treatment. He has mentored undergraduate and graduate students involved with Engineers Without Borders on water projects in Bolivia.



Detlef Knappe

(see related article on page 10)

Share Your News!

Keeping your contact information current enables us to keep you up to date on events in the department and elsewhere.

Have a professional or personal update? We would like to hear from you! Please send us your latest news (e.g., career accomplishments, awards, recognitions, marriage, births, retirement) so we may share your news in future issues. Send the following information and/or news stories to: **lora_bremer@ncsu.edu**

- ◆ Name, Mailing & Email Address
- ◆ Work & Cell Phone Numbers
- ◆ Company Name & Address
- ◆ Degree, Major & Class Year



DeCarolis Receives CAREER Award



Dr. Joseph DeCarolis, Assistant Professor, has received the prestigious **Faculty Early Career Development (CAREER) Award** from the **National Science Foundation (NSF)**. This award will provide \$400,795 in funding over five years to support his research project, ***Modeling for Insights with an Open Source Energy Economy Optimization Model***. These awards are provided by NSF to support faculty who exemplify the role of teacher-scholar through outstanding research, excellent education, and the integration of education and research within their organizations.

DeCarolis's research involves the development and application of energy economy optimization (EEO) models, which are computer models that enable optimization-based analysis of energy systems over multiple decades. Such models allow analysts to quantify how particular actions or events (e.g., oil price spikes or climate policy implementation) may affect economic and environmental outcomes of interest (e.g., gasoline prices or greenhouse gas emissions).

The project has four main goals:

- ♦ institute a transparent process for EEO model development and application;
- ♦ generate new insights into energy system development at the national and global scale through the rigorous application of uncertainty analysis;
- ♦ involve analysts, decision-makers, and students in the modeling effort through participation in a joint cognitive process of discovery; and
- ♦ use EEO models as a tool to teach students ranging from high school to graduate school to think critically about energy systems and environmental sustainability from a systems perspective.

Prior to joining the CCEE Department in 2008, DeCarolis worked at the U.S. Environmental Protection Agency as an Environmental Scientist from 2004-2008 and earned a doctorate in Engineering and Public Policy from Carnegie Mellon University in 2004.

CCEE Logo Competition

The Department is undergoing a major redesign of its website. The new version will go live this spring. As part of the redesign, we would also like to develop a new **Department Logo** that better symbolizes the research and teaching activities within the department. Our current logo is a crest, featured in the newsletter banner. An effective logo design will require input from people familiar with our department. We need your help to brainstorm logo ideas!

As a reminder, the department has **three** undergraduate degrees: **Civil Engineering, Construction Engineering and Management, and Environmental Engineering**, and **six** areas of specialization: **Computing and Systems, Construction Engineering and Management, Geotechnical/Geoenvironmental Engineering, Structural Engineering and Mechanics, Transportation Systems and Materials, and Water Resources, Coastal and Environmental Engineering**.

A logo cannot convey the full scope of the department's activities, but should provide an indication of what we do. We will accept any entry for consideration, from logos created with professional software packages to scanned sketches or even a descriptive paragraph. Do not worry about your artistic skills, as we have a graphic designer in the College of Engineering who is willing to help us develop and refine the logo design. Submit entries no later than March 31st to Dr. Joe DeCarolis (jdecarolis@ncsu.edu). The winner will receive a small prize and be recognized on the new website.



Honors, Awards, and Events

- ♦ **Mohammed (Mo) A. Gabr**, Professor, was selected as the College of Engineering recipient of the 2011 **Board of Governors Award for Excellence in Teaching**. This award reflects the care, passion, and excellence that he brings to the classroom. As the nominee from the College of Engineering, Professor Gabr will be recognized at the College of Engineering Spring Awards Ceremony.
- ♦ **Jeremy Kress**, MS graduate student working with Dr. **T. Matthew Evans**, was awarded a USUCGER Student Travel Grant to present a paper at the **GeoFrontiers 11** conference, March 12-16 in Dallas, TX. USUCGER is the United States Universities Council on Geotechnical Education and Research. His paper, "Discrete Simulations of Particulate-Structure Interactions," was featured in the November 2010 edition of *Civil Engineering* magazine, in the Austrian Newspaper *Wirtschafts Blatt* (10/29/10), and will appear in an upcoming edition of *Natural Hazards Observer*.
- ♦ **T. Matthew Evans**, Assistant Professor, was invited to present a seminar to the Department of Civil Engineering at the University of New Mexico on February 25, 2011. The title of the presentation is "Granular Mechanics with Engineering Applications."
- ♦ The **Annual Symposium** of the **Water Resources and Environmental Engineering (WREE)** group in CCEE will be held on Friday, **March 18** in Mann Hall. The symposium will feature over **40 poster presentations** from graduate students and a keynote speaker. The students will compete for best poster awards that will be decided by a panel of judges from local companies, government agencies, and professional societies. The keynote talk will be given at 4 pm in Mann Hall 216 by Dr. **Cliff Davidson** of **Syracuse University**, who will speak on "Educating Engineers for the 21st Century: The Challenge of Sustainability." The symposium is open and free to the public.
- ♦ CCEE graduate students **Brandon Graver**, **Wan Jiao**, **Bin Liu**, **Xiaozhen Liu**, and **Yuanfang Sun** are each first authors on papers accepted for presentation at **Annual Meeting of the Air & Waste Management Association**, to be held June 21-24 in Orlando, Florida. The papers are on topics including measurement of emissions from passenger cars, plug-in hybrid electric vehicles, and railroad locomotives and quantification of human exposure to airborne fine particulate matter. Graduate students B. Liu, Sun, **Gurdas Sandhu**, and **Samaneh Babaee** are co-authors on a paper regarding incorporating vehicle portable emissions measurement systems into the classroom, and have been active in working with students in CE 476/576 Air Pollution Control and CE 479/579 Air Quality on such measurements.
- ♦ CCEE Professor **H. Christopher Frey** was an invited expert panelist for a three day U.S. Environmental Protection Agency workshop, held February 22-24 in Chapel Hill, that recommended scientific approaches to multi-pollutant science assessments of emissions, exposure, and health effects as a way of moving beyond current state of practice in which assessments are made for one air pollutant at a time. Dr. Frey's expertise in air pollution is also being sought for upcoming events. He has been invited to present an overview of vehicle activity and emissions research at a workshop sponsored by the University of California at Riverside on March 24. He is invited to serve on an April 18-19 panel of the U.S. EPA's Advisory Council on Clean Air Compliance to review EPA's draft Report to Congress on black carbon particulate matter. He also serves regularly on panels of the EPA's Clean Air Scientific Advisory Committee, of which he is one of seven statutory members appointed by the EPA Administrator.



