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Research Section of LTRC Reorganized

LTRC congratulates both Mark Morvant and Chris Abadie on their new positions and welcomes newest staff member, "Doc" Zhang.



"Doc" Zhang

As one would expect, a research organization is always looking for an overall more efficient way of doing things. This is particularly true of the major reorganization that has taken place within LTRC's research program. The four strongest research areas of LTRC, the hot mix, concrete, pavement, and geotechnical research units, have been combined into two groups to better facilitate and implement research. The new organization combines

asphalt and concrete under Materials and places pave-

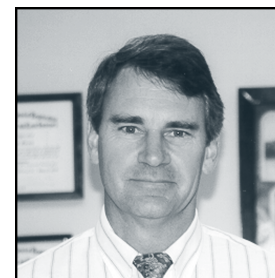


Chris Abadie

ment and geotechnical in a group similar to the department's design unit. Two positions were created over the newly formed units: Mark Morvant has been named the Pavement and Geotechnical Administrator

and Chris Abadie returns to LTRC as the Materials Administrator.

Mark has 14 years of past experience in the pavements and geotechnical



Mark Morvant

design section, 5 years in geotechnical research, and 1 year in construction.

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Rapid Drying of Soils with Microwave Ovens

For more information on this project, contact the principal investigator of the project, Kevin Gaspard, at (225) 767-9104.

Almost everyone has experienced the efficiency that a microwave oven brings to any kitchen, but microwave ovens can also be used to accurately and efficiently determine the moisture content of soils.

For soil-aggregate mixtures, whether naturally occurring or chemically stabilized, compaction is a significant factor in enhancing structural properties. The degree of compaction or densification is influenced by the type of soil, moisture con-

tent, and compactive effort. The current DOTD procedure for determining moisture-density relationships during construction is TR 415-99. It requires a minimum of three proctor tests

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Chris has 6 years of past experience at the materials lab physical testing unit, working with cement, fly ash, epoxies, and reinforcing steel, 6 years of experience in asphalt research, and 2 years in construction. He has also served as the Chair of the Specifications Committee for Superpave Binders, on various FHWA and NCHRP panels, and on three TRB committees. His recent involvement with bituminous construction will bring practical experience to the group.

The Associate Director of Research at LTRC, Skip Paul, describes the benefits of these changes saying, “the reorganization will improve our efficiency in those areas that have traditionally been strong, i.e. the infrastructure labs, and will create an opportunity to develop the capacity for areas where we will need to provide support to the department in the near future i.e. ITS, intermodal, and operations. As implementation of research and providing solutions to problems is our reason for being, we needed to

restructure the responsibilities of our people to better accomplish these activities.”

In meshing the new engineer classification with the reorganization, duties and responsibilities were realigned to improve efficiency and enhance implementation efforts. The two new administrative positions will be accountable for the implementation of research findings and deliverables produced by their groups.

By combining like units as one group, engineers will have the ability to better coordinate research to avoid problems of incompatibility on roadways later. For example, pavements and foundations (the geotechnical section) are inter-related; therefore, “by combining the two, problems can be better analyzed and researched,” says Morvant.

The reorganization will also provide for a less complex means of communicating with customers, allowing operations to run more smoothly. “Having only two

people accountable for a wide range of research will improve efficiency and create a more cooperative spirit,” said Abadie. He hopes that the reorganization will help LTRC apply research and better understand the needs of the department. In doing so, LTRC will establish a greater knowledge of specific problems so that people will look to LTRC for solutions.

Working along side of these administrators are research project managers and experts in each respective unit. Although the operation of research has now been altered for greater effectiveness by coordinating related units, many of the same research engineers will remain as project managers and experts in their specific area of research. Bill King, PRF Manager of ALF, Masood Rasoulia, Pavement Expert, and Kevin Gaspard, Geotechnical Manager, will continue their research under the pavement and geotechnical group. In addition, Dr. Zhongjie “Doc” Zhang has joined LTRC’s ranks to enhance this unit’s

Plans Progress for DOTD's 2002 Transportation Engineering Conference

Further information on the conference can be found at the LTRC web site, www@ltrc.lsu.edu.

Louisiana
Transportation
Engineering
Conference
2002
We Get You There!

