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IOWA STATE UNIVERSITY
Institute for Transportation

Albritton takes technical training coordinator position at LTAP

Paul Albritton was appointed to the newly created position of technical training coordinator of the Iowa LTAP on July 7, 2014.

While dedicated to providing technical and management assistance to Iowa's local governments, Albritton's main responsibility is to assist these agencies' employees by providing them with the training and resources they need.

Education

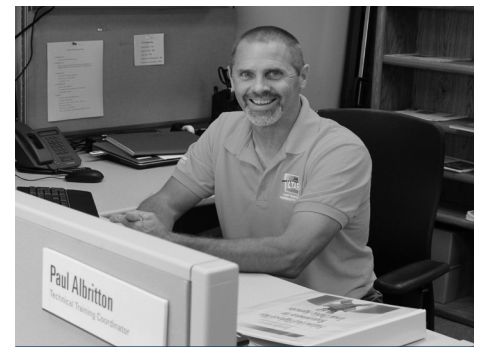
Albritton holds a Bachelor of Science (B.S.) degree in agriculture business with additional expertise in agriculture engineering from the University of Louisiana at Monroe. He's a graduate of the West Des Moines Tier 1 Leadership Class. He is also a certified temporary traffic control supervisor.

Background

He said that what helped prepare him for this new position was primarily his work with the City of West Des Moines, where he worked for over eight years as an operations specialist. Five years of that time was spent working on concrete street and asphalt patching with the rest dedicated to storm water structure inspection and replacement.

Additionally, for three years, while still working for the City of West Des Moines, Albritton was an InTrans workzone safety instructor. He helped host breakout sessions for the cities while working with the late Tom McDonald, who was then the LTAP safety circuit rider. He continues this work and, along with Keith Knapp, is available for workzone and flagger trainings.

"I knew this was a good organization to work for, I knew some of the people here already, and I wanted to see what I could do," says Albritton.



Paul Albritton, Iowa LTAP technical training coordinator

Stan Ring Memorial Library

Heading up the Stan Ring Memorial Library, he is responsible for its entire collection, which includes over 1,500 publications, 620 videotapes, 396 DVDs, 102 CD-ROMs, and 16 sets of slide presentations.

Located at InTrans in the Iowa State University Research Park, the Stan Ring Memorial Library is one of the country's most well-stocked and technical LTAP libraries.

"I may not be a 'librarian,' but I'm excited to be a part of this," says Albritton.

The position is available to assist those looking for technical information of value to city and county operations and activities.

Iowa LTAP workshops

A major part of his job as the technical training coordinator will be developing, organizing, coordinating, and as appropriate, being an instructor within LTAP workshops, including on-site workzone and flagger safety

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Acronyms and Abbreviations in *Technology News*

AASHTO	American Association of State Highway and Transportation Officials
APWA	American Public Works Association
FHWA	Federal Highway Administration
IHRB	Iowa Highway Research Board
InTrans	Institute for Transportation (at ISU)
Iowa DOT	Iowa Department of Transportation
ISU	Iowa State University
LTAP	Local Technical Assistance Program
MUTCD	Manual on Uniform Traffic Control Devices
NACE	National Association of County Engineers
TRB	Transportation Research Board



U.S. Department of Transportation
Federal Highway Administration



Iowa Department
of Transportation

About LTAP

LTAP is a national program of the FHWA. Iowa LTAP, which produces *Technology News*, is financed by the FHWA and the Iowa DOT and administered by the Institute for Transportation at Iowa State University:

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Printed with soy ink



From the director: Change is the only constant

Like many of our local agency clients and customers there are a lot of changes going on at Iowa LTAP. Staffing turnovers, reconsideration of efforts, and many new opportunities and capabilities to help local transportation agencies. We've had three people join our staff during the last quarter.

These new staff include Paul Albritton as our new technical training coordinator. Paul's background and introduction are in this newsletter. Give him a call, he is ready to help, has taken over the coordination of several workshops, and is also there to help with the library and finding answers to technical questions. Paul, along with our other staff, will also be staffing our exhibit booth. Also joining LTAP, just as we were going to print with the newsletter are Devin Happe, our new program assistant. She is also ready to help and will be the local agency administrative and registration contact for all the events that LTAP sponsors or co-sponsors. Devin has an event management background and will be introduced more thoroughly in the next newsletter. Finally, our new local roads safety liaison joined us the third week in September. Tom Stoner comes to us from Harrison County and has more than 30 years of experience that can be used to help our clients and customers. Tom will also be more thoroughly introduced in the next newsletter. Please give these three a call or stop in and get to know them better. Ask them questions you need answered.

