

Colorado LTAP

August 2006

Serving local transportation agencies throughout Colorado

Fall Issue

Polyurethane Resin (PUR) Injection for Rock Mass and Structure Stabilization



PUR injection in the highly jointed rock mass above the Poudre Canyon Tunnel west of Ft. Collins. The left tunnel abutment and the rock mass extending approximately 20 feet above the portal were treated.

By: Matthew DeMarco, FHWA Central Federal Lands, Geotechnical Group Lead

The Federal Lands Highway Division (FLH) of FHWA is responsible for the construction and rehabilitation of scenic roadways in America's most environmentally and culturally sensitive settings. As good stewards of U.S. public lands roadway projects, preservation of unique natural features and historic and archeological structures is central to the FLH "Lightly on the Land" construction philosophy. To further support preservation of our public lands resources, FLH has sought through its Technology Deployment Program ground stabilization technologies that...

(1) Provide superior stabilization and preservation of natural, archeologic, and historic structures subject to environmental and roadway construction damage;
(2) Produce aesthetically pleasing results in context-sensitive settings (particularly technologies that are virtually invisible to the public); and

(3) Provide cost-effective alternatives to traditional blasting-scaling-bolting operations - which are often expensive, time consuming, environmentally invasive, publicly adverse, and which may result in less-than-desirable constructed/excavated features requiring follow-on aesthetic treatment.

LOOK INSIDE
Would Opie Be Driven to School?

Polyurethane resin (PUR) injection, or "rock gluing", a long-established method for rapidly stabilizing weak, actively failing ground in the underground mining industry, is one such technology readily transferable to FLH highway projects. This simple, two-part, epoxy-type

resin is easily transported and stored, readily pumped into fractured rock and/or porous manmade structures, provides superior stabilization/sealing with very short set and cure times, is environmentally friendly, and results in aesthetically pleasing site conditions.

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Routing Slip

After reading this issue of Colorado LTAP, please initial below and pass it along to the rest of you staff.

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The Colorado Local Technical Assistance Program is sponsored by the Federal Highway Administration, the Colorado Department of Transportation, and the University of Colorado at Boulder.

The Colorado LTAP Newsletter is published quarterly. Articles, pictures and comments are welcome.

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Program Manager's Corner

The Colorado LTAP office has been pretty quiet this summer. We didn't hear from too many of you. We know you're busy with summer construction, and although we take a break from training, don't forget we're also here to help with technical assistance and any questions you may have regarding your job or safety concerns.

After a hot, productive summer the fall training schedule is about to begin. Lindsay has scheduled a bunch of new topics for you this semester. A fall training calendar was mailed out in August. However, as hard as you try to get commitments from instructors and locations, something always has to change. So please take a look at the schedule on

page 11 for updated course information; including date changes for *Safety on the Job* and additional locations for the *Small Bridge Inspection* courses.

We'd like to encourage all of you to attend the *Local Road Coordinator's Conference* in October. The new Diesel Engine Emission Standards will be addressed. See page 6 for more details.

Norm Rutherford, the original Colorado LTAP Program Manager, passed away on August 5th. Our thoughts and prayers are with his family. For more information, see page 9.

Hope to see you all soon!

Renée Koller



WORDS OF WISDOM FROM MY FORTUNE COOKIES

Character is who you are when no one is watching.

Words

Losers visualize the penalties of failure. Winners visualize the rewards of success.

of

If we do not change our direction, we are likely to end up where we are headed.

Wisdom

Beginning is easy - Continuing is hard.

You can't solve a problem on the same level you created it.



<http://ltap.colorado.edu>

Visit Colorado LTAP online today for online training, class registration, free lending library, and more.

Would Opie Be Driven To School? Funding to Improve Your Community

By: Betsy Jacobsen, CDOT Bike-Ped Coordinator

If you ever watch TV re-runs, or perhaps saw the original black and white shows of the 60's, you can probably recall the opening to the Andy Griffith show. If you try at all, you can hear the simple whistled theme song as the easy-going Sheriff of Mayberry and his son Opie stroll down the tree-lined lane towards their favorite fishing hole.

