

**2010-2011 Annual Report**  
**Connecting Government, Industry, & Academia**



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 assistance, 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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# 2010-2011

This publication is a report of the transportation research, technology transfer, education, and training activities of the Louisiana Transportation Research Center for July 1, 2010–June 30, 2011. The center is sponsored jointly by the Louisiana Department of Transportation and Development and Louisiana State University.



**Sherri H. LeBas, P.E.**  
Secretary



**Michael V. Martin, Ph.D.**  
Chancellor

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# Facilities

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; Pavement on the Move (POM), a multi-use mobile laboratory for collecting data from field construction projects as well as research and training; and the Intelligent Transportation Systems (ITS) lab, the newest lab designed to evaluate traffic data collected from Louisiana's traffic management centers. 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.



**(top to bottom): TTEC, LTRC, ALF**

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.

# 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

The job of LTRC is to solve DOTD's and Louisiana's transportation problems. However, solving problems is not enough; we have to make sure that solutions are implemented and deployed. Through its capacity of providing solutions through research and then using its technology transfer and education and training activities, LTRC is able to implement about 75 percent of its research efforts. Because of its success, LTRC has participated in a number of activities this year involving implementation methodologies including a nationally broadcast webinar and a scan tour visit by a delegation of Danish engineers.

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 included.

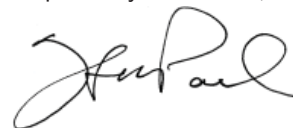
The implementation of two research products is highlighted in this report. The Dynamic Cone Penetrator (DCP) is capable of gathering information on pavement subgrades and base courses more quickly and serving as a tool to measure stiffness index (DCPI), the DCP proves to be a valuable asset in designing pavements built to last. Its full implementation in the districts is nearing completion. It has been used in a number of forensic evaluations by LTRC including the investigation of New Orleans's submerged roads. Another test apparatus, the Surface Resistivity Meter (SRM), which tests the permeability of concrete members for bridge structures, replaces an existing test method. The SRM takes about five minutes to run while the previous tests took two days and eight man-hours to complete. The department saved \$101,000 in the first year of implementation, while contractors are expected to save over \$1.5 million in the first year. With full LTRC use by DOTD, the savings become exponential. This study also received recognition nationally as high value research and will be presented the 2012 annual Transportation Research Board meeting.

The Louisiana Transportation Conference was, of course, the highlight of this year's technology transfer activities. This biennial event continues to grow. Over 1800 transportation professionals from 24 states participated in the conference whose theme was "Transportation: A Key to a Sustainable Future." The conference was the culmination of activities of seven committees involving over 150 LTRC, DOTD, and industry personnel. The conference which provided a forum for education, sharing new ideas and methods, and discussing changes in the industry included 64 sessions and four workshops. Transportation professionals were provided opportunities to earn up to 19 professional credit hours, including the required hour in professional ethics.

The LTRC Transportation Curriculum Council (TCC) held its first meeting on September 1, 2010. The purpose of the committee and related subcommittees is to advise and assist LTRC in the identification, prioritization, development, evaluation, and implementation of transportation related technology transfer, training, work development, and educational services for DOTD and its public and private transportation industry partners. The TCC includes a representative cross section of knowledgeable individuals from the various technical and supportive disciplines necessary to the conduct of the Department's mission, thereby reflecting the diverse needs of the organization and the needs of its public and private industry transportation partners.

Finally, the newest laboratory at LTRC is opening its doors. The Intelligent Transportation Systems lab is the results of several years of research into its feasibility. In this lab, the data from the Baton Rouge Traffic Management Center will be used to assist decision makers for such concepts as managed lane, congestion pricing, traffic signal optimization, work zone management, and a host of other safety and congestion management practices. It provides a platform for graduate students to study the field of advanced traffic management systems for future recruitment and retention in Louisiana.

Respectfully submitted,



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

# Research

## Completed Research

LTRC Project	Agency	Principal Investigator	Project Title
03-7ST	LTRC	Dr. Walid Alaywan	Long-Term Monitoring of the HPC Charenton Bridge
04-5GT	LTRC	Dr. Murad Abu-Farakh	Control of Embankment Settlement: Field Verification of PCPT Prediction Methods
08-1P	LSU	Dr. Mostafa A. Elseifi	Cost Effective Prevention of Reflective Cracking of Composite Pavement
08-1ST	LSU	Dr. Ayman M. Okeil	Evaluation of Continuity Details for Precast Prestressed Girders
09-1C	LTRC	Dr. Tyson Rupnow	Evaluation of Fly Ash Quality Control Tools
10-1GT	LTU	Mr. Wesley Palmer	Measuring Levee Elevation Heights in North Louisiana
10-1TIRE	ULL	Dr. Ahmed Khattab	Application of NanoTechnology to Develop Smart Hot Mix Asphalt (HMA) Mixtures
10-2TIRE	McNeese	Dr. Ning Zhang	Evaluation of Erosion Control Methods for Coastal Highways
10-3TIRE	LSU	Dr. Hak-Shul Shin	Performance Evaluation of Recycled PET Fiber Reinforced Concrete
10-4TIRE	ULL	Dr. Vijay Raghavan	Mining Potentially Interesting Positive and Negative Association Patterns from Traffic Safety Data

# Research

## Completed Research (Pending Publication)

LTRC Project	Agency	Principal Investigator	Project Title
05-5ST	LSU	Dr. Steve C.S. Cai	Development and Performance Evaluation of Fiber Reinforced Polymer Bridge
07-4SS	Southern	Dr. Sharon Parsons	LADOTD Customer Service Process and Outcome Evaluation
07-6P	LTRC	Dr. Zhong Wu	Evaluation of Current DOTD Flexible Pavement Structures Using PMS Data and New M-E Pavement Design Guide
08-2SS	LTRC	Mr. Dan Strecker	LOOP Environmental Monitoring: 2008-2010 Beach Elevation, Beach Vegetation, and Land Loss and Habitat Change Surveys
09-1GT	WPI	Dr. Minjiang Tao	Update LADOTD Policy on Pile Driving Vibration Management
09-2B	LTRC	Dr. Zhong Wu	Development of New Surface Friction Guidelines for LADOTD
09-2C	LTRC	Dr. Tyson Rupnow	Evaluation of Cement and Fly Ash Treated RAP and Marginal Aggregates for Base Construction
09-2ST	LTRC	Dr. Walid Alaywan	Performance and Analysis of Concrete Bridge Railing Using Conventional and Composite Reinforcement Materials
09-4C	LTRC	Dr. Tyson Rupnow	Evaluation of Ternary Cementitious Combinations
09-6C	LSU	Dr. Hak-Shul Shin	Support Study on the Characterization of Ternary Mixes with Various SCMs
10-2C	LSU	Dr. Hak-Chul Shin	Validation of Correction Factors for Coefficient of Thermal Expansion for PCC
10-5B	LTRC	Dr. Louay Mohammad	Laboratory Evaluation of the Performance of Sulfur-Enhanced Asphalt Treated Base Mixtures

LSU: Louisiana State University | LTU: Louisiana Tech University | ULL: University of Louisiana at Lafayette  
 WPI: Worcester Polytechnic Institute

