

# LTAP MATTERS

Montana's Answers To Technical Education of Roads & Streets

Vol. 27, No. 2

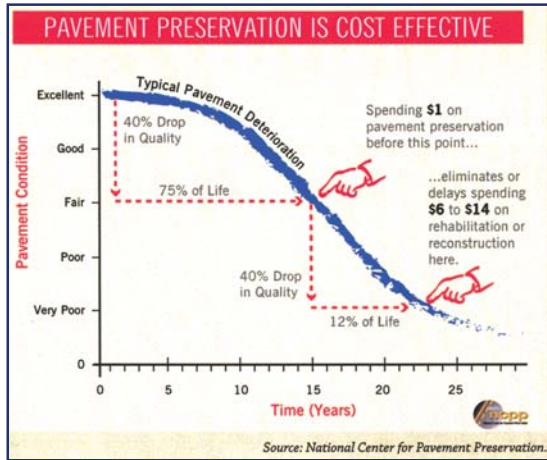
## Spring 2010

From the Director	2
Prioritizing Prevention	3
Where Rubber Meets Slurry	4
Sign Retroreflectivity	5
Calendar of Events	6
Preserve Concrete	8
The Safety Edge	8
US Bicycle Route System	9
Tall Knowledge	10
Nat'l Public Works Week	10
LTAP Library	11
TLN	11
Free Structural Library	11



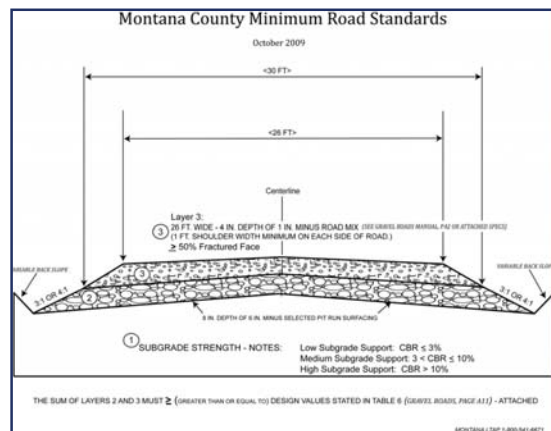
## From the Director

Because Montana LTAP receives a variety of training requests from local governments, we adjust our training schedule to meet these needs. During the past quarter, we held a one-day asphalt seminar, partnering with the Asphalt Institute, that was attended not only by city departments but also county road supervisors, Montana Department of Transportation employees, and private contractors. It was evident by the attendance of over 150 participants that asphalt information is of major interest.



LTAP recently developed training partnerships with Miles City Community College, Flathead Valley Community College, and Salish-Kootenai College.

This spring three Gravel Roads Maintenance and Design classes are being offered at Chester, April 12 and 13; Kalispell, April 14 and 15; and Big Timber, April 27 and 28. I look forward to providing updated information on gravel road design and how Montana County Minimum Road Standards tie into road design.



In February we held our Level II Work Force Summit, partnering with Western Transportation. I presented our Needs Assessment Survey figures and what our constituents were requesting for training. Our Needs Assessment Survey findings will be updated after the recent MACRS (Montana Association of County Road Supervisors) convention. The response from this group indicates that chip seals and overlays are becoming part of the group's concerns in roadway repair and maintenance, usually the more populated counties near larger cities and towns.

National Work Zone Awareness Week is April 19-23 and we are happy to announce over 500 flaggers certified since January 2010. There are 5,000 active certified flaggers in our database. To help those who missed our ten classes in February, we are offering four more Flagger Certification classes: May 18 - Great Falls, May 19 - Lewistown, May 20 - Billings, and May 25 - Bozeman. Visit our website at [www.coe.montana.edu/ltap](http://www.coe.montana.edu/ltap) and go to our Training Page for more information.

*Travel Safe, Steve Jenkins, Montana LTAP Director*

LTAP Matters is published by the Local Technical Assistance Program. LTAP is located with Western Transportation Institute, College of Engineering at Montana State University, Bozeman, Montana.

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Front Page Photo:  
Photo by Michele Beck

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On our website, we list upcoming training courses, registration forms, library information, our contact information, newsletters, various links, and MACRS information. Please go to: [www.coe.montana.edu/ltap](http://www.coe.montana.edu/ltap)

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.

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.





# Prioritizing Prevention Practices

By Daniel Brown, Contributing Editor, Better Roads, June 2009

## The Triple Crown of Pavement Preservation: Right Treatment. Right Road. Right Time.

*For several years now, pavement preservation techniques have been making steady progress in states across the country.*

“Pavement preservation has become a household word,” says Mike Krissoff, executive director of the International Slurry Surfacing Association. Indeed, the road manager and the contractor have an abundance of maintenance tools from which to choose.

For the road manager, experts put it simply: use the right treatment on the right road at the right time. If an agency can take money from its budget for reconstruction, and use that money instead for preventive maintenance, those dollars will provide more lane-mile-years of life — dollar-for-dollar — than money spent on “worstfirst” fixes.

