Technology Today

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In this Issue

Upcoming Events

National Highway Institute (NHI) Course No. 310110 - Federal Aid Highways 101 (State Version)
October 24-25
TTEC 100

Transformational Leadership
November 28
TTEC 179

TRAC and RIDES
December 5-8
TTEC 175

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

The ATLaS30 is designed to model one half of a single truck axle.

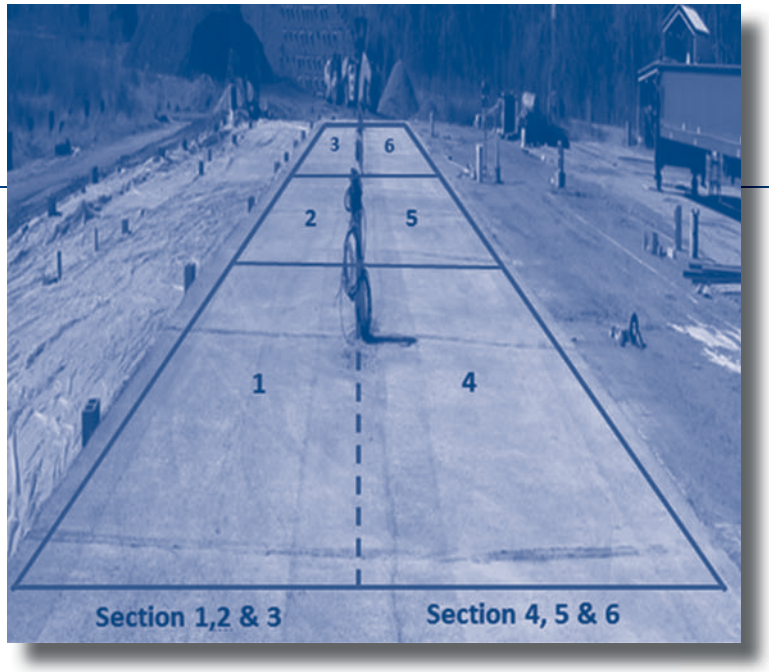
LTRC Receives High Value Research Award

New study recognized for showing how thin RCC-surfaced pavement withstands high loads, potentially saving millions for Louisiana

LTRC was recently awarded a 2017 AASHTO High Value Research "Sweet Sixteen" Award for the research project entitled "Roller Compacted Concrete over Soil Cement under Accelerated Loading." Each year, the Research Advisory Committee (RAC) collects High Value Research highlights from member states across the nation. These highlights showcase projects that are providing transportation excellence through research. From these submittals, each of the four RAC regions selects its top four projects to form the Sweet Sixteen Awards.

Principal investigators for the project included Zhong Wu, Ph.D., P.E., Tyson Rupnow, Ph.D., P.E., and Moinul I. Mahdi. Associate Director of Research Dr. Rupnow presented the project at the AASHTO RAC meeting held in Louisville, KY July 24-27, 2017, while Director Sam Cooper, Jr., Ph.D., P.E., was presented a certificate for the achievement during a luncheon held during the course of the AASHTO RAC meeting.

The research project focused on determining just how thin roller compacted concrete (RCC) could be paved while also maintaining its strength and integrity. From this project, researchers also tapped into a potential savings of over $2 million by utilizing this thinner concrete option for low-volume roads across the state.

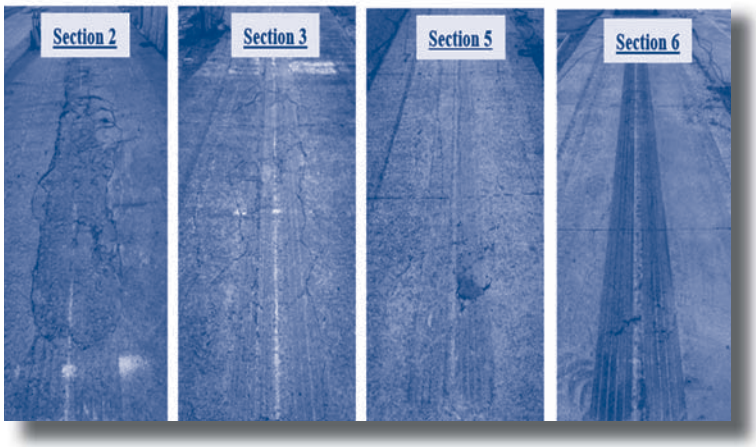


"To illustrate a potential benefit of using a thin RCC pavement in lieu of an asphalt pavement alternative for these low-volume roadways in Louisiana, a construction cost analysis was performed on two pavement structure alternatives," explained Dr. Wu. "Through this analysis, we determined that by using a 5-in. RCC in lieu of a 7-in. hot mix asphalt (HMA) layer, the estimated cost benefits would be $113,087 per lane mile." Applying the estimated cost benefits to a typical two-lane, 10-mile-long roadway project, the use of a 5-in. RCC layer in lieu of a 7-in. HMA layer results in a total construction cost savings up to $2,261,740.