Upcoming workshops

We are still searching for a safety circuit rider replacement. However, in the interim, we are able to serve those needs and complete the activities that Tom McDonald so easily addressed for many years. We'll be doing this as a LTAP team until we get the position filled. We are still providing our on-call/on-site work zone and flagger training. So, please do not hesitate to call me (515-294-8817) or Paul Albritton (515-294-1231) to

set up an appointment at your location. We also continue to assist with and participate in the Local Road Safety Workshops (see the event calendar in this newsletter for 2014 dates) and the Iowa DOT Work Zone Workshops (dates to be advertised later this year). We will also soon begin to plan some signing and marking workshops for 2015, and in the coming year we hope to offer some safety-focused workshops/training. Stay tuned.

The new Roads Scholar program

Another big change this quarter—on September 2—our new Roads Scholar program started. If you signed up you'll be able to, once again, track your credits online. If you haven't signed up, see below for that link, and we'll get you in the system as soon as we can. Note that the requirements have changed for the Roads Scholar levels, etc. If you want to talk about that and how it will work for you – please don't hesitate to call. We'll check your status and figure something out. We are also working to offer alternatives for the required courses. Just before the change in the program, we had three new Master Roads Scholars – the highest level Roads Scholar in the old program. They will be recognized in the coming month.

For more information (and/or to register for the program) see <http://www.iowaltap.iastate.edu/workshops/road-scholars/>.

More to come. ■

Keith

Effects of PWL at Iowa DOT

During the October 2010 letting, the Iowa DOT implemented the FHWA's recommended method, its "quality measure of choice," Percent Within Limits (PWL), to measure the quality of pavement material on all hot-mix asphalt (HMA) projects.

"We wanted to increase the consistency in our paving materials," says Scott Schram, bituminous engineer at the Iowa DOT.

PWL specifications date back to the 1950s, when they were used by the military, and were first applied by the New Jersey DOT in the 1970s. However, at that time the name "percent defective" was utilized.

One of the primary reasons for the switch to the PWL methodology is that the rejected portion of material is not "defective" as the name implies, but it is just of lower quality than the specification limits.

PWL incentives

With PWL, the Iowa DOT implemented the new Section 2303 of their Standard Specifications, which now provides incentives to the contractor to produce HMA that is consistently on target.

Schram says that the previous Quality Management of Asphalt (QMA) specification did not provide for incentive payments to the contractor for providing a superior quality product, only disincentives for poor quality.

"With quality comes performance," says Schram. "It has increased our competition and provided us with more consistent and quality mix."

However, the PWL specification only provides incentive payments for field voids up to a maximum of four percent and lab voids up to a maximum of three percent. The contractor can earn these bonuses by controlling the production and construction operations to provide a consistent mixture on target—and a mat compaction that is both consistent and thorough.

"(PWL) provides a motivation for contractors to be as consistent as they can in their operation," says Schram. "It makes them take a holistic look at their project—from beginning to end."

Both incentive and disincentive are based on equations that provide a smooth and continuous payment schedule rather than the stepped price adjustment schedules used in the past.

Field voids are analyzed daily, with eight core density values obtained each day. It is important that a minimum of eight test results are used because of the statistical formulas involved in PWL. Less than eight test results is not sufficient to do a statistical analysis.

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training, motor grader operator training, and the Occupational Safety and Health Administration (OSHA) 10-hour Safety Training taught by American Road & Transportation Builders Association (ARTBA) instructors. In 2014, the OSHA training consists of three, two-day, workshops in different cities within Iowa.

"I will also be working on coordinating other courses LTAP assists with, like the Introduction to Federal-Aid Right of Way Requirements for Local Public Agencies training," says Albritton.

A look into the future

The LTAP technical training coordinator position is an evolving one, according to Albritton.

Because of recent staff changes, the position may absorb new responsibilities as they arise in the future, including new training programs.

One of the main things he hopes to accomplish while working at LTAP is "working for others," or, in other words, working to provide the necessary resources to Iowa's city and county employees and agencies.

