

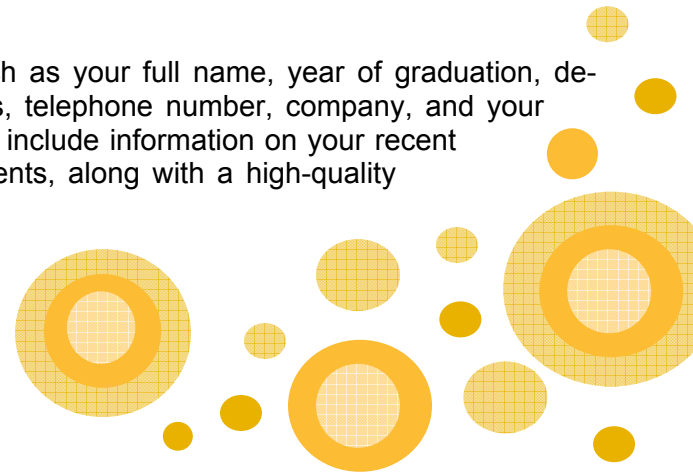


Alumni Registration & Updates

The Department of Civil and Environmental Engineering is always interested in how our alumni are doing. We hope you will take time to send your updates to jmuel-ler@lsu.edu or, if you prefer, you can "snail mail" them to

Department of Civil and Environmental Engineering
Louisiana State University
3418 Patrick Taylor Hall
Baton Rouge, LA 70803-6405

Please include basic information such as your full name, year of graduation, degree, mailing address, email address, telephone number, company, and your title/position. For your update, please include information on your recent professional and personal developments, along with a high-quality photo if available.



Volume 10 Fall Issue November 2010



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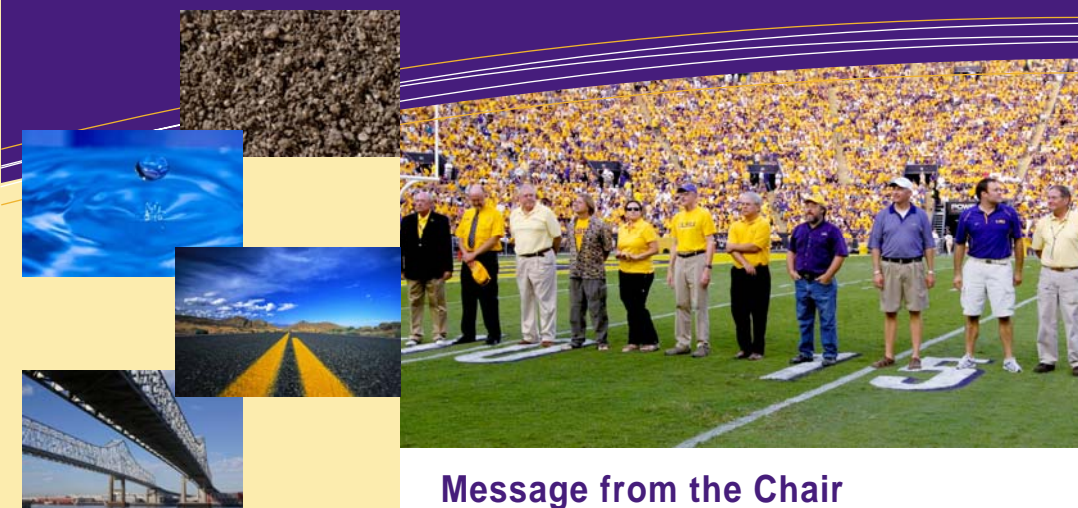
CEEinFocus

Louisiana State University
Department of Civil and Environmental Engineering

Volume 10

Fall Issue

November 2010



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Message from the Chair



The Department is continuing to participate in activities pertaining to the recent

Deepwater Horizon oil spill in the Gulf of Mexico. Several of our faculty are participating in this effort including Professor John Pardue (featured above) who was recognized by LSU, along with nine other LSU faculty members, for his participation in the oil spill response. Other CEE faculty members who also dedicated their time and effort in the response are Professors Kelly Rusch, Q. Jim Chen, Clinton Willson and Ronald Malone. The Department activities include assessing the short and long term impacts on coastal wetlands and the fate and transport of oil.

