

Fall 2014

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From Montana LTAP Director

The saying "Don't judge a man until you have walked two moons in his moccasins" came to mind recently. We just held the 25th Annual Snow Rodeo hosted by the City of Great Falls and I had decided to compete this year.

Usually my Snow Rodeo responsibilities are for training only the first day involving safety equipment concerns. This year our program highlighted load securement and skid steer safety. Our safety partners at Montana Association of Counties and Montana Municipal Interlocal Authority expressed concern with recent accidents from improper load securement. So we focused the first half of the morning we reviewed what causes these types of accidents and opportunities of prevention.

Due to the number of city street departments and county road departments using skid steers for smaller jobs, supervisors were expressing concern regarding the safety procedures with this piece of equipment. The rest of the morning we reviewed the three major safety issues with skid steers:

1. Possible Decapitation and Loss of Limb - due to moving parts surrounding operator

2. Visibility - especially limited sight behind skid steer and backing over other workers

3. Stability – understanding tip over capacity

We were fortunate to have four vendors supply five different attachments for hands-on examples for our afternoon field exercises as well as a thorough skid steer safety walk-around.

Now, back to the quote. With this being the 25th anniversary of this event coupled with the fact I have attended twenty Snow Rodeos, I decided to join in the competition on the second day. Over the years I have operated equipment but not at the level of the rest of the competitors.



Steve Jenkins, MT LTAP, operating backhoe and finessing bucket at Snow Rodeo.

Was it nerve-wracking? Absolutely yes! Humbling, of course. However, after finishing up the last obstacle course with the motorgrader, I found myself realizing the number of personal trainers I had throughout the day and how willingly they shared their expertise with me. It also brought to mind the above quote after operating the snow plow, front end loader, backhoe, and motorgrader, how difficult their jobs are during the inclement weather Montana throws at them each season. After going through the pressures of wanting to perform at my best and to maintain a safety consciousness while doing so, I tip my hat to our city street and county road crews for their continuous service in keeping our roads safe.

Travel safe, Steve Jenkins, Montana LTAP Director *PS: Find more of my rodeo ramblings at http://willtosurvive.* wordpress.com/

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The LTAP/TTAP Mission is to foster a safe, efficient, and environmentally sound surface transportation system by improving skills and increasing knowledge of the transportation workforce and decision makers



E-Mail: MTLTAP(at)coe.montana.edu Our website lists upcoming training courses, registration forms, library information, our contact information, newsletters, various links, and MACRS information. Please go

We can be reached at the following:

(406) 994-5333

Local Technical Assistance Program

(800) 541-6671 or (406) 994-6100

LTAP Matters is published by the Local Technical

Assistance Program. LTAP is located at Western

Transportation Institute, College of Engineering,

Montana State University, Bozeman, Montana.

to: http://www.coe.montana.edu/ltapv2/index.html The Local Technical Assistance Program/Tribal Technical Assistance Program (LTAP/ TTAP) is a nationwide network of 58 centers - one in every state, seven serving Native

American tribal governments and one in Puerto Rico.

Phone:

FAX:





of Transportation Federal Hiahway Administration

MT LTAP Advisory Committee Members The Advisory Board meets annually to make recommendations and evaluate the effectiveness of the Montana LTAP program. **Steve Albert** TBA

WTI Director Cities & Towns **Harold Blattie**

Phil Hauck City of Helena **Kris Christensen**

Russ Huotari **Richland County** David Mumford

City of Billings Jim Muskovich

Jim Rearden

Bob Seliskar

MACo

Montana League of

Thomas Danenhower

Kelly Elser Town of Ennis

Montana Dept of

Transportation

MACo

MMIA

Eric Griffin Lewis and Clark County

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Federal Highway Administration John Van Delinder City of Bozeman

City of Great Falls

Front Page Photo: Clint Walker, Champion of All-Around Champions, Snow Rodeo Motor Grader obstacle course. Photo by Michele Beck

NEW! MACRS Scholarship Available

Over the past few years, the Montana Association of County Road Supervisors Executive Board discussed possible ways of recruiting the up and coming young workforce looking toward transportation for their careers. The most favorable idea just made it to the front of the list -- a MACRS Scholarship.

This scholarship, worth \$1,000 per academic year/\$500 per semester, will be awarded to a student with a declared major in equipment operations, mechanics, civil engineering or transportation related studies.

The applicant must be seeking a degree in a Certificate, Associate of Arts, Associate of Science, Associate of Applied Science, or Bachelor of Science program. This is a one-time awarded scholarship.

This form is available at MSU Bozeman, MSU Northern, University of Montana, Miles City Community College, and Flathead Valley Community College. For questions or forms, please contact Montana LTAP at 1-800-541-6671.

Montana LTAP Newsletter

Going Electronic Starting with the 2015 Winter Issue, Montana LTAP

Starting with the 2015 Winter Issue, Montana LTAP will be providing electronic quarterly newsletters ONLY.

We will be sending out email notices to our listservs this fall. For those not on our listservs and want to receive our electronic quarterly newsletter, send your email request by December 15, 2014 to: mbeck(at) coe.montana.edu. If you need a printed copy, please contact Montana LTAP at 1-800-541-6671.

Those presently receiving electronic newsletters will continue to get their quarterly newsletters as usual.

