TECHNOLOGY TODAY

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RESEARCH

LTRC Project Investigates New Technology Enabling Expanded Pavement Evaluation Across Louisiana

Monitoring and maintaining pavement conditions is a critical task for Louisiana's DOTD. Pavement smoothness is one key measure influencing not only road users' comfort but also their safety on the state's highways. The traditional high-speed inertial profilers used for pavement evaluation, however, are unable to properly evaluate roadway sections such as ramps, acceleration lanes, and deceleration lanes, which are often, by their nature, driven over at low speeds or under stop-and-go conditions. This limitation makes it difficult for the state to properly monitor pavement conditions on these sections, leading to potential gaps in critical maintenance.

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TECH TRANSFER

Behind the Stacks: LTRC's Transportation Research Library

Sandra Brady, MLIS, has always loved reading and research. So in 2007, when Brady learned that LTRC's new Transportation Training and Education Center (TTEC) would include Louisiana's premier transportation research library, she was intrigued at the opportunity to build it. Nearly twenty years later, Brady continues to delight in discovering new ways to help researchers from LTRC and beyond access the resources they need to advance their investigations.

Brady recently took LTRC's Publications Team "behind the stacks" of the LTRC Library to share about the process of building and managing it, as well as the wealth of resources available to researchers at LTRC and across the state and nation...

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IN THIS ISSUE

UPCOMING EVENTS

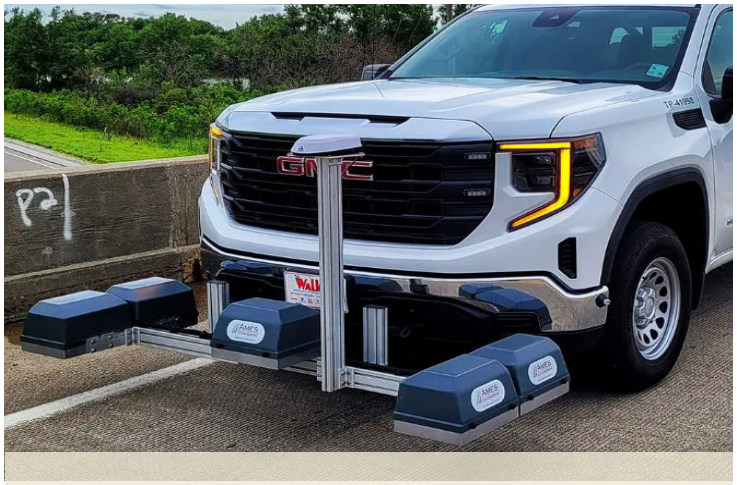
Construction Roundup
October 27, TTEC 100

Engineering Ethics
November 6, TTEC 100

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

Pavement Evaluation (ctd. from pg. 1)

Recent advances in pavement monitoring technology present a significant opportunity for positive change. LTRC researchers Jun Liu, Ph.D., P.E., and Qiming Chen, Ph.D., P.E., recently completed a study evaluating the accuracy and reliability of several new Stop-and-Go (SAG) inertial profilers under multiple special operating conditions. The goal of their research project, entitled "Performance Index Rating and Maintenance Cost Assignment for Ramps, Acceleration Lanes, and Deceleration Lanes in Louisiana," was to assess the usefulness of these new tools and propose a method to measure and characterize key pavement performance indicators (e.g., performance index and international roughness index) on special roadway sections across the state.



LTRC researchers recommend the SAG inertial profiler (pictured above) be employed for pavement evaluation across Louisiana.

After completing two testing cycles in 2022 and 2024—the first comparing the new SAG profilers with conventional systems, and the second evaluating the SAG equipment under various conditions simulating common real-world traffic scenarios—Drs. Liu and Chen reported that the new technology performed well overall in an array of pavement evaluation scenarios. SAG profilers functioned comparably to traditional machines at constant high operational speeds, while also accurately and consistently measuring pavement conditions under low-speed operations, during acceleration and deceleration, and under stop-and-go scenarios. Established standards from both Louisiana DOTD and AASHTO were utilized as baselines to evaluate the profilers' performance for repeatability and accuracy.

