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Iowa Local Technical Assistance Program

2711 S. Loop Drive, Suite 4700
Ames, IA 50010-8664

Phone: 515-294-8103
FAX: 515-294-0467

www.intrans.iastate.edu/ltap

IOWA STATE UNIVERSITY
Institute for Transportation

2011 Snow Rodeo winners

In September the Iowa State Fairgrounds was the venue for Iowa's 2011 Snow Rodeo. Competitions were held for individual loader and motor grader operators and for truck driver teams. With balmy temperatures, operators navigated courses that imitated challenges faced by winter road maintenance personnel when they remove snow from city streets and county roads.

Out of 15 competitors in the loader competition, Gary Knapper (City of Davenport) took first place; Jason Nielsen-Harvey (City of Urbandale) took second place; and Geno Cataldo (City of Des Moines) took third place.

In the motor grader competition, out of 13 competitors, Kevin Decker (City of Des Moines) captured first place, while Brian Snyder (City of West Des Moines) placed second and Ryan Jacks (Des Moines County) placed third.

Twenty-nine two-person teams competed in the snow truck competition. Out of this challenging lineup, West Des Moines showed its strength with first-place winners Tommy Bell and Kevin Hershberger, followed closely by Beav McDaniel and Josh Reynolds in second place. Third-place winners were C. J. Houseman and Keith Ulrich (City of Des Moines). ■



Loader operator winners



Motor grader operator winners



Snow truck winners

Acronyms 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

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Institute for Transportation
ISU Research Park
2711 S. Loop Drive, Suite 4700
Ames, Iowa 50010-8664
Telephone: 515-294-8103
Fax: 515-294-0467
www.intrans.iastate.edu/

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Message from the director: A look back, and bring on the new year



by Keith Knapp, LTAP director

First, a hearty “Thanks” to everyone who helped make 2011 a successful year for Iowa LTAP. If you attended an event that we sponsored or co-sponsored, I hope we were able to help you out. Change has been the one constant this year, and hiccups have occurred along the way. Thanks for your patience as we work to make LTAP an even better resource for you.

Each year we plan to offer workshops that focus on some new subjects (based on demand that we hear about and/or an unexpected opportunity). Of course, we will also continue to offer the workshops/events that we do every year. Remember, we are always looking for new ideas and/or resources that allow us to serve you better. Email us at iowaltap@iastate.edu if you have any suggestions.

As most of you have likely noticed, we are well on our way to doing a lot more online and email workshop advertising and registration. Don't forget, you can register online and print out your confirmation email as an invoice. If you need to cancel, just give us a call or send an email and let us know a week in advance of the workshop. Don't have a work-related email of your own? You can provide one for a person who has agreed to print out the hard copy of any communications for you. If you have comments about improving this approach please let me know at kknapp@iastate.edu.

Planning for 2012 has already started. Workshops that focus on some new subjects are under consideration, including some asset management for local agencies workshops. We intend to continue working with our ARTBA and DMACC partners to offer other subjects. This year we'll also be venturing into hosting NHI bridge inspection course. In addition, we have started the planning for the 2nd annual County Engineers Research Focus Group meeting. In 2012 it will be on February 22. If you'd like to attend that meeting, please let me know.

In addition, the FHWA has started the Every Day Counts (EDC)–EXCHANGE (www.fhwa.dot.gov/everydaycounts/). This initiative is intended to help identify and deploy innovations; see the related article on page 4. The Iowa LTAP will be hosting four “dynamic webinars” in Ames during 2012:

- Geosynthetic reinforced soil (GRS), February 16
- Flexibility in right-of-way, April 19
- In-lieu fees/mitigation banking, June 21
- Adaptive signal control technology, August 16

Keep an eye out for the registration related to these *free* events.

