Local Technical Assistance Program

The Bridge

Linking Transportation Research and Practice

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Alger CRC Implements Asset Management

Understanding between engineers and elected officials paves the way

By John Ryynanen, Editor, Michigan's LTAP

As Engineer and Manager of the Alger County Road Commission in Michigan's Upper Peninsula, Bob Lindbeck, P.E. realizes the pressures placed on road commission officials to fix rough roads. He knows that road users almost always encourage decision-makers to rebuild roads that are structurally deficient instead of doing preventive maintenance on roads that the public views as good. That's a political reality.

As a professional engineer, Lindbeck knows the intricacies of pavement deterioration. He knows that early pavement distress—such as transverse cracks—allow water to penetrate into the base material, which leads to more costly structural damage. He also knows that sealing cracks to prevent water infiltration is a simple, relatively inexpensive way to extend pavement life. That's a technical reality.

Lindbeck works where political and technical realities clash. Much of his job involves communicating technical information to elected officials in ways that help them counter public pressure so they can make wise road management decisions. "The work can get pretty complicated," Lindbeck said. "When we're able to communicate clearly and understand the problems from both points of view, good things happen." Last spring, good things happened in Alger County. Lindbeck's experience with starting an asset management program is a powerful example of how understanding between engineers and elected officials can help improve the way local roads are managed.

Good time to make a change

When Alger County transportation agencies, which include Alger County Road Commission, Alger County Transit, a city and a small village, received $337,000 through the American Reinvestment and Recovery Act (ARRA) in March 2009, Lindbeck recognized an opportunity to start an asset management program.

Preventive maintenance activities, including crack sealing, chip sealing, and various similar activities, are generally considered the bread and butter of any asset management program because they provide such a great return on maintenance dollars invested.

"To start an asset management program I had to convince our decision-makers that preventive maintenance was the best way to extend the serviceability of our road system.

Bob Lindbeck – Alger County Road Commission

"To start an asset management program," Lindbeck explained, "I had to convince our decision-makers that preventive maintenance was the best way to extend the serviceability of our road system."

Near the end is a great place to begin

Lindbeck decided that pavement deterioration, which is the beginning of the end for roadways, would be the best place to start a conversation about road maintenance and asset management. While preparing for a public meeting to vote on how to use the ARRA funds he remembered a PowerPoint slide from an asset management workshop that he had attended. The workshop, sponsored by the Michigan Transportation Asset Management Council, was designed to help local agencies develop and implement asset management programs. "The graphic I had in mind showed how various maintenance treatments affect the rate of deterioration for pavement," he said. "I had a rough idea about what the graphic looked like, and I had costs for various treatments, basic deterioration rates and a general idea about what I wanted to communicate, but I needed help assembling it so it would make sense."

Lindbeck found the help he needed at the Michigan LTAP office. Through a phone conversation and a brief exchange of Emails, Lindbeck worked with members of the LTAP staff to create a one-page handout that summarized pavement deterioration.

See *Understanding* on Page 5

More inside

MichiganTech
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Elephants and Riders

Type "change" into the search field on Amazon.com and you'll get a list of over 175,000 books. As I write, I'm a little over halfway through the book *Switch: How to Change Things When Change is Hard*, which was #2 on the list as of April 2, 2010. In it, authors (and brothers) Chip and Dan Heath draw on conventional wisdom in the field of psychology that says the human brain is driven by two independent systems: the emotional system and the rational system. To illustrate the drive behind each, the Heath brothers borrow an analogy about an elephant and its rider from *The Happiness Hypothesis*, a book by University of Virginia psychologist Jonathan Haidt. The Heaths write:

> *"Our emotional side is an Elephant and our rational side is its Rider. Perched atop the Elephant, the Rider holds the reins and seems to be the leader. But the Rider's control is precarious because he is so small relative to the Elephant. Any time the six-ton Elephant and the Rider disagree about which direction to go, the Rider is going to lose. He's completely overmatched." (Switch, p. 7)*

The Heath brothers go on to explain that the Rider is good at thinking, analyzing and planning; he is readily able to endure short-term sacrifices to realize long-term gains. The Rider can "see" further than the Elephant, who is driven by a hunger for instant gratification.

