



# LTAP MATTERS

Montana's Answer To Technical Education of Roads & Streets

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### PASS IT ON

After you have read this newsletter, copy what you need for your files and **pass it on** to other interested readers in your department:

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## Gravel Roads: Blading & MORE

by Steve Jenkins

**G**ravel Roads Training has always been one of LTAP's most important and best attended courses. This past June, Sam Gianfrancisco of the Montana LTAP Center presented a course titled "Gravel Roads Design and Maintenance." We recognize the time and talents of those county experts who helped with the hands-on training. We also thank Caterpillar for the machines that make all this possible.



Sam Gianfrancisco,  
LTAP Field Engineer



Boulder, Montana

The design stage of a gravel road is such a minor part of the overall processes that maybe it shouldn't be mentioned. What is design anyway? The fact is, design entails drafting, surveying, materials, geometrics, safety, and so on, but it also includes how a road evolves and how it is

Does this class help transform roads, or at least the attitudes of those who work with the roads, the materials and the public? Based on the feedback we've received from attendees, the course does make a difference.



Miles City, Montana Gravel Roads Workshop

(continued on Page 2.....)

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## Gravel Roads *continued from page 1*

maintained. Those who reshape it with each motor grader pass, improving the road's materials and drainage, perform design of a gravel road daily. Well-trained grader operators are the roads' designers and maintainers, as well as the experts on road maintenance. They should know and understand all they can about gravel roads.

This course followed the format of the new FHWA publication *Gravel Roads Maintenance and Design Manual* put together by the South Dakota LTAP Center. Each participant was given a manual that follows the same format and principles that Montana has been using for years. This manual has five sections: Routine Maintenance and Rehabilitation; Drainage; Surface Gravel; Dust Control/Stabilization; and Innovations. There are also five appendices titled: Gravel Road Thickness Design Methods; Gradation and P.I. Determination; Quantity Calculations; When to Pave a Gravel Road; and Walk-around Grader Inspection.

The Routine Maintenance and Rehabilitation section covers the basics of caring for a gravel road. It addresses topics such as creating a crown, maintaining ditches, gravel properties, grading at intersections and cattle guards, bridging soft spots and mowing.

The Drainage section covers ditches, culverts and underdrains. It goes over construction of these water-removing features as well as the all-important maintenance and cleaning. A plugged culvert or a ditch that traps water is worse than none at all!

The Surface Gravel section discusses gradation and cohesiveness, pit and quarry operations and gravel placement. It emphasizes the importance of selecting high quality gravel, as well as the critical role loader operators play in the construction of good roads.



Bob Smith, Lake County, surveying at the Drainage Workshop in Kalispell, Montana

The Dust Control/Stabilization section lists the currently available dust control agents, describes the benefits of stabilization and provides some tips for applying chloride. One significant point is that even though it may not be cost effective to apply dust control simply to improve visibility or reduce dust on adjacent properties, when reductions in maintenance and the need for new gravel are factored in, stabilization becomes a much more economically viable option, particularly on higher volume roads.

The Innovations section discusses new techniques and equipment for working on gravel roads. The point is made that while the properties of gravel roads haven't changed much over the years, the vehicles traveling over them have. Trucks may be less frequent but they are generally larger and heavier. Cars are often smaller with less clearance. We are learning new ways to use old equipment. New equipment, such as carbide tipped blades, is constantly being developed. Some of these new ideas and tools are represented in this excellent manual.



## Gravel Roads *(continued from page 2)*

With good drainage and good gravel, maintenance costs can be significantly reduced. Spending the money up front to put a good surface down and educating blade operators about how to build the best road possible will save money and keep our customers, the traveling public, happy (at least most of them).



Steve Jenkins, LTAP Director, demonstrating at Miles City, MT Gravel Roads Workshop



Butte, Montana Drainage Workshop

This manual is available online at [www.epa.gov/owow/nps/gravelman.pdf](http://www.epa.gov/owow/nps/gravelman.pdf). It's a big file so be prepared to wait. Please contact me, Steve Jenkins, Montana LTAP Director, at 1-800-541-6671 or email me at [stevenj@coe.montana.edu](mailto:stevenj@coe.montana.edu) if you are interested in this Gravel Roads Workshop.