As a final note, if you attended an “Accessible Sidewalks and Curb Ramps: Design to Installation” workshop this year, the comment period has been extended related to the proposed accessibility guidelines for pedestrian facilities in the public right-of-way (i.e., PROWAY). The deadline for comments on this proposed rule making is now February 2, 2012. The Access Board received a request for this extension from the National Association of Counties, National League of Cities, the American Council of Engineering Companies, and the U.S. Conference of Mayors. The guidelines can be viewed and comments provided at www.regulations.gov (search for the following ID: ATBCB-2011-0004).

Have a Happy New Year.

Keith

Ten commandments for working with your county board

Editor's note: Following is a summary of a presentation at the National Association of County Engineers (NACE) 2011 Annual Conference in Minneapolis, Minnesota. This summary is adapted from an article by the Minnesota LTAP.

In a session on how county engineers can and should communicate with their county boards and the media, the first speaker caused quite a stir.

“Our first speaker,” moderator Charles Cadenhead said, “is an author, shepherd, law-giver, and prophet. He was born in 1391 B.C. and spent most of his career in the Middle East where he encountered burning bushes and helped people cross the Red Sea.

“In his modern engineering career, he has dealt with burning issues and turbulent political waters—and has wandered the county highway department for 24 years. And here he is to present the 10 commandments for dealing with your county board—Moses!”

At that point, Washington County, Minnesota, county engineer Don Theisen entered the room from the rear with great ceremony, dressed in a Moses costume complete with flowing beard, hooded cloak, and a pair of Styrofoam “stone” tablets.

The setup for his presentation was fun, but Theisen was serious about his message. His 10 commandments for working with county boards are as follow:

1. Establish a good relationship with your county board members. Learn their wives’ (or husbands’) names and their dogs’ names. In fact, establish good relationships with everyone else too because you never know who your next county board member will be.

2. Always be available to any county board member. Your staff should know that any time a county board member or county administrator calls, they are to interrupt you—pull you out of a meeting if necessary—and that goes 24/7.

3. Never embarrass a board member in public. Sooner or later, every board member will say something wrong. Unless someone’s going to die as a result of that, you can always correct the board member in private.

If needed, explain why a board member can’t attend a meeting and say he or she is very interested in the topic and you’ll update them later.

4. Don’t ever speak negatively about a board member—not even in private. In fact, there’s no such thing as a private conversation in this day and age. Even if they insult you, take it professionally—not personally. Rise above it. I

If you go around saying you work for a bunch of idiots, what does that say about you?

5. Always give credit and praise to the board. If a resident thanks you, make sure you emphasize that it was the board that made it possible.

Agree with board members before the meeting that, if a sticky issue goes a certain way, you’ll wear the black hat and let them wear the white hats.

6. Never ask the board what to do on an engineering issue. If you don’t want the board to run your department, don’t ask them to do it.

The key is to frame engineering decisions as policy issues.

If there’s a sticky issue like a driveway permit you don’t want to grant, avoid focusing on that particular permit and make the discussion about the overall policy on access to roads.

7. Treat every complaint before the board as a top priority—and if you solve it, let the board member pass on the good news.

When the board sends you a constituent’s complaint, always start the call to the constituent by saying, “I’m following up on your discussion with Commissioner Smith.”

Don't tell people we build the roads this way because that's the standard. . . . Always provide the answer in the form of a story they can identify with.

And the faster the better! Respond the same day and at least tell the resident(s) you’re working on it and when they can expect a complete response.

8. Provide the board with professional recommendations. Give them the professional pros and cons. And do it in a way that your neighbor could understand.

Don’t tell people we build the roads this way because that’s the standard. Tell them we do it because, when Johnny goes off the road, we don’t want him to hit a power pole that will kill him.

Always provide the answer in the form of a story they can identify with.

9. Learn that you don’t need to respond to every comment. Let the bad ones go by, and let the board bask in the good comments.

You also need to know when they’ve bought your milk so you don’t need to try to sell them the cow. Just let that vote be taken, and move on.