Though the oil spill recovery will be an ongoing process, it's headline in the news has

been almost replaced with another issue just as detrimental to our state. As most of you are aware, we are experiencing significant budget shortfalls which have resulted in LSU receiving drastic budget reductions. And unfortunately, there may be more to come. Though certain colleges and entities on campus have thus far borne the brunt of those cuts more so than others, our Department has not been left untouched. We have absorbed those cuts to the best of our ability without sacrificing the quality of our programs or the experience we offer for our students any more than necessary. We look forward to a future of continued success, maintaining our level of excellence. We are as determined as ever to tackle each road block with precision as we maintain our focus on our goals of future growth and continuous improvement. Now more

than ever we need your support. As faculty, we can stand firm on our commitment to providing a quality education and well-rounded learning experience for our students. As staff we will come together to work more efficiently and cooperatively for the betterment of the department. And to our alumni and friends we thank you for your continued support during these trying times. Whether through sharing your passion for LSU and the Department or participating in the Forever LSU Campaign, you are making a difference and we ask for your continued support of LSU and the Department. It is more vital now than ever and we assure you that it is never taken for granted.

Best Regards,
Dr. George Z. Voyiadjis
Boyd Professor, Chair
And Bingham C. Stewart
Distinguished Professor

A Foundation of Excellence Program



Student Highlights

Student Highlights

PhD student Stuart Adams traveled to Japan in late September to present a paper at the 8th International Workshop on Remote Sensing for Disaster Management in Tokyo. Adams was one of 30 participants from nine different countries that delivered 28 presentations on topics such as damage detection methodologies and building inventory systems. The well received paper, coauthored with his professors Marc Levitan (CEE) and Carol Friedland (CMIE), was on use of unmanned aerial vehicles in data acquisition for damage assessments. Image-Cat, Inc., an international risk management innovation company headquartered in Long Beach, California, helped sponsor Adams's trip.



The Department would like to congratulate the ASCE Student Chapter Steel Bridge team on another successful placement at the 2010 National Student Steel Bridge Competition. This year's competition was hosted at Purdue University on May 28th and 29th in West Lafayette, Indiana. The LSU Steel Bridge Team, attending nationals for the eighth consecutive year, competed admirably and succeeded in accomplishing the goals that had been set before them at the beginning of the year. The team placed 14th overall out of the 46 schools invited to nationals, and out of 196 schools that competed at all combined regional competitions. The finished product weighed a total of 280 pounds, deflected one inch when

subjected to a 2500 pound load, and could be constructed in approximately 7 minutes. Major sponsors for the team included: Prospect Steel Company, Schrenk and Peterson Consulting Engineers, CSRS Architects Engineers, ASCE Baton Rouge Branch and ASCE Louisiana Section. Additional assistance from several other companies, various personal contributions, and LSU faculty and staff also aided the team and contributed to their success. The team consisted of Mark Dunn (Captain), David Craft, Josh Porter, David Ziegler, Kristi Acuff, and Chris Sciortino. Congratulations to the students, as well as their faculty advisor Dr. Ayman Okeil and staff advisor David Robertson.

Chi Epsilon Lesley Horst Attends National Conclave

The Chi Epsilon 41st National Conclave was held March 11-13 at the University of Alabama, Tuscaloosa. The national conclave is held every other year and serves as a great opportunity for both students and professionals in the field of engineering to meet and discuss topics in civil engineering. Representing the LSU Chi Epsilon chapter was Lesley Horst, LSU Department of Civil and Environmental undergraduate student in Civil Engineering and current Chapter President.

Members of Chi Epsilon, a national honors society, are selected based on scholarship, character, practicality, and sociability and must rank in the top of their class. The purpose of Chi Epsilon is to maintain and promote the field of civil engineering as an ideal profession. Chi Epsilon also serves to uphold the development of character and technical ability in the civil engineering field of its members and of others by example.

Faculty Highlights



Every year, the National Institute for Water Resources runs a highly competitive grants program through USGS. For the second time in 5 years, Dr.

