Welcome to another issue of our newsletter. I would like to take this opportunity to illustrate the research and education activities of our department, the achievements of our faculty, and the successes of our students. This newsletter features these issues for this academic year 2013-2014.

Our faculty members continue to conduct cutting-edge research on many fronts and receive national recognition. In this newsletter there is a special focus on the aging infrastructure and its associated issues. In addition, there is an article on using NASA data to predict oyster contamination. These are pertinent issues for our state and country.

In student news, our student organization chapters, as always, are active and growing. It is my pleasure to introduce to you our latest CEE Hall of Distinction Inductee: Mr. William E. Rushing. He is the Vice President of Waldemar S. Nelson & Co., Inc. and the Incoming President of the American Institute of Concrete. The department honored him at our annual banquet, as well as recipients of the 2014 faculty awards. These recent inductees bring our Hall of Distinction to 31 outstanding individuals who have made significant contributions to our profession and to the department through their honorable achievements and support.

You will also find information on the latest awards and distinctions of our faculty and students. We also held our 3rd CEE Graduate Student Research Conference and presented awards to our top three students. We continue to be proud of their outstanding achievements.

The CEE Department has been actively engaged in hiring four new faculty members starting in August 2014. Three of these faculty in Environmental, Coastal and Geotechnical Engineering have already accepted our offer and we will be highlighting them in the Fall issue of our newsletter.

Sincerely,
Dr. George Z. Voyiadis
Boyd Professor, Chair
Bingham C. Stewart Distinguished Professor

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For your update, please include information on your recent professional and personal developments, along with a high-quality photo if available.

Thanks for staying in touch!
Student Highlights

ASCE STUDENT CHAPTER PARTICIPATES IN DEEP SOUTH REGIONAL CONFERENCE

In March, members of the LSU ASCE Student Chapter participated in the 2014 Deep South Regional Conference hosted by Christian Brothers University. Members of the steel bridge and concrete canoe teams traveled to Memphis, TN to compete against student chapters and clubs from Arkansas, Louisiana, Mississippi, and Tennessee. The primary goal of the Deep South Conference is “to further technical, professional, and ethical knowledge of these students as it relates to civil engineering.” Annual competitions offer students an opportunity to apply principles and concepts they have learned in their undergraduate studies.

The concrete canoe team included members: Sean Moore, Alicia Fortier, Brendan Copley, Emily Weigand, Jarah Laundy, Robert Davis, Patrick Siegmund, and Laura Iverson. The team placed third overall. The canoe was improved this year by decreasing the thickness of the sides from over an inch to one-half inch and also by lightening the concrete mix by removing coastal sand and expanding clay. The women placed second in both the 600m slalom and 200m sprint races. The four-person co-ed 400m sprint team placed third. The men placed second in sprint and third in slalom. The team would like to thank the following sponsors: Modjeski and Masters, CSRS, the Louisiana Transportation Research Center, SBJ Group, Forte & Tablada, H. Davis Cole & Associates, Aucoin & Associates, and Ardaman & Associates.

The steel bridge team included members Ryan Jeansonne, Brad Jacobs, Paul Wedig, Josh Kohler, and Blake Villarubia. The LSU purple and gold bridge was made with I-beams to decrease weight and the team was able to decrease their build time to 9:15 minutes (before penalties and deductions) which was one of the best construction times among the nine teams participating at this year’s competition. Unfortunately, the bridge failed during loading just after the final weight was added. The team would like to thank the following sponsors: Exxon Mobil, CDI Corporation, CB&I, the American Institute of Steel Construction, and Shread-Kuyrkendall & Associates.

The group also participated and won first place in the mystery event. The team had to create a structure that would withstand a given frequency. Tongue depressors, super glue, and a base was supplied to the team. During testing, LSU’s structure withstood through the highest frequency. Ole Miss, University of Memphis, and LSU tied for first place.