In today's terms, that quiet dirt road wouldn't be considered a complete street - you wouldn't see bike lanes or sidewalks on that well-worn street. But you do get the sense that pedestrians had the right of way and were safe from traffic. If a car suddenly drove down that road, you just know it would give space to those two walkers.

Less than 40 years ago, walking and biking to school were commonplace - in 1969, roughly half of all 5 to 18 year olds either walked or biked to school. Times have changed, and today, nearly 90% of our youth are driven to school either by bus or individual car. Can you even imagine that Opie would've been driven to school? This change in transportation mode has added to traffic congestion, a reduction in air quality and the deterioration of our children's health. As much as 27 percent of the country's morning traffic is made up of parents driving their children to school.

With the passage of the Federal Transportation Act, SAFETEA-LU (Safe, Accountable, Flexible, Efficient, Transportation Equity Act - A Legacy for Users), Congress implemented a new program to help and encourage children, to walk and bicycle to school; to make walking and bicycling to school safe and more appealing; and to facilitate the planning, development and implementation of projects that will improve safety, and reduce traffic, fuel consumption, and air pollution in the vicinity of schools.

This program is **100% federally funded** and managed through the Colorado Department of Transportation (CDOT). Funds are awarded through a statewide competitive process, and in proportion to



the geographic distribution of the student population K-8 grades. But this is not a program limited to construction projects. Additionally, 10-30% of the total funding must be allocated towards encouragement and education programs. So children and parents can learn about the reasons for biking and walking; can find that it's easy to do and there are safe ways to do it. Any state department, city, county or school district can apply. Nonprofits are also eligible by partnering with a state subdivision as the administrator.

In Colorado's first funding cycle (a combination of years 2005 and 2006), nearly \$2 million will be distributed for 29 different projects. The Safe Routes to School (SRTS) Advisory Committee (a nine-member appointed committee representing teachers, parents, bicyclists, pedestrians, law enforcement and members of the Statewide Transportation Advisory Committee) received 72 applications requesting more than \$6.5 million in funds. Clearly there is more need than funding, but SRTS will go a long way towards improving routes to make them safer and more usable.

The 2007 application is tentatively scheduled to be available in early fall, with a due date in December.

Applications will then be reviewed, scored, selected and approved by late spring. Interested persons should go to the CDOT Bicycle and Pedestrian website at <http://www.dot.state.co.us/bikeped> and click on the *Safe Routes* button. They can also get more links and information from the national SRTS Clearinghouse website at www.saferoutesinfo.org.

...continued on page 4

Colorado LTAP Advisory Committee Members:

◆
Marlene Crosby
Gunnison County

◆
John Baker
Town of Snowmass

◆
Adam Lancaster
City of Cañon City

◆
Richard McKee
City of Boulder

◆
Tammie Crawford
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◆
Doyle Villers
LaPlata County

◆
Kevin Scott
Phillips County

◆
Beth Moore
CDOT

◆
Craig Larson
FHWA

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at Boulder

◆
Renée Koller
Colorado LTAP



A SAFE ROUTES TO SCHOOL PARTNERSHIP

Bikes Belong is a national coalition of bicycle suppliers and retailers working together to put more people on bicycles more often. Through national leadership, grassroots support, and promotion, they work toward making bicycling safe, convenient, and fun. *Bikes Belong* supports a group of organizations with an interest in Safe Routes to School.

The *Safe Routes to School National Partnership* is a collaboration of bicycling and walking groups, as well as health advocates, schools, gov't agencies, and businesses. The partnership's goal is to advance the Safe Routes to School national movement. A key component of this goal is ensuring that the Safe Routes funding authorized by the new transportation law is put to the best possible use. The *Bikes Belong Coalition* is providing initial funding for this partnership. Deb Hubsmith—a nationally respected Safe Routes to School expert—is the partnership's coordinator.