CCEE Department History—Buildings: 1889—1928



Main Building 1895
(Archives image 0007)

The **North Carolina College of Agriculture and Mechanic Arts** first enrolled students on October 3, 1889. As the only building, all classrooms, offices, housing, library, gym, kitchen and dining were in the **Main Building**, later named Holladay Hall for the first college president Alexander Q. Holladay. Two curricula were available, agriculture and mechanics, the latter including the fundamentals of civil and mechanical engineering.



Mechanics Building
(Archives image 4745)

The **Mechanics Building**, built in 1890 with an annex completed 1894, provided the mechanics programs with more space. The annex increased wood and metal shop area and added space for a forge. In 1895, the Civil Engineering curriculum was established but the new department continued to be housed, along with the new Mechanical Engineering department, in the Mechanics Building.



Campus Bird's-Eye View 1897
(Archives image 1346)

A bird's eye view of the campus, drawn by David Clark as part of his requirements for the Civil Engineer degree in 1897, shows the Mechanics Building to the right behind Holladay Hall. The campus was proudly shown as being up-to-date with electric power lines carefully drawn from the Boiler Building, housing a dynamo, to other buildings and two trains passing on the still familiar tracks. The Mechanics Building was sometimes referred to later as the Engineering Building or the

Mechanical Building. It was demolished in 1927 to make way for Peele Hall.



Primrose Hall 1896
(Archives image 1879)

Primrose was named for William S. Primrose, a member of the Watauga Club which had pushed for the establishment of A&M College. He had also served as president of the College's Board of Visitors.

Primrose Hall was constructed in 1896 with adjacent green-houses and originally called the Horticulture Building. In 1904, completion of the Agriculture Building, now Patterson Hall, gave agriculture programs a new home. By 1906, Civil Engineering had taken residence in the vacated Primrose Hall.



Winston Hall 1910
(Archives image 2757)

Winston Hall was called the New Engineering Building when it opened in 1910. Winston originally housed the departments of Civil Engineering and Electrical Engineering on the lower two floors and Chemistry and the State Experiment Station Chemistry Department on the third floor. The building honors former college president George T. Winston. He had repeatedly petitioned the State Legislature to fund a new engineering building as engineering enrollment grew beyond the existing facilities' capacities. But instead the Legislature approved funding for a new agriculture building. Thus, when finally funded after his retirement, it was fitting that his name was later attached to the building he fought so long to construct.

In 1917, the college was renamed North Carolina State College of Agriculture and Engineering. Winston Hall would continue to be the home of Civil Engineering until 1928.

This article is one of a series planned to describe the department's history. The first few will describe the buildings that have served as our homes followed by other articles on faculty, students, development of programs, and educational and research facilities. In parallel, a history section will be developed on our website. The writer, David Johnston, is indebted to the NC State Libraries Special Collections Research Center for permission to use the images included and to Kimberly Grau, BSCM, BS History, '02 (now Dr. Kimberly G. Talley) for background research of the history as a special project in 2002. Other important resources include *NC State University: A Narrative History* by Alice Regan and *NC State University: A Pictorial History* by Murray Downs and Burton Beers.



NC State ASCE Student Chapter Will Host Carolinas Conference

Civil engineering students from colleges and universities in the Carolina region of the American Society of Civil Engineers (ASCE) student chapters will descend on N.C. State University April 14-16, 2011 for the annual 3-day ASCE Carolinas Conference.

The annual conference is competition based, with a day focused on the concrete canoe competition and a day centered on the steel bridge competition and the paper competition. The rules for each of these competitions are created by the national ASCE Competition Committee and the winner of each event is invited to the national competition.

In addition to N.C. State, Duke University, the University of North Carolina at Charlotte, Trident College, the Citadel Military Academy, Clemson University, Georgia Institute of Technology, North Carolina AT&T, the University of South Carolina, and South Carolina State University will participate in this conference.



