



LTRC

2009-2010 Annual Report



Merging Government,
Industry, and Academia



Sherri H. LeBas, P.E.
Secretary



Michael V. Martin, Ph.D.
Chancellor

The Louisiana Transportation Research Center (LTRC) is a research, technology transfer, and training center administered jointly by the Louisiana Department of Transportation and Development (DOTD) and Louisiana State University (LSU). LTRC provides a setting in which the thresholds of technology can be explored and applied in practical ways. By merging the resources of DOTD and LSU, a versatile core of facilities and expertise addresses the rapidly evolving challenges in the transportation field.

In addition to its affiliation with LSU, LTRC participates fully with other universities in Louisiana that house engineering programs (Louisiana Tech University, McNeese State University, Southern University, Tulane University, University of Louisiana at Lafayette, and University of New Orleans). By combining their resources with those of DOTD, the center eliminates duplication of effort and provides a richer base of support. The center also provides an avenue for multi-disciplinary support from universities to meet the practical and academic needs of the transportation industry in such areas as engineering, law, business and management, basic sciences, planning, and environmental studies.

Since its creation by the Louisiana legislature in 1986, LTRC has gained national recognition through its efforts to improve transportation systems in Louisiana. The center conducts short-term and long-term research and provides technical assis-

tance, training, continuing education, technology transfer, and problem-solving services to DOTD and the transportation community at large. The center is largely supported through funding authorized by DOTD and the Federal Highway Administration (FHWA).

LTRC merges the resources of the state and local government, universities, and private industry to identify, develop, and implement new technology to improve the state's transportation system. By harnessing these valuable resources, LTRC is empowered to find innovative solutions to Louisiana's transportation problems.

To enhance the center as the focus for transportation-related research, technology transfer, and education in Louisiana, the LTRC foundation, a non-profit organization, has been established. The foundation provides an excellent partnership opportunity for DOTD, state universities, and the private sector.

In these and other ways, LTRC is paving the way for more efficient and beneficial research and training, thanks to a combination of modern techniques, locally available resources, and a wide pool of support.

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This publication is a report of the transportation research, technology transfer, education, and training activities of the Louisiana Transportation Research Center for July 1, 2009–June 30, 2010. The center is sponsored jointly by the Louisiana Department of Transportation and Development and Louisiana State University.

Director's Message

To: Sherri H. LeBas, P.E., Secretary, DOTD
Michael V. Martin, Ph.D., Chancellor, LSU
Richard Savoie, P.E., Chief Engineer, DOTD
Richard Koubek, Ph.D., Dean, College of Engineering, LSU

Change, streamlining, and efficiency seem to be the actionable words this year. Leadership changes at DOTD and LSU and within the LTRC policy committee were many this year. We welcome Richard Savoie, DOTD chief engineer, as our new Policy Committee chair. He replaces Bill Temple upon his retirement. Bill was a long time employee and later friend of research and, on a personal note, was my first supervisor at DOTD many years ago as the assistant pavement research engineer. Likewise, Steve Cumbaa has retired. Sherri Lebas was named as Secretary of DOTD. Sherri presaged her engineering career as a student worker at LTRC working in the geotech lab and upon graduation began her DOTD career at LTRC as an engineer intern. We look forward to serving her needs and bringing continued innovation to DOTD. Dean Richard Koubek also began his tenure at LSU at the beginning of this year. Finally, we welcome Dr. Bob Bruce and Dr. Norma Jean Mattei as new Policy Committee members from their respective universities, Tulane and the University of New Orleans.

I would like to bring your attention to several streamlining and efficiency efforts that have come to fruition this year. First, the LTRC Research Project Management System is up and running. This web based management system automates every process used in the administration of the research program, including modules for our research project solicitation process, work program development, biannual reporting, and implementation reporting along with access to project files and other management reports. The financial side will be included when DOTD initiates the state's Enterprise Resource Program. Additional modules will be added as necessary. Hundreds of man-hours are saved through this management system.

Meanwhile, the Transportation Training and Education Center (TTEC) is reaching its potential as a technology-enhanced center of learning for our work force development. Our Media Site software captures almost every course or training session in a digital format that is posted to the LTRC web site. Students can access these courses to review portions or all of

course offerings, and new students can access these courses as a distance learning experience. Almost 1,100 hits were made on this site this year. In addition, we have tripled the number of hours of training through video conferencing. Most important is some research on immersive virtual learning experience as a new method of course delivery. You will find a feature article on page 17 describing this IVLE methodology.

Inside this report you will find featured articles on the research program, education and training and technology transfer activities. Completed and active research projects, training accomplishments, technology transfer activities, support of higher education, and publications and presentations are also included.

LTRC hosted the Southeast Transportation Consortium (STC) meeting this year. The STC is a pooled fund effort of 10 southeastern states to collaborate on research efforts through the leveraging of funds and the reduction of research duplication. The efforts of the STC are described in another featured article on page 9.

Town hall meetings were held at six of our seven Policy Committee universities this year in order to introduce new professors to LTRC and our support for higher education. In particular, we outline how they can participate in our programs.

LTRC continued its success in attracting external research funding with three additional FHWA Innovative Bridge Research and Deployment studies, another NCHRP study and a project for USACE.

Finally, I would bring your attention to the last page of this report where we are very proud to report the selection of Rita "Tinka" McFarland as a Charles E. Dunbar, Jr. Award Honoree for her service to the citizens of Louisiana.

Respectfully submitted,



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

Facilities

(l to r): TTEC, LTRC, ALF



Located on the LSU campus in Baton Rouge, LTRC provides researchers and students access to excellent laboratories and state-of-the-art research equipment. The full resources of LSU as a Carnegie Designated Doctoral/Research Extensive Institution are also available. The unique position of LTRC provides access to virtually all of LSU and DOTD's resources to pursue its mission.

LTRC houses more than 90 employees and up to 30 students in two adjacent facilities. The LTRC building is a 25,300-square foot facility that includes five research laboratories, a conference room, and offices. The laboratories are used to conduct advanced research into asphalt, concrete, soils, and pavements. The 14,000 square foot **Transportation Training and Education Center (TTEC)** houses a lecture hall, a computer-based training classroom, and two general classrooms that are all equipped with advanced education and training equipment and distance learning/video-conferencing capabilities. A comprehensive transportation library and offices are also included.

LTRC has identified research areas of strategic importance and has developed expanded capabilities for concentration in several areas: the Engineering Materials Characterization and Research Facility (EMCRF), a laboratory facility specializing in fundamental materials characterization; the Geotechnical Engineering Research Laboratory (GERL), a laboratory focusing on transportation earth-works, structural foundations, and geosynthetics; and Pavement on the Move (POM), a multi-use mobile

laboratory for collecting data from field construction projects as well as research and training.

Although remote from the center, the **Louisiana Pavement Research Facility** is an important facility that streamlines pavement loading research by compressing years of road wear into months of testing. The six-acre facility is located on the west side of the Mississippi River and incorporates an Accelerated Loading Facility (ALF™).

The addition of TTEC greatly enhances LTRC's mission by facilitating the delivery of training, professional development opportunities, and technology transfer to engineers, technicians, undergraduate and graduate students, and professionals from both the public and private domains.

LTRC is a budget entity of the Louisiana Department of Transportation and Development. Funding is a combination of State, State Planning and Research (Part II, Federal), Innovative Bridge Research and Deployment (100 percent federal), Surface Transportation Program (STP-federal), and external contracts and grants, such as the National Cooperative Highway Research Program, the U.S. Army Corps of Engineers, and the National Science Foundation.

