

Technology Today

Volume 24, Issue 1

Fall 2009



A publication of the Louisiana Transportation Research Center

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Upcoming Events

- Oct. 21-22
Southeast Transportation Consortium
- Oct. 21
FHWA Mid-South Workshop
- Oct. 28-29
Concrete Technology Seminar
- Oct. 30
LA APWA Chapter Sustainability Workshop

LTRC Secures Contract from Shell for Thiopave Testing

The Louisiana Transportation Research Center (LTRC) was recently awarded a contract from Shell Oil Company to characterize the laboratory performance of conventional HMA mixtures and mixtures containing Thiopave additives through their fundamental engineering properties. After participating as a guest lecturer at the Southeast Asphalt User Producer Group, Shell employees approached Engineering Materials Characterization Research Facility (EMCRF) Manager and LSU Civil Engineering Professor Louay Mohammad, Ph.D., with a unique concept that has the potential to replace a large percentage of the asphalt cement currently used to produce asphalt mixtures for roads by utilizing Shell Thiopave additives.

The main focus for this particular research is infrastructure sustainability. "The goal is to be able

to produce mix at lower cost without compromising performance by using innovative material selection and mixture and pavement structural design," says Dr. Mohammad. "Thiopave has the potential to save Louisiana money and improve roads' performance by lowering the cost of necessary materials since Shell Thiopave can replace up to 40 percent of the asphalt cement, which is more expensive and rises in cost parallel to crude oil." Dr. Mohammad also explains that by replacing a portion of the asphalt cement in the asphalt mix with Shell Thiopave, the overall mix strength may increase, resulting in an improved load-bearing capacity of finished roads and, therefore, exceeding service life.

Another potential impact of using Shell Thiopave is that it can help reduce energy requirements at



Shell Thiopave, a patented Shell additive containing sulphur, plasticizer, and other additives



Dr. Mohammad performs dynamic modulus testing.

asphalt plants. Shell Thiopave is an additive containing sulphur that enables lower temperature production, using less fuel, thereby delivering meaningful reductions in greenhouse gas emissions. This proves to be an advantage for the state of Louisiana, which contains several non-attainment areas that struggle to meet the strict air quality standards.

Dr. Mohammad's current project with Shell began July 1, 2009 and will continue until June 30, 2010. He is also in the process of securing additional work for Shell to carry out his testing in a larger scale at LTRC's Accelerated Loading Facility (ALF) later next year.



Louisiana Ranks First in IBRD Awards

This year Louisiana was awarded the sum of \$770,000 for three applications that were submitted to the Innovative Bridge Research and Deployment (IBRD), which is an initiative of the Federal Highway Administration (FHWA) that provides direction and funding to help state, county, and local bridge owners incorporate innovative materials and materials technologies in their bridge projects. IBRD aims to reduce congestion associated with bridge construction and maintenance projects, increase productivity by lowering the lifecycle costs of bridges, keep Americans moving, and enhance safety.

This year, Louisiana received approximately 15 percent of the \$5.2 million for this year's program, making it the most money to be given to a single state.

Project Title	Amount Awarded
<i>Monitoring System for Bridges Subject to Heavy Loads</i>	\$250,000
<i>Geosynthetic Reinforced Soil (GRS) for Bridge Abutments</i>	\$250,000
<i>Elimination of Deck Joints Using a Corrosion Resistant FRP Grid</i>	\$270,000

Louisiana has been participating in IBRD for the last 4-5 years and has experienced many benefits as a result. Including the awards above, LTRC and LADOTD have been able to secure over \$2.5 million. These federal funds are at the 100 percent level and require no state match.

For additional information about this program, the Louisiana program manager, Walid Alaywan, may be contacted at 225.767.9106 or at walid.alaywan@la.gov.

LTRC Redesigns Web site

In response to LTRC's new logo and overall brand image, a newly designed LTRC Web site went live June 2009. The new Web site features expanded content, easy navigation, and quick access to information on every department within LTRC. The redesign incorporates bold colors found in LTRC's logo and new navigational tools including an organized final reports page and the availability to download many forms needed for proposals, research, publications, and travel. Users are also allowed access to the event calendar on every page to view recent or upcoming classes and events held at the center.

Emily Wolfe, LTRC multi-media specialist, spearheaded the project, "Basically, I tried not to change things so drastically that people would have trouble finding often used information, but I did try to streamline the home page navigation to make it easier for first-time visitors to find items. I also wanted visitors to see a little more about what we do on the home page."