The course, as a whole, was an excellent combination of classroom learning and hands-on lessons. Sam's lively and varied presentation kept the class entertained and interested throughout the course, while the folks from the various counties and Caterpillar gave us the opportunity to see some of the lessons in practice.



Boulder, Montana Gravel Roads Workshop

LTAP Matters is published by the Local Technical Assistance Program at Montana State University, Bozeman, Montana.

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## New FHWA Work Zone Website

The FHWA Office of Operations has recently made a number of improvements to its work zone program area website. Designed with the practitioner in mind, the site provides easy access to a variety of tools and information on making work zones work better and features an innovative practice each month.

A section on practitioner tools offers information on leading-edge practices and technologies that can reduce congestion and crashes in and around work zones. This section also includes information on available decision support tools that can be used to expand the analysis capabilities of highway agencies. Many of these tools are available for download through the site or can be requested using the contact information provided on the site. Furthermore, information on various outreach events, such as National Work Zone Awareness Week and the Making Work Zones Work Better Workshops, will enable practitioners to learn about work zone activities going on around the nation.

The site also provides other valuable resources, such as facts and statistics on work zone mobility, safety and access to publications, studies on current or emerging techniques, and practices that can help make work zones work better. Resources also include links to the websites of other Federal agencies, State transportation departments and a variety of transportation/work zone related associations.

Please take an opportunity to view and bookmark our improved Work Zone Mobility and Safety page at [www.fhwa.dot.gov/workzones](http://www.fhwa.dot.gov/workzones). If you have any questions about the work zone website, please contact Scott Battles, 202-366-4372, or email: [scott.battles@fhwa.dot.gov](mailto:scott.battles@fhwa.dot.gov)

## Annual Calendar 2003 & 2004

<p><b>October 2003</b></p> <table border="1"> <thead> <tr> <th>S</th><th>M</th><th>T</th><th>W</th><th>Th</th><th>F</th><th>S</th> </tr> </thead> <tbody> <tr> <td></td><td></td><td></td><td>1</td><td>2</td><td>3</td><td>4</td> </tr> <tr> <td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td> </tr> <tr> <td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td> </tr> <tr> <td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td> </tr> <tr> <td>26</td><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td><td></td> </tr> </tbody> </table> <p>1-3: League of Cities &amp; Towns, Sheraton, Billings, MT            MACRS - Drainage &amp; Trenching: 2nd-Glendive; 7th-Great Falls; 8th-Missoula; 9th-Butte            22-23: Region 8 - Rapid City, SD</p>	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		<p><b>November 2003</b></p> <table border="1"> <thead> <tr> <th>S</th><th>M</th><th>T</th><th>W</th><th>Th</th><th>F</th><th>S</th> </tr> </thead> <tbody> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td>1</td> </tr> <tr> <td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td> </tr> <tr> <td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td> </tr> <tr> <td>16</td><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td> </tr> <tr> <td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td> </tr> <tr> <td>30</td><td colspan="6">Equipment Training on Request</td> </tr> </tbody> </table> <p>3-5: ATSSA-American Traffic Safety Services Association, Billings, MT            12-14: ATSSA - Missoula, MT            17-18: MACRS - Conference Planning, Lewistown, MT</p>	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	Equipment Training on Request						<p><b>December 2003</b></p> <table border="1"> <thead> <tr> <th>S</th><th>M</th><th>T</th><th>W</th><th>Th</th><th>F</th><th>S</th> </tr> </thead> <tbody> <tr> <td></td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td> </tr> <tr> <td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td> </tr> <tr> <td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td> </tr> <tr> <td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td> </tr> <tr> <td>28</td><td>29</td><td>30</td><td>31</td><td colspan="3">Training on Request</td> </tr> </tbody> </table> <p>*Winter Travel-Survival            *Winter Maintenance            *Leadership</p>	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	Training on Request		
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Some dates & locations subject to change. Call Donnetta Bohman, LTAP, 1-800-541-6671 or 406-994-6100 to confirm.