Frank Tsai successfully competed for an award. Dr. Frank Tsai and Dr. Jeffrey Hanor (Department of Geology and Geophysics) were awarded three-year funding, \$217,645 from 2010 NIWR/USGS National Competitive Grant Program to work on a project entitled "Hierarchical Multi-model Saltwater Intrusion Remediation and Sampling Designs: A BMA Tree Approach"



Dr. Q. Jim Chen is the Principal Investigator of a multi-institutional multi disciplinary grant (\$725,000) from the Northern Gulf Institute. The project is titled

"Understanding Coastal Resiliency from Hurricane Impacts Using Integrated Modeling and Observations." The research team includes faculty members at LSU, Mississippi State University and NOAA.

Also, Dr. Q. Jim Chen's group has actively collaborated with researchers at the LSU Center for Computation and Technology (CCT). The CCT Coastal Modeling Group has recently appeared in an article titled "Louisiana Optical Network Used to Study Hurricane Effects on Spilled Oil" published in the HPC WIRE, which has covered the fastest computers in the world and the people who run them since 1986. Chen and his collaborators are modeling and visualizing how severe storms would affect the re-suspension and transport of the spilled oil particles using high performance computing resources available at Louisiana Optical Network Initiative (LONI) and NSF TeraGrid, a national cyberinfrastructure for scientific research.



Dr. Louay Mohammad, Professor and Director of the Engineering Materials Characterization Research Facility, was highlighted in a story published by the Institute of Scrap Recycling Industries in their *Recycling Today* publication. Dr. Mohammad's research is on utilization of crumb rubber as an asphalt binding material and offers

an alternative to traditional asphalt binder, providing cost savings much needed as the price of crude oil and the traditional binder material continues to increase. Also, Dr. Mohammad is serving as principal investigator on a study *Optimization of Tack Coat for HMA Placement*. This project and the results thus far were highlighted in an article by Harold "Skip" Paul, Director of the Louisiana Transportation Research Center, and appeared in the May/June 2010 issue of the HMAT (Hot Mix Asphalt Technology) publication of the National Asphalt Pavement Association.



Dr. Michele Barbato received a grant of \$128,866 for his proposal entitled "Development of finite elements for response and response sensitivity analysis of reinforced concrete structures retrofitted with externally-bonded fiber reinforced polymers" from the LA Board of Regents. This research project proposes to develop

efficient algorithms for nonlinear finite element response and response sensitivity analysis of reinforced concrete structures retrofitted with externally-bonded fiber reinforced polymers (FRPs). These algorithms are essential for the integration of advanced finite element models, currently used for deterministic analysis of structures, and structural reliability, which provides a rigorous framework for the safe and economic design of structures.



Drs. Mostafa Elseifi and Louay Mohammad received a new research fund (\$165k) from the National Science Foundation. The project, titled "A New Approach to Recycle Asphalt Shingles in Hot Mix Asphalt" will revolutionize recycling practices of asphalt shingles in pavement construction and will enhance the understanding of sustainable materials in construction applications for high school and undergraduate students especially among underrepresented groups.



Dr. Ayman M. Okeil received a \$180,000 grant from the National Science Foundation to study a novel technique for strengthening using pultruded fiberglass composite (GFRP) sections that he developed for thin-walled steel structures. Experimental and analytical investigations under static and fatigue loading will be conducted to assess the performance of the new technique over a wide range of variables.

Faculty Highlights

CEE Faculty Awards



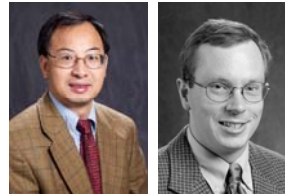
Awardees of the 2010 Department Faculty Awards were Dr. Clinton Willson, Dr. Suresh Moorthy, and Dr. Guoping Zhang. Dr. Suresh Moorthy was honored with the Educational Achievement Award

for his diligent work to ensure a high quality of educational experience for undergraduate students enrolled in foundational engineering courses, which has resulted in higher instructor evaluation scores and an increased number of well-prepared students moving forward into their chosen specialized engineering curricula. Dr. Clinton Willson was honored with the Departmental Service Award for his outstanding contributions during the Department's accreditation process, along with his continued efforts to coordinate and lead collaborations with other departments and centers across campus, recruit new faculty, and gaining recognition for the Department as a whole. The Research Achievement Award was bestowed on Dr. Guoping Zhang for consistently showing significant results in his research program that have made local and national impacts, for attracting and mentoring highly accomplished graduate students for their dissertation research and for showing strength in both undergraduate and graduate teaching.



