

Technology Today

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Upcoming Events

Transportation Safety Conference
March 2-3, 2010
Crowne Plaza in Baton Rouge

Southwest Geotechnical Engineering
Conference
April 26-29, 2010
Crowne Plaza in Baton Rouge

Southeastern Transportation Consortium Convenes at LTRC

On Wednesday, Oct. 21, the inaugural meeting of the Southeastern Transportation Consortium (STC) was held at LTRC. The STC was established to foster better growth in knowledge, skills, and abilities amongst transportation professionals and academic partners.

The collaborative research program consortium was initiated through the FHWA Transportation Pooled Fund (TPF) Program with Louisiana as the lead state. Each member state contributes to the pooled fund project.

The purpose behind STC is to pool financial, professional, and academic resources to coordinate research and develop improved methods of addressing common problems in the planning, design, construction, maintenance, management, and operation of transportation systems in participating states.

By utilizing member states' transportation research program resources, the consortium has



access to a broad range of talent and expertise. Ten of the 13 SASHTO states have joined the STC. These attendants representing their states include Mrinimay Bismas, North Carolina; Jeff Brown, Alabama; Chris Henning, Arkansas; Sandra Hoff, Tennessee; David Jared, Georgia; Robert Louis, Kentucky; Mark Morvant, Louisiana; Michael Perfater, Virginia; James Watkins, Mississippi; and Don Williams, West Virginia. Also in attendance from Louisiana were Skip Paul, LTRC director, and Chris Abadie, LTRC materials research administrator.

LTRC Associate Director of Research Mark Morvant, P.E., began the meeting by opening the table for members to identify ways in which they

envision spending allocated funds and to discuss what they would like to see accomplished through the consortium. Bismas from North Carolina explained, "I see this as being an incubator for research that may be of interest to many of the states, so if we find a project that is suitable for all states it should definitely be done by this organization." Perfater from Virginia added, "I hope to go back with a better understanding of where the pockets of expertise are in individual states and universities."

Because the consortium is intended to encourage coordination among member states and provide resources and management of collaborative studies, members had the opportunity to present their research programs. These presentations included active and future research, affiliations with state universities, and possible future collaborations with other states. By learning more about each state's program, high-priority transportation research topics of common interest to the southeastern and adjoining states can be addressed easier than before, reducing duplication of research between member states.

To encourage this and promote better communication of ongoing research activities in state research programs, the first project initiated by the consortium will be a synthesis of member states' recently completed and ongoing projects. By launching this study, the consortium objectives of developing synergy and providing a more efficient use of resources are now underway.



STC members listen as Skip Paul explains LTRC's research program.

LTRC Captures Bridge Demolition

The \$29.5 million Amite River bridge project gained momentum on Wednesday, Oct. 21 as onlookers watched contractors demolish the metal portion of the old westbound bridge. LTRC filmed the explosion as the 77-year-old bridge crumbled under high explosives.



The demolition was just another necessary step the state has taken to construct a new bridge on U.S. 190 over the Amite River. Each span of the new bridge will include two 12-ft. lanes, a 10-ft. outside shoulder, and a 4-ft. inside shoulder. The new bridge opened to westbound traffic on Sept. 10, and the new eastbound span is on schedule to be complete by December 2010. Visit http://www.ltrc.lsu.edu/ltrc_video.html to view the demolition video.

Crumb Rubber Research Shows Significant Savings

Researchers at LTRC are transforming recycled scrap tires into something beneficial for all Louisianans by utilizing crumb rubber, a fine, grainy substance made from shredded tires, to construct some of Louisiana's newest roads.

In 2009 alone, Louisiana reused 145,000 recycled tires in crumb rubber modified asphalts across the state. The most recent projects include a long stretch on I-12 between Robert and Covington, completed September 2009; I-10 in St. James and St. John parishes, completed July 2009; and I-12 from O'Neal Lane to Denham Springs, completed March 2009.