All of our quarterly newsletters are available at any time on our website: http://www.coe.montana.edu/ltapv2/newsletter/index.html

MACRS at NACE 2014

Report submitted by MACRS President Ovila Byrd, Flathead County Road Supervisor Following is a brief summary regarding my recent trip to the NACE Conference held in Baton Rouge, Louisiana, April 14 -17, 2014. I was joined by fellow MACRS Representative District #2 Joe Carter, Jefferson County Road Department. It was a great opportunity to get to know each other and share county road issues.

We attended every possible session offered. The Louisianans started with their hospitality right from the get-go. At the registration desk on Sunday, they were very happy to see us and welcomed us with their great big southern smiles. They showed us where all of the sessions were to take place and let us know where to go for everything else. Whenever someone found out we were from Montana, they always had something to say about our great state or a comment about where we live.

The vendors were very good in all respects. I did notice some related to the engineer side of things more than

what we have at MACRS. Joe Carter and I commented to each other our vendors at MACRS are easily as informative as what they had to offer at NACE. Our MACRS vendors provide us with the much needed information our MACRS group is requesting.



L to R: Joe Carter, Jefferson County; Ovila Byrd, MACRS President, Flathead County; Jim Fancka, Road and Bridge Project Inspector Supervisor, Halfway, Missouri

It was a project not funded by any federal money, but rather all donations were made by private entities. Once completed, it was then given to the Louisiana DOT for maintenance. The whole project included not only a 2.4 mile-long cable-stay bridge but also twelve miles of four-lane highway leading to and from the crossing. The project total cost was around 400 million dollars! Both Joe and I were awestruck by the amount of money spent.

Other sessions attended included asphalt preservation, bridge designs, and Safety Management. They were all very informative. From the NACE conference, I returned with some interesting ideas to help me be prepared to work with MACRS Executive Board in putting on next year's MACRS conference.

I strongly agree the next year's MACRS president (2015-2016) would benefit greatly from

attending NACE. It is an educational stepping stone to further prepare the MACRS President for planning our MACRS conference. It was well worth the time and money from my perspective.

Be sure to mark your calendars for MACRS Spring Conference, March 30-April 2, 2015.

There were many informative and interesting sessions, but in particular was the tour of the John James Audubon Bridge.

25th Annual Snow Rodeo 2014

The 25th Annual Snow Rodeo was hosted by the City of Great Falls. This two-day event included equipment safety training on the first day provided by Montana LTAP and the second day included equipment competition, diagnostics, and safety exams for those striving to win in one of the four categories to become an All- Around Champion.



First Day Equipment Safety Training on Load Securement and Skid Steer Safety

"Because we were celebrating twenty-five years we put together a special category of All-Around Champions who competed among themselves," said Montana LTAP Director Steve Jenkins. " It is a way to honor those who reached cumulative points to become an All-Around Champion from past Snow Rodeos."

Competing Past All-Around Champions: Andy Dean, Yellowstone County; Mo Henman, Retired Yellowstone County; Joe Miller, Missoula County; Clay Moore, Yellowstone County; Doug Nesbit, Lewis & Clark County; Clint Walker, Missoula County; Will Wertz, Broadwater County.



For the equipment safety training, the morning started with load securement and tie down regulations.

L to R: Doug Hecker, Richland Co. and Steve Jenkins, MT LTAP

Numerous class participants added to the discussion regarding serious incidents that occurred and what prevention methods were

For the afternoon hands-on field exercises, vendors provided various attachments on skid steers to try out.

Competition started bright and early the next morning with a welcome from Great Falls Mayor Mike



L to R: Mayor Winters and Public Works Director Jim Rearden

Winters and Great Falls Public Works Director Jim Reardon. Sixty-two competitors, including the seven All-Around Champions, concentrated on moving through each obstacle course with safety and skill.

Chris Vitek, Winter Equipment, explained at the Wisconsin Snow Rodeo he attends there is a snow plow competition among the regional city mayors. Mayor Winters thought this was a great idea and requested it be on the planning agenda for next year's Snow Rodeo in Montana.

"Both days provided participants with the opportunity to network with other counties and city street personnel," said MT LTAP Conference Coordinator Genevieve Houska. "Because new personnel are coming up the ranks, this event

> is an avenue to also talk with vendors and experienced operators to discuss solutions for issues they face."

City of Great Falls and Montana Department of Transportation supplied some competition equipment and provided judges and crew to help with competition scoring and resetting obstacles.

the morning focused on skid steer safety. Jenkins noted three major safety concerns: • Possible Decapitation and Loss of Limb

Visibility Stability

Tractor and Equipment Company's Kevin Sedgwick and Krista Lundberg provided a thorough safety walkaround of a skid steer.



Center: Kevin Sedgwick, Tractor and Equipment Company, and Krista Lundberg, Tractor and Equipment Company, in skid steer.

Continued on Page 5...

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Fall 2014



Genevieve Houska, MT LTAP, discusses with Chris Vitek, Winter Equipment, various ways to place an order.



Tractor and Equipment Company's CAT Skid Steer with Milling Attachment

"It is a great honor to be part of the Snow Rodeo event," exclaimed Debbie Kimball, City of Great Falls. "The Rodeo originally was a dream put together by then Operations Manager of Public Works Marty Basta. This is an important event for our city street crews as well as for county employees. Our partnership with Montana LTAP continues to grow over the years and I am looking forward to the next Rodeo."