## Active Research

LTRC Project	Agency	Principal Investigator	Project Title	Start Date	End Date
05-1GT	LTRC	Dr. Murad Abu-Farsakh	Field Demonstration of New Bridge Approach Slab Designs and Performance	8/1/08	6/30/13
06-2SS	LTRC	Dr. Chester Wilmot	Development of a Time-Dependent Hurricane Evacuation Model for the New Orleans Area - Phase 2	7/1/08	6/30/12
06-4B	LTRC	Dr. Louay Mohammad	Optimization of Tack Coat for HMA Placement	7/1/05	9/30/11
07-1B	LTRC	Mr. Bill King	Evaluation of Warm Mix Asphalt Technology in Flexible Pavements	3/15/09	3/31/12
07-1ST	LTRC	Dr. Murad Abu-Farsakh	Structure Health Monitoring of the I-10 Twin Span Bridge Over Lake Pontchartrain	11/1/07	7/31/12
07-3ST	LSU	Dr. Steve C.S. Cai	Repairing/Strengthening of Bridges with Post-Tensioned FRP Strands and Performance Evaluation	10/1/07	8/31/11
07-4ST	LSU	Dr. George Z. Voyiadjis	Integral Abutment Bridge for Louisiana's Soft and Stiff Soils	10/1/07	9/30/11
07-7P	ULL	Dr. Xiaoduan Sun	Safety Improvement from Edge Lines of Rural Two-Lane Highway	9/1/07	8/31/11
07-8P	LTRC	Dr. Kun Lian	Developing Embedded Wireless Strain/Stress/Temperature Sensors Platform for Highway Applications	6/1/07	3/31/10
08-2ST	LSU	Dr. Steve C.S. Cai	Monitoring Bridge Scour Using Fiber Optic Sensors	1/1/09	12/31/12
08-3GT	LTRC	Dr. Murad Abu-Farsakh	Support Study to Structure Health Monitoring of the I-10 Twin Span Bridge Over Lake Pontchartrain	11/1/07	12/31/12
08-3SS	ULL	Dr. Xiaoduan Sun	Developing Louisiana Crash Factors	11/1/09	8/31/12
08-3ST	LSU	Dr. Gouping Zhang	Evaluation of Design Methods to Determine Scour Depths for Bridge Structures	4/1/09	9/30/11
09-1ST	LTU	Dr. Aziz Saber	Load Distribution and Fatigue Cost Estimates of Heavy Truck Loads on Louisiana State Bridges	4/1/09	6/30/12



LTRC Project	Agency	Principal Investigator	Project Title	Start Date	End Date
09-2P	LTRC	Dr. Mostafa Elseifi	Implementation of the Rolling Wheel Deflectometer (RWD) in PMS and Pavement Preservation	7/1/09	12/31/11
09-2SS	LTRC	Dr. Chester Wilmot	Enhancing Calibrated Peer Review for Improved Engineering Communication Education	9/1/08	8/31/12
09-4ST	LSU	Dr. Guoqiang Li	A Shape Memory Polymer based Self-healing Sealant for Expansion Joint	5/1/09	7/31/11
09-5C	LTRC	Mr. Patrick Icenogle	Construction Quality Control of HMA and PCC Pavements in Louisiana	7/1/09	12/31/11
09-5ST	LSU	Dr. Guoqiang Li	Support Study for A Shape Memory Polymer based Self-healing Sealant for Expansion Joint	5/1/09	7/31/11
09-7P	LTRC	Dr. Zhong Wu	Construction and Accelerated Pavement Testing of TTI Pavement Test Sections	10/1/09	10/1/11
10-1B	LTRC	Dr. Louay Mohammad	Field versus Laboratory Volumetrics and Mechanical Properties	8/1/09	2/29/12
10-1SS	LTRC	Dr. Glynn Cavin	Evaluation of Knowledge Transfer in an Immersive Virtual Learning Environment for the Transportation Community	1/1/10	12/31/12
10-1ST	LTU	Dr. Aziz Saber	Monitoring System for Bridges Subject to Heavy Loads	3/15/10	6/30/12
10-2GT	Dataforensics, LLC	Dr. Scott Deaton	Geotechnical Information Database – Phase 2	3/10/11	9/9/12
10-3GT	LTRC	Mr. Khalil Hanifa	Design Values of Resilient Modulus of Stabilized and Non-stabilized Base	9/1/10	2/29/12
10-3P	LTRC	Dr. Leticia Santos da Rocha Courville	LED Traffic Signal Lifetime Management System	11/1/10	7/31/13
10-3SS	Cambridge Systematics	Dr. Susan Herbel	Automated Enforcement and Highway Safety	6/1/11	5/31/13
10-4B	LTRC	Dr. Louay Mohammad	Development of Performance Based Specifications for Louisiana Asphalt Mixtures	4/1/11	3/31/14
10-4P	ULL	Dr. Mohammad Jamal Khattak	Development of Cost-Effective Pavement Treatment Selection and Treatment Performance Models	9/1/10	6/30/13

## Active Research, continued

LTRC Project	Agency	Principal Investigator	Project Title	Start Date	End Date
10-4SS	GEC, Inc.	Mr. Thomas Swanson	Truck Facility Access Design Guidelines	4/25/11	4/24/13
10-4ST	Ocean Engineering Associates, Inc.	Dr. Max Sheppard	Development of Wave and Surge Atlas for the Design and Protection of Coastal Bridges in South	5/2/11	10/1/13
10-5SS	LSU	Dr. Helmut Schneider	Developing Inexpensive Crash Countermeasures for Louisiana Local Roads	1/17/11	1/16/13
10-5ST	Wiss, Janney, Elstner Associates, Inc.	Mr. Jonathan McGormley	Development of Guidelines for Transportation of Prestressed Concrete Girders	5/2/11	9/1/12
10-6B	LSU	Dr. William H. Daly	Implementation of GPC Characterization of Asphalt Binders at Louisiana Materials Laboratory	6/1/10	12/1/11
10-6SS	LSU	Dr. Sherif Ishak	Establishing an Intelligent Transportation Systems (ITS) Lab at LTRC (Phase II)	8/20/10	11/19/11
11-1B	LTRC	Mr. Md. Sharear Kabir	Validity of Multiple Stress Creep Recovery Test for DOTD Asphalt Binder Specification	9/1/10	6/30/12
11-1P	Nichols Consulting Engineers	Ms. Margot Yapp	LaDOTD Pavement Management System (PMS) for Project Level Applications	5/23/11	5/22/13
11-2B	LTU	Dr. Nazimuddin M. Wasiuddin	Evaluation of Dynamic Shear Rheometer Tests for Emulsions	9/15/10	7/14/12
11-2GT	LTRC	Dr. Murad Abu-Farsakh	Field Instrumentation and Testing to Study Set-Up Phenomenon of Piles Driven into Louisiana Clayey Soils	12/1/10	11/30/14
11-2P	Inner Corridor Technologies	Ms. Jennifer Harrison	Development of a DOTD GPS Technology Management Plan	3/1/11	10/31/11
11-2SS	LSU	Dr. Sherif Ishak	Measuring Effectiveness of Ramp Metering Strategies on I-12	4/1/11	3/31/13
11-3B	LTRC	Mr. Bill King	Testing and Analysis of LWT and SCB Properties of Asphaltic Concrete Mixtures	4/1/11	3/31/13
11-3GT	LTRC	Dr. Murad Abu-Farsakh	Accelerated Load Testing of Geosynthetic Base Reinforced Pavement Test Sections	12/1/10	5/31/12

LTRC Project	Agency	Principal Investigator	Project Title	Start Date	End Date
11-3P	LTRC	Mr. Mark Martinez	The Rideability of a Deflected Bridge Approach Slab (LTRC Project O2-2GT Continuation: Phase II)	4/1/11	3/31/13
11-3SS	C-K Associates	Mr. Tre Wharton	LOOP Environmental Monitoring: 2011-2013 Beach Elevation, Beach Vegetation, Land Loss and Habitat Changes Surveys	4/12/11	4/11/14
11-3B	LTRC	Mr. William "Bill" King & Mr. Md Sharear Kabir	Testing & Analysis of LWT & SCB Properties of Asphaltic Concrete Mixtures	4/1/11	3/31/13
11-4B	LTRC	Dr. Louay Mohammad	Modulus Based Construction Specification of Earthwork and Unbound Aggregate	10/7/10	4/6/13
11-4GT	LTRC	Dr. Murad Abu-Farsakh	Calibration of Resistance Factors for Drilled Shafts for the New FHWA Design Method	1/12/11	1/11/12

