



TECHNOLOGY TODAY

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UPCOMING EVENTS

Managing Across Generations (TTEC 179)
November 3

National Highway Institute (NHI) Course No. 130055
Safety Inspection of In-Service Bridges 10 Day Course
(Week 1 of 2) (TTEC 100)
November 29-30

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

RESEARCH

Flooding Assessment Project Earns Top Research Award

Flood damage research conducted by LTRC researchers Mingjiang Tao, Ph.D, and Rajib B. Mallick, Ph.D., from the Worcester Polytechnic Institute has been nationally recognized as an American Association of State Highway and Transportation Officials (AASHTO) high value research project. This "Sweet Sixteen" award is voted on each year and awarded to projects that show ingenuity and benefit to their communities.

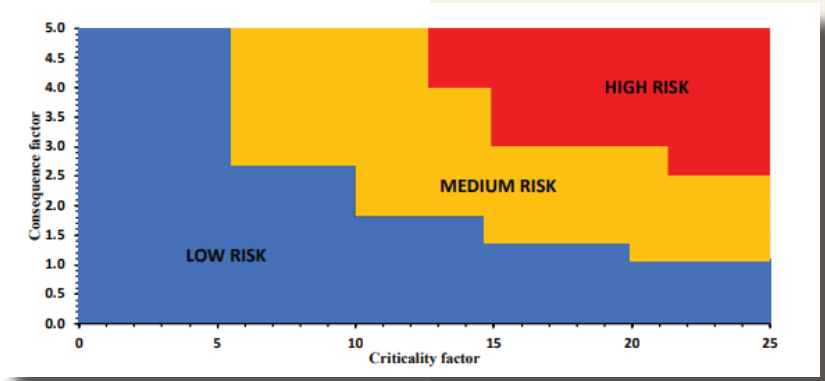
In their project "Best Practice for Assessing Roadway Damages Caused by Flooding," researchers sought to identify the best practices for assessing flood damage and develop multiple and appropriate levels of roadway damage assessment protocols.

"Over the years, many state and local agencies across the country have used their financial resources to assess and evaluate roadway damages caused by major flooding events with varying degrees of success," explained lead researcher Dr. Tao. "There is some guidance for engineers to follow in distinguishing between roadway damage that warrants temporary versus permanent repairs when assessing flooded roadways, but it is primarily based on visual inspection rather than

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...tied to any pavement performance based properties.”

During this project, researchers collected best practices used by local, state, and federal highway agencies to evaluate flood-induced damage to roadways through a questionnaire survey and a comprehensive literature review. A composite evaluation indicator or “risk factor” (a combination of hazard, vulnerabilities, and consequence factors) was proposed to take into consideration the potential of flooding, structural loading capacity, hydraulic conditions, base material properties, and damage-entailed consequence. Based on the risk factor, a hierarchical engineering evaluation framework was developed to help decision makers conduct an appropriate level of evaluation for specific flooded pavements.



Risk factor map of a roadway section under a given size storm based on its risk factor in criticality factor-consequence factor space

Researchers concluded that flexible pavements, especially those with a thin AC layer, have been identified as more prone to flood-induced damage, compared to rigid pavement and composite pavements. Therefore, local and low-volume roads are most vulnerable, even though oftentimes these roadways appear to be intact after the flood.

Dr. Tao and his team recommend that state DOTs and local municipalities regularly monitor and document structural conditions of roadways, especially those with a thin AC layer. Common in-situ testing tools used by various highway agencies, including FWD, DCP, and GPR, are recommended for such a purpose.