LTRC has spent years researching crumb rubber asphalts at the local level giving the Louisiana Department of Transportation and Development (DOTD) confidence to make these economical decisions to implement such roads. Since 1994, LTRC researchers have studied five locations throughout Louisiana that were paved with different types of crumb rubber asphalts to compare the performance with conventional asphalt pavements.

Based on the results from the project, LTRC Asphalt Research Manager William "Bill" King, Jr., P.E., explained, "We anticipate extended service life for our crumb rubber modified asphalt pavements. The biggest advantage is cost savings to DOTD along with enhanced performance and service life, so hopefully we'll be able to construct a lot more roadways using this system."

Overall, LTRC researchers found, compared to conventional asphalts, crumb rubber modified roads crack less; provide for a smoother, quieter drive; and require less maintenance, which improves roads' performance while cutting costs. In fact, current crumb rubber projects have proven to reduce the project material cost by \$5 per ton of hot mix, which can be up to 5 percent of the total material cost. Louisiana saves \$7500 for every mile of construction using this crumb rubber method.

"We're being proactive in our infrastructure sustainability by maximizing the use of reclaimed, recycled materials yet not compromising the engineering performance, so in the positive sense, we have a better material at a cheaper price as well," explained Louay Mohammad, Ph.D., Engineering Materials Characterization Research Facility (EMCRF) manager and LSU civil engineering professor.



Scrap tires are collected at a tire recycling center and sent to a special plant that shreds waste tires into small strips, removing all metal and steel bits.



Tire strips are then ground into sand-sized particles, creating crumb rubber.

Sustainability Conference Evaluates Methods and Looks to the Future

The first conference of its type in Louisiana and the first major statewide event sponsored by the Louisiana Chapter of the American Public Works Association (APWA) since Hurricane Katrina, *Sustainability in Public Works: Building a Foundation* brought together a diverse group of public works directors and managers, engineers, architects, planners, scientists, and state and federal transportation personnel. LTRC's Local Technical Assistance Program (LTAP) hosted the all-day event Friday, Oct. 30 at TTEC.



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Special guest, George Crombie, incoming national president of APWA opened the conference with remarks on Louisiana's rebuilding efforts and the notion of sustainability. He noted that the APWA Board of Directors has made sustainability a national priority and created the new Center for Sustainability. Crombie stressed that sustainability requires systems thinking and that current and future public works directors will need technical competency and strong skills in the broader areas of leadership, team building, and communication to be able to forge the relationships needed to start down the path of sustainable development and management.

Keynote speaker Michael Mucha, public works director for Olympia, Washington and director of APWA's new national Center for Sustainability, continued the conference with a discussion on the idea of "finding balance in everything." He explained that as public works officials and those involved in planning and implementing programs at the local level, we all need and want to complete things correctly. Mucha also noted that those involved have to plan for the future, and this usually involves thinking and acting in different ways. It's easier to do this when conflict is removed from the situation, which requires strong relationships.

Responses by attendees to the question of "what's so hard about sustainability?" yielded a number of discussion points including:

- There is a need for a paradigm shift in how things have always been done.
- The paradigm of sustainability does not allow for unilateral decision making.
- It is hard to define what it is initially.
- It is a long term commitment and is often thought to require a higher initial investment.

Mucha suggested that it's not having the right answer but rather asking the right questions. It's about using new technology and new ideas to do things better. The concept of sustainability should not mean being proud of increasing the amount of recycling materials, but it should mean reducing the amount of materials consumed.

Mucha stressed that public works professionals, planners, architects, engineers, and citizens must help communities do better by providing opportunities including infrastructure and programs that support sustainable development.

Following Mucha's presentation, conference attendees split into two sessions. The session entitled "Stormwater" presented challenges and opportunities in Louisiana concerning stormwater management, sustainable streets, and landscape solutions. The concurrent session "Solid Waste" presented topics on the hierarchy of solid waste management, sustainable solid waste practices, and disaster debris management. The next set of sessions included discussions on water and wastewater as well as facilities and grounds.

Mucha concluded the conference with an interactive presentation on how to develop a framework to apply sustainability methods in participants' local areas. He explained that strategy much come first and gave attendees applicable ideas and methods to improve sustainability efforts in their region.