In light of these findings, the research team recommended the SAG profiler be employed across Louisiana to assess conditions on previously unmeasurable pavement sections such as ramps, acceleration lanes, and deceleration lanes. While there are additional necessary steps to fully implement these findings—for example, the calculation of maintenance needs and actual treatment costs for special pavement sections—the results of this study represent a significant breakthrough for Louisiana's transportation officials.

Dr. Liu highlights the potential impact of expanded pavement evaluation capabilities for the state: "The ability of SAG profilers to accurately measure pavement smoothness, particularly in urban areas and on critical highway sections such as ramps, complements current data collection practices, thus helping DOTD make more informed decisions regarding pavement maintenance, rehabilitation, and overall network management."

Read Final Report or Tech Summary 713 online: *www.ltrc.lsu.edu/publications.html*

RESEARCH

LTRC Researchers Honored with AASHTO High Value Research Award

LTRC strives for innovation and excellence in all of its research endeavors, aiming to add consistent value to the transportation community in Louisiana and beyond. These outstanding efforts were recently recognized by the Research Advisory Committee (RAC) of the American Association of State Highway and Transportation Officials (AASHTO) as LTRC was honored with a 2025 High Value Research Award.

Concrete Manager Zhen Liu, Ph.D., P.E. (pictured at right), along with fellow researchers Jose Milla, Ph.D., P.E., and William Saunders, P.E., received the award for their project, "Evaluation of the Miniature Concrete Prism Test (MCPT) for Use in LADOTD." This project, which launched in 2020, evaluated an innovative new testing method (MCPT) to assess concrete aggregates' vulnerability to alkali-silica reactivity (ASR), ultimately commending the method for both its reliability and timeliness. As Dr. Liu and his team discovered, the MCPT enables transportation officials to confidently assess source materials in approximately 56 days, compared with previous methods that require one year or longer. For more information on this project, see Technology Today Volume 38, Issue 3.

AASHTO's HVR Awards recognize and commend outstanding transportation research projects that address critical issues in the industry and demonstrate significant, actionable solutions. Winning projects from each of the four AASHTO regions are honored at the organization's summer meeting each year, as well as at the annual Transportation Research Board (TRB) conference in Washington, D.C.

Dr. Liu explained why he believes that his team's work is characterized appropriately as "high value": "Evaluating the source materials for concrete has historically been a costly and time-consuming process. Our team's favorable evaluation of the MCPT method will save transportation engineers significant time on their projects, allowing critical infrastructure needs to be addressed more efficiently and effectively. This is a win for state DOTs, their industry partners, and ultimately road users across Louisiana and beyond."

The research team's MCPT recommendations are currently under review by Louisiana DOTD officials. Dr. Liu says that he is hopeful that he and his fellow researchers will continue to offer the state more efficient and effective testing and mitigation strategies to enhance concrete construction on infrastructure projects.

Everyone at LTRC commends Dr. Liu and his partners on their excellent work and well-deserved honor!

Transportation Library (ctd. from pg. 1)

When and how did you discover your interest in libraries, and how did your education and career journey lead you to LTRC?

SB: Both of my parents read voraciously, and Mom took us to the library regularly as kids. Our elementary school librarian was amazing—probably my favorite teacher of all time. I spent many recesses in the library (for fun!) and even worked as a library helper.

During my long and winding journey to complete my undergraduate degree, I spent so much of my time in the LSU Library, I joked that they should pay me! As it worked out, when I finally graduated, there was an open position for a Library Associate. I applied, and they hired me. I started in the Reference Department in February 1996. While working there, I was able to pursue my Master's degree in Library and Information Science (MLIS). When I completed my degree in August 2001, I was hired as a Librarian.