Marty Basta, Retired City of Great Falls

The four equipment categories included: •Motorgrader Obstacle Course

- Backhoe Stationery Obstacle Course
- •Front End Loader Obstacle Course
- •Snow Plow Truck Obstacle Course

•Show Plow Truck Obstacle Course

Competitors also had to find at least 3 of 6 things wrong on one of the two front end loaders or the snow plow truck. The safety exam covered basic CDL questions and winter maintenance.

Asphalt Zipper P NOWmiss Laterit R Boalds R Sisi R Boalds

Vendor: Asphalt Zipper

"We are very appreciative of the vendor support at this 25th Annual Snow Rodeo," said Jenkins. "They have provided equipment for training and competition over the years and we honor this partnership. Be sure to thank the following vendors:"

•Tractor and Equipment Company -

equipment for training and competition days •RDO Equipment Company - equipment on training and competition days



Kraig Pester, Tractor and Equipment Company

•Tri-State Equipment - Volvo skid steer with several attachments for training day

• Rocky Mountain JCB - two different skid steers for event

•Asphalt Zipper - vendor booth with information for participants for both days

•Winter Equipment - vendor booth with information for participants for both days



L to R: Debbie Kimball, City of Great Falls; Michele Beck, LTAP; Genevieve Houska, LTAP; Renee Aafedt, City of Great Falls

Continued on Page 6 . . .

Snow Rodeo 2014 (Cont'd from page 4)



Snow Rodeo 2014 (Cont'd from page 5)

RDO Equipment provided a skid steer with an auger and one with a street sweeper attachment.

Tri-State Equipment brought a Track Skid Steer with a bucket along with the forklift attachment. Participants found the variety to be of interest and discussed ways these implements would be useful on different types of jobs.



Brandon Caldwell, Cascade County, checking out Tri-State Equipment's Vovlo Skid Steer



RDO Equipment's Deere Skid Steer with Sweeper Attachment operated by Steve Kurk, MT LTAP Equipment Advisor

Above: MJ Bothman, Park County, trying out RDO's Deere Skid Steer



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Calendar of Events • July 2014 - December 2014

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July 2014

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4: Fourth of July Holiday - Offices Closed

15: MT LTAP Webinar: TBA-7:30-8:00am

21-24: National LTAP/TTAP Summer Conference, St. Louis, MO

Training on Request: Summer Survival Hand Safety Slips, Trips, & Falls

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12-14: SafetyFest - Havre (www.safetyfestmt.com/) 19: MT LTAP Webinar: TBA - 7:30-8:00am

| <i>Training on Request:</i> |
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| Forklift |
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September 2014

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1: Labor Day Holiday - Offices Closed

3 & 4: 25th Annual Equipment Safety Training and Snow Rodeo -Great Falls, MT (MT LTAP) Brochure available in July

21-25: MACo 105th Annual Conference, Hilton Garden Inn, Kalispell, MT www.mtcounties.org or MACo's Karen Houston 406-449-4360 23: MT LTAP Safety Webinar: PASER INVENTORY 7:30am-8:00am

| October 2014 | | | | | | | | | | |
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MACRS Fall District Meetings:

1: Miles City 2: Billings 6: Hot Springs 7: Butte 9: Helena 8 - 10: 83rd League of Cities & Towns - West Yellowstone, MT 8: Public Works Directors Meeting - West Yellowstone, MT 10: Put On The Brakes Day - 14th Anniversary (go to: www.brakesonfatalities.org) 13: Columbus Day - Observed (Montana LTAP Offices Open) 21: MT LTAP Safety Webinar: Load Securement- 7:30am-8:00am

21 - 23: 28th Regional Local Road Coordinators Conference, Rapid City, SD

November 2014

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4: Election Day - Offices Closed

11: Veterans' Day - Offices Closed

17: LTAP Leadership - Great Falls 8am - noon

17 - 18: MACRS Planning Meeting, Great Falls, 1-5pm and 8am -noon; 25: MT LTAP Safety Webinar: Winter Maintenance 7:30am - 8:00am 27 - 28: Thanksgiving Holiday - Offices Closed

Some dates and locations are subject to change. Call Genevieve Houska, LTAP, 1-800-541-6671 to confirm.

December 2014

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3: LTAP Leadership - Miles City

16: MT LTAP Safety Webinar: Winter Survival 7:30am-8:00am 25 & 26: Christmas Holiday - Offices Closed

Safety Meeting Webinars from Montana LTAP October 21, 2014: Load Securement November 25, 2014: Winter Maintenance December 16, 2014: Winter Survival Monthly Thirty-Minute Safety Webinars held at 7:30am on Tuesday Mornings Call Montana LTAP at 1-800-541-6671 for more information!

