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ABOUT THE COVER

A Tradition of Excellence

Considered to be the culmination of every conceivable aspect of structural engineering, the nuclear-powered aircraft carrier and the nuclear-powered submarine have unlimited range and can go twenty-five years before refueling. As Executive Vice President and Director of Newport News Shipbuilding, Walter Tilford Smith (CE 1929), the 1966 recipient of the College of Engineering's Distinguished Alumnus Award, was responsible for implementing the United States Navy's shift from fuel oil to nuclear propulsion. Mr. Smith's leadership helped to bring about the nuclear-powered Polaris submarine and the first Nimitz-class nuclear-powered aircraft carrier, the USS Enterprise.

The photograph on the cover of this year's Civil Engineering Newsletter depicts the lower bow lift during the construction of the ninth and newest Nimitz-class nuclear-powered aircraft carrier, the USS Ronald Reagan (CVN 76). The Reagan will enter the fleet in 2003 and will be the most modern and sophisticated aircraft carrier in the world. It is as long as the Empire State Building is tall (1092 feet), will be home to some 6,000 sailors, carry more than 80 aircraft, and cruise at speeds in excess of 30 knots. The USS Ronald Reagan will displace 81,209 tons empty and over 92,000 tons loaded.

We are proud to be able to claim Walter Tilford Smith as an alumnus of the Department of Civil Engineering and we plan to feature projects of our Department's other recipients of this award on the cover of future issues of our newsletter. Such achievements of national prominence like those of Mr. Smith illustrate our tradition of excellence in civil engineering education and the individual contributions of just a few of our many outstanding alumni.

DEPARTMENTAL MESSAGE



David W. Johnston

In previous issues of the newsletter we have mentioned the Department's efforts to initiate distance education opportunities. Due to many recent advances, a more thorough update is warranted. For many years the College of Engineering has offered a Master of Engineering degree through video-based engineering education known as VBEE. Course offerings in any one engineering discipline were limited. However, the year 2002 has seen an acceleration of opportunities. The VBEE program has been renamed Engineering Online (engineeringonline.ncsu.edu) and is the delivery support unit for distance courses taken either for lifelong education in engineering or for credit in engineering degree programs.

The Civil Engineering faculty have steadily increased the number of CE courses available in recent years. It is now feasible to meet with more depth the needs of civil engineers for a distance education program. Approval was received in early 2002 to offer the existing **Master of Civil Engineering** degree by distance education (see: www.ce.ncsu.edu) The essential degree requirements are the same as for the on-campus student. The student must complete a Plan of Graduate Work including 30 credit hours of graduate course work, possibly including a project, with about 2/3 of the credits in the major field. Entry into the program is through application for admission to the Graduate School just as for the on-campus student. Several distance MCE students were admitted this fall and many more engineers are taking individual courses through the Post-Baccalaureate Studies (PBS) program to explore how this method of delivery works for them.

It is not currently possible for all CE courses taught on campus to be available by distance. At present, the Environmental Engineering and Transportation Engineering specialties offer the most courses and it is possible to develop good depth in those areas. Construction Engineering and Management, Geotechnical Engineering, and Structural Engineering have some initial offerings and these will gradually increase. However, initially, students with interests in these areas will be undertaking programs with more breadth to satisfy MCE degree requirements with perhaps 2 or 3 courses from each area, rather than great depth in one. Presently 4 to 5 courses are offered by distance each semester. We are currently in discussions aimed at developing two studio classrooms in Mann Hall since campus studio space is a current limiting factor.

The primary audience is practicing engineers in companies and agencies throughout North Carolina and across the United States. International availability will initially be limited to persons in the U.S. military or working for U.S. companies abroad. However, we are developing an arrangement with the Universidad Católica Andrés Bello in Venezuela to deliver distance courses to students in South and Central American countries. In all cases, a key to the integrity of the program is the ability to have a suitable proctoring arrangement for tests and exams. Distance education has the potential to meet the advanced study needs of many engineers in practice. We are committed to this direction but it will require time, resources, and patience to achieve the breadth of offerings desired. We welcome any thoughts you might like to share.

Best Regards,

David W. Johnston

Professor and Associate Department Head for Graduate Programs

SPECIAL CAMPUS FEATURE

■ SECOND INTERCONTINENTAL LANDFILL RESEARCH SYMPOSIUM HELD IN ASHEVILLE



Morton Barlaz

The Second Intercontinental Landfill Research Symposium (ICLRS) received high marks from the 132 attendees which included a healthy mix of practitioners, regulators and researchers as well as 27 graduate students. Participants represented the United States and 16 foreign countries. **Morton Barlaz** served as host and co-chair of the symposium which was held October 13-16 in Asheville, NC. The program was designed to maximize opportunities for interaction between participants with approximately 50% of the time in each technical session designated for open discussion. In addition, participants were together for all meals and there was an active social program to further facilitate interaction.

This year's program included 16 technical sessions covering all aspects of landfills as well as an evening session which included over 30 posters. The social program included an opening reception on the grounds of the Biltmore Estate, a poster session/buffet dinner, and a traditional North Carolina pig pickin, complete with cloggers and a bluegrass band.



Participants at the Second Intercontinental Landfill Research Symposium

The first of the biennial ICLRS series, intended to serve as the premier meeting of landfill researchers in the world, was held in Sweden in 2000. The next meeting will be held in Japan in 2004. More information on ICLRS can be obtained from Morton Barlaz (barlaz@eos.ncsu.edu).