10. Never allow a bad vote to be taken. If you know you don’t have the votes, find a way to defer the vote to a later meeting. Say, “The board has asked good questions about this—and they’re still unanswered, so I’d be glad to come back at a future date with better information on this important issue.” Then work behind the scenes.

Once a vote has been taken, it’s hard for officials to switch their votes. ■

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.

Staff

Shashi Nambisan
Director of InTrans
shashi@iastate.edu

Keith Knapp
Director of Iowa LTAP
kknapp@iastate.edu

Tom McDonald
Safety Circuit Rider
tmcdonal@iastate.edu

Bob Sperry
Local Roads Safety Liaison
rsperry@iastate.edu

Sabrina Shields-Cook
Communications Manager

Marcia Brink
Issue Editor

Kris Angaran
Secretary
krisa@iastate.edu

Advisory Board

The professionals listed below help guide the policies and activities of Iowa LTAP. Contact any of the advisory board members to comment, make suggestions, or ask questions about any aspect of LTAP.

Donna Buchwald
Iowa DOT, Office of Local Systems
515-239-1051
donna.buchwald@dot.iowa.gov

Gary Fox
Traffic Engineer, City of Des Moines
515-283-4973
glfox@dmgov.org

Tim Herstrom
Road Maintenance Foreman
515-795-2825
bctjh@iowatelecom.net

Bret Hodne
Director of Public Works, City of West Des Moines
515-222-3480
bret.hodne@wdm-ia.com

Joe Jurasic
Transportation/Construction Engineer, FHWA–Iowa
515-233-7321
joe.jurasic@fhwa.dot.gov

Ron Knoche
City Engineer, City of Iowa City
319-356-5138
ron-knoche@iowa-city.org

Charlie Purcell
Iowa DOT, Office of Local Systems
515-239-1532
charlie.purcell@dot.iowa.gov

Roger Schletzbaum
Marion County Engineer
641-828-2225
schletzbaum@co.marion.ia.us

David Shanahan
Cherokee County Engineer
712-225-6715
dshanahan@co.cherokee.ia.us

Robert Kieffer
Boone County Engineer
515-433-0530
boonecountyengr@boonecounty.iowa.gov

Wade Weiss
Greene County Engineer
515-386-5650
wweiss@co.greene.ia.us



EDC-EXCHANGE: Connecting the national transportation innovation network

What is EDC-EXCHANGE?:

The FHWA is providing a new series of free “dynamic seminars” called Every Day Counts–EXCHANGE. Each EDC-Exchange in-person learning session will describe a specific, effective project development and/or delivery practice, tool, or “market ready” technology that local and tribal transportation agencies can readily implement into their programs.

FHWA national subject matter experts, in conjunction with FHWA and state DOT field office experts, will provide information and materials and facilitate discussions designed specifically for the local/tribal transportation managers.

How can local agencies participate?

Each EDC-EXCHANGE will be delivered to convenient sites in each state by broadband internet technology. Each site (FHWA Division offices, state DOT HQ or district offices, industry sites, etc.) will provide a classroom setting for 25 to 40 local, state, and tribal professionals to participate.

FHWA subject matter experts will deliver training modules developed and targeted specifically for local transportation agencies. Participants across the country will interact with webinar presenters by text chat, polls, surveys, or voice-calling questions to the subject matter experts, who will then respond during the program.

Each site audience will also have the benefit of LTAP, local, state, and FHWA experts in the room with them to facilitate the discussion and answer questions geared to the local level.

What is the EDC-EXCHANGE format?

Each EDC-EXCHANGE seminar will have three, one-hour segments, each consisting of a 20-minute presentation by national subject matter experts (SME), a 20-minute facilitated local discussion in each seminar room, and a 20-minute Q and A period with the national SME.

What is the schedule?

Each afternoon session will typically be presented from 1:00 p.m. to 4:00 p.m. Eastern Standard Time.

The first EDC-EXCHANGE, an introduction to the program, was held in December 2011. (A CD covering this introductory material is available for loan through the Iowa LTAP library; see details on page 6.)

