



# TECHNOLOGY TODAY

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*A publication of the Louisiana Transportation Research Center*



*Nuclear and non-nuclear density gauges*

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## UPCOMING EVENTS

**National Highway Institute (NHI) Course  
No. 130056 - Culvert Design**

June 20  
TTEC Auditorium - Room 100

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

## RESEARCH

### Researchers Explore Safer Density Measuring Options

**New non-destructive methods prove to cut costs, increase safety, and show same or better accuracy in determining a road's density**

The density of soil and asphalt layers is often considered the most important component in the construction of durable, long-lasting roads. To meet density requirements, contractors and transportation agencies follow quality control (QC) and quality assurance (QA) procedures to ensure specifications are met and performance is achieved. However, many contractors and DOTD personnel have voiced concerns over the unsafe, expensive, and time-consuming issues regarding the current density measures. As a result, local geotechnical and asphalt research groups came together to find solutions. David Mata, P.E., and LTRC researchers Nicholas Ferguson, E.I., and Saman Salari, E.I., launched a study to test new non-destructive methods.

“The goal here was to implement a novel, safe, and quick method to replace the current ways to distinguish the density of the roads. It is very important to determine the densities of the roads in order to pay the contractors for the work they have done,” explained Salari.

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*A typical test site. Coring either took place the day of paving or the next day. If coring was done on the same day, ice bags were laid on the spots to cool the spots before coring.*

The current methods used to measure density include placing a nuclear density gauge (NDG) on a pavement or taking asphalt cores from new pavement. However, these procedures typically show problems such as: nuclear radiation, decreased safety, additional training requirements, special storage and handling, damage to the fresh pavement, long testing times, and small sample sizes.

Ferguson explained, “Non-destructive methods are trying to fix these issues. In the geotechnical group’s point of view, the research was to see if we could use a device that reduces the utilization of radiation.”

Researchers explored the potential of non-destructive methods (low- to non-nuclear gauges) to overcome the disadvantages of the current NDG and core sample method. “Low- to non-nuclear gauge methods offer advantages of economic savings, faster data

measurement, no intense federal regulations, decreased concerns for safety, no extra licensing and intense training, improved calibration techniques, non-destructive testing, faster testing times, and increased density measurements throughout the entire paving project,” explained Mata.

To compare the current methods against the new non-destructive methods, a validation study was conducted. The geotech and asphalt groups evaluated two types of density gauges along with typical coring (for asphalt) and density measurements. For asphalt, the density gauges were nuclear and non-nuclear (electric pulses); for geotech, the density gauges were nuclear and low nuclear (smaller gamma source).

Researchers in the asphalt group determined that the non-destructive alternatives to measuring density, such as the non-nuclear gauges, are accurate and economically feasible. Mata explained, “Based on the results of the asphalt research, we recommend the use of the non-destructive testing for both QC and QA testing, provided the manufacturer’s and AASHTO T-343’s recommendation is followed to calibrate the device daily by applying a core-calibration offset.”

However, while still hopeful of future technological improvements, the geotech group decided to continue with the conventional methods due to a concern with the low nuclear density gauge’s probe depth and short life cycle.

**To find out more about this project,** please visit [www.ltrc.lsu.edu/pubs\\_final\\_reports](http://www.ltrc.lsu.edu/pubs_final_reports) and select Final Report 600 to read the study or technical summary in full.

*You may also contact Saman Salari at [Saman.Salari@la.gov](mailto:Saman.Salari@la.gov) and Nicholas Ferguson at [Nicholas.Ferguson@la.gov](mailto:Nicholas.Ferguson@la.gov).*



# LTAP Director receives Outstanding Public Service Award

*By Rudynah Entera Capone*

LTAP Director Marie Walsh, Ph.D., was recently awarded the Outstanding Public Service Award from the Women in Transportation Seminar (WTS) Louisiana Chapter.