LTAP Director Marie Walsh, Ph.D., explained, "The combination of presentations with a national expert as well as other experts and practitioners from Louisiana gave conference participants ideas of what is happening in other places around the country and the world as well as what is being applied here at home."

Evaluations given to the participants following the conference showed a high level of enthusiasm for the speakers and content as well as the desire to hear more about the subject and how more can be done in Louisiana.

2009 Seminar Series Focuses on Concrete

On Wednesday, Oct. 28, LTRC hosted this year's concrete seminar in the TTEC auditorium. This year marked the first concrete seminar held at LTRC. Over 100 transportation professionals, engineers, and consultants gathered for a day of concrete topics and discussion.

Director Skip Paul, P.E., welcomed all those in attendance and explained that one of the goals behind the seminar is to provide a way for LTRC to get information out to industry and Department personnel in areas of expertise that is offered at LTRC.

Mike Ayers with the American Concrete Pavement Association (ACPA) kicked off the seminar by presenting "Concrete Basics." Ayers discussed the essentials for building quality pavements such as design, materials, construction practices, and quality control and quality assurance (QC/QA) programs.

After a short break, Ayers continued the seminar on the topic of hot weather concrete. He discussed field testing plans, adjusting properties, the importance of building on a uniform platform, the differences



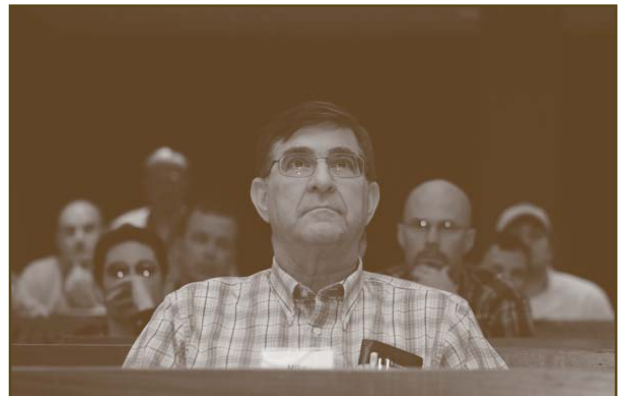
in terminology, and design principles. Ayers also explained construction operations and factors that influence quality, such as the importance of properly selected equipment and crew, subgrade and subbase preparation, concrete production and delivery, and texturing. Overall, Ayers explained that concrete paving is a “simple” process if the right things are done: pre-plan, get good quality materials and equipment, follow through with the plan, and check every step in the process making adjustments where necessary.

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The seminar then held a brief roundtable discussion on current issues and problems in the concrete field with a panel including Darrel Elliott, Buzzi Unicem; Mike Ayers, ACPA; Scott Ashmore, James Construction Group; B.J. Eckholdt, LaFarge; John Eggers, DOTD; and Tyson Rupnow, LTRC.

Afternoon topics focused on future technologies including calorimetry, maturity, and non-destructive testing (NDT) devices. Following these discussions, Rupnow spoke on air content in Louisiana where he explained air types, benefits of using air in concrete, mix designs, and other states’ specifications. He also presented a summary of the fly ash research that is currently being explored at LTRC, explaining test methods, chosen materials, recent progress, and preliminary results.

The seminar concluded with a final roundtable discussion. In this discussion, panel members answered questions on International Roughness Index (IRI) specification updates, the microwave moisture test, cross stitching, and hot weather concrete specifications.



Crumb Rubber Research Shows Significant Savings [cont'd]

With the rising cost in construction materials, LTRC and DOTD plan to continue utilizing crumb rubber in pavements across the state. By doing so, Louisiana saves money and improves road performance—all while promoting sustainability and decreasing the number of waste tires.

If you would like to learn more about the uses of crumb rubber at LTRC, please contact Bill King at 225-767-9129 or Louay Mohammad at 225-767-9126 or visit LTRC’s Web site at http://www.ltrc.lsu.edu/ltrc_video.html to view a short video on the crumb rubber process in Louisiana.