Both have strengths. Where the Elephant is emotional, energetic and passionate, the Rider is reserved, quiet and analytical. According to the Heaths, the key to change is to tap into the strengths of each.

> *"If you want to change things, you've got to appeal to both. The rider provides the planning and direction, and the Elephant provides the energy. If you reach the Riders of your team but not the Elephants, team members will have understanding without motivation. If you reach their Elephants but not their Riders, they'll have passion without direction. In both cases, the flaws can be paralyzing. A reluctant Elephant and a wheel-spinning rider can both ensure that nothing changes. But when Elephants and Riders move together, change can come easily." (Switch, p. 8)*

Two stories in this issue are about change. The big one is about how Bob Lindbeck, P.E., successfully implemented a new asset management program at Alger County Road Commission. To get it done he had to change the way decision-makers think about road maintenance. The second one is about how the Center for Technology & Training is changing the model for technology transfer.

Money plays an important role in both stories. Interestingly, money evokes both rational and emotional responses in most people. In both stories about change, the rational appeal of saving money ("*This* way of doing things costs much less than the other way...") engages strong emotions ("... look at the money we can save if we do things *This* way!"), which makes change easier.

For much more, read the book. Elephants and riders could change the way you think about change.

The Bridge

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LTAP Steering Committee

The Local Technical Assistance Program (LTAP) is a nationwide effort financed by the Federal Highway Administration and individual state departments of transportation. It intends to bridge the gap between research and practice by translating the latest state-of-the-art technology in roads, bridges, and public transportation into terms understood by local and county highway or transportation personnel.

The LTAP Steering Committee makes recommendations on, and evaluations of, the activities of the Local Technical Assistance Program based on discussions at the Technology Transfer Interchange and Advisory Committee meeting. This meeting is held annually and is open to all rural and urban agencies, and individuals concerned with the transfer of transportation technology in Michigan.

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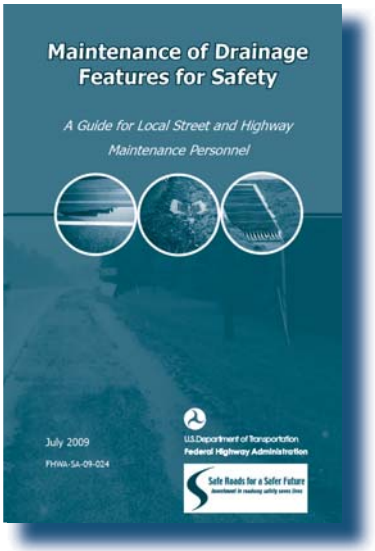
New Roadway Maintenance Resources Available on the Web

Maintenance of Drainage Features for Safety

http://safety.fhwa.dot.gov/local_rural/training/fhwasa09024/



Excerpt: Safety on streets and highways, bicycle trails, and sidewalks is essential to motorists, bicyclists, and pedestrians. Drainage systems that remove storm water run-off from streets and highways are an integral feature of a safe system. Water that remains on the roadway surface can contribute to vehicle hydroplaning. In winter, standing water can freeze and cause skidding.

Curbs, gutters, channels, and ditches that carry the run-off away from the roadway can have a serious effect on an errant motorist or bicyclist when not designed and maintained correctly. Erosion along the roadway can also contribute to the severity of a crash or inundate crash worthy systems such as breakaway sign supports. Even headwalls, pipe ends and grates on drop inlets and pipe openings need to be safety treated when they are within the area an errant motor vehicle or bicycle can reach.

Maintaining roadway drainage is important for safety and for ensuring the long life of the roadway by:

- Preventing erosion of the roadway
- Preventing saturation of the subbase
- Preventing damage to structures

This guide is intended to help local road agency maintenance workers understand the importance of maintaining and upgrading drainage features on their road system to avoid an unsafe condition. Its purpose is to highlight common roadway drainage problems that can cause an unsafe condition and suggest inspection methods and corrective action. This guide is not intended to be a design guide.