## Calendar of Fall Events

### MACRS District Meetings- Drainage & Trenching:

- Billings, Montana September 30, 2003  
*Holiday Inn, 5500 Midland Road, 406-248-7701*
- Glendive, Montana October 2, 2003  
*Best Western, 223 N. Merrill, 888-4-536-3483*
- Great Falls, Montana October 7, 2003  
*LaQuinta, 600 River Drive South, 406-761-2600*
- Missoula, Montana October 8, 2003  
*Double Tree, 100 Madison, 406-728-3100*
- Butte, Montana October 9, 2003  
*Best Western-Butte Plaza Inn, 2900 Harrison Avenue, 406-494-3500*
- Contact Donnetta Bohrman, 1-800-541-6671, to make Meeting Reservations

### League of Cities & Towns

- Billings, Montana October 1-3, 2003  
*Northern Hotel*  
Contact League of Cities & Towns, 406-442-8768, Fax: 406-442-9231, or email: The League of Cities and Towns

### MACRS Conference Planning

- Lewistown, Montana October 17 & 18, 2003

### ATSSA Workshops

- Billings, Montana November 3-5, 2003  
Missoula, Montana November 12-14, 2003  
Contact Donnetta Bohrman, 1-800-541-6671, for information

### ATSSA Training Comes to Montana--Register by October 17!

The American Traffic Safety Services Association from Fredericksburg, Virginia, is bringing their Traffic Control Technician Course and Traffic Control Supervisor Course to Montana with Montana LTAP as a cosponsor.

The one-day Traffic Control Technician Course is being held on November 3rd in Billings and on November 12th in Missoula. This course applies workable concepts, techniques and practices in the installation and maintenance of traffic control devices. Course materials include a "Pocket Guide" that will prove to be an indispensable tool in the field. Participants will learn the underlying principles of temporary traffic control as detailed in the MUTCD, proper installation

and removal techniques for traffic control systems, make temporary traffic control areas safer for workers, motorists and pedestrians.

The two-day Traffic Control Supervisor Course, November 4-5 in Billings, and November 13-14 in Missoula, is the advanced training course for supervisors and has been the industry standard for nearly 20 years.

Call Donnetta Bohrman, LTAP Conference Coordinator at 1-800-541-6671, before **October 17** for Registration Information.



Winter Events 2004  
3rd Annual Safety Congress  
January 12-14, 2004  
Lewistown, Montana  
In Conjunction with MACo

### October 10th Put the Brakes on Fatalities Day

On October 10, public and private organizations will join together to increase safety on America's roadways. The goal is to unite the country in achieving a full day of zero traffic deaths by encouraging safer behavior and actions. Safety events will be conducted to encourage the traveling public to focus on their own behavior when using the roadways as pedestrians, bicycle and motorcycle operators, motor vehicle operators, and passengers. Posters in English and Spanish have been distributed to State DOT Public Affairs Officers. A limited supply is still available, contact Ann Walls at 202-366-6836 or [ann.walls@fhwa.dot.gov](mailto:ann.walls@fhwa.dot.gov). Be sure to check out the official web site at [www.brakesonfatalities.org](http://www.brakesonfatalities.org) - a new 10 second PSA is featured, along with safety tips, talking points, and fact sheets. (FHWA)



## Center Line Rumble Strips Reduce Crash Risk on Rural Two-Lane Roads

by Richard Retting, Insurance Institute for Highway Safety

On a national basis, rural roads account for approximately 40 percent of all motor vehicle travel but 60 percent of all fatal crashes. Approximately 90 percent of all fatal crashes in rural areas occur on two-lane roads, which typically lack physical measures such as wide medians or barriers to separate opposing traffic flows. As a result, a major crash problem on these roads involves vehicles crossing the centerline and either sideswiping or striking opposing vehicles head-on. These types of opposing-direction crashes account for about 200 percent of all fatal crashes on rural two-lane roads and result in approximately 4,500 fatalities annually.

The risk of head-on and opposing-direction sideswipe crashes can be reduced by engineering improvements such as roadway widening and median barrier installation. However, such measures are costly and therefore generally are applied on a limited basis to high-priority locations. Because centerline incursions can occur at virtually any point along undivided roads, spot safety improvements can provide only limited protection against widespread opposing-direction crashes. More widely applied measures are needed to reduce the risk of drivers inadvertently crossing roadway centerlines. One such potential countermeasure entails installation of rumble strips along the centerlines of undivided rural two-lane roads to warn/alert distracted, fatigued, or speeding motorists whose vehicles are about to cross the centerlines and encroach into opposing traffic lanes.

