L T R C
ANNUAL REPORT

LOUISIANA TRANSPORTATION RESEARCH CENTER

PERIOD : 2017/18

Shawn D. Wilson, Ph.D.
Secretary

F. King Alexander, Ph.D.
LSU President

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 broader 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, environmental studies, safety, ITS, and technology transfer.

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- 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.

The LTRC Foundation, a non-profit organization, enhances the center as the focus for transportation-related research, technology transfer, and education in Louisiana. 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, 2017–June 30, 2018. The center is sponsored jointly by the Louisiana Department of Transportation and Development and Louisiana State University.

LTRC MAIN BUILDING &
LAB FACILITIES

TRANSPORTATION TRAINING &
EDUCATION CENTER

PAVEMENT RESEARCH
FACILITY

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 the center's mission.

LTRC houses more than 90 employees and up to 30 students in two adjacent facilities. The LTRC Administration 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, executive conference room, and offices are also included.

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 has identified research areas of strategic importance and has developed expanded capabilities for concentration in several areas: the Engineering Materials Characterization 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™) for testing flexible pavements and our ATLaS30 for testing rigid pavements.

LTRC is a budget division of the Louisiana Department of Transportation and Development. Funding is a combination of State Planning and Research (Part II, Federal), Innovative Bridge Research and Deployment (Federal), Surface Transportation Program (STP-Federal), and external contracts and grants, such as the National Cooperative Highway Research Program, Federal Agency Grants, and the National Science Foundation.

DIRECTOR'S MESSAGE

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

LTRC is committed to the support of higher education and solving Louisiana's transportation problems. Within this annual report, it is shown that LTRC has 58 active research projects and completed an additional 14 research projects. Louisiana is the lead state in the Southeast Transportation Consortium and the "Design and Analysis Procedures for Asphalt Mixtures Containing High-RAP Contents and/or RAS" pooled-fund studies. These pooled-fund studies are a collaborative effort between the Federal Highway Administration (FHWA) and state departments of transportation.

LTRC is also committed to the support of our local transportation and public works agencies. LTRC's Local Technical Assistance Program (LTAP) is one of 51 centers networked throughout the United States. LTAP stimulates the progressive transfer of highway technology through training, work force development and technical assistance. A cooperative effort of DOTD, FHWA, and LSU, LTAP leverages the expertise and resources of these organizations for the benefit of local transportation and public works agencies. LTRC's LTAP is very active not only within Louisiana but nationally such as FHWA's Every Day Counts (EDC) initiative and the Local Roads Safety Program (LRSP), which involves state and national safety efforts. LTAP led a working group to define key elements related to local transportation damage and recovery related to disaster incidents. This group developed a training module that will introduce local agencies to the federal Emergency Response programs. This training will improve the level of communication and access of technical assistance to local agencies related to disaster situations.

Additional highlights of the 2017-2018 LTRC annual report are as follows:

- LTRC received an AASHTO High Value Research Award for its research project entitled, "Roller Compacted Concrete over Soil Cement under Accelerated Loading."
- Louisiana hosted the 2018 Louisiana Transportation Conference (LTC), which attracted a record number of 1,877 people from across the nation. The theme of the conference was "Transportation Infrastructure: Driving the Economy." The feature speaker for the 2018 LTC was Tennessee Department of Transportation Commissioner and AASHTO President John C. Schroer. Key speakers at the general session included Shawn Wilson, Ph.D., DOTD Secretary, and Jay Dardenne, Louisiana Commissioner of Administration.
- In the area of Technology Transfer, LTRC published 9 final reports and technical summaries, 10 project capsules, 1 technical assistance reports, and 4 Technology Today newsletters. In addition, LTRC filmed and produced 12 DOTD informational videos and 6 Transportation Talk videos featuring the DOTD Secretary, and edited several other LTRC videos.

Please feel free to follow LTRC's latest news via our website, www.ltrc.lsu.edu, and through social media.

Respectfully submitted,

Samuel B. Cooper, Jr., Ph.D., P.E., Director

RESEARCH: The LTRC research program emphasizes applied research and technology transfer to further knowledge in the field of transportation and to solve transportation problems encountered by LADOTD and the general transportation community. Input for research programs is solicited from state and local government, universities, and private industry.

COMPLETED RESEARCH

BITUMINOUS

14-2B: Field Implementation of the Louisiana Interface Shear Strength Test
Principal Investigator: Louay Mohammad, LTRC

16-5B: DOTD Support for UTC Project: Ductility of Extreme-Temperature Asphalt Binders by Shear and Extensional Rheology
Principal Investigator: Nazimuddin Wasiuddin, Louisiana Tech University

17-3B: DOTD Support for UTC Project: Development of a Revised RTFO Protocol for Foam-Based Warm Mix Asphalt
Principal Investigator: Nazimuddin Wasiuddin, Louisiana Tech University

CONCRETE

14-1C: Evaluation of Dowel Bar Alignment and Effect on Long Term Performance of Jointed Concrete Pavements
Principal Investigator: Tyson Rupnow, LTRC

SPECIAL STUDIES

12-2SS: History of Road Design Standards in Louisiana DOTD
Principal Investigator: Sherif Ishak, Louisiana State University

STRUCTURES

09-2ST: Performance and Analysis of Concrete Bridge Railing Using Conventional and Composite Reinforcement Materials
Principal Investigator: Walid Alaywan, LTRC

16-3ST: Live Load Rating of Cast-in-Place Concrete Box Culverts in Louisiana
Principal Investigator: Ayman Okeil, Louisiana State University

During fiscal year 2017-18, 122 students (undergraduate and graduate) were supported by LTRC research projects. LTRC staff and contract researchers published nearly 50 journal articles and completed 120-plus presentations at national and international conferences.

PAVEMENT

12-3P: Minimizing Shrinkage Cracking in Cement-Stabilized Bases Through Micro-Cracking
Principal Investigator: Zhong Wu, LTRC

SAFETY

15-1SA: Exploring Naturalistic Driving Data for Distracted Driving Measures
Principal Investigator: Sherif Ishak, Louisiana State University

15-2SA: Development of a Simulation Test Bed for Connected Vehicles using the LSU Driving Simulator
Principal Investigator: Osama Osman, Louisiana State University

15-3SA: Investigating Safety Impacts of Centerline Rumble Strip, Lane Conversion, Roundabout and J-turn Features on Louisiana Highways
Principal Investigator: Xiaoduan Sun, University of Louisiana at Lafayette

16-3SA: Evaluating Cell Phone Data for AADT Estimation
Principal Investigator: Julius Codjoe, LTRC

16-4SA: Pedestrians and Bicyclists Count: Developing a Statewide Multimodal Count Program
Principal Investigator: Tara Tolford, University of New Orleans

17-2SA: Support Study for Pedestrians and Bicyclists Count: Developing a Statewide Multimodal Count Program
Principal Investigator: Julius Codjoe, LTRC

ACTIVE RESEARCH

BITUMINOUS (ASPHALT)

15-1B	Evaluation of Crumb Rubber Modification of Louisiana Mixtures	Saman Salari	LTRC
15-2B	Support Study for Evaluation of Crumb Rubber Modification of Louisiana Mixtures	William H. Daly	LSU
17-1B	Field Implementation of Handheld FTIR Spectrometer for Polymer Content Determination and for Quality Control of RAP Mixtures	Nazimuddin Wasiuddin	LTU
17-2B	Evaluation of Non-Destructive Density Determination for QA/QC Acceptance Testing	David Mata	LTRC
17-4B	Development of a 4.75-mm Asphalt Mixture Design	Saman Salari	LTRC
18-5B	Evaluation of Asphalt Rubber and Reclaimed Tire Rubber in Chip Seal Applications	Mostafa Elseifi	LSU