This article will take a closer look at several preventive maintenance techniques:

- Fog seals
- Crack sealing and crack filling
- Chip seals
- Slurry seals (see addition on Page 4)
- Micro Surfacing
- Thin asphalt overlays

**Fog seals** are inexpensive treatments that typically involve spreading a diluted asphalt emulsion on the roadway. No aggregate is added. Normally an emulsion is about 35 percent water. With a fog seal, that emulsion is diluted even further, by about 50 percent, says Chuck Ingram, sales manager for Slurry Pavers Inc., a contractor based in Glen Allen, VA.

The purpose of a fog seal is to seal the pavement, inhibit raveling and enrich the hardened, oxidized asphalt. Upgrades to polymer-modified fog seals are available. “And in the fog seal family there can be rejuvenators that penetrate into the asphalt and add life,” says Ingram. He says the typical life of a fog seal is one to two years, depending on traffic and climate.

When applying a fog seal, the contractor needs to take care not to shoot the asphalt too heavily. Because there is no added aggregate, an excessive application rate can create a slick pavement. Application rates run about 0.05 to 0.10 gallons per square yard.

**Crack filling** should only be used on non-working cracks, says Ingram. Non-working cracks are age related, and usually no routing is needed. Crack sealing can be used on working or thermal cracks. With crack sealing, it is recommended to rout the crack before applying the sealant. “That way you get a consistent width and depth of the crack, so that the sealant will expand and contract evenly in the crack,” says Ingram. “You can dictate what the climatic effect is.”

It’s important to clean out cracks before applying sealant. If the crack is not clean and dry, the sealant will not bond to the substrate. Cimline Inc., a manufacturer of hot crack sealing equipment, publishes a 40-page booklet called the Guide to Crack Sealing, which is an excellent reference on the subject (go to [www.cimline.com](http://www.cimline.com)).



*Micro surfacing is an environmentally safe application that leaves an aesthetically pleasing black surface and minimizes life-cycle costs*  
Photo Courtesy of Bergkamp

## ADVISORY COMMITTEE MEMBERS

The Advisory Board meets annually to make recommendations and evaluate the effectiveness of the Montana LTAP program.

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Federal Highway  
Administration

Kelly Elser  
Town of Ennis

Fred Hansen  
MACo

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Cities & Towns

Lynn Miller  
Montana Dept of  
Transportation

## Prioritizing Prevention Practices (Cont'd from Page 3)

The Strategic Highway Research Program recommends that cracks be treated with a heat lance, or hot air lance, before sealant installation. Hot air lances are designed to mix propane and compressed air to produce hot air. Depending on the manufacturer, heat lances output flame or flame-free heat. These devices generate upwards of 2,000 deg. F. to remove moisture and provide additional cleaning.

"There are some good cold-applied sealants and some good hot ones," says Ingram. "For performance, the hot-applied sealants are proven to outperform the cold-applied sealants." He puts the basic cost of crack sealing at \$0.50 per linear foot – and the added life at four years.

A **chip seal** is the uniform application of asphalt binder to a prepared surface followed by the application of a cover aggregate that is seated by a roller. Chip seals apply to sound pavement, usually to more rural routes. A chip seal is ideal for pavements with the loss of surface texture.

Chip seals seal pavement from water intrusion, improve surface friction, create a durable wearing course, and upgrade non-paved roads. Chip seals can be applied in multiple layers, Ingram points out. If you do that, the coarser aggregate goes down first. Years ago, Ingram says he recalls the state of North Carolina placing a 1-inch rock, followed by a 3/8-inch stone to fill in the gaps.

He says polymerized emulsions in recent years "have gone a long ways toward improving the performance of chip seals." Polymers help hold the rock in place; surface raveling is reduced. "The typical life of a chip seal is five to seven years,



*More than 2,287,000 square feet of Type III microsurfacing preserved 15 miles of U.S. Route 76 just north of San Diego, Calif.  
Photo courtesy of Bergkamp*

and with multiple applications they can last 10 years," says Ingram. "Chip seals are one of the most cost-effective preventive maintenance treatments." . . . Continued Page 5

### Where The Rubber Meets the Slurry

Rubberized asphalt is not new, but terminal-blended rubberized asphalt has recently moved into the mainstream of road materials. And in California, the city of Oceanside is now accepting Tire Rubber Modified Slurry Seal (TRMSS) as an equal product to Rubberized Emulsion Aggregate Slurry (REAS).

Oceanside, located between Los Angeles and San Diego, is one of the first cities in the country to use TRMSS on a major project. For residential streets, TRMSS is expected to last five to seven years, depending on traffic volumes and climate severity.

There's a definite difference between TRMSS and the REAS product. TRMSS uses terminal-blend rubberized asphalt. The tire rubber has been digested, and that rubberized asphalt is then emulsified into a cationic emulsion, says Lance Allan, a manager at Roy Allan Slurry Seal Inc., Santa Fe Springs, Calif.

