

Technology Today

Volume 29 Issue 2

Winter 2014

A publication of the Louisiana Transportation Research Center



In this Issue

BRCC Highway Technician Program to Open in September
3

Louisiana Center for Transportation Safety: A Critical Need to Reach Destination Zero Deaths
4

TTEC Updates Video Conferencing Equipment
5

King Promotes New Testing Concept As It Gains Popularity
5

Staff Updates and Accomplishments
6

Recently Published
7

Upcoming Events

March 23-26
National Highway Institute (NHI) Course No. 132012
TTEC-100

April 7-9
National Highway Institute (NHI) Course No. 130053 - Bridge Inspection Refresher Training
TTEC-100

To view more events, please visit
<http://www.ltrc.lsu.edu>.

Louisiana Short-line Railroad Analysis Shows Critical Role in Economy

While relatively small in capacity when compared to their national rail counterparts, short-line rail operations play a significant role in supporting core industries in Louisiana, namely petrochemicals and agriculture. However, because a number of these short-line railroads have diminished over the years, many states have initiated steps to ensure the continued sustainability and viability of short-line rail service. One of those steps was to conduct an economic impact analysis of short-line railroads in Louisiana. Funded by the National Center for Intermodal Transportation for Economic Competitiveness and LTRC, the study addresses a number of key factors related to their overall economic impact upon the state's economy, noting their importance to the state's overall transportation infrastructure and export/import process.

The principal and co-principal investigators of the study were Jared Llorens, Ph.D., and James Richardson, Ph.D. Dr. Llorens



explains, "The primary objective of this research study was to provide a detailed analysis of the economic impact of short-line rail operations in Louisiana. This report is intended to both provide background materials to policymakers on the economic role of short-line operations in Louisiana and to provide data on short-line rail operations in the state and regional economies. Additionally, this report addresses the impact of short-line rail operations on other industries in the state."

To achieve these goals, the researchers employed a mixed-

methods approach that combined the use of an electronic survey of railroads, discussions with people who have observed the short-line rail industry over many years, and one on-site visit with a short-line railroad. Indirect economic impacts were derived by using Regional Input-Output Multipliers (RIMS) as derived by the U.S. Department of Commerce.

The study found that while short-line railroads play a vital role in supporting some of Louisiana's leading industries, precisely estimating the economic impact of short-line operations is quite challenging due to the diverse customer base of short-line rail operations, as well as their direct and indirect impact on key industries.

In terms of state and local tax revenue, short-line rail operations also provide a substantial contribution to the state economy. The authors estimate that, on average, short-line railroads in Louisiana bring in approximately \$44.5 million in annual revenues that generate approximately \$3.5 million in state tax revenues and \$2.86 million annually in local revenues. Additionally, the presence of short-line rail operations reduces the need for freight transportation by truck, which results in approximately \$21 million in annual pavement damage savings according to outside research groups.

While the direct employment and revenue impact of short-line rail operations may be relatively small when compared to economic contributions of the agricultural or petrochemical industries, the critical role that short-line railroads play in linking industries to national transportation networks via Class I rail represents what is perhaps their most significant impact upon the state economy. "At the end of the day, the presence of short-line railroads allows major corporations such as the Albemarle Corporation or Ventura Foods to locate and expand their facilities in the state and, more importantly, in areas of the state that have typically experienced limited employment options," explains Llorens. "While metropolitan areas such as Baton Rouge and New Orleans may provide a multitude of employment options to state residents within their respective parishes, short-line railroads support employment in some of the poorest parishes in the state, such as Acadiana Railroad in Avoyelles Parish or the Delta Southern Railroad in East Carroll Parish." In this respect, short-line railroads can be viewed as playing a critical role in the Louisiana economy beyond what their immediate impact might indicate.

Short Line Rail	Parishes Served	Miles of Track in Louisiana	Percent
Acadiana Railroad	Acadia, Avoyelles, Evangeline, St. Landry	87	17.1%
Arkansas, Louisiana, and Mississippi Railroad	Morehouse, Ouachita	24	4.7%
Baton Rouge Southern Railroad	East Baton Rouge	2	0.4%
Delta Southern Railroad	East Carroll, Madison, Ouachita	44	8.6%
Louisiana and Delta Railroad	Assumption, Iberia, Lafayette, Lafourche, St. Martin, St. Mary, Vermilion	65	12.8%
Louisiana and Northwest Railroad	Bienville, Claiborne	37	7.3%
Louisiana Southern Railroad	Bienville, Grant, Jackson, Rapides, Webster, Winn	157	30.8%
New Orleans and Gulf Coast	Jefferson, Plaquemines	32	6.3%
New Orleans Public Belt	Orleans, Jefferson	35	6.9%
Ouachita Railroad	Union	8	1.6%
Timber Rock Railroad	Beauregard	18	3.5%