Maintenance of Signs and Sign Supports

http://safety.fhwa.dot.gov/local_rural/training/fhwasa09025/

Excerpt: Traffic signs are critical elements of the highway because they communicate the rules, warnings, guidance, and other highway agency information that drivers need to safely and efficiently navigate roads and streets. Well maintained signs are important as they help drivers make good decisions. This guide is intended to help local agency maintenance workers ensure their signs are maintained to meet this need.

This guide is not a comprehensive design guide for roadway signing—there are many aspects to signing that cannot be covered here. For standards and guidance on all signs, refer to the Manual on Uniform Traffic Control Devices (MUTCD), the Standard Highway Signs Handbook, and the many other references found at the end of this guide. These references provide more detailed information on the sign topics briefly covered here:

- Principles and Types
- Materials and Supports
- Installation
- Management System
- Inventory and Inspection
- Preventive Maintenance
- Repair and Replacement
- Record-keeping

Appendices are provided for:

- Materials and equipment used for sign maintenance
- Clear zone description
- Typical work zone traffic control plans for sign maintenance activities

APWA Michigan Chapter Announces 13th Annual Fleet Seminar

Michigan Chapter APWA Working in the Public Interest

May 25–27 at Shanty Creek Resort in Bellaire

Fleet maintenance issues for today's fleet managers, parts personnel and technicians - Includes vendor product and equipment trade show – This is a great event for all fleet maintenance personnel. Informational presentations by industry professionals and peers will reinforce management skills and introduce the latest repair techniques and technologies. The format of the seminar provides plenty of opportunities to network with peers, industry professionals and equipment providers. **Attendance at this full event will earn 1.35 CEUs**.

For a detailed agenda, registration rates and lodging information please visit the APWA Michigan Chapter Web site: **http://michigan.apwa.net/resources/documents/**

Awards presented at 44th annual County Engineers' Workshop

The careers of four recent retirees and the contributions of one engineer in the prime of his career were formally recognized at the 44th annual Michigan County Engineer's Workshop in March.

Wayne Harrall, P.E. director of engineering at Kent County Road Commission, was chosen as the County Road Association of Michigan's (CRAM) urban engineer of the year for 2009. Among a lengthy list of achievements and responsibilities, Harrall was recognized for effectively overseeing an annual design and construction engineers program worth $15–20 million, which included 17 Federal Aid projects in 2009. In a short acceptance speech, Harrall thanked the leadership at Kent County Road Commission. "[They have created] an environment that encourages excellence and achievement," Harrall said.

Michigan's LTAP

Wayne Harrall and Heather Smith.