Calendar of Events • January 2015 - June 2015

January 2015

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1: New Year's Day - MT LTAP Offices Closed

11-15: 94th Transportation Research Board, Washington, DC

19: Martin Luther King Day - Offices Closed

20: MT LTAP Safety Webinar-Temp. Traffic Control 7:30am-8:00am

26-29: 12th Annual Safety Congress - Great Falls, MT (MT LTAP):

26am: Work Zone Tech 26pm: Traffic Control Supervisor 27: Traffic Control Supervisor

28: Roadway Safety Training 29: Worker Safety Training

| Montana LTAP |
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| Quarterly Newsletter |
| Going Electronic |
| January 2015 |
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March 2015

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9-13: MSU Spring Break

16: Work Zone Technician - Butte (MT LTAP)

17: Work Zone Technician- Great Falls(MT LTAP)

18: Work Zone Technician- Havre (MT LTAP)

19: Work Zone Technician- Billings (MT LTAP)

20: Flagging Certification Course - Billings (MT LTAP)

23-27: National Work Zone Awareness Week (FHWA)

24: MT LTAP Safety Webinar Slips/Trips/Falls - 7:30am-8:00am 30 - April 2: MACRS 35th Annual Conference-

Heritage Inn Great Falls MT (MT LTAP)

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6: Gravel Roads Maintenance & Design - Bozeman

12: Work Zone Flagging Course - Miles City (MT LTAP)

13: Work Zone Flagging Course - Glendive (MT LTAP) 14: Work Zone Flagging Course - Wolf Point (MT LTAP)

17-23: National Public Works Week(APWA)

19: Gravel Roads Maintenance & Design - Baker

20: Gravel Roads Maintenance & Design - Roundup

25: Memorial Day - Offices Closed

26: MT LTAP Safety Webinar: Road Stabilization/Dust 7:30-8:00am

27: Work Zone Flagging Course - Helena (MT LTAP)

If you injure or kill someone while DUI, you can be convicted of vehicular homicide while under the influence. Expect a prison term up to 30 years and fines up to \$50,000, or both. DON'T DRINK & DRIVE! § 45-5-106, MCA

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12: Asphalt Institute - Helena, MT (MT LTAP)

16: President's Day - Observed (Montana LTAP Offices Open)

24: MT LTAP Safety Webinar - Leadership- 7:30am-8:00am

April 2015

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1-2: MACRS 35th Annual Conference Heritage Inn, Great Falls, MT (MT LTAP) 12-15: APWA North American Snow Conference - Grand Rapids, MI

More info: http://www.apwa.net/Snow

21: MT LTAP Safety Webinar: Roadway Prism Design 7:30-8:00am 19-23: NACE Annual Conference 2015, Daytona Beach, FL

| SAVE THE DATES: |
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| ACRS 2015 Spring Conference |
| March 30 - April 2, 2015 |

| June 2015 | | | | | | | | |
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2: Work Zone Flagging Course - Bozeman (MT LTAP)

3: MACRS Executive Meeting, 1-5pm - Bozeman

4: MT LTAP Annual Advisory Board Meeting, 9am-12pm - Bozeman 16: MT LTAP Safety Webinar - Weeds & Mowing 7:30am-8:00am

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Some dates and locations are subject to change. Call Genevieve Houska, LTAP, 1-800-541-6671 to confirm.

25th Annual Snow Rodeo Champions

Congratulations to Clint Walker, Missoula County, 2013 All-Around Champion, for becoming the first "All-Around Champion of Champions" at the 25th Annual Snow Rodeo. He competed against six other past All-Around Rodeo Champions. Not only did he claim title to being the Champion of Champions, he finished First in top points for motorgrader competition and Second with top points for backhoe against the entire 62 competitors. Fellow All-Around Champion of 2011, Will Wertz, Broadwater County, finished Third in top points against entire field of competitors. They will receive special plaques indicating such.



All-Around Champion of Champions Clint Walker, Missoula County

All-Around Champion of Champions Division: Champion of Champions: Clint Walker, Missoula County

All-Around Champions: Backhoe: 2nd – Clint Walker, Missoula County

All-Around Champions: Motorgrader: 1st – Clint Walker, Missoula County

All-Around Champions: Loader: 3rd – Will Wertz, Broadwater County



Will Wertz, Broadwater County



L to R: Clint Walker, Missoula County; Ryan Jones, Missoula County; Bill Kreis, Missoula County; Mike Miller, Missoula County; TJ Graveley, Broadwater County; Clay Caudle, Lewis & Clark County; Roger Thompson, Cascade County; Andy Pitcher, City of Bozeman

Competition Division:

All-Around 2014: Ryan Jones, Missoula County

Backhoe

1st: Clay Caudle, Lewis & Clark County2nd: Ryan Jones, Missoula County3rd: Roger Thompson, Cascade County

Loader

1st: TJ Graveley, Broadwater County2nd: Ryan Jones, Missoula County3rd: Mike Miller, Missoula County

Motorgrader

1st: TJ Graveley, Broadwater County 2nd: Mike Miller, Missoula County 3rd: Ryan Jones, Missoula County

SnowPlow

1st: Mike Miller, Missoula County2nd: Andy Pitcher, City of Bozeman3rd: Bill Kreis, Missoula County

10 Montana LTAP Fall 2014

Congratulations to Ryan Jones, Missoula County, for achieving the most accumulated points of 2,290 to win All-Around Champion 2014. As indicated in the Competition Division lists to the left, Jones placed in every division except SnowPlow where he came in 5th place on points.

For those interested in final scoring sheets for the 2014 Snow Rodeo, please contact MT LTAP at 1-800-541-6671.



All-Around Champion 2014 Ryan Jones, Missoula County

High Friction Surface Treatments

The following information is from FHWA's Every Day Accounts Frequently Asked Questions About HFST Fact Sheet. To view entire Fact Sheet go to: https://www. fhwa.dot.gov/everydaycounts/edctwo/2012/pdfs/fhwa-cai-14-019_faqs_hfst_ mar2014_508.pdf

What is a High Friction Surface Treatment (HFST)?