The 2002 Transportation Engineering Conference will be held February 17-20, 2002, at the Baton Rouge Radisson Hotel and Conference Center

Plans are in full swing for DOTD's 2002 Transportation Engineering Conference to be held February 17-20, 2002, at the Baton Rouge Radisson

Hotel and Conference Center. LTRC is coordinating the conference which provides a forum for members of the industry to relate innovative technologies and

to discuss transportation policy, practice, and problems. More than 1,200 transportation professionals representing the public, private and academic sections of the transportation industry are expected to attend.

Further information on the conference can be found at the LTRC web site, www@ltrc.lsu.edu.

In the near future, both the government and corporate registration forms may be downloaded and mailed or faxed to Gordon Smith, LTRC Technology Transfer Program Manager at 225-767-9156.

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research as Geotechnical Expert. In the materials group, Dr. Louay Mohammad will continue his work as Associate Professor and as Director of EMCRF (Engineering Materials Characterization Research Facility), and John Eggers will continue his research as Concrete Expert.

The non-infrastructure units have also been realigned such that each program manager will report directly to the Associate Director of Research, Skip Paul. Art Rogers will handle management and policy studies, and Dr. Chester Wilmot, Associate Professor, will assume program management of planning studies in

addition to conducting his own research. Additionally, the environmental and water resources position recently vacated by Curtis Fletcher's departure will soon be filled. Future efforts in addressing the non-infrastructure areas, intermodal and operations/ITS are planned in accordance with the LTRC strategic plan to fully serve the needs of DOTD.

Grouchy Elected Chairman of Executive Committee for National LTAP Association



David Grouchy, Director of the Louisiana LTAP Center, a program of the Louisiana Transportation Center (LTRC), has been elected chairman of the executive committee of

the National LTAP Association. "This is a great honor for me personally and for Louisiana. I feel that the LTAP program as a whole is one of the most effective federal programs," Grouchy said recently. Grouchy says his vision as chairman is to help the national program become even better, which will, in turn, benefit the people of Louisiana.

The LTAP, or Local Technical Assistance Program in Louisiana, provides technical services and training opportunities to local governments. While the focus of LTAP is on city and parish workers, many state and federal employees as well as contractors and consultant personnel have

taken advantage of the excellent training offered.

Training opportunities given by LTAP are numerous, including courses such as work zone safety, maintenance of bridges and asphalt pavements, and the safe operation of maintenance vehicles. LTAP also makes video and printed material available through a lending library located in Baton Rouge. Anyone in need of library materials can call the 800-256-1567, and requested materials will be sent to them free of charge.

According to Grouchy, LTAP offers services from "how to patch a pot hole to sophisticated management concepts." Through this program, engineers and land surveyors can even receive professional development credit hours necessary for their registration.

On a national level, LTAP is comprised of 58 centers: one in each state in the U.S., one in Puerto Rico, and eight Native American Tribal Centers. Each center is an independent entity; some are based in state

DOTs and some in universities. Each center works to fulfill the unique needs of its respective local governments. The strength of the program, however, is the sense of cooperation among centers that generously share ideas, teaching materials, and instructors.

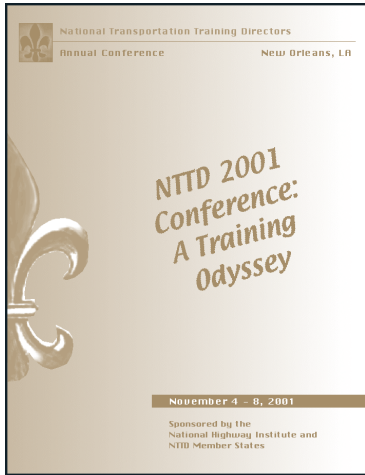
Federal funding is provided by the Federal Highway Administration. Many states, including Louisiana, give more than the required 50% funding to the program. The Louisiana LTAP Center has received stable funding as a result of the efforts of its parent organization, LTRC. Joe Baker, Director of LTRC says, "The obvious benefits of this program to our local government customers well justify our strong support."

"Stable funding is critical to the program and is one of the objectives we most want to attain for all LTAP centers through the national association in the next couple of years. Many centers don't have the great support we get from LTRC," Grouchy said.



LTRC Hosts National

Transportation Training Conference



LTRC will be hosting the National Transportation Training Director's Conference in New Orleans, Louisiana on November 4-8, 2001.

