

# Technology Today

Volume 24, Issue 3

Spring 2010

A publication of the Louisiana Transportation Research Center



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## Upcoming Events

The Southwest Geotechnical Conference will be held **April 26-29, 2010** at the Crown Plaza in Baton Rouge, LA.

Sponsored by the Association of Transportation Safety Information Professionals (ATSIP), the 36th International Forum on Traffic Records and Highway Safety Information Systems "Leaving the Silos Behind" will be held **July 25-28, 2010** at the Hilton Riverside in New Orleans, LA.

To view more events, please visit  
<http://www.ltrc.lsu.edu>.

## TTEC Researches New Learning Technology in Classrooms

Researchers at LTRC's Transportation Training and Education Center (TTEC) are currently evaluating a new technology to apply in learning environments where real-life practice is beneficial. Through an experimental course entitled "Basic Flagging Procedures," researchers hope to determine the factors for successful implementation of a new technology in a maintenance work zone safety course and compare the traditional course delivery method to the blended course delivery method, among other objectives. The course began Monday, Mar. 15 and will continue until Monday, Apr. 29.

The four-and-a-half-hour course will test the use of web 3D technology in an immersive virtual learning environment (IVLE), simulating real-world highway maintenance work zones. During the course, participants will learn



the characteristics of a good flagger, correct flagging equipment, proper use of the equipment, acceptable placement of the flagger in a maintenance work zone, and applicable safety rules.

This research is unique due to the evaluation of effectiveness of knowledge transfer across socioeconomical, racial, and generational differences. Previous studies show that participants are more apt to apply encoded instructional knowledge in the IVLE because mistakes can be made without negative consequences, encouraging application and building confidence.

Since 2003, the total number of individuals killed in a construction or maintenance work zone in the U.S. has reached a staggering 5,771 according to the National Work Zone Safety Information Clearinghouse 2009 database. Through an IVLE, researchers predict that this number can be reduced by offering an environment that will allow active experimentation with work zone safety flagging procedures.

The IVLE supplements traditional course content and delivery methods to enhance the transfer of work zone safety procedure knowledge. This learning environment consists of real-life case studies within a 3D virtual world. The software used to create this environment was developed by Louisiana Immersive Technology Enterprise (LITE), a global initiative facilitating the advancement of today's business and research communities located at the University of Louisiana at Lafayette.



*In the software program, participants are able to experience real-life flagging scenarios through their avatars.*

While a large portion of the class is computer based, computer skills will be minimal since LITE's programs only require participants to operate the computer using one simple input device, similar to those commonly utilized in computer games. Participants will see themselves as an avatar in the IVLE and will be able to perform the required flagging training by using the computer controller. Participants will be able to interact in a simulated maintenance work zone environment and utilize the knowledge they obtain through the lecture portion of the course.

However, not all participants for the study will experience the IVLE. Researchers hope to compare the new course to traditional course delivery methods by conducting both types of classes during the research period. Some classes will be trained using existing instructional design and delivery methods along with group exercises, while other classes will experience a similar course, but the group exercises will be replaced with individual activities that occur within the IVLE.

Participants of the classes will provide researchers with pretests, posttests, demographic surveys, and interviews. Findings from this research will be utilized to gauge if knowledge transfer is, in fact, increased by the use of an IVLE.

For questions on the class, please contact Mary Leah Coco at [maryleah.coco@la.gov](mailto:maryleah.coco@la.gov) or 225-767-9167.

## Midwest and Southeast Conference Convened at LTRC

The latest meeting of the Midwest and Southeast Bridge Working Group was held at TTEC on Wednesday, Dec. 2, 2009. The meeting attracted nation-wide bridge professionals from state departments of transportation, industry partners, and universities for a time of discussion, networking, and insight into other state's successful practices and implementation in the field of bridge inspection and maintenance. The one-and-a-half day event marked the first time both regions were able to meet together and was broadcasted online for those who were attending the meeting at an off-site location.

The day-long session included a variety of presentations on bridge decks, asphalt plug joints, sustainable deck joints, and FHWA's perspective on bridge preservation and maintenance, among others. One notable presentation was "Building a Business Case for Bridge Maintenance" by William Dye with Dye Management Group. As a former budget director for the state of Missouri who says he never had enough information to make a budget decision, Dye offered valuable advice. Dye explained in detail how to make a proper business case to get the right audience listening in order to increase funding for projects.

