



# TECHNOLOGY TODAY

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## UPCOMING EVENTS

**Bridge Management System (BMS) Workshop**  
September 1-3

**LTRC Seminar Series: Pavements**  
October 13

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

## RESEARCH

# Researchers Evaluate Signage Effectiveness at Highway-Rail Grade Crossings

*Results show signage alone is not enough*

In recent years, crashes have steadily risen across the approximately 5,262 highway-rail grade crossings in Louisiana. In addition to safety concerns, these incidents also present liability issues for the state government, local agencies, railroad companies, and private owners. The current and most common approach to reduce crashes is by installing warning or regulatory signage. However, after evaluating the effectiveness of these signs, researchers suggest that statewide signage installation at grade crossings is not sufficient.

In their report, "Evaluating the Effectiveness of Regulatory and Warning Signs on Driver Behavior near Highway/Rail Crossings," researchers Julius Codjoe Ph.D., P.E., William Saunders E.I., Joseph Cotten E.I., Saleh Mousa Ph.D., and Grace Ashley sought to determine the effectiveness of regulatory signage on drivers approaching highway intersections near grade crossings. Researchers collected video data at various sites and evaluated driver behavior in order to perform a comprehensive comparative analysis before and after installation.

The research team selected eight grade crossings in both rural and urban settings with a history of drivers stopping within the dynamic envelope zone (DEZ). The DEZ

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represents the clearance area required for the train and its cargo overhang. By working with DOTD district traffic operations engineers, researchers mounted video surveillance systems and installed regulatory signs. At each site, data was collected before and after installing the signs. A second set of data was collected after novelty periods, which allowed drivers time to familiarize themselves with the new signs. The researchers evaluated the effectiveness of the signage by observing three categories of driver behavior: major violations, minor violations, and safe maneuvers.

**Major violations** occurred when a vehicle stopped completely within the DEZ. **Minor violations** occurred when a vehicle did not stop within the DEZ but also did not stop at the stop line or performed a rolling stop while in a vehicle queue. A **safe maneuver** occurred when the vehicle stopped before the stop line in a vehicle queue and waited for the area between the tracks and the intersection to become clear before proceeding.

The results varied inconsistently across the study sites. In some instances, it was reported that violations (both major and minor) significantly decreased but then significantly increased after the novelty periods and vice versa. The same held true for safe maneuvers, and no clear correlation was found between the signage installation and the behavior of the drivers.

According to Dr. Codjoe, “The comparative safety analysis concluded that installation of the signage produced mixed effects, and the overall positive effect of regulatory signage on DEZ stopping behavior was minimal.”

Since the signage was not found to be effective all of the time, researchers recommend employing additional methods along with regulatory signage, such as pavement markings, flashing lights/bells, and in-vehicle auditory warnings in order to improve safety at highway-rail grade crossings. It was also proposed that additional research be undertaken on other forms of crossing enhancements that may encourage drivers not to stop within the DEZ.



### For more information

on this study, please visit [www.ltrc.lsu.edu/pubs\\_final\\_reports](http://www.ltrc.lsu.edu/pubs_final_reports) and select Final Report 611 or contact Dr. Codjoe at [Julius.Codjoe@la.gov](mailto:Julius.Codjoe@la.gov) or 225-767-9761.



## A Tribute to Colleague and Friend, Kirk Zeringue

We are deeply saddened over the death of LTRC Special Studies Research Administrator Kirk Zeringue, who passed away on Friday, June 26, 2020, at the age of 42.

To many, he described himself as “a jack of all trades, master of none.” However, those closest to him are quick to boast of his many contributions and impacts to the field of transportation and research.

As a valued voice and contributor, Kirk served on the TRB ADA50 Standing Committee on Transportation Programming and Investment Decision-Making and the TRB ABG 10 Standing Committee on Conduct of Research. He was also selected by TRB to serve on the project panel for NCHRP Project 23-07: “Guidebook for Identifying and Implementing Forecasting Techniques for Effective Target Setting” as well as the chairman of the project panel for NCHRP Project 17-87: “Enhancing Pedestrian Volume Estimation and Developing HCM Pedestrian Methodologies for Safe and Sustainable Communities.”



for help in educating folks around the state on how to better use data to solve their own problems. He wanted to enable people. In a world where many just want to help themselves solve their own problems, it was refreshing to meet someone who cared about empowering others. He wanted what was best for the state. He wanted to make a difference, and he wanted to encourage others to do the same.”