Completed Research

LTRC Project	Agency	Principal Investigator	Project Title
09-1SS	LSU	Dr. Douglas Carlson	Monitoring Saltwater in Sparta Aquifer in North Central Louisiana
08-2P	LSU	Dr. Mostafa Elseifi	Analysis of Seasonal Strain Measurements and Asphalt Materials under Accelerated Load
08-1SS	LSU	Dr. Douglas Carlson	Extent of Disease Risk from Lignite Within Aquifers of Northwestern LA
07-3GT	LSU	Dr. Roy Dokka	Development of Operational Real-Time Kinematic Global Positioning Service for Southeastern Louisiana
07-2GT	LTRC	Dr. Murad Abu-Farsakh	Calibration of Resistance Factors needed in the LRFD Design of Driven Piles
06-6GT	LSU	Dr. Khalid Alshibli	Update of Correlations Between Cone Penetration and Boring Log Data
04-2ST	Tulane	Dr. Robert N. Bruce	Structural Monitoring of Rigolets Pass Bridge
03-1GT	LTRC	Gavin Gautreau	Development of Geotechnical Information Database- Computer Program to Expedite Soil Subgrade Survey Data to Designers
01-3ENV	LTU	Dr. Dixie Griffin	Transport, Treatability, and Toxicity of Highway Storm Water Discharged to Receiving Waters Across Louisiana
09-1TIRE	ULL	Dr. William Chirdon	Effect of Thermal Oscillation Frequency on the Effective Thermal Properties of Concrete and Asphalt
09-3TIRE	LSU	Dr. Marwa Hassan	Use of Titanium Dioxide to Improve Performance and Air Purifying Capabilities of Concrete Pavements
09-4TIRE	LTU	Nazimuddin M. Wasiuddin	Theoretical and Experimental Determination of Adhesion Between Asphalt Binders and Aggregates in Dry and Wet Conditions
09-2TIRE	LSU	Dr. S.A. Hsu	Application of Satellite Imagery for Surface Rain Rate Estimation
09-2GT	LSU	Dr. Roy Dokka	Quality Control Review for Management System Roadway Elevations
07-3SS	LSU	Dr. Sherif Ishak	Establishing and Intelligent Transportation System (ITS) at LTRC
05-5GT	LTRC	Dr. Murad Abu-Farsakh	Evaluating the Benefits of Geogrid Reinforced Bases in Flexible Pavement (Interim Report)
05-3ST	LSU	Dr. Guoqiang Li	Development and Advanced Grid Stiffened (AGS) FRP Tube-Encased Concrete Columns
03-1SS	LSU	Dr. Chester Wilmot	Evaluation of Freeway Contraflow Evacuation Initiation and Termination Point Configurations

LSU: Louisiana State University; LTU: Louisiana Tech University; ULL: University of Louisiana at Lafayette

Completed Research (Pending Publication)

LTRC Project	Agency	Principal Investigator	Project Title
03-2GT	LTRC	Dr. Zhong Wu	Accelerated Loading Evaluation of a Subbase Layer on Pavement Performance
04-1GT	LTU	Dr. Xingran (Jay) Wang	Estimating Setup of Piles Driven into Louisiana Clayey Soils
08-6GT	LSU	Dr. Michele Barbato	Performance Evaluation of Buried Pipe Installation
95-3GT	LTRC	Mr. Kevin Gaspard	In-Place Cement Stabilized Base Reconstruction Techniques
00-2P	LTRC	Mr. Mark Martinez	Development of Warranty Requirements in State Contracts for Highway Construction
07-1P	LTRC	Dr. Zhong Wu	Finite Element Simulation of Structural Performance on Flexible Pavements with Stabilized Base/Treated Subbase Materials under Accelerated Loading
03-3B	LTRC	Dr. Louay Mohammad	Optimization of Asphalt Mixture Design for the Louisiana ALF Test Sections
04-3B	LSU	Mr. William H. Daly	A Comparative Analysis of Modified Binders: Original Asphalts and Materials Extracted from Existing Pavements
04-7B	LTRC	Dr. Ioan Negulescu	The Use of DMA to Characterize the Aging of Asphalt Binders
09-1B	LTRC	Dr. Louay Mohammad	Characterization of HMA Mixtures Containing High Recycled Asphalt Pavement Content with Crumb Rubber Additives
05-1ST	LSU	Dr. Guoqiang Li	Data Validation of FRP Materials Used in Strengthening Bridge Beams in Louisiana
02-3SS	LSU	Dr. Xiaoduan Sun	Developing a Comprehensive Highway Accident Data Analysis System with GIS (III)
05-1SS	LSU	Dr. Sherif Ishak	Evaluation Of The Traffic Safety Benefits Of A Lower Speed Limit And Restriction of Trucks To Use Of Right Lane Only On I-10 Over The Atchafalaya Basin
06-1SS	LSU	Dr. Chester Wilmot	Statewide Traffic Safety Study - Phase II
06-3SS	ULL	Dr. Ramesh Kolluru	Gulf Coast Opportunity Zone (GOZone) Redevelopment Using 3D Modeling
07-2SS	LSU	Dr. Brian Wolshon	The Design of Lane Merges at Rural Freeway Construction Work Zones

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Active Research

LTRC Project	Agency	Principal Investigator	Project Title	Start Date	End Date
09-1GT	WPI	Dr. Minjiang Tao	Update LADOTD Policy on Pile Driving Vibration Management	6/1/2009	5/31/2011
08-1P	LSU	Dr. Mostafa Elseifi	Cost Effective Prevention of Reflective Cracking of Composite Pavement	6/15/2008	2/14/2011
09-2P	LTRC	Dr. Mostafa Elseifi	Implementation of the Rolling Wheel Deflectometer (RWD) in PMS and Pavement Preservation	7/1/2009	6/30/2011
08-1ST	LSU	Dr. Ayman Okeil	Evaluation of Continuity Details for Precast Prestressed Girders	12/1/2007	8/31/2010
08-3ST	LSU	Dr. Gouping Zhang	Evaluation of Design Methods to Determine Scour Depths for Bridge Structures	4/1/2009	4/1/2011
09-5ST	LTRC	Dr. Guoqiang Li	Support Study for A Shape Memory Polymer Based Self-healing Sealant for Expansion Joint	5/1/2009	11/1/2010
07-4SS	SU	Dr. Sharon Parsons	LADOTD Customer Service Process and Outcome Evaluation	5/1/2007	12/31/2010
08-3SS	ULL	Dr. Xiaoduan Sun	Developing Louisiana Crash Reduction Factors	11/1/2009	10/31/2011
09-6C	LSU	Mr. Hak-Shul Shin	Support Study on the Characterization of Ternary Mixes with Various SCMs	7/1/2009	12/31/2010
10-1SS	LTRC	Dr. Glynn Cavin, MaryLeah Coco	Evaluation of Knowledge Transfer in an Immersive Virtual Learning Environment for the Transportation Community	1/1/2010	12/31/2010
05-1GT	LTRC	Dr. Murad Abu-Farsakh	Field Demonstration of New Bridge Approach Slab Designs and Performance	8/1/2008	8/1/2011
08-3GT	LTRC	Dr. Murad Abu-Farsakh	Support Study to Structure Health Monitoring of the I-10 Twin Span Bridge Over Lake Pontchartrain	11/1/2007	7/31/2012
07-6P	LTRC	Dr. Zhong Wu	Evaluation of Current DOTD Flexible Pavement Structures Using PMS Data and New M-E Pavement Design Guide	7/1/2009	6/30/2011
09-7P	LTRC	Dr. Zhong Wu	Construction and Accelerated Pavement Testing of TTI Pavement Test Sections	10/1/2009	10/1/2011
04-6B	LTRC	Dr. Louay Mohammad	Characterization of Louisiana Asphalt Mixtures Using Simple Performance Tests and MEPDG	1/1/2008	12/31/2010
07-1B	LTRC	Mr. Bill King	Evaluation of Warm Mix Asphalt Technology in Flexible Pavements	3/15/2009	3/15/2011
09-2B	LTRC	Dr. Zhong Wu	Development of New Surface Friction Guidelines for LADOTD	7/1/2009	6/30/2011