CONCRETE

14-4C	Evaluation of Bonded Concrete Overlays over Asphalt under Accelerated Loading	Zhong Wu	LTRC
14-5C	DOTD Support for UTC Project: Development of Rapid PCC Pavement Repair Materials and Construction Techniques	Hak-Shul Shin	Southern University
17-1C	Effect of Clay Content on Alkali-Carbonate Reactive (ACR) Dolomitic Limestone	Jose Milla	LTRC
18-6C	Influence of Internal Curing on Measured Resistivity	Jose Milla	LTRC

GEOTECHNICAL

11-3GT	Accelerated Load Testing of Geosynthetic Base Reinforced Pavement Test Sections	Murad Abu-Farsakh	LTRC
13-3GT	Finite Element Analysis of the Lateral Load Test on Battered Pile Group at I-10 Twin Span Bridge	Murad Abu-Farsakh	LTRC
13-5GT	Monitoring of In-Service Geosynthetic Reinforced Soil (GRS) Bridge Abutments in Louisiana	Murad Abu-Farsakh	LTRC
13-9GT	CORS 911: Continuously Operating Reference Stations for the Bayou Corne Sinkhole	J. Anthony Cavell	LSU

GEOTECHNICAL (CONTINUED)

15-1GT	pLog Enterprise - Enterprise GIS-Based Geotechnical Data Management System Enhancements	Scott Deaton	Datafo-rensics, LLC
16-1GT	LADOTD Geotechnical Design Manual	Ed Tavera	GeoStellar Engineering, LLC
16-6GT	Incorporating the Site Variability and Laboratory/In-situ Testing Variability of Soil Properties in Geotechnical Engineering Design	Murad Abu-Farsakh	LTRC
17-2GT	Update the Pile Design by CPT Software to Incorporate Newly Developed Pile-CPT Methods and Other Design Features	Murad Abu-Farsakh	LTRC
18-1GT	Analysis of Driven Pile Capacity within Pre-bored Soil	Shengli Chen	LSU
18-4GT	Geotechnical Asset Management for Louisiana	Gavin Gautreau	LTRC

PAVEMENT

12-1P	Assessment of Pavement Distresses caused by Trees on Rural Highway	Kevin Gaspard	LTRC
12-2P	Assessment of Environmental, Seasonal, and Regional Variations in Pavement Base and Subgrade Properties	Kevin Gaspard	LTRC
12-11P	Field Validation of Equivalent Modulus for Stabilized Subgrade Layer	Mark Martinez	LTRC
14-2P	Assessment of Structural Capacity Indicators from Rolling Wheel Deflectometer Data Collection in Louisiana	Mostafa Elseifi	LSU
16-2P	Transportation Infrastructure Asset Damage Cost Recovery Correlated with Shale Gas/Oil Recovery Operations in Louisiana	Zhong Wu	LTRC
16-5P	Pavement Service Life Extension Due to Asphalt Surface Treatment Interlayer	Mohammad Khattak	ULL
16-6P	Quality Management of Cracking Distress Survey in Flexible Pavements Using LTRC Digital Highway Data Vehicle	Zhong Wu	LTRC
17-1P	Improving the Use of Crack Sealing to Asphalt Pavement in Louisiana	Mostafa Elseifi	LSU
17-3P	A Decision-Making Tool for Incorporating Sustainability Measures into Pavement Design	Marwa Hassan	LSU
18-1P	Exploration of Drone and Remote Sensing Technologies in Highway Embankment Monitoring and Management	Zhongjie Zhang	LTRC
18-2P	Mitigating Joint Reflective Cracks using Stone Interlayers: Case Study on Louisiana Highway 5, Desoto Parish	Kevin Gaspard	LTRC

PAVEMENT (CONTINUED)

18-3P	Best Practices for Assessing Roadway Damages Caused by Flooding	Minjiang Tao	WPI
18-4P	Cost-Effective Detection and Repair of Moisture Damage in Pavements	Mostafa Elseifi	LSU
19-1P	Application of Mechanistic-Empirical Pavement Design Approach into RCC Pavement Thickness Design	Zhong Wu	LTRC

POOLED FUND

14-5PF	Design and Analysis Procedures for Asphalt Mixtures Containing High-RAP Contents and/or RAS	Louay Mohammad	LTRC
16-1PF	Development of a Guidebook for Determining the Value of Research Results	Yoojung Yoon	West Virginia University

SAFETY

16-1SA	Highway Construction Work Zone Safety Performance and Improvement in Louisiana	Helmut Schneider	LSU
16-5SA	Highway Work Zone Construction Safety Research and Training: A Driving Simulator Study	Yimin Zhu	LSU
17-1SA	Evaluating the Effectiveness of Regulatory and Warning Signs on Driver Behavior near Highway/Rail crossings	Julius Codjoe	LTRC
18-1SA	Economic Effect of Restricted Crossing U-Turn Intersections in Louisiana	Helmut Schneider	LSU

SPECIAL STUDIES

10-6SS	Establishing an Intelligent Transportation Systems (ITS) Lab at LTRC (Phase II)	Julius Codjoe	LSU
14-3SS	Development of a Mode Choice Model to Estimate Evacuation Transit Demand	Chester Wilmot	LTRC
15-2SS	Cost and Time Benefits for using Subsurface Utility Engineering in Louisiana	Kirk Zeringue	LTRC

SPECIAL STUDIES (CONTINUED)

16-5SS	Diverted Traffic Measurement	Ravindra Gudishala	LTRC
17-1SS	Economic Evaluation of Applicants to the Port Construction and Development Priority Program	James Richardson	LSU
17-3SS	Hurricane Evacuation Modeling Package	Chester Wilmot	LSU
17-4SS	Dredging Louisiana's Navigable Waterways - A Statewide Systematic Approach to Meeting Dredging Needs	Mohan Menon	GIS Engineering, LLC
17-5SS	Development of Guidelines for Ramp Metering Implementation and Performance Evaluation on I-12	Osama Osman	LSU
17-6SS	Evaluation of HeadLight: An E-Construction Inspection Technology	Tyson Rupnow & Mary Leah Coco	LTRC
18-3SS	Evaluation of DOTD's Existing Queue Estimation Procedures	Julius Codjoe	LTRC
18-4SS	Trip Generation Modification Factors for Louisiana	Chester Wilmot	LTRC

STRUCTURES

14-1ST	Evaluating Louisiana New Continuity Detail for Girder Bridges	Ayman Okeil	LSU
15-3ST	Rehabilitation of Deteriorated Timber Piles using Fiber Reinforced Polymer (FRP) Composites	Hota GangaRao	West Virginia University
16-1ST	Retrofit of Existing Statewide Louisiana Safety Walk Bridge Barrier Railing Systems	William Williams	Texas A&M (TTI)
16-2ST	Field Monitoring and Measurements Education: A Model for Civil and Environmental Engineering	Vijaya Gopu	LTRC
16-4ST	Overheight Impact Avoidance and Incident Detection System	George Voyiadjis	LSU
18-4ST	Load Rating of Existing Continuous Stringers on Louisiana's Bridges	C. Shawn Sun	Louisiana Tech University
18-5ST	Investigating Available State-of-the-Art Technology for Determining Needed Information for Bridge Rating Strategies	Afshin Karshenas	FDH Infrastructure Services, LLC

RESEARCH HIGHLIGHTS

LTRC RECEIVES HIGH VALUE RESEARCH AWARD

LTRC was awarded a 2017 AASHTO High Value Research "Sweet Sixteen" Award for the research project entitled "Roller Compacted Concrete over Soil Cement under Accelerated Loading." Each year, the Research Advisory Committee (RAC) collects High Value Research highlights from member states across the nation. These highlights showcase projects that are providing transportation excellence through research. From these submittals, each of the four RAC regions selects its top four projects to form the Sweet Sixteen Awards.

Principal investigators for the project included Zhong Wu, Ph.D., P.E., Tyson Rupnow, Ph.D., P.E., and Moinul I. Mahdi. Associate Director of Research, Dr. Rupnow, presented the project at the AASHTO RAC meeting held in Louisville, KY July 24-27, 2017, while Director, Sam Cooper, Jr., Ph.D., P.E., was presented a certificate for the achievement during a luncheon held during the course of the AASHTO RAC meeting.