To learn more about this project, please visit https://www.ltrc.lsu.edu/pubs_final_reports.html and select Final Report 615 or Technical Summary 615, or watch the video presented as one of the Sweet Sixteen sessions at the virtual 2021 National RAC Annual Meeting by visiting <https://research.transportation.org/sweet-sixteen-2021/>



TRAINING

DOTD District Trainers Gather for Biannual Meeting

District training coordinators from across the state convened this summer in the TTEC building in Baton Rouge. Coordinators in attendance represented Bridge City, Lafayette, Monroe, Lake Charles, and Baton Rouge. The purpose of this meeting is to allow training coordinators from around the state a chance to gather and discuss training or development updates, share information as it relates to each district, and to collaborate with members of LTRC to enhance the administration of training and development initiatives.

“The meetings are a way for us to identify where gaps may exist in order to better support the district trainers in their roles. Often the trainers will bounce ideas off each other to determine the best way of handling certain issues,” explained DOTD Structured Training Director Keri Norton. “When an issue is brought up, another district may share their best practices on how they proctor tests, or another district may have encountered that same issue in the past and will share how they handled that issue.”



RESEARCH

Research Experiences for Undergraduates (REU) Program Visits LTRC

Students representing universities from across the nation recently toured LTRC's various laboratories and education facilities as part of the Advanced Infrastructure Materials (AIM) REU program. This highly selective summer program was established at the University of Louisiana at Lafayette by Dr. VJ Gopu, Associate Director for External Programs, after acquiring funding by the National Science Foundation (NSF). Serving as the REU site director, Dr. Gopu sat down to answer some questions about the program and its many offerings.

Tell us about the REU program and how students are selected.

The REU program is funded by the NSF to provide research opportunities for undergraduate students through its REU sites. Students apply for acceptance by the REU site, and the selection is very competitive. The selection is based on the applicants' background, interests, prior work experience, and GPA. Effort is made by the sites to select a diverse group of students and particular attention is paid to include underrepresented students in the cohort.

What is the goal of the program?

The goal of the program is to offer a group of 12 students per year—for 4 years—the opportunity to

work on research projects under the supervision of faculty mentors at the university. The research work is carried out over a 10-week period during the summer; the students are offered several professional development seminars/workshops and technical tours in addition to the research experience during the 10-week period. The LTRC technical tour is considered a highlight of the program by the participating students.

With such a variety of universities represented in the program, how does the program attract such a wide-range of students?

The information about the REU opportunity is disseminated to the appropriate department chairs at numerous universities by the REU site director. In turn, the department chairs communicate this REU opportunity to their undergraduate students. In addition, the students can apply for support from any REU site of interest to them on a national website—nsfetap.org. All the REU sites supported by NSF are generally included in this national website. The REU sites deal with a very broad spectrum of disciplines and students can generally find several

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DOTD Seeks to Improve Consultant Plan Quality by Launching Assessment Study

The Louisiana Department of Transportation and Development (DOTD) recently undertook an assessment of its consultant plan development and consultant rating processes to identify opportunities for improving consultant plan quality. The findings showed positive results overall, and a set of recommendations for improving the consulting rating system were offered for DOTD's consideration.

High-quality engineering plans are essential—errors and omissions in design plans can impact public safety, cause construction delays, and lead to cost overruns. Like many states, DOTD has experienced issues with the quality of completed plans submitted by consultants. These issues range from incomplete plans, errors, and plans that do not follow DOTD-specific design guidelines. To improve plan quality, DOTD partnered with Dye Management Group (DMG) through an LTRC study to conduct a five-month assessment of its consultant plan development and consultant past performance rating (CPPR) processes. Through focus groups and interviews as well as a best practice and current practice reviews, researchers were able to get an inside look into how DOTD's consultant plan policies function and compare to other states.

Head researcher Ron Hamilton, P.E., explained, “While consultant rating practices vary considerably among DOTs, DOTD's policies are in line with established norms and comply with statutory guidelines and regulations. Achieving consistency among raters is an issue most state DOTs struggle with. Opportunities to improve DOTD's consultant rating system include simplifying the rating process and forms, reducing the number of ratings required, training raters in how to conduct ratings, and requiring better compliance with established DOTD policies and guidelines.”