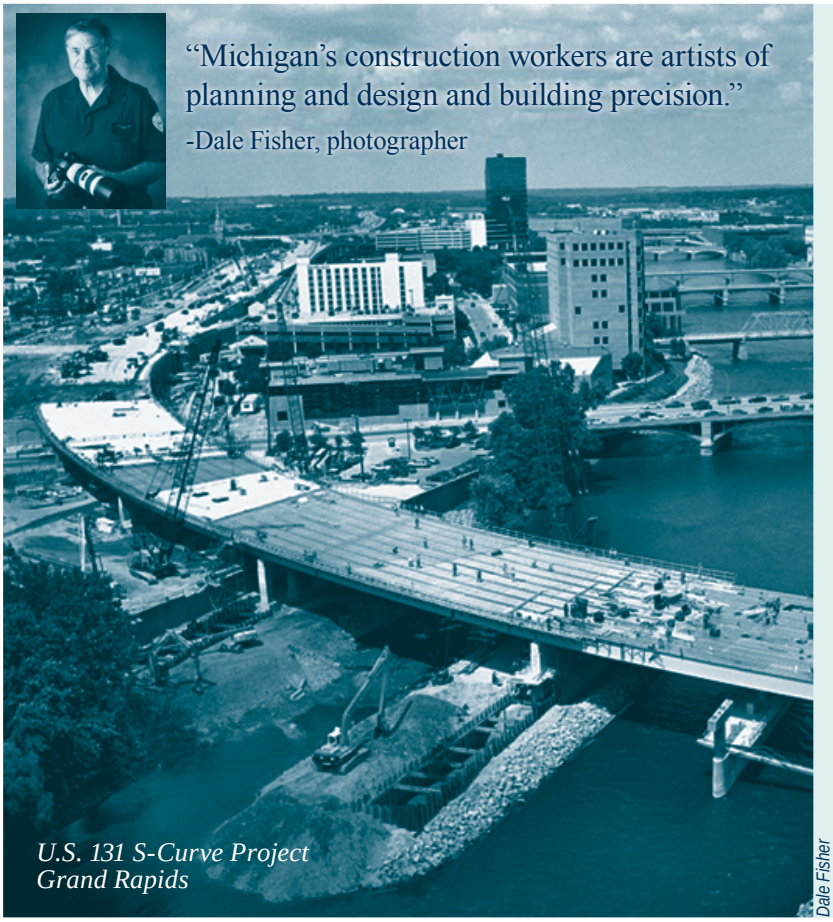
Michigan's LTAP

Wayne Schoonover (left) with Michael and Patty Hamp.

Michael Hamp was honored as a recent retiree from Ionia County Road Commission, where he served for 37 years, most recently as assistant to the engineer. Wayne Schoonover, P.E., County Highway Engineer at Ionia County Road Commission, publicly thanked Hamp for his service. "Mike worked at the Road Commission with a passion for serving the public," Schoonover said. "As the last of a four-generation legacy here – he first showed up as a toddler when he came to work with his grandfather – Mike was a large part of our institutional memory. His help and service has been immeasurable."

Three other retirees were also honored, but were not present at the event. They included **John Lambert**, for 30 years at Bay County Road Commission; **Lonny Weining**, for 44 years at Kent County Road Commission; and **James G. Knapp, P.S.**, for 30 years at Mecosta County Road Commission.

Heather Smith, chair of the County Engineers' Workshop and assistant engineer at Barry County Road Commission, presented the awards.



"Michigan's construction workers are artists of planning and design and building precision."

-Dale Fisher, photographer

U.S. 131 S-Curve Project
Grand Rapids

Dale Fisher

Roads and bridges as art

In 2003, renowned aerial photographer and artist Dale Fisher published *Building Michigan - A Tribute to Michigan's Construction Industry*. "When people think of what defines beauty in Michigan," Mr. Fisher wrote in the introduction to the book, "they are understandably drawn to our wonderful lakes, majestic forests, and patchwork quilt of rolling farmlands. But I see beauty in something more. Michigan's construction workers are artists of planning and design and building precision. From the view of a helicopter, the magnitude of all they have done becomes incredibly clear."

This summer, Mr. Fisher is planning to shoot and assemble photos for a second edition of *Building Michigan*, and he invites road agencies from all over Michigan to contact him with dates and locations of major projects. "Roads and bridges create incredible patterns from the air and are especially interesting during construction," he said. "I'll be flying through almost every area of the state this summer. I encourage local road agencies to notify me when they have projects underway so I can plan my travels accordingly."

For more information:
Phone: 517-522-3705
Email: dale@dalefisherphoto.com
Web: www.dalefisherphoto.com

***Understanding*, from Page 1**

Pavement deterioration 101

Using the summary at the public meeting, Lindbeck explained that the rate of deterioration for pavement can be described by an S-shaped curve (see Figure 1). The x-axis of the curve is time. The y-axis is the pavement surface rating which, using the Pavement Surface Evaluation and Rating (PASER) system, is a number between one and ten. In the PASER system, the rating is based on distresses that are visible on a pavement surface; a rating of one indicates failed pavement; a rating of ten is brand new pavement.