He described the importance of running a good program, knowing decisions makers, and speaking their language. Dye pointed out that most legislators in the Louisiana House of Representatives are not people who are accustomed to thinking in terms of engineering. In fact, only two representatives have an engineering degree, compared to the 26 without a degree, 21 with a law degree, 11 with business/finance/accounting degrees, etc. Dye says, "These are not people who wake up thinking about engineering and we need to be able to gear our message to that typical person from all spectrums, and we've got to boil this down into terms they understand."

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Another informative presentation was by Mat Kotowsky with Northwestern University's Infrastructure Technology Institute (ITI) entitled "Best Practices in Remote Communications for Structural Health Monitoring." Kotowsky explained what health monitoring is and why communication from the system is important. In addition, he explored some of the best practices ITI has discovered overtime, such as backhaul choices, security, and hardware reliability. Kotowsky stressed the importance of rebooting these devices and presented two case studies on the subject of remote monitoring to inform those in attendance of what to look for and what to avoid when deciding on different types of instrumentation. Kotowsky closed by saying, "Robust communications are critical. Without them, your system does not work and whatever money you spent on your system is wasted. And above all, don't trivialize communications."

*Continued on page 6*

## LTRC Head of Structured Training Receives Prestigious Award

After 40 years of service to DOTD, Reta “Tinka” McFarland, DOTD structured training director, has been named a 2009 recipient of the highly esteemed Charles E. Dunbar, Jr. Award, the highest honor classified state employees can receive for their service to the citizens of Louisiana. The Civil Service League bestows the award on local, state, and municipal civic service employees who distinguish themselves through unselfish service, contributions toward workplace improvement, personal initiative, and volunteer community service.



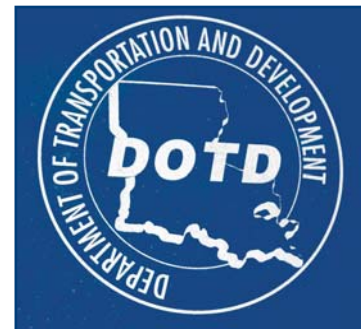
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Joe Baker, former director of the Louisiana Transportation Research Center and McFarland’s boss for many years says, “Tinka’s work ethic, commitment to quality, and loyalty to programs under her jurisdiction represent the single best example of employee excellence I can cite.”

McFarland began working for the state as an illustrator in the training office of an agency known then as the Louisiana Department of Highways. There she designed DOTD logos, “Welcome to Louisiana” signs, the emblem and patch for DOTD Weight Enforcement Police, and the majority of artwork needed for DOTD training manuals and audiovisual courses, among others.

Transitioning from illustrating to technical writing, McFarland became involved in training course development and served as the training and development program manager for the Department’s maintenance training program, overseeing the development and implementation of training materials for approximately 150 job classifications. McFarland now heads LTRC’s Structured Training Programs and is responsible for five major training programs held at the center.

Tinka holds a Certification in Supervisory Techniques (CST, 1992) and is a Certified Public Manager (CPM, 1994.) She was a member of the committee that worked in cooperation with Louisiana State University’s Division of Workforce Development to implement a certification program for training and



*Some of McFarland’s first notable contributions to the Department were logo illustrations.*

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development to meet national standards. In 2000, she completed the series of pilot classes leading to a Louisiana State Trainer Certification and a Certificate in Human Resource Development with an emphasis on adult education. She also actively served in the Louisiana Society of Certified Public Managers organization, acting as the Nomination Chair for three years and a Director-at-Large for Membership for six.

Over the years, McFarland has also participated in many major DOTD efforts. She oversees DOTD's Workforce Development Policy, PPM 59, which established the Department's workforce philosophy. The policy formally recognizes that developing a workforce through structured training, professional development, continuing education, and on-the-job training is essential to maximize employee potential and provide qualified personnel crucial to the effective management of the transportation system.

