

Technology

Today

Vol 20
No. 2

LTRC

2005

A publication of the Louisiana Transportation Research Center

Louisiana Asphalt Pavement Association

Donates \$100,000 to LTRC Foundation

The Louisiana Asphalt Pavement Association (LAPA) recently donated \$100,000 to the LTRC Foundation, which is currently raising funds to equip and furnish LTRC's Transportation Training and Education Center (TTEC). LAPA President Steve Hackworth presented the check to LTRC Director Joe Baker at LAPA's 46th Annual Convention held June 1-5, 2005, in Point Clear, Alabama.

"It is with great personal pride that I was able to present the donation on behalf of the

Board of Directors of LAPA. It is an honor to support such a worthy cause as the LTRC Foundation and TTEC," said Hackworth after the presentation. "We feel that the future of our industry depends on education, research, communication, and training, and from our observations, the management and staff of LTRC have proven their commitment to excellence in all of these categories. Our organization shares a great relationship with everyone associated with LTRC, and they are top-notch professionals.

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Zhang Detailed to Pavement & Geotechnical Administrator Position



Zhongjie "Doc" Zhang, Ph.D., P.E., previously LTRC's Senior Geotechnical Research Engineer, has been detailed to the Pavement and Geotechnical Administrator position.

Zhang's 15-plus years of experience in geotechnical research, design, and consulting includes universities, research institutes, industry, and government agencies in both the United States and China. Before joining LTRC's staff in 2001, Doc worked for DOTD in Urban Traffic and Planning, Pavement Design, and Bridge System Management. Doc received his B.S., M.S., and Ph.D. from Xian Highway Transportation University, Tongji University, and LSU, respectively. He has authored numerous refereed journal articles and is a frequent presenter at the Transportation Research Board annual meetings and other conferences.

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Donation to LTRC Foundation (cont. from page 1)

LAPA hopes this donation will strengthen that bond for the good of LTRC, the entire construction industry, and the taxpayers of the great state of Louisiana.”

Baker responded on behalf of the LTRC Foundation. “We are thrilled to receive the support of the LAPA and the very important segment of the transportation industry it represents. We have been privileged to enjoy a close relationship with the asphalt industry over many years, and our research as well as our training and education programs reflect the strong emphasis that we believe asphalt technologies deserve in improving Louisiana’s transportation systems,” he said. “We are committed to the continuance of that productive partnership with LAPA and greatly appreciate their confidence in and support of LTRC.”



LAPA board members pictured (l to r): Ed Milner (Coastal Bridge, Past President, LAPA), Chuck Wale (Huey Stockstill, Inc.), Steve Strickland (F.G. Sullivan Contracting, Treasurer, LAPA), Rich Rise (Nortrax, South), Joe Baker (Director, LTRC), Don Weathers (Executive Director, LAPA), Courtney Fenet (Second Vice President, LAPA), Steve Hackworth (President, LAPA), Fred Leffingwell (Barriere Construction Co.), Nelson Roth (Vulcan Materials Co., Secretary, LAPA), Bobby

Yeargain (Asphalt Products Unlimited, LAPA Representative, LTRC Foundation), Woody Harvey (Prairie Contractors, Inc.), Jay Winford (Prairie Contractors, Inc., First Vice President, LAPA).

In August 2004, construction crews broke ground on TTEC, a progressive partnering effort between the public and private sectors of the transportation industry. Weather permitting, TTEC will be operational by the fall of 2005. For more information about TTEC, call (225) 767-9131 or visit www.ltrc.lsu.edu/ttec.html.



Back view of TTEC as of May 2005

Zhang (cont. from page 1)

“Doc Zhang has brought great distinction to himself and to LTRC through his research in the geotechnical field,” says Skip Paul, Associate Director, Research. “He also brings a wealth of pavement experience to this job, and we have every confidence that he will excel in this new administrative capacity, which serves to advance technology in both of these important fields.”

Upon his appointment, Zhang says, “I am honored to have this new position with more responsibilities. I will lead our team to fulfill our commitment to the Department and the public by evaluating DOTD’s engineering problems, developing applied research approaches to solve these problems, and helping implement the solutions into DOTD’s way of doing business.”

On-Line Assessments Offer Savings and Convenience

For more information, contact Treba Patin at (225) 767-9155.

Since personal computers are ubiquitous in the modern workplace, many employees have learned basics like Windows navigation and file management either on their own or through previous training. DOTD employees can now demonstrate their knowledge with on-line assessments that, if completed successfully, will substitute for course credit.