You can join the partnership, or learn more at

<http://bikesbelong.org>



continued from page 3...

Example Safe Routes to School Programs

The following examples are a sample of SRTS programs, activities and materials from around the country. A more comprehensive list of national, state and local programs is available through the SRTS website.

- § Facts, articles and a 10-step program that brings parents, teachers and principals together with traffic engineers to identify and fix dangerous locations.
- § Safety toolkits and training.
- § Classroom curriculum focused on traffic safety and the environment.
- § Maps for walking and other transportation modes for city schools.
- § School area engineering improvements.
- § Non-profit organizations dedicated to improving communities by working

Driven To School? Safe Routes to School

Any state dept, city, county, or school district can apply; and program funds are not limited to construction projects.

closely with residents, parents, children, and municipal officials. This privately-funded program assists communities in planning safe routes to schools and applying for public funds for construction and related programs.

§ Grants and materials for promotional efforts, fact sheets and presentations to assist in building community support.

§ Programs emphasizing air quality and pollution reduction.

§ Classroom activities and contests written by experienced program developers.

§ Designing a "Safe Ways to School" guide that emphasizes school task force development and assessment.



Photos courtesy of the Pedestrian and Bicyclist Information Center's Image Library, photographer Dan Burden.

Need a little extra ca\$h?



Your knowledge is worth something.

Our center has initiated a program to encourage local participation in the publishing of Colorado LTAP's quarterly newsletter. We would like the recipients of our newsletter to benefit from all the knowledge local agencies have in the areas of roadway maintenance, design, and construction. We are offering \$50 to city, town, or county employees that submit an article that is chosen to be published in our newsletter. Articles can address current methods and procedures, best practices, innovative techniques, or projects in the transportation industry. Content should contain as much detail as possible, but we can provide assistance in editing and writing the final version. We request articles not promote any particle product. *Photos are encouraged.* For more information, or to submit articles/photos, include author name and contact info, and mail to the Colorado LTAP office at the address listed on page 2, or email to cltap@colorado.edu.

Polyurethane Resin Injection

Rock Mass and Structure Stabilization

continued from page 1...

Although technology transfer to the civil transportation sector has been slow compared to more conventional ground stabilization methods (e.g. rock bolting, cementitious grout), this technology becomes quite cost-effective when addressing the aesthetic requirements common to FLH roadway projects - where external rock and structure rehabilitation fixtures cannot be tolerated, and where applications cover relatively confined areas.

The FLH Technology Deployment Program is currently investigating and documenting the primary applications of the PUR technology as a rapidly deployed, cost-effective ground stabilization measure providing superior stabilization performance, while achieving aesthetics objectives. More specifically, study objectives include (1) transferring this ground stabilization technology from the mining/tunneling industry to the FLH roads program via a comprehensive applications manual, and (2) demonstrating its application on one or more FLH-type projects.

Most recently, FLH, in cooperation with the Colorado Department of Transportation (CDOT), has completed a full-scale PUR demonstration project at a historic tunnel located in the scenic Poudre Canyon west of Ft. Collins, CO. The demonstration involved the "gluing" of a previously bolted section of the western tunnel portal where annual freeze/thaw cycles and rock mass creep toward the adjacent Cache La Poudre River are contributing to portal instability. Over the course of six days, a three-man crew working out of a lift advanced twenty three 10-12 ft deep borings in the portal and tunnel abutment, through which 6,000 lbs of PUR were successfully injected. The PUR infused throughout the rock mass, evidenced by small amounts of resin dripping from surface joints and fractures, effectively stabilizing and sealing the portal area (see photos).