In order to arrive at this savings potential, researchers had to first create an appropriate RCC mixture proportion for constructing six test lanes (including density and strength characteristics) and then evaluate it in real-time with various load-carrying capacities by using the ATLaS30, located at LTRC's Pavement Research Facility (PRF) in Port Allen, La.

Through the PRF test, researchers sought to determine the structural performance with failure mechanism and the load-carrying capacity of thin RCC pavements that may be used as a design option for low-volume pavement design in Louisiana.

This heavy vehicle load simulation device, the ATLaS30, was used to load the constructed RCC test sections. Since each RCC section had endured a certain number of extremely high axle loads (i.e., an equivalent single axle load range of 18 kips ~ 55 kips) before a fatigue failure, such high RCC fatigue lives proved the feasibility and suitability of using a relatively thin RCC pavement on low-volume roadways where heavy/overloaded trucks are often encountered.



Cracking failure that occurred during testing

Each RCC test section was loaded under the ATLaS30 in an incremental loading sequence of 9, 16, 20, 22, 25, and 27.5 kips until reaching pavement failure. In the end, four RCC sections loaded to a cracking failure. The overall accelerated loading results showed that all thin RCC test sections had a high-load carrying capacity under a typical southern Louisiana pavement condition.

Overall, researchers found that by using a thin RCC in lieu of an HMA layer for a low-volume

pavement where heavy or overloaded trucks frequently travel in Louisiana, not only can be cost-effective in construction, but it also potentially extends pavement service life with a less-maintenance need.

To learn more, please contact Dr. Zhong Wu at (225) 767-9163 or zhongwu@ltrc.lsu.edu or visit www.ltrc.lsu.edu and click on Final Report 578 (12-7P) under publications.

DOTD Innovations Showcase to Highlight Smart Solutions Across the State

New employee innovation competition will recognize top inventive maintenance approaches and improvements

DOTD's Office of Operations has launched a new, competitive approach to problem-solving and is moving Louisiana another step closer to greater safety and cost-savings. The first annual DOTD Innovations Showcase is currently underway and accepting submissions until October 1, 2017. Organizers of the event hope to identify and promote innovative practices and technologies throughout the Department by allowing maintenance and technology professionals to demonstrate how they are making their work safer and simpler as well as saving time or money.

The showcase is open to all full-time DOTD employees within the Office of Operations. All innovations must either be in use within the Department and resulting in the desired results, or if concept only, it must be demonstrable (such as by use of a prototype). There is no limit on the number of innovations that can be submitted by any district or work gang.

"We are very interested to see just how many applicants there are and what type of innovations are brought forth. The hope is that there are already things being done in the field by individuals that are innovative, that can be identified and brought forth," said Maintenance Management Administrator Kevin Reed. "The long-term goal is for the idea of innovation to become more a part of the culture, such that innovation isn't done simply for a competition but rather because we want to find ways to make the job safer, simpler, and more efficient."

continued on page 6

New Online Form to Streamline all Training Requests

Over the years, Section 33 at LTRC has quickly evolved into a one-stop shop for much of the Department's training needs. From developing classes, securing instructors, and facilitating registration, LTRC is committed to making practical use of today's research technical innovations and transferring them to the transportation community. In an effort to streamline all requests and capitalize on the center's resources, LTRC recently launched an online training form that now allows all private industry and DOTD professionals to quickly request their training needs.

"Ultimately, this will allow us to be proactive in meeting the workforce development needs of the Department while encouraging innovation in addressing technology transfer and training needs, explained Associate Director of Technology Transfer and Training Mary Leah Coco, Ph.D. "The need to ensure all requests were directed to the proper group in Section 33 drove the need for this form. In order to avoid duplication of efforts, having a main request that is disseminated to the proper group in Section 33 and then communicated to the other groups is extremely helpful."