Active Research

LTRC Project	Agency	Principal Investigator	Project Title	Start Date	End Date
09-2ST	LTRC	Mr. Walid Alaywan	Performance and Analysis of Concrete Bridge Railing Using Conventional and Composite Reinforcement Materials	4/1/2009	3/31/2011
06-2SS	LTRC	Dr. Chester Wilmot	Development of a Time-Dependent Hurricane Evacuation Model for the New Orleans Area - Phase 2	7/1/2008	6/30/2012
09-2C	LTRC	Dr. Tyson Rupnow	Evaluation of Cement and Fly Ash Treated RAP and Marginal Aggregates for Base Construction	3/1/2009	3/1/2011
09-4C	LTRC	Dr. Tyson Rupnow	Evaluation of Ternary Cementitious Combinations	3/1/2009	6/30/2011
09-5C	LTRC	Mr. Patrick Icenogle	Evaluation of Non-Destructive Technologies for Construction Quality Control of HMA and PCC Pavements in Louisiana	7/1/2009	6/30/2011
10-1C	LTRC	Dr. Tyson Rupnow	Evaluation of the Surface Resistivity Measurements as an Alternative to the Rapid Chloride Permeability Test for Quality Assurance and Acceptance	2/1/2010	5/1/2011
05-5ST	LSU	Dr. Steve C.S. Cai	Bridge Deck Replacement using FRP Materials	11/15/2005	11/14/2010
07-1ST	LTRC	Dr. Murad Abu-Farsakh	Structure Health Monitoring of the I-10 Twin Span Bridge Over Lake Pontchartrain	11/1/2007	7/31/2012
07-3ST	LSU	Dr. Steve C.S. Cai	Repairing/Strengthening of Bridges with Post-Tensioned FRP Strands and Performance Evaluation	10/1/2007	3/31/2011
07-4ST	LSU	Dr. George Z. Voyiadjis	Integral Abutment Bridge for Louisiana's Soft and Stiff Soils	10/1/2007	8/31/2011
08-2ST	LSU	Dr. Steve C.S. Cai	Monitoring Bridge Scour Using Fiber Optic Sensors	1/1/2009	7/1/2011
08-2SS	LTRC	Mr. Dan Strecker	LOOP Environmental Monitoring: 2008-2010 Beach Elevation, Beach Vegetation, and Land Loss and Habitat Change Surveys	1/1/2008	12/31/2010
10-1GT	LTU	Mr. Wesley Palmer	Measuring Levee Elevation Heights in North Louisiana	12/1/2009	11/30/2010
07-7P	ULL	Dr. Xiaoduan Sun	Safety Improvement from Edge Lines of Rural Two-Lane Highway	9/1/2007	8/31/2011
06-4B	LTRC	Dr. Louay Mohammad	Optimization of Tack Coat for HMA Placement	7/1/2005	12/31/2010
10-1B	LTRC	Dr. Louay Mohammad	Field versus Laboratory Volumetrics and Mechanical Properties	8/1/2009	2/29/2012

LSU: Louisiana State University; LTU: Louisiana Tech University; ULL: University of Louisiana at Lafayette; SU: Southern University

Active Research

LTRC Project	Agency	Principal Investigator	Project Title	Start Date	End Date
10-5B	LTRC	Dr. Louay Mohammad	Laboratory Evaluation of the Performance of Sulfur-Enhanced Asphalt Treated Base Mixtures	7/1/2009	6/30/2010
09-4ST	LSU	Dr. Guoqiang Li	A Shape Memory Polymer based Self-healing Sealant for Expansion Joint	5/1/2009	11/1/2010
09-2SS	LTRC	Dr. Chester Wilmot	Enhancing Calibrated Peer Review for Improved Engineering Communication Education	9/1/2008	9/1/2011

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Ground Tire Rubber: Implementing Sustainability



In 1991, the Intermodal Surface Transportation Efficiency Act (ISTEA) specified that all asphalt pavement projects funded by federal agencies must use a

certain percentage of scrap tires in construction projects. By 1994, the mandate was suspended from the ISTEA legislation, yet it still encouraged the research and application of crumb rubber modified (CRM) asphalt in hot mix asphalt (HMA) pavements.

Louisiana had begun field evaluations of using ground tire rubber (GTR) in our HMA mixtures by 1994. LTRC published Final Report 393 after a seven-year evaluation of five field projects that included eight test sections and six GTR products. The following findings are reported:

- The GTR wet process is an excellent method for reducing crack propagation.
- Researchers recommended that asphalt cement binder specifications be developed and implemented to allow the use of the GTR in a wet process in HMA.

- The use of GTR modified HMA mixtures should increase the life-cycle of HMA pavements.

In 1998, LTRC began evaluating the use of GTR modified HMA mixtures under accelerated pavement testing. Findings from this project included:

- The wearing course mixture using GTR showed similar laboratory properties when compared to the conventional polymer modified mixture.
- Similar rutting results also occurred in this comparison.
- The base course mixture using GTR showed improved laboratory properties when compared to conventional base course mixtures.
- Lower rutting was also reported in the base course GTR mixtures.

Storage stability, required mix temperatures at the refinery terminal, and the ability for the contractor to compact the rubber modified mixture at normal compaction temperatures were just a few of the challenges the Department needed to overcome. In April 2008, DOTD adopted the PG82-22rm binder specification, which uses waste GTR to modify the neat binder. The specification allows the use of the PG82-22rm binder in lieu of any binders specified. A shortage of styrene-butadiene-styrene (SBS) polymers later in 2008 caused contractors to look at alternatives to modify the asphalt binder, which included the use of GTR.

Featured Research

Southeastern Transportation Consortium Convenes at LTRC

In October 2010, LTRC hosted the inaugural meeting of the Southeastern Transportation Consortium (STC). 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. 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 transportation systems in participating states. Ten of the 13 SASHTO states have joined the STC (North Carolina, Alabama, Arkansas, Tennessee, Georgia, Kentucky, Louisiana, Virginia, Mississippi, and West Virginia.)

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. Mwrinmay 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.” Michael 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.

By the end of 2010, Louisiana will have recycled over 300,000 scrap tires in construction projects, with more planned on future projects.



Compared to other modifiers, GTR uses less energy and produces lower emissions. This is due to lower blending temperatures and reduced mixing time. In addition, approximately 12% of the base asphalt is displaced when modifying the mixture with GTR, creating a reduction in asphalt from the refinery as well as less refining of crude oil. The combined result is a substantial reduction in created carbon emissions. The use of GTR is a promising technology for Louisiana with significant potential to enhance pavement performance and satisfy current market needs with respect to supporting the recycling of scrap tires.

Featured Research

Development and Performance Assessment of an FRP Strengthened Balsa-Wood Bridge Deck



Typically, highway bridge decks in the US are made of steel-reinforced concrete, but repair and maintenance costs of these bridges incurred at the federal and state levels can be overwhelming. As a result, transportation agencies have searched for new cost-effective and reliable construction materials. One very promising alternative is the Fiber Reinforced Polymer (FRP) bridge deck system, as FRP composites have found increasing applications in bridge design and construction.

In this project, researchers aimed to develop an innovative FRP-wrapped balsa wood bridge deck system suitable for replacing a damaged bridge steel grid deck, assess the options for long-term monitoring, and develop long-term monitoring guidelines. The ultimate objective is to take advantage of the promising characteristics of FRP materials to develop a more durable, less maintenance-intensive bridge system to save limited funds for more urgent needs in the transportation infrastructure system.

The bridge selected for this study, which is on route LA 70 in Assumption Parish, features a concrete deck and bents, steel I-beam, and a removable span. Built in 1988, the bridge has a design load of HS20-44 and an average daily traffic (ADT) of approximately 6000. The superstructure height, the span length, and the feature of movability make this steel span a good candidate to be replaced with a FRP slab system. The span to be replaced has eight 25 ft. x 6 ft. deck panels. The FRP-wrapped balsa wood deck panels that are bonded on the I-girders have the same dimensions as the steel grid deck panels. In this project,

the primary issues of interest for the bridge's long-term performance monitoring are: (1) the integrity of the FRP-wrapped Balsa wood bridge deck system; (2) strains in the transverse direction of the deck and the longitudinal direction of the individual girders and (3) bridge deck-girder interface bond integrity.

The instrumentation plan was designed to measure the live load response behavior of the superstructure. The central four composite panels and supporting girders were instrumented with sensors. Both internally and externally attached fiber optic FBG and OTDR sensors were used in this project. These sensors enable both short-term and long-term monitoring of strains, slips, and temperature in both deck and girder members. Sixteen traditional strain transducers, six accelerometers, and eight Acoustic Emission (AE) sensors were also mounted during the live load testing conducted immediately after construction, working as a reference for cross checking the fiber optic sensor (FOS) instrumentation system.