(Cont'd on Page 7)

## Culvert Inspection & Repair

by Marisa DiBiaso, Project Assistant,

University of New Hampshire Technology Transfer Center. LTAP

In the autumn water levels are usually low, making it a great time to inspect culverts and perform routine maintenance. This article will cover inspections to determine needed cleaning, repair or replacement, and methods to minimize erosion.

### Inspections

Thorough inspection is essential to effective maintenance. Knowledge of culvert material can predict the types of problems a culvert may have. Each material has specific weaknesses.

- ◆ Steel culverts are subject to corrosion and abrasion, and have a shorter life span than other materials.
- ◆ Aluminum culverts can sustain abrasion and have less strength.
- ◆ Plastic culverts bend easily and are subject to ultraviolet degradation. They are subject to impact damage at low temperatures.
- ◆ Concrete is the most durable material, but concrete and reinforcing steel still deteriorate.

### Cleaning

Inspections frequently show that culverts require cleaning. During cleaning, certain maintenance tasks should be performed:

- Remove obstructions and clean inside the pipe.
- Examine the culvert for visible cracks, changes in shape, corrosion or abrasion.
- Check upstream for trees, dead branches, and other debris that may obstruct the pipe.
- Cut vegetation that may hinder flow near inlet and outlet.
- Look for evidence of past overflow to indicate whether the culvert is the correct size.
- Remove debris and sediment, or add material to make the ditch bottom level with the culvert invert elevation.

### Repairs

Bent or broken culvert ends should be repaired for smooth water flow. Repair headwall cracks, loose mortar, and displaced stones. The chart on the facing page will help to diagnose other problems and choose a repair.

### Replacements

The most important reason to replace a culvert is to minimize the possibility of structural failure. Weak culverts beneath a road are especially dangerous. Replace a culvert if it cannot handle the expected water flow. Water and debris lines above the culvert indicate a larger culvert is needed. Area residents and town records can indicate water levels of past storms and the maximum level to expect.

Replacing a culvert with one only slightly larger significantly increases the capacity of flow. For example, an 18" culvert has about 50% more capacity than a 15" culvert. Before installing a larger culvert, check culverts downstream to ensure they can handle the increased flow.

Multiple culverts might be necessary if cover is insufficient for a larger culvert. The table below shows the number of smaller diameter culverts equal in water carrying capacity to that of one larger sized culvert. It is based on culverts laid on the same slope. For example, one 24" diameter culvert is equivalent in water carrying capacity to five 12" culverts or two 18" culverts.

Diam	12"	15"	18"	21"	24"
12"	1				
15"	1.7	1			
18"	2.5	1.5	1		
21"	3.6	2.2	1.4	1	
24"	5	3	2	1.4	1

Culvert Diam. (ft.)	Depth (ft.)	Width (ft.)	Length (ft.)
1.0	1.0	2.0	4.0
1.5	1.5	3.0	6.0
2.0	2.0	4.0	8.0
2.5	2.5	5.0	10.9



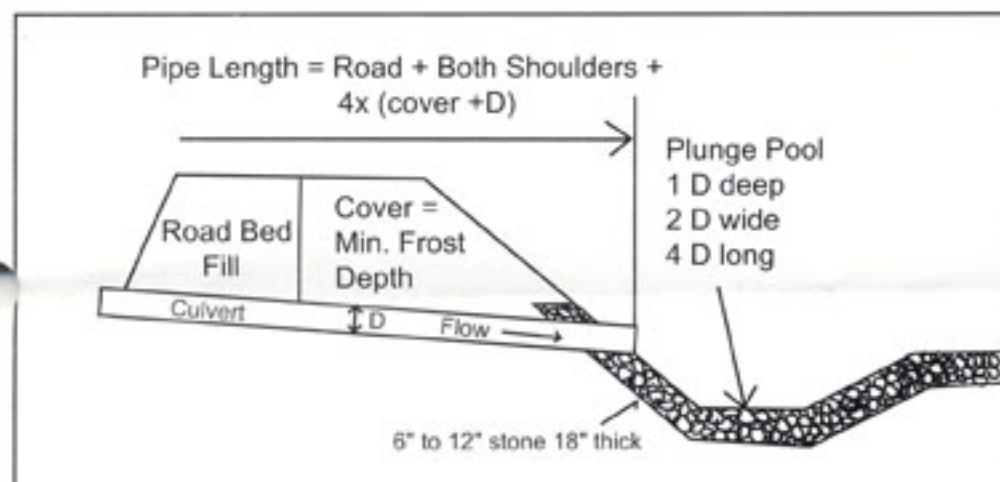
## Culvert Inspection (cont'd)

