

# Technology

## Today

Vol 15  
No. 4

LTRC

2000

A publication of the Louisiana Transportation Research Center

### LTRC Announces Free Educational Opportunities for Transportation Community

The Louisiana Transportation Research Center (LTRC) has announced that it will be offering three important educational opportunities for the transportation community of Louisiana. The center will provide seminars for SuperPave generalist training, cone penetration testing, and changes to the *Manual on Uniform Traffic Control Devices (MUTCD)*. All three seminars are free and open to the transportation community.

Professional development hours (PDHs) will also be awarded for each course completed.

#### SuperPave Training Open to Public



LTRC will be offering seminars for SuperPave generalists, one of the three courses on SuperPave the center is providing. All the courses were developed by

LTRC's Dr. Louay Mohammad.

The course is open to the transportation community and admission is free for local, state, and federal government employees.

The *SuperPave Generalist* seminars will be held in Baton Rouge on April 2, 2001, and in Alexandria on April 4. The generalist course is designed for engineers and supervisory tech-

Cont. on  
page 2

### LTRC Welcomes New Dean of Engineering



LTRC is proud to welcome the new LSU Dean of Engineering Pius J. Egbelu. Dr. Egbelu, a Bert Turner Distinguished Professor, has served as the dean of the department since August 2000. Prior to joining LSU he was a professor and chair of the Department

of Industrial and Manufacturing Systems Engineering at Iowa State University. He has also served on the faculty of the Department of Industrial Engineering and Operations Research at Pennsylvania State University and the

Department of Industrial Engineering and Operations Research at Syracuse University.

He holds a B.S. in Industrial Engineering, magna cum laude, from Louisiana Tech

Cont. on  
page 7

For a registration form for the SuperPave Generalist and Cone Penetration Testing seminars, contact the LTRC Technology Transfer and Training Office at (225) 767-9139 or email [alandry@dotd.state.la.us](mailto:alandry@dotd.state.la.us).

nicians who need a basic understanding of SuperPave. The course teaches the fundamental concepts of SuperPave technology, describes various testing methods, summarizes the data generated from these tests and relates this information to mix design, quality, and performance. The classes will emphasize Louisiana SuperPave and provide a discussion of DOTD's experience with SuperPave and case histories of projects in the state.

LTRC previously offered three sessions of the *SuperPave Mix Design* course, which was designed for technicians involved in the design, control, validation, or acceptance of SuperPave mixtures and provided detailed instruction on SuperPave mix design and analysis. Topics covered by the class included an introduction to the behavior of asphalt mixtures, mixture volumetrics, SuperPave aggregate requirements and design aggregate structures, an overview of SuperPave binder specs, QC/QA, and

quality level analysis. The class also provided hands-on training in the use of the gyratory compactor and gave each participant the chance to work through the calculations required for mix design.

LTRC has also offered numerous *SuperPave Refresher* classes, which included a review of volumetric definitions and analysis for mix design, QC/QA, a review of quality level analysis, as well as hands-on training in aggregate testing and sample preparation using the gyratory compactor.

For a registration form for the *SuperPave Generalist Technology Transfer and Training Office* at (225) 767-9139 or email [alandry@dotd.state.la.us](mailto:alandry@dotd.state.la.us).

### Cone Penetration Testing Seminar

As part of its continuing technology transfer efforts, LTRC will present the *Cone Penetration Testing Technology Seminar*, to be held in Baton Rouge, on

March 26 and 27, and in Alexandria, on March 28 and 29.

In an effort to use technology to provide more efficient, cost-effective designs, DOTD is moving toward implementation of cone penetration testing (CPT) to obtain design parameters.

The seminar will present the findings of two LTRC research studies, *Evaluation of Bearing Capacity of Piles from Cone Penetration Test* and *Investigation of the Applicability of Intrusion Technology to Estimate the Resilient Modulus of Subgrade Soil*, along with the plans of DOTD to implement CPT technology.

The course features onsite availability of the LTRC cone equipment and software demonstrations. CPT consultant representatives are also scheduled to be on hand.

The two-day seminar was developed by LTRC Research Manager Mark Morvant, P.E.

Cont. on page 3

### Satellite Broadcast on MUTCD Available throughout State

The American Traffic Safety Services Association (ATSSA) has announced plans to hold a nationwide broadcast on March 20, 2001, that discusses changes and updates to the *Manual on Uniform Traffic Control Devices (MUTCD)*. The manual, scheduled for completion in December, contains standards for traffic control devices that regulate, warn, and guide motorists in all 50 states. Uniformity of traffic control devices is critical to optimize traffic performance and to help improve safety by reducing the number and severity of traffic crashes.