The new bridge deck consists of pre-fabricated FRP-wrapped balsa wood units. Balsa wood beams were wrapped with GFRP sheets. The deck was adhesively bonded to the steel girder using customized epoxy. Live load testing was performed on the bridge, and collected data are currently being analyzed for publication in a final report.

“The next application for this deck may be as a replacement for existing moveable bridge decks.”
—*Gil Gautreau, DOTD Structures and Facilities Maintenance Engineer*

Featured Research

Mechanistic Flexible Pavement Overlay Design Program

DOTD currently follows the 1993 AASHTO pavement design guide's "component analysis" method in its flexible pavement overlay thickness design. Such an overlay design method, however, does not require performing any field or laboratory tests to assess existing pavement structural conditions. Instead, pavement engineers have to use a pre-assigned, parish-based subgrade resilient modulus value and a set of structural layer coefficients in an overlay thickness design. Obviously, such a procedure could potentially lead to an over- or under-designed overlay thickness since none of the design parameters represent actual field conditions.

The objective of this project was to develop an overlay design method/procedure that is used for a structural overlay thickness design of flexible pavement in Louisiana based upon (1) in-situ pavement conditions and (2) non-destructive test (NDT) methods, specifically the falling weight deflectometer (FWD) and/or Dynaflect.

Fifteen flexible pavement overlay rehabilitation projects were selected for this study. Field testing consisted of conducting NDT deflection tests (FWD and Dynaflect) along both traffic directions on each selected project. Among them, four projects were selected for the Phase I study and the rest were used in Phase II. For Phase I projects only, in-situ layer thicknesses of existing pavements were measured through auguring, and the mid-depth temperatures of asphalt concrete layers were continuously monitored during NDT testing. The overlay thickness design analysis was performed based on six selected NDT-based overlay design procedures as well as the Mechanistic-Empirical Pavement Design Guide (MEPDG) software and the current DOTD component analysis method. Construction cost and life-cycle cost analyses were also included in this study.

A FWD deflection-based overlay thickness design procedure was developed in this study for structurally rehabilitating flexible pavements in Louisiana. Based on the results of this study, the following specific observations and conclusions may be drawn:

- The 1993 AASHTO NDT procedure generally over-estimated the effective structural number for the existing flexible pavements in Louisiana, which would result in an under-designed overlay thickness.
- Without further modification or calibration, none of the six-selected NDT procedures or software could be directly applied in an overlay thickness design in Louisiana since none represent a Louisiana pavement condition.
- The Louisiana Pavement Evaluation Chart, originally developed by Kinchen and Temple, has been proved not only applicable to the Louisiana flexible pavement conditions, but is also based on the elastic multi-layered pavement theory. Therefore, it can be further used in the evaluation of existing pavement strengths of Louisiana flexible pavements.
- A strong correlation between FWD and Dynaflect determined structural numbers were obtained. Such a correlation is deemed useful since it builds a link between the layered elastic theory applied in a flexible pavement structure and Louisiana in-situ pavement conditions.
- The cost-benefit analysis indicated that, in lieu of the current LADOTD component analysis overlay design method, a significant amount of cost savings (\$74,419 per mile) would result in applying the proposed FWD-based overlay design method developed from this study.

The developed FWD-based overlay design procedure is recommended to be used for Louisiana flexible pavements' structural overlay thickness design until such time as LADOTD can implement the new MEPDG method. For low-volume roads where a higher probability of functional instead of structural overlay is required, this proposed overlay design process would be of little use except to validate that a structural overlay is not required.

Education & Training

Because training is a necessary component of career advancement, DOTD supports and promotes an environment of continual learning. This atmosphere allows employees to maximize their potential and provide qualified personnel crucial to the effective management of the transportation system. Through specialized and intensive job-specific training and education programs, LTRC reaches out to the individual working in the transportation industry.

LTRC manages DOTD's Structured Training Programs; develops maintenance and construction training materials and programs; coordinates seminars, workshops, and conferences for continuing education and professional development; and contracts with the private and public sectors for unique training needs.

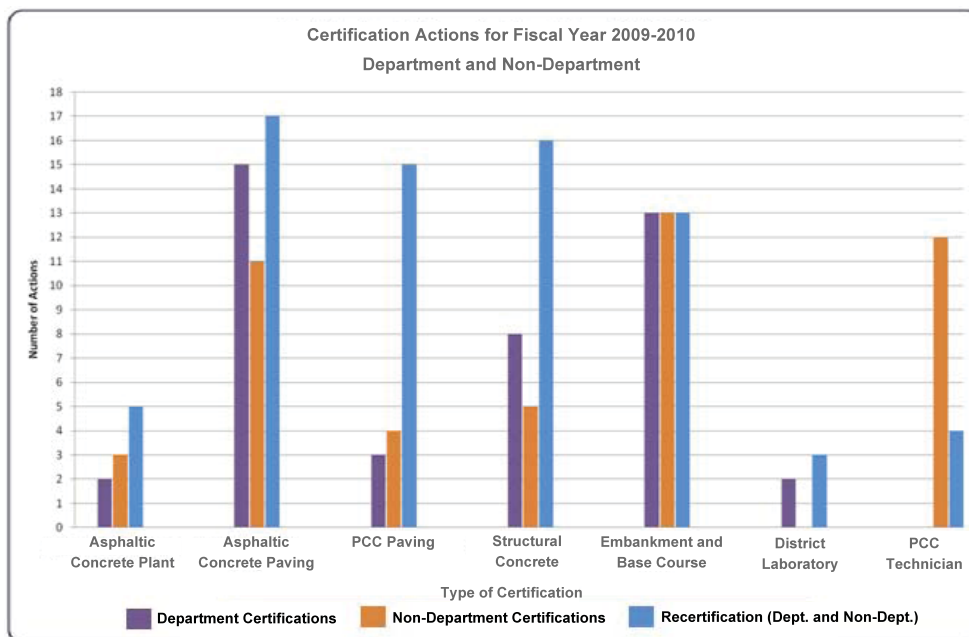
LTRC continues to manage the Inspector/Technician certification program for the Louisiana Department of Transportation and Development and the Louisiana transportation industry. The chart at right shows all certification actions for fiscal year 2009-2010 (91 new construction certifications awarded; 73 re-certifications processed).

DOTD Structured Training Program

The DOTD Structured Training Program is a department-sanctioned, progressive training curriculum that requires specific work-related training be completed at each level of an employee's career path. DOTD supports and promotes an environment of continual learning and feels that training is a necessary component and an integral part of career advancement. Structured training can involve professional development, technical skills training, continuing education, and hands-on and on-the-job training. The program manages the work force development for the personnel in construction, maintenance, and supervisory/leadership positions. The program also provides liaison assistance to headquarters personnel and district training personnel for policy interpretation and compliance decisions.

The Construction and Materials Training Program manages the Inspector/Technician Certification Program for DOTD and the Louisiana transportation industry. This program develops construction and materials training materials and coordinates the training, testing, authorization, certification, and re-certification of inspectors and technicians statewide in each area of construction.

The Maintenance Training Program focuses on the development of new job-specific courses related to job functions, work processes and safe operation of equipment used by maintenance field personnel. These courses promote an awareness of safe practices and attitudes needed for maximum job performance.



Education & Training

Construction and Maintenance Course Development

There were 16 courses/projects developed or revised during this time period, 10 in construction and 6 in maintenance.

Construction Training Course/Projects Completed

- »☒ Sampling and Testing of Plastic Concrete Manual - Implemented
- »☒ Introduction to Highway Plan Reading - Complete
- »☒ Base Course Inspection Manual - Implemented
- »☒ Surveying with Transits, Theodolites, and Total Stations Manual - Implemented
- »☒ Lab Safety Procedures for Section 19 - Implemented
- »☒ Instruction Video for DOTD TR 304 - Determination of Specific Gravity and Density Characteristics of Compressed Asphaltic Mixtures - Completed
- »☒ Construction Leveling - Revision Implemented
- »☒ Revision of Application of Quality Assurance Specifications for Asphaltic Concrete Mixtures - Completed
- »☒ Governmental Ethics/Ethics for Construction Personnel - Revision
- »☒ Introduction to Transportation Permits (self study course for Section 43)- Implemented

Maintenance Courses/Projects Completed

- »☒ Preventive Maintenance of DOTD Vehicles - Completed
- »☒ Sewer Jet Part 1 and Part II SOCL - Implemented
- »☒ Aspen Bridge Access Unit Model A40 Part I and Part II SOCL - Completed
- »☒ Maintenance Math Volume II - Completed
- »☒ Basic Flagging Procedures Revision for use in Immersive Virtual Learning Environment
- »☒ Herbicide Spray Rig SOCL - Completed

There are 10 projects currently on-going, 8 in construction and 2 in maintenance.