The assessment

In order to come to this conclusion, researchers identified best practices among other state DOTs for the



evaluation of consultant plan deliverables, conducted a thorough review and assessment of the DOTD consultant plan delivery process, identified best practices among other state DOTs for the evaluation of consultant rating systems, and evaluated the effectiveness and subjectivity of DOTD's current consultant rating system.

Overall, the assessment sought to discover the quality of consultant-developed construction plans (including DOTD's QC/QA processes) and DOTD's CPPR processes. “To assess plan quality, researchers first attempted to quantify the extent of the problem using data from past performance rating scores and construction change orders. The assessment did not look at in-house developed plans. Researchers then conducted an assessment of DOTD's QC/QA processes including organizational responsibilities, policies and procedures, and tools,” said Hamilton. “To assess the CPPR system, researchers compared DOTD's practices with other state DOTs and looked at how effectively and consistently DOTD's existing policies and procedures were being applied in practice.”

What's next?

Researchers presented a number of recommendations grouped by plan quality and the CPPR system. The top three items under plan quality included: create a plan development Quality Assurance Manager position within the new Plan Checking Unit (PCU); review all DOTD manuals, directives, policy guides, and other documents dealing with QC/QA for consistency and needed updates; and implement standard practices for plan review comments and responses.

To read more of Hamilton and his team's recommendations, please visit https://www.ltrc.lsu.edu/pubs_final_reports.html and select Final Report 629 or Technical Summary 629.

LTAP Center Develops a List of Training Resources for Local Public Agencies

The Louisiana Local Technical Assistance Program (LTAP) center has put together a two-page resource sheet featuring training materials and web-based courses offered by trusted agencies. This sheet is a valuable one-stop source for any local agency who is interested in additional training in a variety of areas but does not know where to start or is unsure of the many free courses, webinars, and videos available.

Among the resources featured are the newly developed online courses from FHWA's Center for Local Aid Support (CLAS). They may be accessed anytime and anywhere, and they are designed to meet a transportation professional's needs. These courses include:

- Safe Transportation for Every Pedestrian (STEP)
- Geosynthetic Reinforced Soil – Integrated Bridge System (GRS-IBS)
- Gravel Roads Construction and Maintenance
- Construction Inspection of Rockeries
- Project Bundling

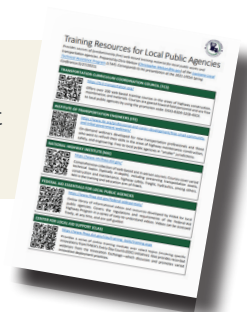
Another valuable resource is the Federal Aid Essentials for LPAs, a central online library of informational videos



and tools about the regulations and requirements of the Federal-Aid Highway Program. Each video sheds light on a single topic by simplifying complex regulations and requirements of the Federal-Aid Highway Program into comprehensible concepts and illustrated examples.

Also featured is a searchable database of recorded webinars and training materials provided by the National LTAP Association (NLTAPA). It contains links to AASHTO's Transportation Curriculum Coordination Council's (TC3) courses, National Highway Institute's (NHI) courses, American Public Works Association (APWA) courses, and classes offered by LTAP centers around the nation.

To view a full listing of the resource sheet and sign up for LTAP's classes, visit the training tab of www.louisianaltap.org.



Trainers meeting continued

During the course of the meeting, each training program manager provided an update as it relates to his or her programmatic responsibilities. Additional topics of interest included annual updates made to the DTRN system (the system that tracks DOTD's training efforts), the ethics training course and how that course is presented, sexual harassment training courses, new supervisor orientation, administrative manual updates, certification program changes, and a discussion was facilitated by Construction and Materials Training Program Manager John Dean on best practices when proctoring tests in the test.com system.

"We also introduced the needs assessment project, which we are excited recently began. For this project, Garrett Wheat will lead us through a needs assessment for training courses that are contained in the various STPs," explained Norton.