The Louisiana Transportation Research Center is making the satellite broadcast available to the public free of charge at the following venues across the state:

- Baton Rouge - LPB Studio, Perkins Road
- New Orleans - WLAE, Causeway Boulevard

- Monroe - University of Louisiana, Nursing Building Auditorium, University Avenue
- Alexandria - LSU-A, Caffey Annex
- Sulphur

"Everyone in the roadway safety industry has worked hard over the last couple of years to provide input and ideas into this new manual," Roger Wentz, executive director of ATSSA, said. "Many of the new changes and updates are significant, and by releasing this information to communities around the country simultaneously, countless lives will be saved on the nation's roadways beginning immediately."

The current *MUTCD*, published in 1988, had several changes added in 1995, but, essentially, the 1988 version has remained the industry standard for over 12 years.

"Times have changed," said Shelley Row, director of the Federal Highway Administration's (FHWA) Office of Transportation Operations. "Congestion is

a national issue, technology is pushing us in new directions. There are more work zones than ever before, and transportation professionals must respond to increasing demands. It's time for a new manual," she said.

Row handpicked a FHWA panel that will present the manual during the nationwide broadcast.

The panel, the actual drafters of the new manual, will present the manual's changes and updates on television from Northern Virginia Community College, in Annandale, Virginia, on March 20. The two-and-one-half-hour broadcast begins at 10:00 a.m. CST. ATSSA, the host of the broadcast, is pre-registering downlink sites now across the country, via their website at [www.atssa.com](http://www.atssa.com). Program viewers will also have the ability to immediately interact with the panel via toll-free telephone numbers on March 20, in-place specifically for the broadcast.

Cont. on page 7



*LTRC's Sher Creel sat down with Roddy Dillon before his retirement in January to discuss his thoughts on his long and prosperous tenure.*

After 38 years of service with DOTD, Roddy Dillon has decided to go home... again... Well, at least, for now.

Dillon began his transportation engineering career with DOTD straight out of Louisiana Tech University, and over the years, rose from location and survey in the district to project engineer and then to District 04 construction engineer, where he worked until his first retirement after 30 years in 1987.

He enjoyed retirement for a short time, then found himself back in the saddle for five years with a consulting firm in private industry. But he discovered he missed DOTD. When the opportunity arose to return to the department in 1993 as district administrator of District 04, he jumped at the chance.

---

"I just missed the people," he admitted sheepishly. "I enjoyed my associations in private industry, but DOTD is just different. The people are more like a family. So when the opportunity came to return, I took it."

---

Ultimately, his career path led him to Baton Rouge to become DOTD's Chief Engineer, the position he has held for over eight years now. He retires with 43 years on the books. "Looking back," he said, "I still look at the district as the best job, even as much as I've enjoyed this job."

Still somewhat awed just to be considered for the job of chief engineer, much less selected, Dillon observed that it has been a very humbling and overwhelming experience. "I certainly hope I've done a good job of it and helped to establish an atmosphere of trust that I hope will continue," he added. Although he insists he cannot take the credit, Dillon says one of the things he was most pleased with was getting the district maintenance people upgraded.

---

"I did not realize that just several years ago, we had people in our maintenance sections whose salaries were so low, they could not live off them. We got them upgraded so that they could at least make a living wage," he said with a note of satisfaction.

---

When asked about his biggest contribution to the department, Dillon was modest. "I would hope it would be my tenure as chief engineer since a lot of the authority and decision-making power rests with that office. I've tried to be fair, honest, and impartial in my decisions and treat everyone with respect," Dillon said thoughtfully, "although, I must admit in some instances I found myself becoming short in my demeanor in a controversial situation. My desire was not only to be a good steward of public money but also to ensure the contractor or consultant received a fair hearing."

Dillon says he has enjoyed a long association with LTRC and involvement in the research and training functions. "I've always been an advocate of training," he said, citing his earliest contributions to the training program as a committee member helping in the development of base course and concrete paving training courses. Since, he continues to respect the value of the department's various training programs.

"In my opinion, we lead the nation in construction training courses and certification," Dillon stated. "I haven't seen any state with a certification program better than ours. I've been real proud of that particular area of training. The key to remember, though, is that this (program) is for the people—you're dealing with people, and you've got to have a little flexibility."

His history also intertwined with research, Dillon remembers making a presentation at the Transportation Research Board Meeting in Washington, D.C., on soil-cement work as early as 1967. "Supposedly, I was told at that time, I was the project engineer on probably more soil cement work than any other project engineer in the state."