By contrast REAS is an anionic product, and the tire rubber is incorporated into the slurry after the emulsion is made. So the rubber appears like an aggregate in the slurry.

Because TRMSS is a cationic emulsion (positively charged), it is attracted to the negatively-charged aggregates of Southern California. And with TRMSS, you get a chemical cure. REAS, being different, relies on dehydration to evaporate the water in the slurry – so it's a temperature-based cure, says Allan.

Cationic emulsions like TRMSS can be applied during a wider window of time during the year. Using cure retarders, the cure can be slowed down so that handwork can be completed before the material sets up. "We never use accelerators," says Allan. "Even in cold weather we use retarders, just not as much of it. The advantage of the TRMSS is that it can be placed in colder weather – it's a cationic quick set emulsion."

This spring (2009) the Roy Allan firm is working on a million-square-foot residential street project with TRMSS in Oceanside. The project involves mostly Type 2 slurry sealing with some Type 3 mixed in for the more deteriorated areas. (Type 2 slurry has quarter-inch topsize aggregates; Type 3 has three-eighths-inch topsize aggregates.)

Roy Allan is running four slurry machines for the big Oceanside project. Normally the firm runs just three machines, but the distance from the stockpile and emulsion tank is too far to maintain production with three machines. "The only time we're making money is when slurry is coming out of the slurry machine," says Allan. "So we want to make sure we always have a machine working."

For Type 2 slurry, TRMSS is applied at a rate of 10 to 15 pounds per square yard; for Type 3 slurry the rate is 20 to 25 pounds per square yard. The cost of the material depends on the cost of liquid asphalt, but Allan pegs TRMSS at 15 to 20 cents per square foot.

Roy Allan has been placing test sections of TRMSS for some five years – a section here and there. "We have data from test sections across southern California," says Allan. "And our product proves out very well in the wet track abrasion test, which is a test used on slurry seals."



## Prioritizing Prevention Practices (Cont'd from Page 4)

**Slurry surfacing systems** include **slurry seals** and **microsurfacing**. Typically a slurry seal is a blend of crushed aggregate and asphalt emulsion, mixed together in a pugmill attached to the back of a truck. Slurry seals offer no structural value, but they can extend the life of a pavement by five to seven years.

Micro-surfacing is similar to slurry sealing, except microsurfacing typically uses a polymer-modified emulsion and is applied to higher-volume roads such as urban arterials. Slurry seals are for lower-volume roads. "When people ask me what the breakpoint is between the two treatments, I tell them it's ten to fifteen thousand cars per day," says Ingram. "But that's only a round number, not a hard-and-fast rule."

With micro-surfacing, you can place multiple lifts; you can level out consolidation rutting. "It's important to determine the cause and type of rut that you're attempting to level," says Ingram. "A consolidation rut, or rutting from the top down with no base or subbase failure can be effectively leveled with micro-surfacing. Plastic deformation such as shoving and rutting at intersections, are not good rut-filling candidates for micro-surfacing. There is too much movement for the microsurfacing to be an effective tool."

Micro-surfacing can allow traffic back onto the pavement within an hour, says Vic Gawith, a salesman for Bergkamp Inc., an equipment manufacturer. "Once the chemical reaction starts, the water is being pushed out and the emulsion sucks in around the aggregate," says Gawith. "You may want to add a retarder so that the material doesn't break (set up) in the machine or in the spreader."



*Just outside of Rockport, Indiana, micro surfacing treated an 8.5 mile stretch of S.R. 70 to improve skid resistance, increase wear life and correct minor rutting and surface deterioration*

*Photo courtesy of Bergkamp*



*Used here in a parking lot, slurry sealing is an effective treatment to increase pavement life by up to seven or more years*

**Thin asphalt overlays** can be used on any pavement with minor distresses such as raveling or very light cracking, says Dave Newcomb, vice president of research and technology for the National Asphalt Pavement Association. For overlays of 1.5 inches thick, one uses 3/8-inch topsize aggregate; for overlays of 1 inch thick you use quarter-inch aggregate.

Thin overlays bring some structural benefit, Newcomb says; they also restore ride quality and skid resistance, and they can be used to quiet a noisy pavement. Thin overlays don't require much adjustment in terms of grade corrections – you can mill the pavement lightly at the curb and feather the overlay into the curb. A thin overlay will typically last 10 to 15 years, Newcomb says.❖

*Reprinted with permission from the Better Roads June 2009 Issue*

### Sign Retroreflectivity - Reminder

The Federal Highway Administration (FHWA) enacted changes to the Manual on Uniform Traffic Control Devices (MUTCD) that require new retroreflectivity maintenance standards for signs. By January 2012, local jurisdictions must establish and implement a sign assessment or management method and all regulator, warning, and ground mounted signs must be in compliance by January 2015. Local and state governments must begin preparing for compliance within their jurisdictions. Montana LTAP has a new book in our library: *How to Meet the New National Standard - Sign Retroreflectivity Guidebook for Small Agencies, Federal Land Management Agencies, and Tribal Governments*. Call us at 1-800-541-6671.