Some of the ways in which Section 33 offers its services include:

- COURSE DEVELOPMENT
- FACILITATION (COURSE/MEETING/ETC.)
- COURSE MANAGEMENT
- COURSE PROCUREMENT
- COURSE SCHEDULING (DATES AND LOCATIONS)
- COURSE ANNOUNCEMENT(S)
- COURSE CONFIRMATION(S)
- COURSE MANUAL CREATION
- COURSE CERTIFICATE(S)

As a whole, there are many ways that Section 33 assists the Department outside of the normal day-to-day operations. With the creation of the new form, LTRC will now be able to proactively address technology transfer and training needs while also having a repository of stored requests. This allows LTRC to track when, how, who, etc. the request was made and better serve the entire local transportation community.

Who can use the form?

If you have a training needs request of any kind as outlined on the form, you are now required to submit your information there. LTRC will no longer take requests through phone and/or email. Dr. Coco welcomes dialogue in the beginning stages, then will redirect our partners to complete the form.

The form can be found on LTRC's homepage or at http://www.ltrc.lsu.edu/fr/trainingneeds.html. For more information, please contact Dr. Mary Leah Coco at (225) 767-9167 or maryleah.coco@la.gov.

Specifications Book Roadshow 2017

By Laura Williams

Over 700 transportation professionals attended the Specifications Book Roadshow, where speakers travelled across the state between June 12-July 20, 2017, presenting on recent revisions in the 2016 *Louisiana Standard Specifications for Roads and Bridges* manual. The Department hosted a total of nine classes in Baton Rouge, Shreveport, Alexandria, Lafayette, New Orleans, and West Monroe. Because of extensive revisions to the standards between the 2006 version and the 2016 version, the roadshow featured a number of presentations highlighting all the major changes.

DOTD Chief Engineer Janice Williams, P.E., requested the creation of the workshops instead of the usual test on spec book revisions that users were previously required to take. "We decided to provide classes for the specifications update so people could have an interactive way to learn about the changes," said Williams.

The presenters were Timothy Strohschein and Amar Raghavendra, P.E., of DOTD and Gavir eau, P.E., Samuel Cooper, III, P.E., Ph.D., Tyson Rupnow, P.E., Ph.D., and Mary Leah Coco, Ph.D., of LTRC. "Periodically, the standard specifications are revisited and updated to incorporate newer business models, updated practices, previously used special provisions, and new materials," explained Dr. Coco. "Throughout these workshops, subject matter experts across the 10 parts of the specifications provided information on these major changes to the standards specifications from the 2006 to the 2016 version."

> *Throughout these workshops, subject matter experts across the 10 parts of the specifications provided information on these major changes to the standards specifications from the 2006 to the 2016 version.*
>
> *—Dr. Mary Leah Coco*

Among the many changes covered in the course were removing all metric measurements and the inclusion of non-standard items, while other parts underwent complete revisions. Williams added, "Many parts of the specifications including the general provisions, asphalt pavements, portland cement concrete, structures, and materials have been reorganized and/or significantly rewritten." While Part 5 and Part 9 of the spec book are now longer, Part 8 has doubled in length. However, the greatest change, which has been in the works for years, was updating the specification's language from passive to active voice, which creates clearer, shorter, and more concise sentences.

Although the courses provided details on the major revisions, due to length, they could not cover every revision, so contractors, designers, and DOTD personnel are encouraged to read the spec book in its entirety and all special provisions.

Copies of the 2016 *Louisiana Standard Specifications for Roads and Bridges* manual can be purchased through DOTD's General Files Office. The cost of each manual is $20 plus tax and applicable fees. The manual is also available for download online at no cost in PDF format at http://wwwapps.dotd.la.gov/administration/dotdaz/definition.aspx?termID=173.

If you have any questions about the manual, please feel contact DOTD's General Files Office directly by calling (225) 379-1107.

Innovations Showcase continued from pg. 3

Innovations can be submitted in the areas of tools and equipment, productivity, and projects. The Innovations Showcase Committee will evaluate the submissions on the following criteria:

- **Originality** – *How new is it to DOTD?*
- **Duration** – *How long has it been in practice with desired results?*
- **Transferability** – *How likely is it to be used in other areas?*
- **Organizational Impact** – *How will it positively impact DOTD with tangible results?*
- **Conservation of Resources** – *How much money will it save?*
- **Cost to Implement** – *What is the total cost of the innovation?*
- **Meets Intended Goal** – *How well does it perform against the intended goal?*
- **Impact on Safety** – *What is the impact on safety to employees, contractors, or the traveling public?*

The top three evaluated innovations will receive a budget transfer ranging from $2,500 to $10,000 to their respective district/gang from the HQ maintenance division. Winners at the district/regional level will advance to a statewide showcase, which will be held during the Louisiana Transportation Conference, February 25-28, 2018.