As chief engineer, Dillon has served on and chaired the LTRC Policy Committee for many years and is well acquainted with the activities of the center and its values. "Certainly, we need the research; it's necessary to get anywhere! You've got to look forward, and you have minds that can think beyond what you're doing now," he said. "I think our research section is nationally recognized."

Despite equipment problems at the LTRC Pavement Research Facility, known as ALF, Dillon praises the work that is being accomplished there. "Those guys are now probably the most expert in the nation on fixing and putting ALF back together. When it broke, there was no one else to turn to. . ." (with the Louisiana facility only the second in the nation). "They had to do it themselves, and they've done a good job!"

In looking toward his January retirement from the department, Dillon felt rather "nostalgic and emotional." He treasures the friends he's made along the way, he says, and his association with the DOTD people, contractors, consultants, and suppliers of highway products.

---

"I also especially appreciate the division heads in the chief engineer's directorate, Jimmy Little, Bob Boagni, Joe Baker, and Karl Finch. These individuals and their personnel made my responsibilities even more enjoyable."

---

He particularly credits his secretary, Gail Raleigh, with smoothing the way for him. "She's been a tremendous help. She knows things that I still haven't learned! But it's all worked out well."

When asked about his plans for the future, Dillon responded with care, "I have no plans—I have not sought any, or looked for any." He pointed out that he's restricted for two years by the ethics board from working with the department. "I did get an opinion from the ethics board, just in case I do something else. I needed to know where I stood. I never thought I'd be back with the department THIS time—the opportunity just presented itself." Dillon smiled, almost coy. "As I said, I have no plans—but I'm not closing any doors."

"I don't know of any monumental thing that I've done," he paused in thought. "I've worked under three DOTD secretaries, each one of them very different," he said with a chuckle. "Guess that says something right there!"

So with an Ethics Board opinion in his pocket, one has to wonder, has Roddy Dillon really retired?

*Editor's note: Having worked with Mr. Dillon for many years, we want to take this opportunity to wish him well in whatever endeavors he pursues. We have truly enjoyed our association with him and will sincerely miss his presence in the department.*

## Researchers Sound New Ideas for Aircraft Operations Classification System



the day and what do you see – pandemonium. Baggage is moving in one direction, passengers in another. Flight attendants, pilots, and people are all trying to get to their destination. To keep airports running smoothly, accurate records of all airport activities need to be kept.

Large airports are by necessity equipped with the means to track every minute of daily operations, but for smaller and rural airports that may be manned only during certain hours, record keeping can become a problem. Research sponsored by LTRC and conducted by Dr. Charles A. Harlow, LSU, realized this need and has designed a system to help solve the problem.

The researchers wanted to develop a prototype for an

automatic aircraft operation monitoring system, which would identify numbers and types of aircraft which take off and land. This information is of great importance in qualifying for funding, particularly at small, unmanned airports. Some of the issues involved in deploying technologies for monitoring aircraft operations include the cost of the monitoring operation, the reliability of the system, the portability of the system, the ability of the system to operate self-contained in the field, and the ability of the system to be acceptable and not interfere with airport operations.

After an evaluation of possible methods for deploying a monitoring system, the investigators determined that acoustic technology offered the best prospect. They created a database consisting of airport information, runway information, acoustic records, photographic records, a description of the event (take-off, landing) aircraft type, and environmental information.

The researchers determined that the best way to identify aircraft was from sound signals, but the signals presented an object identification problem with different types of aircraft. Feature extraction, the process of reducing the amount of data while retaining the ability to recognize the object, was used to solve the problem.

Sound data are often processed in the root mean square (RMS) of the sound signal pressure. The equivalent continuous sound level over a specified time interval is the equivalent steady level that would have the same RMS value over that time interval. Some sound events, such as jet aircrafts, are loud. Single engine propeller aircraft landings are very quiet. Other measures can be related to the shape of the curves. A fast aircraft, such as a jet, will have a curve that is steeper as the plane approaches, compared to a propeller aircraft. Using algorithms and acoustic signals as well as frequency, skewness, and symmetry measurements, a system

Cont. on  
page 8

## Educational Opportunities (cont. from page 3)

ATSSA has established a link at its website that explains the broadcast in greater detail. The link also features a nationwide map detailing the locations of pre-registered downlink sites, including driving directions to those locations.

“Anyone with an interest in roadway safety must get involved in this broadcast,” said ATSSA President Dennis Sterndahl. “Communication tools exist right now to make this new information available to virtually anyone, anywhere, with immediacy and accuracy. Lives on our nation’s roadways will be saved right away as a result of this broadcast.”