Kirk also made a difference in people’s lives wherever he went. Known for his brisk walk down the hall and between buildings, he was constantly on the move, investing in those around him. Whether he was presenting to a national audience of researchers, giving a guest lecture, or leading a project meeting, he is remembered for his constant smile, genuine personality, attentiveness, humor, and excellent managerial and problem-solving skills.

“Kirk saw opportunities to solve Louisiana’s transportation problems where most people would have just thrown their hands up in the air and quit,” said Pack. “He did more with limited data sets and limited tools than other states and people that had significantly more resources.”

A loving father and husband, Kirk would also frequently share stories of his children, Skyler and Emi, and he often spoke highly of his wife, Lori. “Kirk always talked about how smart she was and would even send her Excel spreadsheets we were struggling to analyze. True to word, she always had the answer and would turn around what could have taken us a lot of time to solve,” added Dr. Codjoe.

Family man, data expert, innovator, colleague, and friend, Kirk’s time in this world may have been too brief, but the effects from his presence will be far-reaching for years to come. We are grateful for the many years we were able to witness Kirk’s love of numbers, people, and problem-solving work together to benefit our communities and state in such a profound way.

In May, he received a Master of Transportation from The University of New Orleans and was awarded Outstanding Graduate Student.



Kirk’s drive to further his knowledge and expertise was evident not only in his recent pursuit of higher education but also in his years of experience in the field and his

desire to ask questions and produce results. ITS/Traffic Program Manager and friend, Julius Codjoe, explained, “Kirk knew the name of any DOTD resource that I needed off the top of his head. He left this world young, but most of his working life had been at DOTD. He served DOTD with a passion and he loved what he did. Kirk will be remembered for his institutional knowledge of DOTD and LTRC. He was widely known and he knew widely.”

A particular area of passion for Kirk was analyzing probe data. This data is a form of traffic flow data, collected by third-party companies, using GPS-enabled vehicles travelling in the traffic stream over pre-defined road segments. DOTD gets probe data from INRIX through the RITIS platform of the University of Maryland’s CATT Lab. Director of CATT Lab and friend, Michael Pack, said, “Kirk was a champion for DOTD. He was constantly asking



Photo by Burst on Unsplash

## TECH TRANSFER

# Training Shift to Online Offers Students New Experience

In light of stay-at-home orders, quarantines, and new phased-in approaches across the state, training professionals at LTRC have risen to the challenge in successfully moving all adaptable courses to a virtual environment. With new video conferencing delivery methods, instructors and students overcame their own set of challenges to show that distance education can successfully provide both synchronous (virtual, real-time learning) and asynchronous (independent online learning) opportunities.



**Mary Leah Coco, Ph.D., Associate Director, Technology Transfer & Training,** on LTRC's mission on distance learning

In order to continue meeting the training needs of the Department during these ever-changing times, a selection of LTRC's workforce development opportunities have been transitioned into synchronous virtual classrooms with a live instructor. LTRC continues to work with our training partners to deliver other courses through live, virtual classroom instruction as well.

While the method of delivery may be different, our mission remains the same: to be partners in identifying needs, providing resources, and delivering learning opportunities to equip our workforce for continuous improvement.

A few of the benefits of synchronous, virtual training are as follows:

-  The same content can be presented in a real-time, engaging multimedia classroom.
-  Travel to a course location is not required.

-  Synchronous interaction provides learners with opportunities for experimentation, context-dependent feedback, and constructive problem solving.
-  Asynchronous and synchronous communication along with collaboration helps bridge geographical distance.

LTRC has our dedicated team working hard to ensure your staff will have the opportunities they need to have access to as many courses as possible. If there are specific training needs you would like addressed for your section/district, please do not hesitate to reach out. We stand ready to serve your section/district.

**Garrett Wheat, DOTD Leadership Development Institute Teaching Associate,** on class structure shifts for online learning



Adapting classes for this new online environment brings many benefits. LTRC is able to meet the students where they are and give employees the ability to take a class when it may best fit their schedule.