Both teams would also like to thank the Department of Civil & Environmental Engineering for their support, along with faculty advisor Dr. Michele Baratta and CEE staff member Dave Robertson for making their participation in the regional competition possible.

Alumni News

MAKING HISTORY AS NEW CHIEF ENGINEER OF DOTD

LSU civil engineering graduate Janice (Joplin) Williams is making history as the first female chief engineer at the Department of Transportation and Development (DOTD). As the daughter of an LSU civil engineering professor, Williams is following in her father’s footsteps. With two daughters studying here at LSU, one in civil engineering and the other in graduate student, the tradition of educational excellence continues on.

Williams, a 1985 graduate, began her DOTD career immediately after graduating from LSU and has held multiple positions since. As the new chief engineering of DOTD, Williams will now oversee more than 500 engineers, technicians, and support staff.

Connect with us on Facebook! Search for “LSU Department of Civil and Environmental Engineering.” Click “like” and add us to your interest list to receive news and updates from the department!

THANK YOU!
FOR HELPING THE LSU COLLEGE OF ENGINEERING
BREAK NEW GROUND

The LSU College of Engineering is committed to educating the very best engineers, and thanks to your help, it will break ground on the renovation and expansion of the engineering campus this fall. More than 450 individual and corporate donors pledged $52.5 million in private funds, fulfilling the College’s commitment to a $100 public/private partnership. Please know how much we appreciate your support of the next generation of LSU Engineers.

Visit us online at www.cee.lsu.edu
To make an impactful gift, please contact Dr. George Z. Voyiadjis (225) 578-8668 or voyiadjis@eng.lsu.edu
**Student Highlights**

**CHIEPSILON HAS AN ACTIVE SPRING SEMESTER**

The LSU Chi Epsilon Honor Society has had an active Spring semester. At its initiation ceremony held March 24, the chapter welcomed nine new undergraduate and graduate students. Also in March, Pollard Lawson (current associate editor) represented the chapter at the National Conclave in Salt Lake City, Utah where he was able to network with fellow society members.

Dr. Frank Tsai (Associate Professor in civil engineering) continues as the chapter’s faculty advisor and the newly elected officers for Fall 2014 academic calendar will be: Chris Rowan (President), John Voelker (Vice President), Laura Iverson (Treasurer/Secretary), Pollard Lawson (Associate Editor), and Justin Richard (Marshal). The chapter would also like to congratulate five chapter members graduating this May: Fabiola Campoblanco (former President), Thomas Bourgeois, Michael Sanders, Philip Goppelt, and Paul Wedig.

Chi Epsilon honors engineering students who have exemplified the principles of scholarship, character, practicality, and sociability in the civil engineering profession. For more information about the society or if a senior Chi Epsilon member is interested in speaking to the group, please contact faculty advisor Dr. Frank Tsai (ftsai@lsu.edu).

**ENVIROMENTAL ENG STUDENTS PARTICIPATE IN WERC DESIGN CONTEST**

LSU environmental engineering students, along with faculty advisors Drs. John Pardue and Ron Malone, recently traveled to New Mexico to participate in the 2014 WERC Design Contest. The team won the first annual EPA Pollution Prevention award with their design of a bioretention basin to treat stormwater using recycled materials as the medium. Team members included Aaron Moseley, LeeAnn Pitch, Jess DeVile, Zachary Romaine, Clark Brussard and Alexander Franklin. The award included a $500 check to help defer costs of attending.

**HIGHLIGHTS**

- **Dr. John Pardue**, along with his LSU research group, won the 2014 EBC Ira W. Leighton, Jr. Outstanding Environmental-Energy Technology Application Award, presented by the Environmental Business Council of New England. The award will be presented in Boston on May 21.

- **J. Anthony “Tony” Cavell**, PLS, CFedS, from Louisiana was elected vice president of the National Society of Professional Surveyors. Cavell is a research specialist with the LSU Center for Geoinformatics (C4G) within the Department of Civil & Environmental Engineering and a consulting professional land surveyor. He previously served LSU C4G as Associate Director from 2005 to 2010 during which he saw the development of the LSU network of GNSS reference stations called C4Gnet.