### Erosion

Water exiting the culvert can erode the land at the outlet. The greater the velocity of flow, the greater the erosion. Erosion at the outlet of an upstream culvert will loosen sediment and debris, which can build up in ditches and inside a culvert downstream. Buildup slows the flow. Ultimately sediment is carried into streams, ponds, or lakes. A solution for low velocities is to plant vegetation. For higher velocities, crews should construct a stone splash pad or plunge pool at the outlet. Typically, for culverts with a diameter of 30

inches or less, the depth of the plunge pool should equal the diameter of the culvert.

Inspection determines whether culvert cleaning, repairs, or replacement are needed. Where necessary, obtain a wetlands permit before performing maintenance. If replacement is necessary, it is important to choose a culvert the right size for the location and water flow. Regular maintenance, such as removing sediment and debris, is essential to keep the culverts working properly.



### Common Culvert Problems and Solutions

What you observe...	What may be the reason...	How to fix it...
Scouring/erosion at the inlet.	-Ditch too steeply graded. -Poor location / alignment. -Clogged pipe.	-Line the ditch with stone. -Properly align the ditch with the culvert. -Clean and flush the culvert.
Scouring/erosion at the outlet.	-Pipe sloped too much. -Pipe is too small.	-Build a stone splash pad or plunge pool. -Check size and replace with a larger pipe if necessary.
Ponded/puddled water.	-Invert is too high. -Ditch grade is too flat.	-Reset the pipe - match the invert to the channel bottom. -Regrade ditch to maintain correct flow.
Dented/crushed ends.	-Traffic / snowplows are hitting the ends.	-Fix pipe ends. -Install marker posts or guardrails.
Heavy corrosion.	-Water flowing through culvert is acidic.	-Install a PVC sleeve or replace with a non-corrosive material.
Piping around the culvert.	-Pipe is incorrectly installed	-Reinstall pipe with proper bedding and compaction. -Install a head wall.
Sediment	-Not enough slope.	-Reinstall pipe with a slope of at least 1/4" per foot.

### Rumble Strips (cont'd from page 6)

A comprehensive before-after study was undertaken to estimate the nature and magnitude of crash reductions associated with installation of center line rumble strips on rural undivided two-lane roads. Data were drawn from seven states: California, Colorado, Delaware, Maryland, Minnesota, Oregon, and Washington. In total, 98 treatment sites along approximately 210 miles of road were studied. Statistical procedures were used to properly account for regression to the mean - a threat to the validity of simple before-after studies -- while normalizing for differences in traffic volume and other factors between the before and after periods.

Overall, motor vehicle crashes at treated sites were reduced 14 percent; injury crashes reduced by an estimated 15 percent. Head-on and opposing-direction sideswipe crashes -- the primary target of center line rumble strips -- were reduced by an estimated 21 percent, while head-on and opposing-direction sideswipe crashes involving injuries were reduced by an estimated 25 percent. This result, taken together with the fact that installation costs are relatively low, suggest that consideration should be given to wider application of center line rumble strips on rural two-lane roads to reduce injury crashes. *September, 2003*

*(We have the full 9-page report in our LTAP Library. Just call 1-800-541-6671, and we will send you a copy.)*



## Jack Walsh Bridge Dedication

In the early part of September, the Sieben Canyon Bridge on Chevalier Drive in Helena, was dedicated to a very special person--Jack Walsh. The following letter was read by Eric Griffin, past MACRS President, at the ceremonies, in conjunction with Mike Murray, Lewis & Clark County Commissioner:

"Jack helped prolong the life of many bridges -- in many counties -- throughout Montana. Jack was a valuable resource to have at the annual Montana Association of County Road Supervisors (MACRS) Conference each spring. Jack was sincerely interested and always had a cost saving alternative for road supervisors, county commissioners and consultants to take back home and try.