High Friction Surface Treatments place a thin layer of specially engineered, durable, high friction aggregates as a topping on a thermosetting polymer resin binder - usually epoxy, modified polyester, or urethane. These aggregate systems have long lasting skid resistance, while also making the overlay much more resistant to wear and polishing. The resin or polymer binder combination locks the aggregate firmly in place, creating an extremely rough, hard, durable surface capable of withstanding everyday roadway demands, such as heavy braking and even snowplowing. HFST restores pavement surface friction characteristics where traffic has worn down existing pavement surface aggregates. HFST can also help compensate for inadequate geometric designs such as sharp curves and/or substandard or variable superelevations.

Aggregates used in an HFST, by definition, have a higher Polished Stone Value (PSV). This is a laboratory test that measures the friction value after wear from an abrasive wheel. This test is used to predict the friction serviceability after it is exposed to traffic. These values have been correlated with successful HFST performance in field installations. Depending on the version of the PSV test used (ASTM or AASHTO), this value may be different, and so the same version of the test must be used to compare aggregate selections. Although several aggregates have been evaluated, only Calcined Bauxite aggregate has met the threshold for performance necessary to be called an HFST.

An HFST Aggregate Durability Study will be published later this year (2014) in cooperation with FHWA and NCAT.

Roadway Safety Institute

The new Roadway Safety Institute, a \$10.4 million regional University Transportation Center (UTC) established in late 2013, will conduct a range of research, education, and technology



transfer initiatives related to transportation safety. Led by the University of Minnesota, the two-year consortium will develop and implement user-centered safety solutions across multiple modes.

The Institute will be a focal point for safety-related work in the region, which includes Minnesota, Illinois, Indiana, Michigan, Ohio, and Wisconsin. Other consortium members are the University of Akron, University of Illinois at Urbana-Champaign, Southern Illinois University Edwardsville, and Western Michigan University.

To learn more or subscribe to the Institute's e-newsletter, please see http://www.roadwaysafety.umn.edu/.

What is the purpose of HFST?

HFST can enhance the ability of a road surface to provide pavement friction to vehicles in critical braking or cornering maneuvers. Maintaining the appropriate amount of pavement friction is critical for safe driving. Compared to vehicles driving on a tangent section of road, vehicles traversing horizontal curves require a greater side force friction; and vehicles at intersections require greater longitudinal force friction. In locations such as sharp horizontal curves where vehicles may brake excessively, the road surface of standard pavements may become prematurely polished, thereby reducing the available pavement friction. This friction reduction can contribute to vehicles losing control or skidding when they speed, turn abruptly, or brake excessively. Negotiating a sharper curve demands more friction to keep vehicles on track, and that greater demand causes greater shear forces, thereby leading to even more polishing of the surface aggregate.

Where are HFSTs likely to be beneficial?

HFST technology is unique in its ability to address sitespecific issues. While the largest numbers of problem locations are likely to be on the local and collector systems, there are also high volume intersections, interchange ramps, and selected segments of interstate alignments where these treatments would also be beneficial. This innovation has application to State DOTs, counties, cities, tribes, and federal lands agencies across the country.

Are there guidelines for the limits on HFST installations?

Typically, HFST should be installed at a point where vehicles start to brake. At horizontal curves, brake lights are a good indication of where treatment should start, as the intention is to slow down the drivers as they are going into the curve. Most states will end their treatment at the Point of Tangent (PT).

What is the effect of snow plows on this pavement treatment?

The treatment consists of a thin overlay designed to be less than 1/4 - inch in thickness. As such, the effect from snow plows has been minimal, even where bare pavement policies are followed in locations such as Illinois, Vermont, and Michigan. The bauxite surface wears very well under heavy snow plowing. No deterioration from steel-tipped plows has been observed.

Are these materials resistant to fuels and common deicing agents?

The polymer binder is unaffected unless it is flooded with diesel fuel or solvents. They are resistant to common de-icing agents.

The Texas Transportation Institute published a paper titled, "Using High Friction Surface Treatments to Improve Safety at Horizontal Curves," that provides recommendations on how to select start and end points for HFST installation. http://d2dtl5nnlpfr0r. cloudfront.net/tti.tamu.edu/documents/TTI-2012-8.pdf

Fine Aggregate, Polymer Modifiers Key to New Texas Thin Lift Mixes

Reprinted with permission from the Summer 2014 issue of **Pavement Preservation Journal**, published by FP2 Inc. For more information, or to subscribe, please visit http://fp2.org.

If "thin is in," then the new pavements being developed by researchers at the Texas A&M Transportation Institute (TTI) and the Texas DOT are all that, and then some.

Instead of the traditional 2-inch overlays that are typical for road rehabilitation, TTI researchers have dared to go much thinner, developing pavements that are 1 incg in height and, in one case, a mere half-inch deep.

Because these new pavements are made with high-quality stones and polymer-modified asphalt, they are expected to last longer and require less maintenance. As a result, state, county and city officials are jumping on the thin overlay bandwagon in order to save taxpayers money and inconvenience and, at the same time, provide smoother rides.

In Brazos County, county engineer Alan Munger is sold on TTI's new mixes. In July 2013, he supervised the paving of five roadways with a 1-inch overlay covering a total of five miles. This was Brazos County's first use of the thin mix.