During this time, my husband was working at LTRC. In 2007, he told me that LTRC wanted to establish a research library and would be hiring a Librarian. While engineering was not necessarily my preferred field at the time, after almost 12 years in the LSU Reference Department, I believed that my research skills were transferable, so I applied for the job. When I interviewed, I was blown away by how dedicated the LTRC Administration was to promoting quality research and supporting efforts to build a quality library. When they offered me the position, I was excited to make the move!

Building a research library from scratch seems like a major undertaking. How did you begin organizing the library we see here today?

SB: Honestly, I sat and scratched my head for a couple of days—maybe even weeks! That said, I had tables and clear shelves, so I started emptying boxes. It didn't take long for me to find related items to group together. A large part of my training and experience was in sorting, organizing, and cataloging. Of course, I did have some false starts along the way, but as I learned more about the industry and the collection, I rearranged items, and each time I did, things got better and easier.

Also, before I started at LTRC, the center was already a member of the Transportation Libraries Connectivity Pooled Fund and the National Transportation Knowledge Network. These groups were composed of librarians from transportation libraries across the nation who wanted to coordinate and share resources to help one another promote quality research. They were an invaluable resource for best practices, introductions to the field, lists of acronyms and definitions, and more!

How do you assist our LTRC researchers in advancing their research initiatives?

SB: I have 29 years of experience working in libraries and helping people with their research and information needs. Here are a few ways that I can help:

- When research topics come to mind, I provide an idea of what is already available in existing literature.
- I find resources on topics that researchers are interested in.
- I seek out and provide access to our most-used standards and publications.
- I preserve, catalog, and provide access to LTRC and DOTD's historical publications and documents.

Updates & Accomplishments

LTRC's **Geotechnical Research Team** published the following peer-reviewed journal publications and delivered corresponding conference presentations:

- **Gavin P. Gautreau, P.E.**, and **Masoud Nabohar**—"Long-Term Performance Evaluation of Reinforced Embankment Test Sections Over Extremely Soft, Compressible Soil: A Case Study in Louisiana," in *Transportation Research Record* and presented at the 104th TRB Annual Meeting.
- **Gautreau, Nobahar,** and **Nick Ferguson, P.E.**—"Evaluation of Lightweight Aggregate with the Dynamic Cone Penetrometer (DCP)," in *Journal of Transportation Infrastructure Geotechnology* and presented at the 103rd TRB Annual Meeting.
- **Gautreau, Nobahar,** and **Tyson Rupnow, Ph.D., P.E.**—"Forensic Investigation of a Cracked Highway Embankment Pavement in Louisiana: A Case Study," in *Journal of Transportation Infrastructure Geotechnology* and presented at the 103rd TRB Annual Meeting.

Courtney Dupre, M.A., LTAP Program Manager, was named Secretary for the NLTAPA organization.

Louay N. Mohammad, Ph.D., P.E. (WY), F.ASCE, was recently honored with a 2025 Lifetime Achievement Award by the ASCE's Louisiana Section. Additionally, he was selected to serve on NCHRP Project Panel 9-77 on Silo Storage—Impact on Asphalt Mixture Performance.

Vijaya Gopu, Ph.D., P.E., served on a proposal review panel for NSF's Division of Civil, Mechanical, and Manufacturing Innovation in July 2025. Additionally, he served as a moderator and organizer of a technical session on Infrastructure at the Tulane Engineering Forum held in New Orleans in May 2025. He is also serving as a co-PI on an EPA funded project titled "State of Louisiana 132—Port Master Electrification Strategic Plan" for $3 million.

Congratulations to **Melissa Neyland,** who was named Section 33's NHI/Individual Registration/Special Event Program Manager.

- I preserve and provide access to training manuals and testing study materials.
- I often get materials from other libraries to assist researchers, either from my transportation library colleagues or from LSU Libraries.

What kinds of physical and digital resources are available to them through the library?

SB: Physical resources that are available include: TRB Publications; many HRM, professional skills, and interpersonal communications publications; assorted engineering publications and proceedings; and materials written and published by DOTD and LTRC.