It was always a pleasure to see Jack and Catherine at the annual MACRS Conference. The Montana Association of County Road Supervisors enjoyed, and treasured, the fellowship that Jack shared with each and every one of us. The Montana Association of County Road Supervisors will truly miss Jack Walsh."

Sincerely,  
Jack Knorr, President, MACRS  
Stillwater County

## From MACRS President Jack Knorr

Dear MACRS members:

It's been a long, hot and fire-filled summer for us all. I'm sure that every one of you feels as I do, that the drought has been around long enough. Maintaining our roads in this environment is next to impossible.

But it's October now, and the promise of cool, wet weather is around the corner. Along with the fall season comes the time to start planning for the MACRS Annual District Meetings and the Spring Conference. I hope to see and visit with many of you this fall at our District Meetings. (See the Calendar of Events on page 4 of this newsletter for when and where the District Meetings are taking place.) LTAP will be presenting a training session on Drainage & Trench Safety, followed by a short business/informational meeting for our membership.

Please try to take a day from your busy schedules and attend one of these meetings. The best training we can receive comes from our interactions with each other.

We met in Billings in August to start preparations for the upcoming year. Another Planning Meeting will be held in Lewistown on November 17 & 18, 2003, to finalize the agenda for the Spring Conference in Bozeman.

During the District Meetings this fall, you will be asked to fill out a brief questionnaire to let us know the topics that interest you. We will take that data to Lewistown and try to craft the Spring Conference around it. We believe that this allows us to bring topics of interest to our membership and creates a much better conference in general.

The Spring Conference 2004 will be in Bozeman at the GranTree Inn on April 12, 13, 14, 2004. Last year's Conference was very successful. We have reserved 140

rooms at the GranTree Inn and the Holiday Inn (next door). Make your reservations early! (At the GranTree mention #801541 and at the Holiday Inn mention "MAC" to receive the discounted rate.) The Conference promises to be another good one. Last year 54 Counties were represented in our organization. We are working to get all 56 Counties signed up this year.

I want to welcome two new Road Supervisors to our group. Cliff Sabo from Dawson county and Bill Vigue from Mineral County have joined our ranks and could use a kind word and maybe a little assistance as they start their new duties. Welcome guys and good luck!

We attended the Snow Rodeo in Great Falls last month. What a great turn-out and terrific fellowship among the participants. Del Henman, from Yellowstone, captured the over-all championship. Congratulations Big Mo!

Don't forget the District Meetings. I'll see you there. Have a good fall and winter season. And don't forget that help and a sympathetic ear is only a phone call away. Call your fellow MACRS buddies and visit.

Sincerely,

J. F. Knorr  
Stillwater County Road/Bridge Department  
PO Box 715,  
Columbus, MT 59019  
Phone: 406-322-5336 Cell: 406-321-4696  
Email: rbdept@in-tch.com





## Snow Rodeo

It was sizzling hot at this year's Snow Rodeo! Great Falls temps were pushing into the 90's and the Snow Rodeo participants weren't thinking too much about snow at this year's 14th Annual Equipment Operator Training and Snow Rodeo.

The first day of this annual event kicked off with Steve Jenkins, Director, and Sam Gianfrancisco, Field Engineer, from Montana LTAP, covering Drainage and Trench Safety in the classroom. The outdoors classroom had Steve Green and Fred Rubino, from T&E, covering the basics on T&E equipment such as the backhoe, front end loader and motor grader. The Rodeo began the next day with almost 60 participants giving it their best. Thanks to the initiative from Marty Basta, Operations Manager, City of Great Falls, observing a national snow rodeo in Colorado a few years back, Montana now has a Snow Rodeo event.