Having once served in a position that required LTAP training, he understands how beneficial these programs and training modules are to project and job success.

"I hope to be a valuable resource for the cities and the counties that we deal with, and to be somebody they have confidence in," says Albritton.

Contact

Paul Albritton, 515-294-1231,
palbritt@iastate.edu ■



Handwork at Prairie Lake Park Urban Fishery in Cedar Rapids, Iowa. Photograph courtesy of LL Pelling Co.

Iowa LTAP Mission

To foster a safe, efficient, and environmentally sound transportation system by improving skills and knowledge of local transportation providers through training, technical assistance, and technology transfer, thus improving the quality of life for Iowans.

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PWL continued from page 3

Advantages of PWL

- The best combined estimate for the population parameters is provided by PWL.
- PWL as a quality measure is sensitive to variability. This sensitivity gives an advantage to contractors with lower variability in their production.
- The PWL method offers control over production by the contractor.
- When PWL is applied, a varying sample size is accounted for in the estimate of quality, which is not the case in the average method.
- Both a contractor and an agency can calculate their risks using PWL.
- Use of PWL is compatible with the American Association of State Highway and Transportation Officials (AASHTO), because it is their “featured method.”
- FHWA presents PWL as its “used quality measure.”

Acceptance plan categories

Statistical acceptance plans can be categorized according to their specification limits and decision criteria. These categories are as follows:

- Single specification limit, single decision criterion. Single specification limits are used when a material must be controlled above a minimum or below a maximum. An acceptable quality limit (AQL) is set and material is either accepted or rejected based on it. There is no pay factor provision.

- Single specification limit, single decision criterion. Single specification limits are used when a material must be controlled above a minimum or below a maximum. An acceptable quality limit (AQL) is set and material is either accepted or rejected based on it. There is no pay factor provision.
- Single specification limit, dual decision criteria. An AQL and rejectable quality limit (RQL) are set. Material at or above AQL is accepted at full or bonus pay while material below RQL is rejected. Material with an estimated quality level between AQL and RQL is usually accepted at reduced pay according to a pay scale.
- Dual specification limits, single decision criterion. Dual specification limits are used when a material must be controlled within a range of values. The percent of material between these values is calculated as the PWL and compared to the AQL. Material is then either accepted or rejected. There is no pay factor provision.
- Dual specification limits, dual decision criteria. An AQL and RQL are set. Material at or above AQL is accepted at full or bonus pay while material below RQL is rejected. Material with an estimated quality level between AQL and RQL is usually accepted at reduced pay according to a pay scale.

For more information

For information on Iowa DOT specifications regarding PWL, contact Scott Schram, 515-239-1604, Scott.Schram@dot.iowa.gov. ■



Interstate 80 in Iowa. Photograph courtesy of LL Pelling Co.

Iowa DOT to change tree removal specifications

The Iowa DOT is changing its specifications regarding tree removal in lieu of waiting for a final decision by the U.S. Fish and Wildlife Service to list the northern long-eared bat as an endangered species.

According to Mary Kay Solberg, an environmental specialist senior at the Iowa DOT, the department's specifications will officially change in mid-to-late October. Then tree clearing for all projects will be allowed only from October 1–March 31, because during this time the long-eared bat retreats to its winter habitat (caves and mines) to hibernate.

Bat habitat and disease issues

The northern long-eared bat can be found in much of the eastern and north central United States, including statewide in Iowa. These bats roost in both live and dead trees during the summer. Their preferred roosting habitat includes the cracks, crevices, or cavities of small to large trees near wooded areas.

“They have also been known to use bridges either as day roost during the summer or a night roost where they will eat, digest, then go out again,” says Solberg.

The impending listing of the northern long-eared bat as an endangered species and the fact that other bat species are likely to be listed in the future is what encouraged the change in specification by the Iowa DOT. The main reason why the northern long-eared bat will be listed on the endangered species list is not so much the potential loss of habitat as it is “white-nose syndrome.”

A disease that has been decimating bat populations from the Northeast to the Midwest and Southeast since 2006, white-nose syndrome is expected to spread throughout the United States. Although there is uncertainty about the rate that it will spread, U.S. Fish and Wildlife Service reports note that bat population numbers have already declined by 99 percent in the Northeast.