McFarland also served as a lead member of a committee that won DOTD's Team of the Year award in 2002 for revising the Structured Training Program for DOTD's Engineering Technician series. Out-dated training requirements were revised, and 45 new job-specific training programs were put in place. However, the accomplishment of which she is most proud was the conception, implementation, and management of the Rebuilding Opportunities and Development (ROAD) Program, a literacy skills upgrade program allowing work release time for employees to learn to read or work toward a GED. DOTD had more than 90 employees who received their GED during the eight years the program was in place. DOTD was the first state agency with such a program.



***Before computer aided graphics existed, McFarland and her team used handmade models to create maintenance work zone traffic control situations that were photographed and produced as slides to use in the training course.***

## Midwest and Southeast Conference Convenes at LTRC (cont'd)

During the afternoon session, two DOTD employees gave presentations. Arthur D'Andrea, DOTD project manager, spoke on the importance and types of accessibility to bridge inspections, the related dangers for inspectors, commonly used equipment, and shared his thoughts on improvement. D'Andrea explains, "It is important for the teams tasked with bridge inspections to speak out about their needs and participate early in the bridge project development. Designing for ease of inspection needs to be clearly codified in the various bridge specifications."



The final DOTD presenter was Danny Tullier with DOTD Bridge Preventative Maintenance.

Tullier's presentation educated the group on DOTD's federally funded preventative maintenance program and explained how others can apply the same concept in their own states.

The meeting was concluded the next morning as DOTD took the group on a field trip to tour the Swinging Bayou Grosse Tete LA 77 Bridge.

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To view the presentations made at this year's meeting, please visit <http://www.midwestbridge.org>.

## CAAL Makes Generous Donation to LTRC Foundation

The Concrete and Aggregate Association of Louisiana (CAAL) recently donated \$30,000 to the LTRC Foundation. CAAL Director Kyle Ardoin presented the check to LTRC Associate Director of Research Mark Morvant at CAAL's Annual Christmas Luncheon held Wednesday, Dec. 9. In addition to the CAAL donation, \$2,500 was donated by one of CAAL's members for equipment.

The LTRC Foundation exists to enhance and support LTRC as the focus for transportation research, education, and training in Louisiana. However, much work remains in the pursuit to lead LTRC to national prominence. With CAAL's donation and others like it, the foundation hopes to enhance the research/equipment capabilities of LTRC, endow LTRC research professorships, and promote TTEC as a regional center for transportation workforce development.

Formed in 1998, the foundation was chartered as a non-profit corporation instituted solely for the purpose of enhancing and supporting LTRC. A primary purpose of LTRC is to establish cooperation among the groups who work to improve Louisiana's transportation systems. The LTRC Foundation represents a unique opportunity for government, industry, and academia to partner in meeting that expectation.

# Recently Published

## Final Report and Technical Summary 423 and Summary Report 424

*Use of Reinforced Soil Foundation (RSF) to Support Shallow Foundation*

Murad Abu-Farsakh, Ph.D., P.E.; Qiming Chen, Ph.D.; and Sungmin Yoon, Ph.D., P.E.

## Final Report and Technical Summary 439

*Update of Correlations between Cone Penetration and Boring Log Data*

Khalid Alshibli, Ph.D., P.E.; Ayman Okeil, Ph.D., P.E.; and Bashar Alramahi, Ph.D.

## Final Report and Technical Summary 444

*Analysis of Seasonal Strain Measurements in Asphalt Materials under Accelerated Pavement Testing and Comparing Field Performance and Laboratory Measured Binder Tension Properties*

Mostafa Elseifi, Ph.D.

## Final Report and Technical Summary 446

*Development of a Geotechnical Information Database*

Gavin Gautreau, P.E., and Pallavi Bhandari

## Technical Assistance Report 06-1 TA

*Evaluation of HMA Mixtures Containing Sasobit®*

Samuel Cooper, Jr., MSCE, P.E.

## Project Capsule 08-3SS

*Developing Louisiana Crash Reduction Factors*

Xiaoduan Sun, Ph.D., P.E.

## Project Capsule 09-1ST

*Monitoring Load Distribution and Fatigue Cost Estimates of Heavy Truck Loads on Louisiana State Bridges*

Aziz Saber, Ph.D., P.E.