Currently featured on the home page are the latest published publications as well as LTRC's mission statement. In the near future, Wolfe hopes to stream brief informative videos highlighting certain research projects. "I'm also continuing to look at ways to improve search features and make our ever-growing list of publications easier to access," says Wolfe. Other Web pages on the new site feature LTRC research sections, training and education, the Local Technical Assistance Program (LTAP), and the materials laboratory.

Since the launch, Wolfe has experienced a smooth transition between Web sites and received mostly positive feedback. She adds, "People like the new colors; several have commented that it's easier to find publications." Overall, Wolfe hopes that Web site visitors will now be able to get a quick overview of what LTRC is and learn more about the services provided by the center.



To view the newly designed site, please visit www.ltrc.lsu.edu. Wolfe also welcomes updates, questions, and feedback at emily.wolfe@la.gov or 225.767.9145.



Library Web page Stays Up-to-date

While the redesign is complete, LTRC's Web site is ever-expanding to keep up with the latest trends, newest publications, and needs of LTRC's viewers.

Sandy Brady, TTEC librarian, keeps the Library/Information services page current by monitoring the "Chat with Librarian" feature and keeping a TTEC library blog up-to-date to engage researchers and enable quality research.

Those interested are also able to search the complete database of ASTM Standards as well as LTRC publications from Brady's page at <http://www.ltrc.lsu.edu/library.html>.

To contact Brady with questions concerning publications in the library or database, she can be reached at sandra.brady@la.gov or 225.767.9716.

LTRC Designs Geotechnical Information Database

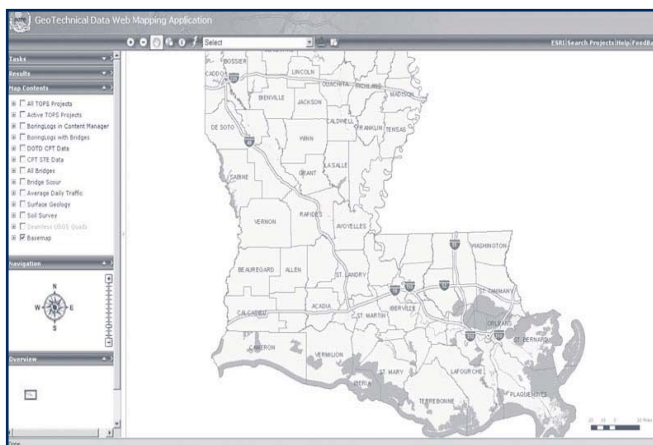
Senior Geotechnical Research Engineer Gavin Gautreau, P.E., and Computer Analyst III Pallavi Bhandari have launched a database that they developed over the last few years. The Geotechnical Information Database originated from the Geotechnical Design Section at LADOTD and their need to review historical geotechnical data prior to new design decisions. The database will also serve as a valuable reference resource, ultimately promoting better road designs.

Because searching for hard copies can be laborious and cumbersome (paper plans, microfiche, CDs, etc.), the goal of the program is to create a user-friendly geotechnical Web site that the LADOTD Headquarters' Geotechnical Design Section and other LADOTD sections will have access to appropriate and necessary resources to make the best design decisions.

Rather than developing a unique and dedicated computer server, review of existing LADOTD databases and storage capabilities revealed only an interface was necessary. Content Manager (CM), an enterprise document (object) management system already used within the Department, was essential in capturing, storing, retrieving, and printing online documents within the Department for the database. Researchers then used a Global Information System (GIS) with a user-friendly interface to not only display the required information but to also link it to the scanned boring logs in CM to speed up access times, consolidating vast amounts of information into one online resource.

Another non-GIS Web site was developed for users to search the boring logs based on project number, route, district, engineers, etc. This Web site also links the boring logs to CM and the GIS Web site, so the searched boring logs can be mapped on the GIS Web site in the form of control sections or global position points where available.

“The Web sites utilize computer technology to allow quick reference to historical boring information. One site is text-based the other is visual. Some of the data was created before computers; we are catching that data and making it available with a few mouse clicks,” explains Gautreau. “PDF files are nice to retrieve, but as more work is conducted, more digital data can be added to the system. I hope that we have helped LADOTD along the trend toward collecting and storing digital data, so it will be available for years to come.”