Dr. Walsh is a familiar figure in the transportation field both nationally and across Louisiana. As the director of LTAP since 2004, she has contributed to the advancement of local transportation workforce development in a wide array of topics. Dr. Walsh's efforts have put Louisiana at the forefront of road safety planning, capacity building, training, and technology transfer. She is frequently invited by various agencies across the nation to share her expertise and in actively engaging with peers in national committees such as: AASHTO and TRB Safety Committees, Toward Zero Deaths Steering Committee, and National LTAP Association Innovations Committee.



*LTAP Director Dr. Marie Walsh (second from left) along with her fellow awardees (L-R): Gresham Smith's Transportation Engineer Intern Rebecca Murray (Member of the Year), DOTD Secretary Dr. Shawn Wilson (Man of the Year), DOTD Local Public Agency Program Director Ann Wills (Woman of the Year), and Buchart Horn's Project Designer Kristen Gahagan (Outstanding Young Engineer).*



*“The local transportation and public road maintenance workforce is critical to the success of our local governments and communities. LTAP offers various training opportunities as well as technical assistance and resources that help local agencies do their work at basic and practical levels,” said Dr. Walsh.*

When Dr. Walsh became the president of the National Local Technical Assistance Program Association (NLTA) years ago, she engaged all LTAP centers across the nation in advancing their efforts to improve road safety. She made road safety her core focus in the leadership efforts.

Dr. Walsh started her career in the environmental engineering field where she handled environmental auditing and systems management. She previously worked with the Louisiana Department of Environment Quality (LDEQ), where she managed the Technical Services Program of the Air Quality Division. Her beginnings with the LTAP program stemmed from her previous work with the East Baton Rouge (EBR) Parish's Quality and Employee Development Department. Back then, she worked with EBR Public Works in conducting LTAP classes at their facility. When the opportunity to be LTAP director opened in 2004, she unhesitatingly jumped in and has spent the last 15 years meticulously shaping the program into what it is today.





## SAVE THE DATE

# 2020 Louisiana Transportation Conference

March 1-4, 2020

Raising Cane's River Center, Baton Rouge

The Louisiana Transportation Research Center is pleased to announce that the 2020 Louisiana Transportation Conference will be held March 1-4, 2020, at the Raising Cane's River Center in downtown Baton Rouge. The theme for the conference is "Transportation Innovation: The Foundation of our Future."

The LTC is held on a biennial basis to promote technology transfer and interchange of ideas among the transportation community's public and private sectors relative to policy, practice, and problems. The 2018 conference featured more than 70 technical sessions and was attended by over 1,800 transportation professionals from government, industry, and academia.

The conference website, [www.ltrc.lsu.edu/ltc\\_20](http://www.ltrc.lsu.edu/ltc_20), will be updated frequently as the conference approaches. **Registration will begin on August 5, 2019.**



### Call for Presentation Topics

Do you have an idea for a conference presentation topic? Visit the submission form at <https://goo.gl/forms/4Ylpem8Dq2p9s2e82> to send your ideas to the program committee.



### Conference Sponsorships Now Open

We are pleased to announce we are now accepting corporate sponsorships until **February 5, 2020**. Our sponsorship levels include Platinum (\$20,000); Gold (\$10,000); Silver (\$5,000); and Bronze (\$2,500). Please visit the website at [www.ltrc.lsu.edu/ltc\\_20/sponsors](http://www.ltrc.lsu.edu/ltc_20/sponsors) for more information on the sponsorship packages or contact Emily Wolfe with any sponsorship questions at [emily.wolfe@la.gov](mailto:emily.wolfe@la.gov) or (225) 767-9145.

# A Closer Look: LTRC Publications Department

Welcome to today's edition of getting to know LTRC. Today, we'll take you on a journey through our publications department introducing you to several creative minds. With 45 years combined experience between this staff, they are proud to be the voice of LTRC through editing, publishing, photography, multimedia development, and video productions. Let's get to know the publications staff, shall we?