Above:
Short line railroads (size and scope, 2013)

In terms of the employment impact of short line operations on the state economy, the authors estimate that the short-line railroads directly employ approximately 331 individuals on an annual basis in positions that average approximately \$67,000 in wages and benefits. Given that Louisiana's mean annual wage across all occupations is only \$39,230, positions in the short-line rail industry represent relatively high paying jobs that serve a significant role in boosting local economies. Indirectly, short-line rail employment supports an additional 1,490 jobs in the state economy, many of which are located in Louisiana's poorest and most economically depressed parishes.

Considering both the value of short-line railroads in Louisiana and their current vulnerability with regards to handling heavier, 286K rail cars, the authors believe it is prudent for state policymakers and transportation administrators to begin the process of designing and implementing a short-line railroad support program that could provide needed support to short-line railroads in Louisiana. Among those suggested by the researchers are grant programs or grant/loan programs—that is, direct investments by a governmental body—in lieu of tax credits.

Overall, based on the economic evidence and importance of short-line rail operations in the state, researchers encourage state policymakers to explore alternatives for ensuring the continued presence of short-line rail operations in the state.

For more information on this study, contact Senior Special Studies Research Engineer Kirk M. Zeringue, P.E., at Kirk.Zeringue@la.gov or (225) 767-9169.



BRCC Highway Technician Program to Open in September

After partnering with LTRC to develop a curriculum, Baton Rouge Community College is planning to begin accepting students in September for the Certificate of Technical Studies in Highway Engineering Technology. This program will allow students to take classes that will prepare them to become certified engineering technicians. This 32-hour program will also offer the student work-study opportunities to gain the experience needed for their certification. The DOTD and BRCC program is specifically designed to meet the entry-level employment needs of the state of Louisiana's engineering and construction community and empower students to enter the workforce with a higher level of experience.

Part of obtaining this certification involves hands-on training in a local laboratory recently completed by LTRC, which is housed in DOTD's Materials Lab on the outskirts of the BRCC campus. LTRC oversees the lab that has all the equipment needed to perform quality assurance materials testing. Training in this lab will be performed by subject matter experts and will allow students to gain the necessary training and experience needed in the workplace and field.

Students enrolled in this program have the opportunity to tailor the program of study by emphasizing one or more courses in the following areas: asphaltic concrete plant inspection, asphaltic concrete paving inspections, structural concrete inspection, Portland Cement Concrete (PCC) inspection, and embankment and base course inspection.

For more information about the program, contact DOTD Structured Training Director Cindy Twiner at cindy.twiner@la.gov or (225) 767-9125.

Louisiana Center for Transportation Safety: A Critical Need to Reach Destination Zero Deaths

In an effort to achieve the state’s vision of “Destination Zero Deaths,” Louisiana’s lead agencies in traffic safety and injury prevention have joined together to create the Louisiana Center for Transportation Safety (LCTS). The LCTS will enhance collaboration between traditional and new partners, promote road safety research and education, and provide technical assistance and technology transfer to the transportation community and related stakeholders. The new center is housed at LTRC and will build on the foundation created by LTRC to facilitate the development of sustainable systems to improve roadway safety and achieve the goal of zero deaths in Louisiana.

LCTS Director Dortha Cummins explains, “Destination Zero Deaths’ is the vision of the state’s Strategic Highway Safety Plan (SHSP), which includes strategies to accelerate the decrease in crashes that cause deaths and serious injuries. This vision and plan are congruent with the National Strategy on Highway Safety – Towards Zero Deaths that is being implemented through a collaborative effort of national highway safety leaders and injury prevention organizations.”

The death rate from traffic-related crashes in Louisiana has historically been significantly higher than the national average, and the state has consistently ranked among the top 10 states for the highest death rates per 100 million vehicle miles traveled. In 2007, the number of traffic-related deaths peaked at 993 after which a downward trend began and declined to 703 deaths in 2013.