In addition to the Poudre Canyon demonstration, FLH is currently planning to investigate the stabilization of historic



Figure 2. Staged PUR pumping underway. The two-part resin mixes at the delivery tube, and permeates the rock mass.

dry-stack retaining walls along the acclaimed "Apache Trail Road" (SR88), located west of Phoenix, AZ. This study will be conducted in late 2006 in cooperation with the Arizona Department of Transportation and Tonto National Forest. Along with the results of the Poudre Canyon Tunnel study, this planned investigation will be documented in a final technology report and companion DVD to be completed in early 2007. The report will provide specific guidance on the appropriate application and use of polyurethane resin injection for (1) stabilizing failing groundmasses (e.g., rock slopes, unique rock promontories, escarpments), and (2) preserving aging and/or deteriorating man-made structures (e.g., historic retaining walls, archeological structures). In addition, secondary uses shall also be described, including managing groundwater around excavations, tunnels, and drainage structures, securing ground anchors, temporary ground stabilization, and seal/adhesive applications.



Polyurethane resins can be injected into cracks or joints to form a gasket; injected through a structure to form a barrier between structure and soil; or injected to consolidate soil into a monolithic impermeable barrier. Polyurethane resins or grouts form gels, foams or solids; are very stable, and have good resistance to acids and alkalis. These resins have many desirable qualities, such as expansiveness, adherence to wet or dry surfaces, controllable set times, a tenacious bonding ability, and chemical resistance. Polyurethane resins can be used for soil stabilization and injection into rock strata, dams, water tanks, etc.

NATIONAL INCIDENT MANAGEMENT SYSTEM (NIMS) COMPLIANCE

NIMS is a comprehensive system that will improve response operations through the use of the Incident Command System (ICS), and other standard procedures and preparedness measures.

AS A REMINDER

To receive FY2006 preparedness grant funds from any federal department or agency, Colorado agencies will have to self-certify that they have met the minimum FY2005 requirements.

The deadline for full NIMS compliance is September 30, 2006.

Beginning in FY2007, which starts **October 1, 2006**, all federal preparedness funding will be conditioned upon full compliance with the NIMS requirements.

Earlier this year, Colorado LTAP provided the required ICS and NIMS training in support of Phase 1, to public works first responders.

NIMS compliance certification information is available online at http://www.fema.gov/emergency/nims/nims_compliance.shtm

Or agencies may contact their local fire department.



DISCOVERING THE WORLD OF PUBLIC WORKS

A Training Package

This is an educational outreach program that introduces children (K-5) to the world of public works. The ready-made curriculum explores in-depth the areas of construction, traffic and transportation, solid waste and wastewater. The curriculum provides you with everything you need to explain to children about the role public works plays in their community.

The Training Package:

- ✘ 1 Instructor's Guide
- ✘ 25 copies of the Workbook for Children
- ✘ 25 copies of Chipper's Adventures in PW

The Curriculum:

- ✘ Acquaints children with basic public safety concepts
- ✘ Stimulates children's interest in public works
- ✘ Increases your community's understanding of what public works professionals do for our communities

The Children's Workbook

contains puzzles, worksheets, word games, coloring pages, glossary, and other activities. There is a quiz at the end of the book to test the children's comprehension.

Available through APWA's bookstore online:

apwa.net/bookstore/

21st Annual Local Road Coordinators Conference

New Diesel Engine Emission Standards- Are You Impacted?



Calling All Agencies

Winners of the state and regional "You Show Us" contest receive their awards at the conference. Randy Renquist of Sedgwick County was the 2005 Colorado State winner.

Each year, the Region 8 LTAP centers (Colorado, Wyoming, North Dakota, South Dakota, and Nebraska) host the annual Local Road Coordinators Conference in Rapid City, South Dakota. This year the event will be held at the Best Western Ramkota Hotel on October 25-26, 2006.

Sessions at the conference this year will include:

- ✘ Asset Management
- ✘ Employee Motivation
- ✘ National Incident Command System Requirements
- ✘ Impact of New Diesel Engine Emission Standards
- ✘ Dealing with Diesel Fuel Formulation Changes
- ✘ Winter Maintenance Issues
- ✘ Roadway Safety Fundamentals
- ✘ Train Approach Warning: Hereford Incident Reenactment
- ✘ "You Show Us" Contest
- ✘ APWA, NACE and FHWA Updates
- ✘ and more....