# Calendar of Events • July 2009 - June 2010

## July 2009

S	M	T	W	Th	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

3: 4th of July Holiday (Offices Closed)  
 24-28: NACo Annual Conference, Nashville, TN - [www.naco.org](http://www.naco.org)  
 27-30: National LTAP Conference: Pittsburgh, PA (LTAP)

## August 2009

S	M	T	W	Th	F	S
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30	31					

17-21: MACo - Clerk & Recorders Association Annual Conference, Billings, MT  
 19-21: Safe Routes to School Conference: Two Steps Ahead Hilton, Portland, Oregon - [www.saferoutesconference.org](http://www.saferoutesconference.org)

*Training on Request:*  
 Forklift  
 Sign Safety  
 Road Audits

## November 2009

S	M	T	W	Th	F	S
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29	30					

2 & 3: Roadway Management (TLN Broadcast)  
 3 & 4: MACRS Planning Meeting, Heritage Inn, Great Falls, MT  
 11: Veterans' Day - Offices Closed  
 16-19: Nat'l Tribal Transportation Conference, Phoenix, AZ  
 26-27: Thansgiving Holiday - Offices Closed  
 30: Winter Maintenance, Missoula, MT - Montana LTAP

## December 2009

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1: Winter Maintenance, Missoula, MT - Montana LTAP  
 9: Workforce Summit Webinar - Montana LTAP/WTI  
 15: Winter Maintenance-City of Billings  
 16: Winter Survival - Miles City  
 17: Winter Survival/Leadership - Sidney  
 25: Christmas Holiday - Offices Closed

## March 2010

S	M	T	W	Th	F	S
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21	22	23	24	25	26	27
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4: Workforce Summit - Bozeman - MT LTAP/WTI  
 9: Flagging Certification Course - Helena (MT LTAP)  
 10: Flagging Certification Course - Missoula (MT LTAP)  
 11: Flagging Certification Course - Kalispell(MT LTAP)  
 16: Flagging Certification Course - Miles City (MT LTAP)  
 17: Flagging Certification Course -Glendive(MT LTAP)  
 18: Flagging Certification Course - Wolf Point (MT LTAP)  
 19: Flagging Certification Course - Sidney (MT LTAP)  
 15-19: MSU Spring Break  
 29,30, 31 and April 1: MACRS 30th Annual Conference Heritage Inn, Great Falls, MT (MT LTAP)

## April 2010

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1: MACRS 26th Annual Conference Heritage Inn, Great Falls, MT (MT LTAP)  
 12&13: Gravel Roads - Chester (MT LTAP)  
 14&15: Gravel Roads - Kalispell (MT LTAP)  
 27&28: Gravel Roads - Big Timber (MT LTAP)  
 25-29: NACE 2010, Sheraton Ft. Worth Hotel & Ft. Worth Convention Center, Fort Worth, Texas. Contact NACE at [nace@naco.org](mailto:nace@naco.org)

**Training Opportunities at Montana LTAP Website:**  
[www.coe.montana.edu/ltap](http://www.coe.montana.edu/ltap)

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

# Calendar of Events • July 2009 - June 2010

## September 2009

S	M	T	W	Th	F	S
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### 2 & 3: Snow Rodeo - Metra Park, Billings, MT (MT LTAP)

7: Labor Day Holiday - Offices Closed

13-16: 2009 APWA Congress - The Best Show in Public Works  
Columbus Convention Center, Columbus, OH

15-17: Int'l Conference on Sustainable Concrete Pavements; Sacramento, CA; Sam Tyson, 202-366-1326, sam.tyson@fhwa.dot.gov

20-24: MACo's 100th Annual Conference, Colonial Inn, Helena, MT

### 29: MACRS Fall District Meeting - Polson, MT (MT LTAP)

#### Gravel Pit Operations & Operator Safety

30 & Oct 1 & 2: Governor's Occupational Safety & Health Awards Program  
Hilton Garden Inn, Missoula, MT

## October 2009

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Oct 1 & 2: Governor's Occupational Safety & Health Awards Program  
Hilton Garden Inn, Missoula, MT

### MACRS Fall District Meetings: (MT LTAP)

#### Gravel Pit Operations, Truck & Loader Safety

5: Bozeman 6: Big Timber 8: Great Falls 15: Glendive

7: Walk to School Day - www.walktoschool.org

7, 8, 9: 78th League of Cities & Towns, Heritage Inn, Great Falls, MT

#### 7: Public Works Directors - (MT LTAP)

19-21: 8th Nat'l Conference on Transportation Asset Management,  
Portland, OR; Contact Tom Palmerlee, 202-334-2907, tpalmerlee@nas.edu  
20 & 21: Region 7 Local Roads Conference, Rapid City, SD