Lindbeck also explained that pavement life can be extended considerably by performing appropriate maintenance activities when the pavement is showing certain types of distresses. The shaded areas of Figure 1 list types of activities that are appropriate within different "windows of opportunity" along the deterioration curve. After pavement deteriorates below a rating of four, which to a pavement expert is the critical distress point (CDP), the cost of fixing the pavement gets much more expensive.

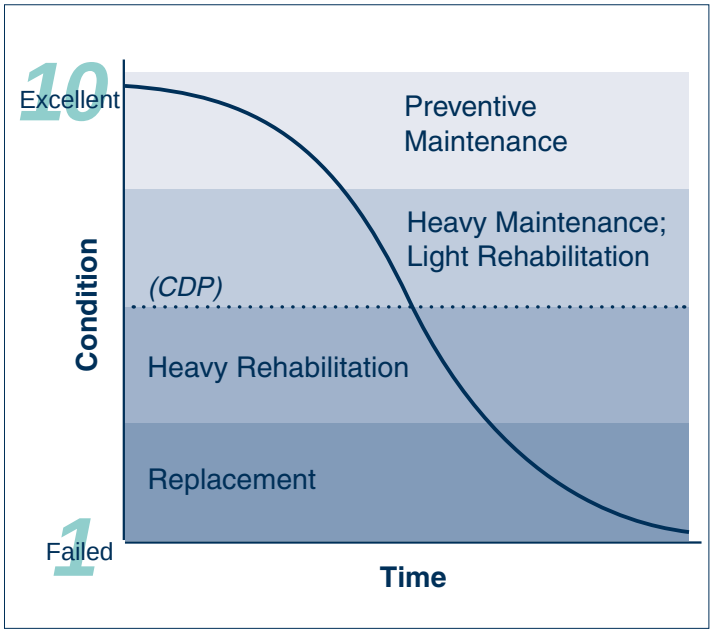


Figure 1. "S"curve that describes basic pavement deterioration.

Overcoming misunderstandings

"One of the big misunderstandings about road maintenance that I had to change among our decision-makers is that the worst stretches of road should be improved before those that are less deteriorated," Lindbeck said. "With the summary, I was able to show that we can get more bang for our buck by chip-sealing an 11 year-old road that looks pretty good instead of reconstructing a 20 year-old road that's structurally deficient."

Lindbeck used an example (see Figure 2), in which he explained that paving a road costs approximately $180,000 per mile for Alger County Road Commission. If the road commission performs no preventive maintenance, the road typically lasts about 15 years, which works out to a total cost of ownership per year of about $12,000 per mile ($180,000/15 years).

Lindbeck went on to explain that chip-sealing the same road at 11 years and 18 years will extend the pavement service life approximately 14 years, and the road will last 29 years before replacement is necessary. At $20,000 per mile, the cost per year for chip-sealing twice would be about $2,857 per mile ($40,000/14 years). The total cost of ownership per year would be about $7,586 per mile ($180,000 + $40,000/29 years).

