

The Department of Civil and Environmental Engineering is always interested in how our alumni are doing. We hope you will take time to complete the Alumni Update information below. Please include information on your recent professional and personal developments, along with a high-quality photo if available. Please email your information to jmueller@lsu.edu or mail submissions to *Civil and Environmental Engineering, Louisiana State University, 3418 Patrick Taylor Hall, Baton Rouge, LA 70803-6405.*

Name: _____ Graduation Year(s): _____

Home Address: _____

Home Telephone: _____ Email: _____

Company: _____ Title: _____

Business Address: _____

Business Telephone: _____

News: _____



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

ADDRESS SERVICE REQUESTED

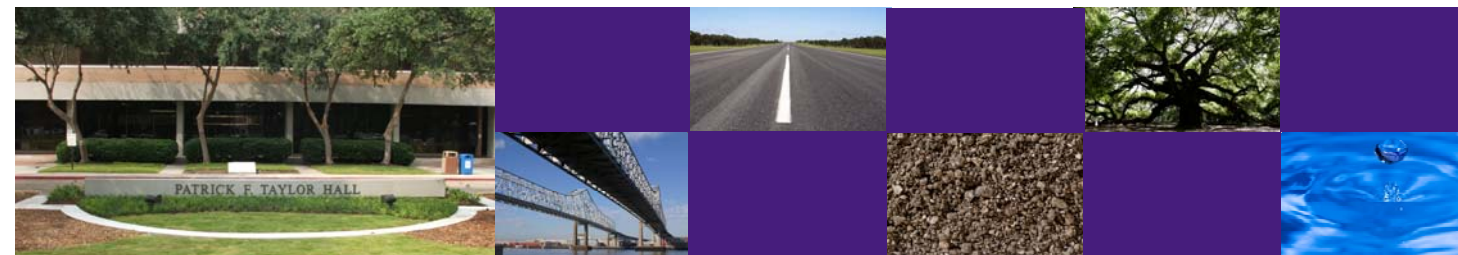
Non-Profit Org
 U.S. Postage
 PAID
 Permit No. 733
 Baton Rouge,
 LA



Department of

Civil and Environmental Engineering

LOUISIANA STATE UNIVERSITY



Volume 8 • Fall Issue

December 2008

A Foundation Of Excellence Program

Message from the Chair

I would like first to congratulate all of our 2008 students who will be graduating at the end of this Fall semester. I wish them success and prosperity in their future careers. It is also important to note that our undergraduate and graduate enrollments have increased. In particular our undergraduate enrollment increased by 33%. This is great news for the department and we hope to see our enrollment numbers continue to rise.

Provost Astrid Merget and Vice Chancellor Chuck Wilson visited our Department in November to address our External Advisory Board. This board meets annually and is comprised primarily of executive directors of civil and environmental firms as well as engineering practitioners. This year's meeting addressed not only the traditional action items of the board, but also included discussions on the new Coastal and Ecological Engineering PhD and MS programs.

I would also like to take the time to acknowledge the passing of two individuals who have made significant contributions to our department. Dr. Dipak Roy, former CEE faculty member and member of the CEE Hall of Distinction, passed away after a long illness. Dr. Roy joined was one of the initiators and archi

pects of our departments' Environmental Engineering program. Also, we recently saw the passing of Dr. Gordon Boutwell after a long battle with cancer. Dr. Boutwell was President of Soil Testing Engineers here in Baton Rouge, Louisiana and was a long time member of the CEE External Advisory Board. Our thoughts and prayers go out to the families of these outstanding gentlemen.

As usual, this newsletter contains a summary of the events and achievements of our department for the Fall Semester 2008. Also, some technical articles will be appearing in the newsletter on a regular basis. Check this newsletter for two exciting articles – one by Dr. Mohammed and one by Dr. Levitan. I hope that including such articles will help the readers get an idea about the current research directions of our faculty members.

Finally, at the end of this semester and the coming holiday season, I take this opportunity to wish you all a Merry Christmas and a Happy New Year in 2009.

Best Regards,
 Dr. George Z. Voyiadjis



Dr. George Z. Voyiadjis
 Boyd Professor, Chairman
 and Bingham C. Stewart
 Distinguished Professor

INSIDE THIS ISSUE

Environmental Engineering Meeting	2
Summer Commencement	2
Student Highlights	3
Carol Friedland Receives Award	3
ASCE Student Chapter	4
Hurricane Seminar	4
Faculty Highlights	5

A Successful First AAM Conference	5
Dr. Dipak Roy Passes Away	5
EAB Annual Meeting	6
2008 Hurricane Season	6
Research Highlight	8
Kazmann Center	10
Dr. Gordon Boutwell Passes Away	10
Alumni Corner	10



Environmental Engineering Holds Fall Undergraduate Meeting



(Top) Environmental engineering majors enjoy pizza and time with friends at the Fall 2008 EVEG student meeting. (Bottom) Dr. John Pardue discusses environmental engineering course paths with students attending the event.