“Many factors including safer roads, vehicles, enforcement, and legislation and even the economy have contributed to this decline, which was also seen at the national level. Louisiana’s safety stakeholders are working diligently to continue the decrease in deaths and to accelerate life saving measures,”

LCTS GOALS

To provide traffic safety research program development and implementation

To develop a competent and well-trained highway safety workforce

To identify opportunities for traffic safety related university programs and curriculum

To improve technology transfer opportunities for highway safety

To administer the Local Road Safety Program (LRSP) with assistance from LTAP and DOTD

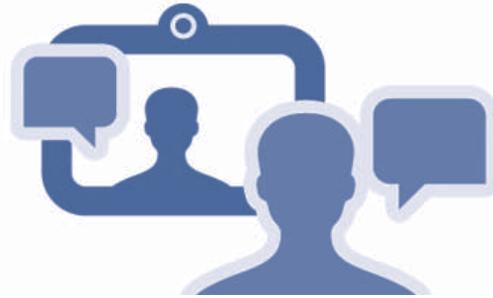
To ensure congruity, to increase collaboration, and to coordinate behavioral projects in the DOTD funded Strategic Highway Safety Plan and Louisiana Highway Safety Commission funded Highway Safety Plan.

explains Cummins. “Tools include proven countermeasures, results of promising new research, collaborative approaches, multidisciplinary approaches, local engagement, and a host of other strategies. But more research, evaluation, education, outreach, and collaboration are needed to continue this positive trend.”

For more information on the new center, please contact Dortha Cummins at dortha.cummins@la.gov or (225) 767-9137.

TTEC Updates Video Conferencing Equipment

TTEC has purchased and installed video conferencing equipment. This equipment takes the place of retired equipment and offers more capabilities. The new equipment can be used with mobile devices and room devices so anyone can join a video conference. The new equipment can also record conferences from any location within the DOTD network and stream the recorded or live video to mobile or desktop computers.



King Promotes New Testing Concept As It Gains Popularity

At the request of former LTRC employee, LSU Ph.D. graduate, and now UT professor, Dr. Boshan Huang, Materials Research Administrator Bill King, P.E., gave an hour-long presentation of a new testing concept before a group of Graduate and Post Doctorial candidates at the University of Tennessee in Knoxville. King visited UT on a side trip after attending the Southeastern Asphalt User/Producer Group (SEAUPG) annual meeting in Nashville, TN.

The presentation, entitled “Balanced Asphalt Mixture Design through Specification Modification: Louisiana’s Experience,” gave an overview of the “balanced mix design” concept that has been adopted by DOTD in the new specifications with the addition of two new performance-based mixture tests. The semi-circular bend (SCB) and loaded wheel tracker (LWT) tests are required to ensure that the mixture designed for placement on the roadway will have a high probability of performing throughout the expected life span.



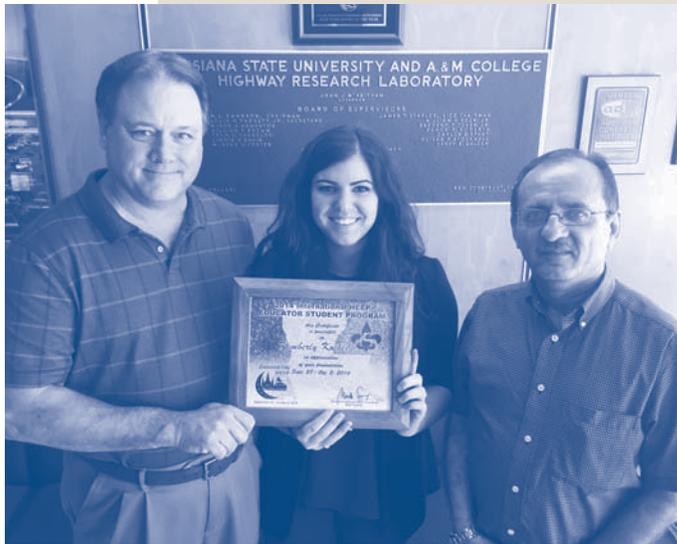
After the presentation was over, students then gave King a tour of the new engineering building, showcasing new laboratories, office space, and classroom space at the University of Tennessee.

Staff Updates and Accomplishments

LTRC would like to welcome **Rebecca Rizzutto** as TTEC's new Training Program Coordinator.