Construction Current/On-Going Projects

- »☒ Revision of *PCC Paving Inspection Manual*
- »☒ Revision of *PCC Plant Inspection Manual*
- »☒ Revision of *Structural Concrete Inspection Volumes I and II Manuals*
- »☒ Video for Sampling and Testing of Plastic Concrete
- »☒ Quality Assurance Manuals for Asphaltic Concrete and Embankment and Base Course
- »☒ Context Sensitive Solutions Training Materials
- »☒ Management of the Inspector/Technician Certification Program for DOTD and the Louisiana Transportation Industry

Maintenance Current/On-Going Projects

- »☒ Basic Business Math
- »☒ SOCL Mobile Crash Attenuator

Presentations/Classes

- »☒ Basic Flagging in Immersive Virtual Learning Environment - 13 classes, 305 students
- »☒ Lockout/Tagout for Section- 45 - 25 students
- »☒ How to Use Adobe Reader for IQ-Box Registration
- »☒ How to Use the Basic Functions of ETRN
- »☒ How to Use the PC Training Workstation
- »☒ Traffic Control through Maintenance Work Areas - 104 students
- »☒ Dump Truck Safety and Operations and Operator Daily Maintenance of Dump Trucks
- »☒ Superpave Mix Design and Analysis in District 62 - 9 students
- »☒ Asphaltic Concrete Mix Design Class for McNeese University - 16 students
- »☒ Train-the-Trainer distance learning for revised Substance Abuse, Harassment, and Violence in the Workplace classes for District Trainers

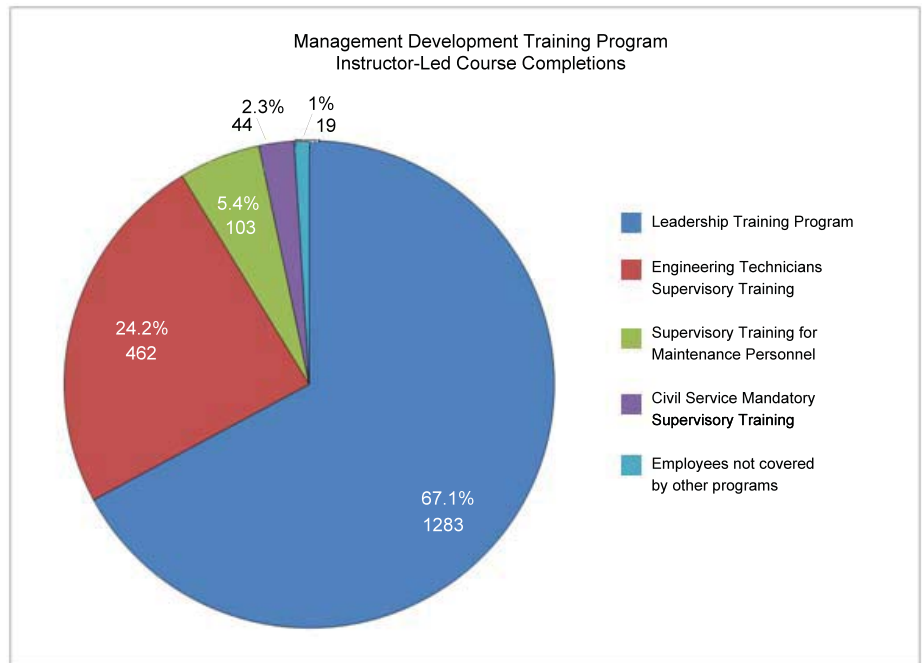
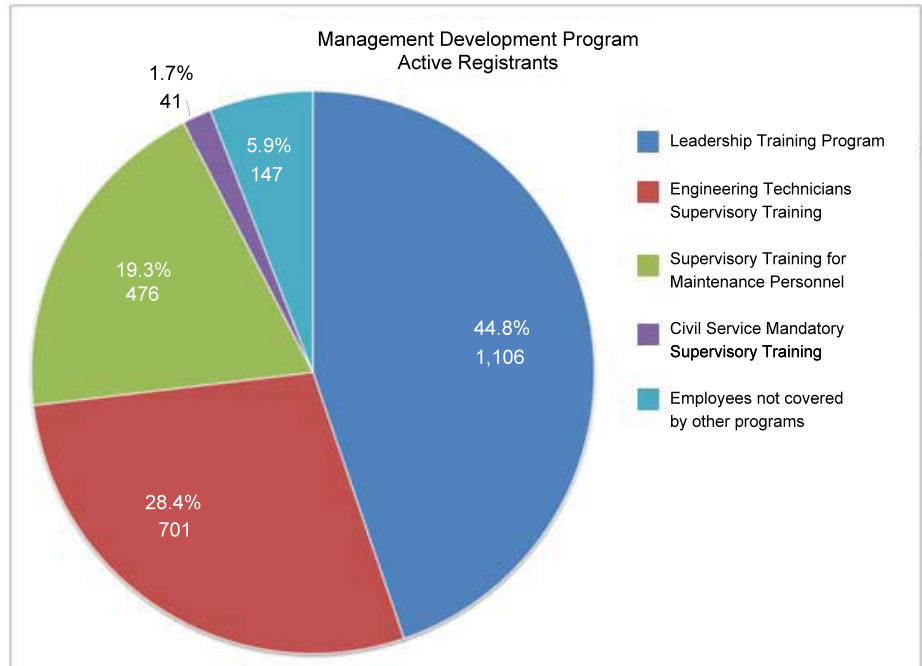
Education & Training

Management Development Training

This program oversees several mandatory supervisory, management development, and career development training programs: the Leadership Training Program, a structured training program for DOTD employees in a professional job series; the Engineering Technician Supervisory Training Program, a supervisory training program for DOTD engineering technicians; the DOTD Supervisory Maintenance Training Program for trades, crafts, and maintenance supervisors; and the Civil Service Supervisory training program for supervisors not covered by other DOTD training programs.

Courses for these training programs are delivered through several sources: the Governor’s Office Comprehensive Public Training Program (CPTP), the DOTD Human Resources Section, the LTRC/ DOTD Contract with the LSU Division of Workforce Development, and in-house training courses developed by LTRC.

There are currently 2,471 employees actively participating in the management development training programs. The number of instructor-led individual course completions for this period of time was 1,911.



Education & Training

Workforce Development

This is a new program created at LTRC to accomplish the following: develop and create an annual Workforce Development Plan (WDP); serve as liaison to LTRC Transportation Curriculum Council (TCC) as outlined in PPM 47; collaborate specifically with District Administrators to support staff development, training and planning; and coordinate Executive Leadership training.

The first DOTD WDP was compiled for the DOTD Secretary during 2009-2010. The plan provides executives and managers with a framework to make staffing decisions based on DOTD's strategic goals and objectives and a set of desired workforce competencies that would help staff perform their jobs more efficiently and effectively. The Plan addresses the need to attract and retain staff that can meet a changing work environment and expectations such as an increase in retirements due to the rapidly aging workforce, the challenge of competition for jobs with the private sector, an increasingly mobile workforce, and the necessity of pursuing a flatter organizational structure. This Plan analyses the Department's work, workforce, and strategic direction to create a better plan for developing the workforce needed for the future.

Support for Higher Education

LTRC coordinates the statewide DOTD Engineer Resource Development Program (ERDP), which provides structured rotational training for entry-level engineers. LTRC also manages the Cooperative Education Program for engineering students, a cooperative endeavor between DOTD and universities within Louisiana to employ full-time university students to perform engineering work and receive practical experience in the field of civil and transportation engineering. During 2009-2010, 8 people participated in the ERDP and 34 participated in the Cooperative Education Program. In addition, 48 graduate students were supported through LTRC research projects during 2009-2010.