In his opening address Barlaz thanked the contributing sponsors for their "enthusiastic embrace of the ICLRS" which made the program possible. Supporters from the waste management community included The Environmental Research and Education Foundation; Waste Management, Inc.; GeoSyntec Consultants; Sita (France); Buncombe County North Carolina Solid Waste Services; SCS Engineers; Delaware Solid Waste Authority; Camp, Dresser & McKee.

The first of the biennial ICLRS series, intended to serve as the premier meeting of landfill researchers in the



Civil Engineering Wall Of Fame, Mann Hall Lobby

In October the lobby of Mann Hall underwent a dramatic change with the first in a series of improvements designed to reflect, to all who enter the building, the Department's tradition of excellence in civil engineering education. The Civil Engineering Wall of Fame is at present a collection of permanent displays of the achievements of ten of the Department's outstanding graduates. The displays cover a wide range of themes including construction, historic preservation, military service, environmental engineering, transportation systems, and steel structures.

■ WORLD TRADE CENTER BEAM DONATED TO DEPARTMENT

A portion of a steel beam recovered from the World Trade Center has been donated to the Department of Civil Engineering by **David Griffin**, of D.H. Griffin Wrecking Company, Inc. Greensboro, NC and **Ronnie Stott** (BSCE '97), of the Raleigh office of Bovis-Lend Lease. Mr. Griffin led the demolition and recovery operations for Bovis on-site in New York. This monument to the recovery effort and to the strength and resilience of the American people will be placed on display in the lobby of Mann Hall as soon as the display base is completed.

■ PAUL ZIA DISTINGUISHED LECTURE SERIES ESTABLISHED



Paul Zia

The Constructed Facilities Laboratory in the Department of Civil Engineering at North Carolina State University announces the Paul Zia Distinguished Lecture Series. The new series has been established to honor the contributions to the civil engineering profession, particularly in the concrete and structural engineering fields, of **Paul Zia**, Distinguished University Professor Emeritus of Civil Engineering.

Zia is a member of the National Academy of Engineering and served as president of the American Concrete Institute in 1989. He is an honorary member and fellow of the American Society of Civil Engineers, the American Concrete Institute, and the Prestressed Concrete Institute. He served as head of the Department of Civil Engineering at NC State University for nine years.

The inaugural lecture of the series will be presented on November 22nd at the Engineering Graduate Research Center on Centennial Campus of NC State. Ben C. Gerwick, Professor Emeritus of Civil Engineering at the University of California, Berkeley, and founder and past president of Ben C. Gerwick Inc., will present the lecture entitled "Some Major Bridges: Recent, Current, and Future." For more information about the Paul Zia Distinguished Lecture Series, contact the Department of Civil Engineering at NC State University at 919-513-1733 or Sami_Rizkalla@ncsu.edu.

■ OUTREACH TO VENEZUELA: SUMMER PRACTICUM

Many students attend summer school, but few help present summer school, especially to international visitors. Two graduate transportation students at NC State did just that

DEPARTMENTAL NEWS

■ WALL OF FAME PROJECT

Question – What department at what university produced graduates who 1) Were in charge of the design and construction of all of the launch support facilities for the Apollo Program; 2) Implemented the United States Navy's shift from fuel oil to nuclear propulsion; 3) Chaired the construction company who built one of the two Petronis Towers in Kuala Lumpur, Malaysia? The answer is the Department of Civil Engineering at North Carolina State University produced all three!



Civil Engineering Students from Venezuela

during the summer of 2002. CE graduate students **Will Letchworth** and **Greg Saur** in the NC State Departments of Civil Engineering helped host senior engineering students from the Universidad Católica Andrés Bello (UCAB) located in Caracas, Venezuela. UCAB sent 13 of its best and brightest civil engineering seniors to NC State to attend the three-week CE Summer Practicum from July 21 to August 11, 2002. NC State faculty member **John R. Stone** organized the Practicum.

The UCAB students take two-day Civil Engineering workshops that are followed by field trips. At the end of the Practicum the students earn three credit hours at UCAB. The civil engineering students learn about Geographic Information Systems (GIS), environmental systems, structures, geotechnical engineering, construction management and transportation. The NCSU CE faculty instructors were **Joe Hummer, John Stone, Debra Laefer, Ranji Ranjithan, Detlef Knappe, Mike Leming, Roberto Nunez, Jim Nau, and Mike Kowalsky.**

Regarding graduate work in Civil Engineering, Stone and **Professor Jose Ochoa** at UCAB are working to form a Distance Education Program for the NCSU Masters of Civil Engineering degree. Because of the popularity of Distance Education in the United States, they believe students from UCAB and other South American universities will also seek the MCE Distance Education degree. To test the Distance Education concept with UCAB, Linda Krute (College of Engineering On-Line Program), Stone, and Ochoa have developed preliminary agreements to provide courses via the Internet for the Spring 2003 Semester. UCAB students can register for NCSU courses and take them at UCAB using compact disk and streaming video technologies that capture live lectures on the NCSU campus. UCAB students communicate with NCSU faculty via email for questions and homework. Class websites provide course information, data, and educational resources. Internet chat rooms for the courses support group discussions and facilitate faculty-student communication. The NCSU – UCAB outreach through the Summer Practicum and the Distance Education MCE are, indeed, opening doors to South America.

■ NEW CLASS OFFERING: DAM DESIGN, REPAIR, AND REHABILITATION, ON CAMPUS AND OFF

One of the Department's newest faculty members, **Debra Laefer**, will be offering a new graduate course (CE 793D) that will be available both on campus (MW 6-7:15) and through the video based Engineering Education Program. The class is the perfect curricular addition for students and professionals with an interest in environment, hydrological, geotechnical, and structural engineering.

