

# Technology Today

Volume 28 Issue 2

Winter 2013

A publication of the Louisiana Transportation Research Center



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## Upcoming Events

April 8, 10  
LPA Core & Planning Classes  
TTEC-100

April 10  
TRB Webinar: Conducting Forensic  
Investigations of Highway Pavements  
TTEC-175

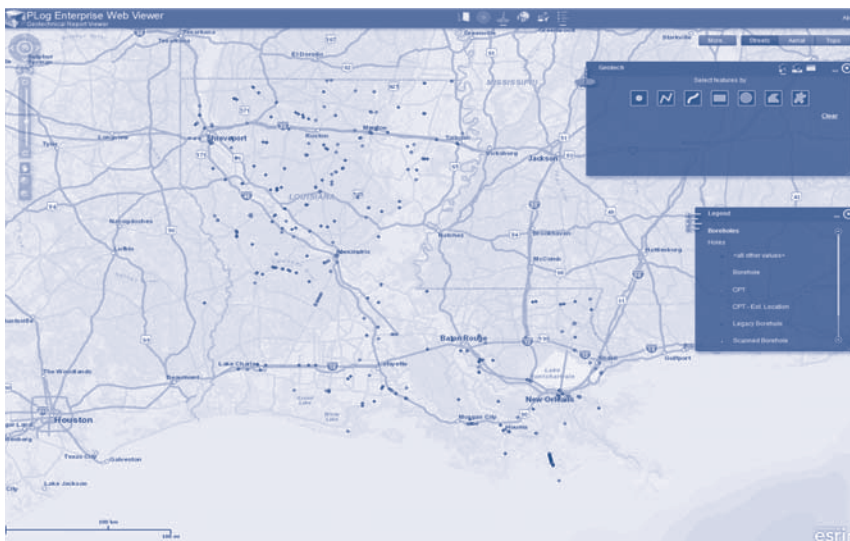
To view more events, please visit  
<http://www.ltrc.lsu.edu>.

## DOTD Geotechnical Information Database Expands

Accessing historical geotechnical data and combining it with new data for the purpose of design, analysis, visualization, and reporting has proven difficult over the years because the data has been generated by disparate systems and stored as hard copies, scanned images, various digital formats, or other non-digital formats such as microfilm. To alleviate this problem, an initial geotechnical database was completed by LTRC in 2008 to preserve and allow quick access to some historical data via a geographic information system

(GIS). Subsequent requests from the Louisiana Department of Transportation (DOTD) Geotechnical Design section and inspiration from similar work by the Kentucky Transportation Cabinet, led to this follow-up study to expand the geotechnical information system and database.

Senior Geotechnical Research Engineer Gavin Gautreau, P.E., explained, "The goal of this project was to create an enterprise GIS-based geotechnical data management



The web-based GIS map converts the DOTD geotechnical data into a valuable asset that can be re-used over time. The map-based interface provides a simple and direct way for DOTD personnel and its consultants to find historical geotechnical data, generate reports, and ultimately get the data in a digital format so it can be re-used on future projects.

system that allows for the integration of historically acquired (likely in non-digital format), recently acquired (likely in digital format), and future acquired data (in digital format) to create a composite database for a particular project that not only benefits that project, but also becomes part of a larger knowledge base available for use on other future projects undertaken by DOTD.”

Dataforensics was contracted to conduct the research and create a plan to integrate and implement a customized data management system for DOTD. The work incorporated tasks and strategies that required expertise in geotechnical engineering, database systems, GIS technologies, process flow, as well as software development and integration.

“This project ultimately developed a comprehensive geotechnical data management system to streamline the processes for borehole, lab testing, CPT, in-situ vane, and test pile load test data, while providing long-term availability of the data via a web-based GIS portal,” said Gautreau. “By standardizing the database structure, incorporating validation rules, and creating custom reports, DOTD personnel in various sections can more easily access and report their geotechnical data while simultaneously improving the quality and reliability of the data.”

The GIS interface can access many different sources and types of data within and outside the Department. The quick and easy access to valuable data, including the mapping applications in the GIS, will streamline and facilitate the analysis of data. This enterprise GIS-based geotechnical data management system is comprised of various off-the-shelf software packages including PLog Enterprise, RAPID CPT, gINT, ArcGIS, and ArcGIS Server.

The project is currently being utilized by the Geotechnical Design section and Materials Testing section, and it will allow for more accurate and cost effective design decisions. This database resource tool will continue to grow over time as more data is uploaded/entered by DOTD and its consultant partners. Additionally, this project archived data compiled in the 03-IGT and 06-6GT projects as the first data loaded into the system. If DOTD were to try to re-create this same data by reinvestigating the same sites (~600 boreholes and ~1100 CPT soundings), the cost is estimated at \$9,300,000 (\$10,000 per borehole/\$3,000 per CPT sounding). Accordingly, the potential benefit of this work is extraordinary as approximately \$200,000 was expended to turn \$9,300,000 worth of data into a usable asset. The return on investment of this asset going forward will be realized as new projects utilize the geotechnical database to supplement knowledge and reduce the amount of future site investigations needed for the design analysis.