On-line assessments are available for four required personal computer training courses: Introduction to Windows, PC File Management, Introduction to Excel, and Introduction to Word. Instead of attending these courses in the traditional classroom setting, DOTD employees can complete a Web-based skill assessment from their own desks by visiting the "LTRC Training Opportunities" section on the DOTD intranet home page (<http://ladotnet/training/>). From that screen, employees should follow the "UNO PC Course Login" link.

To pass the assessment, an employee must score 80 percent or higher. With a passing score, credit will be given immediately for both of the one-day courses, Introduction to Windows and PC File Management. For Introduction to Word and Introduction to Excel, an employee with a passing score must then attend and pass the classroom-taught Intermediate Word and Intermediate Excel to receive credit for the entire sequence.

Although the on-line assessments have only been available for a few months, 6 individuals have tested out of a 2-day class and 16

have tested out of a 1-day class. With an \$89 average cost per student per day for these PC courses, these assessments have saved nearly \$2,500 in classroom instruction costs. In addition, employees who can successfully complete all the on-line assessment offerings will save six days of work time that would have otherwise been spent in the classroom. By offering these assessments to employees who are already proficient in a program, students who do need classroom instruction can attend class sooner.

With these cost and time savings, the on-line assessments will allow DOTD to deliver PC training more effectively and efficiently. LTRC is currently evaluating the possibility of offering an on-line assessment for Introduction to Lotus Notes.

Save the Date!

6th Annual
Tulane Engineering Forum
"Engineering in a
Coastal Environment"

September 30, 2005
8:30 a.m.—5:00 p.m.

New Orleans Hilton Riverside Hotel
7 PDH credits, including 1 Ethics PDH
400+ engineers expected to attend
www.eng.tulane.edu/tef

For more information, contact
Jenny Kottler, Coordinator
(504) 891-1044, jkottler@bellsouth.net

LTRC Investigates the Effectiveness of DOTD's Warranty Program

The Louisiana House of Representatives passed HB 1698 in 1997 requiring that every contract for constructing or improving highways include a warranty from the contractor to guarantee that the constructed item shall be free of defects in materials and workmanship for a three-year period from the project's initial acceptance date.

A research project was initiated at LTRC to evaluate and establish the pavement performance thresholds for the Louisiana warranty specifications.

Researchers determined the applicability of current warranty requirements for highway construction on existing pavements, and then assessed their impact on future highway construction, contractors, and DOTD. Two new flexible pavements projects were constructed under these warranty provisions. One of these projects, LA 422 (SP# 819-02-0012),

recently reached the end of the warranty period. This pavement includes a 12-mile-long, 2-lane highway, constructed 3 years ago in the rural area of East Feliciana Parish. The pavement structure consists of 3.5 inches of AC over 8.5 inches of cement stabilized in-place materials.

The current warranty requirements stipulate that the extent of block cracking be less

than 10 feet² and that no longitudinal or transverse cracking of longer than 50 feet occur in any segment of the highway within 3 years after the project is opened to traffic. However, if the cracking results from factors beyond the contractor's control (e.g., reflection shrinkage cracking), it is exempted from the warranty requirements.

At the end of LA 422's warranty period, pavement cracks were discovered at the site. The average crack width was less than 0.05 inches and varied from 3 feet to 160 feet in length at several locations within the project, as shown in Figure 1. LTRC conducted a field evaluation to determine the cause of pavement cracking. After examining several cores taken from the crack locations, researchers found that the majority of the cracks were caused by reflection cracking from the cement-stabilized base layer and, as such, will not be covered by the warranty.

However, researchers also found evidence of a base failure in one area, which the contractor may have to cover under warranty terms.

The warranty concept is an evolving field for DOTD and other state agencies. Through its research efforts, LTRC is formulating a comprehensive warranty plan for further implementation by DOTD.



Figure 1
Cracks exceeding warranty requirements (retouched for better visibility)



Figure 2
Reflection crack, not covered by warranty provisions

Pipe Installation Workshops Held Statewide

The Local Technical Assistance Program (LTAP) of LTRC recently co-sponsored three pipe installation and inspection workshops with the Concrete and Aggregate Association of Louisiana (CAAL). Over 250 local and state agency personnel, public works employees, and other transportation professionals participated in regional workshops in Lafayette, Alexandria, and Bossier City. The workshop planned for Baker will be rescheduled due to instructor illness.

The morning session of each workshop featured presentations by LTRC researchers, Zhongjie “Doc” Zhang, Ph.D., P.E., and John Eggers, P.E., along with noted industry expert William Nesbeitt, P.E., of Hydro Services Incorporated.