STUDENT REPORT

■ THE AMERICAN SOCIETY OF CIVIL ENGINEERS STUDENT CHAPTER REPORT

The 150th anniversary of the ASCE National Conference was held in Madison, Wisconsin in June. To commemorate the anniversary, the student competitions were combined into one national competition, with over 1200 people in attendance. The concrete canoe team, consisting of **Brian Alexander, Erskine Brooks, Audrey**



NC State's Concrete Canoe

Buchholz, Anna Cook, Doug Cabbage, Kim Fischer, Daniel Gardener, Kim Grau, Mark Johnson, Leigh Morris, David Myrick, Jason Pace, Julie Robinson, and Branch Smith did an excellent job in the overall competition. They finished 10th in the nation out of a field of 25 schools, an improvement of 5 places over the 2001 finish.

In individual competitions **Jason Pace** and **Doug Cabbage** finished

third in the Men's Endurance Race. **Jason Pace, Leigh Morris, Audrey Buchholz** and **Doug Cabbage** placed second in the Coed Sprint Race, in a rather exciting finish, coming from fourth place down the stretch to pass two canoes near the finish line. **Mark Johnson** and **David Myrick** placed third in Canoe Display.

Officers for the 2002-2003 academic year are **Josh Davis** (president), **Branch Smith** (vice president), **Sarah Burrell** (secretary), **Matthew Quigg** (treasurer). This year the student chapter will be hosting the annual Carolina's Conference, April 4-5 at NCSU. Competitions will include steel bridge, concrete canoe, technical paper, geotechnical, environmental, balsa wood bridge, surveying, and tee-shirt design. The schools competing in the competition will be NCSU, Clemson, Georgia Tech, South Carolina State University, University of South Carolina, Trident Technical Community College, UNC Charlotte, UNC A&T, Duke, and The Citadel. Attendance is expected to be approximately 350 students.

■ THE ASSOCIATED GENERAL CONTRACTORS STUDENT CHAPTER REPORT

Under the leadership of their officers, AGC student chapter members enjoyed an active year in 2001-2002. Chapter officers were **Meghan Rider** (president), **Eric Brinker** (vice president), **Andy Singleton** (treasurer), and **Hannah Randall** (public relations chair).

The student chapter has hosted several industry speakers at its luncheon meetings during Fall 2002. These have included Dave Simpson of Carolinas AGC, on AGC Legislative Initiatives; Steve Routon of HNTB Construction Services, on the Golden Gate Bridge Retrofit; and David Griffin of D.H. Griffin Wrecking Company, on the World Trade Center Clean-up Project. The spring lineup is currently being developed. Our thanks to those who volunteered time to bring their experience to the students.

Chapter members traveled to the AGC Annual Convention in Las Vegas, Nevada. Members attended presentations and student activity sessions of AGC and the Con Expo exhibits. Also, time was made for a trip to the Hoover Dam. Chapter members look forward to another active year in 2002-2003 with their new officers: president **John Partin**, treasurer **Glen Smith**, and secretary **Chris Morris**. Faculty advisors are **Ed Weaver** and **Roberto Nunez**.

■ THE A.P. NORWOOD CHAPTER OF CHI EPSILON STUDENT CHAPTER REPORT

The North Carolina State University Chapter of Chi Epsilon inducted 43 new members in 2001. Officers for the 2001-2002 academic year were **Kimberly Grau** (president), **Brian Mazzochi** (vice president), **Anna Cook** (secretary), **Grady McClamrock** (treasurer), **Brent Gatlin** (pledge marshal) and **Sara Anderson** (editor).

■ THE NATIONAL ASSOCIATION OF HOME BUILDERS STUDENT CHAPTER REPORT

Under the leadership of their officers, president **Travis Nelson**, vice president **Kimberly Grau**, secretary **Mattie Lee**, treasurer **Mark King**, and faculty advisor **Ed Weaver**, the NAHB student chapter volunteered for the Ideal Home Show, attended the Raleigh/Wake County Home Builders Association Casino Night Party at the Raleigh Convention Center, and attended the International Home Builders Show in Atlanta.

The goals of the chapter are to increase involvement with Habitat for Humanity, send the student chapter officers to the National Home Builders Show in Las Vegas, begin a shadowing program for students to spend a day with local contractors on the job, be involved with the Wake County High School mentoring program for future home builders, and develop stronger relationships with home builders in the industry, as well as the Raleigh/Wake County Home Builders Association. The officers for 2002-2003 are president **Travis Nelson**, vice president **Brit Cohan**, secretary **Eric Brinker**, and treasurer **Adam Rush**.

■ THE AIR & WASTE MANAGEMENT ASSOCIATION STUDENT CHAPTER REPORT

The Air & Waste Management Association Student Chapter had a great year in 2001-2002. Under the leadership of President **Scott Ryals**, Vice-President **Julie Larsen**, and Secretary/Treasurer **Quansong Tong**, we have continued to maintain a local section of highway adopted last year as part of the NC Adopt-A-Highway program and have held three trash parties during the year. The student chapter also co-sponsored the 2002 Water Resources and Environmental Engineering Spring Symposium. More than 25 graduate students entered the poster competition, which was judged by a panel of faculty and industry representatives. More than 100 students and faculty attended the event. The keynote speaker was Lester Lave, University Professor and Higgins Professor of Economics, Graduate School of Industrial Administration, Carnegie Institute of Technology and Heinz School of Public Policy at Carnegie Mellon University. The subject of his talk was "Recycling, Electric Cars, and Diapers: Lessons for Improving Environmental Quality and Sustainability." The symposium was co-sponsored by The Center for Transportation and the Environment (CTE) and the Research Triangle Chapter of the Society for Risk Analysis.