LSU: Louisiana State University | LTU: Louisiana Tech University | ULL: University of Louisiana at Lafayette  
WPI: Worcester Polytechnic Institute

## 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.

### 2010-2011 Technical Assistance Highlights

- Evaluation of the LA 1 Bridge at the Morganza Flood Control Structure
  - » LTRC's research section investigated the LA 1 Bridge located at the flood control structure near Morganza, LA. The in-place condition of the bridge deck showed signs of wear in terms of exposed aggregate and cracking. The depths of the cracks generally did not extend to the reinforcement steel and the condition of the steel showed little to no corrosion in the full and partial depth cores. No delamination was found when the site was visited. The tensile and compressive strengths proved adequate and the pull-off test strengths showed that an epoxy type overlay will be very well suited as a rehabilitation technique. The full results of this technical assistance response can be found in report 11-1TA ([www.ltrc.lsu.edu/pdf/2011/tar\\_11\\_1TA.pdf](http://www.ltrc.lsu.edu/pdf/2011/tar_11_1TA.pdf)).
- Walking Profiler Evaluation Effort in Support of the Profiler Certification Rodeo
  - » Yearly certification of contractor profilers requires that the Department conduct a Profiler Certification Rodeo each April. In support of this effort, it is necessary for the Pavement Research Section to provide technical assistance to District 22 by conducting Walking Profiler tests on the the tests sites to help provide a benchmark.
- Baton Rouge Regional Airport Forensics
  - » LTRC completed the forensics investigation of distresses occurring in newly placed asphalt surface. FWD and DCP measurements were taken along with full depth cores (as much as 18 inches deep). Laboratory tests included volumetric verification, performance grading of liquid binder (supplied and extracted), gradation, repeated shear constant height (RSCH), loaded wheel tracker and direct shear. GPC molecular evaluation of the binder and other liquid residues were evaluated.

## Dynamic Cone Penetrator Implementation into the Subgrade Soil Survey Process

With thousands of miles of roadways stretching across the state, Louisiana understands the importance of designing pavements that are long lasting and reliable. In an effort to continue ensuring roads reach their respective service lives, LTRC has conducted three extensive research projects evaluating a device called the Dynamic Cone Penetrator (DCP). Capable of gathering information on pavement subgrades and base courses more quickly and serving as a tool to measure stiffness index (DCPI), the DCP proves to be a valuable asset in designing pavements built to last. The DCP has also been used in numerous forensic studies investigating failed pavements. LTRC researchers also correlated DCPI with resilient modulus ( $M_r$ ) used in the design of pavement for cohesive soils in Louisiana.

In light of DCP capabilities, DOTD recently charged LTRC with the task of initiating an Implementation Committee to utilize the DCP in the subgrade soil survey portion of the DOTD pavement design process. “By utilizing the DCP in this segment, researchers and engineers will be able to gather subgrade strength information, which is not available with the current method of soil borings,” says Kevin Gaspard, senior pavement research engineer and head of the DCP implementation committee. With more information at their fingertips and a new method of obtaining information, engineers will soon have an updated system when it comes to building pavements specific to every project throughout the state.

In order to complete the implementation of the DCP in Louisiana, the LTRC implementation team first had to revise an existing DOTD Engineering Directives and Standard Memorandum, more commonly known as EDSM. LTRC received approval for their revision from DOTD’s chief engineer in June 2009, enacting a new policy for all districts across the state to use the DCP in their subgrade soil surveys.

During the next phase of implementation, the team developed and gained approval of a new TR procedure in the DOTD testing manual for the DCP, explaining the proper way to use the device as well as how to accurately record DCP readings. In fact, LTRC created a downloadable form available for engineers to record all the necessary information when operating the device in the field. After the field data is entered into the form, users can then transfer all the gathered information into an Excel template. From there, users will be able to access

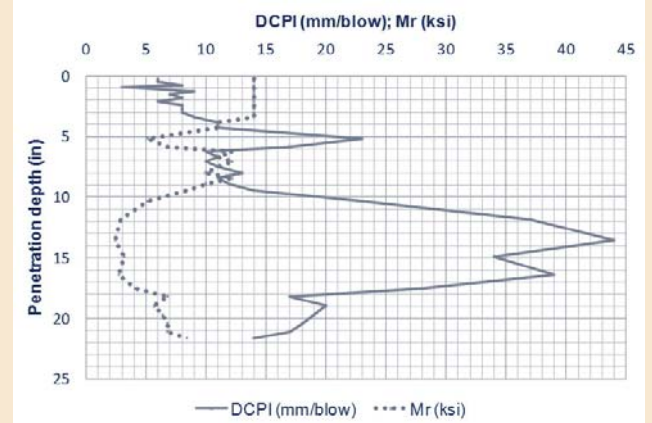


Figure 1

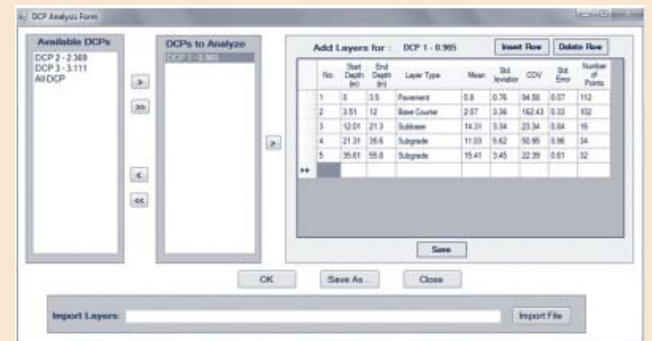


Figure 2

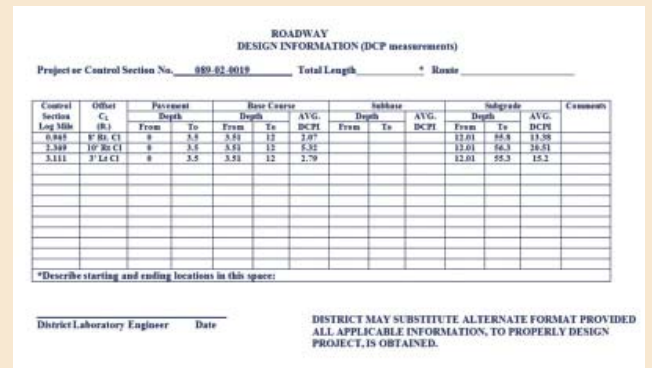


Figure 3

## Permeability Testing Device to Save Department Thousands

In January 2011, LTRC researchers evaluated a new testing device for quality acceptance of precast and cast-in-place concrete and are in the process of implementing the device into DOTD laboratories across the state. The device, a surface resistivity meter, which tests the permeability of concrete members of bridge structures, replaces an existing method called ASTM C 1202 (Standard Test Method for Electrical Indication of Concrete's Ability to Resist Chloride Ion Penetration). Researchers explain that by using this new testing device, the Department can expect to save about \$101,000 in personnel costs within the first year. It is also estimated that contractors will save about \$1.5 million in quality control costs.

LTRC Concrete Research Engineer Tyson Rupnow, Ph.D., P.E., introduced the device to DOTD officials and is spearheading the project as well as the ongoing implementation. Dr. Rupnow explains that while they confirmed the current and new tests' results correlate well in their permeability results, the main advantages they found with the new device are cost and time. "The existing test method equipment alone cost \$18,000-\$20,000. This new test costs roughly \$3,000 for the piece of equipment," he said. "Also, the old test took two days and 8 man hours to do, while this new test takes less than 5 minutes."

Currently, Louisiana is only the second state in the U.S. to be using the device for acceptance, but many states are in the process of evaluating their current methods against the surface resistivity meter to measure permeability in light of new specifications that will be in effect in 2012. Dr. Rupnow explained, "This testing is important because the new AASHTO LRFD designs for concrete bridges require 75-year or 100-year designs, and the only way you can get that is if you measure permeability." With this new load and resistance factor design (LRFD) requirement, Louisiana will not only continue meeting the standard, but will do so at a higher costs savings to the state than ever before.