THE ATLAS30 IS DESIGNED TO MODEL ONE HALF OF A SINGLE TRUCK AXLE.

The research project focused on determining just how thin roller compacted concrete (RCC) could be paved while also maintaining its strength and integrity. From this project, researchers tapped into a potential savings of over $2 million by utilizing this thinner concrete option for low-volume roads across the state.

"To illustrate a potential benefit of using a thin RCC pavement in lieu of an asphalt pavement alternative for these low-volume roadways in Louisiana, a construction cost analysis was performed on two pavement structure alternatives," explained Dr. Wu. "Through this analysis, we determined that by using a 5-in. RCC in lieu of a 7-in. hot mix asphalt (HMA) layer, the estimated cost benefits would be $113,087 per lane mile." Applying the estimated cost benefits to a typical two-lane, 10-mile-long roadway project, the use of a 5-in. RCC layer in lieu of a 7-in. HMA layer results in a total construction cost savings up to $2,261,740.

In order to arrive at this savings potential, researchers had to first create an appropriate RCC mixture proportion for constructing six test lanes (including density and strength characteristics) and then evaluate it in real-time under various loads by using the ATLaS30, located at LTRC's Pavement Research Facility (PRF) in Port Allen, La.

Through the PRF test, researchers sought to determine the structural performance with failure mechanism and the load-carrying capacity of thin RCC pavements that may be used as a design option for low-volume pavement design in Louisiana.

This heavy vehicle load simulation device, the ATLaS30, was used to load the constructed RCC test sections. Since each RCC section had endured a certain number

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LTRC COLLABORATES ON CRASH COUNTERMEASURE EFFORT

In response to a request from DOTD's Highway Safety Section, LTRC assisted in the creation of the Infrastructure and Operations Countermeasure Selection Sheet. This project was a collaborative effort between LTRC, DOTD, and the Rapides Planning Commission.

The highway safety section's goal for this resource was to have a one-page document that would aid engineers, planners, consultants, and citizens in identifying the most appropriate solutions depending on the type of road safety issues identified during the problem identification or project development process. This tool can help identify possible solutions once a crash type has been identified through some type of analysis, whether it is an RSA (Road Safety Assessment), crash data, road data and/or input from concerned citizens, law enforcement, safety advocates, etc.

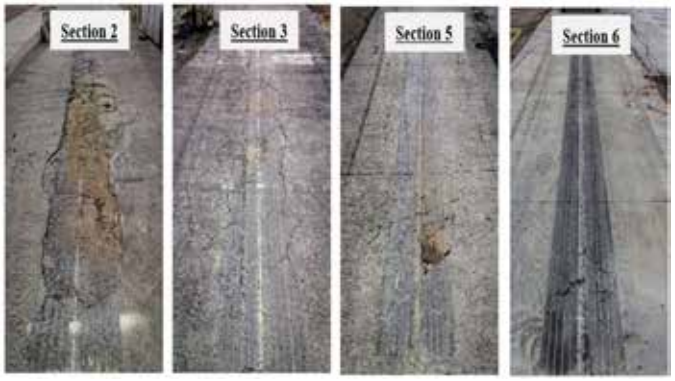
The content of this sheet was based on what's in *DOTD's Guidelines for Conducting a Crash Data Analysis Using Safety Performance Functions and Pattern Recognition Analysis* document developed in 2016. One section of this document provides a table of possible causes and countermeasures related to crash types. LTRC solicited input for the resource from a varity of concerned parties.

HIGH VALUE RESEARCH, cont. from page 10

of extremely high axle loads (i.e., an equivalent single axle load range of 18 kips ~ 55 kips) before a fatigue failure, such high RCC fatigue lives proved the feasibility and suitability of using a relatively thin RCC pavement on low-volume roadways where heavy/overloaded trucks are often encountered.

Each RCC test section was loaded under the ATLaS30 in an incremental loading sequence of 9, 16, 20, 22, 25, and 27.5 kips until reaching pavement failure. In the end, four RCC sections loaded to a cracking failure. The overall accelerated loading results showed that all thin RCC test sections had a high-load carrying capacity under a typical southern Louisiana pavement condition.

Overall, researchers found that by using a thin RCC in lieu of an HMA layer for a low-volume pavement where heavy or overloaded trucks frequently travel in Louisiana, not only can be cost-effective in construction, but it also potentially extends pavement service life with a lower maintenance cost.



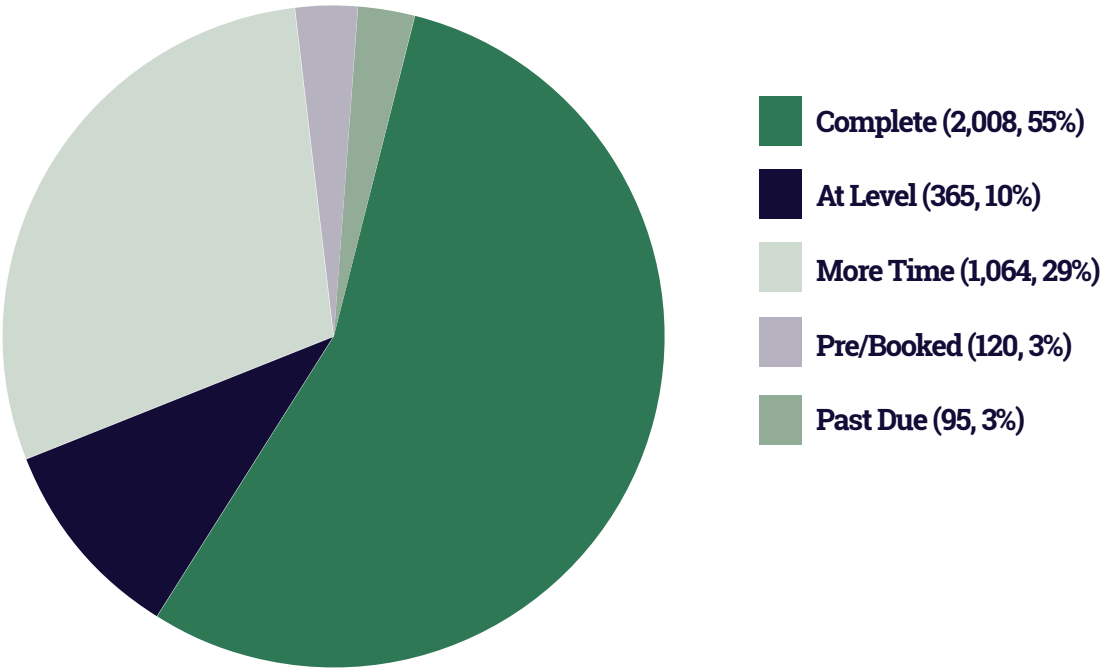
CRACKING FAILURE THAT OCCURRED DURING TESTING

Training is a critical component of career advancement, and 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 individuals working in the transportation industry. Each year, the External Training Program hosts programmatic initiatives for over 10,000 individuals (state, local, federal, and industry) and is a progressive partnering effort between the public and private sectors of the transportation industry.