"I am confident that thin lift asphalt will work," Munger said. "I visited test sites [State Highway 6 access roads] where the Bryan TxDOT District placed TTI's thin lifts, and I was impressed that the pavements are performing so well."

From now on, Munger says he plans to incorporate the use of the thin mixes on higher volume county roads that are good candidates for thin-lift hot-mix asphalt overlays. He expects them to require fewer repairs over a longer period of time.



Three-quarter-inch PFC thin asphalt overlay on U.S. 183 south of Breckenridge, Texas, in Stephens County

Rigorous Testing

"We have been developing and conducting rigorous testing procedures on these thinner pavements for several years now," said Tom Scullion, manager of TTI's Flexible Pavements Program, late last year. "We found out that by using smaller, higher quality aggregate, we were able to go much thinner



The final mat of SMA thin asphalt overlay on SH 6 access road in Bryan, Texas

and increase longevity." Scullion says the lab tests show the pavements are rut and crack resistant. He expects agencies to see a 30 percent savings per square yard in their road maintenance budgets.

In College Station, a section of two roads, which have much different traffic types, have now been overlaid with a 3/4-inch pavement. Crews recently put down the thin pavements on 1,500-ft. sections of Brentwood Drive East and Rock Prairie Road West. More than 500 tons of the thin overlays were used on both locations.

"What made me interested in these new overlays is the quality of materials used in the mixes," says College Station street supervisor Marshall Wallace. "It's a lot better quality than what we and everybody else typically use. Based on my meetings with TxDOT and TTI, all indications are that these pavements will last longer than the 2-inch overlays we are accustomed to."

Wallace says the sections of new pavement are considered test sites, and the city will monitor the locations through the spring 2014. If they perform well in the rainy season and hold up to the traffic, the city could start using the pavements on a much larger scale. He says longer-lasting pavements and less maintenance could represent an entire city street being overlaid each year as a result of the cost savings.

Other areas that are beginning to use the new pavements include Houston, Austin, Beaumont, San Antonio and Brownwood.

"These thin mixes are really starting to take off," Scullion said. "When we go this thin, the mixes have to pass stricter laboratory performance tests. I've been extremely pleased with these results and I think they're the pavements of the future."

Three Mixes Tested in 2012

With maintenance budgets stretched to their limits, researchers though thin asphalt overlays might fatten those 'thin' budgets a bit. In response, TTI researchers spent years refining thin asphalt overlay mixes that bridge the gap between high traffic loads and limited maintenance budgets.

In 2012, Scullion and Cindy Estakhri, manager of TTI's Recyclable Materials Program, worked with TxDOT to implement the use of three new thin asphalt mixes: a crackattenuating mix (CAM), fine-graded stone matrix asphalt (SMA) and permeable friction course (PFC).

Fine Aggregate (Cont'd from Page 12)

The goal of the research was to develop mixes that help to reduce costs by using a very thin overlay while retaining quality. The research results indicate that the use of goodquality Grade 5 aggregate is one of the keys. "To place it thin, you need a smaller rock," Estakhri said. "Grade 5 aggregate is in abundant supply and is almost a waste product at some quarries. We felt we could obtain the Grade 5 aggregate at a reasonable cost."

Researchers wanted mixes that were easy for maintenance personnel to work with, very thin and easy to compact. To ensure the good quality of these mixes, all three of them have to pass the rutting (Hamburg wheel tracking test) and reflection cracking (overlay tester) performance tests (also see Texas Center Evaluates Test Temperatures, page 00).

The CAM mix was not originally intended to be a surface mix. The first purpose of this asphalt-rich mix was as a thin treatment below the surface to retard reflective cracking. In an early project in Houston, a CAM was placed on a highvolume interstate highway and left exposed to traffic for over one year.

It performed very well, leading to its modification for use as a thin overlay for surface use. When used as a thin overlay, it's known as a fine dense-graded mix (DGM) instead of a CAM. By lowering the target density to 96.5 percent, the new DGM has between 0.7 percent and 1.0 percent less asphalt than the original CAM.

Alternative to Seal Coats

The fine-graded PFC was developed as an alternative to seal coat on lower-volume roadways. It drains well and has good friction characteristics. An added benefit is reduced noise compared to seal coats. "Sometimes people complain about the noise associated with seal coats," Estakhri said. "Because PFC is finer, it makes for a quieter surface."

Sarah Horner, assistant area engineer with TxDOT's Brownwood District, oversaw the use of the fine-graded PFC on U.S. 183 in Stephens County. The PFC was placed ¾-inch thick in both travel lanes. TxDOT hopes to combat a bleeding issue that compromised the existing surface.

"We're hoping that the open PFC will allow the bleeding to go up into the PFC and keep it away from traffic," Horner said. "We're also hoping for a smoother, quieter ride." They are expecting at least five years with little or no maintenance from the new PFC surface.

The fine-graded SMA has an excellent surface texture, resists rutting, and is useful on roadways with high volume and numerous intersections. Darlene Goehl, materials engineer for TxDOT's Bryan District, chose SMA for a recent resurfacing project on the access roads for SH 6.



One inch of SMA thin asphalt overlay is placed in Bryan, Texas; paver uses TTI's Pave-IR system to detect uniformity of mat temperature.