The officers for the 2002-2003 academic year are President **Scott Ryals**, Vice President **Julie Larsen**, Secretary **Quansong Tong**, and Treasurer **Kim Grau**. We presently have an enrollment of 35 Civil and Environmental Engineering students. Activities for the coming year include the maintenance of the Adopt-A-Highway section, volunteering efforts in the NC Big Sweep, sponsorship of the 2003 Spring Symposium, and sponsorship of three lunch seminars in the Spring semester. With the continued support of the faculty, our advisor **Chris Frey**, the students, and our parent chapter, the Research Triangle Chapter of the A&WMA, we expect another great year.

■ THE INSTITUTE FOR TRANSPORTATION ENGINEERS STUDENT CHAPTER REPORT

Under the leadership of president **John Woodlief**, vice president **Will Letchworth**, secretary **Jeff Dayton**, and treasurer **Wayne Jacas**, we had several interesting speakers this year. Ed Parrish of The LPA Group gave a presentation on the 2020 Transportation Program in South Carolina. Roger Henderson of Kimley-Horn presented a comprehensive traffic and land-use study for the town of Cary in the area surrounding the Crossroads shopping district. Andrew Topp, of Parsons Brinkerhoff, discussed the issues surrounding HOV lanes in North Carolina. Scott Ney, also of Parsons Brinkerhoff, and John Roberson of the Triangle Transit Authority discussed the TTA's regional rail project, with an emphasis on the NCSU station. Finally, Tom Kendig, NCSU's new Director of Transportation, discussed the development of NCSU's Transportation Master Plan.

The student chapter also participated in several professional development activities. In April of 2001, John Brantley, head of RDU Airport Authority, treated the NCSU chapter with a tour of Raleigh-Durham International Airport, including the radar room and control tower. Students learned about the operation of an international airport as well as future plans for RDU. In October of 2001 several students attended the North Carolina Section of the ITE's annual meeting held at the Crabtree Marriot. The NCSU chapter was pleased to have three students in its group receive scholarships and was both excited and surprised to be awarded the Cribbins Cup for outstanding student chapter of the year. In January 2002, several student chapter members attended the Transportation Research Board annual meeting in Washington D.C. Two of the more memorable topics were "Integrated Land Use and Transportation Modeling" and "Environmental Information and Decision Support for Transportation."

■ GREG SAUR RECEIVES OUTSTANDING STUDENT AWARD FROM STC

The Southeastern Transportation Center at the University of Tennessee (Knoxville) selected NC State student **Greg Saur** to receive its Outstanding Student Award for 2003. NC State and nine other universities make up the STC - a member of the USDOT Transportation Centers Program.

Greg is working on his MS in Civil Engineering and is specializing in Transportation Systems Engineering. His innovative research with John Stone has integrated a regional transportation model with a traffic operations model. The STC and USDOT will recognize Greg's achievements at a banquet at the annual Transportation Research Board meeting in January.

THE GRADUATE PROGRAM

■ GRADUATE STUDENTS

Our graduate students continue to be recognized with prestigious fellowships. **Tori Roulac**, a PhD student in the transportation systems area, is recipient of the Eisenhower Fellowship awarded by the U.S. Department of Transportation. **Emily Zechman**, a PhD student in environmental engineering, is recipient of a GANN Fellowship. **Jon Williams** was awarded a National Science Foundation fellowship. The current College of Engineering Dean's Fellows include: **Slade Harvin**, **Abigail Humphreys**, **Cameron Long**, **Nicholas Lindow**, **John Sloan**, **Tara Swanson**, **Michael Tryby**, and **Jon Williams**. Southeast Transportation Center Fellowships were awarded to **Greg Saur**, **Ko Sok Chae**, and **Casey Covington**. **Jason Dorn**, **Tanya Kunberger**, and **Pamela Schooler** received fellowships from the Center for Transportation and the Environment. **Abigail Humphreys** and **Christos Anastasiou** received Alumni Fellowships. **William Letchworth** was awarded the Bruce Matthews NC Airport Managers Fellowship. NC Section Institute for Transportation Engineers (ITE) Scholarships were presented to **William Letchworth** and **Andrew Topp**.



The Automated Wheel-Track Pavement Testing System being used by Paul Khosla and several graduate students was obtained under the recent NSF Equipment Grant.

For 2001-2002, the number of graduate degrees awarded included 55 masters and 13 doctoral. Our graduate program enrollment increased this year to 213 graduate students, a new record. Our mix of students is 65% masters and 35% doctoral, and 59% U.S. and 41% international. Approximately 125 CE graduate students are supported by assistantships or fellowships. Competition for assistantships is keen, and fellowships are also available for outstanding U.S. students. Most of the assistantships are Research Assistantships funded through external contracts and grants resulting from faculty proposals.

David Johnston, CE Director of Graduate Programs, notes that applications to the graduate programs have increased significantly in recent years. The total applications have been about 200 in 1997, 300 in 1998, 400 in 1999, 450 in 2000, 500 in 2001 and 600 in 2002. Reviewing applications is becoming a major task for our faculty, but one result is an extremely well qualified group of students.

THE FACULTY REPORT



William Rasdorf

■ RASDORF RECEIVES ASCE'S RICHARD T. TORRENS AWARD

William Rasdorf, professor of civil engineering, was selected by the American Society of Civil Engineers (ASCE) Board Committee on Publications to receive the 2002 Richard T. Torrens Award for his work on the Journal of Computing in Civil Engineering. Rasdorf has been editor of the ASCE journal since 1989. He received his award during the ASCE Annual Convention in Washington, DC November 6, 2002.