Full implementation began in April 2011, where an associated DOTD TR test method will be implemented. Surface resistivity meters will be purchased; one for each district laboratory, central materials laboratory, and LTRC. In addition, a training program will be developed for training district personnel. "The training program will include a short lecture detailing the background and theory of the surface resistivity meter, a tutorial video, performance evaluations, and a proficiency exam," said Dr. Rupnow.

### DCP Implementation, cont. from page 10

a new piece of LTRC software that interfaces with the Excel template capable of producing both a DCPI and M<sub>p</sub> profile as shown in Figure 1.

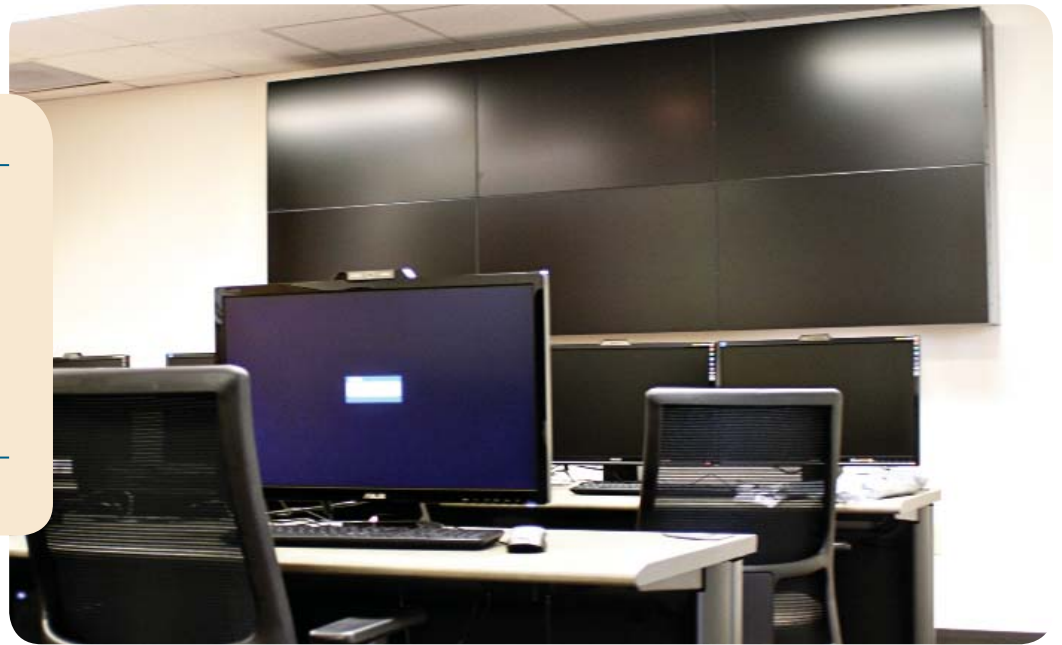
This software step signifies the third phase of implementation that LTRC is currently undergoing—the computer software phase. Here, engineers and programmers have developed new software designed for analyzing DCP data and producing a subgrade soil DCPI sheet. "The software is designed to minimize the amount of work required to analyze DCP data, which can be quite tedious," explains Gaspard.

As the software approaches completion in the next few months, Gaspard explains that it is user friendly and includes a self-contained tutorial. Additionally, it produces the subgrade soil DCPI chart once the layers are identified by the user as shown in Figures 2 and 3.

The fourth and final phase of implementation into the subgrade soil survey process will include two types of training: training for the analysis of data for pavement engineers as well as data collection training for district lab engineers. More information on this step will be available in the near future as plans progress.

## New LTRC Lab Gathers Research to Address Needs of Travelling Public

**“This information will assist transportation officials in developing applications that improve their service to the public.”**



Researchers at the Louisiana Transportation Research Center recently put the final touches on their newest lab at the center designed to transform traffic data into useful information that is instrumental to procedures and applications that benefit DOTD, the local government, and the general public. The Intelligent Transportation Systems (ITS) lab has been the result of several years of research where researchers studied equipment possibilities, applications that support ITS data, affiliated costs, ways to properly and securely maintain the lab, and other ITS labs across the country.

Primarily serving the metropolitan and state transportation authorities in their service to the traveling public, the ITS lab is envisioned to evaluate traffic data collected from Louisiana's traffic management centers. The state-of-the-art ITS lab will be a tool for LTRC where data and video will be collected for highway incident detection and management, travel time estimation and prediction, work zone management, ramp metering, crash analysis, new concepts such as managed lanes and congestion pricing, highway breakdown and recovery analysis, traffic signal optimization, calibration of microscopic simulation models,

implementation of new pavement design procedures, and others. From there, data and video will be analyzed, reported, and then procedures will be passed on to agencies in order to apply them on a routine basis.

This information will assist transportation officials in developing applications that improve their service to the public (e.g., providing current and expected future traffic conditions and developing operational strategies for the existing infrastructure). The lab is also anticipated to retain, recruit, and inspire interest in the field of advanced traffic management systems for students in Louisiana as well as potential graduate students from outside Louisiana in providing access to raw and processed data of traffic flow.

The short term measure of success of the lab will be reflected by the capability to stream traffic data in real-time from traffic monitoring sites that are connected to the Baton Rouge Traffic Management Center (TMC). Also, the lab will offer technical reporting capabilities that assist users in extracting the most relevant information needed from such data.

## LTRC Provides Superpave Advice to Local Government

In the last decade, Superpave asphalt has proven its importance and necessity as more states are implementing Superpave mixtures into their roads and highways. Superpave stands for Superior Performing Asphalt Pavement and represents an improved system for specifying the components of asphalt concrete, asphalt mixture design and analysis, and asphalt pavement performance prediction.

As Superpave gains popularity, LTRC has been consistent in testing and researching the material to discover how it should be best implemented in Louisiana roads. While the state began the transition to Superpave mixtures over 10 years ago, the city of Lafayette has recently taken notice of the material's success and potential for better road design options on their city roads.

As a result, the Lafayette Consolidated Government met with LTRC transportation officials and asphalt experts at a Superpave seminar to discuss the possibilities and benefits of implementing Superpave into Lafayette's hot mix design. Mitch Wyble, a representative of the Lafayette Consolidated Government and city engineer, explained, "We realize Superpave is coming into the era that we're in and if we don't get on board, we're going to be left behind." To best assist Lafayette, a modified version of the DOTD Superpave specifications that fits municipalities was presented to the group and then discussed during the seminar along with benefits and potential problems.

To give the group a better understanding of the material, Engineering Materials Characterization Research Facility (EMCRF) Manager and LSU Civil Engineering Professor Louay Mohammad presented a condensed lecture on the background of Superpave and gave a brief overview. Mohammad addressed the mix design process, the required purchasing of the Superpave Gyratory Compactor, additional research, and how to best implement Superpave (where Mohammad suggested the importance of committees, testing the material, and training contractors, material suppliers, and consultants). He also discussed and showed the performance of Superpave on about 23 projects throughout the state in northern and southern regions with various traffic levels.

Throughout the rest of the seminar, questions were asked of the experts concerning how Superpave will alleviate problems Lafayette is facing and how to manage quality control of the material. The group also discussed the different potential levels of use and how to determine Superpave's uses specifically in Lafayette.

To wrap up the seminar, Mohammad took the group on a tour of the LTRC asphalt laboratory to get a better idea of Superpave's characteristics and equipment needed for implementation and testing. For more information on Superpave pavements, please contact Louay Mohammad at 225-767-9126 or [louaym@lsu.edu](mailto:louaym@lsu.edu) or William "Bill" King, Materials Research Administrator, at [bill.king@la.gov](mailto:bill.king@la.gov).



