

# Technology Today

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**LTRC**



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## Upcoming Events

**Tuesday, July 1, 2008**

Emulsion: Design, Construction, and Performance Seminar  
Holiday Inn Select  
Baton Rouge, Louisiana  
Registration—Free

Visit [www.ltrc.lsu.edu](http://www.ltrc.lsu.edu) for more upcoming events.

## LSRC Provides for Reestablishment of Official Federal Reference System in LA

The Mississippi River, in all of its meandering, has for years deposited wet, weak alluvial soils across its South Louisiana coast. The soil deposits have accumulated and settled, as is evidenced in the resulting differential and global movement. Surveying techniques based on benchmarks now buried under the soil are no longer accurate indicators of conditions.

In a proposition to the Louisiana Department of Transportation and Development (LADOTD), representatives of the Center for Geoinformatics at Louisiana State University suggested that the elevation and centerline coordinates of the top of federal and local levees be measured. The study that followed focused on 742.5 miles of levees and floodwalls between Donaldsonville (western boundary), Venice (eastern boundary), Slidell (northern boundary), and Grand Isle (southern boundary). Informal levees and floodwalls not recognized by LADOTD were not measured.



*Coastal Louisiana*

The Center for Geoinformatics collaborated with the National Geodetic Survey (NGS) to create the Louisiana Spatial Reference Center (LSRC). LSRC is responsible for the development and maintenance of GULFNET, a statewide network of high precision Global Positioning System (GPS) receivers. The network serves the purpose of reestablishing Louisiana's official federal reference system and is the state's backbone with regard to surveying, supporting GIS development, detailed topographic mapping, precision farming, navigation, and general geospatial applications. GULFNET was charged with the tasks of pinpointing the location of subsidence along the coast and measuring the exact rate at which the coast was sinking.

GULFNET assists the NGS with the definition and management of Louisiana's coordinate system, a part of NGS's National Spatial Reference System (NSRS). The Louisiana coordinate system provides the foundation for the state's transportation and communication, mapping and charting, and a multitude of assorted scientific and engineering applications.

Elevations at all significant breaks in the profile along the southeastern Louisiana levees and floodwalls were measured. The LSU GULFNET GPS reference network serves as the official and legal basis for vertical positioning in Louisiana and governs the measurement of elevations. Said elevations were reported with respect to the North American Vertical Datum of 1988 (NAVD88), and lateral coordinates measured were reported with respect to the North American Datum of 1983 (NAD83).

The GULFNET GPS Reference Network allowed LADOTD to accurately measure existing levees and provide measurements that reflect actual elevations and can be incorporated into the department's levee safety program. As fixed benchmarks were not set, possible problems with sinking benchmarks were avoided, and faster data collection was facilitated.

For more information on this project, contact Geotechnical Research Engineer Gavin Gautreau at 225-767-9110 or [gavingautreau@dotd.la.gov](mailto:gavingautreau@dotd.la.gov).

## Peer Exchange Highlights Opportunities for Growth

While internal organizational reviews are critical to progress, periodic critiques from outside experts can provide invaluable insight, leading to best practice implementation. Such is the philosophy behind peer exchanges.

In order to manage State Planning and Research (SP&R) funds, LTRC must conduct a peer exchange every three to five years, according to federal regulations (23 CFR 420 Subpart B). Peer exchange is an opportunity to review research and development and technology transfer activities. Its intent is to strengthen weak programs while enhancing strong ones.

LTRC's peer exchange team convened in Baton Rouge for three days in May for an informal open dialogue and exchange of ideas. During the meetings, LTRC staff presented information about current focus areas and practices, and the invited participants shared their state practices and took part in brainstorming sessions.

The 2008 peer exchange team included representatives from Arizona, Florida, Iowa, Mississippi, Texas, and Wyoming, along with officials from FHWA, LTRC, and LADOTD headquarters. With the distance learning technology available at LTRC's Transportation Training and Education Center (TTEC), remote team members were able to participate in sessions via videoconference.

This year's peer exchange focused on the following key areas:

- Enhancing university relationships
- Exploring new research topics
- Effectively cooperating with regional peers
- Measuring and reporting on the value of research
- Developing LTRC's transportation library

The results from all presentations, interviews, and breakout sessions were compiled into a final report that identified LTRC's strengths in the aforementioned areas as well as opportunities for improvement and growth.

## LTRC Offers Optimal Setting for Technical Session on Bailey's Approach to Hot Mix Asphalt

The Louisiana Transportation Research Center (LTRC) recently hosted a three-day class entitled *Bailey Method: Achieving Volumetrics and HMA Compactability*. The session united an eclectic mix of students from the Louisiana Department of Transportation and Development and private industry. LTRC's Transportation Training and Education Center (TTEC) served as an apt facility for students to study and discuss the possibilities for use of the Bailey Method in construction projects.