Solberg said that the Iowa DOT hopes the mitigation strategies it already uses for the Indiana bat (another federally identified endangered species) will also be efficient in protecting the northern long-eared bat. The Indiana bat only lives in Iowa during the summer months. Current mitigation strategies include changing tree clearing specifications and replanting trees in cleared areas to better provide more habitat sites for the bats.

The Iowa DOT hopes to also experiment with “BrandenBark,” which is an artificial bark that can be attached to telephone poles and existing dead trees and used as a mitigation/habitat enhancement tool. If successful, it will not be necessary to wait until new saplings grow into adult trees to be able to provide ready-to-use habitat sites.

Effect on construction projects

Currently, the Iowa DOT has not come across any construction projects in which planned tree removal has caused concern for the safety of northern long-eared bats. However, each Iowa tree clearing project will be fully evaluated to determine if the project will affect the bats' natural habitat.

Solberg says that although winter tree clearing will affect a lot of future projects, with early preparation there shouldn't be any major causes for concern to engineers.

“It is a bit of a mind shift in how you develop a project and how you schedule it,” said Solberg. “This is not that bad—you just need to think a little differently.”

She adds that they don't know yet how much the northern long-eared bat utilizes bridges during the summer or how much their presence will impact future bridge projects.

Iowa State University, InTrans, and the Bridge Engineering Center are partnering with the Iowa DOT, the U.S. Fish and Wildlife Service, and the FHWA to conduct a critical study entitled, “Assessing Bridge Characteristics for Use and Importance as Roosting Habitat for Bats.”



Northern long-eared bat with white-nose syndrome. Photograph courtesy of Steve Taylor, University of Illinois at Urbana-Champaign

“If funded we will be able to conduct research that will tell us what bridges we need to look at and what bridges we can discount—because the bats just don't use those bridges,” says Solberg.

U.S. Fish and Wildlife Service imeline

The U.S. Fish and Wildlife Service plans to make its final determination regarding the northern long-eared bat by April 2, 2015. During this six-month extension from the original October 2 deadline, the service is seeking more input from states, tribes, federal agencies, and other stakeholders about the status of the northern long-eared bat and the impacts of white-nose syndrome on the species.

For more information

For more information about the proposal to list the northern long-eared bat on the endangered species list, visit www.fws.gov/Midwest/endangered/mammals/nlba/index.html.

For information on how threatened and endangered species are considered in local transportation projects, visit www.iowadot.gov/ole/OLESite/section7.html. Or contact Mary Kay Solberg, 515-239-1741, MaryKay.Solberg@DOT.iowa.gov. ■

CEER partners with Iowa DOT to research pavement foundation design technologies

The Iowa DOT worked with its research partners to design comparative pavement foundation test sections at the Central Iowa Expo Site in Boone, Iowa. The goal was to increase the range of stabilization technologies to be considered for future pavement foundation design.

By constructing test areas that would allow for long-term performance monitoring, researchers were able to investigate how new stiffness measurement technologies including intelligent compaction assisted in evaluating freeze-thaw performance.

“For any road construction, the foundation you have beneath is important. What we have done in this Boone project is use different technologies to build those foundations for roadways and test them to assess their performance,” says Pavana Vennapusa, Center for Earthworks Engineering Research (CEER) assistant director.

The project began in May 2012 and is ongoing for the next three years, with support from the Iowa DOT and the Federal Highway Administration.

Vennapusa added that the original section in Boone County, used by the Central Iowa Expo, consisted of a gravel roadway with a thin chip seal coat with potholes resulting from spring-thaw and thus required repair.

“The question became: What can we do to improve these roads?” says Vennapusa.

During the construction period, 16 different 700-foot-long test sections were constructed on 4.8 miles of roadway using the following foundation stabilization technologies:

Woven and non-woven geosynthetics

This project included four different geosynthetics for subgrade improvement: woven and non-woven geotextiles at sub-

grade/subbase interfaces to serve as separation layer; triaxial and biaxial geogrids at subgrade/subbase interfaces for reinforcement of subgrade; and four-inch and six-inch geocells in the subbase layer for confinement.

Chemical stabilization of subgrade

Iowa subgrade soils range generally from fair to poor and can exhibit low bearing strength, high volumetric instability, and freeze/thaw durability problems. Chemical stabilization offers opportunities to improve these soil conditions.