**Representatives from Lafayette Consolidated Government learn about the potential uses and benefits of Superpave.**

# 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.

## 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, authoriza-

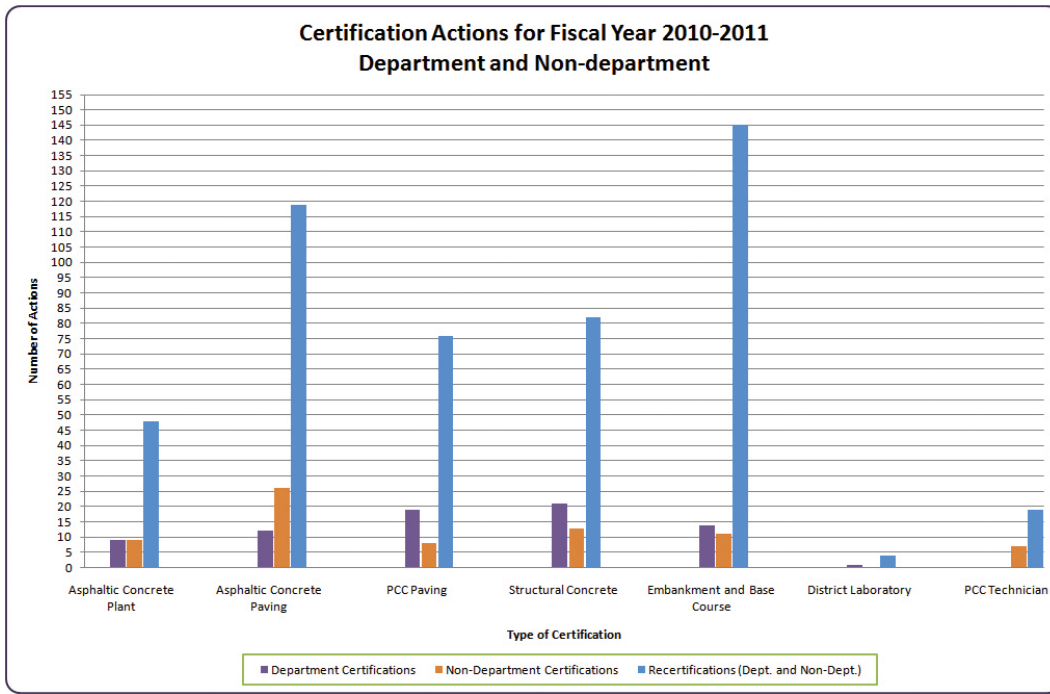
tion, certification, and re-certification of inspectors and technicians on a state-wide level in each area of construction.

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.

## Presentations & Classes

- 19 Agile Assets Training classes statewide
- Basic Flagging
- Aerial Lift/Scaffolding Safety/Personal Falls Arrest
- ABC's Work Zone Safety
- Duties of Personnel Assigned to Movable Bridges, and various safety topics
- 6 Superpave Mix Design and Analysis classes
- 1 Asphaltic Concrete Mix Design class for McNeese Civil Engineering
- 1 Automated Profiler class for District 03





*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 left shows all certification actions for fiscal year 2010-2011.*

## Construction and Maintenance Course Development

There were 15 courses/projects developed or revised during this time period, 10 in construction and 5 in maintenance.

### Construction Training Course/Projects Completed

- Sampling and Testing Plastic Concrete performance evaluation
- Sampling and Testing Plastic Concrete training video
- TR645-DCP training video
- TR233-PCC Resistivity training video
- Created a LaGov Help Script file (statewide implementation)
- Assisted in creating PPR training with HR
- Completed and assisted in developing Agile Assets training with Section 42
- Collected \$70,510.00 in Construction Certification Program enrollment fees
- Revised of Governmental Employee Ethics
- Awarded 149 new construction certifications – processed 494 re-certifications

### Maintenance Courses/Projects Completed

- SOCL: Mobile Crash Attenuator Part I and Part II
- SOCL: Auto Crane A72A for CCCD Part I and Part II
- SOCL: Lorain LCD 150 for CCCD Part I and Part II
- SOCL: Medium Duty Dump Truck Part I and Part II
- IMSA Recertification

There are 20 projects current/on-going, 16 in Construction and 4 in Maintenance.

### Construction Current/On-Going Projects

- Revision of Structural Concrete Inspection Volumes I and II manuals
- Introduction to Pile Driving Inspection manual
- PCC Paving Inspection manual and supporting materials
- PCC Plant Inspection manual and supporting materials
- PCC Mix Design manual and supporting materials
- Numerous instructional training videos
- Metrics for Engineering Technicians
- English for Engineering Technicians
- Quality Assurance Manual for Embankment and Base Course
- Highway Plan Reading Volume 1 - revision
- Highway Plan Reading Volume 2 - revision
- Basic Business Math
- Density Testing for Embankment and Base Course manual revision
- Context Sensitive Solutions training materials
- Continued refinement of the HMA training program and HMA Plant Accreditation program.
- Management of the Inspector/Technician Certification Program for DOTD and the Louisiana Transportation Industry

### Maintenance On-Going Projects

- Equipment Operation: M5035B, Tractor-Mounted Backhoe
- Equipment Operation: M5054B, Track Backhoe
- Review of 31 SOCLs for updating or deletion
- Review of the IRF online portfolio for updating or deletion

## Management Development Training Program

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.

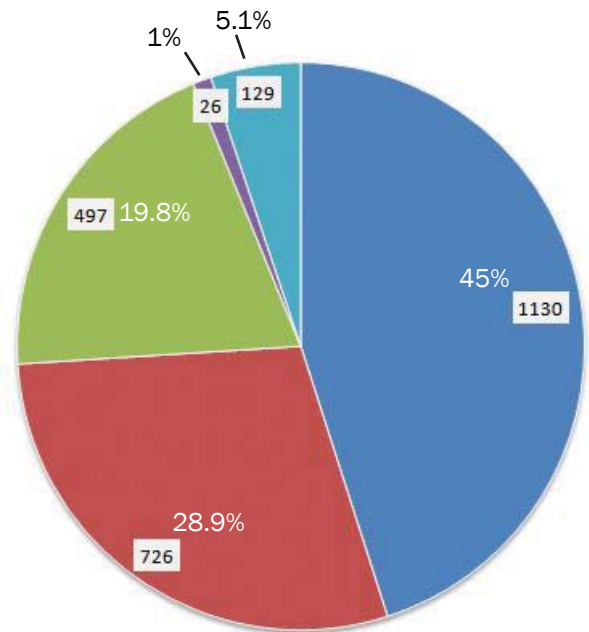
Courses for these training programs are delivered through several sources: the Civil Service Comprehensive Public Training Program (CPTP); the DOTD Human Resources Section; the LTRC/DOTD Contract with the LSU Division of Workforce Development; and in-house training courses developed by LTRC.

There are currently 2508 employees actively participating in the management development training programs. The number of instructor-led individual course completions for this period of time was 1363.