## January 2010

S	M	T	W	Th	F	S
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24	25	26	27	28	29	30
31						

1: New Year's Day - Offices Closed

5, 6, 7: Winter Safety: Missoula 1/5; Butte 1/6; Bozeman 1/7

14: Winter Safety - Public Forum-MSU Ballroom - Bozeman

18: Martin Luther King Day - Offices Closed

20, 21, 22: Loss Control Conference (LTAP Safety Congress) MACo-  
Hilton Garden Inn, Missoula, MT - 21: Steve Jenkins Presents

#### Loss Control Conference:

January 20-22 - Hilton Garden Inn, Missoula

January 21, Thursday - Steve Jenkins Presents

Preregistration Required - www.maco.cog.mt.us

## February 2010

S	M	T	W	Th	F	S
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14	15	16	17	18	19	20
21	22	23	24	25	26	27
28						

8 & 9: Traffic Control Supervisor Two-Day Course,  
Wingate Inn, Helena (MT LTAP)

10: Asphalt Institute, Colonial Inn, Helena (MT LTAP)\*

15: President's Day - Offices Closed

22: Flagging Certification Course - Bozeman (MT LTAP)

23: Flagging Certification Course - Butte (MT LTAP)

24: Flagging Certification Course - Dillon (MT LTAP)

#### Traffic Control Supervisor Two-Day Course

February 8 & 9 - Monday & Tuesday - Helena - Wingate

Pre-registration Required - Montana LTAP - 1-800-541-6671

<http://www.coe.montana.edu/ltap/pages/training.htm>

## May 2010

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9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

18: Flagging Certification Course - Great Falls (MT LTAP)

19: Flagging Certification Course - Lewistown (MT LTAP)

20: Flagging Certification Course - Billings (MT LTAP)

25: Flagging Certification Course - Bozeman (MT LTAP)

26: Montana LTAP Annual Advisory Board Meeting - Bozeman

27: MACRS Executive Meeting - Bozeman

31: Memorial Day - Offices Closed

## June 2010

S	M	T	W	Th	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

2&3: LTAP Region 7 Meeting - Bismarck, ND

#### Newsletter Costs Have Gone Up!

This newsletter costs about \$2.20 each to print and mail. If you prefer to receive this newsletter electronically, please call Montana LTAP at 1-800-541-6674 or e-mail Michele Beck: mbeck (at) coe.montana.edu with your e-mail address. OR if this newsletter is going to an incorrect address, please let us know so we can correct our mailing addresses. Thanks for your help.



# How to Preserve Concrete Pavements

By Daniel Brown, Contributing Editor, Better Roads  
Reprinted with permission from Better Roads June 2009 Issue

**Slab stabilization:** This technique restores support to concrete slabs by filling small voids that develop underneath the concrete slab at joints, cracks, or the pavement edge.

**Full-depth repairs (FDRs):** This is a way to fix cracked slabs and joint deterioration by removing at least a portion of the existing slab and replacing it with new concrete.

**Partial-depth repairs (PDRs):** These correct surface distress and joint-crack deterioration in the upper third of the concrete slab. Placing a PDR involves removing the deteriorated concrete, cleaning the patch area, placing new concrete, and reforming the joint system.

**Dowel bar retrofits (DBRs):** This method consists of cutting slots in the pavement across the joint or crack, cleaning the slots, placing the dowel bars, and backfilling the slots with new concrete. Dowel bar retrofits link slabs together at transverse cracks and joints so that the load is evenly distributed across the crack or joint.

**Cross-stitching longitudinal cracks or longitudinal joints:** Cross-stitching repairs cracks that are in low-severity condition. The method adds reinforcing steel to hold the crack together tightly.

**Diamond grinding:** By removing faulting, slab warping, studded tire wear and unevenness resulting from patches, diamond grinding creates a smooth, uniform pavement profile.

**Joint and crack resealing:** This technique minimizes the infiltration of surface water and incompressible material into the joint system. Minimizing water entering the joint reduces subgrade softening; slows pumping and erosion of the subgrade or sub-base fines; and may limit dowel bar corrosion caused by deicing chemicals.

For more information, you can contact the American Concrete Pavement Association (ACPA) headquarters at 847-966-2272. ACPA maintains chapter offices throughout the country that stand ready to help with your concrete pavement questions. See also [www.pavement.com](http://www.pavement.com).