Following are the winners and top "1st Timers":

**Snow Plow:** 1st - Del Henman, Yellowstone County Road  
2nd - Joe Miller, Missoula County PW  
3rd - Kevin O'Brien, City of Missoula  
1st Timer - Steve Hall, Missoula County PW

**Loader:** 1st - Joe Miller, Missoula County PW  
2nd - Robin Miland, Missoula county PW  
3rd - Darren Kobelt, Yellowstone County Road  
1st Timer - Floyd Butkiewicz, U.S. Air Force

**Backhoe:** 1st - Robin Miland, Missoula County PW  
2nd - Joe Miller, Missoula County PW  
3rd - James Blanchard, U. S. Air Force  
1st Timer - Edward Franke, City of Billings

**Motor Grader:** 1st - Del Henman, Yellowstone County Road  
2nd - David Harrison, Missoula County PW  
3rd - Stew Schipman, Custer County Road Department  
1st Timer - David Harrison, Missoula County PW

**ALL AROUND CHAMPION: DEL HENMAN, Yellowstone County**



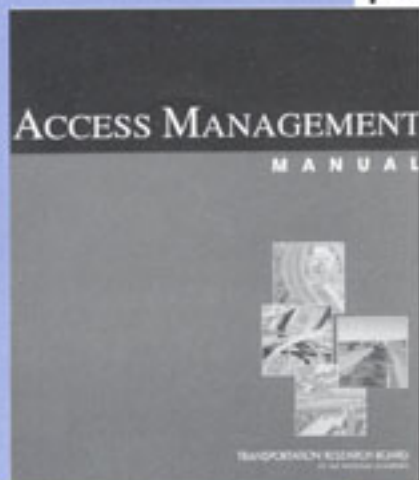
Some of the winners from the 14th Annual Snow Rodeo held in Great Falls, Montana:

Del Henman, Yellowstone City; Robin Miland, Missoula City PW; Joe Miller, Missoula City PW, David Harrison, Missoula City PW

Welcome to the LTAP Lending Library where publications, videos, and software may be borrowed for two weeks and then returned to the Library. Up to three videotapes may be borrowed from the LTAP Lending Library rent-free for two weeks. Some publications are free or for a nominal charge upon request.

Call Donnetta Bohrman or Michele Beck, LTAP  
1-800-541-6671  
for information or checkout procedures.

Note that our website at [www.coe.montana.edu/ltap](http://www.coe.montana.edu/ltap) has been updated and includes the total library publications and videos. At this website you can also keep track of upcoming workshops, our newsletter, and "New Flash" items that change every month.



## LTAP Lending Library

### Publications

**p-280:** *Montana Public Works Standard Specifications - Fifth edition, 2003:* Complete book from Montana Contractors' Association covering bidding process, contracts, etc. (Note: p-279 is the Fourth ed. 1996.)



**p-636:** *Riparian Protection and Restoration: Road Design Techniques:* The six descriptions of riparian restoration projects discussed illustrate how road projects can help protect, restore, and keep riparian areas intact. Road riparian management that incorporates interdisciplinary planning, design, implementation, and monitoring has proven to be highly successful.

**p-815:** *Access Management Manual:*

The purpose of this manual is to compile information on access management practices, policies, and experience, along with insights of a diverse group of practitioners, into one source that summarizes the state of the art on access management. It is intended to assist state transportation agencies, local governments, metropolitan planning organizations, and their consultants in program development and implementation. (Transportation Research Board)

**p-2320:** *European Practices in Transportation Workforce Development (FHWA):* The Federal Highway Administration, American Association of State Highway and Transportation Officials, and National Cooperative Highway Research program sponsored a scanning study of Sweden, Germany, France, and England to investigate how those countries deal with transportation workforce development issues.

**p-2358:** *Optimal Procedures for Quality Assurance Specifications (FHWA):* This manual is a comprehensive guide that a highway agency can use when developing new, or modifying existing, acceptance plans and quality assurance specifications. It provides necessary instruction and illustrative examples to lead the agency through the entire process of acceptance plan development.

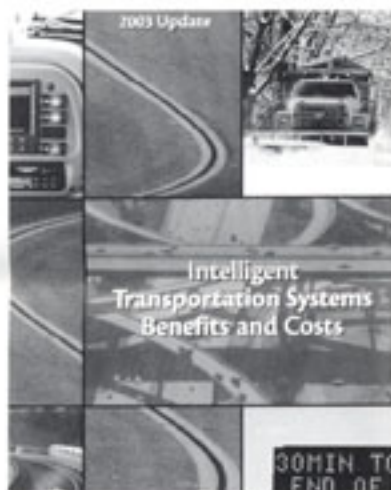
**p-2526:** *Traveler Information Systems in Europe:* The scan team visited eight cities in Spain, Germany, Sweden, Scotland, and England that have established traveler information products and services that reflect all transportation modes. The timing for the tour also allowed the team to examine European practices that could be applied in implementing "511" telephone traveler information services in the United States. The scan team evaluated findings in information content, customer needs, business/cost recovery models, technology applications, consistency and standards, and legal and policy issues and made specific recommendations for applications in the United States.