A follow-up project is anticipated to further expand the utilization of the Department’s geotechnical data, and eventually open the website to the public, after efforts regarding internal security and firewalls are resolved.

To learn more about this study and its findings, you can download Final Report or Technical Summary 498 at LTRC publications page (<http://www.ltrc.lsu.edu/publications.html>) or contact Gavin Gautreau at [gavin.gautreau@la.gov](mailto:gavin.gautreau@la.gov).



# Louisiana Represented at 93rd Annual TRB Meeting

LTRC and DOTD engineers, contract researchers, and officials represented Louisiana at the Transportation Research Board (TRB) 93rd Annual Meeting in Washington, D.C., January 12-16, 2014. Nearly 12,000 policy makers, administrators, practitioners, researchers, and representatives of government, industry, and academic institutions attended the meeting, which was held at the Washington Marriott Wardman Park, Omni Shoreham, and Hilton Washington hotels. More than 4,500 presentations in 800 sessions and workshops covering all aspects of transportation were given during the meeting. The spotlight theme for 2014 was Celebrating Our Legacy, Anticipating Our Future.

The following LTRC research was presented at this year's meeting:

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*Understanding Your Deployment Strategy from Research Initiation to Project Delivery*

Mark Morvant, presenter

*Prep-ME: Status of Pooled-Fund Project TPF-5(242) and Implementation Experience of Software Users*

Zhongjie "Doc" Zhang, presenter

*Use of Rolling Wheel Deflectometer Deflection Data in Pavement Management Systems for Flexible Pavement*

Zhongjie "Doc" Zhang, presenter

*Louisiana Legislature Acts on Research to Add Axle to Overloaded Sugar Cane Trucks*

Bill King, presenter

*Effects of Gauge Length and Specimen Orientation on Laboratory-Measured Dynamic Modulus of Asphalt Mixtures*

Sam Cooper, III, presenter

*Balanced Asphalt Mixture Design through Specification Modification: Louisiana's Experience*

Sam Cooper, III, presenter

*Why Pavement Fails: Why Pavement Fails: A Case Study in Louisiana*

MD Kabir, presenter

*Validity of Multiple Stress and Creep Recovery Test for Louisiana DOTD Asphalt Binder*

MD Kabir, presenter

*Evaluation of PMS Pavement Rehabilitation Recommendation Using RWD Deflection Data for Flexible Pavement*

Zhongjie "Doc" Zhang, presenter

*A Case Study on Instrumenting and Testing Full-Scale Test Piles for Evaluating Set-up Phenomenon*

Murad Yusuf Abu-Farsakh, presenter

*Accelerated Load Testing of Geosynthetic-Reinforced and Stabilized Unpaved Roads Built over Native Soft Soil*

Xiaochao Tang, presenter

*Evaluation of Performance of Geosynthetic-Reinforced Unpaved Roads Using Plate Load Tests*

Qiming Chen, presenter

*Foundation Load Test Databases: Applications, Contents, and Development*

Naser Abu-Hejleh, presenter

*Evaluation of AASHTO Pavement M-E for Louisiana Rigid Pavement Design*

Zhong Wu, presenter

*Approaches to Relate Cumulative Traffic Loading to Performance for Pavements Designed Using MEPDG*

Danny Xiao, presenter

*Laboratory Performance of Asphalt Mixtures Containing Recycled Asphalt Shingles*

Samuel B. Cooper, Jr., presenter

## LTRC Director Harold R. Paul Receives W. N. Carey, Jr., Distinguished Service Award

Recognized for his leadership and distinguished service to TRB, Harold “Skip” Paul was the 2013 recipient of the W.N. Carey, Jr., Distinguished Service Award. Paul, recognized for his outstanding service to transportation research and to TRB, received the award on January 15, 2014, during the Chairman’s Luncheon at the TRB 93rd Annual Meeting in Washington, D.C.

Created by the TRB Executive Committee in 1972 as the Highway Research Board Distinguished Service Award, the award was renamed in 1987 to honor W. N. Carey, Jr., who served with distinction as the TRB Executive Director from 1967 until 1980.

Paul has served the Transportation Research Board tirelessly for more than 25 years in a variety of roles. The consummate TRB state representative, he has long been the Louisiana Department of Transportation and Development’s voice in TRB and a key contributor to the Board’s strong continuing partnership with the states, both through his work in that post and through his leadership roles on the American Association of State Highway and Transportation Officials Research Advisory Committee (RAC) and Standing Committee on Research (SCOR).