Headquarters Training

This program assists section heads and designated section training coordinators in providing their employees the training prescribed by the training programs governing their employees' positions. This program provided the following for the Headquarters' sections:

- » Orientation – Monthly presentation at new employee orientation. This year provided 112 new employees information about respective training programs and how to fulfill individual training requirements.
- » Exception reports – If an employee's training is incomplete at the time of a proposed personnel action, such as a merit increase or promotion, an exception may be allowed if it is the result of circumstances over which the employee has no control, such as scheduling or unavailability. Over 100 employee training records were reviewed and exceptions granted this year.
- » Testing – Testing sessions are held 3 times a month for self-study courses. Employees were given 105 tests for different courses this year.
- » Training – This year classes were conducted to train 111 employees in topics to include: Basic Flagging, Traffic Control through Maintenance Work Areas, Lockout/Tagout, Dump Truck Safety and Operations, and Operator Daily Maintenance of Dump Trucks

LTRC also facilitates the DOTD Support Program for Civil Engineering Studies, a cooperative endeavor between DOTD and Louisiana state universities with civil engineering programs. It provides practical experience to civil engineering students who select transportation-related topics among their engineering design courses. DOTD supports this program financially, and universities grant academic credit to its participants. The senior design projects are transportation-related and are included in courses for which junior- or senior-level students receive a grade. At the end of the senior design project, participants provide copies of the final report to LTRC and give a 15-20 minute presentation. LSU, University of Louisiana at Lafayette, and McNeese State University participated in the program during 2009-2010.

The Transportation Training and Education Center (TTEC) is dedicated to the delivery of transportation training, professional development opportunities, continuing education, and technology transfer to engineers, technicians, and other professionals from Louisiana's public and private sectors. Through this new facility, LTRC is expanding the scope and availability of training, thereby serving a larger population.

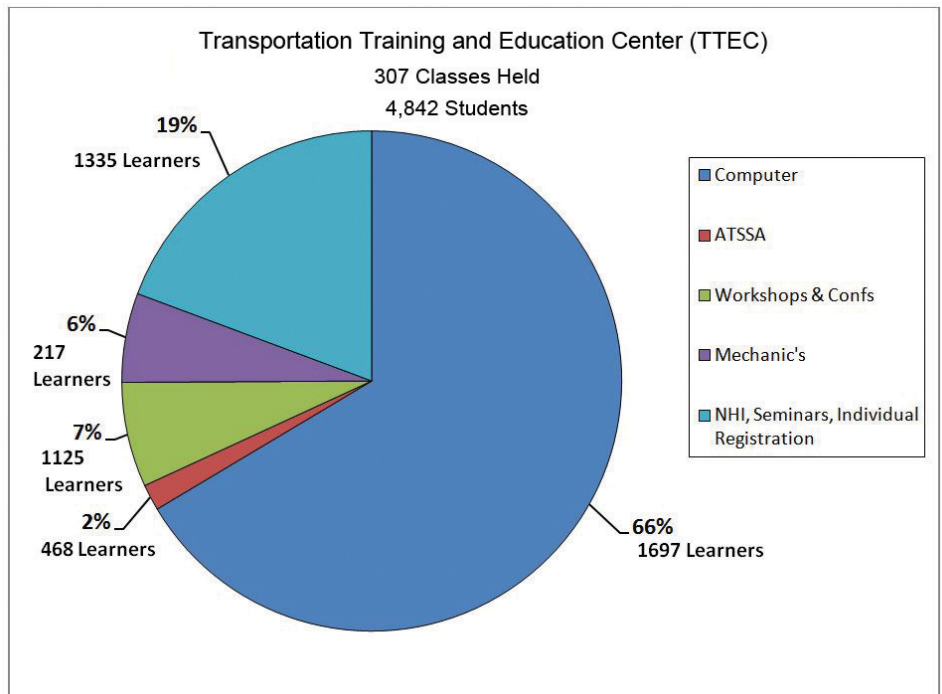
TTEC's strategy is to assist and enable workforce development using principles of strategic human capital improvement. The goals of this strategy are to:

- Create and provide sound training.
- Transition current classes/training into the distance learning environment where appropriate.
- Incorporate instructional design concepts, utilizing the talents of formally trained designers to update and modernize courses.

External Training Activities

LTRC's external training program, which includes event management of workshops and conferences, continues to supply the professional development and technical skills training necessary for strategic human capital improvement, workforce development, and the career growth of all DOTD employees and the greater transportation community of the region. This training program is vital for DOTD, local governments, and private industry. External training satisfies specific needs by providing job related training topics through partnerships with universities and private training providers.

TTEC was the host for the majority of these events which included National Highway Institute (NHI), Federal Highway Administration (FHWA), Louisiana State University, University of New Orleans, and Northwestern University courses. The number of students attending TTEC courses increased by 35% this year as 4842 students attended over 300 courses offered by TTEC from July 2009 through June 2010, an 8% increase over the past year. TTEC also achieved a 9% decrease in the training cost per student by carefully monitoring and managing training contracts and agreements. The breakout of courses is shown below along with the number of students per class type:



TTEC Researches New Learning Technology in Classrooms

TTEC is progressing with the “Evaluation of Knowledge Transfer in an Immersive Virtual Learning Environment for the Transportation Community” project (10-1SS). There are approximately 800 deaths in highway work zones each year (National Work Zone Safety Information Clearinghouse, 2009).



more congruent with an individual’s visual images stored in memory, thus improving learning transfer and retention. Such engagement in the learning activity allows learners to move beyond the memorization of the presented concepts and into the application and synthesis of the material.

This is the first experiment that LTRC is aware of that used a sample of the trade

This research project explores the use of virtual learning technology for work zone training, with the goal to increase work zone safety. The use of virtual technologies promises to be an exciting new training method that increases student engagement and subsequent knowledge transfer, and in the context of this study, increase safety awareness as well.

workforce from government and private sources, who were diverse in education, socioeconomic background, and propensity to use technology. This research expanded the scientific knowledge of adult education, specifically that which deals with knowledge transfer in an IVLE as it enhances and supplements traditional learning.

This research tested the use of an Immersive Virtual Learning Environment (IVLE) simulating real-world highway work zones. IVLEs go beyond traditional visual learning by presenting images that combine a new form of visual learning and virtual experiential learning in a way that is


The purpose of this research study was to determine if an IVLE increased engagement in the learning activity such that learners moved beyond memorization of presented concepts and into the application and synthesis of the material.



Individual Registrations

In addition to managing courses in-house, the center provides the opportunity to attend courses, conferences, seminars, and other educational and training opportunities offered by outside parties. During 2009-2010, LTRC managed registrations for 502 employees to attend conferences, courses, seminars, and other educational and training opportunities. TTEC was also responsible all the logistical, site management, automation, and audio/visual support for 11 conferences attended by 1125 participants at various metropolitan areas around the state.

Tech Transfer



As LTRC's formal research program continues to investigate solutions to Louisiana's transportation problems, the technology transfer program serves the wider transportation community by implementing these research findings and technological innovations. Whether through technical assistance on DOTD projects, publications, videos, seminars, or workshops, technology transfer's ultimate goal is to disseminate practical knowledge to municipalities, parishes, and the transportation industry at large.



Seminar Series Focuses on Concrete, Transportation Research Board Papers

In October 2009, over 100 transportation professionals, engineers, and consultants gathered for a day of concrete topics and discussion in the TTEC auditorium. 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.

The seminar then held a brief roundtable discussion on current issues and problems in the concrete field. Afternoon topics focused on future technologies including calorimetry, maturity, and non-destructive testing (NDT) devices. Following these discussions, Tyson Rupnow, LTRC, 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.

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Researchers and engineers with LTRC, LADOTD, and Louisiana universities represented Louisiana at the Transportation Research Board (TRB) 89th Annual Meeting that was held in Washington, D.C., January 10-14, 2010. Speakers from across Louisiana presented results from numerous LTRC sponsored research projects through presentations as well as poster sessions. More than 10,000 transportation professionals from around the world attended the event.