NCSU students pose with concrete canoe

Engineers Without Borders Student Chapter Plans Water Distribution System in Sierra Leone



View from the hillside in Allentown, Sierra Leone

Following an article in December's issue of CCEE News, the Sierra Leone Water System project team of Engineers Without Borders-USA (EWB-USA) at NC State made an assessment trip to Allentown, Sierra Leone over winter break. The team consisted of **Ross Varin**, Project Lead and senior in Environmental Engineering, **Crag Perry**, professional mentor and project manager at **ms consultants**, and Project Member **Megan Smithmyer**, junior in Chemical Engineering. The team spent ten days collecting data that they will use to design a water distribution system that will serve a medical center, school, and community taps. Currently, the community's water supply has been cut off because of construction of a reservoir and treatment facility. After the reservoir is finished, the community will have no way to access clean water, so the team's challenge is to design a system to effectively deliver water to the community.

The drinking water project requires engineering and interpersonal skills. With cooperation of local community leaders, the EWB team plans to build several water taps that will be available to community members who pay a small fee to cover their maintenance. The team plans to return to Allentown in two years after construction of the reservoir is complete. Meanwhile, the team will work on system design and an implementation plan. The team will also conduct fundraising to cover the cost of the planned trip. More information on EWB-USA, NCSU is available at www.ewbnscu.org and via the facebook group Engineers Without Borders @ NCSU.



Making a Splash During Spring Break

When you wash your clothes, do you ever wonder how you'd clean them without a washing machine? In El Incendio, Nicaragua, the most common approach to clothes washing is scrubbing on a riverside rock. However, thanks to service-minded students such as senior environmental engineering major **Justin Boucher**, the people of El Incendio now have a washing station, replete with two private showers and a pair of clothes-washing basins.

Last spring, Boucher and a group of his classmates spent spring break working with a Nicaraguan non-profit to help improve water quality for El Incendio residents. Traveling on behalf of NC State's Center for Student Leadership, Ethics & Public Service, the students were immersed in the culture and customs of the Central American country while completing acts of service for the local community. With Alternative Spring Break locations as diverse and in-need as Alaska, Italy and Louisiana, Boucher chose Nicaragua because the service project focused on water quality in a setting with no existing infrastructure.



Environmental Engineering student Justin Boucher (right) working in the field in Nicaragua

"As an environmental engineering major, I wanted to see what kind of sustainable projects I could get involved with abroad," the Saxapahaw, NC, native said. "There really was no other way I could gain an understanding of what that meant other than going there and getting hands-on experience, even if just for a week."

The team spent long hours in the hot sun working only with their hands. "It was an eye opener to see how much work you must do to get things done." The experience did not deter Boucher from his career goals. After graduation he plans to continue helping those in developing countries benefit from improved systems. Boucher plans to return to Nicaragua this March for his senior year spring break – this time as a team lead.

Construction Engineering and Management Juniors Receive Scholarships

Construction Engineering and Management (CEM) juniors **Olivia Davis** and **Brian Harding** recently received awards from the Triangle Chapter of the Professional Construction Estimators Association (PCEA).



Olivia Davis receives check for the Kyle Cave Merit Scholarship

Davis received the **Kyle Cave Merit Scholarship Award** and just finished an internship with **Brasfield and Gorrie**. In addition, she received a \$2,000 scholarship from the **Construction Financial Management Association (CFMA)** Triangle Chapter on January 18.

Harding received the Merit Scholarship award and is currently working with **Archer-Western**.



Brian Harding receives Merit Scholarship award



Student Chapter of American Concrete Institute Receives ACI Excellent University Award

The American Concrete Institute (ACI) has recognized NC State with the **ACI Excellent University Award**. The award is based on participation in activities and programs via the ACI student chapter and related events during 2010. NC State will be recognized during the ACI Spring 2011 Convention in Tampa, Florida, April 3-7, 2011 and will also be featured in *Concrete International* magazine.

According to ACI student chapter advisor **Roberto Nunez**, "this award recognizes efforts by the entire CCEE community, including students, faculty, staff, alumni, and many private construction organizations." In 2009 and 2010, **R. Bruce Clark** has been the ACI Student Chapter President, providing excellent organizational work and leadership. Through the chapter, future civil and construction engineers have active engagement with the concrete industry. The students in the chapter are supported by CCEE faculty, including Dr. **Paul Zia**, Dr. **Sami Rizkalla**, Dr. **Rudolf Seracino**, Dr. **Mervyn Kowalsky**, Dr. **Michael Leming**, Dr. **David Johnston**, and Mr. **Roberto Nunez**.

Since its inception in 2006, each year, NCSU teams have participated in two ACI Annual Conventions. To date, approximately 180 CCEE students have enjoyed the benefits of traveling to a national ACI Convention, including concrete project competitions, while visiting with concrete professionals in different parts of the country and overseas. This award also recognizes that NCSU students and staff have been instrumental in the success of an award winning, NCSU-based, ACI Concrete Certification Program that annually trains and certifies approximately 200 concrete industry professionals.

The NCSU-ACI Chapter is driven by an entrepreneurial spirit to learn through experience and adventure. For example, NCSU's is the only ACI Student Chapter globally that has organized study trips to the Panama Canal expansion project. In March of 2011, a group of 12 students will conduct a second visit to this magnificent infrastructure project. These achievements would not have been possible with strong support from the Chapter, alumni, and private enterprises friendly to and supportive of our CCEE program.