One major goal of the department is to increase the number of students who pursue and complete an LSU environmental engineering undergraduate degree. Recent feedback from EVEG undergraduates revealed that frequently they didn't even know any other students majoring in environmental engineering until their sophomore or junior year. To help the 70 students make connections, the department held its first *Fall 2008 Meeting for Environmental Engineering Undergraduates* on October 23, 2008, in the North Courtyard of Patrick Taylor Hall. This was a casual event that included pizza and time to meet the faculty and fellow students.

This gathering was an opportunity to disseminate important information to students. Lisa Fontenot, Counselor with the College of Engineering, provided students with current degree audits. Dr. John Pardue introduced proposed changes to the EVEG curriculum that will include new concentration tracks and courses tailored to the needs of EVEG majors.

Also, students were encouraged to get involved with organizations that will build their professional links and serve the community. Kevin Chenier, graduating May '09, fellow students to become active in the student affiliate of the Louisiana Water Environmental Association (LWEA). LWEA regularly brings in guest speakers from the professional community and organizes the LSU lakes clean-up each semester. Sarah Jones, Research Associate in the department, provided information about peer mentoring opportunities through the College of Engineering NSF funded Engineering Engagement Program.

If you would like to participate in the spring 2009 meeting that will feature recent graduates and professional topics please contact Sarah Jones at sjones@lsu.edu.

CEE Summer 2008 Commencement

CONGRATULATIONS!

The Department would like to congratulate all of our 2008 Summer graduates who, along with family and friends, attended the commencement ceremonies.

Master of Science in Civil Engineering

Cherian Cherian-Korah
Yan Qi

Jesse Gerard Rauser
Cheng-Fend Tsai

Doctor of Philosophy in Civil Engineering

Yilmaz Bingol

"Development of an Ultrasonic NDE&T Tool for Yield Detection in Steel Structures" (Assistant Professor Ayman M. Okeil)

Ziad N. Taqieddin

"Elasto-Plastic and Damage Modeling of Reinforced Concrete" (Bingham Cushman Stewart Distinguished Endowed Professor, Boyd Professor George Z. Voyiadjis)



Joey Krefft

CEE 2003 graduate Joey Krefft (pictured left) received his P.E. in June 2008. Krefft, a structural engineer for Aillet, Fenner, Jolly & McClelland, Inc., was a structural design engineer for LSU's new Alex Box Stadium. In late March 2008, he led two tours of Dr. Levitan's steel design class at the stadium job site and presented at the LSU ASCE chapter meeting. Krefft is also serving as the 2008-2009 President of the Shreveport Chapter of the La. Engineering Society.



Donald J. Anderson Jr.

Donald Anderson, Jr., P.E., LEED AP, of Fugro Consultants Inc., was recently named 2008 Young Engineer of the Year. Anderson is a 1998 MCE graduate from the CEE department. The Houston Branch of American Society of Civil Engineers selected Anderson based on his service to the advancement of the profession; significant technical contributions to the profession; and significant service to the community. Anderson received his bachelor's of science in civil engineering and a master's of science in civil engineering from Louisiana State University. Anderson was also selected as one of Building Design + Construction's "40 Under 40" competition winners.

If you are a CEE graduate and have news that you would like to share, please email your news and a high-resolution photo (if available) to Julie Mueller at jmueller@lsu.edu

YES, count me in!

I want to donate to the:

- Raphael G. Kazmann Center for Graduate Studies
 Civil and Environmental Engineering Siess Endowment Fund
 Other (please designate) _____

Here's my contribution of:

\$10,000 \$5,000 \$2,000 \$1,000 \$500 \$250 \$_____

Payment:

Check enclosed

Please make check payable to:

LSU Foundation/Civil & Environmental Engineering

Credit card (Circle one): Visa MasterCard Discover AmEx

Account number: _____

Expires: ____/____ - ____/____ - ____/____

Name as it appears on card: _____

Signature: _____

I enclose a matching gift form for my company

Note: If your/your spouse's employer has a Corporate Gift Matching Program, you may be able to double or even quadruple your gift! Please contact the employer's human resource office for more information. Your gift is tax deductible to the fullest extent allowed by law.

Please send this completed form to:

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

Please fill out the information on the back of this form also.

Happy Holidays from CEE!

The Department of Civil & Environmental Engineering has the privilege of being once of the most ethnically diverse departments at LSU. With that brings an array of different cultures and belief systems. The holidays are as perfect a time as any to celebrate our department's wonderful diversity! Our department would like to wish you and your family a safe and happy holiday season.

Raphael G. Kazmann Center for Graduate Studies

The Raphael G. Kazmann Center for Graduate Students was dedicated in January 2003 in memory of Raphael "Ray" G. Kazmann, Professor Emeritus in the Department of Civil Engineering. Kazmann taught at LSU for over 20 years and to commemorate his great contribution to not only LSU but also to the field of engineering, science, environment and public policy, his wife Mary Caroline Kazmann facilitated the dedication of this center in his memory.