"We can have problems with seal coats and turning movements," Goehl said. "Seal coats often shove [or ripple, creating a washboard effect] in an intersection. We were looking for a rut-resistant, crack-resistant thin mix that we

could place in urban areas. We're expecting 10 to 12 years of service life from the SMA surface."

All three of the mixes were created as alternatives to seal coats or multiple inches of hot-mix asphalt. "It's not as cheap as a seal coat, but it will be cheaper than 2 inch of regular hot mix," Estakhri said. "Currently those are the alternatives. These mixes are in between those options. Even though they are much thinner, we think that these overlay mixes will perform better than 2 inch of hot-mix asphalt."

Adapted from material provided by Texas Transportation Institute. Images courtesy of TTI. For much more information about these mixes read the September 2013 technical paper, **Design and Construction Recommendations for Thin Overlays in Texas**; Locate it by Googling the title or "TTI 0-6615-1.pdf".





Sarah Horner, assistant area engineer with TxDOT's Brownwood District, performs a test on PFC thin surfacing on U.S. 183 south of Breckenridge, Texas.

TLN in Montana

By Brad Nelson, Engineering Training Specialist, Highways & Engineering Division, Montana Department of Transportation

The Montana Department of Transportation (MDT) partners with the Transportation Learning Network (TLN) for the delivery of electronic training throughout the year. With very few exceptions, all TLN training is offered at no cost.

Located at the Upper Great Plains Transportation Institute at North Dakota State University, TLN provides training opportunities via several different forums to their four-state consortium of state transportation departments. This training is also available to LTAP members, local governments, US Forest Service, and other federal agencies. The four states are North and South



Example of May 14, 2014, TLN "Gravel Roads Maintenance" Live Webinar with Ken Skorseth, South Dakota LTAP

Dakota, Wyoming and Montana. The training topics cover a wide array of areas and are applicable to state DOT staff, county and city construction and maintenance staff, road superintendents, local officials, Forest Service staff, and more.

These training events are available in three different forums:

- •1. Live Video-Teleconference
- •2. Webinar
- •3. Self-Paced Online training modules

1. The Live Video-Teleconference events can be broadcast at eleven MDT sites around the state. Attending these events is dependent on room availability and the number of registrations. Locations are at MDT Division offices in Billings, Butte, Glendive, Great Falls, Havre, Helena, Kalispell, Lewistown, Miles City, Missoula, and Wolf Point. The live training events allow for interaction between the instructor and attendees, among attendees from each of the respective locations around the state, and among attendees at the other three states. 2. Webinars can be attended at your (or anyone's) computer work station.

3. The Self-Paced Online training modules can be accessed through the TLN website from your computer work station.

TLN will be delivering training events on approximately fifty topics this upcoming training year from July 2014 through June 2015. These topics will be delivered primarily through Live Video-Teleconference. Some of these live events are recorded for viewing at a later date by

those who were unable to attend the actual event.

In order to participate in any of the TLN training events of Live, Webinar, Self-Paced Online, or recorded sessions or training modules, you must have an active account with TLN. It is free and easy to sign up. Once you create your account, you will have access to upcoming training events as well as any recorded sessions from this past year. Create your TLN account here: http://tln.learnflex.net/include/login. asp?url=/users/index.asp.

If you have any questions about TLN in general or creating an account, please contact Brad Nelson at MDT: 406-444-6333 or bnelson@mt.gov.

More information regarding TLN can be found here: http://www.translearning.org/

Peer to Peer Exchange

This past August, Utah LTAP'ers Nick Jones, Principle Investigator, and Chris Potter, Utah DOT's Local Government Programs Engineer, met with MT LTAP Director Steve Jenkins to review Montana LTAP's training program and operation.

Jones was "impressed with the services" Montana LTAP provides to their customers and the training and programs offered. Jenkins covered the most requested Montana workshops such as work zone, gravel roads, signing, forklift, technical truck driving, and winter maintenance and survival. He explained how they selected topics for the monthly safety webinars.

Jones and Potter also visited Alaska, Colorado, and Wyoming LTAPs. Jones said it was interesting to see how different the LTAPs are and the creative solutions to training that Montana LTAP has developed. They both saw some possible approaches to training they could use at the Utah LTAP. Jones hoped to see Jenkins and his Gravel Roads program he has been involved with over the years. Jones and Potter extended their thank you to Montana LTAP for taking time to answer questions and walk them through their operations. Jenkins said he also looked forward to visiting Utah LTAP soon to look at their TAM's program.



L TO R: Nick Jones, Chris Potter, Steve Jenkins

Montana LTAP Library

Welcome to the LTAP Lending Library where publications, videos, DVD's, and software may be borrowed for a two-week period. We have a limit of three videotapes or DVD's for a rent-free two-week period. Some publications are free or for a nominal charge upon request.

For information or checkout procedures, please call Genevieve Albert or Michele Beck, LTAP, 1-800-541-6671. If you have computer access, please e-mail us:

mtltap(at) coe.montana.edu.

We have new lists for the library publications, software, DVD's, and videos at our web site, just click on Resources: http://www.coe.montana.edu/ltapv2/ (Note: Many of our publications are electronically available.)