WORKFORCE DEVELOPMENT

DOTD STRUCTURED TRAINING UNIT

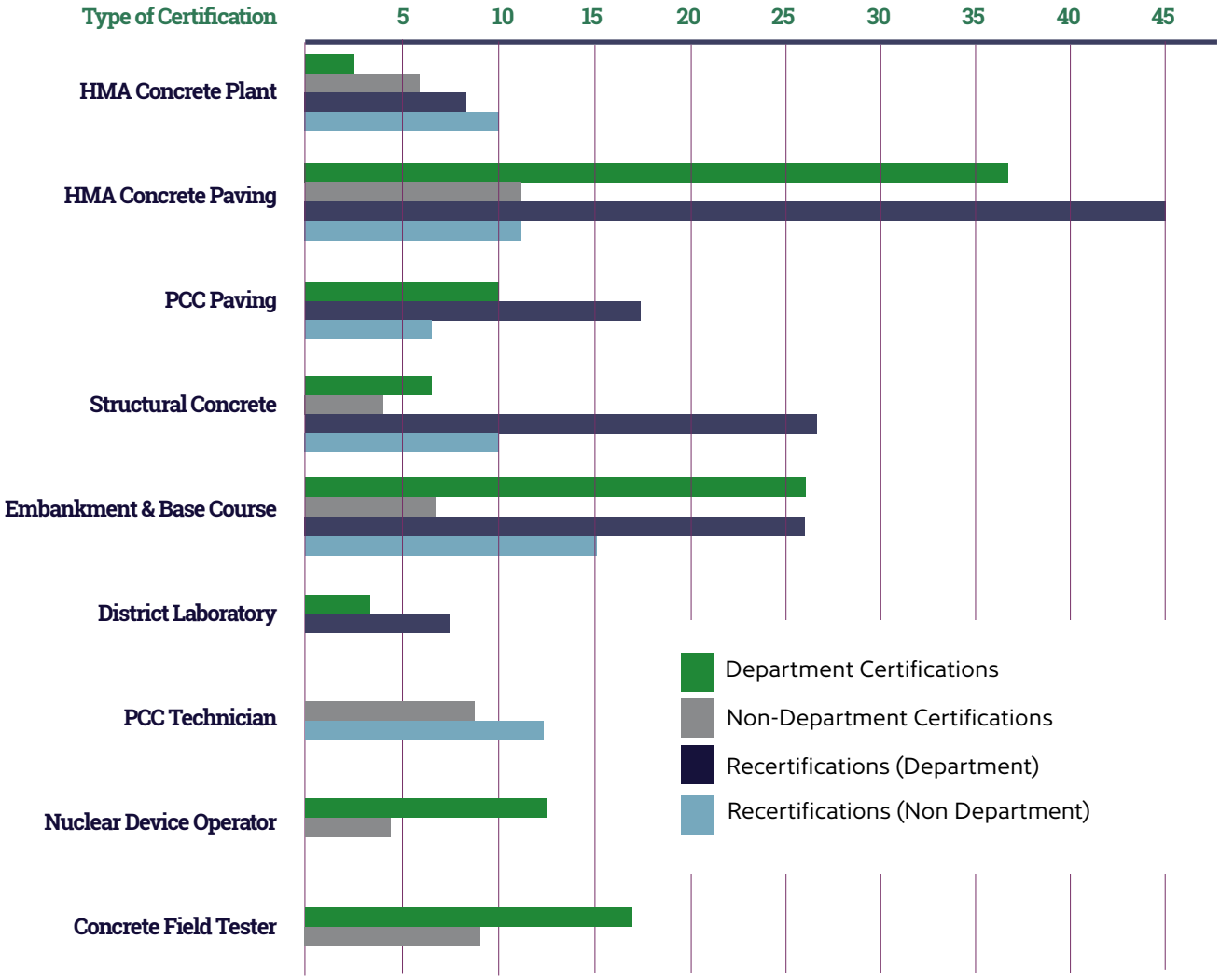
The DOTD Structured Training Program is a department-sanctioned, progressive training curriculum that requires specific work-related training be completed at each level of an employee's career path. DOTD supports and promotes an environment of continual learning and feels that training is a necessary component and an integral part of career advancement. Structured training can involve professional development, technical skills training, continuing education, hands-on and on-the-job training. The program manages the work force development for 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.



CONSTRUCTION AND MATERIALS TRAINING PROGRAM

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 on a statewide level in each area of construction.

- Awarded 163 new construction certifications
- Processed 194 re-certifications
- Processed 88 requests for new certifications



MAINTENANCE TRAINING PROGRAM

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. This training program also assists with the Equipment Operation Certification Program to standardize and improve equipment training for maintenance functions.

WORKFORCE DEVELOPMENT PROGRAM

This program functions to:

- Serve as liaison to LTRC Transportation Curriculum Council (TCC) as outlined in PPM 47.
- Act as a liaison between LTRC and the HQ sections to provide assistance with conformance to structured training requirements.

The LTRC Transportation Curriculum Council (TCC) held its first meeting on September 1, 2010. It has an active council consisting of 13 members from Louisiana State University, transportation partners and DOTD management. There are six subcommittees from: Engineering, Operations, Multimodal, Management and Finance, Core Skills, and Leadership and Outreach. 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. New training and process and procedures are approved by the TCC before implementation The Workforce Development program has the responsibility of helping schedule and facilitate subcommittee meetings, distribute the meeting minutes to the appropriate people, and provide any support services needed by the subcommittee. It also has the responsibility of scheduling and planning each TCC Committee meeting. The TCC held four meetings this fiscal year.

This program also assists section heads and designated section training liaisons 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 140 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 28 employees were reviewed and exceptions granted this year.
- Testing – Testing sessions are held three times per month for self-study courses. Employees were given 242 tests for different courses this year.
- Training – This year classes were conducted to train employees in various topics which include: Basic Flagging and Traffic Control through Maintenance Work Areas.

MANAGEMENT DEVELOPMENT TRAINING PROGRAM

This program oversees several mandatory supervisory, management development, and career development training programs: Management Development 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; and the Civil Service Supervisory training program for supervisors.

During fiscal year 2017-2018, courses for these training programs were delivered through several sources: The Civil Service Comprehensive Public Training Program (CPTP); the DOTD Human Resources Section; and in-house training courses developed by LTRC.

There were 999 employees subscribed to the Management Development Program and there were 474 employees subscribed to the Management Development Technician Program. A total of 236 completed their course programs in FY 2017-2018.

DOTD supervisory employees are also required to participate in the CPTP supervisory programs and take continuing education classes each year after the supervisory programs are completed.
Number of people in CPTP supervisory group programs FY 2017-2018:

- Civil Service Group 1: 589
- Civil Service Group 2: 244
- Civil Service Group 3: 62

Number who completed their Supervisory Group programs FY 2017-18:

- PES: 77
- Core: 84
- Group 1: 92
- Group 2: 22
- Group 3: 5

Number who already completed Supervisory Groups and completed CPTP Continuing Education requirements:

- Completed continuing education in FY 17-18: 474

PRESENTATIONS/CLASSES

- *Basic Flagging Procedures* (3)
- *Traffic Control Through Maintenance Work Areas* (1)
- *Project Management* (4)
- *Highway Plan Reading Volume I* (2)
- *Highway Plan Reading Volume II* (2)
- *Superpave Mix Design and Analysis* (1)
- *Structural Concrete Inspection* (2)
- *Embankment and Base Course Inspection* (1)
- *Facilitation Skills* (3)
- *Phantom of the Conversation* (3)
- *Site Manager for LPA* (2)

COMPLETED PROJECTS

Construction

- Updated all Construction Certification Specialty Area and Recertification tests and loaded them into Test.com
- Created *Qualified Aggregate Tester* Authorization program
- Updated *PCC Paving Inspection* manual and supporting materials
- Created *Asphalt Plant Inspection* Level 1
- Revised Qualified Profiler Operator

Maintenance

- Replaced 16 outdated International Road Federation videos
- Created *Equipment Operator Certification Performance Evaluation for JLG T350 Boom Lift*
- Updated *Basic Flagging Procedures*
- Updated *Bearings: Preference and Preservation*
- Updated *Practical Electricity Volume II*
- Updated *Dangerous Insects and Venomous Snakes/Poisonous Plants Course*
- Revised *Maintenance Manual*

Other Projects

- Created *How DOTD Works* Presentation
- Converted *Grammar 1 and Grammar 2* training manuals to web-based format
- Produced three issues of *The Mile Marker* training newsletter
- Created *Complete Streets WBT* and manual
- Created *Complete Streets* instructor-led class
- Performed voiceover for *Interview Panel Member WBT*
- Created *Phantom of the Conversation ILT*
- Updated *EEO Biennial Meeting WBT 2017-2019*