In March, LTRC continued its seminar series of the year by inviting local TRB speakers to share their TRB presentations, allowing transportation professionals who were unable to attend the Washington meeting useful information regarding Louisiana's latest transportation research. With nine sessions in topics ranging from geotechnical, pavement, policy, materials, and traffic research, 25 presentations were made throughout the two-day seminar at the TTEC facility. The seminar attracted over 75 transportation professionals from across the state. The session that gained the most attention was the second session, which consisted of four pavement paper presentations. Pavement topics included the use of stabilized blended calcium sulfate, new approaches to indexing roughness, field rutting under different types of loading, and alleviating transverse joint faulting in jointed concrete.

Local Technical Assistance Program

2009-2010 Highlights

The Louisiana Technical Assistance Program (LTAP) continued its training and professional development efforts providing over 150 learning opportunities to over 3,000 local and state transportation professionals across the state. These offerings included traditional workshops, on-site classes, and webinars or e-learning sessions. LTAP partnered with DOTD's Traffic Engineering Office and the Louisiana Municipal Association to develop and broadcast a series of "traffic engineering 101" webinars. These webinars provided DOTD an efficient way to convey DOTD policy updates to the local community and to encourage feedback from local participants. LTAP also coordinated a series of statewide listening sessions with the local transportation community on the new DOTD driveway rule and other meetings on the right of way program.

LTAP partnered with the Louisiana Parish Engineer's and Supervisor's Association to present two statewide conferences, which included technical topics as well as ethics, public bid law requirements, and other important topics. In conjunction with the Louisiana American Public Works Association, LTAP sponsored a first time "sustainability for local communities" workshop at TTEC, which featured national and local speakers. LTAP continued to expand its local road safety efforts offering related training, multiple technical assists and management of over 100 low-cost safety improvements.

The Louisiana Strategic Highway Safety Plan includes LTAP and the Local Road Safety as a member of the Implementation Team and Marie Walsh, LTAP director, as the co-chair of the Occupant Protection Focus Area Team. LTAP also assisted the Louisiana Highway Safety Commission and the Department of Public Safety by planning and conducting nine impaired driving workshops for local and state law enforcement officers as well as a train the trainer workshop for speed management facilitators.

Marie Walsh, LTAP director, participates in national road safety efforts and was appointed as an associate member to AASHTO's Standing Committee on Highway Traffic Safety



The Louisiana Local Technical Assistance Program (LTAP) is one of 52 centers in a national network that provides services to the local transportation community in each state, Puerto Rico, and the Native American Tribal areas. Each center operates independently to develop and implement programs that best meet the needs of the local transportation agencies while sharing a common national mission "to foster a safe, efficient, and environmentally sound surface transportation system by improving skills and increasing knowledge of the transportation workforce." LTAP also shares four national focus areas that include infrastructure maintenance, safety, workforce development, and value delivery.

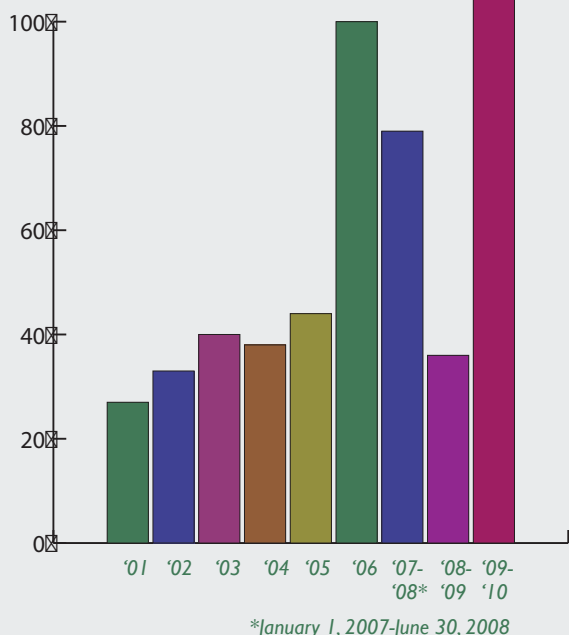
The LTAP provides an array of services geared specifically to the local agencies and personnel that manage and maintain Louisiana's local roads and transportation system. Training classes and workshops have been primary services offered since the program began in 1986. Classes are routinely offered at eight locations around the state as part of the ongoing "Roads Scholar" program. Special topic classes are also offered, and on-site on-demand workshops are also available. LTAP also provides technical assistance on request, publishes a quarterly newsletter, and maintains a publication and video library.

and to the AASHTO Subcommittee on Safety Management. She is a member of the National LTAP Association's Executive Committee and serves as the co-chair of the NLTAPA Safety Workgroup. She was honored with the 2010 NLTAPA National Achievement Award at the annual meeting in July.

Tech Transfer

Technical Assistance Projects

LTRC's technical assistance program provides laboratory testing, field testing, and forensic investigation in direct response to Departmental inquiries for expert analysis on DOTD projects. LTRC also provides assistance to state universities for laboratory or field testing on research projects not funded by LTRC. During the 2009-2010 fiscal year, LTRC responded to 112 technical assistance requests.



Dissemination of Information

Technology transfer's ultimate goal is to disseminate practical knowledge to municipalities, parishes, and the transportation industry at large. LTRC's Publications and Digital Media Development Program meets DOTD's informational and training needs through newsletters, brochures, annual reports, capsules, Web development, and video production/photography. During 2009-2010, LTRC published 12 technical summaries, 10 project capsules, 4 Technology Today newsletters, 13 final reports, and 2 technical assistance reports. For a complete listing of publications and presentations by all LTRC personnel, please visit our Web site at www.ltrc.lsu.edu/09_10publications.html.

Project Capsules

09-5C	Evaluation of Non-Destructive Technologies for Construction Quality Control of HMA and PCC Pavements in Louisiana
09-2P	Implementation of Rolling Weight Deflectometer (RWD) in PMS and Pavement Preservation
08-3SS	Developing Louisiana Crash Reduction Factors
09-1ST	Monitoring Load Distribution and Fatigue Cost Estimates of Heavy Truck Loads on Louisiana State Bridges
10-1GT	Measuring Levee Elevation Heights in North Louisiana
10-1SS	Evaluation of Knowledge Transfer in an Immersive Virtual Learning Environment for the Transportation Community
09-2ST	Performance and Analysis of Concrete Bridge Railing Using Conventional and Composite Reinforcement
08-3ST	Evaluation of Design Methods to Determine Scour Depths for Bridge Structures
10-1C	Evaluation of Surface Resistivity Measurements as an Alternative to the Rapid Chloride Permeability Test for Quality Assurance and Acceptance

LTRC Publications

Technical Assistance Reports

06-1TA	Samuel B. Cooper, Jr.	Evaluation of HMA Mixtures Containing Sasobit®
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Final Reports & Technical Summaries

423/ 424	Murad Y. Abu-Farsakh, Qiming Chen, and Sungmin Yoon	Use of Reinforced Soil Foundation (RSF) to Support Shallow Foundation
437*	Robert N. Bruce, Jr., John J. Roller, and Henry G. Russell	Structural Monitoring of Rigolets Pass Bridge
438	John Eggers and Tyson D. Rupnow	Flexural Strength and Fatigue of Steel Fiber Reinforced Concrete (2004 Hale Boggs Deck)
439	Khalid Alshibli, Ayman M. Okeil, and Bashar Alramahi, Ph.D.	Update of Correlations between Cone Penetration and Boring Log Data
440	Aziz Saber	Field Verification for the Effectiveness of Continuity Diaphragms for Skewed Continuous P/C P/S Concrete Girder Bridges
441	Ayman M. Okeil, Yilmaz Bingol, and Md. Rubiat Ferdous	A Novel Technique For Stiffening Steel Structures
443	Guoqiang Li, Aziz Saber	Elimination of Deck Joints Using a Corrosion Resistant FRP Approach
444	Mostafa A. Elseifi	Analysis of Seasonal Strain Measurements in Asphalt Materials under Accelerated Pavement Testing and Comparing Field Performance and Laboratory Measured Binder Tension Properties
446	Gavin P. Gautreau and Pallavi Bhandari	Development of a Geotechnical Information Database
447	D. M. Griffin, Jr.	Volume Balance and Toxicity Analysis of Highway Stormwater Discharge from Cross Lake Bridge
449	Murad Y. Abu-Farsakh, Sungmin Yoon, and Ching Tsai	Calibration of Resistance Factors Needed in the LRFD Design of Driven Piles
457	Mark Martinez	The Rideability of a Deflected Bridge Approach Slab
466	Zhi-Qiang Deng	First Flush Reactor for Stormwater Treatment for Elevated Linear Transportation Projects