Students and faculty associated with NC State's ACI student chapter take time for a group picture at the Fall 2010 Convention in Pittsburgh, PA

Your Company name and logo could appear here

Sponsorship opportunity...

We hope you have enjoyed receiving the *CCEE News*. Interest in the newsletter is growing steadily, and we have had many requests for a hard copy version to be made available for our alumni and friends. Our goal is to print 250 copies of each newsletter, and we are looking for a sponsor to cover the cost of printing or who will print it for us.

Sponsorships are available on an annual basis. The first time you sponsor a newsletter, we can include an item in the newsletter about you or your company to introduce you to our alumni. In each subsequent issue, space permitting, we can feature a short blurb along with your company name and logo. For additional information please contact **Lora Bremer** at 919-513-0983 or lora_bremer@ncsu.edu.



In the Spotlight: **Water Resources and Environmental Engineering**

*The Department of Civil, Construction, and Environmental Engineering (CCEE) is comprised of six “groups” that represent key disciplinary areas. The groups include: **structural engineering and mechanics; water resources and environmental engineering; transportation systems and materials; computing and systems; geotechnical and geoenvironmental engineering; and construction engineering and management.** This is the second in a series of articles that profile each of these groups.*

Water Resources and Environmental Engineering (WREE) has fourteen fulltime faculty members and several adjunct professors. The group oversees the ABET-accredited B.S. Environmental Engineering (ENE) degree, which is ranked 12th in the nation by *U.S. News and World Report*. The group has recently developed ENE degrees at the master’s level to increase recognition of the environmental engineering graduate program, and continues to offer environmental concentrations as part of masters and PhD degrees in civil engineering. Currently, there are approximately 150 undergraduate students in the BS ENE program, and over 80 graduate students advised by WREE faculty. Moreover, courses delivered by WREE faculty are an integral part of undergraduate and graduate degrees in Civil Engineering in the areas of water resources, coastal engineering, and environmental engineering.

The WREE group offers undergraduate and graduate courses on a wide range of topics including fluid mechanics and hydraulics, water and wastewater treatment, air pollution, solid waste and groundwater management, coastal and ocean engineering, risk analysis, energy and climate, and systems analysis. Our students learn laboratory and field measurement techniques, computational modeling, geographic information systems, and decision support methodologies, providing an excellent background for further study and professional practice. Student educational and research experience are supported by laboratories in environmental engineering, hydraulics, computation, and geospatial analysis, and by field instrumentation. Our graduates find placement in local, state, and national government agencies, consulting and environmental service firms, non-profit research institutes, non-governmental organizations, and academia.

Outreach and Public Service: Our students and faculty are active in communicating research results via peer reviewed journal papers, seminars and short courses. Our students frequently win best paper awards at national conferences. Many WREE faculty members serve on editorial boards of national and international technical societies. Dr. **Chris Frey** was appointed in 2008 by the Administrator of the U.S. Environmental Protection Agency to the Clean Air Scientific Advisory Committee, which reviews all National Ambient Air Quality Standards. Dr. **Joel Ducoste** serves on the Drinking Water Committee of the US EPA Science Advisory Board, providing advice on national drinking water standards. Dr. **Margery Overton** chairs the Science Panel on Coastal Hazards, a group that advises the NC Coastal Resources Commission on scientific issues related to coastal policy, and is serving on the Governor’s Scientific Advisory Panel on Offshore Energy. Dr. **Billy Edge** is currently serving as President of the Academy of Coastal Ocean Port & Navigation Engineers.

Highly Distinguished Faculty: WREE faculty have been honored with numerous national and international awards including a Presidential Faculty fellowship (Dr. **Barlaz**) and CAREER awards from the National Science Foundation (Drs. **Arumugam, DeCarolis** (*see page 7*), **de los Reyes, Ducoste, Frey, Ranjithan** and **Yu**), and the Brown & Caldwell Lifetime Achievement Award (Dr. **Borden**). Many faculty have been elected as fellows of professional societies (e.g., Air & Waste Management Association, Society for Risk Analysis). Dr. **Knappe** recently received a prestigious teaching award (*see page 6*).

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Water Resources and Environmental Engineering (cont'd)

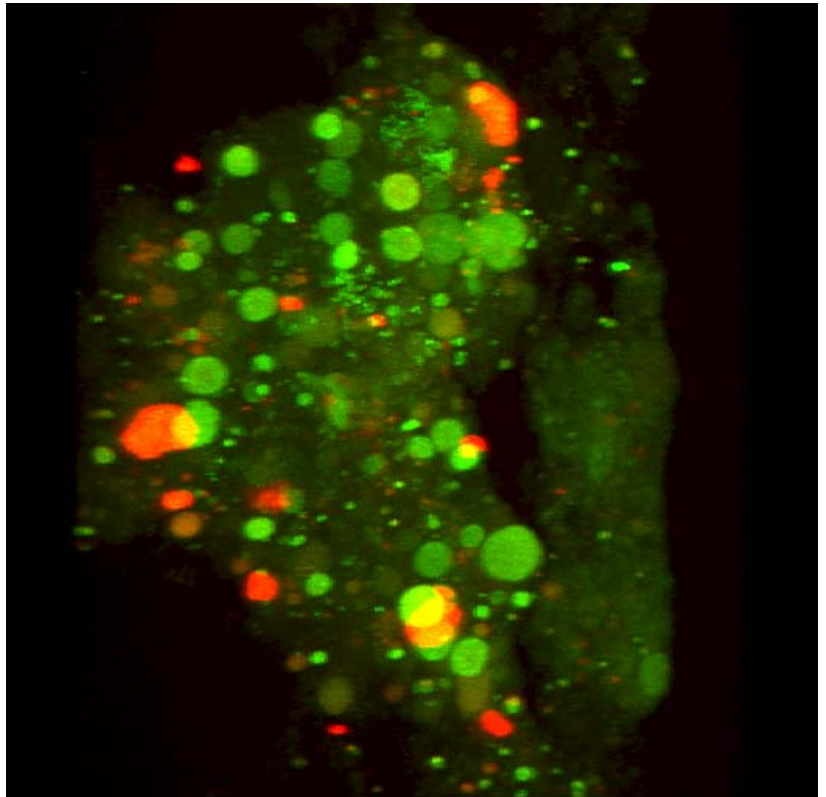
Research Activities: Current research projects range from decomposition in landfills to protecting drinking water systems from terrorist attacks. Professors **Barlaz**, **DeCarolis** and **Ranjithan** are developing a second generation decision support tool to evaluate the effect of climate change mitigation policies and energy pricing on solid waste management strategies.