Ray educated students and professors alike during his nearly twenty years at LSU. He joined the faculty in 1963 as an associate professor of civil engineering and became a full professor in 1969. He served as associate director of the Louisiana Water Resources Research Institute (LWRRRI) from 1966 to 1982. During his tenure as associate director of LWRRRI, Ray and Dr. David B. Johnson, a professor in the Economics Department at LSU, co-authored a study of the Mississippi River and the Old River Control Structure, which continues to be cited to this day. Ray also wrote *Modern Hydrology* (3 editions) which has been used in groundwater courses in many universities and was even translated into Spanish for use in Central and South American universities. *Geotimes*, *The Louisiana Civil Engineer*, *Environmental Geology*, *Mining Engineering*, *Physics Today* and other scientific journals published his articles and letters to the editor.

From history and political science to anthropology and social behavior, Ray's interests spanned many disciplines. His application of engineering principles to morality resulted in the booklet *The Ten Commandments: an Engineering Evaluation*. He also wrote a book on democracy titled *The American Revolution Resurgent*, which is a cul-

mination of Ray's thoughts on moral philosophy as it applied to democratic government. Ray was published in *The New Yorker*, *The Freeman* (presently called *Ideas on Liberty*), *Conservative Review*, *Freedom First* and many newspapers, including the *Wall Street Journal*.

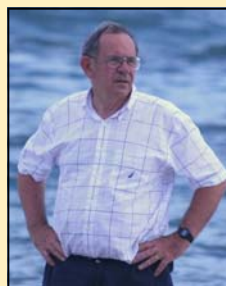
Ray's goal as a teacher was to teach students to think not only about engineering principles but how those principles applied to society. He was out spoken in his views and welcomed challenges to his opinions. His enthusiasm and love of learning, reading and writing was infectious. And the Kazmann Center for Graduate Students captures the same spirit that was Raphael Kazmann.

2007 saw the passing of Mrs. Kazmann but Paige Kazmann Moore and Hollis Beem Kazmann, along with son William (bill) Kazmann continue to preserve their father's work through their active involvement with the center. The entrance to the center displays Ray's work and is frequently updated by daughter Paige Kazmann Moore. We welcome all alumni, when visiting the department, to visit the center on the second floor of Patrick Taylor Hall.

The success of this center is fueled by the enthusiasm of students and by the continued supporters of this project. Please consider making a tax-deduction donation to this center. Your donations keep the center a reality by not only maintaining the current facility, but also to continue to improve its resources. For donations over \$1,000, a plaque in your name will be placed in a cubicle. For donations above \$10,000, a room in the center will be named for you or someone else you might designate. For more information, please contact Don Eisenberg at (25) 578-2441 or eisenberg@lsu.edu.

Alumni Corner

Dr. Gordon Boutwell Passes Away



We regretfully announce that Gordon Boutwell, long time member of the Civil and Environmental Engineering Department External Advisory Board, passed away on September 2, 2008 after a long battle with cancer. Dr. Boutwell earned his B.S.E. and M.S.C.E. from Georgia Tech in Atlanta. He served as an Engineering Officer in the U.S. Marine Corps and then, after, earned his Ph.D. at Duke University. Dr. Boutwell was President of Soil Testing Engineers, Inc., located in Baton Rouge. In addition to the many positive contributions he made through his business, he also volunteered in numerous technical capacities. He was most active with the American Society of Civil Engineers (ASCE) in a variety of ways over the years, most recently as a key member of the ASCE Levee Assessment Team in the greater New Orleans area following Hurricane Katrina. His candid but courteous observations and recommendations will help to safeguard many lives in the future if they are followed. Dr. Boutwell is survived by his wife of 30 years, Mary Lilley Heath Boutwell and will be missed by many.

Student Highlights

LSU CEE graduate student, **Kimberly S. Bowman**, and post-doctoral researcher, **Jyoti U. Rao**, participated in the 2008 American Society for Microbiology (ASM) Robert J. Kadner Institute for Graduate Students and Postdoctoral Students in Preparation for Careers in Microbiology. Bowman and Rao were among 36 senior-level graduate students and early career postdoctoral researchers from universities across the United States and Canada selected from among a national pool of applicants for the program. From July 19 through 23, they participated in the intensive five-day institute in Boulder, CO. The Kadner Institute provided hands-on training in grant-writing, scientific communication and presentation skills, and ethics. Sessions also addressed career opportunities in applied research in industry, public health, patent law and teaching. The Kadner Institute is managed by ASM and sponsored by the National Institute of Allergy and Infectious Diseases and the Burroughs Wellcome Fund.