These digital resources are available as well: AASHTO Publications via Engineering Workbench; ASTM Standards via ASTM Compass; digital TRB publications; and databases available from LSU Libraries.

What is the most significant change you have seen since the library opened?

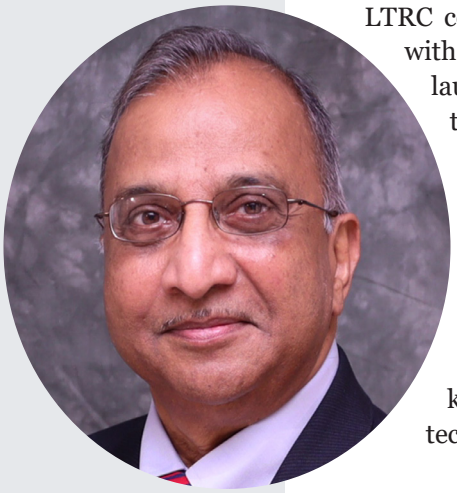
SB: So much is now available digitally—and more is being digitized every day! That, however, does not make librarians irrelevant; just because something is available

doesn't mean it is a reliable resource or that it is available legally. Copyright is still a thing, even online, and I can help researchers find and evaluate online resources.

What is the most enjoyable and energizing aspect of your role, and why?

SB: I love learning new things, and I love helping others. We have so much happening at LTRC with our research and educational initiatives that every day gives me opportunities to do both!

LTRC Expands Global Academic Outreach through International Collaboration



LTRC continues to strengthen its global academic ties through a collaborative initiative with the University of San Jose–Recoletos (USJ-R) in Cebu City, Philippines. Officially launched in 2023, this partnership is driven by a shared commitment to advancing technology transfer, research, and knowledge exchange in the fields of transportation, sustainability, and infrastructure development.

Webinar Series Highlights Cross-Border Technology Sharing

LTRC and USJ-R recently co-hosted a virtual webinar series titled "Introduction to FRP Composite Materials, Applications, Durability, Property Testing, and Computations." This initiative served as a conduit for the transfer of specialized knowledge from U.S.-based researchers to a global audience, demonstrating how technology can transcend borders to impact infrastructure practices worldwide.

To ensure accessibility across time zones, pre-recorded webinars were paired with live Q&A sessions, led by USJ-R's College of Engineering Dean Dennis Kilongkilong, CPRDS Director Englevert Reyes, and faculty members Yuriy Jose Sesican, Elvira Sales, and Randy Salazar. U.S. experts, including VJ Gopu, Ph.D., P.E. (LTRC), Hota Gangarao, Ph.D. (West Virginia University), and LTAP Director Rudynah Capone, participated in real time to support this collaborative effort.

"Participation at RGRC 2025 was a milestone in LTRC's continued commitment to global research outreach."

VJ Gopu, Ph.D., P.E., Associate Director of External Programs

Dr. Gangarao's insights on FRP composites underscored the power of technology transfer in reshaping global infrastructure, highlighting how innovations developed in U.S. research labs could significantly reduce maintenance costs and improve durability in international settings. His contributions, alongside those of Berry Chair Professor Rakesh Gupta, Ph.D., and Research Professor Ray Liang, Ph.D., helped illuminate the real-world value of FRP technology for infrastructure resilience.

With nearly 200 participants across two sessions, including academics, students, government officials, and private industry engineers, the event marked a major success in knowledge mobilization and technology dissemination across borders.

Dr. Gopu Presents at Recoletos Graduate Research Conference

Dr. VJ Gopu also delivered a plenary presentation at the Recoletos Graduate Research Conference (RGRC) 2025 on August 29-30 at the USJ-R Main Campus. While unable to attend in person, his pre-recorded talk, titled "Transportation Engineering and Sustainable Cities," explored the intersection of infrastructure technologies and resilient urban design, reinforcing LTRC's commitment to technology transfer as a catalyst for sustainable development.