- **The following have been recognized for their years of service to the University:**
  - Dr. Chester Wilmot (left), Professor 20 years of service
  - Dr. Clinton Willson (middle), Professor 15 years of service
  - Joshua Kent (right), GIS Manager at the LSU Center for Geoinformatics (C4G) 15 years of service

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**CE4460 VISITS BOYKIN BROTHERS, INC.**

On March 19, students enrolled in the capstone project class (CE 4460 Design of Bridges), along with instructor Dr. Ayman Okeil, visited a prestressed concrete production line. The visit was arranged by Mr. Paul Fossier, Louisiana State Bridge Engineer, who also guest lectures the course, and Mr. Sam Greenwood from Boykin Brothers, Inc. in Baton Rouge. The students were able to tour the plant and see production steps of several ongoing projects. Mr. Greenwood explained to the students the ins and outs of precast concrete production. They listened to how forms are prepared, reinforcement is placed and prestressed, and went into the concrete batch plant control room. Field trips such as these provide students an opportunity to see “real world” applications of the engineering principles and practices.
A result of the improved scaling and level of detail and the custom designed automated control and measurement systems, the ESSPM will be able to better simulate the hydraulics and bulk sediment (sand) transport under a variety of flow and sea level conditions, and do so in a more efficient time frame. Willson says "While we haven’t done a complete testing of the sediment time scales, we anticipate that one year of Mississippi River time will take on the order of one or two hours in the ESSPM.”

The new river model facility will be much more than simply a lab for the ESSPM - it will also be a center for education and outreach, containing a hydraulics lab, a couple of small meeting spaces and an exhibit hall. The hydraulics lab will allow for LSU faculty and students to conduct laboratory experiments at scales that are relevant to the state’s coastal issues. The exhibit and outreach space, currently being designed by the LSU Coastal Sustainability Studio, will have interactive, hands-on exhibits and displays that highlight the important restoration and protection work being done by the CPRA, the state’s universities, colleges, and private industry.

“The ESSPM will be one more tool in our toolbox as we seek to better understand how to more effectively manage and utilize the Mississippi River and its resources,” said Willson. "The work that we do there will be highly complementary to the computational and field studies currently being conducted by researchers at the Water Institute, the state and the U.S. Army Corps of Engineers." Construction of the building is anticipated to be complete by summer 2015. For more information, please contact Clint Willson at 225-578-8672 or cvwillson@lsu.edu.

The centerpiece of the river model facility will be the ESSPM. The new model domain will cover approximately 140 miles of the lowermost Mississippi River, more than twice the old model’s domain, at a horizontal scale of 1:6000 and a vertical scale of 1:400. The ESSPM will contain 220, five foot by ten foot panels, each routed individually based on the latest bathymetric and topographic surveys. As a result of the improved scaling and level of detail and the custom designed automated control and measurement systems, the ESSPM will be able to better simulate the hydraulics and bulk sediment (sand) transport under a variety of flow and sea level conditions, and do so in a more efficient time frame. Willson says "While we haven’t done a complete testing of the sediment time scales, we anticipate that one year of Mississippi River time will take on the order of one or two hours in the ESSPM.”

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More than 90 percent of the roads in the United States are surfaced with asphalt. The asphalt industry produces 5 billion tons of HMA annually in the USA. Highway construction consumes a great amount of material (aggregates and asphalt) and energy (production and transportation). The energy consumption required to produce HMA mixtures can be reduced through the use of warm mix asphalt technologies that allow asphalt mixtures to be produced and placed at lower temperatures as compared to hot mix asphalt (HMA). WMA technologies also offer improvements in workability, cost, and environmental sustainability such as reduced fuel usage, greenhouse gas emissions, and wear and tear at plants, while enhancing worker health and safety conditions. Dr. Mohammad's research characterized and compared the structural performance of plant-produced WMA and HMA mixtures. The results of the research showed that the reduction in production and placement temperatures had no negative performances when compared to conventional mixtures. In addition, reduced energy consumption associated with producing WMA resulted in fuel savings of 12-14% and an average energy savings of 1.61 per ton of mixture compared to that of HMA.