The Bailey Method is used as an analytical tool in the design of hot mix asphalt composite aggregate structures. The method allows for an understanding regarding the way in which aggregates combine. It aids in determining which fraction of aggregate will control the overall structure of the mix. The Bailey Method helps engineers estimate adjustments needed in composite aggregate blends. It also promotes the optimization of mix characteristics with available aggregates.

Robert D. Bailey first conceptualized what would come to be known as the Bailey Method as part of his work for the Illinois Department of Transportation in 1980. His method provides a practical approach that can be successfully utilized in the development and analysis of hot mix asphalt in the lab and in the field. The Bailey method allows for an advantageous starting point from which to approach mix design, and it serves as an invaluable aid in making adjustments as part of an effort to improve air voids, voids in mineral aggregate (VMA), and the overall workability of the mix. The Bailey method applies to the use of Marshall as well as Superpave.

*Cont'd on Page 4*

## DOTD Awards Scholarships to Civil Engineering Students

The Louisiana Department of Transportation and Development (DOTD) recently awarded seventeen \$1,000 scholarships to civil engineering students from Louisiana universities. LTRC administered the scholarship awards.

The recipients include Allison Vinson, Mai Nguyen, Adele Cook, Noah Hasslock, Jeremy Yeglin, Ben McArdle (Louisiana State University); Jennifer Treme, Brian Rogers, Dane Dupont (McNeese State University); Meagan Pinkney, Tynekia Hampton, Jasmine Smith, Lonicka Laurent, Jaubert Ambeau, Jacquole Landry (Southern University); Jayne Duncan (University of New Orleans); and Henry Shuler (Louisiana Tech University).

Applicants were required to be at the junior or senior level with a declared major in civil engineering and an interest in pursuing a vocation in the transportation field. They were evaluated on academic success and a one-page description relating their academic choices to their career goals in the transportation industry. Each application was reviewed and rated by the LTRC Policy Committee, composed of DOTD officials and representatives from the seven Louisiana universities with schools of engineering.

A presentation of the scholarships was made to the recipients at a ceremony at DOTD headquarters. William Ankner, DOTD Secretary, personally presented the awards.

The Southeastern Association of State Highway Transportation Officials (SASHTO) provided the funds for these scholarships. Louisiana's leadership was instrumental in the decision by the SASHTO board of directors to utilize SASHTO technical conference funds in such a manner. During SASHTO's 2000 meeting in New Orleans, which was hosted by DOTD, scholarships were first awarded to participating states.

*"Dr. Ankner spoke at length on career opportunities in the transportation field and especially in Louisiana and at DOTD. It was exciting to meet these young people, many of whom have already participated in the DOTD CO-OP program, working up to 20 hours per week or during the summers. We hope that with this opportunity, they will consider DOTD as an employer of choice upon graduation." ~ Skip Paul, LTRC Director*

The association made an allocation to each of the states that make up SASHTO: Louisiana, Alabama, Arkansas, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia, and the Commonwealth of Puerto Rico.

Scholarships will be awarded again for the fall semester of 2008, based on funding from SASHTO. Civil engineering students from the following universities are eligible for the scholarships: Louisiana State University, Louisiana Tech University, McNeese State University, Southern University, Tulane University, the University of Louisiana at Lafayette, and the University of New Orleans.

For further information, students may contact the Civil Engineering Department of their respective universities.

**LADOTD Secretary poses with scholarship award recipients.**



## Bailey's Approach to Hot Mix Asphalt (cont'd)

The Bailey Method is useful with coarse-graded, fine-graded, and stone matrix asphalt (SMA) mixtures. It may effectively aid in determining the reason(s) some mixtures are difficult to compact or have problems meeting VMA requirements. The method also provides insight as to why small gradation changes, which often occur during production and are within allowable tolerances, can cause significant changes to mixture volumetric properties and field compactability.

The format of the Bailey Method class at TTEC gave students a chance to study the method from various angles. Instructor Bill Pine, an avid proponent of the Bailey Method, said, "I really wanted to give these students a chance to explore these methods for themselves. I believe in the Bailey Method, and I want others to learn to appreciate its benefits as well."

Using the provided course manual and analysis software, students took a closer look at aggregate packing for different aggregate blend combinations based on specific mix types. Group discussions allowed students to examine volume blending and voids estimation spreadsheets in order to effectively analyze gradations and corresponding properties for lab and field work.

