

# Technology Today

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## Upcoming Events

3/31/08-04/11/08	Safety Inspection of In-Service Bridges TTEC Rooms 175 and 179
04/01/08	Preserving Our Transportation Infrastructure/Tech Transfer Conference TTEC Auditorium Room 100
04/28/08-05/02/08	Advanced Geometric Design Workshop TTEC Auditorium Room 100

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

## LTRC Seminar Shines a Spotlight on Bridge Projects



The Louisiana Transportation Research Center, the research arm of the Louisiana Department of Transportation and Development, held a bridge structures seminar on February 20 and 21 in New Orleans, Louisiana. The seminar boasted 150 attendees from 13 states and featured presentations on major bridge projects, moveable bridges, bridge maintenance, bridge rehabilitation, structures research, and bridge design. Presentations covered topics such as the Luling Bridge, the I-10 Twin Span Bridge, and the John James Audubon Bridge.

Several of the 17 participating speakers were from Louisiana. LADOTD Chief Engineer William "Bill" Temple opened the series by welcoming participants to what he hopes will be one of many opportunities for the sharing of vital bridge research.

LADOTD's Ching Tsai contributed to a session centered on the American Association of State Highway and Transportation Officials Load and Resistance Factor Design Code. He explained that, in compliance with a Federal Highway Administration mandate, LADOTD and LTRC have an ongoing research project that calibrates the risk levels (in terms of resistance factors) associated with deep foundations in Louisiana. AASHTO's LRFD design methodology strongly encourages field verification testing by specifying significantly greater resistance factors for static and dynamic load tests. Field testing and feedback during construction become the most important aspects of any project. The implementation of LRFD in geotechnical design places greater demands on the geotechnical engineers in every aspect of their work, i.e., more field investigation, more laboratory testing, more detailed analyses, and more field testing.

*"The seminar provided a concise overview of DOTD's past and current projects and the magnitude of efforts of the bridge designers. It was a great opportunity to learn more about what other sections of the department have accomplished and to improve my understanding of project development processes during both design and construction." - LADOTD's Ching Tsai*

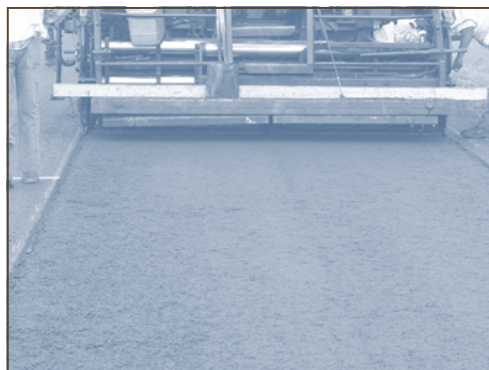
Dr. John Kulicki, CEO at Modjeski and Masters and member of the National Academy of Engineering, gave a presentation summarizing the seven year process that culminated in AASHTO's 1993 adoption of LRFD. The presentation included a discussion of the pilot study that directly resulted in the development of LRFD. Also discussed were certain objectives and limitations regarding the specifications. The draft review process is another topic that was covered by Dr. Kulicki. Kulicki reviewed the reliability basis and calibration. He presented newly developed reliability indices based on the work of NCHRP 20-7/186, which involved the use of Monte Carlo analysis applied to the original bridge data base in combination with a newly developed bridge database. Kulicki delved into the

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# ATAM — A New Generation of Asphalt

Louisiana Transportation Research Center's asphalt materials research group is evaluating a new mixture intended to serve as a viable cost-effective alternative for the reconstruction of Louisiana's low volume roadways. The Asphalt Treated Aggregate Mixture (ATAM) consists of an aggregate base with added asphalt and was originally intended to be used as a base mixture. It was developed at the request of contractors and Louisiana Department of Transportation and Development personnel seeking a low-cost option.

The ATAM is comprised of 75 percent #610 Stone Base and 25 percent washed sand and is mixed with three percent asphalt cement. LTRC is conducting a research project that includes an extensive laboratory evaluation as well as a comprehensive field performance evaluation. The laboratory investigation began in 2007, and many of the mixtures have demonstrated a great deal of promise thus far. Results from actual field projects will be forthcoming. The project is being headed by principal investigator Dr. Louay Mohammad, who is assisted by Dr. Munir Nazzal and William "Bill" King.