**Jenny Kirkland** serves as our Director of Public Information. Kirkland takes the lead on seniority with 17 years devoted to LTRC. She supervises her team in creating fantastic annual reports, logos, training documents, research reports, and videos. Kirkland also knows a thing or two about e-commerce transactions and online registration to get everything online and the money going into the right account. Any question concerning the LTRC office of Public Information can be directed to [Jenny.Kirkland@la.gov](mailto:Jenny.Kirkland@la.gov).

Next as our Multi-Media Designer we have **Emily Wolfe**. With a total of 14 years at LTRC, Wolfe is the programming genius behind the LTRC website, LTAP website, and the intranet training page.

If that's not enough, Emily also manages all of LTRC's social media. Have you seen some of our tweets?  Wolfe is also a design expert, an online registration master, and is always available for special web and print projects for AASHTO, TRB, or any association that may need a helping hand. If you need something posted to the LTRC website and/or social media, you can check in with [Emily.Wolfe@la.gov](mailto:Emily.Wolfe@la.gov).



Coming up next with 10 years as our Editor/Technical Writer is the "other" Jenny—**Jenny Gilbert**. She edits research reports, technical summaries, capsules, and fact sheets. Gilbert is the creative expert behind most content for our newsletter, *Tech Today*. Gilbert is also a design expert and can handle assisting with the layout of any of our design projects. From reading a report to writing an article, she is always impressed by the work LTRC is doing for our state. For any of your editing questions, contact [Jenny.Gilbert@la.gov](mailto:Jenny.Gilbert@la.gov).



For close to 4 years, **Chris Melton** has served as our Multi-Media Producer. That's a fancy term for photographer and videographer. Melton is one talented artist and lends his expertise to video editing, graphic design, illustration, and motion graphics to LTRC. In the few years that Melton has been on board, he's responsible for LTRC's YouTube channel and dozens of published videos. He even assisted the Department in winning "Best YouTube Video Channel" at the AASHTO awards. Need help with a video? Reach out to [Chris.Melton@la.gov](mailto:Chris.Melton@la.gov).



Now that you've gotten to know our publications department at LTRC a little bit better, we hope you know who to call on when you need a specific media or graphic-related task. We're a fun group and our doors are always open! By integrating all our design experience and using state-of-the-art software, LTRC houses a powerful internal resource for design, print, and visual elements of all DOTD's research and training programs. We look forward to making LTRC look good for years to come!

We are happy to feature your department and staff in our Closer Look series for *Tech Today*! If you are interested in highlighting your program or department, please contact Jenny Gilbert at [jenny.gilbert@la.gov](mailto:jenny.gilbert@la.gov) or 225-767-9150.

# New Employee Spotlight: Keri Runnels



**As LTRC’s new Structured Training Director,** Keri Runnels oversees a staff of DOTD program professionals in each of the DOTD structured training program areas of the Technology Transfer Section. She also coordinates the activities of the district training offices to establish, develop, produce, implement, and deliver technical training and leadership training programs to all DOTD employees—as

well as to parish, local, and regional public agencies and the transportation industry within Louisiana and national entities engaged in various activities in the transportation field.

Coordinating training and professional development is nothing new to Runnels as she comes with 11 years of experience in Human Resources. She was most recently DOTD’s HR Staffing Manager and is excited to now be a part of the LTRC family. Runnels explained, “After working with DOTD for six years, I’ve come to realize that LTRC is a hub of information, a wealth of knowledge, and the individuals who work here are constantly pushing that knowledge out for others to gain from it. I wanted to be a part of that push.”

Runnels was also recently accepted into LSU’s M.S. program for Leadership and Human Resource Development with a concentration in Workforce Development. “I am super excited about this particular field because I think it will marry my Human Resources background with my new career path in Workforce Development,” she said.



## Fun Facts

- I am currently planning my wedding and will become Keri Norton in December 2019!
- I refuse to eat square hamburgers
- Other than DOTD, I have also worked with State Civil Service, Division of Administration, and Public Safety – State Police.