Carol Friedland Awarded State Farm Companies Foundation Doctoral Dissertation Award



Carol Friedland investigating hurricane damage in New Orleans following Hurricane Katrina

Carol Friedland, M.S., PE., a doctoral student in the Department of Civil & Environmental Engineering and an instructor in the Department of Construction Management and Industrial Engineering at LSU has been awarded the State Farm Companies Foundation Doctoral Dissertation Award for her work on storm surge damage of residential buildings. Marc Levitan, LSU Hurricane Center Director, Charles P. Siess Jr. Professor, and Associate Professor of Civil & Environmental Engineering serves as Friedland's dissertation advisor.

Friedland developed an academic interest in the modeling of storm surge damage to residential buildings after witnessing the devastation caused by Hurricane Katrina's storm surge in New Orleans and coastal Mississippi. Her award-winning dissertation research focuses on the development of characterization criteria for storm surge damage to residential buildings, management of large datasets for validation studies, investigation of the suitability of remote sensing for storm surge damage detection, and on the development of an analytical damage model framework that would be used to estimate storm surge damage to buildings. Friedland

and a team of other researchers from the LSU Hurricane Center have collected a vast amount of field data on housing damage during Hurricane Katrina and Hurricane Ike to support her research.

Friedland holds a B.S. degree in civil engineering with honors from the University of Wyoming and a M.S. degree in civil engineering from Louisiana State University. She hopes to complete her degree requirements by spring of 2009.

The State Farm Companies Foundation is a nonprofit organization established in 1963 and funded by the State Farm Mutual Company. According to its website, "the Doctoral Dissertation Award is designed to stimulate research and development of new knowledge in the fields of insurance and business, and to increase the number of qualified teachers of insurance and business at U.S. colleges and universities." Generally, up to three awards are given annually in each of the two fields. Winners are selected by an independent committee of scholars based on academic achievement, quality of the dissertation proposal, and recommendations from the dissertation advisor and faculty members. As one of this year's award recipients, Friedland will receive a \$10,000 research grant. Louisiana State University will also receive a \$3,000 grant.

Student Chapter Happenings



Recently the ASCE Chapter at LSU held their 3rd annual Career Fair on October 16th. We had a total of eight engineering firms, and one state agency. They are:

AECOM	CH2M HILL
EDG, Inc	Forte and Tablada, Inc.
G.E.C., Inc.	HNTB
Federal Service Corporation	Louisiana DOTD
Owen and White, Inc.	T. Baker Smith, Inc.

Also for the first time, the ASCE Baton Rouge Branch was present in a dedicated booth to inform students about their activities such as the younger member group. The career fair was well received among students and participants alike. We are looking forward to keep this successful event going in the future. So, suggestions are welcome to make it better.

This semester we also volunteered in a Habitat for Humanity Build Day. We had several members from our LSU chapter, the ASCE Baton Rouge Branch and the ASCE chapter at Southern University come out and support the build. The day consisted of washing walls, caulking and painting. We all enjoyed helping out the community in a positive way. We hope to continue to have more community service projects like this in the near future.



CEE Graduate Students Present at Hurricane Center Seminar



CEE graduate students Carol Friedland (pictured left) and Stuart Adams presented data, analysis techniques and preliminary findings from Hurricane Ike damage investigations at a LSU Hurricane Center Seminar held on November 17 in Patrick Taylor Hall.

This seminar, titled *Wind and Storm Surge Damage During Ike: Detection, Quantification, and Data Analysis*, presented the initial results of the research collaboration between the LSU Hurricane Center and Texas Tech University's Wind Science and Engineering Research Center (WISE Center) to study the building performance in the aftermath of the recent storm. The survey teams used GPS-located video systems to capture HD imagery of the damage over wide areas of Galveston Island and also Southwest Louisiana. The LSU team additionally performed detailed walk

around assessments of approximately 50 buildings. The data collected from these investigations are being used as ground truthing for damage detection investigations using high resolution satellite and aerial photography data.

The seminar featured several guest speakers. Dr. Douglas Smith (PE) spoke at the seminar. Dr. Smith is an Associate Professor of Civil Engineering at Texas Tech and heads up much of the full scale testing and field research at the WISE Center. CEE graduate student Carol Friedland (PE), who has been leading the LSU data collection and analysis effort, also presented. Other speakers/presenters included CEE graduate student Stuart Adams and visiting research associate Ms. Yahui Shao. Mr. William Colbourne (PE), who serves as Director of Wind and Flood Mitigation Projects for the Applied Technology Council and is an Adjunct Professor of Civil Engineering at University of Delaware, also participated in the seminar.