Dr. Steve C.S. Cai, Ph.D., P.E., Edwin B. and Norma S. McNeil Distinguished Professor in CEE, has been appointed as Associate Editor of Journal of Engineering Mechanics (JEM), American Society of Civil Engineers (ASCE). JEM is a highly respected journal in engineering mechanics. Dr. Cai has also served as Associate Editor since 2005 for Journal of Bridge Engineering, ASCE and is serving as a member of a few other editorial boards.

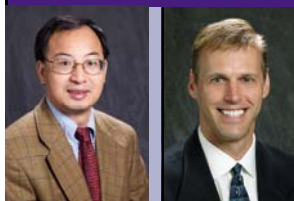
In addition to his recent appointment as Associate Editor of the Journal of Engineering Mechanics, Dr. Steve C. S. Cai has been elected a Fellow of American Society of Civil Engineers (ASCE). The Fellow status is a prestigious honor held by fewer than 5% of ASCE members. The Department congratulates Dr. Cai on this outstanding achievement.



The Department would like to congratulate Drs. Steve C. S. Cai and William Moe on their recent promotions. Both faculty were promoted to full Professor of Civil and Environmental Engineering. Dr. Cai, whose areas of specialization include bridge engineering, prestressed concrete,

wind engineering, structural dynamics, structural performance evaluation and rehabilitation, joined the department in 2001. Before Dr. Cai joined LSU in 2001, he worked for consulting firm, state government, and other institutes for eight years in the US, in addition to a few years as an instructor in China. Dr. Moe, whose areas of specialization include air pollution control, biological waste treatment, biofilm processes and sequencing batch reactors, joined the department in 1991 after completing his PhD at Notre Dame.

Professorships Awarded



This year the College of Engineering received 16 nominations for 4 open professorships. The Department is delighted to announce that two of our faculty members, Drs. Steve C.S. Cai and Brian Wolshon, were each selected for professorships. Dr. Steve C.S. Cai has

been granted the Edwin B. and Norma S. McNeil Distinguished Professorship in the College of Engineering. Dr. Brian Wolshon has been granted the Edward A. & Karen Wax Schmitt Distinguished Professorship in the College of Engineering.



The Department would like to announce the appointment of Dr. Clinton Willson, Associate Professor,

as the new Department of Civil and Environmental Engineering Graduate Programs Coordinator. We would like to thank Dr. Donald Dean Adrian for his many years of service to the program. "Dr. Adrian has done a wonderful job in improving the quality of our graduate program while continuing to grow the student numbers. Since taking over this position, I have heard a number of wonderful comments about Dean's service from faculty and staff in the LSU Graduate School. Dr. Adrian's dedication and commitment to his position as Coordinator greatly enriched the quality of our graduate programs and graduate students for many years" stated Dr. Willson, new graduate program coordinator. The Department would like to thank Dr. Adrian for his outstanding service.

Student Highlights



Coastal Mechanics Group Visit O.H. Hindsdale Wave Research Lab

The summer of 2010 saw the Coastal Mechanics Group, headed by Dr. Heather D. Smith, participating in a laboratory study with Oregon State University's Dr. Dan Cox and Dr. Denny Albert and Kyoto University's Dr. Nobuhito Mori at the O.H. Hindsdale Wave Research Laboratory in Corvallis, OR. The Hindsdale laboratory houses the largest Tsunami wave simulator in the world and the largest full-scale wave flume in North America. The goals of the project are to (1) quantify the reduction of incoming offshore wave energy by increasing turbulent dissipation through the vegetation and (2) investigate the effects on sediment transport through the vegetation. Use of vegetation to dampen wave energy and maintain sediment is both a cost effective technique as well as an ecologically sustainable solution to the high wave energy induced wetland loss encountered in southern Louisiana.