2014 NATIONAL EVACUATION CONFERENCE

The Gulf Coast Center for Evacuation and Transportation Resiliency, along with co-sponsors at the University of New Orleans and LSU's Stephenson Disaster Management Institute, held the 2014 National Evacuation Conference (NEC) January 7-10 at the New Orleans Ernest N. Morial Convention Center. The conference, the fifth since its inception, focused on uniting the fields of transportation and emergency management to further advance and improve evacuation planning to accommodate the needs of all people before, during and after a major disaster.

The biennial conference brings together public and nonprofit professionals from around the world to address policy, lessons learned, best practices and forward thinking, resulting in the mitigation of loss of life and property when catastrophic events occur. This year's conference was designed to foster an interdisciplinary exchange of ideas surrounding a broad range of issues, particularly mass evacuations prompted by disasters.

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The NEC is teaming with the Journal of Emergency Management to publish a special edition highlighting research featured at this year's conference. Wolshon is serving as a guest editor for this special edition of the Journal.

For more information about the center, visit www.evaccenter.lsu.edu

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2014 UNDERGRADUATE SCHOLARSHIP AWARD RECIPIENTS

Please join the department in congratulating the following 2014 undergraduate scholarship recipients. The award committee selected students who have demonstrated academic excellence and meet the criteria specific to each award.

Chevron Texaco Scholarship in Civil Engineering
Amy Olson, Luke Evan, Rebecca LaPorte, Kelsey Schmaltz, Maris Fangoy, Laura Iverson

Chevron Texaco Scholarship in Environmental Engineering
Matthew Louque, Sarah Belanger

Erin Krielow Lahr Memorial Scholarship Fund
Amy Olson

Uniroyal Chemical Company, Inc. Environmental Engineering Scholarship
Annelise Zeltmann, Kaillen Arceneaux

CIVIL ENGINEERING STUDENTS RECEIVE THE LOUISIANA ASPHALT TECHNOLOGY SCHOLARSHIPS

Eight civil engineering students: Kimberly Koehl, Alyse Aldridge, Lane Hargroder, Michael Sanders Jr., Brittany Day, Theodore Reynolds, Regina Viviana, and Andres Gonzales, were recently named as recipients of the Louisiana Asphalt Technology Scholarships that are funded by the NAPA Research and Education Foundation and the Louisiana Asphalt Pavement Association. Member companies that sponsored these scholarships include Barriere Construction Company,

New Orleans, R. E. Heidt Construction Company, Lake Charles, Coastal Bridge Company, Baton Rouge, and Asphalt Products Unlimited, Baton Rouge. This scholarship program was developed in an effort to encourage young men and women to choose asphalt technology courses as a part of their curriculum. “An example of partnership among academia, government and industry, this scholarship is intended to not only benefit the asphalt industry by providing a trained workforce in asphalt technology, highway construction and rehabilitation, but also benefit the individuals who choose careers in the public sector at the federal, state, or municipal level,” said Dr. Mohammad, LSU Professor of Civil Engineering and Director of the Engineering Materials Characterization Research Facility at LTRC. The scholarships, each $2,000, are presented annually to college sophomores, juniors or seniors who are U.S. citizens and already enrolled in a full time civil engineering curriculum.

Research Highlights

WARM MIX ASPHALT TECHNOLOGIES: MECHANISTIC, ENVIRONMENTAL, AND ECONOMIC ANALYSIS

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The department also honored two faculty members and a staff member. Drs. Louay Mohammad, Irma-Louise Rush Stewart Distinguished Professor, and Brian Wolshon, Edward A. and Karen Wax Schmitt Distinguished Professor, were awarded 2014 Research Achievement Awards. Staff member Julie Mueller was presented with a Career Service Award for her continued contributions to the department, especially with the graduate program.