## Project Capsule 10-1GT

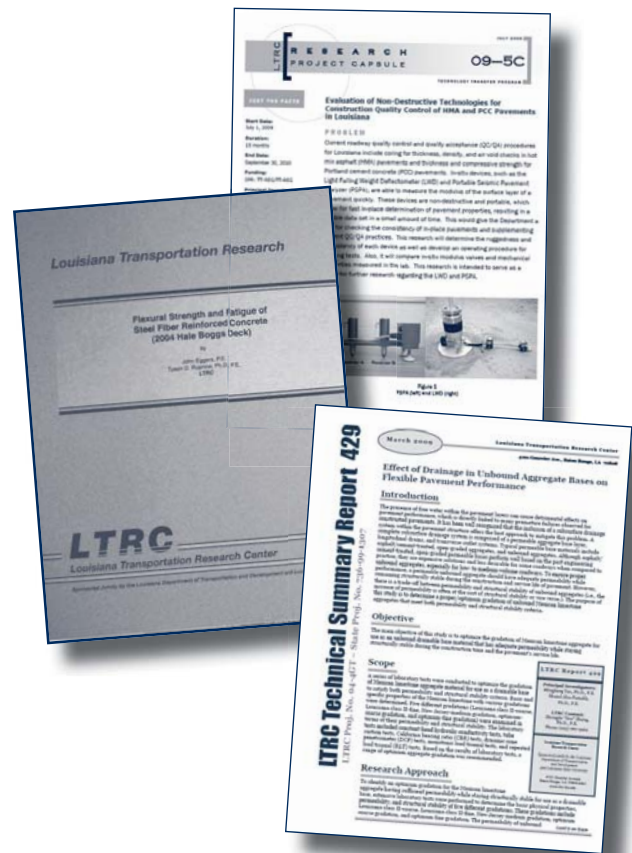
*Measuring Levee Elevation Heights in North Louisiana*

Wesley Palmer

## Project Capsule 10-1SS

*Evaluation of Knowledge Transfer in an Immersive Virtual Learning Environment for the Transportation Community*

Glynn Cavin, Ph.D., and Mary Leah Coco, M.S.



To view a complete list of LTRC publications, visit the Web site at [www.ltrc.lsu.edu](http://www.ltrc.lsu.edu).

## Staff Updates and Accomplishments

Associate Director of External Programs **Vijaya (V.J.) Gopu**, Ph.D., P.E., is currently serving on the Organizing Committee for the 2010 Tulane Engineering Forum to be held in New Orleans in April 2010.

Engineering Materials Characterization Research Facility (EMCRF) Manager and LSU Civil Engineering Professor **Louay Mohammad**, Ph.D, has recently been appointed to the Transportation Research Board's Committee on Characteristics of Bituminous-Aggregate Combinations to Meet Surface Requirements, AFK40.

Materials Research Administrator **Chris Abadie**, P.E., and **William "Bill" King, Jr.**, P.E., asphalt research engineer, presented at the annual meeting of the Association of Modified Asphalt Producers in Savannah, GA on Feb. 2 and 3, 2010. Abadie presented "Performance of Modified Asphalt in Louisiana," while King presented "Modified Warm Mix Asphalt."

**Dr. Mohammad** chaired a technical session on the Moisture Susceptibility Measurements in Hot Mix Asphalt Mixtures at the 89th Annual Meeting of the Transportation Research Board January 2010 in Washington, D.C. Dr. Mohammad was also presented with the 2009 Asphalt Rubber Ambassador Award by the Rubber Pavement Association at the 2009 Asphalt Rubber Conference held in Nanjing, China, November 2-4, 2009. This award recognizes individuals for their scholarly research and implementation initiatives of asphalt rubber in pavement construction.

Associate Director, **Mark Morvant**, P.E., has been appointed to serve as an ad hoc member of the Transportation Research Board's Design and Construction Group's Executive Board, AF000.

This public document is published at a total cost of \$711.00. Fourteen hundred copies of the public document were published in this first printing at a cost of \$711.00. The total cost of all printings of this document, including reprints, is \$711.00. This document was published by Louisiana State University, Printing 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.

## 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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