Subsequent events are scheduled bimonthly on the third Thursday of the month through August 2012, as shown below. The schedule is as follows:

Exchange #2, Topic: Geosynthetic Reinforced Soil (GRS)
February 16, 2012

Exchange #3, Topic: Flexibility in ROW
April 19, 2012

Exchange #4, Topic: In Lieu Fees/Mitigation Banking
June 21, 2012

Exchange #5, Topic: Adaptive Signal Control Technology (ASCT)
August 16, 2012

Information about the February and April events in Iowa, with contact information for people interested in participating, is included in the conference calendar on page 7.

What happens after each seminar?

FHWA will host and manage an online “community of practice” forum, located on the EDC website at www.fhwa.dot.gov/everydaycounts/, to field follow-up questions and share additional information after the initial broadcast. After 30 days, all questions and corresponding answers will be moved to the EDC website on the specific topic/initiative’s page.

What if someone can’t attend a seminar?

All SME presentations will be captured and viewing access will be provided via the EDC website as soon as possible after the event. ■

Iowa experiments with a “greener” pavement option

Is there a greener alternative to asphalt?

Chris Williams thinks so.

Williams, an associate professor of civil, construction, and environmental engineering at ISU and director of InTrans's Asphalt Materials and Pavements Program, is leading research that incorporates bio-oil, a renewable resource, into asphalt.

He says that, in addition to being a green product, bio-oil has the potential to improve asphalt's performance and even to serve as a partial or even full replacement for asphalt.

“Some 90% of our roads use asphalt, which is derived from crude petroleum,” says Williams. “So, if we can reduce the amount of asphalt by using a renewable resource, we can impact our dependence on foreign oil.”

Sacrificial oxidizer

With funding from the Iowa Energy Center and the Iowa DOT, Williams initially looked at bio-oil as an asphalt additive because of its antioxidant properties. Conventional asphalt oxidizes under certain environmental conditions, causing it to get stiff, lose its elastic properties, and become more susceptible to thermal cracking.

When bio-oil is incorporated into asphalt, it serves as a sacrificial oxidizer. That is, oxygen molecules target the bio-oil and age it rather than the asphalt.

As he worked with bio-oil, however, Williams discovered that adding small amounts (3–9%) of bio-oil to asphalt in the lab actually improves the paving material's elastic properties. Bio-oil is harder than asphalt at low temperatures, gets softer at warmer temperatures, and when stretched returns to its original shape.

These characteristics make bio-oil a potential partial replacement and possibly full replacement for asphalt.

Better than Mother Nature?

The bio-oil that Williams uses is produced by a thermochemical process called fast pyrolysis. Biomass such as corn stalks, leaves, and wood residue is heated quickly

without oxygen, and an innovative technology developed at ISU produces and collects multiple fractions of bio-oil. From those fractions, Williams has developed Bioasphalt®.

Other byproducts of fast pyrolysis have commercial potential in the fuel, chemical, and pharmaceutical industries.

The process itself has benefits: Unlike natural decomposition of plant materials, which releases large amounts of CO₂ and thus contributes to climate change, fast pyrolysis releases oxygen and produces biochar.

Biochar is a charcoal-like, stable solid, rich in carbon. Biochar can be returned to farm fields to enrich the soil and improve crop yields. It can sequester carbon in the soil for hundreds of years.

Fast pyrolysis technologies were first researched and developed at ISU by Robert Brown, distinguished professor of mechanical engineering and director of the Bioeconomy Institute, and his research group. Brown's former graduate students have created a start-up company—Avello® Bioenergy Inc.—located at ISU's BioCentury Research Farm.

Dennis Banasiak, president of Avello®, says the company has exclusive rights to use the bio-oil separation technology, and Bioasphalt® and is moving towards commercialization.

From lab to bike trail

In the fall of 2010, after nearly five years of lab research on bio-oil, Williams was ready to try Bioasphalt® in the field.