Geotechnical GIS Web site home page

MAP PROJECT NUMBER	PROJECT NAME	CONSTRUCTION NUMBER	PROJ. NO.	PROJECT ENGINEER	ORGANIZATION	PARISH	ROUTE	FIELD NUMBER	CONTRACT NUMBER	BORE NUMBER	BORE LOG	VIEW
Map 000-006	STATE ROUTE IN ROUTE IN LA 75	001	001	LANDRY, F. G.		24	LA 75					View
Map 125-03	001	001				24						View
Map 028-05						24						View
Map 028-06						24						View
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Geotechnical Non-GIS Web site for searching boring logs

According to Ching Tsai from the LADOTD Geotechnical Section, the database will enhance the Geotechnical Design Section's ability to select proper boring depths. He also says that the information attached to the database such as load test data, pile driving logs, and other activity logs will greatly improve the pile resistance prediction; a better prediction may ultimately reduce the cost of foundation construction.

The virtual geotechnical database can be found at the LADOTD GIS Web page located at <http://gis.dotd.la.gov/info/home.aspx> on LADOTD's Intranet Web site.



LTRC Monitors Health of New Twin Span Bridge

LTRC has made significant advances in utilizing the latest bridge technology for Louisiana over the years and continues to do so as researchers take steps to closely monitor the new I-10 Twin Span Bridge over Lake Pontchartrain. LADOTD recently celebrated the ribbon cutting of the new eastbound bridge Wednesday, July 8. The new I-10 Twin Span Bridge was designed to be higher, bigger, and stronger than the existing bridge, so it can last well into the 22nd century. To address several questions raised during the design phase of the project, LADOTD decided to install a substructure and superstructure health monitoring system on a selected bridge pier (M19



eastbound) at the main span for short-term and long-term monitoring of the bridge that can collect data such as acceleration, water pressure, strains, and lateral deformations of the piles, pile caps, columns, bent caps, girders, and concrete slab that result from strong wind, waves, and vessel collision loads.

Louisiana is one of only a few states that have implemented a complete substructure and superstructure health monitoring system on a major bridge.

So far, LTRC has successfully designed and conducted a test to assess the validity of the analysis methods using the FB-MultiPier software. During the test, two high strength steel strands were run through the pile caps of the M19 eastbound and M19 westbound piers. These cables were then pulled with great force (1900 kips), and LTRC monitored the horizontal movements of the caps to determine the amount of lateral load that can be withstood overtime.

Ultimately, this research along with future findings will provide knowledge that will be carried out in bridges across the state and can be used to reduce the construction

and maintenance costs of bridges in Louisiana and throughout the nation.

The LTRC research team continues to work closely with the Twin Span Construction Team, LADOTD design, maintenance, and FHWA to improve field testing using remote sensors, onsite for long and short term data processing, for load and traffic count.

LTRC Policy Committee Meeting

The summer LTRC Policy Committee Meeting brought various transportation professionals together June 19 to discuss the research work program for the fiscal year 2009-2010, the external funding program, highlights on current projects, and new business.

The meeting was chaired by William Temple, P.E., of LADOTD, and was attended by representatives from LADOTD, LTRC, and several Louisiana universities, including UNO, Tulane, Louisiana Tech, LSU, and ULL.

Chris Abadie, P.E., associate director of research, and Zhongjie “Doc” Zhang, Ph.D., P.E., pavement and geotechnical research administrator, presented work highlights, which in addition to their own presentations, included presentations on the Project Management System by Pallavi Bhandari, Traffic Loading Study for MEPDG Implementation by Hak-Chul Shin, and the Geotechnical GIS Database by Gavin Gautreau. Emily Wolfe also led the group through an interactive tour of the new LTRC Web site and answered questions regarding the site’s organization and content.

Associate Director of External Programs Vijaya (VJ) Gopu, Ph.D., P.E., updated the group on LTRC’s external program. Gopu reminded the committee of the strategic mission, listed recent proposals submitted to external agencies, shared research expenditures (in-house, contractual, and external) over that last 10 years, discussed the importance of National Highway Institute (NHI) classes and gaining certified instructors, and updated the group on recent TIRE proposals that were awarded to four investigators in May 2009.

Temple concluded the two-hour meeting with new business on travel authorizations before the group adjourned for lunch provided by LTRC.

LADOTD Hosts 2009 AASHTO Subcommittee on Bridges and Structures Meeting

Over 600 transportation bridge engineers, FHWA bridge engineers, researchers, and private consultants from all over the nation gathered at the Hilton Riverside in New Orleans July 5-9 to attend the 2009



American Association of State Highway and Transportation Officials (AASHTO) Subcommittee on Bridges and Structures Annual Meeting.

The meeting was hosted by the LADOTD Bridge Design Section. Every year, the meeting provides a forum to discuss new business, update AASHTO specifications, present new ideas, and provide fellow state representatives updates on future and on-going projects.

