Technology Today

Volume 29 Issue 3

Spring 2015

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In this Issue

Upcoming Events

ATSSA Work Zone Traffic Control Technician (TCT) Grant Course
July 9, 2015 – Baton Rouge
TTEC Auditorium, Room 100

ATSSA Work Zone Traffic Control Supervisor (TCS) Grant Course
July 10-11, 2015 – Baton Rouge
TTEC Auditorium, Room 100

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

DOTD Mini-Workshops a Success

The Louisiana Transportation Research Center (LTRC) facilitated a meeting between university faculty and the Department of Transportation and Development (DOTD) staff in order to discuss research interests. This is the first time a meeting of this nature has been held. LTRC Associate Director of External Programs Vijaya (VJ) Gopu, Ph.D., P.E., organized four mini-workshops with each workshop focusing on specific area/s of interest. Each workshop lasted approximately 3.5 hours. Faculty members from the seven State universities with engineering programs were invited to participate in the mini-workshops. Each workshop began with the participating faculty member presenting a brief presentation of their background, research interests, and their ongoing research work. These presentations enabled the DOTD staff to gain an understanding of the research capabilities that exist at our State universities. After the faculty presentations, the DOTD staff discussed their current research interests and issues that they may need addressed in the near future, providing an opportunity to exchange ideas. This will assist faculty to submit relative problem statements, during the biennial solicitation period, which may be of an interest to DOTD.

LTRC Associate Director Dr. VJ Gopu leads discussion

DOTD considers the mini-workshops a success and extremely valuable. Plans are in place to hold these mini-workshops every two years, a few months prior to problem statement submission deadline so that the faculty and DOTD staff can directly interact about ongoing research and current needs.

To complement the workshops, at the beginning of the 2015 fall semester, LTRC Director Harold "Skip" Paul, P.E., and Dr. Gopu plan to visit several university campuses across Louisiana that have engineering programs and host "LTRC town hall meetings." Faculty from the entire campus, not just the engineering departments, will

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Save the Date! 2016 Louisiana Transportation Conference February 28 – March 2, 2016

The Louisiana Transportation Research Center is pleased to announce that the 2016 Louisiana Transportation Conference (LTC) will be held February 28 - March 2, 2016 at the Baton Rouge River Center. The theme for the conference is Transportation: Making Connections that Matter. The LTC is held on a biennial basis to foster relationships and understanding among professionals from all sectors of the transportation community. The conference provides for technology transfer and interchange of ideas between the public and private sectors relative to transportation policy, practice, and problems. The 2016 conference will feature more than 70 technical sessions and is expected to be attended by over 1,500 transportation professionals from government, industry, and academia.

To get more information about the conference please visit the conference web site at www.ltrc.lsu.edu/ltc_16. The web site will be updated frequently as the conference approaches.

2016 Louisiana Transportation Conference (LTC) Registration Information

DOTD employee, private industry, government/university, and DOTD retiree registration will open later this summer. Conference attendees are responsible for making their room reservations for overnight stays. For additional hotel information, please visit: www.ltrc.lsu.edu/ltc_16/acc.html.

2016 Louisiana Transportation Conference (LTC) Proposed Topics

The LTC planning committee needs your feedback. Please indicate the top 8 topics you find most interesting and may plan to attend. The following link will take you to a list of proposed topics: www.ltrc.lsu.edu/ltc_16/prelim_survey.html.

2016 Louisiana Transportation Conference (LTC) Sponsorship Opportunities

We are also pleased to announce the conference will be offering corporate sponsorships. Please visit the web site at www.ltrc.lsu.edu/ltc_16/sponsors.html for more information on sponsorship packages and see the chart to the right.

We look forward to seeing you at the 2016 Louisiana Transportation Conference. Feel free to contact Samuel B. Cooper, Jr., Conference Chairman at 225-767-9165 or samuel.cooper@la.gov for more information.