### Partnership with Baton Rouge Community College

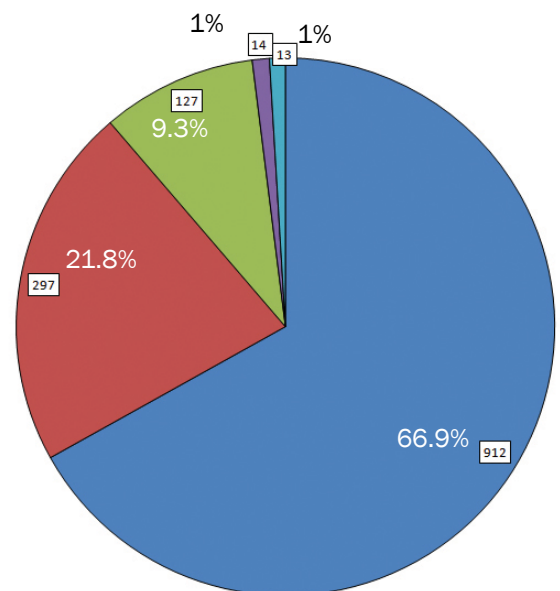
LTRC has worked with Baton Rouge Community College (BRCC) to establish a Civil Engineering Technology Curriculum leading to an Associate's Degree in Applied Science or a Certificate in Applied Science. This partnership was established to ensure an increase in the number of properly trained engineering technicians available to the public and private sector. The plan is to have students take core courses at BRCC and additional courses at a premier, state-of-the-art training facility/laboratory housed on the grounds of the Materials Laboratory. This facility would provide instructor-led classes, taught by subject matter experts, in each of the certification areas. These classes would enhance the existing training already provided by the Department plus provide hands on training for laboratory-based testing procedures. This facility would also provide the computer-based training needed to complete inspector/technician duties. The curriculum has been established and is currently awaiting approval by BRCC. Plans for the training facility/laboratory have been completed.

Management Development Training Program: Active Registrants



- Leadership Training Program
- Engineering Technicians Supervisory Training
- Supervisory Training for Maintenance Personnel
- Civil Service Mandatory Supervisory Training
- Employees not covered by other programs

Management Development Training Program: Instructor-Led Course Completions



## Headquarters Training Program

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 143 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. Training records of 62 employees were reviewed and exceptions granted this year.
- Testing – Testing sessions are held three times a month for self-study courses. Employees were given 141 tests for different courses this year.
- Training – This year classes were conducted to train 110 employees in topics to include: Basic Flagging, Aerial Lift/Scaffolding Safety/ Personal Falls Arrest, ABC's Work Zone Safety, Duties of Personnel Assigned to Movable Bridges, and various safety topics.

## 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 2010-2011, 13 people participated in the ERDP and 32 participated in the Cooperative Education Program. In addition, 44 graduate students were supported through LTRC research projects during 2010-2011.

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

## Transportation Curriculum Council

The LTRC Transportation Curriculum Council (TCC) held its first meeting on September 1, 2010. The purpose of the committee and related subcommittees is to advise and assist LTRC in the identification, prioritization, development, evaluation, and implementation of transportation related technology transfer, training, work development, and educational services for DOTD and its public and private transportation industry partners.

LTRC's Workforce Development program has the responsibility of helping to schedule and facilitate subcommittee meetings, distribute the meeting minutes to the appropriate people, and provide any support services needed by the subcommittee. It also schedules and plans the annual TCC Committee meeting.

The TCC includes a representative cross section of knowledgeable individuals from the various technical and supportive disciplines necessary to the conduct of the Department's mission, thereby reflecting the diverse needs of the organization and the needs of its public and private industry transportation partners. The chair of the committee will be the DOTD deputy secretary. Members represent LADOTD administration, LTRC, the Local Technical Assistance Program (LTAP), the FHWA Louisiana division, academia partners, and industry partners.

TCC subcommittees will serve in an advisory capacity for the following areas: engineering, operations, multimodal, education/outreach, and management and finance.

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. Four universities participated in this program during 2010-2011: Louisiana Tech, McNeese, Southern, and University of Louisiana at Lafayette.

# TTEC

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, and incorporate instructional design concepts, utilizing the talents of formally trained designers to update and modernize courses.

## Current and Ongoing Projects

- Managing the contract for Employee Development Structured Training Program- statewide
  - » Contracted services with Louisiana State University
- Providing Professional Engineer Exam Workshop, 77 instructional hours
  - » Services to be contracted with Test Masters, Inc.
- Managing the Individual Registration Fund
  - » Evaluated submitted requests in order of importance and relevance to the department.
- Providing SIDRA software courses
  - » Course management (i.e., registration, course rosters, course evaluations, vendor correspondence, and room set up).
- Managing the contract with University of New Orleans to provide Personal Computer training – statewide
- Managing the contract with Partners in Learning, LLC., to provide leadership training as requested by the Secretary
  - » Initial overview training provided July 26 for 580 participants
  - » Train-the-trainer training for two LTRC employees who will provide follow-on training for up to 350 participants



**Groups from private industry, government, and academia utilize TTEC's auditorium.**

## Completed Projects

- Roundabouts – Levels 1 & 2
  - » Course management (i.e., registration, course rosters, course evaluations, vendor correspondence, and room set up).
- Highway Safety Manual
  - » Course management (i.e., contract management, registration, course rosters, course evaluations, vendor correspondence, and room set up).
- Chip Seal Seminar
  - » Course management (i.e., contract management, registration, course rosters, course evaluations, vendor correspondence, and room set up).
- Louisiana Transportation Conference
  - » Conference management (i.e., contract management, facility management, registration management, vendor correspondence, and speaker assistance).
- Support study for the Evaluation of Knowledge Transfer in an Immersive Virtual Learning Environment for the Transportation Community



TTEC Conference Room

## LTRC Library Continues to Expand Offerings

Sandy Brady, LTRC librarian and transportation research advisor has been assisting researchers and growing the LTRC library since it opened in 2008. Call, e-mail, or chat online at <http://www.ltrc.lsu.edu/library.html> for help in a number of areas.

### Research Assistance

- ~Assisting in literature reviews
- ~Suggesting databases for research
- ~Helping with search strategies

### Document Retrieval

- ~TTEC library
- ~Libraries nationwide

### Networking

- ~Open communication with other state librarians on commonly asked questions to better answer questions from local researchers

### Resource Provision

- ~Adding necessary books and other publications to the physical library or by subscribing to them electronically



# 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.

## 2011 Louisiana Transportation Conference

Approximately 1,800 people from 24 states attended the 2011 Louisiana Transportation Engineering Conference, which was held January 9-12, 2011, at the Baton Rouge River Center. The biennial conference, which provides a forum for education, sharing new ideas and methods, and discussing changes in the industry included 64 sessions and four workshops.

The conference's general session included key speeches by DOTD Secretary Sherri LeBas; Division of Administration Commissioner Paul Rainwater; American Association of State Highway and Transportation Officials (AASHTO) Executive Director John Horsley; and Federal Highway Administrator Victor M. Mendez. Additional featured speakers throughout the conference included Eric Kalivoda, DOTD deputy secretary, and DOTD Office of Management and Finance's Michael Bridges, undersecretary, and Kirt Clement, deputy undersecretary.

Featured sessions, which highlighted the conference's theme, *Transportation: A Key to a Sustainable Future*, included topics ranging from the social and economic sides of sustainability in transportation to new technology and techniques in research.

"The focus for this conference is addressing transportation challenges through innovation," said LeBas. "Now, more than ever, it is important that professionals in the field of transportation continue to seek out innovative and creative solutions within our industry."

Over 200 speakers contributed to the conference as a whole and led discussions during the four-day conference on a variety of topics in addition to sustainability specific topics. A survey taken after the conference showed that many of the sessions were found to be very informative and useful in day-to-day operations in the workplace. Many also commented on the great job of all the speakers.

Two sessions in particular gathered the largest crowds. The first was Session 34: Bridge Construction, which discussed the John James Audubon Bridge that was opened in May 2011. Presenters discussed the innovative precast cofferdam de-



**The Baton Rouge River Center is the home of the Louisiana Transportation Conference.**

sign, installation, and synchronous jacking that took place in the spring of 2009 for the main pier foundations of the bridge and the engineering required for the erection of the bridge that will soon be the longest span cable-stayed bridge in the America, with a main span of 1,583 feet. The second and one of the highest attended sessions featured roundabouts in Louisiana, focusing on the DOTD roundabout contract with NE Roundabouts, which includes assistance in capacity analysis, preliminary design, peer review, design training workshops, roundabout software training, and simulation services. Existing roundabouts in Louisiana were featured as well as state-of-the-art roundabout practices.