## The Safety Edge

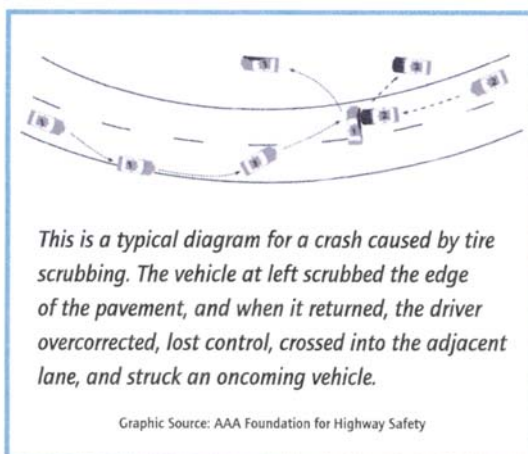
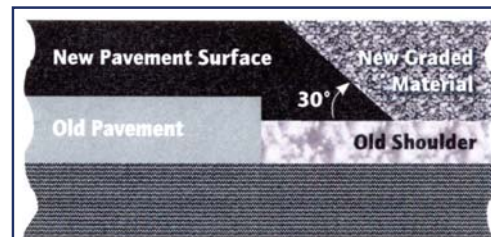
The asphalt paving technique called the Safety Edge is gaining momentum across the country as State transportation departments strive to protect motorists from run-off-the-road crashes. The Federal Highway Administration recommends that States use the safety edge technique—particularly on two-lane roads with unpaved shoulders.



During the normal paving process, pavement edges are formed vertical or near vertical. The recommended practice of bringing the adjacent graded material (unpaved shoulder or stabilized soil) flush with the top of the pavement only lasts for a short time and requires frequent maintenance. The exposed vertical edge can contribute to drivers losing control of the vehicle when attempting to recover from a roadway departure.

While data documenting the role of pavement edges at the national level remain elusive, studies in several States point

to the life-saving potential of safer edges. For example, researchers studying crashes in Missouri during 2002-2004 reported that pavement edges may have been a contributing factor in as many as 25 percent of rural run-off-road crashes on paved roadways with unpaved shoulders. This type of crash was twice as likely to include a fatality as rural crashes overall on similar roads.



*This is a typical diagram for a crash caused by tire scrubbing. The vehicle at left scrubbed the edge of the pavement, and when it returned, the driver overcorrected, lost control, crossed into the adjacent lane, and struck an oncoming vehicle.*

Graphic Source: AAA Foundation for Highway Safety

Recent updated research has shown that almost all drivers and vehicles can recover if the edge is tapered to 30 degrees from the horizontal. This durable taper, the Safety Edge, is easy to include in the paving process, provides a safer roadway edge, and a stronger interface between the pavement and the graded material. The additional cost of the asphalt edge is minimal when included as part of resurfacing projects. Benefits include the avoided economic and social impacts of fatalities, injuries, and property damage.

For more information about Roadway Departure issues and effective countermeasures to prevent Roadway Departure crashes, go to the FHWA Office of Safety's Web site at <http://safety.fhwa.dot.gov/> and click on "Roadway Departure."



# A plan unveiled: the U.S. Bicycle Route system

by Ginny Sullivan, Adventure Cycling, Missoula, MT; Debbie Hale, APWA, Monterey County, CA; Sue Hann, APWA, Palm Bay, FL

A year ago, the American Association of State Highway and Transportation Officials (AASHTO) approved a national corridor plan for an official U.S. Bicycle Route System. The plan is a blueprint for an urban/suburban/rural network of bicycle routes connecting all parts of the U.S.—potentially the largest cycling network in the world.

Now, some states are starting to turn the plan into reality by defining new U.S. routes and levying support from all levels of transportation and government. Adventure Cycling Association, which provides staff support for the project, helps coordinate information between state and local agencies, cycling interests and the national AASHTO Task Force on U.S. Bicycle Routes.

Like a national “interstate” of bicycle routes, the plan identifies corridors connecting America’s urban, rural, and suburban areas in the lower forty-eight states. It has been under development for nearly five years under the auspices of an AASHTO task force on U.S. numbered bicycle routes, with representatives from federal and state transportation agencies and nonprofit organizations. The plan has gone through more than a dozen revisions—with input from hundreds of federal and state officials, cycling advocacy groups, and individuals—as well as review and approval by AASHTO’s committees on traffic engineering, design, and non-motorized transportation.

## Where the real effort begins & what you can do

While a set of national corridors has already been identified ([www.adventurecycling.org/usbrs](http://www.adventurecycling.org/usbrs), “Corridor Plan Map”), the precise routes have not been specified in most states. Adventure Cycling is partnering with American Public Works Association to link state leaders with local bicyclists and transportation planners to suggest the best routes to within the selected corridors.

In states like Montana, for example, Adventure Cycling will be working with the transportation planners to find the most bicycle-friendly routes along the designated north-south and east-west corridors. Adventure Cycling has numerous cross state routes already mapped in Montana so these will provide a first option for connecting destinations including cities, national and state parks, other scenic and historic sites and transportation hubs. Another consideration will be routes that link into North Dakota, South Dakota, Wyoming, and Idaho.



To get involved, the first step is to review the National Corridor Plan on the Adventure Cycling website (noted previously). Then, local planners should send suggestions to Adventure Cycling Association who is coordination communication between AASHTO and state DOTs (MT DOT is ultimately responsible for nominating routes through AASHTO).