CURRENT PROJECTS

Construction

- Revising *Structural Concrete Inspection Volumes I and II* manuals
- Revising all construction training manuals to the 2016 Standard Specifications
- Revising *PCC Plant Inspection* manual and supporting materials
- Revising *PCC Mix Design* manual and supporting materials
- Revising numerous lab procedure instructional training videos
- Revising *Pre-Stressed Concrete Inspection* course
- Creating *Structural Steel Welding Inspection* course
- Creating *Radiation Safety WBT*
- Managing the Inspector/Technician Certification Program for DOTD and the Louisiana transportation industry

Maintenance

- Managing the Equipment Operator Certification Program
- Updating *Traffic Control Through Maintenance Work Areas*
- Revising *Practical Electricity Series 3 – 4*
- Revising *Maintenance Traffic Control Handbook*

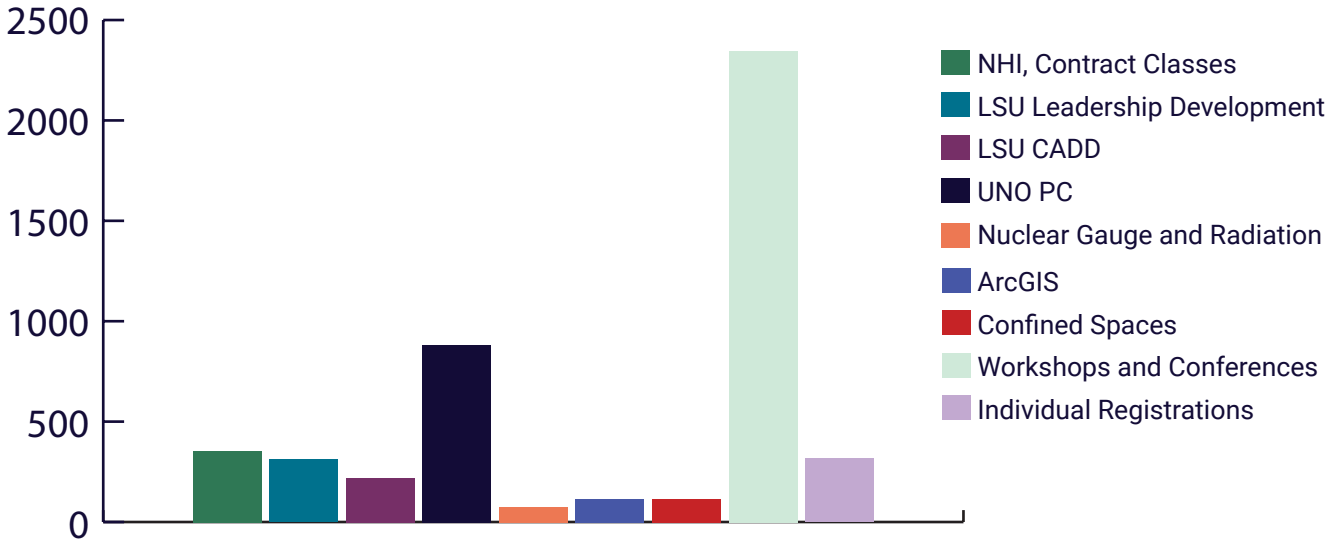
Other Projects

- Producing Training Section Newsletter
- Converting *Grammar 3* to web-based format
- Creating *Road Design Manual* training course
- Creating *Site Manager for LPA* training
- Revising *Selecting the Best ILT*
- Creating *Presentation Guidelines* course
- Voice over narration is ongoing for *DOTD Audit Expectations*
- Managing LTRC's Test.com E-Testing System
- LEO and DTRN support and training

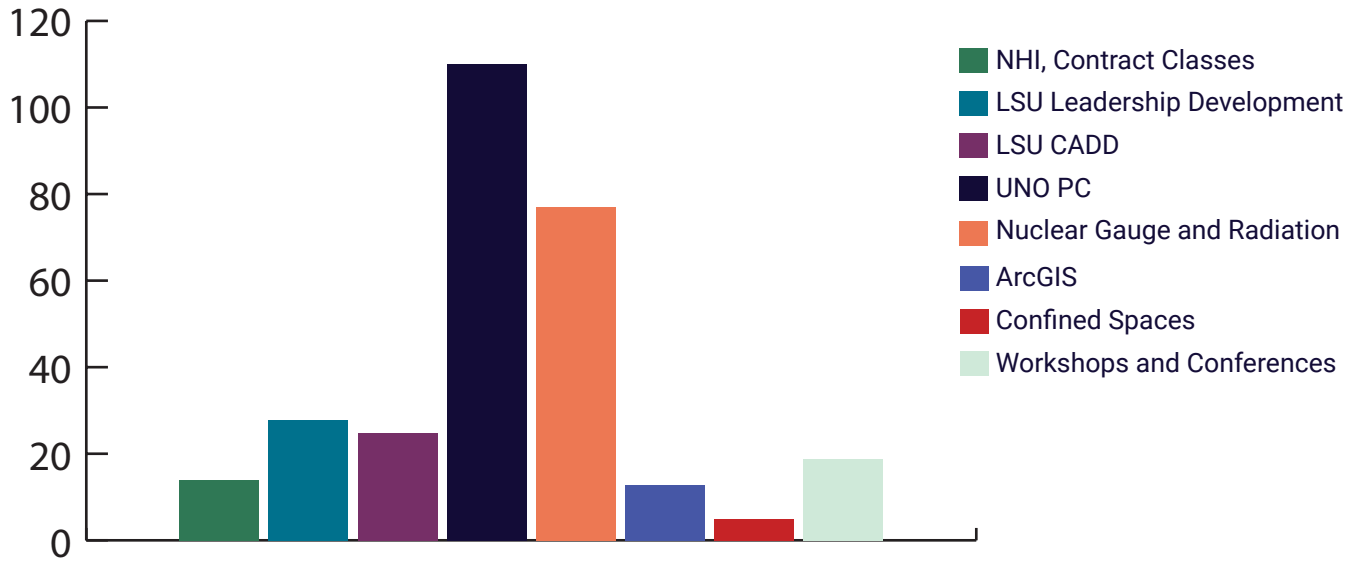
EXTERNAL TRAINING PROGRAM ACTIVITIES OVERVIEW

In Fiscal Year 2017 – 2018, the DOTD External Programs impacted over 4,700 individuals (departmental, state, local, and transportation community partners) through over 300 programmatic initiatives.

Number of Participants



Number of Courses



The following are brief overviews of External Training Program activities managed at LTRC:

National Highway Institute

The National Highway Institute Program covers the 15 programmatic areas that are offered statewide to DOTD employees, municipal employees, private engineering firms, and other transportation partners. These areas include, but are not limited to, the following:

- Business, Public Administration and Quality
- Construction and Maintenance
- Design and Traffic Operations
- Environment
- Freight and Transportation Logistics
- Geotechnical
- Highway Safety
- Hydraulics
- Intelligent Transportation Systems (ITS)
- Mathematical Sciences
- Pavement and Materials
- Public Affairs
- Real Estate
- Statewide Planning
- Structures

This program has various courses that are required in departmental structured training programs. A sample listing of these required courses are as follows, but not limited to: *Bridget Inspection Refresher*, *Fracture Critical Inspection of Steel Bridges*, *Managing Highway Contract Claims*, *Safety Inspection of In-Service Bridges*, and *Writing Highway Construction Specifications*. These courses address Louisiana-specific material while also incorporating the necessary federal guidelines as well. *During fiscal year 2017-18, 355 participants attended 14 courses.*

CADD/MicroStation Structured Training

Through the DOTD CADD/MicroStation Structured Training Program, this has developed the Department's current process for obtaining surveying information that utilizes Microstation, Inroads, and Inroads Survey. This process of coding and capturing data continues to evolve as departmental and federal regulations change. Microstation and Inroads are the software backbones for the department's plan development.