**p-2545:** *Never summer - Poems from Thin Air by Chris Ransick:* Book of poems by Chris Ransick who is an avid outdoorsman and spends his free time walking the last remaining wilderness in the Rocky Mountains, from Canada to New Mexico.



## Publications, Software, Videos

**p-3535:** *Intelligent Transportation systems Benefits and Costs (FHWA): Information* in this report is drawn from the ITS Benefits and Unit Costs Database, a regularly updated repository of such information, available on the Internet at [www.benefitcost.its.dot.gov](http://www.benefitcost.its.dot.gov). The report presents material from the database that describes the impacts and costs of the intelligent transportation infrastructure as well as intelligent vehicle applications.



### Software

**SW-110:** *RoadsIS (IdahoT2) - with Manual:* Roads Information System is cost tacking software designed to track activities and costs for agencies that are responsible for road management. The program tracks labor, equipment and material costs by road, project, department and district. It also tracks repair and fuel costs for each piece of equipment owned by your agency.

**SW-145:** *Rubblization:* The quick, cost-effective, environmentally friendly fix for failed concrete pavement. (APA) [www.AsphaltAlliance.com](http://www.AsphaltAlliance.com)

**SW-400:** *AASHTO 2002 Roadside Design Guide:* In PowerPoint Presentation and Video Supplement to PowerPoint Presentation (FHA, LTAP, NHI)

### Videos

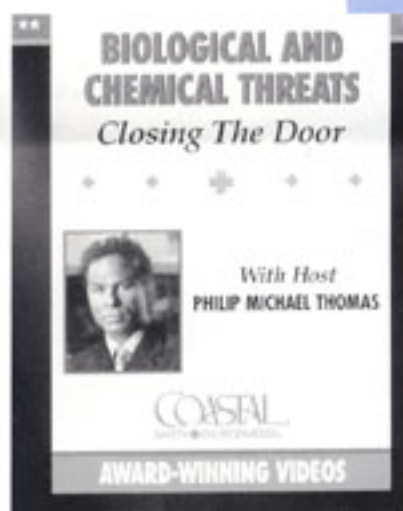
**PAG109:** *Pathways to Tomorrow - BIA, Tribal Roads* Time: 38 min

**PAS121:** *Train the Media - Train the Trainer (Coastal)* Time: 14 min

**PAS125:** *The Hats of Incident Management (Dec.2001)* Time: 18 min

**SG189:** *Crisis Under Control - Emergency Action Plan (Coastal)* Time: 16 min

**SG191:** *Biological and Chemical Threats - Closing the Door, with Host Philip Michael Thomas (Coastal)* Time: 17 min



**SG200:** *Stairways and Ladders - The First Step (Coastal)* Time: 18 min

**SG205:** *Safe Winter Driving* Time: 17 min

**SG206:** *Bike 'N Ped Driver Ed - Everyone Has A Story, Road Sharing Tips for Motorists & Bicyclists (Florida)* Time: 16 min

**ST140:** *Making the Effort Works - Reducing Utility Delays During Construction (FHWA)* Time: 19 min

LTAP has a new  
FAX Number:  
406-994-5333

A few websites for  
bicycles:  
**Pedestrian and  
Bicycle Safety:**  
[http://  
safety.fhwa.dot.gov/  
programs/  
ped\\_bike.htm](http://safety.fhwa.dot.gov/programs/ped_bike.htm)

**Bicycle Safety  
Education Resource  
Center:**  
[http://  
www.bicyclinginfo.org/  
cc/fhwa.html](http://www.bicyclinginfo.org/cc/fhwa.html)





Local Technical Assistance Program  
416 Cobleigh Hall  
PO Box 173910  
Montana State University-Bozeman  
Bozeman, MT 59717-3910



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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.

Individuals wishing to receive future copies of the newsletter at no cost may send their request to LTAP, 416 Cobleigh Hall, PO Box 173910, Montana State University-Bozeman, Bozeman, MT 59717-3910, or call 1-800-541-6671.

### 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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