Shortly after the broadcast, videotape copies of the pro-

gram will be available through ATSSA, as well as both print and CD-ROM versions of the complete MUTCD.

Since 1969, ATSSA has represented companies and individuals in the traffic control and roadway safety industry. ATSSA’s 1,700 members provide the majority of traffic safety services and materials used on our nation’s roadways, such as guardrails, stripes, signs, lighting, drums, cones and barricades. ATSSA, headquartered in Fredericksburg, Virginia, also places heavy emphasis on work zone safety and training.

*For more information on exact times and locations when the broadcast can be viewed, contact Chip Thompson, LTRC training and development specialist, at (225) 767-9143 or email [chipthom@dotd.state.la.us](mailto:chipthom@dotd.state.la.us).*

*A venue is also being provided, courtesy of the Calcasieu Parish Police Jury, at the Post Oak Pavilion, 2911 Post Oak Road, Sulphur, Louisiana. For more information about the Calcasieu venue, contact Al Prater or Dixie Fontenot at 1-800-542-7623 or (337) 437-3507. Registration forms should be mailed to the Calcasieu Parish Police Jury, P. O. Drawer 3287, Lake Charles, Louisiana 70602.*

## LTRC Welcomes New Dean (cont. from page 1)

University and an M.S. and a Ph.D. in Industrial Engineering and Operations Research from Virginia Polytechnic Institute and State University. His research interests are in the areas of automated material handling, robotics, and manufacturing and enterprise systems analysis.

Some of Dr. Egbelu’s many accomplishments include the 1989 Outstanding Young Manufacturing Engineers Award by SME and the 1983 Outstanding Young Man of America Award. He was also a co-recipient of the 1996 National Science Foundation Director’s Award

for Management Excellence. He is listed in “Who’s Who in Engineering and Science” and a Fellow of the Institute of Industrial Engineers. LTRC looks forward to working with this accomplished and dedicated professional.

## Aircraft Operations Classification System (cont. from page 6)



was developed that was capable of classifying and monitoring different aircrafts and airport operations.

For the purpose of the research, there were a total of 105 takeoff events for jets, multi-engine, single engine planes, and helicopters. The accuracy of testing was 100 percent. A second study was conduct-

ed that included 48 sound events, such as various background noises including tractors, cars, trucks, construction sounds, etc. The testing results of the second study were also 100 percent.

The researchers believe further tests in the field and refinements to the algorithms and software can yield an

even more promising, commercial solution. With a system such as the researchers propose, smaller airports could have more accurate records and a more efficient classification system.

*For additional information contact Dr. Charles A. Harlow, principal investigator for the project, (225) 388-6796.*

### Technology Today Publication Statement

*Technology Today* is a quarterly publication of the Louisiana Transportation Research Center, administered jointly by the Louisiana Department of Transportation and Development and Louisiana State University. For additional information on material included in this newsletter, contact the editor, (225) 767-9145, Louisiana Transportation Research Center, 4101 Gourrier Ave., Baton Rouge, LA 70808-4443.

**Joe T. Baker, P.E.** Director, LTRC  
**Sher Creel** Executive Editor  
**Sandy Fiser** Editor

**Kirt Clement, P.E.** Assoc. Director, Technology Transfer  
**Vicki Dischler** Graphic Designer

**Renee Laborde** - Editorial Assistant

This public document is published at a total cost of \$936. Seventeen hundred copies of the public document were published in this first printing at a cost of \$820. The total cost of all printings of this document including reprints is \$936. This document was published by Louisiana State University, Graphic Services, 3555 River Road, Baton Rouge, to report on the research and training of the Louisiana Transportation Research Center as required in R.S. 48:105. This material was duplicated in accordance with standards for printing by state agencies established pursuant to R.S. 43:31. Printing of this material was purchased in accordance with the provisions of Title 43 of the Louisiana Revised

### Ethics Online

The Louisiana Professional Engineering and Land Surveying Board has made an ethics course available online through its website, located at [www.lapels.com](http://www.lapels.com). The course fulfills the requirement for one professional development hour (PDH) of ethics during each biennial licensure renewal period for each license.

In order to provide an ethics course for non-resident engineers, land surveyors, and others who cannot easily complete this requirement, the Board of Registration has provided a course on their website. When visiting the website, click on the "Continuing Professional Development" link to access several files dealing with continuing professional development, one of which is titled "Professional Ethics."

Reading this course and completing the ten-question quiz fulfills the requirement for one PDH. The completed quiz must be maintained in your personnel records to show that you have fulfilled this requirement.