Associate Professor, Research, GERL Manager **Murad Abu-Farsakh**, Ph.D, P.E., with Ching Tsai (DOTD), Michael McVay (University of Florida) and Steven Saye (Kewit Engineering Company) organized a workshop at the TRB 2015 meeting entitled "Pile Capacity Assessment with Cone Penetration Test (CPT) Data." Dr. Abu-Farsakh gave the presentation "Introduction to CPT for Pile Design Louisiana Pile Capacity Calculation Approach Bayou Lacassine, LA Bridge Case History."

Local Road Safety Program Manager **Rudynah "Dynam" E. Capone** presented "Building Public Awareness and Recognition: Changing the Safety Culture One Community at a Time" at the Strategic Highway Safety Plan (SHSP) DOTD Staff and Coalition Leader Facilitation Workshop put together by DOTD and Cambridge Systematics December 15-16, 2014.



Kimberly Koehl, LSU senior civil engineering student and DOTD Co-op participant, was selected to compete at the 56th Annual IHEEP Conference (International Highway Engineering Exchange Program) as an Area 2 Louisiana representative in the student competition. Area 2 includes Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia. At the IHEEP conference (held in New Orleans, Louisiana, September 28-October 2, 2014), Koehl made a presentation on "The Impact of Recycling Agents on the Design of Asphalt Mixtures Containing Roofing Shingles." She

was awarded second place at this competition among other master and doctorate degree candidates.

LSU Civil Engineering Professor and EMCRF Manager **Louay Mohammad**, Ph.D., has been appointed to the Louisiana Professional Engineering and Land Surveying Board Transportation Engineering Practice Committee.

Recently Published

Project Capsule I4-2C

Implementation of Maturity for Concrete Strength Measurement and Pay
Tyson D. Rupnow, Ph.D., P.E.

Project Capsule I4-5SS

LTRC Project Management and Tracking System Enhancement
Adele Lee

Final Report and Technical Summary 519

Evaluation of Dynamic Shear Rheometer Tests form Emulsions
Nazimuddin M. Wasiuddin, Ph.D., Saeid S. Ashani, and M. Readul Islam

Final Report and Technical Summary 526

Data Collection and Evaluation of Continuity Detail for John James Audubon Bridge No. 61390613004101
Ayman M. Okeil, Ph.D., P.E.

Final Report and Technical Summary 527

Economic Impact Analysis of Short Line Railroads
Jared J. Llorens, Ph.D., and James A. Richardson, Ph.D.

Final Report and Technical Summary 529

Structural Health Monitoring of I-10 Twin Span Bridge
Murad Y. Abu-Farsakh, Ph.D., PE., Sungming Yoon, Xinbao Yu, , Ph.D., and Xiaochao Tang, Ph.D.

Final Report and Technical Summary 532

Investigation of Best Practices for Maintenance of Concrete Bridge Railings
Marwa Hassan, Ph.D., P.E.



FIND OUT MORE

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



Louisiana Transportation Research Center

4101 Gourrier Avenue
Baton Rouge, LA 70808-4443
DOTD Section 33

Pre-Sort Standard
U.S. Postage
PAID
Permit No. 936
Baton Rouge, LA

www.ltrc.lsu.edu

Technology Today Publication Statement

Technology Today is a quarterly publication of the Louisiana Transportation Research Center, administered jointly by the Louisiana Department of Transportation and Development and Louisiana State University.

For additional information on material included in this newsletter, contact the public information director at 225.767.9183.



Follow us at www.twitter.com/LTRC_Updates,
and search for us at www.facebook.com.

LTRC Administration and Publications Staff

Harold "Skip" Paul, P.E., Director
Mark Morvant, P.E., Associate Director, Research
Sam Cooper, MSCE, P.E., Associate Director, Tech Transfer and Training
Vijaya (VJ) Gopu, Ph.D., P.E., Associate Director, External Programs

Jenny Speights, Public Information Director
Emily Wolfe, Multi-Media Specialist
Jenny Gilbert, Editor/Technical Writer
Laura Williams, Editorial Assistant

This public document is published at a total cost of \$553.40. One thousand and one hundred copies of the public document were published in this first printing at a cost of \$553.40. The total cost of all printings of this document, including reprints, is \$553.40. This document was published by Printing Tech, 11930 South Harrell's Ferry Road, Baton Rouge, to report on the research and training of the Louisiana Transportation Research Center, as required in R.S. 48:105. This material was duplicated in accordance with standards for printing by state agencies, established pursuant to R.S. 43:31. Printing of this material was purchased in accordance with the provisions of Title 43 of the Louisiana Revised Statutes.