The RGRC 2025 theme, "People, Ecotechnology, and Innovation: Cornerstones to a Resilient and Sustainable Future," reflects LTRC's vision of global collaboration through shared technological advancement. As Dr. Gopu notes, "Our opportunity to participate at RGRC 2025 was a milestone in LTRC's continued commitment to global research outreach."

Building on these successful engagements, LTRC is exploring future opportunities for joint research publications, virtual learning exchanges, and in-person workshops. These efforts aim to extend the reach of transformative technologies, accelerate knowledge transfer, and promote sustainable infrastructure practices throughout Southeast Asia and beyond.

Recently Published

Project Capsule 26-1C

Joint Deterioration Synthesis
Ricardo Hungria, Ph.D., E.I.

Project Capsule 25-1SA

Assessing Speeding-Related Crashes in Louisiana to Support a Safe System Approach
Milhan Moomen, Ph.D.

Project Capsule 25-3SS

Autonomous Vehicle Regulatory Landscape Review
Milhan Moomen, Ph.D.

Project Capsule 26-1B

Effect of SARA Asphalt Binder Fractionations on Laboratory Performance of Asphalt Mixtures
Louay Mohammad, Ph.D., P.E. (WY), F.ASCE

Final Report & Technical Summary 687 (Project 21-6B)

A New Generation of Porous Asphalt Pavement: OGFC Support Study
Mostafa A. Elseifi, Ph.D., P.E. (VA); Hossam Abohamer, Ph.D., P.E. (TX); Md. Tanvir A. Sarkar, Ph.D.; Md. Afif Rahman Chowdhury; Sk. Raihan Akbar

Final Report & Technical Summary 696 (Project 21-4B)

Development of a Standard Practice for the Design of Durable Open-Graded Friction Course (OGFC) Mixtures with Epoxy Asphalt
Louay Mohammad, Ph.D., P.E. (WY), F.ASCE; Anas Abualia, Ph.D.; Jun Liu, Ph.D., P.E.

Final Report & Technical Summary 709 (Project 21-5B)

Improving Maintenance of Open-Graded Friction Course in Louisiana
Corey Mayeux, P.E.; Moses Akentuna, Ph.D., P.E.; Saman Salari, P.E.

Final Report & Technical Summary 710 (Project 21-1B)

Development of a Cyclic Semi-Circular Bend Test to Evaluate Asphalt Mixture Crack Propagation Properties at Intermediate Temperate
Louay Mohammad, Ph.D., P.E. (WY), F.ASCE; Ye Ma, Ph.D.

Final Report & Technical Summary 715 (Project 23-3SS)

Estimating HCM Default Parameters for Louisiana
M. Ashifur Rahman, Ph.D.; Milhan Moomen, Ph.D.; Siam Junaed. E.I

Final Report & Technical Summary 711 (Project 21-2B)

Assessment of Long-Term Performance of Louisiana Asphalt Pavements
Louay Mohammad, Ph.D., P.E. (WY), F.ASCE; Moses Akentuna, Ph.D., P.E.; Kwadwo Ampadu Boateng, M.S.; Shasank Pant, M.S.

Final Report & Technical Summary 712 (Project 19-2B)

Development of a Moisture Sensitivity Test for Asphalt Mixtures
Louay Mohammad, Ph.D., P.E. (WY), F.ASCE; Moses Akentuna, Ph.D., P.E.; Mohammad Faizan Asghar, Ph.D.; Ibrahim A. Elnaml, Ph.D.

Final Report & Technical Summary 713 (Project 22-1P)

Performance Index Rating and Maintenance Cost Assignment for Ramps, Acceleration Lanes, and Deceleration Lanes in Louisiana
Jun Liu, Ph.D., P.E.; Qiming Chen, Ph.D., P.E.

Final Report & Technical Summary 714 (Project 21-2GT)

Geotechnical Database, Phase IV
Gavin P. Gautreau, P.E.

VIEW ONLINE

To download a complete list of LTRC publications, visit www.ltrc.lsu.edu.

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LTRC Administration and Publications Staff

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