"This conference is a wonderful

opportunity for state transportation training personnel to share and exchange information," said Wilma Chustz, 2001 Conference Coordinator and LTRC Technology Transfer Program Manager.

Training directors from each state's highway/transportation department, the National Highway Institute training staff, and LTRC program managers are invited to attend the conference.

Various topics will be covered during the conference including the keynote address: "From Feasibility Analysis to Cost Benefit Analysis," presented by Dr. Scott Parry, the founder of Training House, Inc. and creator of the Managerial Assessment of Proficiency (MAP). Other presentations include, "Emotional Intelligence and Its Impact upon Workplace

Performance," by Graydon Dawson, Missouri DOT; "Awarding CEU's," presented by Bob Stull, International Association for Continuing Education and Training; "Performance Measurement in a DOT," presented by Dave Acree, NTTD president, Washington State DOT; "Transitioning to Performance Consulting," presented by Connie Beitter, New York State DOT Graydon Dawson; and a survey and discussion on "Recruitment, Retention, and Workforce Development," headed by Joe Toole, Director, FHWA Office of Professional Development.

For more information regarding this conference, contact Wilma Chustz at (225) 767-9134 or email her at wchustz@dotd.state.la.us.

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Rapid Drying of Soils with Microwave Ovens (cont. from page 1)

per construction zone. Each proctor test is accompanied by a moisture content test so that a moisture-density relationship can be established. According to field technicians, it takes approximately 60 minutes to conduct a moisture content test using the stove method, DOTD TR-403. This can create problems because the contractor is usually in the next construction zone before the quality control and quality assurance testing is complete.

A new method for drying soils was needed to reduce the amount of time required to perform moisture content testing and to improve accuracy if possible. With the current method, errors can occur in several ways. First, the amount of heat used to dry the material is determined by the skill and experience of the operator. If the material is overheated, combustion of the organic material in the soil can occur. Furthermore, if recycled asphalt pavement is blended into the base course, the asphalt coating on the aggregate can be melted or vaporized if overheated. Second, some material may spill out of the pan during the process of stirring the specimen while conducting the test.

In this study, four devices were used: a convection oven, a computer-controlled microwave oven, a standard microwave oven, and a stove. The soils selected for analysis were those typically encountered in Louisiana highway construction. Seven soils were examined, each in its natural state. Some soils containing Portland cement and some with lime were examined. A testing program was then conducted, and the results were statistically analyzed.

The convection oven, considered to produce the true moisture content, was used for comparison to the other devices. Based on a five percent deviation from the average moisture content value obtained from the convection oven, the standard microwave oven, computer controlled microwave oven, and stove were ranked first, second, and third, respectively. The average testing duration for the computer-controlled microwave oven and for the standard microwave oven was 34 and 23 minutes, respectively.

A benefits-to-costs analysis was conducted. The indicators for benefits were testing time and accuracy of the device while the indicators for costs were the ini-

tial cost of the device with accessories and salary cost to perform testing. The benefits-to-costs ratio for the standard microwave oven, computer-controlled microwave oven, and field method (stove) are 4.8, 1.26, and 0.72, respectively. Therefore, the standard microwave oven is the best alternative device based on accuracy, testing duration, and the benefits-to-costs analysis.

Microwave ovens are a viable means of rapidly drying soils. This study has shown that they are safe, accurate, and efficient.

Future implementation consists of several phases. A proposed specification "DOTD TR 403-01, Method C, Rapid Drying Soils with Microwave Oven" has been written and submitted to the DOTD Testing Procedures Committee for review. The District 03 and 62 Laboratory Engineers are conducting field trials with the microwave oven. Their feedback will be incorporated into the implementation program. When the test procedures are approved, a training program including a video will be developed. Implementation of this timesaving and efficient method of drying soils will increase the productivity of construction inspection.



Tulane Engineering Forum 2001 Held DOTD Secretary Movassaghi Keynote Speaker

Oops!

In our last issue, we inadvertently neglected to credit the many people who worked diligently on the “Fatigue & Shear Behavior of HPC Bulb-T Girders” project. Dr. Bob Bruce of Tulane University, principal investigator of the project, was joined by a team from LTRC, including Skip Paul, Art Rogers, Walid Alaywan, John Eggers, Randy Young, Al Mix, Matt Tircuit and DOTD’s Paul Fossier. Private consultant, Dr. Henry Russell of HGR, Inc., worked as Co-PI; and the fabricator of the girders was Gulf Coast Prestress. Construction Technology Laboratories, Inc., (CTL) performed the dynamic testing of the girders.