For more information about future district trainers meetings, contact Patrick Frazier at (225) 767-9159 or patrick.frazier@la.gov.

REU visit continued

sites of interest to them. The UL-Lafayette site received 90 applications and could accept only 12 students into the program.

What is expected from the students while they are in the program?

The students are expected to conduct research work under the supervision of the faculty mentors and make a poster presentation at a symposium held on the last day of their internship period. In addition, the students are required to participate in all the professional development seminars/workshops and technical tours.

What do you hope students gain from their time in REU?

It is my hope the undergraduate students gain a good understanding of what is involved in conducting research and develop an interest in pursuing graduate studies. This unique opportunity is not otherwise available to undergraduate students in their educational program.



EVENT

Louisiana Transportation Conference Goes Virtual in 2022



Registration is now open for the 2022 Louisiana Transportation Conference (LTC). The Louisiana Transportation Research Center is excited to announce that the conference will temporarily move to a virtual conference platform on March 15-16, 2022. As the Louisiana Department of Transportation has continued to monitor many evolving factors, shifting this large-scale event to a virtual platform is a prudent decision for the health and safety of our transportation community.

With the LTC 2022 virtual footprint, we look forward to offering you the same innovative programming, impactful networking, and opportunities for professional development on the emerging topics within our transportation community. In keeping with tradition, the LTC will include a variety of technical sessions. The conference committee is hard at work planning opportunities for virtual engagement within an environment to connect with speakers, sponsors, and educators from across the globe.

Transitioning to this format presents conference planners with the unique opportunity to spotlight the best of what virtual learning has to offer. We hope you will join us for this reimagined event and celebrate our collective resilience and dedication to educating our transportation community. Our goal is to also resume an in-person event in 2023 when we are confident in the well-being of everyone attending the Louisiana Transportation Conference.



Staff Updates and Accomplishments

Congratulations to Assistant Professor, Research and ITS/Traffic Research Manager **Raju Thapa**, Ph.D., on passing the P.E. exam.

Nicholas Ferguson also passed the P.E. exam and was recently promoted to Geotechnical Research Engineer.

LTRC Librarian **Sandy Brady** was featured in the National Transportation Knowledge Network (NTKN) Member Spotlight. Her interview can be found by visiting: <https://transportation.libguides.com/NTKN/blog/>

Congratulations to Pre-Construction Training Program Manager **Heather Huval** on the successful completion of her Bachelor of Science in Business Administration from Southern New Hampshire University.

LTAP Program Manager **Chris Melson** obtained his P.E. license and is now officially a Louisiana-registered P.E.

Teaching Associate, DOTD Leadership Development Institute **Marcus Sylvas** successfully passed his examination to become a certified professional with the Society of Human Resources Management and recently graduated with his Master of Science in Leadership and Human Resource Development.

Congratulations to **Patrick Frazier** on being selected as the new DOTD Program Specialist 4 (Maintenance & Special Topics Program Manager) for Section 33 in Internal Training.

PUBLICATIONS

Recently Published

Final Report and Technical Summary 632 (16-5P)

Evaluation of Pavement Service Life Extension Due to Asphalt Surface Treatment Interlayer over Soil-Cement Base

Mohammad "Jamal" Khattak, Ph.D., P.E.; Gilbert Y. Baladi, Ph.D., P.E.; and Mohammad Reza Ul Karim Bhuyan, M.S., GA

Final Report and Technical Summary 639 (14-5PF)

Design and Analysis Procedures for Asphalt Mixtures Containing High RAP Contents and/or RAS

Louay Mohammad, Ph.D., P.E. (WY); Wei Cao, Ph.D.; and Peyman Barghabany

Final Report and Technical Summary 652 (17-1C)

Effect of Clay Content on Alkali-Carbonate Reactive (ACR) Dolomitic Limestone

Jose Milla, Ph.D., P.E.; Tyson Rupnow, Ph.D., P.E.; and William Saunders, E.I.



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