Dr. **Arumugam's** group is working to improve climate forecasts and extreme event predictions (e.g., floods and droughts). Drs. **Ducoste**, **de los Reyes**, and **Aziz** are investigating effective, energy efficient approaches for managing fat, oil, and grease (FOG) in sewer systems. Treatment options for the removal of emerging contaminants (pharmaceuticals, endocrine disrupting chemicals, and perfluorinated compounds) are being examined by Dr. **Knappe's** group. Dr. **Borden's** work on in situ soil bioremediation using emulsified vegetable oil has been used to clean up thousands of hazardous waste sites throughout the world.

Dr. **Yu** is working to quantify the physical processes of waves, currents and sediments, and their impacts on transport and mixing in coastal waters and wetlands. Dr. **Overton's** work is focused on coastal hazards modeling and the development of response strategies to improve resilience in coastal environments. Dr. **Edge** is directing a multi-university engineering research program including NCSU, UNCC and NCA&T to capture wave, tidal and ocean current energy with the goal of reducing the State's carbon footprint.

Dr. **Frey's** work on in-use measurement and modeling of energy use and emissions during motor vehicle operation, ranging from compact sedans to railroad locomotives, and regarding exposure and risk assessment, has influenced the development of EPA and state policy decisions. Dr. **DeCarolis** is developing computer models to analyze future U.S. energy system performance under a variety of environmental policy constraints.

Research in WREE is sponsored by the National Science Foundation, National Oceanic and Atmospheric Administration, Department of Defense, Department of Energy, Department of Homeland Security, Environmental Protection Agency, National Institutes of Health, Federal Railroad Administration, Water Research Foundation, NC Department of Transportation, NC Water Resources Research Institute, NC Urban Water Consortium, NC Sea Grant and numerous private industries, including Waste Management, Procter and Gamble Company, Eastern Research Group, United Soybean Board, Washington Suburban Sanitary Commission, and others. The variety of sponsorships illustrates the myriad of opportunities for student and faculty engagement in leading edge research, and for the transfer of research into mentoring and classroom educational experiences.



Dr. de los Reyes is using fluorescently-labeled DNA and mRNA probes to monitor the activity of ammonia-oxidizing (green) and nitrite-reducing (red) bacteria in an activated sludge floc.



CCEE Hosts Distinguished Lecturers on Infrastructure, Water and Energy

The CCEE Department recently hosted three distinguished lecturers on civil infrastructure vulnerability, alternative water sources for use in power generation, and the role of civil engineers in the energy challenge.



Dr. Rae Zimmerman

Dr. **Rae Zimmerman**, Professor of Planning and Administration at the Robert F. Wagner Graduate School of Public Service at New York University, and Director of the Institute for Civil Infrastructure Systems at NYU, spoke January 18 on 'Infrastructure and Social Vulnerability and Resiliency in Natural Disasters and Terrorism.' Her two day visit, during which she met with many faculty and students, was sponsored by the **Seminars of Purpose Lecture Series** of NCSU's PURPOSE Institute. Dr. Zimmerman identified factors that contribute to infrastructure vulnerability such as concentration, location, and interconnectedness. For example, one-half of roadway mileage is concentrated in 14 states, many of which are located in low-lying population centers exposed to hurricane tracks or vulnerable to long term effects of sea level rise. Interconnectedness is illustrated by a potential for cascading failure modes, such as a water main breakage leading to power outage to disruption of traffic control.

Dr. Zimmerman touched upon the distribution of infrastructure and associated hazards with respect to population demographics, pointing out that the American Society of Civil Engineers (ASCE) does not include security and equity to vulnerable demographic groups in its infrastructure grading scheme. Dr. Zimmerman cited several examples in which low income and minority groups are disproportionately exposed to potential hazards such as air pollution from major roadways, contaminated Superfund sites, and flooding. Vulnerability could be reduced by dispersing the resource base, creating backup or redundancy for critical services, use of improved methods or materials to better survive a potential failure, and improved crisis response.