Recently the Tulane Engineering Forum provided an opportunity for professionals to learn from industrial and academic experts about important current issues and how they affect our world and the future. Currently in its second year, the annual forum was sponsored by the School of Engineering of Tulane University and the Society of Tulane Engineers.

This year’s theme was Advanced Materials: Research, Development and Applications. Forum sessions were held on a host of engineering-related topics in a variety of industries including aerospace, biomaterials, energy, marine, nanostructured materials and structural/construction. Experts from around the country shared their knowledge with the audience in plenary and concurrent sessions as well as in poster sessions.

Keynote presenters included DOTD Secretary Kam Movassaghi and Tulane Professor, Dr. Bob Bruce. Both researchers have worked closely with LTRC over the years and are well respected in their fields.

Staff Accomplishments

- David Grouchy, Director of the Louisiana LTAP Center which is part of the technology transfer side of LTRC, has been elected chairman of the executive committee for the National LTAP Association. As one of 58 LTAP programs nationally, the Louisiana program provides technical services and training opportunities primarily at the local government level. Grouchy’s appointment as national chairman is an honor, not only for him, but also for LTRC.
- Congratulations to LTRC’s Philip Graves who recently passed the P.E. exam and received his professional engineering license. Graves currently works in the area of asphalt research at LTRC.
- LTRC researcher and associate professor, Dr. L. N. Mohammad, was acknowledged as an LSU Distinguished Faculty Award Nominee for the Civil and Environmental Engineering earlier this summer. Dr. Mohammad has spoken nationally on such topics as large stone asphalt mixtures, the application of intrusion technology in flexile pavement design, and Louisiana’s experience with accelerated loading.
- Dee Jones, LTRC Technology Transfer Program Manager, recently presented “Adult Learning Techniques for Course Design” at the M-TRAC Training and Certification Workshop in Des Moines, IA.

“Postmortem” is Not a Somber Event at the LTRC Pavement Research Facility



NOT A GRAVE: Bill King, assisted by Glen Gore removes a slab of pavement.

Currently the LTRC Pavement Research Facility is in the planning stages for the fourth ALF experiment to evaluate various Superpave mixes.

When it comes to pavement engineering and evaluation, “postmortem” can be the next best thing for finding out what really happens to pavements when they fail and when they are no longer able to effectively carry a load. This process is similar to conducting an autopsy on a deceased patient. The only difference is that, at the Pavement Research Facility (PRF), the deceased patient is the pavement that has to be opened up for examination.

Other devices, such as the Falling Weight Deflectometer and the Dynaflect, are also used to evaluate pavements non-destructively. The basic concept of these devices is to induce a load on top of the pavement, measure the result-

ing deflections on the pavement surface, and assess the condition of pavement layers. Although the accuracy of such devices has been verified through years of research, certain situations require further destructive methods of evaluation. For example, if faced with determining the cause of an excessive rutting problem with a flexible pavement top layer, the condition of the base course must be determined to see if there is a base failure so that appropriate corrective action can be taken.

Cutting a trench in the roadway and assessing the condition of the entire pavement layer, so far, is considered the best method for pavement evaluation. Unfortunately, for many of our roadways under heavy traffic, creating a trench is almost impossible due to the disruption of the traffic, road closures, and hazards that may result. However, at PRF, where full-size highway sections are subjected to failure by an accelerated method, cutting the trench and evaluating the exposed pavement layers are necessary tasks that are carried

out by LTRC’s pavement researchers.

In June of this year, failed lanes were exposed to determine the pavement failure mode. In this experiment, PRF personnel evaluated the performance of rubberized asphalt in the wearing course and the base course. Three test lanes were subjected to the loading of approximately 4,000,000 ESAL (Equivalent Single Axle Load) applications, which were applied by LTRC’s ALF device. ALF simulates the passage of a single truck axle weighing 18,000 pounds, which is a standard load unit for designing pavements by AASHTO standards. The loading can be accelerated by placing additional plates on a dual tire assembly, thereby expediting the testing duration.

Researchers from Texas DOT and University of Texas at El Paso have also observed the postmortem examination. These researchers are using PRF data to develop pavement performance models through a pool-funded research project sponsored by FHWA and other states.