An awards luncheon closed the four-day conference on Wednesday, Jan. 12, to recognize special achievements in engineering and construction projects performed by transportation partners of the LTC. This competition recognized the “best of the best” projects, demonstrating dedication to providing the highest quality in transportation infrastructure to customers, the citizens of Louisiana, and the users of the state’s highways, transit systems, airports, ports, and other public works.

The luncheon also recognized DOTD/SASHTO scholarship award winners, which included students from Louisiana State University, the University of New Orleans, Southern University, McNeese State University, Louisiana Tech University, and the University of Louisiana at Lafayette.

Conference sponsors were also recognized for their generous contributions to the conference. Those industry leaders, private sector organizations, and local agencies included:

**Platinum Sponsor:** Baton Rouge Area Convention and Visitors Bureau

**Gold Sponsors:** Fenstermaker & Associates, ABMB Engineers, Inc., Vulcan Materials Company, the Louisiana Asphalt Pavement Association, and the LPA Group Transportation Consultants

**Silver Sponsors:** Fugro, Pine Bluff Sand & Gravel Company, Louisiana Associated General Contractors, Inc., Neel-Schaffer, Inc., and TRC Engineers, Inc.

**Bronze Sponsors:** Huval & Associates, Inc., and Wilbur Smith Associates.

Industry partners at GEC, Inc. were also recognized for coordinating the hospitality and vendor exhibits, which was held Monday, Jan. 10, until Tuesday, Jan. 11, in the Baton Rouge River Center Exhibition Hall, where approximately 70 exhibitors participated.



The 2011 LTC began with the opening session and keynote addresses.

The next LTC is already in the works and is currently scheduled for February 17-20, 2013. If you would like a copy of any of the presentations from this year’s conference, you can visit [http://www.ltrc.lsu.edu/ltrc\\_11/survey11\\_thanks.html](http://www.ltrc.lsu.edu/ltrc_11/survey11_thanks.html).



Scenes from the 2011 LTC vendor exhibition

## Chip Seal Expert Featured in Seminar Series

As part of the 2011 LTRC Seminar Series, the Chip Seal Pavement Construction Seminar brought together designers, material suppliers, consultants, parish representatives, DOTD technicians, and engineers to provide end user tools necessary to identify and successfully construct chip seals. Consulting Engineer James Scherocman led the seminar Tuesday, Feb. 1, 2011, and Wednesday, Feb. 2, 2011, in Pineville and Baton Rouge.

Scherocman brought his expertise and wealth of knowledge to the two groups as he discussed factors that affect chip seal construction and performance, determining the condition of existing pavement surfaces, asphalt binder and cover aggregate application, and examples of good and poor chip seal construction. “The instructor who is an expert in this area provided a host of examples and photographs to help identify proper chip seal candidates, proper construction techniques, and techniques for troubleshooting problem areas that may arise,” said LTRC Asphalt Research Engineer William “Bill” King, Jr., P.E.



**James Scherocman led the chip seal seminar in Pineville and Baton Rouge.**

In general, chip seals are applied to existing pavements to extend the life of the pavements and improve traction or “skid resistance”; however, they are not intended as permanent pavement surfaces and are expected to last approximately seven to ten years. Chip seal service life varies depending on the condition of the existing surface, traffic volumes, weather, choice of materials, and how well it is placed. Since DOTD is more involved in chip seal applications than in the past, it is important for Louisiana transportation professionals to become more accustomed to the proper usage and application of the material.

The main point that Scherocman expressed focused on the basics, explaining what makes a good chip seal and what makes a bad chip seal. Scherocman also emphasized the importance of utilizing the knowledge of workers, types of materials, and proper usage of equipment. He highlighted three main factors that can make the difference in a quality chip seal: uniform application of the asphalt, followed by quick application of the aggregate and uniform application of the aggregate.

The open forum allowed for many attendees to express questions or concerns for certain strategies presented during the seminar and get input from colleagues and other experts in attendance.

### Connect with LTRC Online



Stay current with what’s happening at LTRC through LTRC’s new Facebook and Twitter pages with postings of new research publications, education and training news, and other information.

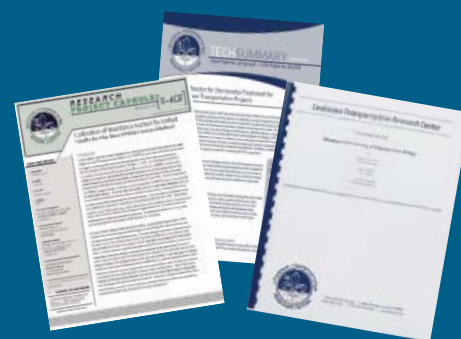


- Find us on facebook at <http://www.facebook.com>.
- Follow us at [www.twitter.com/LTRC\\_Updates](http://www.twitter.com/LTRC_Updates).
- You can also visit our Web site at [www.ltrc.lsu.edu](http://www.ltrc.lsu.edu) for a calendar of events.



## 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 2010-2011, LTRC published 19 technical summaries, 26 project capsules, 4 Technology Today newsletters, 17 final reports, and 1 technical assistance report. For a complete listing of publications and presentations by all LTRC personnel, please visit our Web site at [www.ltrc.lsu.edu/pdf/10\\_11publications.pdf](http://www.ltrc.lsu.edu/pdf/10_11publications.pdf).



Visit [www.ltrc.lsu.edu/publications.html](http://www.ltrc.lsu.edu/publications.html) to download any of our reports, summaries, or capsules.

### Project Capsules

04-4B	Development Of A Design Methodology For Asphalt Treated Base Mixtures
09-2B	Development of Surface Friction Guidelines for LADOTD
11-1B	Validity of Multiple Stress Creep Recovery Test for DOTD Asphalt Binder Specification
10-2C	Validation of Correction Factors for Coefficient of Thermal Expansion for PCC
10-3GT	Design Values of Resilient Modulus of Stabilized and Non-stabilized Base
11-3GT	Accelerated Load Testing of Geosynthetic Base Reinforced Pavement Test Sections
07-6P	Evaluation of Current DOTD Flexible Pavement Structures Using PMS Data and New M-E Pavement Design Guide
10-4P	Development of Cost-Effective Pavement Treatment Selection and Treatment Performance Models
11-2P	Development of a DOTD GPS Technology Management Plan
10-4SS	Truck Facility Access Design Guidelines
10-6SS	Establishing an Intelligent Transportation Systems (ITS) Lab at LTRC (Phase II)
08-2ST	Monitoring Bridge Scour Using Fiber Optic Sensors
11-3B	Testing & Analysis of LWT & SCB Properties of Asphaltic Concrete Mixtures

## Final Reports and Technical Summaries

461	William H. Daly, Ioan I. Negulescu, Louay N. Mohammad, and Ionela Chiparus (Ph.D. candidate).	The Use of DMA to Characterize the Aging of Asphalt Binders
469	Tyson Rupnow	Evaluation of Fly Ash Quality Control Tools
463	Jay Wang, Neha Verma, and Eric Steward	Estimating Setup of Piles Driven into Louisiana Clayey Soils Evaluation of the Base/Subgrade Soil under Repeated Loading: Phase 1—Laboratory Testing and Numerical Modeling of Geogrid Reinforced Bases in Flexible Pavement
470	Murad Y. Abu-Farsakh, Xinbao Yu, Sungmin Yoon, and Ching Tsai	Calibration of Resistance Factors Needed in the LRFD Design of Drilled Shafts
459	J. Anthony Cavell and Roy Dokka	Reference Measurements of Pavement Management System Roadway Elevations
460	Mohammad Jamal Khattak, Gilbert Y. Baladi, and Xiaoduan Sun	Development of Index Based Pavement Performance Models for Pavement Management System (PMS) of LADOTD
400	Brian Wolshon, Gregoris Theodoulou, and Yu Yik “Erick” Lim	Modeling Hurricane Evacuation Traffic: Evaluation of Freeway Contraflow Evacuation Initiation and Termination Point Configurations
456	Sherif Ishak, Brian Wolshon, Chris Schwehm, Pradeep Rayaprolu, and Bharath Sridhar	Establishing an Intelligent Transportation Systems (ITS) Lab at LTRC
406*	Louay N. Mohammad, Ananda Herath, Ravindr Gudishala, Munir D. Nazzal, Murad Y. Abu-Farsakh, and Khalid Alshibli	Development of Models to Estimate the Subgrade and Subbase Layers’ Resilient Modulus from In situ Devices Test Results for Construction Control