(Cont. Research Highlight)

Figure 3 shows the direct shear device that was used to measure the interface shear strength of cylindrical specimens. The device is referred to as the Louisiana Interlayer Shear Strength Tester (LISST). The LISST device was designed such that it will fit into any universal testing machine. It has a nearly frictionless linear bearing to maintain vertical travel and can accommodate sensors that measure vertical and horizontal displacements. The device can also apply a constant normal load up to 689kPa, and accommodates a specimen with 100 or 150-mm diameters. The interface shear strength of emulsified tack coats under a wide range of testing conditions commonly encountered in field applications was evaluated using the LISST test device. Three types of emulsified tack coats, CRS-1, SS-1h, and Trackless, were considered at three application rates, 0.14, 0.28, and 0.70 l/m². In addition, a "no tack coat" condition was included in the analysis. The effects of construction conditions such as wet (rainfall) and dusty conditions were also evaluated. Laboratory direct shear tests were performed at 25°C. To simulate these test conditions, cores were extracted from a full-scale test site at the Pavement Research Facility of the Louisiana Transportation Research Center. This test site was designed and constructed using conventional tack coat application and paving equipment over an existing HMA pavement surface, Figure 4. Preliminary analysis of the results showed that the trackless tack coat produced the highest shear strength at the three application rates, and SS-1 and CRS-1 resulted in the medium and the lowest strength, respectively. The majority of the cases showed statistically significant difference between clean and dusty conditions. However, no significant difference was found between dry and wet conditions.

FIGURE 3 Schematic Diagram of the Louisiana Interlayer Shear Strength Tester

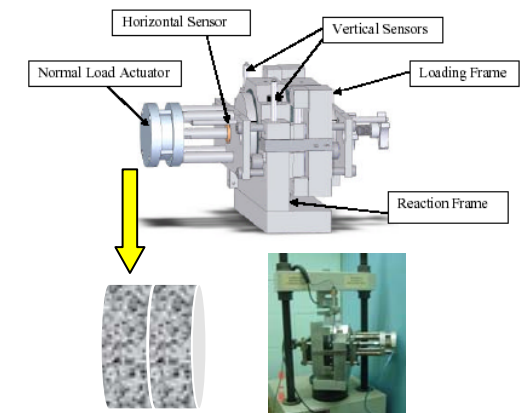


FIGURE 4 Spraying of Tack Coat and HMA Overlay Construction



CEE Graduate Makes Interesting Discovery

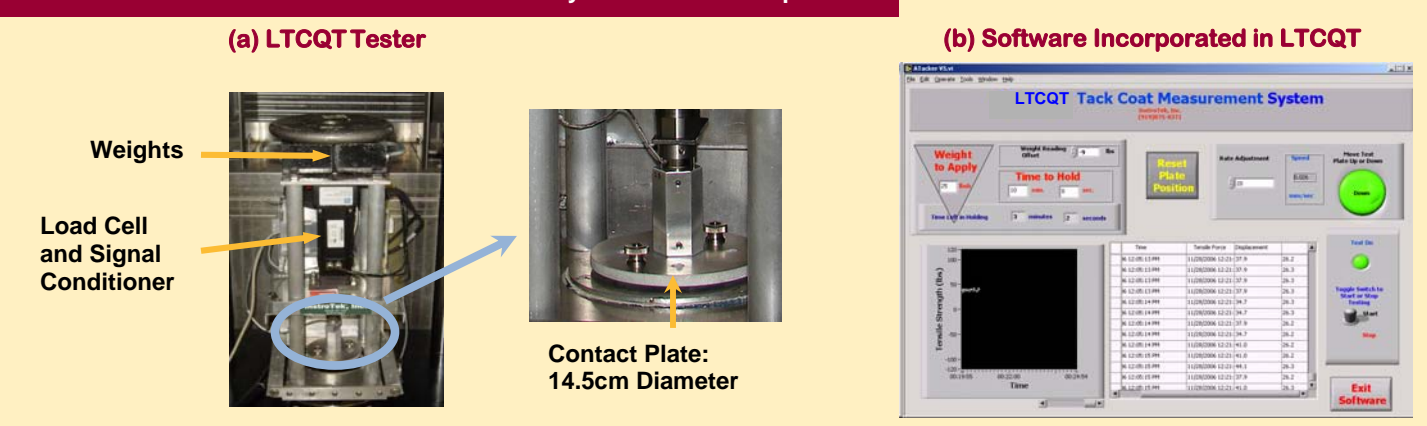
CEE graduate Commander Ralph Weiss (class of 1958) was recently highlighted in the Newport Daily News for a recent discovery in the Newport Historical Society archives. Weiss, a retired naval commander and military engineer, is a self-professed history buff. After retiring from his career in the Navy, Weiss began eagerly pursuing his interest in history, land surveying and map collecting. While in the process of writing an article about Ezra Stiles, a minister at the Second Congregational Church in Newport and a leading figure in America's Age of Enlightenment, Weiss came across a map that could possibly be a major discovery for both Newport and American History in general. This map shows the positions of British and American ships in the Newport Harbor at what could have been the first significant naval battle of the Revolutionary

War. If the map is proven to be a work of Stiles, it would be a great find for Newport as it would be another example of Newport's significant Colonial and Revolutionary War History. Edmund Morgan, a nationally recognized historian at Yale University and a Stiles scholar, believes that the map is in fact a work of Stiles. But there are some, including the executive director of the Newport Historical Society and a nameless curator at Yale University, who disagree. Weiss' discovery of the possible link between Stiles and the map is a great discovery but regardless of the origins of the map, it still serves as a great documentation of American History.