See *Understanding*, on Page 8

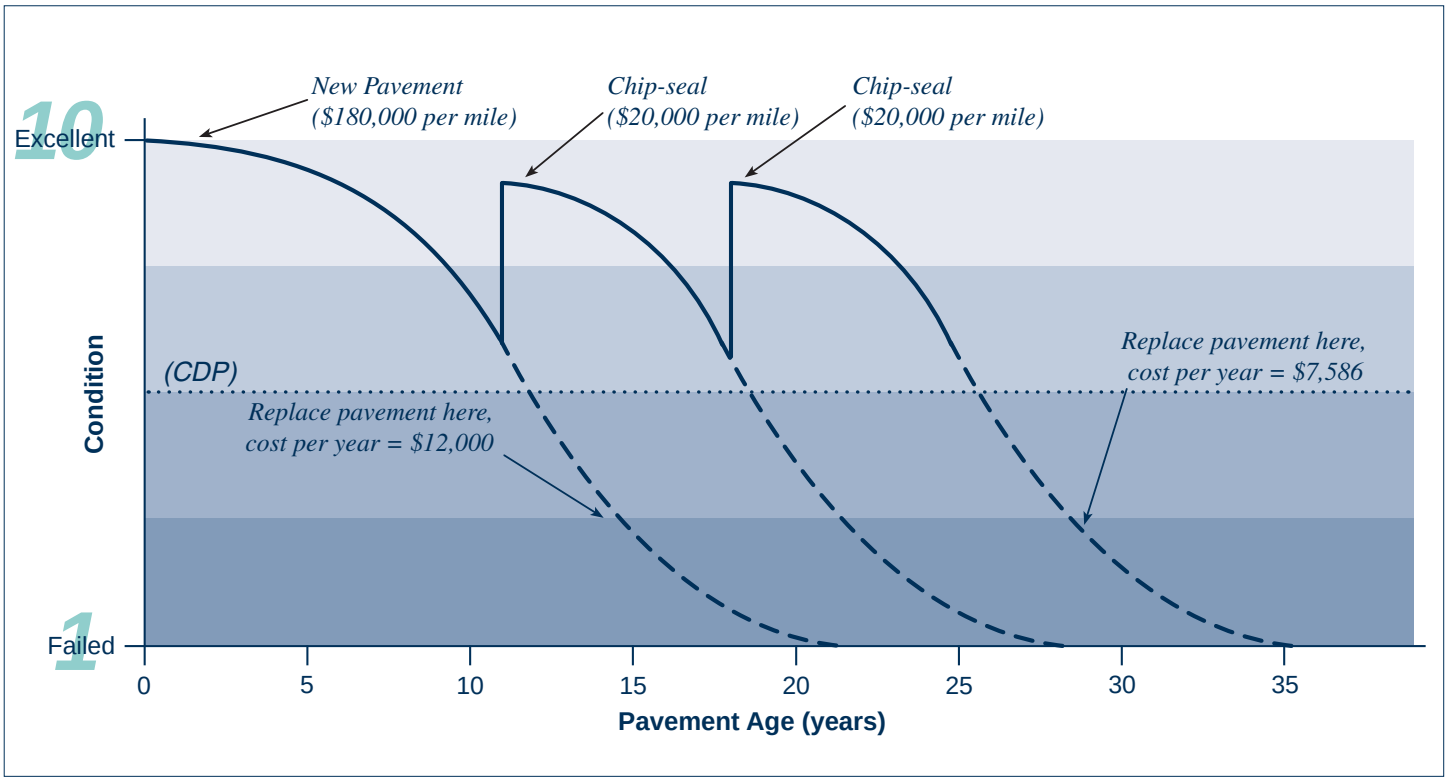


Figure 2. Alger County Road Commission's example of using preventive maintenance treatments to extend service life.

Center for Technology and Training Brings New Tools to Transportation Technology Transfer

By Jennifer Donovan, Director of Public Relations
Michigan Technological University

Web-based training is expanding the reach of Michigan Tech's transportation technical assistance programs. Despite rising costs of training and shrinking budgets of county road commissions, cities, towns and villages throughout Michigan and the nation, a new Center for Technology and Training (CTT) at Michigan Tech is making more training available at a lower cost.

The CTT developed from a three-year experiment that replaced traditional classroom and textbook training with Internet webinars, harnessing this emerging technology to expand the center's reach while reducing costs – both for the trainers and the participants. Some of the webinars have attracted more than 750 people in 13 states. "They have taken desktop web conferencing to a new level at Michigan Tech by conducting large-scale, fully interactive training sessions – over 900 hours of webinar broadcasts in 2009 alone," said Chad Arney, systems administrator for Educational Technology Services at Michigan Tech. "This is a pivotal technology for the programs this group offers."

New name clarifies identity

The broad reach of web-based training demanded a new technology transfer model and a new organizational structure to support it. So the CTT was established. Within the Michigan Tech Transportation Institute (MTTI), the CTT is directed and managed by the staff that also supports the Local Technical Assistance Program (LTAP) and the Technology Development Group (TDG).