This year, the conference opened with a bridge tour and presentation focusing on the I-10 Twin Span Bridge Replacement and the Huey P. Long Mississippi River Bridge Truss Widening on US 90. Subcommittee members and guests were also invited to a reception held at the National World War II Museum. For the remainder of the conference, attendees broke into their designated technical committee meetings, ranging from materials (concrete, steel, and timber), security, bridge preservation, research, to geotechnical areas. Members and guests were also able to attend general sessions and other meetings such as a separate FHWA meeting and the state bridge engineers meeting.

The subcommittee meeting's featured speaker at the Chairman's lecture was Robert S. Boh, president of Boh Brothers Construction. Secretary William D. Ankner, Ph.D., opened the lecture by discussing problems in financing bridges throughout the country and the importance of planning for future bridges. Following Dr. Ankner, Boh addressed the crowd with a presentation entitled "New Orleans: Four Years After Katrina." Boh focused on the background of Boh Brothers Construction Company, the devastation Katrina had on New Orleans, the challenges and opportunities Boh Brothers faced after the storm, lessons learned, and a highlight on New Orleans today. Boh also shared with the crowd his company's involvement with the emergency repairs made to the I-10 Twin Span Bridge following the storm and the ongoing phases of construction his company will be providing.

California DOT or CALTRANS will host the next meeting in the summer of 2010. It will be held in Sacramento, California on May 23-27, 2010 at the Grand Sheraton Hotel.

Downloads of the New Orleans meeting presentations are now available on the AASHTO Bridge Subcommittee Web site at <http://bridges.transportation.org/?siteid=34>.

Recently Published

Technical Assistance Report 09-ITA

Impact of Left Lane Truck Restriction Strategies on Multilane Highways in Louisiana—A Literature Review
by Chester Wilmot, Ph.D., and Mini Radhakrishnan

Technical Summary 429

Effect of Drainage in Unbound Aggregate Bases on Flexible Pavement Performance
by Mingjiang Tao, Ph.D., P.E., and Murad Abu-Farsakh, Ph.D., P.E.

Project Capsule 05-IGT

Field Demonstration of New Bridge Approach Slab Designs and Performance
by Murad Abu-Farsakh, Ph.D., P.E.

Project Capsule 09-1C

Evaluation of Fly Ash Quality Control Tools
by Tyson Rupnow, Ph.D., P.E.

Project Capsule 09-2C

Evaluation of Cement and Fly Ash Treated RAP and Aggregates for Base Construction
by Tyson Rupnow, Ph.D., P.E., and Zhong Wu, Ph.D., P.E.

Project Capsule 09-4C

Evaluation of Ternary Cementitious Combinations
by Tyson Rupnow, Ph.D., P.E.

Project Capsule 09-5C

Evaluation of Non-Destructive Technologies for Construction Quality Control of HMA and PCC Pavements in Louisiana
by Patrick Icenogle and Md. Sharear Kabir



Staff Updates and Accomplishments

LTRC is happy to announce the promotion of **Patrick Frazier** to asphalt technician 4. Frazier previously worked as an asphalt technician 3 in the asphalt lab. You can reach Frazier at 225.767.9159 or patrick.frazier@la.gov.

LTRC would like to welcome **Mary Leah Coco**. Coco joined the LTRC staff as training events program manager and can be reached at 225.767.9167 or maryleah.coco@la.gov.

EMCRF Manager and LSU Civil Engineering Professor **Louay Mohammad**, Ph.D., would like to recognize his graduate student, Patel Nachiketa, who won first place for his presentation titled "Interface Shear Strength Characteristics of Emulsified Tack Coats" at the 2009 Area 2 Highway Engineering Exchange Program (HEEP) conference held in Baton Rouge, June 7-10, 2009. Nachiketa will move on to compete at the International HEEP conference to be held in San Antonio, Texas, September 27-October 1, 2009.

Transportation Training and Education Center Director **Glynn Cavin** was awarded a Doctorate in Human Resource Education and Workforce Development from LSU on August 7, 2009. For his dissertation, Cavin explored the problem solving and leadership styles of those tasked with the responsibility of running state- and local-level Emergency Operations Centers in Louisiana during the prolonged and intense stress of declared emergencies.



Stay current with what's happening at LTRC and connect with other LTRC researchers and employees through LTRC's new Facebook and Twitter pages at http://www.twitter.com/LTRC_Updates and <http://www.facebook.com>.

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Technology Today Publication Statement

Technology Today is a quarterly publication of the Louisiana Transportation Research Center, administered jointly by the Louisiana Department of Transportation and Development and Louisiana State University. For additional information on material included in this newsletter, contact the public information director at 225.767.9183.

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