In addition, six undergraduate students were recognized with various awards for academic excellence and leadership. Some recipients were selected by a faculty committee and others were voted for by their peers. Philip Goppel, Emily Wegand, Nelda Herrera, Allyson Lutz, Connor Whetsel, and Russell Bayham are all exceptional students who undoubtedly will represent the department well in their future endeavors.

For a full list including bios of the CEE Hall of Distinction inductees, please visit online at www.cee.lsu.edu and click on “Alumni.”

Dr. Louay Mohammad
2014 Research Achievement Award
(pictured above, left to right: Drs. Wolshon, Mohammad and Voyiadjis)

Dr. Brian Wolshon
2014 Research Achievement Award
(pictured above, left to right: Drs. Wolshon, Willson and Voyiadjis)

FACULTY AWARDS

2014 INDUCTEE
William E. Rushing, Jr.
Vice President
Waldemar S. Nelson & Co., Inc

SUSTAINABLE DEVELOPMENT:
THE USE OF SUSTAINABLE PAVEMENT MATERIALS AND TECHNOLOGIES IN INFRASTRUCTURE

Drs. Louay Mohammad is Professor of Civil & Environmental Engineering and holder of the Irma Louise Rush Stewart Distinguished Professor in the Department of Civil and Environmental Engineering at LSU and Director of the Engineering Materials Characterization Research Facility of LTRC. He teaches and conducts research in the area of Highway Construction Materials, Pavement Engineering, Accelerated Pavement Testing, Advanced Materials Characterization and Modeling, and Infrastructure Sustainability. Mohammad has focused on conducting research into the concepts of sustainable material development and how it can be applied to the practice of pavement design, engineering, and construction. Mohammad and his research group developed mechanical test devices along with their standard test methods for fracture characterization of asphalt mixtures as well as the characterization of interface bonding in flexible pavements. He has actively contributed in setting asphalt-related specifications in Louisiana and the nation by leading five NCHRP research projects in critical topics as identified by AASHTO and state highway agencies.

THE USE OF WASTE TIRES

Approximately 850 million to 3 billion waste tires are disposed of in landfills, stockpiled, or illegally dumped around the US, a number that increases by 250 million tires every year. In hot and wet climates such as Louisiana, the poor management of waste tires also provides a suitable environment for mosquito borne diseases such as the West Nile Virus. Mohammad’s research on developing methodologies and specifications that advance the use of waste tires in asphalt mixtures used in construction of flexible pavements has demonstrated that the use of crumb rubber (CR) is a promising technology that has significant potential to enhance pavement performance while satisfying current market needs with respect to supporting the recycling of waste tires. Specifications for the use of CR in asphalt mixtures were developed and implemented in the Louisiana Standard Specifications for Roads and Bridges. As the use of this material in asphalt gains popularity in the state and is paved into more roads, Louisiana was able to save thousands of dollars, improve roads, and above all, promote sustainability by drastically reducing the amount of waste into landfills.

SULPHUR ENHANCEMENT FOR ASPHALT MIXTURES – SHELL THIOPAVE

Many highway agencies experienced a significant increase in construction costs. One major reason for this sharp increase is the rise in energy costs and the price of liquid asphalt cement, a petroleum product. Mohammad evaluated a new generation of sulfur-based additive, an industrial waste extender known as Thiopave®. The sulfur modifier has the potential to replace a large percentage of the asphalt cement currently used to produce asphalt mixtures for roads. The goal is to be able to produce mix at lower cost, without compromising performance by using innovative material selection, mixture, and pavement structural design. Thiopave has the potential to save Louisiana money and improve mads’ performance by lowering the cost of necessary materials since Thiopave can replace up to 40 percent of the asphalt cement, which is more expensive and rises in cost parallel to crude oil.