For more information on what is happening across the country, contact Ginny Sullivan of Adventure Cycling at [gsullivan@adventurecycling.org](mailto:gsullivan@adventurecycling.org).

## To Stay Informed – visit the web

For an overview of the project, visit [www.adventurecycling.org/usbrs](http://www.adventurecycling.org/usbrs)

- From this page, be sure to visit the links on the right-hand tool bar:
  - ▶ Corridor Plan Map – see the national corridor-level plan
  - ▶ FAQ’s – answers to all your Questions
  - ▶ Resources – tools for implementation, studies, etc.
  - ▶ Discussion Forums – see progress corridor-by-corridor
- To get involved in discussions, become a member: <http://wearepublicworks.org/group/usbikeroutesystem>
- Become a fan of the U.S. Bicycle Route Facebook page and receive bi-weekly blog posts regarding national progress: [www.adventurecycling.org/usbrsfacebook](http://www.adventurecycling.org/usbrsfacebook)
- To view the Application and Instructions, visit AASHTO Special Committee on U.S. Route Numbering: <http://cms.transportation.org/?siteid=68>

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It's springtime in Montana - time to check out the bike routes  
Photo by Michele Beck

## Tall Knowledge

by Tim Ard, Forest Applications Training, Inc.  
Reprinted with permission by Tim Ard at [www.ForestApps.com](http://www.ForestApps.com)

I was told a story recently of a young man assisting another to take down a tree. He was somewhere in the work area as the tree was beginning to be felled. About the time the tree was to be released he looked and saw a vehicle coming toward the target or lay area and ran out to stop the vehicle on the road. The tree fell and the young man was in its path on his way to the road. I was told he lost his life in the incident. The person relating the story said that the sad thing was that the tree wasn't tall enough to reach the road. The young man lost his life and the tree could not have hit the car coming down the road. It was not tall enough to do so.

How important is checking the lay of the tree before beginning the cut? The surroundings in relation to the height and lean are so important. A plan must be complete with whether the tree has potential of hitting or reaching an obstacle or if a person is positioned to stop traffic, can it reach the person? How would you know? Height measure is the answer. Height measure is the technique of estimating or measuring the height of the tree before you cut.

There are several ways to check standing tree height and many different tools ranging from a stick to an elaborate laser type hypsometer. One of the simplest, and usually readily available, is a stick or even two short sticks that can be located at just about every worksite.



The concept is called triangulation. If you can figure two sides of an equal triangle you know the length of the other side... Well I'm not sure if the terms or the geometrical theory is correct but I know the stick trick can work. Take a stick longer than your arm and measure your arm length as accurately as possible. Then turn the stick upright at 90 degrees. Sight the base of the tree at your thumb grip on the stick, then with a look upward to the upper end of the stick note what you see at the tree. If you have tree above the stick move back. If the stick is above the top, the tree would not reach your location. Right below your eye, if the visual height of the tree is covering the entire stick, on the ground will be where the tip of the tree will land. It can be very accurate.

With this technique you can estimate height for some important tall knowledge before you cut.

Make sure people, pets and obstacles are well out of the way before you choose to start the saw.

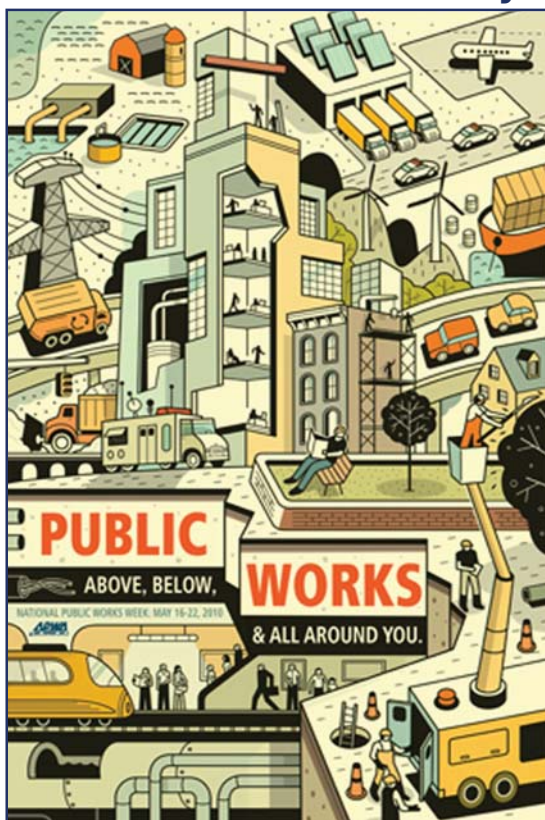
For more information, go to Tim's website: [www.ForestApps.com](http://www.ForestApps.com).

## National Public Works Week May 16-22, 2010

Since 1960, APWA has sponsored National Public Works Week. Across the nation, our 29,000 members use this week to energize and educate the public on the importance of the contribution of public works to their daily lives: planning, building, managing and operating the heart of our local communities and building the quality of life.