\*Technical Summary only

## Technical Assistance Report

11-1TA	Tyson Rupnow	Evaluation of the LA 1 Bridge at the Morganza Flood Control Structure
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# Local Technical Assistance Program



The Louisiana Local Technical Assistance Program (LTAP) is one of 58 centers operating nationally to serve the local and tribal transportation agencies. The LA LTAP has nearly 25 years of history serving DOTD and Louisiana's local agencies providing technical training, safety training, technical assistance, and technology transfer. To achieve our objectives, LTAP works in direct partnership and cooperation with our national, state and local partners to identify needs, develop materials, and implement programs. Frequently serving in a liaison role, LTAP works closely with many of the DOTD offices that interact with the local agencies and to communicate DOTD policies and information to the local transportation community and facilitate feedback from the locals. The LA LTAP is also a leader in Louisiana in local road safety and participates actively in implementation of the Louisiana Strategic Highway Safety Plan. Dr. Marie Walsh, Director of LTAP, is active in safety efforts at the national level serving on major committees and panels.

Highlights of the 2010-2011 Roads Scholar training program included a series of workshops presented at nine locations around the state. Topics included "Off-system Bridge Inspection" followed by "Off-System Bridge Maintenance and Repair," "Vegetation Management and Control," and regional sessions of "Signing From the Ground Up." In partnership with the Louisiana American Public Works Association (APWA), LTAP coordinated a series of classes for local construction inspectors on the new inspection codes, which qualified for continuing education credits allowing inspectors to continue working while qualifying for certification. LTAP

also coordinated two conferences of the Louisiana Parish Engineers and Supervisors Association, which provides the opportunity for professional development hour credits.

LTAP continued its full support of the Louisiana Strategic Highway Safety Plan (SHSP) through implementation of the Louisiana Local Road Safety Program (LRSP) and working with other state safety partners. LTAP hired a new full time traffic safety engineer to provide additional services to local agencies including training, on-site road safety technical assistance, and project management. Currently, through the LRSP, LTAP is overseeing the implementation and management of over \$10,000,000 in low cost safety improvements on the local roads. The workshop series "Impaired Driving Case Improvement for Law Enforcement Officers" was conducted by LTAP on behalf of the Louisiana Highway Safety Commission. Over 400 law enforcement officers have participated in this program. LTAP also conducted an "Occupant Protection Brainstorming Workshop" as part of the SHSP activities to engage stakeholders and generate new strategies for potential use in Louisiana.

The LTAP staff is active in national LTAP activities and is a leader in championing the local road safety efforts at a national level. Walsh is the co-chair of the NLTAPA safety work group and also serves in leadership or leadership capacities on AASHTO safety committees and TRB committees. She also serves as a panel member on the NCHRP Project 17-51, Development of a National Strategy on Highway Safety.

# Organizations & Committee Memberships

## 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
- 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
- AFP 30 Soil and Rock Properties, Friend of the Committee
- AFK 00 Bituminous Materials Section
- ANB10 Transportation Safety Management
- AHB65 Operational Effects of Geometrics
- AND20 Committee on User Information Systems
- AND20(2) Subcommittee on Advanced Traveler Information Systems
- AFD40 Full Scale Accelerated Pavement Testing
- AFF70 Culverts & Hydraulic Structures
- AFK20 Characteristics of Bituminous Materials
- NCHRP Panel-Safety Evaluations of the 13 Controlling Criteria for Design
- NCHRP 17-51 Development of a National Strategy on Highway Safety
- AFK10 General Issues in Asphalt Technology
- AHD18 Pavement Preservation
- Division A Technical Advisory Committee
- State Representative Advisory Committee
- NCHRP 20-68A Domestic Scan Program
- NCHRP 20-83(5) Climate Change and the Highway System: Impacts and Adaptation Approaches
- NCHRP 20-89 Intellectual Property Management Guide for State Departments of Transportation
- NCHRP 20-91 NCHRP Participation in European Road Association (ERA) ERA-NET ROAD Research Program
- SHRP2 Panel R-21 Composite Pavement Systems

## 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
- Eastern Transportation Knowledge Network
- National Transportation Training Directors Organization
- Society for Human Resource Management

## Miscellaneous

- American Association of State Highway and Transportation Officials (AASHTO) Research Advisory Committee
- AASHTO Standing Committee on Research
- FHWA Sustainable Pavements Technical Working Group
- 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
- Association of Asphalt Paving Technologists (AAPT)
- Asphalt Pavement Analyzer Users Group
- Southeastern Asphalt User Producer Group
- Chi Epsilon, Civil Engineering Department Level Honor Society
- Tau Beta Pi, College of Engineering Level Honor Society
- Phi Kappa Phi, University Level Honor Society

- Accreditation Board for Engineering and Technology, Engineering Program Evaluator
- Organizing Committee, 2011 Transportation Hazards and Security Conference
- Louisiana Traffic Records Coordinating Committee
- Association of Transportation Safety Information Professionals
- DOTD Asphaltic Concrete Specification Committee, DOTD Part V Specification Committee
- American Institute of Steel Construction, 2010 Chairman
- Sigma Xi, Scientific Research Society
- Society of Engineering Science
- American Institute of Steel Construction

## 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, Bituminous Materials
- 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)

- 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

### Office of the Director

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Theresa Rankin, Administrative Manager  
Tina Blanchard, Accountant

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Bridget LeBlanc, Executive Services Assistant

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Pavement & Geotechnical Research Administrator

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Mark Martinez, P.E., Pavement Research Engineer  
Mitchell Terrell, Pavement Technician 5  
Shawn Elisar, Pavement Technician 4  
Glen Gore, Pavement Research Specialist 2

### Pavement Research Facility - ALF

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George Crosby, C.P.C., Pavement Research Facility Manager  
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Brandon Janet, Pavement Research Specialist 1  
Leticia Courville, Ph.D., E.I., Research Associate 4  
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Paden Schilling, Geotechnical Technician 3

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Pallavi Bhandari, Computer Analyst III  
Xinbao Yu, Ph.D., Research Associate 3  
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### Materials Research

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### Asphalt Research

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Md. Sharear Kabir, E.I., Asphalt Research Engineer  
Gregory Tullier, Senior Asphalt Technician  
William Gueho, Asphalt Technician 5  
Patrick Frazier, Asphalt Technician 5

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Patrick Icenogle, E.I., Concrete Research Engineer  
Randy Young, Senior Concrete Technician  
Matt Tircuit, Concrete Technician 5  
Shane Laws, Engineering Technician 3

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Amar Raghavendra, P.E., Applications Engineering Manager  
Minkyum Kim, Ph.D., Research Associate

### Structures Research

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### Planning/Intermodal

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Technology Transfer & Training  
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Marty Mumphrey, Audio Visual Consultant  
Angela Benn, Administrative Program Specialist

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Candy Cardwell, Training & Development Program Manager,  
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Keith Beard, Engineering Technician DCL  
Kelvin Stone, Training and Development Specialist  
Rex Ransome, Training and Development Specialist  
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## External Educational Resources

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Melissa Lee, Training and Development Specialist  
Sandy Brady, Librarian  
Brenda Wolfe, TTEC Administrative Assistant

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Bob Breaux, LTAP Office Manager  
David McFarland, LTAP Teaching Associate  
Jason Taylor, LTAP Safety Manager

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