The ASCE Board Committee on Publications established the Torrens Award in honor of Richard R. Torrens who served the Publications Department for 17 years. The award recognizes volunteer journal editors who have made outstanding contributions to the ASCE publications program. ASCE previously hon-

ored Rasdorf with the 2001 Computing in Civil Engineering Award. He was also named Fellow of the American Society of Civil Engineers in 1996.

Rasdorf received his bachelor's and master's degrees in architectural engineering from Pennsylvania State University in 1974 and 1978, respectively, and his master's and doctoral degrees in civil engineering from Carnegie Mellon University in 1979 and 1982, respectively. He joined the College of Engineering faculty in 1982. His research interests include structures, construction, computer-aided design, engineering databases and information systems, geometric modeling, geographic information systems, global positioning systems, materials management and technology assessment.



David W. Parish

■ NEW FACULTY APPOINTMENTS

David W. Parish (PhD, Civil Engineering '01, North Carolina State University) joined the department in January 2002 as a visiting assistant professor and the coordinator of undergraduate advising. As an engineering officer in the United States Army he worked on numerous foundation projects with the Army's Corps of Engineers. His experience is complemented with an educational background in geological engineering and geotechnical design. Dave has held positions as a Project Geologist and Foundation Engineer with the NC Department of Transportation. His research interests focus on the durability of transitional rock materials and their uses in foundation designs. To assist with undergraduate affairs, Dave teaches basic engineering courses to newly matriculated students.



Emmett A. Sumner

Emmett A. Sumner (MS '95, Virginia Tech) joined the Department in September 2002 as an instructor in structural engineering. He is completing his PhD from Virginia Tech and should receive his degree in December 2002. He will be an assistant professor starting next semester. Before returning to Virginia Tech to pursue his PhD, he worked as an engineer in Columbia, South Carolina for the LPA Group, where he designed bridge and transportation structures. He later worked for Stevens and Wilkinson of South Carolina designing commercial and industrial building structures. As a registered professional engineer, he has been a consultant to industrial corporations and engineering firms.

His research interests include the design, analysis, and full-scale testing of structural steel connections in building and bridge structures. He serves as a member of the Committee

on Connections for the American Society of Civil Engineers and is an active member of several other professional organizations.

Billy M. Williams (PhD Civil Engineering '99, University of Virginia) joined the department in September 2002 as an assistant professor in Transportation Systems and Materials. He joins the faculty after three years as an assistant professor at Georgia Tech. A native of Williamston, North Carolina, and an NC state alumnus, he received a BSCE in 1984 and a MCE in 1990. Billy is a licensed professional engineer, served four years as a naval officer in the Navy Civil Engineers Corps from 1984 to 1988 and as a consultant with the Cary-based firm of Kimley-Horn and Associates from 1990 to 1995.

His research and teaching interests are focused in the areas of traffic operations, emergency evacuation, traffic flow theory, and intelligent transportation systems. While at Georgia Tech, he received a National Science Foundation Faculty Early Career Development (CAREER) award for his proposal titled "System-wide Traffic Condition Monitoring and State Estimation for Intelligent Transportation Systems." The five year CAREER grant began on June 1, 2002 and is being transferred to NC State where he will implement the integrated research and education program outlined in his proposal.



Billy M. Williams

■ MATZEN AND KNAPPE ARE PROMOTED

Vernon C. Matzen (PhD Structural Engineering and Structural Mechanics '76 University of California, Berkeley) was promoted to professor on July 1, 2002. Vernon is Director of the Center for Nuclear Power Plant Structures, Equipment and Piping. His research interests include experimental and computational structural analysis for both static and dynamic loadings. His recent research applications include behavior and analysis of piping governed by the ASME Boiler and Pressure Vessel Code for Nuclear Components and the behavior of unanchored structures subjected to seismic base excitation. He is a Distinguished Alumni Professor for undergraduate teaching.



Vernon C. Matzen

Detlef R. U. Knappe (PhD, Environmental Engineering '96, University of Illinois at Urbana) was promoted to Associate

Professor on July 1, 2002. Detlef teaches undergraduate courses in environmental engineering. At the graduate level he teaches a physical-chemical water treatment course and an environmental engineering laboratory course. His research interests include micropollutant



Detlef R. Knappe

removal from drinking water, adsorption of micropollutants by activated carbon and alternative adsorbents, characterization of adsorbent materials and natural organic matter, interactions between micropollutants and humic substances, bioavailability, coagulation, and mitigating the effects of algae on drinking water quality and treatment process performance. Recent research includes investigating the removal of emerging contaminants such as endocrine disruptors and pharmaceutically active compounds from drinking water using alternative adsorbents and nanoscale photocatalysts. He is active in several national committees, including the particulate and organic contaminants research committees of the American Water Works Association (AWWA). In 2001 he was the recipient of the AWWA Water Science & Research Division Best Paper Award which he received for his Journal AWWA paper entitled "Atrazine Removal by Preloaded Granular Activated Carbon."

STAFF NEWS

UNIVERSITY AWARDS FOR EXCELLENCE PROGRAM



Jean Phillips

In spring of 2002 Dean Masnari honored the College's outstanding staff members, three of which were from the Department of Civil Engineering.

Jean Phillips of the Undergraduate Advising Office was honored for her exceptional ability in working with undergraduate students. The care that she extends to the students is a constant source of encouragement and reassurance. The good working relationships that she has built with other university offices on campus enables her to locate sources of service for students and faculty. Jean is an invaluable contributor to the success of the students and faculty in our department.