Research Highlight: Tack Coats Project 9-40, Dr. Louay Mohammad

Dr. Louay Mohammad, CEE Professor and Director of the Engineering Materials Characterization Research Facility of LTRC, serves as the principal investigator on a project titled Optimization of Tack Coat for HMA Placement to determine the optimum application methods, equipment type and calibration procedures, application rates, and asphalt binder materials for the various uses of tack coats and to recommend revisions to relevant AASHTO methods and practices related to tack coats. This project has been funded by *National Cooperative Highway Research Program (NCHRP) Project 9-40* to the Louisiana Transportation Research Center. The Co-Principal Investigator of this project is Joe Button, head of the Materials & Pavements Division of the Texas Transportation Institute at Texas A&M University. Asphalt tack coat is a light application of asphalt, usually asphalt diluted with water. It is used to ensure a bond between the surface being paved and the overlying course. A tack coat provides necessary binding between pavement surface layers to make sure that they act as a monolithic system to withstand the traffic and environmental loads. A strong tack coat binding between the layers of a pavement is critical to transfer radial tensile and shear stresses into the entire pavement structure. On the other hand, no bond or insufficient bond decreases pavement bearing capacity and may cause slippage. Insufficient bonding may also cause tensile stresses to be concentrated at the bottom of the wearing course. Such concentrated stress may accelerate fatigue cracking and lead to total pavement failure. Few guidelines are available for proper selection of tack coat material type, application rate, and placement.

FIGURE 1 The Louisiana Tack Coat Quality Tester Test Set-up



To meet the objectives of this study, two mechanical test devices were developed during this project. The first device characterizes the quality of the bond strength of tack coat materials in tension in the field; while the second one measures the interface shear strength of cylindrical specimens.

FIGURE 2 Variation of the Mean Tensile Strength with Temperature

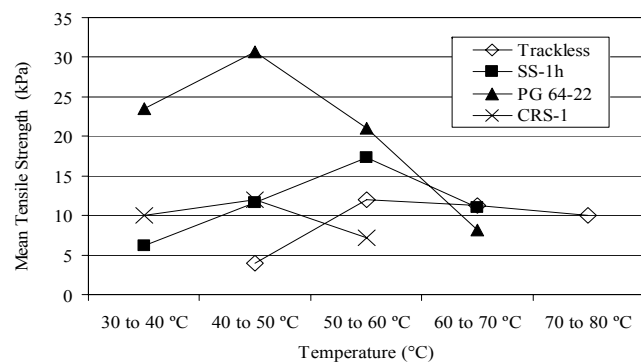


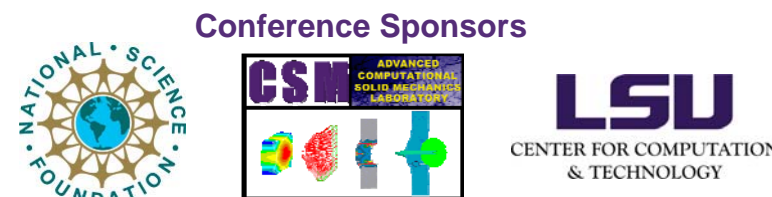
Figure 1 shows a new test device, named the Louisiana Tack Coat Quality Tester (LTCQT), which was developed during this project. LTCQT was selected to evaluate the quality of the bond strength of tack coat materials in tension in the field. A user friendly, menu driven software and test procedure was also developed to determine reliability and the repeatability of this device in the field. Three emulsions, CRS-1, SS-1h, and trackless and an asphalt cement, PG 64-22, were selected as tack coat materials that were tested over a wide range of temperatures. The tack coat materials tested with LTCQT exhibited a maximum tensile strength, S_{MAX} , at a distinct testing temperature, T_{OPT} , Figure 2. Thus, the response of tack coat material in tension was characterized using S_{MAX} at T_{OPT} . Furthermore, there was a good correlation between the T_{OPT} and the softening point of the tack coat materials evaluated.

Therefore, it is recommended to conduct the LTCQT test at the tack coat softening point, which is a readily available property. Test results indicated that the LTCQT can successfully be used in the field to measure the quality of the bond strength of tack coat and discriminate between the responses of the evaluated tack coats.

A Successful Inaugural AAM Conference

The First American Academy of Mechanics Conference was held this past June in New Orleans, Louisiana. This conference was on all topics addressing mechanics of fluids, solids, biomechanics, macro-, micro-, and nano-mechanics, etc. It addressed both Characterization and Assessment of Systems and covered a broad spectrum of topics in solid and structural mechanics, materials, and fluid mechanics. Conference organizers would like to extend their sincere gratitude to the conference sponsors, which included the Louisiana State University Department of Civil and Environmental Engineering, the National Science Foundation, the LSU Center for Computation and Technology and the Advanced Computational Solid Mechanics Laboratory.