APWA has selected "Public Works: Above, Below, & All Around You" as its theme for 2010's National Public Works Week, which will be celebrated May 16-22.

The theme speaks to the all-pervasive effort of public works professionals and their projects, bringing quality of life and the necessities of community to the citizens of the world.



This year's poster is an amazing interpretation of our theme "Public Works: Above, Below, & All Around You" by illustrator Harry Campbell.

Harry's distinctive graphic line illustration work can be found in most major publications including *The New York Times*, *Time Magazine*, *Newsweek*, and many others. A graduate of The Maryland Institute College of Art where he also has taught. Campbell has received numerous awards from The Society of Illustrators, Communication Arts, and American Illustration.

Buy the 2010 Poster Here: <http://www.apwa.net/bookstore/detail.asp?PC=SPR.PSTR>



## 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 the 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@coe.montana.edu](mailto:mtltap@coe.montana.edu).

We recently reorganized the library and have the new lists for the library publications, software, DVD's, and videos at our web site: [www.coe.montana.edu/ltap](http://www.coe.montana.edu/ltap).

At this web site, you can also keep track of upcoming workshops, past and present newsletters, and "What's New" items that change periodically. Our 2009-2010 Needs Assessment form is presently available at this web site. Thank you for taking time to complete it.

### New Publications

**p-1034: Sign Retroreflectivity Guidebook (FHWA September 2009):** This document was developed to assist small-sized agencies without traffic engineering staff in meeting the new Federal requirements for maintaining traffic sign retroreflectivity on roads open to public travel. By considering the needs and capabilities of small agencies, this document provides the necessary information needed to be in compliance with the new traffic sign retroreflectivity requirements. Two products were produced. One is a stand-alone computer-based package CD (known as the Traffic Sign Retroreflectivity Toolkit) and the second product is a hard copy of the computer-based package, without many of the features included in the CD.

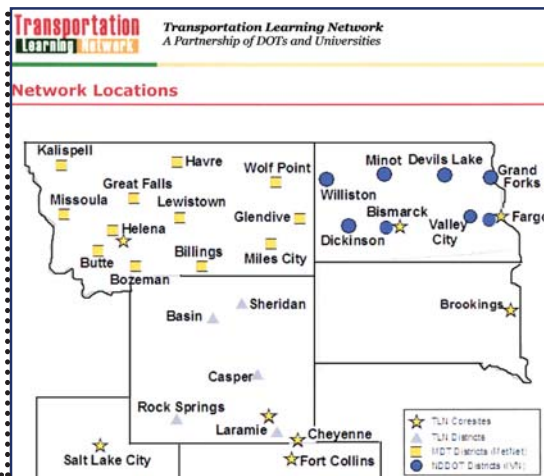


## Transportation Learning Network

The Transportation Learning Network (TLN), formerly Tel8, is a distance learning partnership among organizations in the western United States. TLN links together the transportation departments (DOTs) in Montana, North Dakota, and Wyoming and the Mountain-Plains Consortium universities of Colorado State University, North Dakota State University, South Dakota State University, University of Utah, and University of Wyoming.

TLN's mission is to support quality transportation through a network of people and technology that serves TLN members by enhancing communication, education, professional development, technology transfer, and research. Go to TLN website for more information on training events: <http://www.translearning.org/>

Montana LTAP is partnering with Montana DOT to offer classes from the TLN site to our constituents. Please contact us if you want to sign up or have any questions: 1-800-541-6671



## Free Structural Publication Library Available

The International Association for Bridge and Structural Engineering (IABSE) has put its publications from 1929-1999 -- a body of work consisting of 80,000 pages of documents on structural engineering worldwide--online for free at: [www.iabse.org](http://www.iabse.org).

The IABSE is a scientific/technical Association with 3,900 members in 100 countries, counting 48 National groups

worldwide. Founded in 1929, IABSE is based in Zurich, Switzerland. The President of IABSE (2007-2010) is Jacques Combault, France.

The IABSE deals with all aspects of structural engineering: the science and art of planning, design, construction, operations, monitoring and inspection, maintenance, rehabilitation and preservation, demolition and dismantling of structures, taking into consideration technical, economic, environmental, aesthetic and social aspects. The term 'structures' includes bridges, buildings and all types of civil engineering structures, composed of any structural material.





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## 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:

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The Local Technical Assistance Program Newsletter, *LTAP MATTERS*, is published quarterly. Funding for this program is provided by the Federal Highway Administration, Montana Department of Transportation, Montana State University, and a portion of Montana's gas tax revenues.

This newsletter is designed to keep you informed about new publications, techniques, and new training opportunities that may be helpful to you and your community.

Present and past issues are available at [www.coe.montana.edu/ltap](http://www.coe.montana.edu/ltap) or by calling 1-800-541-6671.

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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.