*ATAM Being Placed*

In the first phase of research, more than ten different aggregate sources were tested in laboratory experiments. Experimental laboratory samples were subjected to performance tests intended to gauge strength, stability, durability, and other factors relating to the mixture and its individual components. Laboratory evaluations of the ATAM have shown positive results when compared with the performance of conventional mixes. Structurally, the ATAM is an ideal base material, sufficient to allow for the reduction of typical base thickness by at least 50 percent, and can speed up construction and provide greater smoothness in both concrete and asphalt pavements. However, many evaluations have shown a reduction in resistance to moisture damage. Based on the laboratory results, specifications have been developed for the implementation of research in actual roadway projects.

In the second phase of research, long term field performance will be monitored and compared to the experimental laboratory results.

The first field project was constructed in February of 2008 on Louisiana Highway 3127, near Convent. It consisted of placing a one mile experimental test lane with two inch thick ATAM on a 10 foot wide shoulder. Barriere Construction Company, LLC served as the contractor for the project.

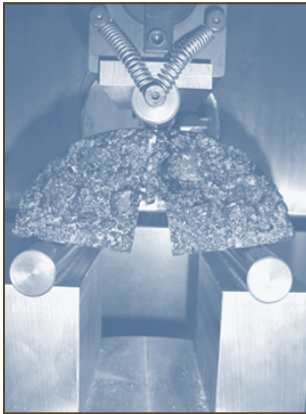
The project is unique in that results from the one mile section of ATAM will also be compared with a one mile section of conventional Superpave Level I shoulder mix with 30 percent recycled asphalt.

Another project planned for construction and evaluation involves U.S. Highway 425, near Rayville.

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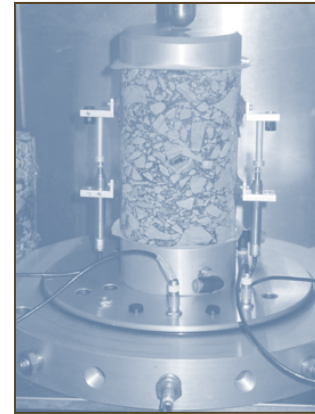
## ATAM (cont'd)

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*Semi-Circular Beam Test*

LTRC's asphalt materials section is continuing to promote the ATAM concept for use on low volume roads in all of the districts. District design engineers have already shown interest in utilizing the technique in an effort to maximize and expand their available budget. ATAM will likely be tested and evaluated using LTRC's accelerated loading facility (ALF) device. The ALF test will be able to confirm the strength of the material in a relatively short period of time by imparting thousands of truck axle loads on pavement built with ATAM.



*Simple Performance Test*

For more information on the ATAM concept, you may contact Bill King at 225-767-9129, or email: [billking@dotd.la.gov](mailto:billking@dotd.la.gov).

## LTRC Seminar (cont'd)

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rationale behind some of the major changes made to long-standing provisions, and he provided for a review of the ninety year history of live load models that led to the HL 93.

As Dr. Kulicki has over 30 years of experience covering virtually all aspects of bridge analysis and design, including significant experience in bridge related research and the education of other design professionals, his contributions to the seminar were invaluable.

Bruce Peterson, of Louisiana TIMED Managers, presented information concerning the Huey P. Long Bridge widening project. The project involves a unique widening and rehabilitation project that will incorporate an existing long span steel truss and existing cantilevered floor beam brackets into the widened multi-truss bridge. Construction is expected to be completed in 2013.

When asked about the seminar, Peterson said, "It was very good because it provided current local research on local problems and issues. In addition, it was an opportunity to learn more about local projects that have been completed or are currently underway. New techniques and construction methods highlighted in these projects help to provide designers and owners with information on available techniques that could be applied to projects they are currently working on."

LTRC Director Harold "Skip" Paul brought the proceedings to a close with positive observations concerning the success of the seminar and the benefits sure to come from the wealth of information provided.

A seminar exploring new technologies and practices for quality assurance/quality control is slated for November of 2008. Information on this fall's seminar will be posted on the LTRC Web site in the near future.

To view presentations from the seminar on bridge structures, visit [www.ltrc.lsu.edu/conferences\\_bridgeseminar.html](http://www.ltrc.lsu.edu/conferences_bridgeseminar.html).

## MATHCOUNTS at TTEC

The Baton Rouge regional MATHCOUNTS competition was held at the Louisiana Transportation Research Center's Transportation Training and Education Center on February 15, 2008. Glasgow Middle School's Bob Liang took top honors at the acclaimed event. Catholic High, Glasgow Middle, and St. Jude the Apostle are three outstanding local schools that will advance to the state competition.

The 2008 statewide MATHCOUNTS competition will be held at the Holiday Inn South in Baton Rouge on March 20. The four top performers from the state competition will go on to compete at the national level May 8-11 in Denver, Colorado.