Field Instrumentation and Testing to Study Set-up Phenomenon of Piles Driven into Louisiana Clayey Soils

Bayou Laccassine Site - Test Pile 2

Piles driven into saturated cohesive soils (clays and silts) usually experience a time-dependent increase in pile resistance (mainly frictional) capacity, known as pile setup, which contributes to the long-term capacity of the piles. Field observations showed that pile setup is significant and continues to develop after installation, especially for fine-grained soils. An increase in pile capacity of up to 12 times, due to setup, has been reported (McManis et al., 1989). Therefore, the assessment of pile setup over time is very important in the design and construction of pile foundations. The construction of the pile foundation is usually expensive. The Louisiana Department of Transportation and Development (DOTD) spent about $30 million on the construction of driven piles in 2014 (DOTD Weighted Averages, 2014. The incorporation of setup into pile design can result in a significant cost savings. The current engineering practice in the design of piles in Louisiana is based on conducting test piles 14 days after driving and ignoring any pile setup after that, leading to a conservative pile design. A more reliable load and resistance factor design (LRFD) methodology that accounts for the effect of time-dependent gain on pile capacity is needed. The accurate prediction/estimation of the

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Sponsorship Opportunities - 2016 LTC

Platinum ($20,000)	***Gold Sponsor ($10,000)***	***Silver Sponsor ($5,000)***	***Bronze Sponsor ($2,500)***
* Complimentary double-size booth in exhibitor area * Recognition at the opening session * Invitation for four guests to the VIP breakfast * Four complimentary delegate registrations * Prominent listing in the conference program * Prominent listing throughout the conference * Recognition at the closing ceremony * Prominent link to company Web site (with logo) from the conference Web site	* Complimentary booth in exhibitor area * Invitation for two guests to the VIP breakfast * Two complimentary delegate registrations * Prominent listing in the conference program * Prominent listing throughout the conference * Recognition at the closing ceremony * Prominent link to company Web site (with logo) from the conference Web site	* One complimentary delegate registration * Invitation for one guest to the VIP breakfast * Listing in the conference program * Listing throughout the conference * Text link to company Web site from the conference Web site	* Listing in the conference program * Listing throughout the conference * Listing on the conference Web site

**Sponsorship must be received by February 5, 2016, to be listed in the conference program. Sponsors registering after this deadline will be added to the program in an insert. The final sponsorship deadline is February 19, 2016.*

LAPELS Workshops

Over 400 individuals attended the Professionalism and Ethics Presentation offered on February 25, 2015 in the DOTD HQ Auditorium, March 2 in the TTEC Auditorium, and March 9 also in the TTEC Auditorium. Each presentation lasted one hour and was available through video conferencing to the LA DOTD districts. The presentation covered functions of the Louisiana Professional Engineering and Land Surveying Board, the investigative process, cited several case studies, and reviewed some of the responsibilities of licensed professional engineers and professional land surveyors.

LAC Title 46, Part LXI, Chapter 31 lists the biennial CPD requirements for engineers and surveyors as:

For engineers

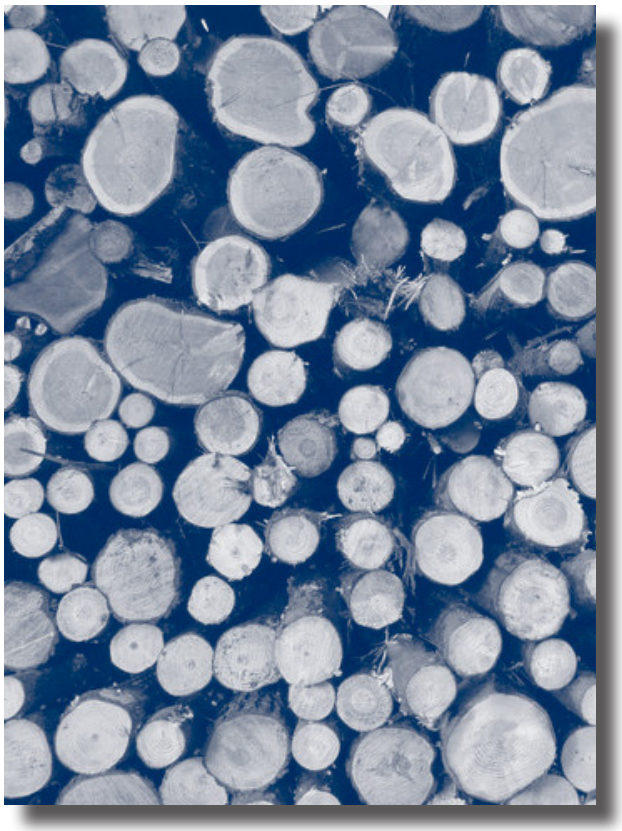
(A)(1) At least one PDH shall be in professional ethics. Professional ethics concerns the standard of professional conduct and responsibility required of a professional engineer.