New Publications

p-49.10 Guide for Materials Selection and Design for Metals Used in Contact with Copper-Treated Wood (USFS

2013) This paper represents a compilation of research on the corrosion of metals in treated wood and is intended to explain why metals corrode in treated wood and give practical design recommendations. (11 pages)

http://www.fpl.fs.fed.us/documnts/fplgtr/fpl_gtr227.pdf

p-49.20 Corrosion of Fasteners in Wood Treated with Newer Wood Preservatives (USFS 2013) This document complies recent research findings related to corrosion of metals in preservative treated wood into a single report on corrosion of metals in wood. The document was created to serve as a desk reference for engineers to aid in materials selection when building with treated wood. (64 pages) http://www.fpl.fs.fed.us/documnts/fplgtr/fpl_gtr220.pdf

p-49.30 Educational Guide on the History of Covered Bridges in the United States (USFS Oct 2011) This guide contains lesson plans for us by teachers of grade levels from kindergarten through high school senior on the history and preservation of covered bridges in the United States. Although the primary users will be history teachers, the topic of covered bridges has been covered broadly so that Mathematics, Science (Physics) and English teachers may find certain units useful in their classes. (127 pages plus interactive CD)

http://www.woodcenter.org/covered_bridges_education/ educational-guide-on-the-history-of-covered-bridges-in-theunited-states.pdf

p-49.40Use of Laser Scanning Technology to Obtain As-Built Records of Historic Covered Bridges (USFS

2012) This study was conducted to examine the use of laser scanning technologies for providing as-built records for historic covered timber bridges. These newer technologies need to be explored so they can provide as-built records at a faster rate and with more accuracy. (18 pages) http://www.fpl.fs.fed.us/documnts/fplrp/fpl_rp669.pdf

p-49.50 Covered Bridge Security Manual (USFS 2013)

This report is intended to assist covered bridge owners in selecting systems that will protect covered bridges with the option of adding active alerts to proper authorities for the purpose of heightening security. (34 pages)

http://www.fpl.fs.fed.us/documnts/fplgtr/fpl_gtr223.pdf

At this web site, you can also keep track of upcoming workshops, past and present newsletters, and workshop announcements.

Our 2014 Needs Assessment Survey is available at this web site. Thank you in advance for taking time to complete it.

p-49.60 Evaluating Naturally Durable Wood Species for Repair and Rehabilitation of Above-Ground Components of Covered Bridges (USFS 2013) This report serves as a guide for the use of these naturally durable wood species for rehabilitation of above-ground components of covered bridges and incorporates the results of field and laboratory tests into the final recommendations. (40 pages) http://www.fpl.fs.fed.us/dpcumpts/fpl.gtr224.pdf

http://www.fpl.fs.fed.us/documnts/fplgtr/fpl_gtr224.pdf

p-977 Temporary Traffic Control for Building and Maintaining Single and Multi-Lane Roundabouts (ATSSA Jan 2013) This document provides considerations and typical applications to assist field staff in setting up temporary traffic control for both new construction and maintenance activities. (36 pages)

https://www.workzonesafety.org/files/documents/training/ fhwa_wz_grant/roundabts.pdf

p-981 Nighttime Lighting Guidelines for Work Zones

(ATSSA April 2013) This document provides a procedure for designing a nighttime lighting system in work zones where no formal lighting plan exists. Engineers, designers, and contractor personnel can use this process without the need to be an expert in illumination. (20 pages)

https://s3.amazonaws.com/media.atssa.com/rsti/ Nightime+Guideline+Doc+428232.pdf

Editorial Contributions Welcome

LTAP welcomes contributions to *LTAP MATTERS*. Those wishing to submit relevant material to be published in the next newsletter can submit their ideas and articles to:
[(800) 541-6671 or (406) 994-6100]

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•LTAP attempts to provide accommodations for any known disability that may interfere with a person participating in any service, program or activity. Alternative accessible formats of this document will be provided upon request •Please send us any comments or concerns you may have regarding this newsletter with your name and address in order that we may respond in a timely manner.



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Parting Shot . . .

In order to share their wisdom, this special column is dedicated to those who are retiring, or recently retired, and wish to pass on some gems from their years dealing with county roads or city streets. The following comments are from retired Yellowstone County Assistant Road & Bridge Director Del "Mo" Henman:

I started my career with Yellowstone County on January 10, 1983. I was hired as the Yardman which consisted of fueling equipment, scrubbing floors, cleaning the bathroom, changing tires and keeping the yard clean and mowed.

I then moved into the welding department for a year and then got to move out with the truck crew. I drove truck for about seven years in which I got the opportunity to run all kinds of equipment and gain experience. I started full time on a motor grader around 1991. I was moved into the Gravel Foreman's position a few years later and did that job for thirteen years.

My last move was into the Assistant Road and Bridge Director position until my retirement on March 31, 2013.

I believe you must learn to work with all kinds of people especially the public. Utilize your fellow co-workers to help in the planning of projects and the quality of the end results. You must be the one to take pride in everything you do. You cannot rely on others to do what you want done unless you have done it yourself. Be a perfectionist and don't fall into the old rut of saying "Oh well that's good enough."



Is it really? Would you want your family driving on that road every day? If so, then you have done your BEST! Remember who you work for--The Taxpayers, Friends, Family and yourself! After all it's your money!

Also, treat others as you want to be treated, "You can get more Bees with Honey than with Vinegar!"

My years with Yellowstone County were some of the best and fun-filled years of my life.

I am **very grateful** for the experience and **ALL** the friends that I have made over those years!

Thank you and GOD SPEED, Del "Mo" Henman