## STAFF NEWS

# Staff Updates and Accomplishments

ULL Assistant Professor and LTRC ITS/Traffic Program Manager **Julius Codjoe**, Ph.D., P.E., was re-elected for a two-year term on the Gulf Region Intelligent Transportation Society (GRITS) board that began on January 1, 2019.

**Rudynah Capone**, LTAP’s Safety Initiatives Manager, recently became a Power Plus member of the Association for Talent Development (ATD) National and Baton Rouge chapter and made plans to attend the ATD Conference on May 19-22, 2019, in Washington D.C.



After 5 years of serving LTAP as the Training Program Coordinator, **Courtney Dupre** has moved in to the Business Manager role! She will manage the business, financial and administrative processes, and services for the LTAP and LRSP programs which provide technical assistance and on-site training to local agency transportation agencies statewide.

Congratulations to **Amy Christen**, Teaching Associate 4, and **Kristi M. Folse**, Safety and Special Topics Training Program Manager, on recently completing the CPTP Professional Trainer Certificate. The CPTP Professional Trainer Certificate is an intensive program for employees at state agencies who are involved in training.



Associate Director, Technology Transfer and Training **Mary Leah Coco**, Ph.D., was recently featured as one of Women of Asphalt's 100 Women. Dr. Coco was selected after being nominated by her peers as a woman who makes a difference in the asphalt industry. Women of Asphalt is a national grassroots coalition started by women in the asphalt industry with the purpose of supporting career growth and development for women in all aspects of the industry.

LTRC welcomes **Hannah Boggs** as an Engineering Technician 4 and **Corey Mayeux**, P.E., as an Engineer 4 to the Asphalt Research Group.

LTRC would also like to welcome former EDRP student **William Saunders**, E.I., to the Concrete Research Group where he will be working as a Concrete Researcher.

## PUBLICATIONS

# Recently Published

### **Project Capsule 18-4B**

*Effect of Increased Asphalt Pavement Density on its Durability*

Louay Mohammad, Ph.D., P.E. (WY)

### **Project Capsule 18-6SS**

*An Assessment of LADOTD's Consultant Plan Development and Performance Rating Process*

Ron Hamilton

### **Project Capsule 19-4SS**

*The Impact of the Louisiana Rail Infrastructure: A System Analysis and Plan*  
Bethany Stich, Ph.D.

### **Project Capsule 18-4SA**

*Intersection on Horizontal Curves: Problems and Potential Solutions*  
Xiaoduan Sun, Ph.D., P.E.

### **Project Capsule 19-1SA**

*Evaluation of Counting Device for Pedestrians and Bicyclists*

Yasser A. Ismail, Ph.D.

### **Final Report and Technical Summary 588**

*Minimizing Shrinkage Cracking in Cement-Stabilized Bases through Micro-Cracking*

Zhong Wu, Ph.D., P.E.; Yilong Liu, Ph.D.; and Ferdous Intaj

### **Technical Assistance Report 17-02TA-SA**

*Distracted Driving: Strategies and State of the Practices*  
Elisabeta Mitran, Ph.D.; Tess Ellender; and Dortha Cummins



## VIEW ONLINE

To download a complete list of LTTRC publications, visit the website at [www.ltrc.lsu.edu](http://www.ltrc.lsu.edu).



## LOUISIANA TRANSPORTATION RESEARCH CENTER

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For additional information on material included in this newsletter, contact the public information director at 225-767-9183.

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### LTRC Administration and Publications Staff

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**Sam Cooper, Jr., Ph.D., P.E.**, Director

**Tyson Rupnow, Ph.D., P.E.**, Associate Director, Research

**Vijaya (VJ) Gopu, Ph.D., P.E.**, Associate Director, External Programs

**Mary Leah Coco, Ph.D.**, Associate Director, Technology Transfer & Training

**Jenny Kirkland**, Public Information Director

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**Chris Melton**, Multi-Media Producer

**Jenny Gilbert**, Editor/Technical Writer

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