To learn more about the event, please contact Kevin Reed at 225-379-1916 or Kevin.Reed@la.gov.

Staff Updates and Accomplishments

Section 33 would like to welcome **Rebecca Rizzutto** as the new Education and Outreach Program Manager for the ERDP, Co-Op, TRAC, and RIDES Programs.

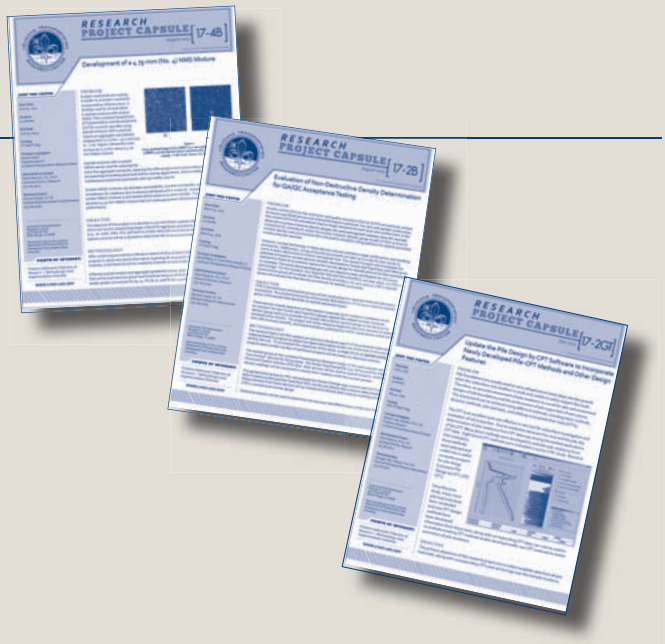
LSU Professor, Research, GERL Manager **Murad Abu-Farsakh, Ph.D., P.E.,** delivered a 4-hour workshop on "Evaluation of Pile Nominal Resistance from CPT Data" during the GeoMEast 2017 conference, held in Sharm El Sheikh, Egypt, July 15-20, 2017. Dr. Abu-Farsakh also served as the first author of "Advances in Analysis and Design of Deep Foundations: Proceedings of the 1st GeoMEast International Congress and Exhibition, Egypt 2017 on Sustainable Civil Infrastructures."

LSU Professor and EMCRF Manager **Louay N. Mohammad, Ph.D., P.E. (WY)** presented an invited lecture at the 2017 GeoMEast International Congress and Exhibition in Sharm Elsheikh, Egypt, July 15-19, 2017. The title of the lecture is "Development and Implementation of a Balanced Asphalt Mixture Design Procedure."

Vijaya (VJ) Gopu, Ph.D., P.E., Associate Director of External Programs, was awarded the Matthew G. Stuller Endowed Professorship by the College of Engineering, University of Louisiana – Lafayette. He also delivered a keynote address and presented a technical paper at the 42nd Conference on "Our World in Concrete & Structures" held in Singapore in August 2017. In addition, Dr. Gopu served on several site visit panels and proposal review panels for the CMMI Division at NSF.

LTRC ITS/Traffic Research Associate **Julius Codjoe, Ph.D.**, was recently appointed as a Board Member of the Gulf Region Intelligent Transportation Society (GRITS). GRITS, a chapter of the Intelligent Transportation Society of America, consists of industry leaders and Intelligent Transportation Systems (ITS) advocates from Louisiana, Mississippi, and Alabama. GRITS advocates for the implementation of innovative and efficient ITS technologies and programs that improve safety and the quality of life for travelers in the three states. With his appointment, Dr. Codjoe will serve as Louisiana's Academic Representative and assist in the advancement of ITS throughout the region.

Recently Published



Project Capsule 17-4B
Development of a 4.75-mm (No. 4) NMS Mixture
Saman Salari

Project Capsule 17-2B
Evaluation of Non-Destructive Density Determination for QA/QC Acceptance Testing
David Mata, E.I., and Khalil Hanifa, E.I.

Project Capsule 17-2GT
Update the Pile Design by CPT Software to Incorporate Newly Developed Pile-CPT Methods and Other Design Features
Murad Y. Abu-Farsakh, Ph.D., P.E.

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LTRC Administration and Publications Staff

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