The overall mix strength may increase by replacing a portion of the asphalt cement in the asphalt mix with Thiopave, resulting in an improved load-bearing capacity of finished roads and, therefore, extending service life.
**Research Highlights**

**CEE In Focus**

**William E. Rushing, Jr.**

**Vice President**

**Waldemar S. Nelson & Co., Inc**

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**Research Activities**

Numerical models are currently being developed to assist in understanding the behavior of SBS. The results will then be used to establish simplified analysis methods that can be used by engineers in a design environment.

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**Structural Health Monitoring (SHM) and Nondestructive Testing (NDT)**

have become essential tools that assist engineers in their daily work. Okeil utilized SHM to evaluate a continuity detail utilized in the construction of the John James Audubon Bridge Project, which crosses the Mississippi River between the cities of St. Francisville and New Roads. Prestressed concrete spans were connected via a continuity diaphragm that was recommended in a National Cooperative Highway Research Program (NCHRP) report. Six different types of sensors were installed as part of a project sponsored by the Louisiana Transportation Research Center and data was recorded for a period of almost five years in the casting yard and at the bridge site while in service.

Numerical and analytical models were also developed to help understand the behavior of the used detail. The findings from this project are currently being disseminated to the bridge community to emphasize the effect of thermal gradients which tend out to be the major factor in the development of long-term positive moments.

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Okeil also serves as an investigator on other projects sponsored by the National Aeronautics and Space Administration (NASA), the Nuclear Regulatory Commission (NRC), the Florida Department of Transportation, and the LA Board of Regents. These projects cover a wide range of infrastructure related research activities including bridge deck design, friction stir welding, and phased array ultrasonic testing.

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**After receiving a Bachelor of Science in Civil Engineering from Louisiana State University, William Rushing joined Morphy, Malofsky and Masson in New Orleans in January of 1981. Shortly after, he joined Waldemar S. Nelson & Co., Inc. and now holds the position of Vice President. His career includes over 33 years in various projects across the United States and internationally, including projects in Italy, Indonesia, Papua New Guinea, and Australia.**

As a Project Manager and Structural Engineer at NELSON, Mr. Rushing has been involved in a wide variety of projects including offshore oil and gas jackets, topside facilities, copper and gold mining structures, liquefied natural gas facilities, levees, flood walls, pipelines, wharves, commercial buildings, high rise structures, industrial facilities, refineries, gas compressor stations, coffee silos, commercial trench damage stations, and extensive work in the repair and rehabilitation of steel, concrete and timber structures. As a Project Manager for NELSON, he has been involved in many multi-disciplined projects requiring coordination of all disciplines of engineering. Mr. Rushing has served as an expert and forensic witness in cases involving structural behavior of various structures, identifying damage causes.

Mr. Rushing is currently the President of the American Concrete Institute (ACI). His 2014-15 president term started after being elected during ACI’s Spring Convention in Reno, Nevada. He has also been a fellow of the ACI for many years and chaired the ACI Strategic Plan Drafting Task Group, the Task Group on Managing Translations of ACI Products and Services, and the ETC Product Development Committee. He is a Past Chair of the ACI Financial Advisory Committee and a member of the Task Group on Communication Platforms for Delivery of Services & Products, and ACI Committees 314, Simplified Design of Concrete Buildings; 351, Foundations for Equipment and Machinery; 376, Concrete Structures for Refrigerated Liquefied Gas containment; E702, Designing Concrete Structures; and S801, Student Activities. He also serves on the ACI Foundation and is a Director for Creative Association Management (CAM). In addition, he serves on subcommittees 314-B, Preliminary Design and Economic Impact; 314-D, Design Aids; 314 Task Group to Update IPS-1; 351-D, Design Specifications for Heavy Industrial Concrete Structures Including Turbine Pedestals; and 376-B, Materials.