Dr. **David Dzombak**, Walter J. Blenko, Sr., Professor of Environmental Engineering of the Department of Civil and Environmental Engineering at Carnegie Mellon University, spoke on February 2 as the **2011 Distinguished Lecturer** of the **Association of Environmental Engineering and Science Professors**. Dr. Dzombak's visit was hosted jointly by CCEE, the Department of Environmental Science and Engineering at UNC Chapel Hill, and the Department of Civil and Environmental Engineering at Duke University. He spoke on "The Need and Challenge of Alternative Sources of Water for Use in Electric Power Production." U.S. electricity demand is projected to increase by 30 percent from 2008 to 2035. Steam-cycle power plants require 0.6 gallons to 30 gallons of cooling water per kilowatt hour (kWh) of power generated. However, many potential power plant sites are located in areas of fresh water scarcity.



Dr. David Dzombak

Dr. Dzombak focused on assessment of treated municipal wastewater as an alternative for cooling. Nationally, 11.4 trillion gallons of municipal wastewater are treated annually, co-located with demand centers. According to Dzombak, in many power generation regions, a large percentage of cooling needs could be met by treated municipal wastewater that is generated within 10 miles of the power plant. However, discharged wastewater is beneficially used now for other purposes, such as maintaining minimum stream flow. Furthermore, there are technical challenges to the use of treated water at power plants, such as scaling, accelerated corrosion, and accelerated biomass growth, that would require additional wastewater treatment. There may also be social acceptance issues with using treated wastewater for cooling, such as public perceptions that visible plumes of vapor from cooling towers that use wastewater could be hazardous to human health.

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Distinguished Lecturers *(cont'd)*

The **40th Henry M. Shaw Lecture**, hosted by CCEE, was delivered on February 17 by Dr. **J. Carlos Santamarina**, the Goizueta Foundation Faculty Chair and Professor in the Geosystems Group of the School of Civil and Environmental Engineering at Georgia Tech.

Shaw, a 1922 graduate in Mechanical Engineering, had a long and distinguished career in the quarrying, aggregate production, and concrete manufacturing industries. As one of North Carolina's leading industrialists, he helped stimulate the state's industrial growth and economy. The Shaw Lecture was endowed in honor of Shaw in 1966 by family and friends.

Dr. Santamarina spoke on the interrelationship of economic growth and energy use, with projections of a pronounced increase in energy demands in the next decades associated with economic development and population growth worldwide. Noting that civil engineering is at the center of the energy challenge, from production, transportation, consumption and conservation, to waste management and carbon sequestration, he showed that the central role of civil engineering extends to all energy resources, including fossil fuels, nuclear energy and renewable sources. The strategies necessary to address these challenges require a wide range of Civil Engineering disciplines, including development of new numerical and experimental tools, innovative field procedures, and unprecedented engineering solutions. Some changes are easier than others. For example, with respect to transportation, Dr. Santamarina recommended that smaller, high efficiency vehicles could reduce the need for imported oil more quickly than longer term changes to land use patterns. With regard to climate change, he stated that the "evidence is becoming increasingly persuasive" and thus there is a need for reduction in the fossil energy intensity of economic activity. "Somehow, we've accepted that throwing garbage into the atmosphere is okay," but "nature may teach us otherwise."

Among the many topics touched upon in his seminar, Dr. Santamarina discussed possible unintended consequences of large scale underground sequestration of CO₂ that may in the future be captured from fossil-fuel-fired power plants. The possibility exists that chemical, physical, and biological processes could contribute to soil failure. He entreated students in the audience to consider what they can do to make a difference, given the wide scope and scale of ways in which they could contribute to a new energy future.



J. Carlos Santamarina

Seeking Contributions to Johnston Fellow Endowment

Dr. **David Johnston**, the Edward I. Weisiger Distinguished Professor in Construction Engineering and Management, retired in December 2010. He has been a mainstay in the Department since 1977. In honor of Dr. Johnston, the Department is establishing an endowment for an award to an outstanding graduate student in the CEM program. The student awardee each year will be referred to as the Johnston Fellow. This award could be given to an existing student or to help attract a new graduate student to the CEM program. Providing financial support to a deserving CEM grad student is the perfect way to honor Dr. Johnston because his priority was and always will be the student.

The minimum for an endowment is \$25,000, which would award \$1000 per year to one student. The more we raise, the greater the award. **Michael B. Gwyn**, PE (BSCE '80; MSCE '94), the current Chairman of the CCEE Advisory Board and President of Benham Constructors, LLC, has made an initial gift of \$2,000 to this fund to get this started. If you are interested in contributing to this endowment, please contact **Lora Bremer**, Director of Development for the department at 919-513-0983 or send checks payable to **NC State Engineering Foundation at NCSU CCEE**, Campus Box 7908 Mann Hall, Raleigh, NC 27695. Please indicate that the check is for the "**Johnston Fellow**" endowment.



CCEE and McDonald York Collaborate on Building Information Modeling and Lean Construction Methods



Dr. Mike Leming, Mr. Mike Kriston, Mr. Brad Wambeke, and Dr. Min Liu at McDonald York's training facility.

Faculty and students in Construction Engineering and Management (CEM) are working with **McDonald York**, one of Raleigh's oldest and most successful firms, to disseminate Building Information Modeling (BIM) and Lean Construction practices. Building Information Modeling (BIM) is the process of generating and managing building data during its life cycle. Typically, BIM uses three-dimensional, real-time, dynamic building modeling software to increase productivity in building design and construction. Lean Construction places emphasis on designing construction projects to minimize time, effort, and production of waste. In January, **Michael McDonald**, Executive Vice President and Chief Operating Officer, and **Mike Kriston**, Vice President of Business Development, invited Dr. **Mike Leming**, Dr. **Min Liu**, and PhD student **Brad Wambeke** to visit their training facility and discuss BIM and Lean Construction initiatives.