The research group, including LSU graduate students Agnimitro Chakrabarti and Getnet B. Agegnehu, obtained detailed measurements of the free surface elevation and sub-surface velocities in the flume for different den-

sities of locally-harvested bulrush (*Schoenoplectus pungens*) obtained in Tillamook Bay, OR. This species of bulrush has close relatives which are native to both the Gulf coast and the Great Lakes. This is one of the first experiments where live, natural vegetation has been used in a controlled laboratory environment. A variety of wave conditions were tested, including regular and irregular waves, different wave periods, and different wave heights. The wave height was increased to simulate a storm scenario in an attempt to quantify plant damage under storm conditions. To the teams' surprise there was little or no destruction of stems even under these destructive waves. Finally, an advection and dispersion study was conducted using salt water as a proxy for contaminants to quantify the transport under waves through the vegetation. In the upcoming months, the research team will be analyzing the data obtained over the three-week long experiment.

This project is funded by the National Science Foundation, the Louisiana Board of Regents, and the Louisiana Water Resources Research Institute.

Pictured Above: The Waves and Vegetation Research Group. Front row (left to right): Dr. Denny Albert, Dr. Heather Smith, and Dr. Daniel Cox. Back row (left to right): Tomoya Shimura, Yuta Hayashi, Sungwon Shin, Munki Kim, Dr. Nobuhito Mori, Agnimitro Chakrabarti, Hayden Ausland, Kerri Bridges, Getnet Agegnehu, Hyun Doug Yoon, Sean Laguna, Sean Kim.



Pictured Above: The four test sections setup in the flume. The three vegetated channels have different vegetation densities and an unvegetated control channel. Pictured Below: Waves approaching the test sections in the flume.



(cont.) ETEC Sponsors Hydraulics and Water Distribution Lab

movement through the system. Also, a connection system will be put into place to open the channel flume where small turbines will be located. The operation and monitoring of these turbines will be also done at the workstations.

ETEC is a manufacturer's representative organization covering both the municipal and industrial markets in Louisiana, Mississippi, Arkansas and Western Tennessee. In addition to over sixteen years of experience involving municipal projects, their staff has specific industrial experience in such areas as pulp and paper, petrochemical, and poultry processing.

The company has both a passion for and roots in LSU Department of Civil and Environmental Engineering. ETC's President, Ronnie Hebert, received his Bachelor's in Civil Engineering from LSU in 1969 and has over forty years experience in the industry. Michael D. "Mike" Todd, sales, received his Bachelor's in Civil Engineering from LSU in 1979 and has been involved in both the manufacturing and sales of water and wastewater treatment equipment for over twenty years.

The ETEC Hydraulics and Water Distribution Laboratory will be dedicated at a ribbon-cutting ceremony, tentatively scheduled for Spring 2011. The Department of Civil and Environmental Engineering would like to thank ETEC for its generous contribution and

dedication to the continual improvement of the Department.

The Forever LSU campaign, launched in June 2006, is the largest, most ambitious fundraising campaign in the school's history. The CEE Campaign Steering Committee set the department target goal at \$4 million with a stretch goal of \$8 million. With the generous support we have received from alumni and friends we are very close to reaching that goal and expect to surpass it by the conclusion of the campaign. With only a couple of months left, we ask that you please consider contributing to this vital effort. If you would like more information and/or would like to discuss donation options, please contact our donor investment advisor Don Eisenberg at (225) 758-2441.



LSU Sesquicentennial Celebration: LSU Day

In the previous newsletter we announced and advertised the LSU Day campus-wide event that was scheduled to be held on April 24th. Unfortunate at the time, the event had to be postponed due to weather. But great news: the event has been rescheduled for Saturday, November 13th (during homecoming week) so mark your calendars!

This year, LSU is celebrating its 150th anniversary. As part of that commemoration, we are proud to invite students, alumni, faculty and staff, and citizens of Louisiana to explore and experience first-hand the benefits of Louisiana's flagship, public, research university. Join us for our inaugural LSU Day! All events take place at the Baton Rouge campus on Saturday, November 13,

from 9 a.m.-1 p.m. Please mark your calendars and join us for a free, fun-filled day full of events for all age groups (so bring the family!).