Rather than a typical full-day class held face-to-face, courses have been broken into two 3-hour blocks over two consecutive days. Breaking the class up into two days allows those who attend to still be available to their team without sacrificing



### Pro

"It was great seeing everyone's answers and going over the reasons for them."

"As an introvert, I felt more willing to participate, and there seemed less inclination for one person to dominate the conversation."



### Con

"The virtual aspect wasn't a negative; however, there may have been some missed opportunity with person-to-person interaction that may have lent well to instruction."

an entire work day. This new delivery also allows new types of activities to be integrated into the class structure, and since time isn't an issue with responses, all attendees can be heard and provide personal insight.

Before students are given access to join a class, a small assignment is emailed a week prior, which includes open-ended and multiple choice questions to be discussed throughout the class. These email messages and assignments also include videos and documents needed, such as the course manual. This allows class activities that may not be feasible in a web-conference (e.g., watching a video or individual activities) to happen before class, and that time is used for guided discussion. By asking demographic and icebreaker questions before class, this can also minimize downtime and keep interaction up during class.

As with any new learning format, some concerns have arisen, which include: decreased face-to-face interaction and communication from the instructor and students, missed cues for questions, limited small group interaction, and difficulties in holding learners' attention. Ultimately, these concerns are offset by attendance, interaction, and involvement, making virtual learning courses as successful as possible.

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## RESEARCH

# E-construction Research Awarded National High Value Research Award

DOTD is the recipient of the American Association of State Highway and Transportation Officials' (AASHTO) annual Sweet Sixteen Award. DOTD and the Louisiana Transportation Research Center were recognized for their research project "Evaluation of HeadLight: An E-Construction Inspection Technology."

LTRC researchers Tyson Rupnow, Ph.D., P.E., and Mary Leah Coco, Ph.D., joined HeadLight's George White and University of Washington's Julian Yamaura to investigate e-construction inspection technology using the HeadLight program. This program replaces the paper-based method that field inspectors previously used with a cloud-based, mobile application. By allowing for more data to be collected electronically, updated information can be seen in real-time by personnel across the state. This new software allows for an increase in productivity without increasing work hours, as well as providing a more efficient and reliable method for state inspectors. Researchers estimate that the increase in productivity for a Department-wide adoption will exceed 117,000 hours per year.

DOTD Secretary Shawn D. Wilson, Ph.D., explained, "I want to commend those who worked on this project and are a part of the development of this system. When fully implemented statewide, DOTD will be the first DOT to have achieved this accomplishment on this level. Creating a more efficient work environment is a priority of mine, and with the help of employees and projects like this, I know this can be a reality."



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**For more information**  
*on this project or to read  
the research in full, please  
visit [www.ltrc.lsu.edu/  
pubs\\_final\\_reports.html](http://www.ltrc.lsu.edu/pubs_final_reports.html)  
and select Final Report  
618 under Special Studies.*

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## RESEARCH

# Employee Spotlight: Norris Rosser

### Concrete Engineer Technician DCL

**Norris Rosser** has been with LTRC for 8 years, and within that short time, he has developed a substantial knowledge base of experience and training to perform the most complex duties of a specialized engineering nature. Goal-oriented and success-driven, Rosser currently plans, prepares, carries out, and monitors the progress of concrete projects and lab accreditations. In this, he provides unique solutions to non-routine problems and creates data analyses that are necessary for publicizing research efforts in reports

or presentations. In addition, Rosser provides guidance and technical training to agency personnel in other sections and districts.

Crediting his group for creating an environment that fosters knowledge and initiative, Rosser explains, "I am most proud that my coworkers and I are able to accomplish so much and that our colleagues know they can count on us, no matter the job or project. Thanks to those I work with and for, we are able to coordinate and alleviate any situation that could possibly cause a challenging experience."