Those two groups, which develop the National Cooperative Highway Research Program, have benefited from Paul’s thoughtful and far-reaching contributions as the current RAC Chair and SCOR Vice-Chair.

Paul has served as a member or chair of more than 30 TRB councils, groups, sections, committees, panels, and task forces. As



Chairman of the Division A Council—now the Technical Activities Council—from 1999 to 2002, he initiated the effort that led to the reorganization of TRB’s standing technical committees and task forces into the current 11 group functional and modal structure.

The enhanced structure has been credited with creating a new synergy among the groups, enabling the standing committees to address a wider variety of transportation research issues. In 2001, he was named a National Associate of the National Research Council of the National Academies.

Paul began his career with the Louisiana Department of Transportation and Development in 1977. In 1986 his responsibilities within the department grew with the creation of the Louisiana Transportation Research Center, where he was named Director in 2006. Paul is a former board member of the Association of Asphalt Paving Technologists and has participated on many Federal Highway Administration advisory groups. Captain Paul is a retired Navy Reserve Intelligence Officer with 42 years of service. He is a graduate of Lehigh University where he earned a Bachelor of Science degree in mechanical engineering (1976) and a Bachelor of Arts degree in English (1976).



## 2014 SASHTO Sponsorship and Trade Show Opportunities

The SASHTO Executive Committee is pleased to announce that the 2014 annual SASHTO conference will be held August 23-27, 2014, at the New Orleans Sheraton. The theme for the conference is Transportation Innovation: Building the Future. The 2014 SASHTO conference is ready to begin accepting corporate sponsorships. Gain valuable exposure for your company and brand by being a SASHTO 2014 sponsor. Multiple levels of sponsorship will be available with varying benefits.

### Sponsorship levels:

Platinum	\$25,000
Diamond	\$20,000
Gold	\$15,000
Silver	\$10,000
Bronze	\$5,000

To view details on each level of sponsorship benefits, please visit the 2014 SASHTO website at [www.ltrc.lsu.edu/sashto2014/sponsors.html](http://www.ltrc.lsu.edu/sashto2014/sponsors.html)

In addition to sponsorship opportunities, your business may be interested in a trade show booth. The trade show will be held in the Sheraton New Orleans Hotel Grand Ballroom. The trade show will run Monday, August 25, 2014, 7:00 a.m. - 5:00 p.m. through Tuesday, August 26, 2014, 7:00 a.m. - 3:30 p.m. Please visit our trade show information page at [www.ltrc.lsu.edu/sashto2014/trade\\_show.html](http://www.ltrc.lsu.edu/sashto2014/trade_show.html) to learn more specifics on this event.



Be sure to visit the conference Web site at [www.ltrc.lsu.edu/sashto2014](http://www.ltrc.lsu.edu/sashto2014) to get more information about the conference and New Orleans. The Web site will be updated frequently as the conference approaches. We look forward to seeing you in New Orleans at the 2014 SASHTO conference!

## Staff Updates and Accomplishments

**Samuel Cooper, III, P.E.**, passed his Professional Engineers exam in Civil Engineering and has been promoted to Engineer 3.

**Jenny Gilbert**, editor, and **Emily Wolfe**, multi-media specialist, designed and submitted the winning logo design for AASHTO's National Transportation Product Evaluation Program (NTPEP). In response, DOTD was awarded a scholarship to attend the 2014 annual NTPEP meeting in Greenville, SC.

**Wolfe** also recently completed the Graphic Design Certificate Program through LSU Continuing Education.

Associate Director of External Programs **VJ Gopu, Ph.D.**, presented a keynote lecture at the 8th Asia Pacific Conference on Wind Engineering held Chennai, India in December 2013.

Engineering Materials Characterization Research Facility (EMCRF) Manager and LSU Civil Engineering Professor **Louay Mohammad, Ph.D.**, was invited to be a panelist at the Transportation Infrastructure Sustainability Summit that was held on October 29, 2013, in Miami, FL. Dr. Mohammad discussed *Sustainable Pavement Systems: Material, Design, and Construction*.

## Recently Published

### Project Capsule I2-ISS

*DOTD Support for UTC Project: Traffic Counting Using Existing Video Detection Cameras*

Sherif Ishak, Ph.D.

### Project Capsule I3-2SS

*DOTD Support for UTC Project: Travel Time Estimation Using Bluetooth*

Chester Wilmot, Ph.D., P.E.

### Project Capsule I3-6GT

*DOTD Standards for GPS Data Collection Accuracy*

Joshua D. Kent, Ph.D.

### Project Capsule I4-ISS

*DOTD Support for UTC Project: Development of an Optimal Ramp Metering Control Strategy for I-12*

Sherif Ishak, Ph.D.