It is imperative that the Department identifies where trends are going and how newer software reacts to the current data collection processes. The Department is required to train and test new versions of the software to not only give guidance to DOTD staff but the consultants who work for the Department as well. DOTD is one of the few state departments that utilize this product series, and the only industry around that uses these products are the companies that work for DOTD. *During fiscal year 2017-18, 225 participants attended 25 courses.*

Work Zone Safety

Through the DOTD Work Zone Safety Program, the following Louisiana specific courses are required for departmental employees and any other non-departmental entity that will work on a departmental project: *Louisiana Traffic Control Technician, Louisiana Traffic Control Supervisor, Louisiana Traffic Control Design Specialist, Louisiana Guardrail Installation Training,* and *Louisiana Nighttime Traffic Control*.

Work Zone Safety classes are required for contractors, consultants, and DOTD personnel. This is to inform workers about safety procedures and improve worker knowledge in order to avoid injury during their daily employment activities. Through these efforts, this also enables highway workers to provide for the safety of motorists, workers, and pedestrians. In contract documents for the contractors and consultants, the verbiage specifically states they must have Louisiana-specific training as it relates to the MUTCD, and the DOTD Work Zone Safety Program provides this specific training through a contract with ATSSA, the only organization that offers this Louisiana-specific training. The contract for services contains language on the Louisiana Standard Specifications, the Special Provisions, the Supplemental Specifications, and the Louisiana Specific Traffic Control Details. Also within the contract, there are specific requirements and consequences for the contractor not having Louisiana specific training.

District Sign Specialists' Certification

The DOTD District Sign Specialists' Certification Program plays a critical role in Traffic Operations. Not only must these employees perform manual labor and operate equipment, they must know, understand, and apply critical traffic engineering principles and details of sign installation as outlined in the *Manual on Uniform Traffic Control Devices*. In addition, district sign specialists are required to testify in court, and this ATSSA certification covers trial and deposition testimony.

Nuclear Gauge and Radiation

The DOTD Nuclear Gauge and Radiation Program is a vital program that assists departmental employees' who are authorized to use a nuclear gauge for density testing on Louisiana's highway construction projects. It is one of the most important quality assurance tools an inspector has to ensure that the foundation of the road will perform as designed. The use of any device containing nuclear material requires compliance with the federal Nuclear Regulatory Commission regulations and safety precautions, enforced by the Louisiana Department of Environmental Quality and DOTD. To ensure that overexposure to radiation does not occur, DOTD monitors over 450 nuclear gauge operators with a dosimeter badge. DOTD is also concerned with the public's exposure to radiation from Department-owned nuclear gauges. To ensure the public is not exposed to more than 100 mrem/year, a biannual survey of the storage area(s) is completed by the district radiation safety officer and submitted to the DOTD materials lab radiation safety officer. *During fiscal year 2017-18, 77 students participated in this program.*

ArcGIS

The DOTD ArcGIS Program is guided by Map 21 and is federal-regulations based. These regulations and Map 21 are moving state transportation agencies into a GIS-based environment for asset management, performance management, inventory, and operations. Transportation-related GIS technologies rely on a linear referencing method to associate legacy data systems with GIS technologies. DOTD has GIS uses in almost all of its engineering and business sections. *During fiscal year 2017-18, 119 students participated in 13 classes.*

PC/Microsoft Structured Training

The DOTD PC/Microsoft Structured Training Program is strategically mapped to various employee category structured training programs. These courses are required for departmental engineers, engineering technicians, administrative staff, and support personnel. The course requirements vary by employee category. *During fiscal year 2017-18, 883 students participated in 110 classes.*

Co-Op

The DOTD Co-op Program is a cooperative endeavor between DOTD and seven Louisiana universities with engineering departments. The Co-op program provides practical experience to civil, mechanical, environmental, electrical, industrial, and chemical engineering students through employment in public sector transportation engineering work. The DOTD Co-op program is intended to enhance the educational process by providing opportunities for participants to explore their interest in transportation engineering through practical experience. The program also provides opportunities for DOTD to evaluate participants as potential employees.

To participate in the program, the students must have

the endorsement of their university and be classified as a junior or senior. The students must give a 15 to 20 minute presentation at the end of each semester. The students are employed year round in positions related to their major engineering field of study. *During fiscal year 2017-18, 20 students participated in the Co-op Program.*

Engineering Rotational Development

DOTD also has an engineering training program for recent college graduates that is managed and facilitated at LTRC through the DOTD External Programs initiatives. This program is the Engineering Rotational Development Program (ERDP), which provides new engineers with an invaluable introduction to DOTD employment.

The ERDP is a 32-week rotation program designed to offer entry-level engineers an opportunity to experience several engineering functional areas within the Department and provide a comprehensive view of the Department and its objectives prior to placement.

After orientation at LTRC, new hires spend 1 to 3 weeks in 19 different sections. To be employed through the ERDP, the employee has to have successfully passed the Fundamentals of Engineering (FE) exam and holds an active FE certification. On occasion, an engineer intern applicant who is waiting for their FE certification to be issued will be employed through ERDP. Professional Engineers are not employed through this program. *During fiscal year 2017-18, 9 new hires participated in the ERDP, with 6 hired by differenct sections/districts.*

Other Programs

All specialized Title 48 and 39 programs are managed via contract with various vendors through the External Programs. A small listing of the contracts that are directed through the DOTD External Programs are included here:

Fiber Optic - The Light Brigade for Fiber Optic Training - This three-day course will provide attendees with the skills necessary to use the latest fiber optic technology and equipment effectively. The first two days will consist of the Technician Level 1 on the physical layer: fiber optics theory, fiber type, cables, splicing, terminations, fiber management products, installation, testing, troubleshooting, maintenance, and safety. Day 3 will consist of the Design Technician Level 2 on system design, loss budgets, optical multiplexing, bidirectional transmission, bandwidth considerations, integration for voice, video, and data systems, and analog-to digital applications.

PTV Vision Traffic Suite (PTV America, Inc.) - In this two-day Virsto Traffic Analysis course, attendees will learn how to conduct traffic studies, evaluate development impacts, and optimize signals all with a single package. The course uses interactive examples of intersections corridors, networks, and development scenarios.

Leadership Development

The Leadership Development Program (LDP) provides participants a process of continuous learning and the ability to apply the leadership methods discussed. In addition, the Leadership Development Program aims for everyone within the Department of Transportation and Development to adopt new behaviors and beliefs toward effective leadership and extend them to the highest levels of achievement.

The goal of this program is to introduce and promote competencies that will empower participants to recognize and improve their leadership skills. Emphasis will be on leadership competencies such as excellence in behavior, communication, relationships, innovation, and operational agility. These competencies are essential to

getting extraordinary things done in organizations. Leadership concepts and approaches are introduced throughout the courses. *During fiscal year 2017-18, 315 students participated in 28 courses.*

Other Course Offerings

A total of 542 students participated in the following courses:

- *AASHTOWare BrR Training*
- *Northwestern Advanced Geometric Design*
- *Northwestern Geometric Design*
- *Northwestern Traffic and Transportation Engineering Seminar 1*
- *Northwestern Traffic and Transportation Engineering Seminar 2*
- *PTV*
- *UI WZ Traffic Management Training*
- *TransModeler Traffic Simulation Software Training*
- *RIDES 2017*
- *UHPC Every Day Counts*
- *NHI 2D Hydraulics*
- *PE Review*
- *Campbell Scientific Soil Sensor*
- *Maintenance and Rehab of Historic Bridges*
- *AASHTO CTPP*
- *Florida's Flexible Filler*
- *Rides 2018*
- *Advanced HSM (ISHDM)*

PUBLICATIONS

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. Fiscal year 2017-18 accomplishments include:

- Publication chair for 2018 LTC
- Sponsorship coordinator for 2018 LTC
- Assisted in all 2017-2018 LTC committees
- Published 4 Tech Today Newsletters
- Published 2017 Annual Report
- Set up online registration for 24 NHI/other training, and 9 LTAP training classes
- Maintained LTAP website
- Maintained Safety Center web pages
- Maintained the LTRC website
- Maintained 2018 LTC website and mobile site
- Photographed all LTRC events
- Maintained the LTRC mobile app
- Filmed and produced 12 DOTD informational videos
- Filmed and produced 6 Transportation Talk videos featuring Secretary Wilson
- Edited 5 LTRC videos
- Published 10 Project Capsules
- Published 9 Final Reports and Technical Summaries
- Published 1 Tech Assistance Reports
- Modified and reworked article for *Roads and Bridges* magazine

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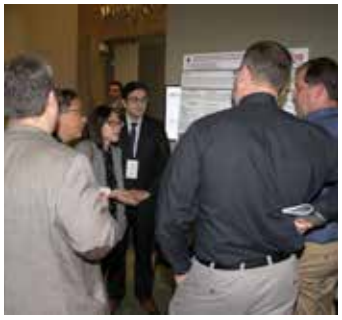
TECH TRANSFER SPOTLIGHT

2018 LTC Hits Record Attendance

Attracting the largest crowd yet, the 2018 Louisiana Transportation Conference (LTC) brought together 1,877 transportation professionals, industry partners, and academics from across the nation. This year's theme was *Transportation Infrastructure: Driving the Economy* and took place February 25-28, 2018, at the Raising Cane's River Center.

The conference's general session included key speeches by DOTD Secretary Shawn Wilson, Ph.D., LTRC Director Sam Cooper, Ph.D., and Commissioner of Administration Jay Dardenne. This year's featured speaker was Tennessee Department of Transportation Commissioner and AASHTO President John C. Schroer.



With over 80 sessions offered at this year's LTC, a wide-range of topics were featured from traffic engineering to water resources. One attendee said, "Nothing compares nationwide to DOTD transportation conference. It is always excellent exchanging of ideas with many sessions to choose from." Two sessions featuring presentations on the 2016 flood and roundabouts attracted the most interest during the three-day conference.

The most popular session was titled "2016 Flood Events" and presented by Chad Vosburg, DOTD Baton Rouge District Engineer Administrator. The session focused on the unexpected events from the Louisiana flood, the impacts on local roads and travel time, and how DOTD coordinated forces with limited resources. State Traffic Design Engineer Brian Walsh, P.E., led the next highly attended session entitled "Compact Roundabouts." He explained that roundabout design does not have to be a one-size fits all approach. Walsh expanded on right-sizing roundabouts and the use of Washington State DOT "compacts," which are smaller roundabouts designed as a fully mountable central island with raised splitter islands to define entry and provide additional deflection.

To close out this year's transportation conference, attendees gathered in River Center Ballroom for the transportation excellence awards ceremony. Special achievements and best projects were honored as well as students receiving scholarships and design awards. Most notably, the first DOTD Innovations Showcase award winners were recognized and received a budget transfer ranging from $2,500 to $10,000 to their respective district/gang from the HQ maintenance division.

LTAP

Louisiana's local transportation agencies face the challenges of aging and deteriorating roads and bridges, turnover in the workforce, disasters due to flooding and weather events, and constantly evolving technology. They must manage these challenges with often shrinking budgets and limited technical expertise. Working in partnership with DOTD, FHWA, and local stakeholder groups, the Local Technical Assistance Program (LTAP) works to promote innovative and cost saving technologies; facilitate workforce development, eliminate traffic related deaths on local roads, and engage local stakeholders in statewide transportation initiatives to improve the impact of transportation on quality of life in Louisiana.

LTAP's participation in the State Transportation Innovation Council has allowed LTAP to promote proven innovative technologies as part of the FHWA driven Every Day Counts (EDC) program and to encourage sharing innovations of particular interest to local agencies. LTAP participated in the state level EDC Implementation Team for four of these EDC technologies. Implementation opportunities were emphasized through peer exchanges, training, and workshops. These include Safe Transportation Every Pedestrian (STEP), Data Driven Safety Analysis(DDSA), Pavement Preservation, and Community Connections. LTAP facilitated local involvement in the STEP and Community Connection workshops held in Louisiana in Baton Rouge. Through the Local Road Safety Program (LRSP) administered by LTAP, targeted workshops on local safety data and local road safety planning were conducted statewide in conjunction with the Regional Safety Coalitions. LTAP staff also participated in three national local road data integration peer exchanges at the request of the FHWA's Office of Safety Headquarters. DOTD and LTAP led EDC Pavement Preservation team-sponsored workshops in Alexandria and Baton Rouge in conjunction with FHWA's Resource Center. In addition, two transportation asset management classes were conducted by LTAP as part of an effort to rollout a new blended learning program on asset management and pavement management to allow more agencies to take advantage of new on-line training and technical assistance that is being planned using STIC incentive funding.

LPA stakeholder partnering, which includes communication and outreach to local agencies, project delivery streamlining on federal aid projects, and continued training as an extension of earlier EDC programs. LTAP coordinated a series of stakeholder meetings that resulted in a program of potential process improvements to the LPA federal aid project delivery process and identified opportunities for continued dialog between DOTD and local agencies. LTAP also coordinated and helped deliver the LPA training program including multiple sessions of the LPA Core class: *Responsible Charge for Project Delivery* and *Construction Engineering and Inspection*.

LTAP has led a joint working group that included the Louisiana Municipal Association, Louisiana FHWA Division, the Governor's Office of Homeland Security and Emergency Preparedness, and FEMA Region 6 to define key issues related to local transportation damage assessment and recovery. This effort has resulted in a training module to introduce local agencies to the federal Emergency Response programs that will be presented by the joint training team in the fall of 2018 across the state. This is a first ever effort of its kind in Louisiana and has identified many opportunities to improve the level of communication and access of technical assistance to local agencies related to disaster situations. A full schedule of training classes and workshops include the following: 10 sessions of work zone safety and temporary traffic control, eight traffic signing and

MUTCD classes, 13 tractor mower safety, two drainage for improved transportation, nine crash data and local road safety planning, two engineering ethics, the LPA Core Training Program classes, and the asset management classes.

LTAP also served as the meeting coordinator and program committee facilitator for the Louisiana Parish Engineers and Supervisors spring and fall conference, which attracts over 100 people for each event, and served on the LPESA Board of Directors. Courtney Dupre, LTAP Program Coordinator, served on the board of the state and branch chapters of the American Public Works Association; Steve Strength, LTAP Program Manager, is a member of ITE and the Deep South ITE; and LTAP Director Marie Walsh is the vice chair of the TRB Transportation Safety Management Committee, the NLTAPA liaison to the AASHTO Committee on Safety, and a member of the safety committees of NLTAPA, NACE, and APWA as well as a member of WTS and the National Association of Country Engineers (NACE) and APWA.

The annual National LTAP Association (NLTAPA) conference was held in late July 2018 at the Hotel Monteleone and the LA LTAP and LTRC hosted the meeting and provided conference planning and on-site support. Strength serves as an Executive Committee member to the NLTAPA and as the chair of the NLTAPA Training Resources Workgroup.

LTAP is active in state and national safety efforts as well as at the local level through the LRSP. Dr. Walsh and Strength are both on the SHSP Implementation Team. Strength also serves as the co-chair of the Statewide Infrastructure and Operations team with a DOTD representative. Through the LRSP, LTAP assists in the implementation of the Louisiana Strategic Highway Safety Plan (SHSP) at the parish and municipal level through the training activities described above and technical assistance. LTAP manages the data analysis and project application submittal processes for the locals to access funding for safety improvement though the DOTD-administered Highway Safety Improvement Program. Each year approximately $3-5 million is allocated for local road projects. The LRSP provides technical assistance through on-site meetings and outreach to the nine regional safety coalitions and their coordinators. The LRSP has provided data analysis and other assistance to the coalitions and local agencies to promote development of local road safety plans and to identify safety improvement opportunities. Eight parishes currently have plans and at least three others are under development with assistance from the LRSP team. The goal is to have a local road safety plan in the top 20 parishes with the highest number of local road traffic deaths. In addition, nearly 20 applications for safety improvement funding were received and processed for entry into the DOTD construction process. The LRSP Program Manager and other LTAP staff have attended and spoken at multiple Regional Safety Coalition meetings to promote the program and preparation of local road safety plans. In addition, the team has made presentations at regional and national meetings of several technical associations. LTAP and the LRSP continue to work with partners and stakeholders to provide consistent workforce development opportunities, outreach, and technical assistance to Louisiana's local transportation community. Leveraging these relationships, LTAP leads the way in bringing innovative technologies and best practices to local agencies and in responding to new regulatory and administrative challenges that impact DOTD and the local transportation community.