A section of the Waveland Bike Trail on the northwest side of Des Moines was selected for a demonstration project. A grant from the Iowa Department of Economic Development funded Avello's production of Bioasphalt® for the project.

About 900 feet of the 10-foot-wide trail was paved with a 2-inch layer of an asphalt mix containing 3% Bioasphalt®. Evaluation of the project is ongoing, but Williams is excited about the success to date.

“We didn't anticipate any problems, nor did any occur,” he says.

Spreading the word

Such demonstration projects are key to the adoption of promising new technologies, according to Scott Schram, Iowa DOT bituminous engineer. He was instrumental in getting support for the trail project from the Des Moines city engineer's office. Several industries were also involved—Elder Corporation, Bituminous Materials and Supply, and Grimes Asphalt and Paving Corporation.

Schram encourages contractors to incorporate bio-oil in other small projects.

Bio-oil continued on page 6



Stanley L. Ring Memorial Library: New acquisitions

Publications

P 1776 Low-Volume Roads: TRB Journal No. 2203

These three volumes contain 90 technical papers by authors from six continents and more than 40 countries presented at the biennial Low-Volume Roads Conference in 2011. Subjects include planning, financing, design, construction, maintenance, and operations. (TRB) (loan)

P 1777 Highway Safety Manual

This three-volume manual introduces a science-based technical approach that takes the guesswork out of safety analysis. It provides tools to conduct quantitative safety analyses, allowing safety to be quantitatively evaluated alongside other transportation performance measures such as traffic operations, environmental impacts, and construction costs. (AASHTO) (loan)

P 1772 Hollow Bar Soil Nails: Review of Corrosion Factors and Mitigation Practice

This report presents the results of an industry-wide survey including agencies, designers, consultants, manufacturers, and contractors related to installation of HBSNs. (US DOT-FHWA) (loan)

P 1773 Hollow Bar Soil Nails: Pullout Test Program

The objective of this study was to develop an initial data file, from installation and testing at four sites, of the available grout-to-ground bond stress of Hollow Bar Soil

Nails (HBSN) and to determine if correlations exist with traditional solid bar drill and grout soil nails. It also sought to establish recommendations for practical standard ways of performing pullout tests on HBSNs. Comparison between the pullout test results showed that the HBSNs generally developed higher bond strength values than the SBSNs. (US DOT-FHWA) (loan)

P 1774 SNAP (Soil Nail Analysis Program) User's Manual

This study developed a state-of-the-practice computer program for designing all components of soil nail retaining structures, including nail and facing elements. The program evaluates the internal and external wall stability based on current standards in the allowable stress design method. The manual discusses the theoretical basis for the computer program, gives a comparison of available soil nail wall design guidelines, discusses program execution including inputs and outputs, and includes two worked examples to demonstrate use of the program. (US DOT-FHWA) (loan)

CDs and DVDs

CR 110 Every Day Counts.

The EDC program identifies and deploys innovation aimed at shortening project delivery, enhancing the safety roadways, and protecting the environment. This course is

Three ways to order LTAP library materials

- Use the online catalog, www.intrans.iastate.edu/ltap/library/search.cfm.
- Contact Jim Hogan, library coordinator, 515-294-9481, hoganj@iastate.edu, fax 515-294-0467.
- Mail or fax the order form on the back cover of this *Technology News*.

Note about delivery of materials: The library sends orders through the U.S. Postal Service. If you have an urgent need for library materials, let us know when you place your order and we will arrange faster delivery.

an introduction to the EDC initiative and shows how to use the new technologies to improve roadways while saving taxpayer monies. (FHWA) (loan)

DVD 280 Customer Driven Service: Keys to Providing Exceptional Customer Experiences in Transit

This is a training course on providing or improving public service by transit operators. It comes with a learner's guide and must be played on a PC. (RTAP) (loan) ■

Bio-oil continued from page 5

"The more it is used, the more testing and evaluation we can do," he says.