### Project Capsule I4-4PF

*Mitigation Strategies for Reflective Cracking in Pavements*

Mostafa A. Elseifi, Ph.D., P.E.

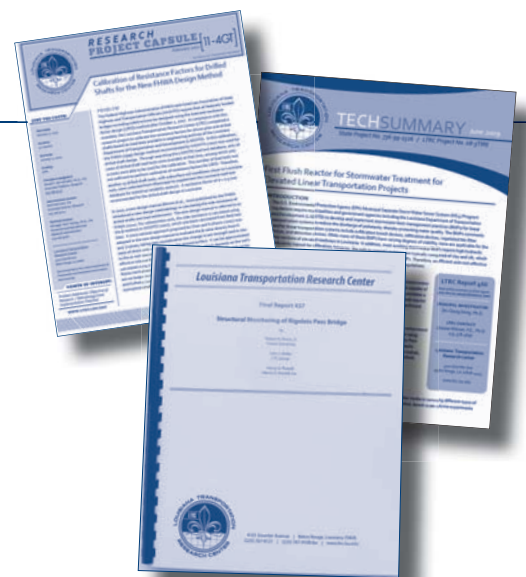
### DOTD Pavement Design Guide

Shashikant Shah

### Technical Assistance Report I3-01TA-B

*Evaluation of Rutting Distresses on I-20 near Mound to Delta Scales*

William "Bill" King, Jr., P.E.; Md Sharear Kabir, P.E.; Samuel B. Cooper, Jr., P.E.; and Kevin Gaspard, P.E.



**Final Report and Technical Summary 453**

*Development of a Design Methodology for Asphalt Treated Mixtures*

Louay N. Mohammad, Ph.D.; Munir D. Nazzal, Ph.D., P.E.; William “Bill” King, Jr., P.E.; and Aaron Austin, P.E.

**Final Report and Technical Summary 475**

*Accelerated Loading Evaluation of Foamed Asphalt Treated RAP Layers in Pavement Performance*

Louay N. Mohammad, Ph.D.; Zhong Wu, Ph.D., P.E.; and William “Bill” King, Jr., P.E.

**Final Report and Technical Summary 493**

*Evaluation of Non-Destructive Technologies for Construction Quality Control of HMA and PCC Pavements in Louisiana*

Patrick Icenogle, E.I., Md. Sharear Kabir, P.E.

**Final Report and Technical Summary 505**

*Implementation of GPC Characterization of Asphalt Binders at Louisiana Materials Laboratory*

Negulescu, Ph.D., and Sreelatha S. Balamurugan, Ph.D.

**Final Report and Technical Summary 506**

*Developing Louisiana Crash Reduction Factors*

Xiaoduan Sun, Ph.D., P.E., and Subasish Das

**Final Report and Technical Summary 507**

*Measuring the Effectiveness of Ramp Metering Strategies on I-12*

Sherif Ishak, Ph.D., Julius Codjoe, Osama Osman, Marlene Russell, and Jose Rodriguez

**Final Report and Technical Summary 509**

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

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

**Final Report and Technical Summary 510**

*LTRC Automated Enforcement and Highway Safety*

Susan Herbel, Richard Retting, and Elizabeth Wemple, P.E.

**Final Report 511**

*STC Synthesis of Research Results for Water Quality Management at Construction Sites*

Alexander M. Aguilar; Richard H. Sheffield, P.E.; and Wilfred M. Welch, III, RPG

**Final Report 512**

*STC Synthesis of Best Practices for Determining Value of Research Results*

Baabak Ashuri, Ph.D., DBIA; Mohsen Shahandashti; and Mehdi Tavakolan, Ph.D.

**Final Report and Technical Summary 513**

*Evaluation of Open Graded Friction Course (OGFC) Mixtures*

William “Bill” King, Jr., P.E.; Md Sharear Kabir, P.E.; Samuel B. Cooper, Jr., P.E.; and Christopher Abadie, P.E.

**Final Report and Technical Summary 514**

*Bayou Corne Sinkhole: Control Measurements of State Highway 70 in Assumption Parish, Louisiana*

Joshua D. Kent

**FIND OUT MORE**

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



## Louisiana Transportation Research Center

4101 Gourrier Avenue

Baton Rouge, LA 70808-4443

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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.

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### LTRC Administration and Publications Staff

**Harold "Skip" Paul, P.E.**, Director

**Mark Morvant, P.E.**, Associate Director, Research

**Sam Cooper, MSCE, P.E.**, Associate Director, Tech Transfer and Training

**Vijaya (VJ) Gopu, Ph.D., P.E.**, Associate Director, External Programs

**Jenny Speights**, Public Information Director

**Nick Champion**, Photographer

**Emily Wolfe**, Multi-Media Specialist

**Jenny Gilbert**, Editor/Technical Writer

**Laura Williams**, Editorial Assistant

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