* *Technical Summary not yet published*

Professional Organizations

Transportation Research Board (TRB) Committees/Panels

- AHB20 Freeway Operations Committee
- ABJ70 Artificial Intelligence and Advanced Computing Applications
- ANB10 (3) Subcommittee on Emergency Evacuation
- Highway Safety Manual Task Force
- AFS70 Geosynthetics
- AFP20 Exploration and Classification of Earth Materials
- AFP40 Physicochemical and Biological Processes in Soils
- AFP10 Pavement Management Systems
- AFS10 Transportation Earthworks
- AFD60 Flexible Pavement Design
- AFP60 Engineering Behavior of Unsaturated Soil
- AFF80 Structural Fiber Reinforced Plastics
- AFF30 Committee on Reinforced Concrete Bridges
- A2C02(1) methods of analyzing steel bridges
- AFF40 Non-destructive Evaluation of Structures Subcommittee
- AFN30 Durability of Concrete (Chair)
- AFN10 Basic Research and Emerging Technologies Related to Concrete
- AFN40 Concrete Materials and Placement Techniques
- AFN20 Properties of Concrete (Communications Coordinator) AFK 20 Characteristics of Bituminous Materials
- AHD 20 Pavement Maintenance Committee
- AFK 40 Characteristics of Bituminous-Aggregate Combinations to Meet Surface Requirements (Chair)
- AFK 50 Characteristics of Bituminous Paving Mixtures to Meet Structural Requirements
- AHD 20 Pavement Maintenance Committee
- AFD 20 Pavement Monitoring, Evaluation and Data Storage
- AFP 30 Soil and Rock Properties, Friend of the Committee
- AFK 00 Bituminous Materials Section
- AFK 10 General Issues in Asphalt Technology
- AHD18 Pavement Preservation
- ABG40 Library and Information Science for Transportation (LIST)
- NCHRP 20-68A Domestic Scan Program
- NCHRP 26-83(5) Climate Change and the Highway System: Impacts and Adaptation Approaches

- NCHRP 20-89 Intellectual Property Stewardship Guide for Transportation Departments
- NCHRP 20-91 European Road Associations ERA-NET Road Research Program
- NCHRP Project 10-05, Modulus Based Construction Specification and Issues for Highway Earthwork and Unbound Base Materials

Training Memberships

- Southeast Task Force on Technician Training and Qualification
- Construction Certification Committee
- DOTD Testing Procedures Committee
- LA Comprehensive Public Training Program (CPTP) Curriculum Committee
- ETRN to LSO Planning Committee
- CPTP Statewide Training Coordinators representative for DOTD
- Civil Service Mandatory Training Coordinators representative for DOTD
- DOTD Loss Prevention Committee
- American Society for Training and Development
- LATOD - Louisiana Trainers Group
- Society of Government Meeting Planners
- Special Library Association
- American Association of State Highway and Transportation Officials Research Advisory Committee
- Transportation Knowledge Network Task Force (AASHTO/RAC/TKN/TF)
- National Transportation Training Directors Organization (President)

Miscellaneous

- International Steering Committee for Travel Survey Conferences
- US Universities Council on Geotechnical Engineering Research (USUCGER)
- Engineering Geology and Site Characterization Committee, Geo-Institute.

- Louisiana Engineering Society (LES)
- LSU Communication across the Curriculum (CxC)
- American Association for Wind Engineering
- Louisiana DOTD Committee on Implementation of AASHTO-LRFD
- American Academy of Mechanics (AAM)
- American Society for Engineering Education (ASEE)
- American Society of Mechanical Engineers (ASME)
- Geo-Institute Geotechnics of Soil Erosion and Scour Committee
- Society of Plastic Engineers
- International Committee for Composite Engineering
- FHWA Binder Expert Task group member
- FHWA Emulsion expert task force member
- Association of Asphalt Paving Technologist (AAPT)
- Management Committee of the Asphalt Pavement Analyzer Users Group
- Southeastern Asphalt User Producer Group, Board Member
- Research Advisory Group of the National Stone, Sand, and Gravel Association, Board Member
- Chi Epsilon, Civil Engineering Department Level Honor Society
- Tau Beta Pi, College of Engineering Level Honor Society
- Phi Kappa Phi, University Level Honor Society

American Society of Civil Engineers (ASCE)

- Transportation and Development Institute, Planning and Economics Committee
- Highway Safety Committee
- ASCE-ACI Joint Committee 343 Concrete Bridge Design
- Associate Editor, Journal of Bridge Engineering
- Committee Member, Dynamics
- Committee Member, Computational Mechanics
- Committee Chair, Experimental Analysis & Instrumentation
- Committee Member, Structural Wind Effects
- Journal of Materials in Civil Engineering, Associate Editor
- Materials Engineering Division, Bituminous Materials Committee
- Louisiana Chapter of T&DI Executive Committee

American Concrete Institute (ACI)

- Committee 440 Fiber Reinforced Polymer Reinforcement
- Associate Member, ACI Committee 335, Composite and Hybrid Structures
- Consulting Member, ACI Committee 423, Prestressed Concrete

American Society for Testing and Materials (ASTM)

- Subcommittee D04.20 on Empirical Tests of Bituminous Mixtures
- Subcommittee D04.22 on Effect of Water & Other Elements on Bituminous Coated Aggregates
- Subcommittee D04.24 on Bituminous Surface Treatments
- Subcommittee D04.25 on Analysis of Bituminous Mixtures, Chair
- Subcommittee D04.26 on Fundamental / Mechanistic Tests,
- Subcommittee D04.44 on Rheological Tests
- Subcommittee D04.45 on Specifications for Modified Asphalt
- Subcommittee D04.46 on Durability & Distillation Tests



Staff Listing

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Nick Champion, Audio and Video Production
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Sandy Brady, Librarian
Brenda Wolfe, TTEC Administrative Assistant

Local Technical Assistance Program

Marie Walsh, Ph.D., Director, LTAP
Bob Breaux, LTAP Office Manager
David McFarland, LTAP Teaching Associate



LTRC Head of Structured Training Honored with Dunbar Award

Reta “Tinka” McFarland, DOTD Structured Training Director, has been named a 2009 recipient of the highly esteemed Charles E. Dunbar, Jr. Award, the highest honor classified state employees can receive for their service to the citizens of Louisiana. The Civil Service League bestows the award on local, state, and municipal civic service employees who distinguish themselves through unselfish service, contributions toward workplace improvement, personal initiative, and volunteer community service.

Tinka holds a Certification in Supervisory Techniques (CST, 1992) and is a Certified Public Manager (CPM, 1994.) She was a member of the committee that worked in cooperation with Louisiana State University’s Division of Workforce Development to implement a certification program for training and development to meet national standards. In 2000, she completed the series of pilot classes leading to a Louisiana State Trainer Certification and a Certificate in Human Resource Development with an emphasis on adult education. She also actively served in the Louisiana Society of Certified Public Managers organization, acting as the Nomination Chair for three years and a Director-at-Large for Membership for six.

Over the years, McFarland has also participated in many major DOTD efforts. She oversees DOTD’s Workforce Development Policy, PPM 59, which established the Department’s workforce philosophy. The policy formally recognizes that developing a workforce through structured training, professional development, continuing education, and on-the-job training is essential to maximize employee potential and provide qualified personnel crucial to the effective management of the transportation system. McFarland also served as a lead member of a committee that won DOTD’s Team of the Year award in 2002 for revising the Structured Training Program for DOTD’s Engineering Technician series. Out-dated training requirements were revised, and 45 new job-specific training programs were put in place. However, the accomplishment of which she is most proud was the conception, implementation, and management of the Rebuilding Opportunities and Development (ROAD) Program, a literacy skills upgrade program allowing work release time for employees to learn to read or work toward a GED. DOTD had more than 90 employees who received their GED during the eight years the program was in place. DOTD was the first state agency with such a program.

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