As part of the LSU Day experience, the College of Engineering will be hosting an Engineering Extravaganza. During this event, the faculty, staff, alumni, and student body of the College of Engineering will demonstrate various engineering fields with hands-on activities, student projects, and presentations. So please join us on the Field of Excellence (located by the LSU Rec center).

For more information about LSU Day and the Engineering Extravaganza, including an updated list of scheduled events and a map, visit www.lsuday.com.

LSU Day is made possible through the generous donations of AT&T, BlueCross BlueShield of Louisiana, Campus Federal Credit Union, Raising Cane's, Coca-Cola, Entergy, and Exxon-Mobil.



CEE Affiliates Receive Awards from ASCE Baton Rouge Chapter



CEE Affiliates Pictured Left: Dr. Ayman Okeil (first from left), Mr. Ara Arman (third from left) and Mr. Robert "Bob" Jacobsen (first from the right). In the picture to the right is Mr. Ronald "Ron" Rodi.



Please join us in congratulating the following CEE affiliates for being recent 2010 ASCE Baton Rouge Branch Award Winners. Our own faculty member, Dr. Ayman Okeil (Associate Professor), received the award of Educator of the Year. CEE Professor Emeritus Ara Arman, also a member of the CEE Hall of Distinction and the CEE External Advisory Board, was honored with the Lifetime Achievement Award. Robert "Bob" Jacobsen, who received his master's degree in Civil Engineering in 1996 and is currently pursuing his

doctorate in Civil Engineering, was awarded the award for Outstanding Civil Engineer. Also, Ronald "Ron" Rodi, CEE alum, Hall of Distinction member, Chairman of the CEE External Advisory and Campaign Steering Committee Chair, was accepted to the Fellow membership grade within ASCE. The Fellow status is a prestigious honor held by fewer than 5% of ASCE members. All are well deserved and serve as excellent representations of their contributions to the profession.

CEE Alumna Appointed Secretary of LaDOTD

Civil Engineering graduate Sherri LeBas was appointed as Secretary of the Louisiana Department of Transportation and Development (DOTD) in June 2010 by Gov. Bobby Jindal. Prior to this permanent appointment, LeBas had served as Interim Secretary since February 2010.

Sherri LeBas earned a bachelor's degree in civil engineering from LSU in 1985. She is a licensed professional engineer and, out of her 25 years of Louisiana state service, has worked for the Louisiana Department of Transportation and Development for approximately 19 years.

Alum Spotlight: Jim Verzwylvelt, Jr.

Jim Verzwylvelt, Jr., P.E., received his Bachelor's in Civil Engineering from LSU in 1992. He has been employed by Pan American Engineers - Alex Inc. for 17 1/2 years as a project/design engineer on various utility, drainage, roadway,

environmental, and civil site work projects including civil designs for over 20 new Wal-Mart Super Centers in Louisiana and Southern Arkansas. He is currently registered in Louisiana, Arkansas and Colorado.

CEE External Advisory Board

The EAB provides outside perspective and valuable input on industry trends and needs.

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GEC, Inc

Wilfred B. Barry
SJB Group, Inc.

Dr. Jim Coleman
Coastal Studies Institute

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Ronald Rodi
CSRS

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Shaw Environmental & Infrastructure, Inc



Advanced Driving Simulator Technology Coming to LSU

Cutting-edge research that responds to the needs of the 21st century and promotes interdisciplinary research here at LSU

Drs. Sherif Ishak, Vinayak Dixit and Brian Wolshon, transportation faculty members in the Department of Civil and Environmental Engineering, will soon embark on new and exciting research in the area of driving simulation. Their project titled *A Driving Simulator to Study Human Behavior and Improve Traffic Operation and Safety in Louisiana* will enable the transportation faculty to conduct cutting-edge research that responds to the needs of the 21st century and promotes interdisciplinary research here at LSU.