"People we work with throughout Michigan, nationally and even on campus have been confused for years by the LTAP and TDG monikers," said Terry McNinch, CTT director. "LTAP is a funded project. TDG was a group of people working on funded projects. It sounds straightforward, but it didn't turn out that way, because the same people were involved in both areas. This should clear it up and give us a single overall identity."

Programs and Projects within the Center for Technology & Training

Michigan's Local Technical Assistance Program
- Workshops and Conferences
- Phone and Email Technical Assistance
- *The Bridge* Newsletter
- Lending Library

Development and Support for RoadSoft and MERL
- Annual Work Plans for Development
- Programming New and Improved Features
- User Group Meetings
- Phone and Email Technical Support
- Documentation, Help Files and Training
- *RoadSoft Roundup* Newsletter

National Training Events
- Informational Web Broadcasts for Local Transportation Agencies
- Certified Inspector of Sediment and Erosion Control (CICEC) Training and Examinations

Transportation Research Assistance
- Asset Management
- Sign Retroreflectivity
- Bio Fuels

Michigan's Local Technical Assistance Program | RoadSoft Since 1992 | MERL

Snapshot of a New Model for Technology Transfer

OVERVIEW

The *2010 Winter Operations Webcast Training Series* was made up of four sessions of informational presentations that showcased successful winter operations at a variety of local agencies in Michigan, Wisconsin, Minnesota and Indiana. All sessions were arranged and moderated by the Center for Technology & Training at the Michigan Tech Transportation Institute with promotional support from the following partners:

- Connecticut Transportation Institute
- Illinois Technology Transfer Center
- Michigan's LTAP
- Michigan Tech TTAP
- National Association of County Engineers
- Ohio LTAP Center

RESULTS

8 presenters sitting at their desks in **4** different states

reached **580** people at **122** sites in **14** states.

Average cost to agencies, per person trained: **$7.36**.

COMMENTS

"Our truck drivers were very interested in the training. In today's economy we wouldn't have been able to send all 12 of them to an in-person event. With the online format, all of our drivers were able to attend."

Roscommon County Road Commission (MI)

"We appreciate your work in offering these online trainings. When you can share information like this with other agencies, we are sharing some really valuable knowledge."

West Virginia Division of Highways

Larry Sutter, professor and director of MTTI, said, "The establishment of the CTT allows all our programs to address technology transfer needs within the transportation industry. We are excited about adopting new delivery technologies and expanding Michigan Tech's outreach activities."

Partnerships expand content and audience

The CTT will increase its effort to provide reasonably-priced online training on a wide variety of transportation and engineering related topics. "We hope this change and the switch to webinar broadcasts will widen the bottleneck and allow us to reach more people at less cost and provide a quicker response when training needs arise," said Tim Colling, senior research engineer and CTT assistant director.

The CTT also plans to offer services outside of Michigan and deliver content in Michigan from other states by working with the other 50 LTAP centers and the seven Tribal Technical Assistance Program (TTAP) centers, as well as national professional organizations such as the National Association of County Engineers (NACE). "We're relying on our sister LTAP/TTAP centers and industry partners to promote the events and help us identify content," said Christine Codere, CTT office manager. "We can't do this alone. It takes a lot of cooperation to reach 38,000 counties and cities."

"We hope this change and the switch to webinar broadcasts will widen the bottleneck and allow us to reach more people at less cost and provide a quicker response when training needs arise."

Tim Colling – Center for Technology & Training

Reorganization will also benefit projects such as the RoadSoft® roadway management system and the MERL project estimator. CTT supports more than 300 agencies using RoadSoft in Michigan, and requests to license the software come from as far away as Brazil. "The webinar technology enables us to train people to use these tools no matter where they are in the world," McNinch explained. "And external licensing brings financial resources into Michigan, which are poured back into the development process. That's good for Michigan's taxpayers and good for Michigan."