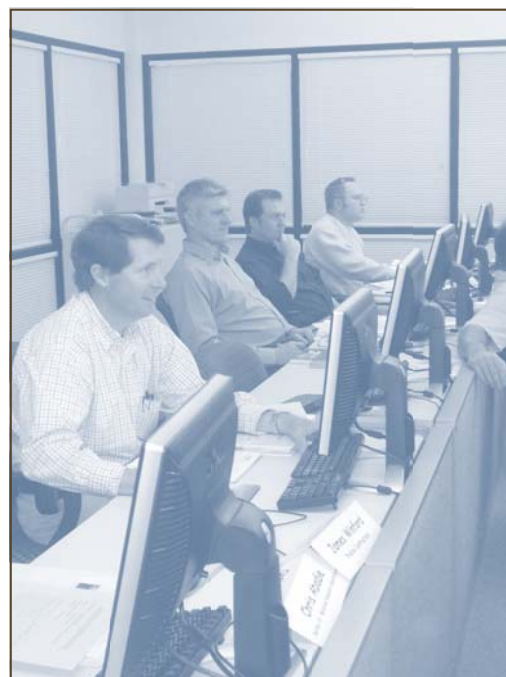
LTRC engineer Bill King said of the course, "The Bailey Method class was very beneficial to me because it gave me a better understanding of the behavior of the aggregate structure in asphaltic concrete mixes. Although it is generally used as a tool to design asphaltic concrete mixes, I thought it was quite interesting that this method was just as valuable in analyzing past mix designs. This could be very useful in trouble-shooting past mixes that did not perform as intended to determine if there were problems associated with the aggregate structure."

TTEC visitor Russell Mickelbrough, of W.E. Blain & Sons, reported being pleasantly surprised with his experience. He said of the class, "The teaching methods used by Mr. Pine were excellent. For me, I really enjoyed the group discussion and use of multimedia items in the class."

Pine enjoyed the state-of-the-art technological capabilities at TTEC that allowed him to effectively present his material in various forms.

TTEC is proud of the success of the class and the positive feedback from students who stand to take advantage of knowledge gained about the method as they return to the field and labs.

TTEC offers an extensive course list covering a wide spectrum of technical topics of interest in the field of transportation engineering. For more information, visit the LTRC Web site at [www.ltrc.lsu.edu](http://www.ltrc.lsu.edu).



*Bailey Method students prepare for another day of instruction from Bill Pine.*



## TTEC Partners with NCPP to Present Course in Chip Seal Best Practices

The Transportation Training and Education Center (TTEC) at Louisiana Transportation Research Center (LTRC) was selected to be the site of a recent course on chip seal best practices. The one-day course, offered by the National Center for Pavement Preservation (NCPP), gave students a chance to improve their understanding of chip seal design, construction, equipment, and inspection.

Chip seals are most common in preventive maintenance functions. They can offer superior pavement distress mitigation; retard the downward action of water, snow, and ice; and provide improved skid resistance. Because the primary causes of chip seal failure are poor construction practices and inappropriate roadway candidate selection, the NCPP course was designed to provide pavement practitioners with the essential skills needed to ensure success.

The course garnered students from the Louisiana Department of Transportation and Development and private industry. In light of the intense training format, each student was provided with a comprehensive training notebook. The training materials were geared toward a broad base of pavement practitioners, including engineers, foremen, superintendents, designers, inspectors, and equipment operators.

*"The course covered national trends, design of surface treatments, problems associated with poor selection of candidate roadways for the treatment, and the importance of details during construction. I personally enjoyed the real life examples of what can go wrong due to improper design and construction."*

~ Simone Ardoin, District 41

The instructor's discussion of real world situations provided students with valuable insight that can be applied to experiences in the field. The instruction and materials laid a solid foundation for future chip seal practices. With the condition of Louisiana's highways continually changing, proper and timely chip seal methods will help to ensure a smooth ride for all.

For more information on chip seals, visit NCPP's Web site at [www.pavementpreservation.org](http://www.pavementpreservation.org).

For more information regarding TTEC's 2008 course offerings, visit the LTRC Web site at [www.ltrc.lsu.edu](http://www.ltrc.lsu.edu).



*Chip Seal participants take part in a presentation on chip seal design, construction, equipment, and inspection.*

## TTEC Hosts Sustainability in Concrete Consortium

The Technology Transfer Concrete Consortium (TTCC) and National Concrete Consortium (NCC) held a meeting at Louisiana Transportation Research Center's Transportation Training and Education Center April 8–10. The theme for this spring's meeting was "Sustainability in Concrete Construction."

The first day of the meeting was sponsored by TTCC and was primarily devoted to the mix design and analysis track of the Concrete Pavement Collaborative Research Program (CP) Road Map. Day one also included a distribution of the Material and Construction Optimization for Prevention of Premature Pavement Distress (MCO) deliverables and a discussion of the implementation of the MCO project's findings.