With the downturn in the economy, firms that are able to effectively embrace BIM and Lean Construction are likely to have a competitive advantage. McDonald York has a long term vision for development of the company that includes learning and implementing cutting edge techniques and management philosophy. The company recognizes that these techniques can help reduce cost and improve project performance.

As a follow-up to the January visit, Mr. Wambeke and Dr. Liu returned to McDonald York on February 10 to deliver an introductory training session on Lean Construction. The attendees included top managers such as Mr. McDonald and Mr. Kriston, project managers, and superintendents. Graduate students from CEM participated in a simulation learning game. Mr. Kriston said that the company will implement Lean Construction methods in a construction project starting this April and is excited to continue further collaboration with the CEM program at NC State.

McDonald York has supported the CEM program by donating funds two years ago to incorporate BIM into the curriculum.

Army Cadet Walton Named Top Engineering Student



Cadet Walton and LTC Ratashak

Construction and Management Engineering student and U.S. Army Reserve Officer Training Cadet **Jeffrey Walton** was selected from 800 Army ROTC Cadets as the top Engineering student in the 4th Brigade, US Army Cadet Command Battalion. Cadet Walton earned his highest rating during Warrior Forge in Fort Lewis, WA and earned the RECONDO badge. Cadet Walton is also received the **NC State University General George C. Marshall** award which was presented to him by **Lt. Colonel Kenneth J. Ratashak**.



Stewart Engineering Honored with Two Design Excellence Awards

The NC American Council of Engineering Companies of North Carolina (ACEC/NC) awarded Stewart Engineering and **Willy E. Stewart** (BSCE '81; MSCE '84), President & CEO two Engineering Excellence Awards at its awards ceremony on November 11, 2010. The first award was for the design of the **R. Kelly Bryant, Jr. Pedestrian Bridge** which will replace a pedestrian bridge over the Durham Freeway (NC 147) that was built in 1973 and then closed in 1995. Stewart worked closely with the City of Durham to develop a design that echoes the themes of the city and meets its requirements for a safe, aesthetically pleasing bridge. The approved design was open and airy, providing good sight lines from the Freeway and from the bridge.



Award-winning Pedestrian Bridge



"Explore the Wild" Habitat

The second award was for its design of the **North Carolina Museum of Life and Science's BioQuest II** which will accommodate three exhibits. **Explore the Wild** is a 6-acre woodland and wetland habitat located in a quarry basin that includes natural habitats for black bears, red wolves and lemurs. **Catch the Wind** is designed to expand visitors' understanding of how plants and animals use and accommodate for the wind. **Dinosaur Trail** consists of a walking trail, featuring life-size model replicas, footprints and a paleontology-dig site. Stewart helped see this through with the design of a 35,000 square foot broad walk, innovative stormwater design, and creative use of plant placement, soil treatments, irrigation and specialized fertilizers. The ACEC/NC awards recognize engineering and surveying firms for projects which demonstrate the highest degree of achievement, value, and ingenuity.

Alumnus Commands NC National Guard



Professors Leming and Barlaz congratulate General Lusk at the Wall of Fame ceremony.

On August 15, 2010, Major General **Gregory A. Lusk** (BSCE '82) was inducted into the NC State Army Reserve Officer Training Corps. Wall of Fame. After graduation, Lusk was commissioned as a Second Lieutenant through the ROTC program in 1982. On September 9, 2010, Lusk was named the state's new Adjutant General by Governor **Beverly Perdue** where he commands over 11,500 Citizen Soldiers and Airmen of the NC Army and Air National Guard. He is also the Governor's principal advisor on military affairs. Governor Perdue and Secretary **Reuben F. Young** of the North Carolina Department of Crime Control and Public



Judge Stevens swears in General Lusk as his wife Deana stands by his side.

Safety both cited Lusk's strong leadership experience in commanding North Carolina's largest National Guard unit and his dedication to duty as some of the attributes considered in the decision to appoint him to the position. As commander of the 30th Heavy Brigade Combat Team, Lusk served two tours of duty in Iraq. He has been a member of the N.C. National Guard since August 1979. Among his awards are the Bronze Star with one Oak Leaf Cluster, Combat Action Badge, Meritorious Service Award with two Oak Leaf Clusters, Iraq Campaign Medal with two Campaign Stars, Global War on Terrorism Expeditionary Medal, and a N.C. National Guard Service Award with a Gold Hornet's Nest.



Alumni Updates



Jack Franks (BSCE '56) and his wife recently traveled to southern France to visit two engineering triumphs—one nearly 2000 years old and the other only recently com-

pleted. The oldest is a 3-level Roman aqueduct (**Pont du Gard**) completed in 50 A.D.

(<http://whc.unesco.org/en/list/344>). The second is a

seven-span cable-stayed bridge (**Viaduc de Millau**) which, when completed in

2004, was the highest bridge in the world (<http://www.leviaducdemillau.com>).