PROFESSIONAL MEMBERSHIPS

Transportation Research Board (TRB) Affiliations

- ABG10, Conduct of Research
- ABG20, Transportation Education and Training
- ABG30, Technology Transfer
- ABG40, Library and Information Science for Transportation
- ABJ40, Travel Survey Methods
- ABR30, Emergency Evacuation
- ADB10-4, Behavioral Processes: Qualitative and Quantitative Methods
- AFD20, Pavement Condition Evaluation
- AFD40, Full-Scale Accelerated Pavement Testing
- AFD50, Design and Rehabilitation of Concrete Pavements
- AFD60, Flexible Pavement Design Committee
- AFD80, Pavement Structure Modeling and Evaluation
- AFD90, TRB Pavement Surface Properties and Vehicle Interaction
- AFF30, Concrete Bridges
- AFF80, Structural Fiber Reinforced Plastics
- AFH40, Construction of Bridges and Structures
- AFH50, Concrete Pavement Construction and Rehabilitation
- AFH60, Asphalt Pavement Construction and Rehabilitation
- AFK00, Asphalt Materials Section
- AFK10, Critical Issues and Emerging Technologies in Asphalt
- AFK20, Asphalt Binders
- AFK30, Non-Binder Components of Asphalt Mixtures
- AFK40, Surface Requirements of Asphalt Mixtures
- AFK50, Structural Requirements of Asphalt Mixtures
- AFN10, Basic Research and Emerging Technologies Related to Concrete
- AFN10, Basic Research and Emerging Technologies Related to Concrete
- AFN20, Properties of Concrete
- AFN30, Durability of Concrete
- AFN40, Concrete Materials and Placement Techniques
- AFP10, Pavement Management Systems
- AFP30, Soil and Rock Properties
- AFP50, Seasonal Climatic Effects on Transportation Infrastructure
- AFP50, Seasonal Climatic Effects on Transportation Infrastructure
- AFP60, Engineering Behavior of Unsaturated Geomaterials
- AFP80, Strength and Deformation Characteristics of Pavement Sections
- AFS10, Transportation Earthworks
- AFS30, Foundations of Bridges and Other Structures (Committee Communications Coordinator)
- AFS60, Subsurface Drainage
- AFS70, Geosynthetics
- AHD15, Maintenance and Operations Personnel
- AHD20, Pavement Maintenance
- AHD37, Bridge Preservation
- B0002(1), Transportation Research Thesaurus Subcommittee

American Society of Civil Engineers (ASCE) Affiliations

- Bituminous Materials
- Engineering Mechanics Institute, Properties of Materials
- Engineering Mechanics, Dynamics Committee
- Engineering Mechanics, Fluid Dynamics
- Engineering Mechanics, Modeling Inelasticity Multiscale Behavior
- Engineering Mechanics, Nanomechanics and Micromechanics
- Engineering Mechanics, Structural Health Monitoring and Control
- *Journal of Engineering Mechanics*, Associate Editor
- Structural Wind Effects

PROFESSIONAL MEMBERSHIPS

American Concrete Institute (ACI) Affiliations

- 123, Research and Current Developments
- 239, Ultra High Performance Concrete
- 335, Composite and Hybrid Structures,
- 343, Bridge Design (ASCE/ACI)
- 423, Prestressed Concrete
- 440, Fiber Reinforced Polymer Reinforcement
- 444, Structural Health Monitoring and Instrumentation
- Louisiana Chapter

National Cooperative Highway Research Program (NCHRP) Affiliations

- 01-52, Calibrated Mechanistic-Based Models for Top-Down Cracking of Hot-Mix Asphalt Layers
- 01-53, Proposed Enhancements to Pavement ME Design: Improved Consideration of the Influence of Subgrade and Unbound Layers on Pavement Performance
- 15-62, Access Management and Design Guidelines for Truck Routes
- 20-102(07), Implications of Automation for Motor Vehicle Codes
- 20-102(09), Providing Support to the Introduction of CV/AV Impacts into Regional Transportation Planning and Modeling Tools
- 46-05, Use of Recycled Asphalt Pavement and Shingles
- 48-02, Tack Coat Specifications, Materials, and Construction Practices
- 18-17, Entrained Air Void System for Durable Highway Concrete
- SN49-09, Concrete Technology for Transportation Applications

American Society for Testing and Materials (ASTM) Affiliations

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

Other Memberships

- AASHTO Committee of Knowledge Management
- AASHTO Research Advisory Committee
- AASHTO Standing Committee on Highway Traffic Safety (SCOHTS)
- AASHTO TRAC and RIDES Advisory Board
- ACRP Synthesis 11-03/Topic S09-08, Practices to Mitigate Alkali Silica Reaction (ASR) Effected Pavement at Airports
- American Association of Engineering Education
- American Institute of Steel Construction
- Association for Talent Development
- Association of Asphalt Paving Technologists (AAPT)
- Association of Traffic Safety Information Professionals (ATSIP)
- CAAL Technical Committee
- Chi Epsilon, Civil Engineering Department Level Honor Society
- Communications Coordinating Council (Team leader)
- Construction Certification Committee
- Deep Foundation Institute, DFI
- DOTD Work Zone Task Force
- Eastern Transportation Knowledge Network Member (ETKN)
- Engineering Research (USUCGER)
- Equipment Operation Certification Committee
- FHWA Expert Task Group R02 – Implementation of Precast Concrete
- FHWA Sustainable Pavements Technical Working Group
- Geo-Institute: Engineering Geology and Site Characterization Committee, Geosynthetics Committee, Deep Foundation Committee
- Gulf Region Intelligent Transportation Society (GRITS)
- International Association of Foundation Drilling

- International Steering Committee for Travel Survey Conferences
- ITI Technical College, Construction
- Jordan Engineering Association
- LA Strategic Highway Safety Plan Implementation Team
- LATOD – Louisiana State Workers Trainers Group
- Louisiana Engineering Society
- LSU Public Administration Institute Student Association
- Management Curriculum Council
- National LTAP Association
- National Society of Professional Engineers
- National Transportation Training Directors, Emerging Technology Chair
- Occupant Protection Emphasis Area Team (Co-chair)
- Partnership for the Transformation of Traffic Safety Culture
- Pavement Technology
- Phi Kappa Phi, University Level Honor Society
- Precast/Prestressed Concrete Institute
- Public Relations Association of LA, Baton Rouge Chapter
- Research Advisory Group of the National Stone, Sand, and Gravel Association
- Society of Human Resource Management
- Southeast Task Force on Technician Training and Qualification
- Southeastern Asphalt User Producer Group
- Special Libraries Association (SLA)
- Strategic Highway Safety Plan (SHSP)
- Tau Beta Pi, College of Engineering Level Honor Society
- Traffic Records Coordinating Council
- Transportation Curriculum Coordination Council
- Transportation Division Member
- US Universities Council on Geotechnical Engineering Research (USUCGER)
- Voluntary Protection Programs Participants' Association

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Patrick Frazier, Asphalt Concrete Training
Kelvin Stone, Maintenance Training Program Manager
Shirly Mamou, Training and Development Specialist
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Kristi M. Folse, Safety and Special Topics Training Program Manager

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