### Certifications and Honors

- A.S., Pre-Engineering, LSU – Alexandria, 2012
- Student, Chemical Engineering, Louisiana State University (16 hrs remain)
- ACI Concrete Strength Testing Technician
- ACI Concrete Field Testing Technician – Grade I
- ACI Aggregate Testing Technician – Level 1
- ACI Concrete Laboratory Testing Technician – Level 1



### Fun Facts

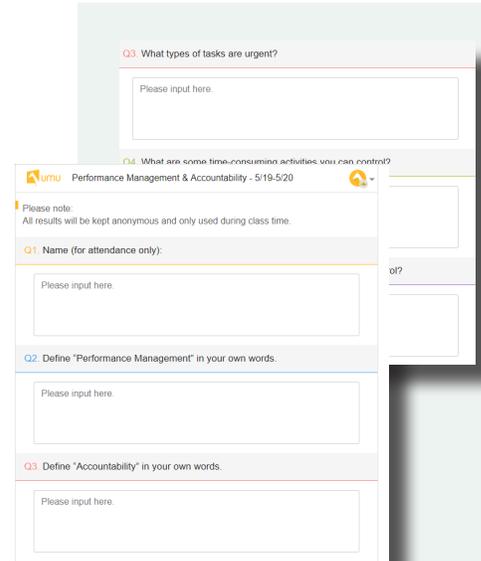
- Proud dad of three
- Bleeds purple and gold!

## Online training contd.



### Jeff Eichholz, Special Topics Training Program Manager, on utilizing video conferencing features in training

Through Zoom, coupled with the learning platform UMU, we have used pre- and in-class quizzes and knowledge questions as well as post-class assessments, reviews, and quizzes to confirm the transfer of knowledge on the given subject. With Zoom, we can use in-class polls, chat, and breakout rooms for the students to participate in team-assigned activities. These capabilities have enriched the virtual training of the students as well as given the instructors an ability to make the classes more interactive and focused on student learning.



Examples of questions instructors asked students via UMU before or during a class

# Staff Updates and Accomplishments

External Programs Associate Director **Vijaya (V.J.) Gopu**, Ph.D., P.E., chaired the Industrial Advisory Board Meeting for the NSF Center for Integration of Composites into Infrastructure (CICI) held on June 16-18, 2020.



LTRC would like to welcome our newest employees:

**Melissa Neyland** joins LTRC after a career in healthcare administration roles and now serves as the Administrative Assistant 5 for Sections 19 and 33.

The new Safety Training Program Manager for the Structured Training Unit is **Kirk Wales**. Kirk joins Section 33 after a career in the United States Marine Corp.



**Annisia Osborne** is the most recent LTRC hire as the new Engineering Technician Training Program Manager—she joins from DOTD’s Human Resources Department, where she was DOTD’s Recruiter.

## PUBLICATIONS

### Recently Published

#### Project Capsule 19-5SS

*Assessing the Economic Benefits of the Transportation Infrastructure Model for Development (TIMED) Program*  
Chester G. Wilmot, Ph.D., P.E.

#### Project Capsule 20-1ST

*Developing the Load Distribution Formula for Louisiana Culvert*  
Ayman Okeil, Ph.D., P.E. (FL)

#### Project Capsule 20-2ST

*Skew Detection System Replacement of Vertical Lift Bridges (Phase I)*  
Gareth Rees, P.E.

#### Final Report and Technical Summary 620 (17-1P)

*Improving the Use of Crack Sealing to Asphalt Pavement in Louisiana*  
Mostafa A. Elseif, Ph.D., P.E., Momen R. Mousa, and Mohammad Z. Bashar

#### Final Report and Technical Summary 623 (18-1GT)

*Analysis of Driven Pile Capacity within Pre-bored Soil*  
Shengli Chen, Ph.D., and Lin Li, Ph.D.

#### Final Report and Technical Summary 624 (19-2PF)

*Synthesis on the Contributing Factors and Effective Countermeasures for Low-Volume Roadway Fatality Rates in the Southeast*  
Nikiforos Stamatiadis, Jennifer Weast, and Eric Green

#### Final Report and Technical Summary 634 (15-1GT)

*Geotechnical Information Database, Phase III - pLog Enterprise - Enterprise GIS-Based Geotechnical Data Management System Enhancements - Final Report*  
Scott L. Deaton, Ph.D.

#### Technical Assistance Report 19-01TA-SA

*Impact of Crosswalk Lighting Improvements on Pedestrian Safety—A Literature Review*  
Elisabeta Mitran, Ph.D., Julius Codjoe, Ph.D., P.E., and Emmaline Edwards

#### Technical Assistance Report 20-02TA-SS

*Literature Review of Mileage-Based Road User Fees*  
Raju Thapa, Kirk Zeringue, P.E., and Julius Codjoe, Ph.D., P.E.



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