In an increasingly technological society, students who fail to develop problem-solving skills in middle school are likely to face an uphill battle later in life. Such is particularly true for anyone hoping to pursue a career in a field involving engineering, math, medicine, or science. Technical subjects require analytical abilities and logical thinking. MATHCOUNTS is a nationwide math enrichment program that combines coaching and competition in an endeavor to improve said skills among students in the U.S.

Because middle school is generally thought to be a crucial stage with regard to student interest and ability in the area of math, MATHCOUNTS targets the susceptible age group with a program geared toward preparing students to succeed in math related careers.

More than seven million students have participated in the MATHCOUNTS program nationwide. The Louisiana Engineering Society (LES), in association with the National Society of Professional Engineers (NSPE), coordinates the MATHCOUNTS program at both the regional and the state level. LES proudly sponsors what it considers to be a wonderful means of promoting mathematics in the hopes of encouraging the engineers of tomorrow.

Shell Oil is a major supporter of MATHCOUNTS in Louisiana. President John Hofmeister said, "Shell is pleased to support MATHCOUNTS. This program fits perfectly with Shell's strategy to support promising students as they pursue innovative projects with an underlying emphasis on math and science."

National sponsors of MATHCOUNTS include: 3M Foundation, CNA Foundation, General Motors Foundation, Lockheed Martin, National Aeronautics and Space Administration, NSPE, Northrop Grumman Foundation, Raytheon Company, and Texas Instruments. MATHCOUNTS was founded by NSPE in conjunction with the CNA Foundation and the National Council of Teachers of Mathematics. LTRC was pleased to host the Baton Rouge regional MATHCOUNTS competition. Additional information is available at [www.mathcounts.org](http://www.mathcounts.org).



## LTRC Participates in TRB's Annual Meeting

The Transportation Research Board held its annual meeting January 13–17. LTRC engineers and contract researchers readily participated in the event, presenting the results of more than a dozen LTRC sponsored research projects.

Participation in the various meetings and functions of TRB is vital to the research conducted by engineers with the Louisiana Department of Transportation and Development, particularly at LTRC. LTRC Director Harold “Skip” Paul said, “The Transportation Research Board is the premier authority in transportation engineering research. All DOTD personnel should take part in TRB, whether by attending the annual meeting or getting involved with one or more of the various technical committees or NCHRP panels. Our researchers and engineers stand to learn innovative technology and information that can be very useful to the department. There is a lot to be gained from our relationship and experiences with the Transportation Research Board.”

Echoing Paul’s sentiments, Associate Director Mark Morvant said, “Participating in TRB’s events and committees provides our researchers with the opportunity to develop contacts with leading authorities on important transportation issues. By taking part in the annual meeting and the general sharing of information, we at LTRC find ourselves on a first-name basis with experts with invaluable knowledge and experience. Such relationships are of the utmost importance in our business.”

The following papers were presented at TRB’s annual meeting:

- Effect of Passenger Age and Gender on Young Driver Crash Risk
- Destination Choice Model for Hurricane Evacuation
- LRFD Calibration of Axially-Loaded Concrete Piles Driven into Soft Soils
- Performance of Various Base/Subbase Materials Under Accelerated Loading
- Development of Resilient Modulus Prediction Models for Louisiana Subgrade Soils
- Laboratory Characterization of Drainable Unbound Aggregate
- Structural Overlay Design of Flexible Pavement by Nondestructive Test Methods in Louisiana
- Development of MS Windows Cone Penetration Test Soil Classification Software
- Louisiana Highway Construction Cost Trends After Hurricanes Katrina and Rita
- A Review of Pavement Management System of State of Louisiana, Phase I
- Mechanistic Properties of Hot-Mix Asphalt Mixtures Containing Hydrated Lime
- Empirical Characterization of Mass Evacuation Traffic Flow
- Application Experience Using Rural Multiple-Lane Safety Predictive Model with Louisiana Data
- Monitoring Louisiana Bridges for Heavy Truck Loads Hauling Sugarcane

These presentations can be downloaded from the LTRC Web site at:  
[www.ltrc.lsu.edu/conferences\\_trb.html](http://www.ltrc.lsu.edu/conferences_trb.html).



## LTRC Establishes a Transportation Library

The Louisiana Transportation Research Center is in the process of establishing a transportation library at its Transportation Training and Education Center, with the goal of supporting researchers at LTRC, at the Louisiana Department of Transportation and Development, at Louisiana State University, and across the nation in their transportation related research. The idea behind the library is that having access to appropriate resources and knowing where to find valuable information quickly is key to facilitating quality research.