Zhang presented the results of LTRC’s trench backfill research, which focused on the settlement that often occurs around conduits like pipes and culverts, causing dips in the surrounding pavement surfaces. He reported that the findings indicated that stone aggregate (or recycled Portland cement) should be required for backfill materials for all cross drain pipes and side drain pipes under paved areas of travel lanes, shoulders, and turnouts. The research resulted in changes to Section 701 regarding DOTD’s backfill specifications for culverts and storm drains (for more information, see *Technology Today*, Volume 19.3 at www.ltrc.lsu.edu/pubs_technology_today.html).

Eggers provided information on the use of flowable fill as an alternative to compacted fill. He addressed DOTD requirements for the use of flowable fill, including mix design, construction requirements, measurement, and payment.

Nesbeitt’s presentation addressed types of pipe products; proper installation; testing requirements; and inspection and acceptance requirements. Workshop attendees learned the differences between installation procedures for rigid and flexible pipe materials as well as the differences between failure modes in rigid and flexible pipes.

The presentations were followed by an afternoon demonstration of pipe installation using different types of pipe and backfill materials. Proper pipe installation techniques were demonstrated, and the potential for failure based on improper practices was shown.

LTRC, CAAL, and LTAP extend special thanks to the local public works agencies that assisted by providing facilities and personnel to conduct the workshops and demonstrations. Special thanks also go to the Alexandria City Public Works Department, the East Baton Rouge Public Works Department, the City of Baker, and DOTD District 04.

For more information on the research projects or the workshops, please contact Zhongjie “Doc” Zhang at (225) 767-9162.

Staff Awards and Accomplishments

Following are several notable staff activities for the past quarter:

Associate Director, Tech Transfer, **Mark Morvant, P.E.**, participated in an invitational Strategic Planning Workshop for Bridge Engineering Research in April. The workshop was convened to assist the AASHTO Highway Subcommittee on Bridges and Structures in developing a five-year national bridge engineering agenda. Mark also presented a TTEC update at the Concrete and Aggregate Association of Louisiana's (CAAL) annual convention in Sandestin, Florida, June 12-15.

Walid Alaywan, P.E., Senior Structures Research Engineer, secured federal funding (IBRC program) for the amount of \$225,000 for a study titled "Development of Advanced Grid Stiffened (AGS) FRP Tube-Encased Concrete Columns." An amount of \$400,000 was secured the prior year. He also co-authored a paper, "Non-linear Finite Element Analysis of a Prestressed Bridge," which was presented at the the 2005 Joint AMSE/ASCE/ SES Conference on Mechanics and Materials held from June 1-3 in Baton Rouge.

Chris Abadie, P.E., Materials Research Administrator, participated in a research group peer exchange with the Washington Department of Transportation. Chris also represented LTRC at the Transportation Research Board's State Representatives meeting held May 23-24 in Washington, D.C.

Louay N. Mohammad, Ph.D., Engineering Materials Characterization Research Facility Manager, was elected to chair the LSU Faculty Senate Committee on Committees. He was also selected to serve as a member of the international scientific committee of the 2005 International Symposium on Pavement Recycling that was held March 14-16, 2005, in São Paulo, Brazil.

LTRC was represented at the Louisiana Asphalt Pavement Association's 46th Annual Convention in Point Clear, AL, June 1-5.

Sam Cooper, P.E., Senior Asphalt Research Engineer, presented "Influence of Tack Coat Type on the Density of Compacted HMA Mixtures." **Joe Baker, P.E.**, Director provided a TTEC update, and **Chris Abadie, P.E.** presented "Louisiana's Smoothness Specifications."

Masood Rasoulia, P.E., Senior Pavement Research Engineer, and **Mark Martinez, P.E.**, Pavement Research E.I., co-authored "Evaluation of Narrow Transverse Contraction Joints in Jointed Plain Concrete Pavements," which was accepted for publication and presentation at the Eighth International Conference on Concrete Pavements, to be held in Colorado Springs, Colorado, August 14-18, 2005.

Visit LTRC's
Web site to see our
entire calendar of events.

www.ltrc.lsu.edu

Behind the Scenes at LTRC:

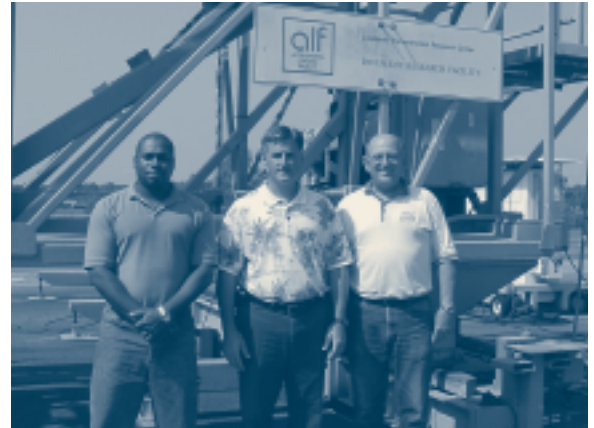
Pavement Research Facility

DOTD's Pavement Research Facility (PRF) is in the business of finding out how to build more durable roads for tomorrow. To do so, it is imperative to find out today how pavements and materials will perform under repeated heavy loads.