NCC's main part of the agenda dealt with sustainability in concrete construction. Industry representatives delivered presentations on new materials, equipment, ideas, and methods that stand to enhance the performance of concrete in pavements and bridges.

NCC representative Jim Grove presented a summary of state survey research related to the CP Road Map.

John Staton led a roundtable discussion pertaining to current and future needs of the state and industry, priorities with regard to missing research and key research, and possible means of bringing funding needs and problem statements to the attention of the Transportation Research Board and the American Association of Highway and Transportation Officials.

## Recently Published

### Technical Assistance Report:

08-2TA— Assessment of Tri-Dyne Precast Concrete Panels

### Technical Summaries:

38I— Louisiana Traffic Sign Inventory and Management System

399— Statewide Traffic Safety Study, Phase I: Review of Current Traffic Safety Research, Practice, Analytical Procedures, and Databases

407— Modeling Hurricane Evacuation Traffic: Testing the Gravity and Intervening Opportunity Models as Models of Destination Choice in Hurricane Evacuation

### Project Capsules:

08-2P Analysis of Seasonal Strain Measurements and Asphalt Materials Under Accelerated Load

08-6GT Performance Evaluation of Buried Pipe Installation

07-1ST Structure Health Monitoring of I-10 Twin Span Bridge

07-2SS Design of Lane Merges at Rural Freeway Construction Work Zones

07-7P Safety Improvement from Edge Lines of Rural Two-Lane Highways

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

## Students Discover LADOTD Career Opportunities

This spring, over 20 students from Louisiana Tech University visited the Louisiana Department of Transportation and Development and LTRC as part of a recruitment effort hosted by LADOTD.

Chief Bill Temple welcomed the students before they spent the first half of the day meeting representatives from Construction, Maintenance, Road Design, Bridge Design, and Bridge Maintenance. The students then broke into four small groups, in which road design engineers Jason Lacombe, Kelly Kemp, and Dusty Bastion led them on 25-minute tours of the Road Design, Bridge Design, ITS, and Bridge Maintenance areas.

“While visiting LADOTD, students get a peek at the day-to-day operations of the department. They get to observe the many diverse engineering and technical careers at work. The visits are a great networking tool for developing long term relationships with the university and members of the faculty. Students learn who’s who, and we are able to identify potential recruits for future career opportunities,” explained recruiting program manager Janice Drake.

The second half of the day was spent touring the Louisiana Transportation Research Center. An overview of LTRC

was presented by Associate Director of Research Mark Morvant. He explained the research capabilities and organizational structure of LTRC. Pavement and Geotechnical Research Administrator Doc Zhang and Materials Research Administrator Chris Abadie also presented the students with information on their respective areas of expertise. Students then toured the asphalt, concrete, pavement and geotechnical laboratories and viewed the field equipment housed at LTRC.

Graduating senior Patrick Icenogle stated, “The tour today showed a lot more than just roads and bridges. Roads and bridges are usually all you hear about at DOTD. I have a computer science background, and I love the lab environment. The research center would be perfect for someone like me. It was very impressive.”

LTRC Director Skip Paul brought the day to a close at LTRC’s Transportation Training and Education Center.



*Students get a tour of LTRC’s mobile testing equipment.*



*Senior concrete research engineer John Eggers demonstrated the use of aggregate for concrete and explained how gradation plays an important part in concrete performance and quality. He continued the tour of the LTRC concrete lab by demonstrating most of its equipment and capabilities.*

## Staff Achievements

LTAP employees **Bob Breaux** and **David McFarland** were honored for their 15 years of service to LSU. LTRC Director Harold "Skip" Paul presented them with certificates at an LTRC staff meeting on May 12, 2008.

The following LTRC employees were recognized for their state service at the Employee Service Awards and Recognition Ceremony held at LADOTD headquarters on April 30, 2008:

- **Christopher Abadie** —20 years
- **Mitchell Terrell** —25 years
- **Matt Tircuit** —25 years
- **David Jumper** —30 years
- **Harold "Skip" Paul** —30 years

**Emily Wolfe** joins LTRC as our multi media specialist. Wolfe will assist with graphic design, publication layout and design, and development of the center's Web site. Emily can be contacted at ewolfe@lsu.edu or 225-767-9145.

Effective July 1, 2008, **Murad Abu-Farsakh, Ph.D., P.E.**, will be promoted to research associate professor from research assistant professor at LSU.

### Current LADOTD Job Opportunities:

<http://www.dotd.louisiana.gov/hresources/CivilServiceJobs.asp>

### Current LSU Job Opportunities:

<http://appl003.lsu.edu/hrm/hrmweb.nsf/Index>

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