Barbara Rowe

Barbara Rowe, the Department's Program Coordinator, manages the department's academic, personnel, accounting, and budgeting functions. She coordinates over 140 research projects and more than 50 non-research projects for 40 faculty members. At one point she shouldered her responsibilities as well as those of three other vacant positions. The Department is indebted to Barbara for her devotion and her efforts which have gone above and beyond the call of duty.



David Black

David Black, Research Technician, was recognized with an Award for Excellence for his outstanding service and innumerable innovations that have led to savings of both time and money as well as improvements in laboratory safety. David has worked as a technician in the Environmental Engineering Laboratory since 1966. Due to his leadership, our laboratory has been recognized as "Laboratory of the Quarter" by the Environmental Health and Safety Center (EHSC) and we routinely pass inspections by the EHSC with no deficiencies.

FIELDS OF SPECIALIZATION

Members of the faculty welcome interaction with our alumni and friends of the Department of Civil Engineering. We invite you to contact the faculty in one or more of the discipline areas below when you have a tough technical question or other matters of concern in your practice.

COMPUTER-AIDED ENGINEERING

John Baugh
Leonhard Bernold
Downey Brill
Murthy Guddati
Abinav Gupta
Dan Loughlin
Kumar Mahinthakumar

Vernon Matzen
Margery Overton
Shamimur Rahman
Ranji Ranjithan
William Rasdorf
John Stone

TRANSPORTATION SYSTEMS AND MATERIALS

Joe Hummer
Paul Khosla
Richard Kim
Nagui Roupail

John Stone
Akhtar Tayebali
Billy Williams

CONSTRUCTION

Leonhard Bernold
David Johnston
Mike Leming
David Lombardi

Roberto Nunez
William Rasdorf
Sami Rizkalla
Ed Weaver

WATER RESOURCES AND ENVIRONMENTAL

Mort Barlaz
Bob Borden
Downey Brill
Allen Chao
Francis de los Reyes
Joel Ducoste
John Fisher
Chris Frey

Mo Gabr
Detlef Knappe
Dan Loughlin
Kumar Mahinthakumar
Rooney Malcom
Margery Overton
Ranji Ranjithan

STRUCTURES AND MECHANICS

John Baugh
Murthy Guddati
Ajaya Gupta
Abhinav Gupta
Kerry Havner
Tasnim Hassan
Mervyn Kowalsky

Vernon Matzen
Amir Mirmiran
Jim Nau
Sami Rizkalla
Emmett Sumner
Paul Zia

GEOTECHNICAL

Bob Borden
Roy Borden
Mo Gabr

Debra Laefer
David Parish
Shamimur Rahman

BASIC AND APPLIED RESEARCH

Our faculty members have about 140 current research projects underway. Two are highlighted here. For a list of project abstracts and their investigators, see our Web site at www.ce.ncsu.edu.

CE AIR POLLUTION TEAM DEVELOPS NEW APPROACH FOR NATIONAL VEHICLE EMISSIONS



H. Christopher Frey

The U.S. Environmental Protection Agency announced at a November 5, 2002 workshop in Ann Arbor, Michigan that it proposes to adopt a modeling approach developed at NC State as a basis for estimating vehicle emissions in its new emission inventory model. The new model, referred to as "MOVES," will be developed over the next several years and will ultimately replace the current generations of the MOBILE6 and NONROAD emission models used in all states except California for statewide air quality management. A study team led by **Chris Frey**, including graduate students **Alper Unal**, **Jianjun Chen**, **Song Li**, and **Chaoting Xuan**, completed a 268 page report for EPA in August 2002 titled "Methodology for Developing Modal Emission Rates for EPA's Multi-Scale Motor Vehicle and Equipment Emission System." Chris was invited by EPA to present this work at the November 5 workshop.

■ NEW TECHNIQUES ACCELERATE SOIL DECONTAMINATION



Mohammed Gabr

Until recently, dumping unwanted chemicals on the ground has seemed to some like a good way of disposing of them. Now we're beginning to realize that these chemicals find their way into surface and groundwater, sometimes from long distances. Cleaning up contaminated soil sites has become a major concern for the public as well as remediation researchers, including **Mohammed A. Gabr**. Gabr and his graduate students have been working for a number of years on the unique problems of soil remediation at heavily contaminated sites.

One technique Gabr has developed is the Well Injection Depth Extraction (WIDE) system, which is a fluid-delivery network of polymeric fabric sleeves that can be punched into the soil at close intervals. The porous sleeves allow extraction fluids to be pumped into contaminated soils and sucked back out after the contaminants are dissolved in the liquid. Once equipment is set up for installation and no subsurface obstruction is encountered, these sleeves can be pushed into the soil to a depth of 30 feet with a drill at a rate of 10 feet per second which makes installation relatively quick. After a grid of sleeves spaced two to three feet apart is created, their tops can be connected at the surface with a piping network that allows delivery of different kinds of liquid or gaseous solvents into the soil. To extract the dissolved contaminants, a vacuum is attached to the piping network, and the fluid or gas is collected in a decontamination tank.

The system has been field-tested on several contaminated sites with excellent results. The sites include soils around an underground jet fuel storage tank on a former military base, an underground gasoline tank in a residential area, a trichloroethylene (TCE)-contaminated disposal pond at a former uranium processing plant and a cesium-137-contaminated filter at a national laboratory. Gabr's current and former students who worked on the system include **Doug Szabo, James Wang, Sean Wokasien, Alan Williamson, Jason Lowther, Kimberly Warren, Tanya Kunberger, Mike Sabodish and John Quaranta**. Corporations that collaborated in the work include Battelle National Laboratories, Informatics Inc., Earthlines Technologies, the Nilox Corporation and U.S. Wicks. The work was primarily funded by the US Department of Energy.