Franks believes both are outstanding achievements for different reasons. **Pont du Gard** is significant for its all-stone structure (no mortar) built with only hand labor. The **Viaduc de Millau** reflects visionary design as well as the magnitude of the actual construction. He feels visiting these sites was a Civil Engineer's dream come true.



John Brantley (BSCE '64), Airport Director at Raleigh-Durham International Airport (RDU), was named **2010 Businessperson of the Year** by *Triangle Business Journal* (TBJ).

Brantley is a member of **CCEE's Advisory Board** and

as an adjunct faculty member teaches airport planning and design courses. Brantley is recognized for his more than 30 years at the airport and for the major projects he has overseen during RDU's transformation. Brantley spoke at a TBJ luncheon on February 1 on RDU's current state of affairs and future prospects, including discussions with air carriers about adding service. RDU has recently undergone a significant expansion of facilities with the opening of the second phase of world-class Terminal 2. The new terminal opened on January 23, just in time to receive an influx of visitors for the National Hockey League's All-Star Game hosted by the NHL's Carolina Hurricanes in Raleigh.

Alumnus Turns 100

A celebration of the 100th birthday of **Hyman Dave** (BSCE '35) was held recently in Asheville and attended by many family members and friends. Dave moved to Asheville in 1935 after graduating from North Carolina State College of the Greater University of North Carolina with a degree in civil engineering. He worked for 76 years with his brother in the family business, **Dave Steel**, a manufacturing and construction business that was a major contributor to the local war effort in WWII. The business grew and put up buildings and prefabricating steel for industries all over the country. His son Steven graduated from NC State with a degree in civil engineering in 1966. Dave was quoted as saying "*I've had a wonderful life in 100 years, I don't regret a day of it.*"



Investing in the Department: We ask you to invest in our future and make a commitment to the NC State College of Engineering. Your gift will have a tremendous impact in helping us take CCEE to a new level of excellence. As a result, we anticipate having better educated and prepared students entering the work force which will raise the visibility and build the stature and prestige of the CCEE Department. There are many ways to give to the Department. Whether an annual gift, an endowed gift, or a one-time gift, it will make a significant impact on current as well as future students and faculty at NC State University.

Checks should be made payable to: **NC State Engineering Foundation, Inc.**, designated for CCEE and mailed to: **North Carolina State Engineering Foundation, Inc. Campus Box 7901, Raleigh, NC 27695-7901**

You can also use your credit card to make an outright gift. Log onto:

<http://www.engr.ncsu.edu/foundation/index.php>

To talk to someone or for additional information, contact: **Lora Bremer**, CCEE, Director of Development

Phone: 919-513-0983 • **Email:** lora_bremer@ncsu.edu



Firm of the Month: Views from Participating Firms

The idea for the firm of the month was suggested by the CCEE Departmental Advisory Board. The firm of the month program is our way of thanking and promoting our corporate partners while at the same time educating our students. This program provides participating firms with name recognition for recruiting and business opportunities, demonstrates to students ways that they can use their degrees after graduation and provides information on employment opportunities.



Crowder Construction Company was honored to be selected to participate as Firm of the Month for February. Crowder is an ENR Top 400 General Contractor serving the Southeast for over 60 years. Projects are completed by design-build, Engineering, Procurement, and Construction (EPC), construction manager and traditional methods. Self-performance capabilities include: water/wastewater facilities, power plants and heavy industrial facilities, heavy civil, electrical projects, and landfill/digester gas-to-energy projects. **Otis Crowder** (BSCE '70), President and CEO (and also a contributor to NCSU's programs) said, "NCSU produces some of the finest engineers in the country, and it is Crowder's privilege to be a part of this legacy GO PACK!!"

NC State is an important partner for Crowder Construction Company. Crowder Construction Company is a privately owned General Contracting and Design-Build service provider. Founded in 1947 by O. P. and W.T. Crowder, Crowder Construction Company is headquartered in Charlotte, North Carolina.



Michael Creed
BSCE '73, MSCE '84

McKim&Creed was honored to be selected as "Firm of the Month." Our company made the decision to move onto Centennial Campus just a few years ago in order to get closer to the students and faculty in the Civil, Construction, and Environmental Engineering department. About the same time, I was invited to serve on the department's Industry Advisory Board (IAB). This has been a greatly rewarding activity as faculty, students, and advisory board members collaborate to make the department even better. I have been very impressed with the professionalism and dedication demonstrated by the faculty in regard to their duty as educators. On a personal note, NC State University provided me an outstanding education in addition to a lifetime of friends and contacts who have enriched my life and advanced my career. For that I will be eternally grateful.

On behalf of McKim&Creed, it is gratifying to have been one of the CCEE department's "Firms of the Month." We are proud of the work we do and were pleased to be able to share our experiences with potential future employees and clients during the January lunch-n-learns.

—**Michael Creed**, President & Chief Executive Officer

CCEE News is published by the Department of Civil, Construction, and Environmental Engineering to share information among faculty, staff, students, alumni, and friends of the Department. This issue was produced by Chris Frey, Editor and Bonnie Diaz, Managing Editor. Additional contributors to this issue are: Mort Barlaz, Bob Borden, Justin Boucher, Lora Bremer, Joe DeCarolus, Francis de los Reyes, Billy Edge, Matt Evans, Mo Gabr, Detlef Knappe, David Johnston, Michael Leming, Min Liu, Ginger McGlamery, Roberto Nunez, Margery Overton, Nagui Roupail, Billy Williams, and Ross Varin.