Avello® is expanding its production capacity. In November 2010 the Iowa Power Fund Board awarded the company \$2.5 million to build a demonstration scale biomass plant. The goal is to start construction in mid 2011.

Banasiak says the company is seeking matching funds for the expansion. He is also developing relationships with local entities to supply biomass and to secure markets for the end products.

Meanwhile, Williams continues his lab work to improve the low temperature behavior of Bioasphalt®.

For more information

For more information, contact Chris Williams, 515-294-4419, rwilliams@iastate.edu; Scott Schram, Iowa DOT, 515-239-

1604, scott.schram@dot.iowa.gov; or Dennis Banasiak, Avello® Bioenergy Inc., 443-326-2755, denban@avellobioenergy.com. ■



Conference calendar

Event	Location	Contact
January 2012		
31 Work Zone Safety Workshop County, City, Utility, Construction, Maintenance	Ames, IA	Tom McDonald 515-294-6384, tmcdonal@iastate.edu www.cpm.iastate.edu/workzone
February 2012		
1 Work Zone Safety Workshop Utility, Construction, Maintenance	Cedar Rapids, IA	Tom McDonald 515-294-6384, tmcdonal@iastate.edu www.cpm.iastate.edu/workzone
2 Work Zone Safety Workshop County, City	Cedar Rapids, IA	Tom McDonald 515-294-6384, tmcdonal@iastate.edu www.cpm.iastate.edu/workzone
3 Work Zone Safety Workshop County, City, Construction, Maintenance	Ottumwa, IA	Tom McDonald 515-294-6384, tmcdonal@iastate.edu www.cpm.iastate.edu/workzone
13 Work Zone Safety Workshop Construction, Maintenance	Storm Lake, IA	Tom McDonald 515-294-6384, tmcdonal@iastate.edu www.cpm.iastate.edu/workzone
14 Work Zone Safety Workshop County, City, Utility	Sioux City, IA	Tom McDonald 515-294-6384, tmcdonal@iastate.edu www.cpm.iastate.edu/workzone
15 Work Zone Safety Workshop County, City, Utility, Construction, Maintenance	Council Bluffs, IA	Tom McDonald 515-294-6384, tmcdonal@iastate.edu www.cpm.iastate.edu/workzone
16 FHWA Every Day Counts-Exchange Topic: "Geosynthetic Reinforced Soil"	Online webinar by Iowa LTAP	Keith Knapp 515-294-8817, kknapp@iastate.edu
22 Iowa County Engineers Research Focus Group	Ames, IA	Keith Knapp 515-294-8817, kknapp@iastate.edu www.cpm.iastate.edu/workzone
29 Greater Iowa Asphalt Conference: Workshops	Des Moines, IA	Keith Knapp 515-294-8817, kknapp@iastate.edu
March 2012		
1–2 Greater Iowa Asphalt Conference	Des Moines, IA	Keith Knapp 515-294-8817, kknapp@iastate.edu
19 Work Zone Safety Workshop County, City, Utility	Mason City, IA	Tom McDonald 515-294-6384, tmcdonal@iastate.edu www.cpm.iastate.edu/workzone
20 Work Zone Safety Workshop Construction, Maintenance	Mason City, IA	Tom McDonald 515-294-6384, tmcdonal@iastate.edu www.cpm.iastate.edu/workzone
21 Work Zone Safety Workshop County, City, Utility, Construction, Maintenance	Ames, IA	Tom McDonald 515-294-6384, tmcdonal@iastate.edu www.cpm.iastate.edu/workzone
April 2012		
19 FHWA Every Day Counts-Exchange Topic: "Flexibility in ROW"	Online webinar by Iowa LTAP	Keith Knapp 515-294-8817, kknapp@iastate.edu

Online Registration

Information and registration details about events sponsored by LTAP, InTrans, or other ISU organizations are available via the online calendar, www.intrans.iastate.edu/calendar/index.cfm.

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