Research based on driving simulators includes the study of human factors in driving tasks, the study of driving performance for different groups and under different environmental conditions, the design or assessment of new in-vehicle gadgets, the training of drivers, and the improvement of highway geometric design standards. Simulation research can be divided into two types: computer simulation and human-in-the-loop simulation. Computer simulation uses advanced com-

puters and mathematical models/ algorithms to mimic the behavior of drivers in a given situation. In contrast, human-in-the-loop simulation (such as with the driving simulator) allows actual humans to interact with the simulator, providing a more complete and real-

“The LSU driving simulator will introduce new research opportunities in the area of human factors and medical research and allow us to study driver behavior (e.g. driver distraction) under a wide range of driving conditions. Such research will significantly impact traffic operation and safety in the state of Louisiana, and is therefore of high economic value .”

istic simulation framework. The software to be used with the driving simulator will provide the re-

searchers the ability to piece together a simulated driving environment tailored to the research being conducted. Once the simulated environment is in place, the researchers will then be able to employ a human subject to carry out the established task(s) and to analyze the results.

The driving simulator will equip the research group with the ability to conduct cutting edge transportation research and expand the research capabilities here at LSU. With this simulator in place, the Department of Civil and Environmental Engineering will be able to tap into and expand on transportation research areas, as well as provide a unique educational tool for hands-on experiments for undergraduate students and recruitment of top-notch graduate students. The simulator will also create interdisciplinary research opportunities in areas such as human psychology and computer visualization. More information about this project can be found on the department website at www.cee.lsu.edu

Congressman Cassidy Visits River Model

In late August, the Department of Civil and Environmental Engineering was pleased to host Congressman Bill Cassidy (Louisiana’s Sixth District) at the Vincent A. Forte River and Coastal Engineering Research Laboratory. The first part of the visit consisted of briefings to the Congressman and his District Director, Brian McNabb, about lower River flow and sediment diversions and the small-scale physical model. Afterwards, the Congressmen had an opportunity to see the model simulate several years of river flow and sediment transport. This led to further discussions concerning better integration of restoration and flood protection projects and the need for the use of multiple tools for improved understanding of these complex projects. We thank the Congressman for taking time out of his busy schedule to visit this unique tool and owe a special thanks to Mrs. Ann Forte Trappey, CEE External Advisory Board Member and graduate, for setting up this meeting.

The Vincent A. Forte River and Coastal Engineering Research Laboratory, dedicated in 2004, houses a small-scale physical model (SSPM) of the lower 80 miles of the Mississippi River. The SSPM, funded by the LA DNR, is a distorted scale model capable of providing semi-quantitative data and information regarding large-scale river flow and sediment diversions over long timescales. Experimental results



Pictured Above: Drs. George Voyiadjis (left) and Clinton Willson (center) discussed with Congressman Cassidy the potential research opportunities that may be conducted in the River Model at LSU.

from the SSPM are being used along with numerical model simulations to provide insights that help guide diversion planning and design.

ETEC Sponsors Hydraulics and Water Distribution Lab

The Department of Civil and Environmental would like to announce that Environmental Technical Sales, Inc. (ETEC), through a \$100,000 gift that has been combined with additional donations for a total of \$200,000 towards the Forever LSU Campaign, has chosen to sponsor the Hydraulics and Water Distribution Lab.

The Hydraulics and Water Distribution Lab was created to provide Civil and Environmental Engineering undergraduate students an experimental and modeling facility where they can get hands-on experience in the real-time monitoring, control, and modeling

of hydraulic systems. The laboratory currently consists of a series of pipes in various diameters, valves, switches, flow meters and pressure gages that are all connected to two reservoirs for water distribution control problems. This pipe loop system can be configured to operate as independent individual loops, collectively as one unit, or in various configurations. Several PC-based computers are set up, some for running Water Distribution Control and Monitoring Software and the others running Monitoring Software and Hydraulic Modeling Software. The real-time monitor-

ing and optimization software equips students with the ability to provide constant flow control according to changing demands, while monitoring main water lines, reservoir levels, water quality, etc. The software also enables continuous monitoring of water quantities and pressures.

This gift will provide for extensive renovations, improvement of capabilities, and expansion to the lab. Computer workstations will be added to serve as a means to control, monitor, and model tracer

Article continued page 8.