This successful inaugural conference highlighted prestigious plenary lecturers including Gang Bao (Georgia Institute of Technology), Tayfun Tezduyar (Rice University), Ted Belytschko (Northwestern University), Jan Achenbach (Northwestern University), Sia Nemat-Nasser (University of California, San Diego) and John Willis (University of Cambridge). Keynote presentations were given by Ken Chong (National Science Foundation), Alan Freed (Saginaw Valley State University), Gerard Maugin (University of Pierre et Marie Curie), Pedro Ponte Castaneda (University of Pennsylvania) and Robert Lipton (Louisiana State University). PDFs of the presentations given can be found at the conference website (<http://firstaam2008.lsu.edu>).



This conference will be hosted in the USA every four years to coincide with the ICTAM conference.

Faculty Highlights

Dr. Louay Mohammad Receives Funding



CEE Professor Dr. Louay Mohammad was received funding in the amount of \$98,023 (for 9 months) from the Federal Highway Administration and the Louisiana Department of Transportation and Development (DOTD) for his proposal "Characterization of HMA Mixtures Containing High Recycled Asphalt Pavement Content With Crumb Rubber Additives". Dr. Mohammad was also recently invited to present on the Optimization of the Use of Tack coat in Pavement Construction at the Emulsion: Design, Construction, and Performance Seminar on July 1, 2008. This seminar is sponsored by LADOTD, LAPA, & FHWA.

Dr. Frank Tsai Appointed as Associate Editor



CEE Assistant Professor Dr. Tsai was appointed to an Associate Editor position on ASCE Journal of Water Resources Planning and Management and an Associate Editor position on ASCE Journal of Hydrologic Engineering

Dr. Michele Barbato Featured in The Daily Reveille



CEE Assistant Professor Dr. Michele Barbato was recently featured in the October 8, 2008 edition of LSU's The Daily Reveille for his research in reducing structural damage of buildings from wind-borne debris. Data collected by student research, along with storm data collected by researchers in the LSU Hurricane Center, is being combined into a database that will enable him to develop a performance-based design method that would be applied to different aspects of hurricane engineering and design.

Dr. Dipak Roy Passes Away



We are deeply saddened to announce the passing away of former CEE faculty member and CEE Hall of Distinction member Dr. Dipak Roy, after a long illness. Dr. Roy joined the university in the 1979 and served as a Faculty member in the Department of Civil and Environmental Engineering. He was one of the architects and initiators of the Environmental Engineering program in our Department. Dr. Roy was also inducted into the CEE Hall of Distinction in 2002. He was a notable and innovative scholar in his field of Environmental Engineering and will be missed by his family, friends and colleagues.

Provost and Vice Provost Attend the CEE Annual External Advisory Board Meeting



The Department of Civil and Environmental Engineering were pleased to have LSU Provost Astrid Merget and Vice Provost Chuck Wilson attend their annual External Advisory Board Meeting on November 21st. EAB chair Ron Rodi conducted the meeting, which was well attended by board members, CEE chair Dr. George Voyiadjis and many others.

This year's meeting began with a brief welcome by board chair Ron Rodi. Provost Astrid Merget and Vice Provost Chuck Wilson then took the floor and addressed the board on several topics including updates on the progress of the College of Engineering Dean search, new leadership in the university, the success of the current flagship agenda and the 2010 unveiling of the new flagship agenda during the university's 150th anniversary. The board then participated in a round table discussion with the Provost and Vice Provost regarding the status of the new Coastal and Ecological Engineering program. This discussion led into a presentation by CEE faculty member Dr. John Pardue which updated board members and meeting attendees on the status of the new program.

Dr. George Voyiadjis, CEE Department Chair, presented attendees with updates on the department's enrollment, graduation rates, etc. over this past year. Don Eisenberg, updated the group on the status of the Forever LSU and CEE campaigns. The rest of the meeting was then dedicated to EAB standard business, such as discussion of this year's Hall of Distinction nomination process and other EAB action items for the next 6 months. The meeting was concluded by the EAB chair and CEE Department Chair thanking all for attending and for a very productive meeting.

Busy 2008 Hurricane Season Provides Research Opportunities for CEE Faculty and Students

In addition to its devastating winds and floods, the active hurricane season of 2008 also brought research opportunities for CEE faculty and students collaborating with the LSU Hurricane Center. It marked the deployments of the Hurricane Center's new 10 m tall, hurricane hardened meteorological observation tower and its residential storm surge damage research team.