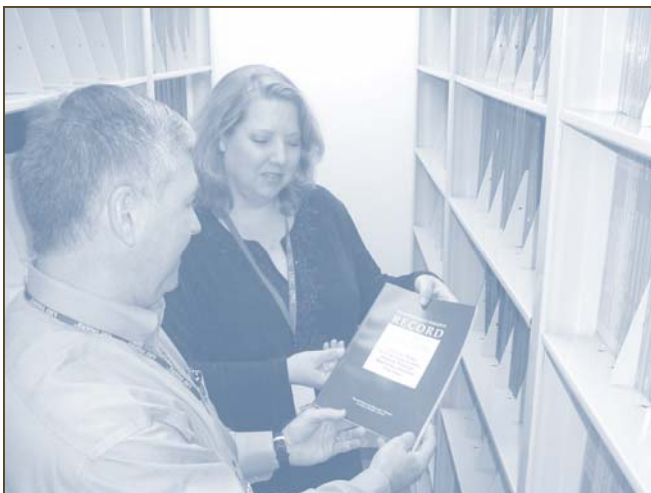
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The first step toward establishing the library involves collecting and inventorying materials. Until now, various publications have been housed on open shelves in the halls of LTRC, in storage buildings, and in offices and work rooms. Once the publications have been organized in one designated area, seeing what is available and filling gaps with needed resources will be possible.

Also involved in the process is choosing and implementing a system that will manage cataloging and circulation. The catalog will be available online and will provide anyone with Internet access with the ability to search the collection and request materials. The circulation system will allow for checking materials in and out of the library and tracking use of the library. Knowing who is using the library, how often it is being used, and the purposes for which it is being used will help library personnel serve the customers with precision.

The Library News Blog, created to facilitate communication between the library staff and customers, contains entries such as, “Why a Blog?” and “LTRC TTEC Library Introductions.” Library staff members hope a steady flow of information will enable the library to fulfill its purpose of supporting research. Topics that will be discussed on the blog in the near future include: Moodle, new items coming to the library, hints for using new databases, and the limited availability of ASTM standards.

[cont. on page 7](#)



*Glynn Cavin, TTEC administrator, and Sandy Brady, librarian, discuss the placement of documents in the new LTRC TTEC library.*

## TTEC Welcomes Librarian Sandy Brady

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The Transportation Training and Education Center's new library is managed by librarian Sandy Brady, who joined the staff of LTRC in 2008. Brady grew up in Baton Rouge and is a graduate of Baton Rouge Magnet High School. She earned a master's degree in library and information science at Louisiana State University in August of 2001.

Before undertaking the creation of the library at TTEC, Brady spent 12 years at LSU's Middleton Library. In the reference department, she spent a great deal of time assisting researchers in all areas, including engineering. Brady had occasion to use research databases such as Academic Search Complete, DIALOG, Engineering Village, and Lexis-Nexis. While working as a librarian at LSU, she taught a course in library research methods. Brady was also responsible for constructing and maintaining the LSU library's instruction Web site.

Questions about the new TTEC library can be directed to Sandy at [sandrabradly@dotd.la.gov](mailto:sandrabradly@dotd.la.gov) or 225-767-9716.

## Library (cont'd)

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TTEC's library will share information with the libraries of various participating state departments of transportation. This will allow users of the TTEC library to take advantage of resources at libraries nationwide. Sharing will also allow users from all over the country to benefit from TTEC's resources. The networking provided by organizations such as The Eastern Transportation Knowledge Network and the Transportation Library Connectivity Pool Fund Project will help TTEC's library staff to better serve its myriad of customers.

A Web site intended to provide easy access to all TTEC library resources is currently being developed. The page will be equipped with a chat feature that will allow visitors to communicate with the librarian in real time. Interested parties will be able to access the library Web page through a link on LTRC's Web site.



## Staff Acheivements

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- **Chris Abadie**, materials research administrator, served on the FHWA Expert Task Group for Asphalt Binders. He will continue to serve in this capacity for the next three years. Chris was also named to the TRB committee AFK20—Characteristics of Bituminous Materials earlier this year.
- **Gajinder Dhaliwal** replaces Lesleigh Waguespack as the LTRC accountant. Gajinder began employment with LTRC in November.
- **Sandra Romero**, training & development program manager, was recently promoted to training & development program staff manager.
- **Jennifer Speights**, formerly LTRC webmaster, replaces **Sher Creel** as public information director. Sher retired from LTRC in November with 36 years of service.
- **William "Bill" Tierney**, research specialist, retired from LTRC in January after 19 years of service.

### 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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