CENTERS' UPDATE

■ TRANSPORTATION FOUNDERS FUND LAUNCHES SEMINAR SERIES

The Transportation Founders Fund (TFF) is a unique opportunity for transportation professionals to interact personally with top-level transportation executives and at the same time support the transportation program at NCSU. The TFF is an outreach activity of the NCSU Institute for Transportation Research and Education (ITRE) and the Department of Civil Engineering. TFF began offering a named seminar series in 2002. These seminars bring in experts to the NC State campus to brief students and area transportation professionals on current transportation topics. To date, speakers have discussed modern roundabouts and mobile emissions modeling and policy.

■ ROUNDABOUT AT THE INTERSECTION OF PULLEN ROAD AND STINSON NOW OPEN

A recent study completed at ITRE jointly funded by the NC State Office of Extension and Engagement and NCDOT evaluated the recommendations regarding the installation of a series of roundabouts on Hillsborough, Pullen, Clark, and Oberlin roads. These round-

abouts are intended to change the character of the Hillsborough corridor, improve the climate for businesses in the area, and make it more pedestrian, bicycle, and transit friendly. The original study, by Kimley Horn and Associates for the City of Raleigh proposed replacing traffic signals at seven intersections and stop signs at four intersections with eleven roundabouts. The ITRE study, published in September 2002, provided a detailed traffic capacity and operational analysis of the system of roundabouts proposed in the Kimley Horn study, from both the vehicle and pedestrian perspectives.

The operational performance of the proposed systems of roundabouts was determined using the micro-simulation model VISSIM. This German model is based on gap acceptance theory at the approach entries, and is beginning to be widely used in the USA. The first in the series of roundabouts based on the Kimley Horn study was recently opened at the intersection of Pullen/Stinson on main campus. A comprehensive presentation on current roundabout practice can be found at: <http://itre.ncsu.edu/ITREmain/NewsReleases/download/TFFSeminar5.pdf>

Nagui M. Roupail led the ITRE study. He is currently serving as ITRE Director and Professor of Civil Engineering. Roupail was ably assisted by **Kosok Chae**, a PhD student in Transportation in the CE Department.

■ CONSTRUCTED FACILITIES LABORATORY MOVING TO A NEW ERA

CFL expanded its mandate from research to product development, working closely with industrial alliances. **Sami Rizkalla** and his research team provided the fundamental mechanical characteristics of the new high performance (high-strength and highly resistant to corrosion) steel reinforcing bars developed and produced by "MMFX" (Microcomposite Multistructural Formable Steel) Steel Corporation of America. Testing includes the mechanical properties in tension and in compression, shear strength, fatigue strength, effect of bend radius on tensile strength of bent rebar (stirrup), bond strength and development length, behavior of MMFX rebars as compression steel in reinforced concrete columns, and development length of the new rebars.



Structural Testing at CFL

CIVIL ENGINEERING AND CONSTRUCTION EXTENSION ACTIVITIES

■ EXTENSION OUTREACH AND SUPPORT TO INDUSTRY

During the past year, the Constructed Facilities Laboratory (CFL) has made excellent progress towards servicing the research, testing and training needs of a wide variety of industries in North Carolina and across the country. A partnership established at the beginning of this year with **Roberto Nunez PE** and **Edwin Weaver PE**, both Construction Extension Specialists of the Department of Civil Engineering, have opened exciting project opportunities including:

- The establishment of the first ACI/NCDOT approved Field Technician Concrete Certification School - This monthly certification school helps the NCDOT, concrete inspection-engineering firms, and concrete manufacturing companies improve the overall testing efficiency and quality of state-owned infrastructure.



Roberto Nunez



Edwin Weaver

- Testing of insulated foam-metal sandwich panels fabricated by Bally Refrigerated Boxes, Inc. - In addition to providing Bally with valuable information for worldwide structural and non-structural applications, this project led the CFL to pursue and obtain a prestigious ICBO Accreditation for Testing certification.
- Investigation of an improved method to reinforce glass panels produced by Clear Defense and Athletic Laminates, Inc. - Results of this work are helping this North Carolina company in improving the safety and performance of protective glass walls in sports arenas and other safety related applications.
- Verification and research of hybrid (wood-concrete) prefabricated wall panels for uplift resistance forces - This investigation enhances the product development efforts of Superior Walls of America Ltd., and supports their efforts to introduce their wall system into new markets.
- Research the creep and shrinkage characteristics of the concrete used in the NCDOT owned bridge and bypass located in the new US-17 Wilmington by-pass - This is ongoing investigation is expected to produce valuable information with regard to volume stability for this and other similar concrete structures.

H.E. "Tony" Withers, III (BSCEC '75) is the CEO of Withers & Ravenel, Inc., a multi-disciplined engineering firm in Cary. He began the company in 1983 with fellow NCSU graduate Samuel F. Ravenel (BSCE '74); the firm now has over 25 registered engineers and more than 85 employees.

Mitchell D. McKnight (BSCEC '76) was recently promoted to Principal with Wilson Miller, Inc., a 350 person planning, engineering and surveying firm with five offices in Florida.

Carl Sims (BSCE '79) is the Quality Control Manager for Caddell Construction, Inc. in Montgomery, Alabama. He is currently working on the \$65 million Separate Battalions Barracks Project at Fort Bragg, NC.