The STORM 1 Tower (Fig. 1) was built with funding from an Enhancement Grant from the Louisiana Board of Regents. This robust tower was designed and constructed by a group of seven Mechanical Engineering seniors, under the guidance of Marc Levitan, Rob Howard, and Kirby Hebert. Jack Chiu and others from the LSU AgCenter, along with Dane Dartez from the LSU Hurricane Center,

were also heavily involved in construction of the tower.

The tower is designed to withstand a direct hit from a Category 5 hurricane with peak gusts of 200 mph. It features instrumentation designed to measure wind speed, direction, barometric pressure, relative humidity, temperature, and rainfall. Instrumentation is supported at five levels, allowing measurement of vertical velocity and turbulence profiles. Wind speed and direction are measured with prop-vane anemometers, with an additional uvw (three-component) propeller anemometer at the 10 m level. The data acquisition system supports 30 channels of instrumentation sampled up to 20 times per second, and can run on self contained battery power for up to five days.



The first deployment of the STORM 1 tower was during Tropical Storm Fay, and then again for Hurricanes Gustav and Ike. Figure 1 shows the tower being set up at Patterson Airport in Louisiana the evening before Gustav made

(Fig. 1. Hurricane Observation tower being set up in Patterson Louisiana several hours before landfall of Hurricane Gustav. CEE doctoral student Kirby Hebert was team leader for this deployment (center, behind tower), assisted by CEE undergraduate student researcher Lesley-Ann Horst (left) and Research Associates Dane Dartez and Jeremy Birch (not shown).

landfall. Maximum sustained winds (1-minute average) at 10 m over open terrain were measured at 54 mph, with higher gusts. The data collected from this research will be used to help understand the wind field and meteorological conditions of landfalling hurricanes, including the nature of turbulence in tropical cyclones, velocity and turbulence profiles, and integral length scales, all of which are very important for the study of hurricane wind effects on buildings.

A team of faculty and graduate students traveled to Cameron Louisiana and Galveston Texas to conduct research on the damage caused by storm surge during Hurricane Ike, including Drs. Levitan and van Heerden, CEE graduate students Carol Friedland, Stuart Adams, Hurricane Center researcher associates Dane Dartez and Ahmet Binselam, and a visiting research associate from Tongji University in China, Yahui Shao. The damage research team used GPS-located video systems to capture HD imagery of the damage over wide areas of Galveston Island and also Southwest Louisiana. The LSU team additionally performed detailed walk-down assessments of approximately 50 buildings. The data collected from this field research is being used as ground truthing for damage detection investigations using high resolution satellite and aerial photography data.

Initial findings from this research were presented and discussed at a Hurricane Research in Progress workshop titled Wind and Storm Surge Damage During Ike: Detection, Quantification, and Data Analysis, held in the Germano center on November 18. The program featured several guest speakers. Dr. Douglas Smith presented the initial results of his universities' field investigations of wind and flood conditions and damage in Galveston and Bolivar Texas. Dr. Smith is an Associate Professor of Civil Engineering at Texas Tech and heads up much of the full scale testing and field research at their Wind Science and Engineering Research Center. CEE graduate student Carol Friedland, who has been leading the LSU data collection and analysis effort, led the LSU presentation team

and also showed results from her Hurricane Katrina research, which is the focus of her dissertation. Mr. William Colbourne (PE), who serves as Director of Wind and Flood Mitigation Projects for the Applied Technology Council and is an Adjunct Professor of Civil Engineering at University of Delaware, also participated in the seminar.

One key finding by the LSU field team in Galveston, led by Stuart Adams, was the performance of elevated homes relative to undermining of their foundations by scour. Current design guidance from FEMA indicates that breakup of slabs under elevated houses is not a problem, as these slabs are typically just used for parking and storage. The LSU team observed a number of houses where the slab was completely undermined by erosion. In most cases where the slab failed, there was also overall foundation failure of the pile support system. In cases where the slab remained intact, it provided lateral bracing to the piles that helped the house survive. The team is following up on this line of research with Mr Colbourne, who is one of the country's foremost experts in coastal residential construction to resist wind and storm surge.



Fig. 2. Storm surge damaged to elevated houses on west end of Galveston Island during Hurricane Ike. Beachfront homes commonly experienced 1-3 feet of scour beneath the slab on grade. Left - Slab failure contributed to overall foundation failure of the structure. Right - although completely undermined - the slab remained intact, providing lateral bracing for the piles that saved the structure. Note the breakaway walls failed as they were designed to do.

Looking ahead - a second tower is on the drawing board right now and should be completed in time for the 2009 Hurricane Season. The STORM 2 tower will be 25 m tall with additional instrumentation levels, which will provide first-of-a-kind in-situ wind data from above the roofline and treeline in typical suburban exposures. The LSU Hurricane Center will be hosting a Digital Hurricane Symposium on January 5-6, to define Grand Challenges in the study of landfalling hurricanes, plan for coordinated deployments of the various research groups that have field measurement capabilities, and begin planning a research consortium.