Use of self-cementing fly ash and portland cement (PC) as chemical admixtures to subgrade and subbase layers for potential improvements to strength/stiffness of foundation layers are being evaluated in this study.

Portland cement stabilization with fiber reinforcement of subbase

Previous research studies on fiber-reinforced natural and chemically-stabilized soils have generally shown improvements in soil shear strength, bearing capacity, ductility, toughness, and resistance to rutting.

In this study, test sections were built to evaluate the long-term performance of two different types of fiber reinforced subbase layers with and without PC stabilization. The fibers include monofilament and defibrillated polypropylene fibers.

Mechanical stabilization

Performance of a mechanically-stabilized layer constructed by mixing on-site reclaimed granular subbase material with the subgrade soil is evaluated in this study.

Post-construction changes in saturation (in part due to freeze-thaw) must be considered in understanding the long-term performance of a mechanically-stabilized layer.

The goal is to investigate if this stabilization technology can provide a stable working platform and foundation under pavements and if it exhibits lower plasticity, lower frost-heave potential, and higher drainage characteristics compared to subgrade soils.

High-energy impact compaction

Application of high-energy impact roller compaction technology in Iowa has been limited primarily to concrete pavement recycling projects, but is recently seeing increased interest for use in foundation layer stabilization. Previous studies have shown that this method can densify material to depths greater than six feet, which is significantly deeper than conventional static or vibratory rollers.

In this study, a non-circular-shaped, tow-behind solid steel impact roller weighing about 19,000 pounds was used to rubblize and push down the chip seal coat and the existing granular subbase on a test section. The roller was pulled using a tractor at a nominal speed of about seven mph to generate a high-impact force.

For more information

An overview of the project is available on YouTube <https://www.youtube.com/watch?v=qnq4fmRs6so>.

Tech briefs developed for the different stabilization technologies are available at <http://www.ceer.iastate.edu/research/project/project.cfm?projectID=-275497063>.

For questions regarding this project, contact Pavana Vennapusa, 515-294-2395, pavanv@iastate.edu or David White, 515-294-1463, djwhite@iastate.edu. ■

Look for more key findings regarding the Boone County Expo Research Project in the next issue of Technology News.

InTrans welcomes communications specialist

Brandy Abraham is a new communications specialist at InTrans and the primary writer for *Technology News*.

In May 2013, she earned her BA in professional and technical writing from Saginaw Valley State University in Saginaw, Michigan.

Her main responsibilities at InTrans include providing editorial quality assurance for InTrans's Go! magazine and other writing and editing support as assigned. She develops proposal templates, newsletters, brochures, articles, annual reports, technical summaries, and other publications.

Before coming to InTrans, Abraham worked on a \$248,000 Title 1 state-funded grant project at Saginaw Valley State University, where she co-led a group of area K-12 teachers as they transitioned to online teaching platforms. During that time she

produced brochures, manuals, and a final report. Helping to organize various technology workshops, she was the lead on editorial quality assurance of presentation material.

She has an extensive background in providing high-quality material to a variety of audiences, even, interestingly enough—prison inmates. Abraham spent three years working with inmates at the Saginaw Regional Correctional Facility in Michigan, where she assisted them in resume and portfolio preparation.

Her interest in transportation, specifically global systems, first led her to present her research, “Why Aramis Died: the Problem with the Personal Rapid Transit (PRT) System” at Saginaw Valley's annual LEAD conference. Secondly, it led her to InTrans. ■



Brandy Abraham, InTrans communications specialist

Conference calendar

Date	Event Name	Location	Contact
October 2014			
8	Fall Safety School	Fairfield	Keith Knapp
9	Fall Safety School	Cedar Rapids	Keith Knapp
10	Fall Safety School	Waverly	Keith Knapp
14–17	Fracture Critical Inspection Techniques for Steel Bridges	Ames	Sharon Prochnow
21	Fall Safety School	Cherokee	Keith Knapp
22	Fall Safety School	Red Oak	Keith Knapp
23	Fall Safety School	Ames	Keith Knapp
November 2014			
6–8	OSHA Ten-Hour Training for the Roadway Construction Industry	Sioux City	Paul Albritton
December 2014			
9–11	Iowa County Engineers Conference	Fairfield	Keith Knapp

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Event details and online registration

Watch for details and online registration information, by specific dates and events, on the online calendar, www.intrans.iastate.edu/mors/calendar/. ■

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