Mr. Rushing previously served on the ACI Board of Direction and is a past Chair of the Convention Committees and a past member of the Educational Activities Committee. He received the Henry L. Kennedy Award in 2011 “in recognition of his outstanding service to the Institute and his leadership of many educational and administrative committees.”

A member of the ACI Louisiana Chapter, Mr. Rushing previously served on the Chapter’s Board of Direction and was its President in 1999. He chaired the Chapter Awards Committee for several years. Mr. Rushing served as Vice Chair of the ACI Fall 1996 Convention and Co-Chair of the ACI Fall 2009 Convention in New Orleans. He received the ACI Louisiana Chapter Activity Award in 2004 and the Chapter Distinguished Member Award in 2010.

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Dr. Ayman Okeil, Associate Professor in LSU Department of Civil & Environmental Engineering, is currently directing several infrastructure related research projects. A grant from the National Science Foundation is funding experimental and analytical work that aims to develop a novel strengthening technique for thin-walled steel structures such as built-up bridge girders. To mitigate local buckling of thin plates forming a built-up section, a cheap, light, and corrosion resistant pultruded stiffener is glued to the vulnerable plate instead of welding a steel stiffener with all the issues that arise from on-site welding. The new technique, Strengthening-By-Stiffening or SBS, is unique in the sense that it uses the out-of-plane stiffness of the pultruded section rather than the in-plane strength that is often used in composite strengthening. Almost 20 steel beams were tested to study the efficiency of SBS and the effect of several key parameters on its performance, such as adhesive type, panel dimensions, bond area, weathering and others. It was found that SBS can increase the shear strength of deficient girders by up to 56% and the initiation of buckling by up to 70%. This is the result of the FRP stiffener reducing the slenderness of the vulnerable plate in the critical shear panel.
First to Predict Oyster Norovirus Outbreak

Dr. Zhiqiang Deng, associate professor of water resources and coastal engineering at Louisiana State University’s College of Engineering, became the first scientist in the world to accurately predict an oyster norovirus outbreak when he forecasted an outbreak in the Cameron Parish oyster harvesting area 30 weeks before it occurred. Norovirus, a highly contagious virus that causes severe abdominal and intestinal inflammation, is the leading cause of acute gastroenteritis.

Deng’s work is funded by a $225,000 grant from NASA, and he used data gathered by NASA satellites to monitor environmental conditions along the Louisiana coast.

Collaborating with the Louisiana Department of Health and Hospitals, Deng predicted the area would become contaminated with the virus more than two weeks before the LDHH closed it on December 28, 2012. Closures of highly productive oyster growing areas causes significant damage to the oyster industry, making it all the more important to determine outbreaks in advance.

“Norovirus outbreaks often occur 10 – 14 days after extremely low tide events during winter months or cold weather, when levels of fecal coliform, a bacterium that originates in feces, are high,” Deng said. Outbreaks of norovirus have been a significant problem for the oyster farming industry. According to the Center for Disease Control (CDC), norovirus causes about 21 million illnesses annually. The virus typically spreads through contaminated water or food, including seafood, but can also transfer from human to human.

“If your friend eats an infected oyster and gets infected by the norovirus, then you may also get sick,” Deng said. “That is why it is important to prevent the norovirus outbreak in the first place.”

Deng and his research group have contributed to oyster norovirus contamination research by developing a proactive model for predicting oyster norovirus outbreaks that curtails both the health and economic costs of oyster norovirus outbreaks. The model involves prediction of future water quality conditions and bacteria levels.

Deng’s next project is creating an online database where oyster producers, government officials and public users can access real-time data about the environmental predictors of oyster norovirus growth using existing data repositories from around the country. He is also seeking funding to test his model in other oyster producing regions in the United States and abroad.

Article by Liz Lebron, LSU College of Engineering communications graduate assistant. For more information, contact Mimi LaValle, mlavall@lsu.edu, 225-578-5706.