The PRF is strategically located on a six-acre site near LA 1 south, across the Mississippi River from Baton Rouge. Pavement test sections are built with full-scale construction equipment closely simulating normal highway construction, and the Accelerated Loading Facility (ALF) provides traffic loading.

The ALF device is a 100-foot long, 55-ton, accelerated loading device used to simulate truck loading for pavement testing. With a computer-controlled load trolley, the weight and movement of traffic is simulated repetitively in one direction with the load can be repeated every ten seconds around the clock. The load is adjustable from 10 thousands to 21 thousands pounds per ALF load application. By increasing the magnitude of load and running the device for 24 hours a day, it is possible to condense 20 years of loading into a period of several months.

LTRC operates the PRF, which is staffed with an engineer manager, an electronics expert, and a mechanical expert. Over \$3 million has been invested in the site development, facility operation, and test bed construction at this state-of-the-art facility. Through the implementation of the initial project findings, DOTD has saved \$8.1 million over a three-year period.



(l to r): Keith Gillespie, Bill King, George Crosby

Bill King, P.E., is the PRF Manager. He is the principal investigator for the facility's contract and is responsible for plan and specification development for PRF research projects. He also oversees construction of the facility's test lanes. Bill began working for DOTD in Bridge design in 1981, and he joined LTRC's pavement group in 1988. He has been the PRF Manager since 1997 and is also a member of the Transportation Research Board Committee on Accelerated Pavement Testing.

Keith Gillespie has worked at the PRF for 12 years as the Electrical Technician, overseeing all of ALF's electrical and computer control systems and instrumentation. He was previously a test electrician for the federal government and is a veteran of the U.S. Navy.

George Crosby, C.P.C., has also been at the PRF for 12 years as the Mechanical Operator. He is responsible for ALF's mechanical drivers as well as data collection and water well readings. Before joining the PRF staff, George worked in private industry oil and gas drilling for 15 years.

LA Transportation Engineering Conference

2006: "Navigating the Wave of Change"



The next Louisiana Transportation Engineering Conference will be held February 12-15, 2006, at the River Center in downtown Baton Rouge. This biennial conference represents a premier tech transfer opportunity for LTRC, which is charged with the accountability for planning, coordinating, and managing the conference. Attendees represent the public, private, and academic sectors from throughout Louisiana and the nation.

As the conference draws closer, program information and online registration will be available on the LTRC web site (www.ltrc.lsu.edu). Mark your calendars, and be sure to check upcoming issues of *Tech Today* for regular conference updates. If you have any comments or questions, please contact:

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Recently Published Research Reports

The following can be viewed at
www.ltrc.lsu.edu/pubs_final_reports.html

Report 391: Investigation of the Use of Recycled Polymer-Modified Asphalt in Asphaltic Concrete Pavements

Authors: Dr. Louay N. Mohammad, Dr. William H. Daly, Dr. Ioan I. Negulescu, Dr. Zhong Wu, and Codrin Daranga

Report 395: Fatigue and Shear Behavior of HPC Bulb-Tee Girders

Authors: Dr. Bob Bruce, Dr. Henry Russell, and John Roller

Report 398: Effects of Hauling Timber, Lignite Coal, and Coke Fuel on Louisiana Highways and Bridges

Authors: Dr. Freddy L. Roberts, Dr. Aziz Saber, Abhijeet Ranadhir, and Xiang Zhou

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 editor, (225) 767-9145, Louisiana Transportation Research Center, 4101 Gourrier Ave., Baton Rouge, LA 70808-4443.

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This public document is published at a total cost of \$1192.00. Seventeen hundred copies of the public document were published in this first printing at a cost of \$920.00. The total cost of all printings of this document including reprints is \$1192.00. This document was published by Louisiana State University, Graphic Services, 3555 River Road, Baton Rouge, to report on the research and training of the Louisiana Transportation Research Center as required in R.S. 48:105. This material was duplicated in accordance with standards for printing by state agencies established pursuant to R.S. 43:31. Printing of this material was purchased in accordance with the provisions of Title 43 of the Louisiana Revised Statutes.