Roger B. Stanley (BSCE '80) recently authored a paper that was published in the December, 2001 edition of Modern Steel Construction magazine entitled Re-Decking the M. Harvey Taylor Bridge.

Shailesh Bettadapur (BSCE '82, MCE '83) completed his MBA from Northwestern University in 1990 and was appointed Treasurer, Asia-Pacific for Johnson Controls, Inc. in April 2001.

R. John Martin (BSCE '84) has relocated to the Northern Virginia office of Kimley-Horn and Associates, Inc. He will be responsible for transportation planning, engineering, and infrastructure development projects, as well as coordinating services for clients throughout the Washington, DC area.

Steve Thomas (BSCE '84, MCE '86) is the Vice President for the Florida Operation of ARCADIS. Steve, wife Ann, and sons Alex and Jack live in Tampa Florida.

Jeff L. Picklesimer (BSCE '85) is currently with NCDOT in Asheboro, NC as District Engineer. He and his wife, Sherry, have three sons, Jeffrey age 18, Heith age 10, and Thomas age 4.

Paul D. Cray (BSCEC '87) has rejoined Lynch, Giuliano & Associates, Inc., a civil engineering and land surveying firm, to open and manage their Burlington, N.J. branch office. He is married to Kelly and has three children, ages 16, 9 and 7.

Phillip S. Dunston (BSCEC '88, MSCE '92, PhD '94) has just joined the faculty in Construction Engineering and Management at Purdue University in the School of Civil Engineering. He is married to Candace Dunston (BSCE '88). They have three children, Jonathan, Kayla, and Azaria.

Bashar Rihani (MSCE '88) has been living in Beirut, Lebanon since 1999, when he became Director of Transportation Department (Dar Al-Handasah). He was elected to the Board of Directors of Dar Al-Handasah Consultants in 1998. He is married with two daughters.

Paul A. Stimpson (BSCEC '90) is the Assistant Engineering Manager for the North Carolina Operation of Timmons, Inc. Paul and Kirsten Lewis Stimpson (BSCE '91) have two daughters, Nina Kay age 5-1/2, and Sara age 2. Paul and Kirsten also joyfully announce the birth of their son, Clay Alexander born on March 15, 2002. The Stimpsons live in Winston-Salem.

Wes Denton (BSCE '92, MCE '95) is Manager of Programming for Sprint's World Headquarters Campus in Overland Park, Kansas, which has over 14,500 associates. He completed his MBA at the University of Kansas in May 2002.

Kenny Johnson (BSCE '93) is Project Manager for Zimmer Development Company in Wilmington, NC. He is married to Libby and has two sons, Brandon and Zachary.

Jeff Moore (BSCE '94) is a senior project manager for Kimley-Horn & Associates in Cary in the Roadway Division. He is married to Margaret and has a son, Layton.

ALUMNI NEWS

ALUMNI NOTES

Alp Caner (PhD '96) and **Erdem Dogan** (PhD '98), structural engineers with Parsons Brinckerhoff, Inc. in New York City, were honored by their company with cash awards for their paper coauthored with **Paul Zia**, Distinguished University professor Emeritus of Civil Engineering. The paper entitled *Seismic Performance of Multi-Simple-Span Bridges, Retrofitted with Link Slabs* was published in the ASCE Journal of Bridge Engineering, March/April 2002. The paper received the honorable mention citation in the company-wide Paper of the Year competition for 2002.

ALUMNI UPDATE

Roy C. Thurmond (BSCE '49) is retired from Allen & Hoshall, consulting engineers.

Billy Eugene Biggerstaff (BSCE '54) died in August, 2001. He retired from the Federal Energy Regulatory Commission in 1986, then went on to operate a consulting business for several years.

William F. Stewart (BSCEC '71) died unexpectedly on September 19, 2001. He was president of Stewart Engineering Services, Inc. of Greensboro, NC; a company he started in 1991.

Donald E. Carmichael (BSCE '71) retired on November 1, 2001 as Assistant City Manager-Operations for the City of Gastonia, NC. His professional career included 18-1/2 years service with the City of Gastonia and 11 years service with the city of High Point, NC.

Emily Meador Sylvester (BSENE '96) is employed with the Marine Corps Base, Camp Lejeune, as the Air Quality program Manager. She is married to Nathaniel Sylvester.

Matthew F. Cagle (BSCE '97) is a Civil Engineer/Construction Operations Manager Trainee with Barnhill Contracting Company in Rocky Mount, NC. Recent projects included the Rocky Mount/Wilson Runway Extension and site work construction for Universal Leaf Tobacco Processing Plant, a 1.2 million sf facility in Nashville, N.C.

Colista Sugg Freeman (BSCE '98) is employed with the North Carolina Dept. of Transportation. She married Mark Freeman on October 6 at Peace College.

Aimee Andrews (BSENE '99) is an Environmental Engineer for Clayton Group Services, a private consulting firm.

Matthew Nachman (MCE '00) is the Project Manager, Restoration and Repair Division, for Tadjer-Cohen-Edelson Structural Engineers in Silver Spring, Maryland.

Christopher M. Roberson (BSCE '00) is working for Bovis Lend Lease, Inc. as a project engineer. Current assignment is an 85,000 sf renovation and vertical expansion of the mother/baby, neonatal, ICU, and adult critical care units at a major healthcare facility in Asheville, NC. Chris was named "Rookie of the Year" in 2001 for Bovis Lend Lease, Inc.'s Charlotte, NC office.

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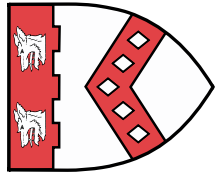
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