For surveyors

(B)(1) At least one PDH shall be in professional ethics. Professional ethics concerns the standard of professional conduct and responsibility required of a professional land surveyor.

This presentation fulfilled the requirement for one PDH in professional ethics.

National Timber Study Completed



In Volume 27, Issue 1 (Fall 2012), the joint FHWA and Forest Products Laboratory (FPL) project Field Performance of Timber Highway Bridges: A National Study was introduced. LTRC Associate Director of External Programs Vijaya (VJ) Gopu, Ph.D., P.E., led the Southeast region study and is pleased to announce that the inspections of the selected group of timber bridges in Alabama, Georgia, North Carolina, and Louisiana that began in spring 2013 are now complete. Each of the national project team members submitted the findings of the study conducted in their respective regions to the FPL in 2014. FPL compiled all the data into a draft report that was sent to the regional leaders for review and comment. According to Dr. Gopu, once he receives the review comments from the four Departments of Transportation that participated in the Southeast region study, he will submit a set of review comments to FPL. The final report will be published by FPL in the summer of 2015.

PTV Vissim and PTV Vistro Workshops

In spring 2015, the Louisiana Department of Transportation and Development and Louisiana Transportation Research Center will hold three workshops at the Transportation Training and Education Center in order to meet the specific goals and objectives relative to the PTV Vision Traffic Suite, which will provide planners, engineers, and other members of the professional engineering community with technical knowledge of the PTV Vision Traffic Suite and the methods for implementation. Experienced PTV Vissim workshop instructors who are recognized for their design experience and teaching expertise will instruct each workshop. As a result of these workshops, participants will be able to utilize the following concepts, along with many others:

Understanding roundabout analysis
Proper setup of roundabout geometry
Speed control and routing
Yielding behavior through conflict areas
Single and multi-lane roundabout examples
How to calibrate a roundabout model
Setting up freeway merging/diverging areas
Driver behavior parameters for freeway calibration
Network considerations for calibration
Freeway specific output
Basic HOV operations
HOT lanes with the Managed Lanes module
Ramp metering (variable and fixed rate)
Curbside parking applications
Transit stops and linesScheduling
Passenger flow model
RBC transit signal priority (TSP)
Departure signals for near-side stops
Bus queue jump

Field Instrumentation and Testing to Study Set-up Phenomenon of Piles Driven into Louisiana Clayey Soils

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increase in pile capacity with time can be incorporated into a rational design through reducing the number of piles, shortening pile lengths, reducing pile cross-sectional area (using smaller-diameter piles), and/or reducing the size of driving equipment (using smaller hammers and/or cranes). Incorporating any or a combination of these benefits will result in a cost reduction and savings to DOTD.

The main objective of this research study was to evaluate the time-dependent increase in pile capacity (or pile setup phenomenon) for piles driven into Louisiana soils through conducting repeated static and dynamic field testing with time on full-scale instrumented test piles for the purpose of incorporating the pile setup into DOTD design practices.

The researchers have developed models to estimate pile set-up based on soil properties and are in the process of implementing the models into LRFD design of piles.