Join the *Build for the Future* Campaign and be Recognized for Your Use of 'Green' Materials

By Susan Mooney, environmental scientist
United States Environmental Protection Agency, Region 5

Using recycled materials like asphalt shingles, foundry sand, tires, reclaimed concrete or asphalt pavement, and compost in infrastructure projects reduces the need to extract and process natural resources, which can reduce emissions of greenhouse gases and other environmental pollutants, save energy, and even save money. U.S. Environmental Protection Agency is working with many stakeholders, including the Federal Highway Administration to foster sustainable materials management in construction activities.

EPA Region 5 established the *Build for the Future* campaign to provide recognition to local road building agencies that are already using some recycled materials and to encourage them to consider using more. Those who join will have access to a free, easy-to-use online tracking system and will receive a "Climate Profile" reflecting the greenhouse gas emission reductions associated with using recycled materials. These documented environmental benefits can be shared with community residents, business leaders, and local government officials.

How Does the Program Work?

State and local road building agencies are invited to join the *Build for the Future* campaign via EPA's WasteWise program (www.epa.gov/wastewise). WasteWise is an EPA voluntary partnership program that encourages partners to reduce waste and buy recycled-content materials.

New partners are asked to submit baseline data via a new online system called RETRAC. Using RETRAC, partners can easily document their successes and calculate the associated environmental benefits. Partners are also asked to set goals and annually report additional uses of recycled materials or other waste reduction practices.

After receiving the baseline data, EPA Region 5 will recognize each partner's leadership and commitment to the use of recycled materials. Partners who use RETRAC to quantify progress towards goals will receive additional recognition from the Agency, including the opportunity for an on-site visit. Reporting partners are also eligible for national awards and recognition from EPA.

Why Should You Join?

Is your state or local government developing a climate action plan? Are you looking for "green" projects or activities? The *Build for the Future* campaign will allow you to measure the climate benefits related to your use of recycled materials and receive recognition from EPA Region 5 for your leadership in sustainable materials management. Region 5 will also ensure partners receive up-to-date information on the use of recycled materials, including new specifications, case studies, fact sheets, webinars and user guidelines.

For More Information

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***Understanding*, from Page 5**

Cracks are sealed

"The road commission received $253,000 from the ARRA funds. I basically showed our decision-makers that we could use the money to either crush, shape and repave about a mile and a half of bad road, or we could use a preventive maintenance treatment to prevent over 12 miles of good road from deteriorating further," Lindbeck explained. "They chose preventive maintenance; we ended up spending the money on chip-sealing."

Today, thanks to the asset management program implemented last spring, motorists in Alger County are enjoying 12.6 miles of good road that will cost them an average of just over $7,500 per mile annually, instead of driving on about a mile and a half of new road that would have cost them $12,000 annually. "Making a prudent decision is pretty easy when you have all the information in front of you and it makes sense," Lindbeck said.

Cooperation

If you want to be incrementally better, be competitive. If you want to be exponentially better, be cooperative. *(Source Unknown)*

No employer today is independent of those about him. He cannot succeed alone, no matter how great his ability or capital. Business today is more than ever a question of cooperation.
(Orison Swett Marden)

Events and Resources

Workshops and Conferences

Sign Retroreflectivity – the Rules, the Science, the Solution
April 19 – Escanaba; 22 – Baraga;
May 4 – Lansing; 5 – Mount Pleasant;
11 – Kalamazoo; 12 – Saginaw: 13 – Gaylord

Michigan Transportation Asset Management Conf.
May 6 – Mount Pleasant

MI Chapter of APWA Annual Fleet Seminar
May 25-27 –Shanty Creek Resort, Bellaire

Webinars

Introduction to RoadSoft 7
This series includes the following two-hour sessions:
May 17 – Overview / Understanding RoadSoft
May 18 – Using the Road Module
May 19 – Data Collection / Using the LDC
May 20 – Managing your RoadSoft Data
May 21 – Intro to Safety Analysis / Using Crash Data

For more information call 906-487-2102
or visit www.MichiganLTAP.org