Staff Updates and Accomplishments

Engineering Materials Characterization Research Facility (EMCRF) Manager and LSU Civil Engineering Professor **Louay Mohammad**, Ph.D., presented in Nanjing, China at the 2009 Asphalt Rubber Conference on “Characterization of HMA Mixtures Containing High Reclaimed Asphalt Pavement Content with Crumb Rubber Additives.” The paper was authored by Dr. Mohammad and Associate Director of Technology Transfer & Training Sam Cooper, MSCE, P.E., and was accepted for presentation and publication in the conference proceedings.

LTRC would like to congratulate Concrete Research Engineer **Tyson Rupnow**, Ph.D., P.E., on receiving his professional engineer’s license to practice engineering in the state of Louisiana.

Dr. Mohammad’s paper titled “Interface Shear Strength Characteristics of Emulsified Tack Coats” is being published in the 2009 Journal of the Association of Asphalt Paving Technologists and was voted second in the balloting for the Walter J. Emmons Award for best paper and will receive “runner-up” recognition at the 2010 meeting of the Association of Asphalt Paving Technologists (AAPT) scheduled for Mar. 17 in Sacramento.

Associate Director of External Programs **Vijaya (VJ) Gopu**, Ph.D., P.E., served on two National Science Foundation (NSF) review panels in October. The panels dealt with the investment of some of the American Recovery and Reinvestment Act (ARRA) funds received by the NSF in major research instrumentation and research infrastructure.

Director **Skip Paul**, P.E., and **Dr. Gopu** held town hall meetings for the faculty at the University of New Orleans in September and at Louisiana State University and Louisiana Tech University in October to inform faculty about the funding opportunities and funding mechanisms at LTRC.

Dr. Gopu also presented a Grand Challenges Lecture at Tulane University School of Science and Engineering on Sept. 16.

LTRC Asphalt Research Engineer **William “Bill” King**, Jr., P.E., was recently elected as both the East Region representative for the Southeast Asphalt User/Producer Group (SEAUPG) and subsequent Chairman for next year’s SEAUPG annual meeting, scheduled for Dec. 3-6, 2010 in Oklahoma City, OK.



From left to right: William Temple, Keith Beard, Tinka McFarland, Allison Landry, and Skip Paul.

Training and Development Specialist **Allison Landry** and Engineering Technician DCL **Keith Beard** were awarded the Star of Excellence Award for outstanding employee performance.

DOTD Structured Training Director **Reta “Tinka” McFarland** was honored for her 40 years of service to DOTD. William Temple, DOTD chief engineer, presented her with a certificate at an LTRC staff meeting on Nov. 13.

Recently Published

Final Report and Technical Summary 447

Volume Balance and Toxicity Analysis of Highway Stormwater Discharge from Cross Lake Bridge

D.M. Griffin, Jr., Ph.D., P.E.

Final Report and Technical Summary 441

A Novel Technique for Stiffening Steel Structures

Ayman Okeil, Ph.D., P.E.; Yilmaz Bingol, Ph.D.; Md. Rubiat Ferdous, MSCE

Final Report 438

Flexural Strength and Fatigue of Steel Fiber Reinforced Concrete (2004 Hale Boggs Deck)

by John Eggers, P.E., and Tyson Rupnow, Ph.D., P.E.

Technical Summary 401

Optimization of Subsurface Flow and Associated Treatment Processes

D.M. Griffin, Jr., Ph.D., P.E.

Project Capsule 07-1B

Evaluation of Warm Mix Asphalt Technology in Flexible Pavements

William King, Jr., P.E., and Louay Mohammad, Ph.D.

Project Capsule 09-2P

Implementation of Rolling Weight Deflectometer (RWD) in PMS and Pavement Preservation

Mostafa Elseifi, Ph.D.

Research Implementation Update

Use of High Performance, High Strength Concrete (HPC) Bulb-Tee Girders Saves Millions on I-10 Twin Span Bridge in New Orleans District

Walid Alaywan, MSCE, P.E.

**To view a complete list of LTRC publications,
visit the Web site at www.ltrc.lsu.edu.**

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