This project:

• Involved field instrumenting and testing of driven piles at several bridge sites (Bayou Teche, Bayou Zourrie, Bayou Laccassine, Bayou Boeuf) to evaluate the time-dependent increase in pile capacity (or setup) for piles driven into Louisiana soils through conducting repeated static and dynamic field testing with time after end of driving on the instrumented test piles.

• Collected all previous static and dynamic load tests databases on driven piles from DOTD archives,

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Staff Updates and Accomplishments

Allison Landry was elected as Secretary of the Louisiana Chapter of SGMP Board of Directors.

Melissa Lee was elected President of the Louisiana Chapter of SGMP Board of Directors.

TTEC would like to welcome **Rebecca Rizzutto,** the new Training Program Coordinator.

Dortha Cummins recently joined LTRC as the Director of the newly formed Louisiana Center for Transportation Safety (LCTS). The LCTS, or aptly called the Safety Center, will work closely with the Louisiana DOTD and Local Technical Assistance Program (LTAP) in providing state/regional/local support for transportation-safety-related training, workforce development, research studies and technical assistance. Also, the Safety Center will provide local governments assistance in crash data analyses and development of local road safety improvement projects through the Local Road Safety Program (LRSP).

Field Instrumentation and Testing to Study Set-up Phenomenon of Piles Driven into Louisiana Clayey Soils

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• Conducted parametric study on the effect of soil type/properties, pile size, and their interaction on pile setup phenomenon,

• Conducted regression statistical analysis to develop analytical models to estimate pile setup with time from soil properties. Three level analytical models were developed to estimate pile setup using the instrumented test pile data and were verified using non-instrumented test pile data.

• In the near future, the researchers will conduct reliability analysis to incorporate the pile setup resistance factors (setup) in the Load and Resistance Factor Design (LRFD) methodology of driven piles in Louisiana.

For more information on this project, contact Dr. Murad Y. Abu-Farsakh, Director of the Geotechnical Engineering Research Laboratory, at cefars@lsu.edu or (225) 767-9147.

DOTD Mini-Workshops a Success

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be invited to attend to learn about LTRC, how it is structured, and how faculty can participate in LTRC research programs and activities. They will also be informed of the upcoming workshops and invited to attend those, as well.

For more information about the mini-workshops or LTRC town hall meetings, contact LTRC Associate Director of External Programs Vijaya (VJ) Gopu, Ph.D., P.E., at (225) 767-9102 or v.gopu@la.gov.

Recently Published

Project Capsule 14-1B
Effects of Temperature Segregation on the Volumetric and Mechanistic Properties of Asphalt Mixtures
Louay Mohammad, Ph.D.

Project Capsule 14-3B
NCHRP Project 20-07 / Task 361: Hamburg Wheel-Track Test Equipment Requirements and Improvements to AASHTO T 324
Louay Mohammad, Ph.D.

Project Capsule 14-2C
Implementation of Maturity for Concrete Strength Measurement and Pay
Tyson D. Rupnow, Ph.D., P.E.

Project Capsule 15-1ST
Development of Wave and Surge Atlas for the Design and Protection of Coastal Bridges in South Louisiana – Phase II
D. Max Sheppard, Ph.D.

Final Report and Technical Summary 533
Comparison of Conventional and Self-Consolidating Concrete for Drilled Shaft Construction
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Monitoring Bridge Scour Using Fiber Optic Sensors
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Final Report and Technical Summary 538
Traffic and Data Preparation for AASHTO DARWin-ME Analysis and Design
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Final Report 546
Evaluation of Rutting Distresses on I-20 Near Minden, LA
William "Bill" King, Jr., P.E.; David Mata; and Samuel B. Cooper, III

Final Report and Technical Summary 550
Best Practices for Achieving and Measuring Pavement Smoothness, a Synthesis of State-of-Practice
David K. Merritt; George K. Chang, Ph.D.; and Jennifer L. Rutledge

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