The Colorado winning entry of the "You Show Us" contest will be submitted to compete with counties in Nebraska, North Dakota, South Dakota, and Wyoming to determine the regional winner. The state and regional awards will be presented at the conference.

The registration fee for the conference is only \$60 and includes meals and the meet-and-greet social - the best bargain in transportation!

The agenda and registration form have been finalized and will be mailed soon. A block of rooms has been reserved at the Ramkota Hotel under the name of *County Road Conference (LTAP)* at a special conference rate. But don't be fooled by that title - the conference is targeted for all city, county and public works personnel responsible for local roads.

For additional information visit our website (<http://ltap.colorado.edu>) or call Renée Koller or Lindsay Nathaniel at Colorado LTAP, 303-735-3530.

Look forward to seeing you there!

SOUTHERN AGENCY OUTREACH PROGRAM A SUCCESS!



In an effort to promote our FREE resources and technical assistance to outlying agencies, Colorado LTAP has developed the *Agency Outreach Program*. Each year, the Program Manager will travel to transportation agencies in one of the cardinal directions meeting with street supervisors and road managers. In August, Renée Koller spent 4.5 days visiting city, town and county transportation agencies along the southern border of Colorado. A few statistics from the trip: 1377 Miles Travelled, 4.5 Days, 19 Municipalities, 14 Counties, 19 Additions to the Mailing List, 9 Summits, 2 Rainbows, and 1 Cop. (It was a burnt out brake light! I promote roadway safety remember.)



What's New in the LIBRARY?

All videos, publications and CDs in the LTAP lending library are available for checkout for a two-week period, free of charge. To check out materials or request a library catalogue, contact the Colorado LTAP office at 1-888-848-5827.

Below is a list of most recent materials added to the library. Our library materials can also be ordered online at: <http://ltap.colorado.edu>

New DVDs

Location

Title

DVD5 CCD

Construction Career Days: A Step into Your Future

The purpose of the event is to introduce high school student to the vast career opportunities and unlimited potential for advancement within the construction industry from building trades to heavy construction. Activities included professional demonstrations, hands on participation and operation of heavy equipment. This 11 minute DVD was filmed in Salt Lake City, UT during their September 2005 CCD event.

DVD40 FRE

Forest Roads and the Environment DVD

This 18 minute DVD covers how roads interact with the environment and how to maintain them to safeguard the environment.

DVD50 TSR

Traffic Safety Review: Mendocino Version

Mendocino County has created a cost-effective program that has achieved a 42% reduction in traffic fatalities over 10 years! This DVD is a review of their *Road System Traffic Safety Review* program, designed to improve signs and markings on arterial and collector roads within the county.

New CDs

Location

Title

CD GTTC

Guidelines for Temporary Traffic Control (3 CDs)

These CDs contain the handbook summarizing guidelines listed in the 2003 MUTCD. It is directed to any entity working on a roadway open to public travel. This handbook contains the basic principles of Temporary Traffic Control (TTC), description of standard TTC devices, and typical application diagrams. Information concerning proper flagging along with the installation and maintenance of TTC devices is also presented.

CD MDM05

Model Drainage Manual 2005

The manual has been developed to provide the designer with a basic working knowledge of hydrology and hydraulics complete with example problems. All basic design elements are included such that the designer can design highway drainage with minimal assistance.

CD RR

Roadside Reminders

This CD contains a movie of a presentation prepared by FHWA. The presentation provides a strong message on the number of motorists that lose their lives on our highways and emphasizes key areas that safety agencies can focus on to save lives. It makes it clear that just one agency alone cannot accomplish our goal of reducing our nation's fatality rate; it must be a combined effort by many safety agencies that incorporates education, engineering, enforcement, and emergency response.

New Publications

Location

Title

31 CQHM *Construyendo Pavimentos de Calidad de Mezcla Asfáltica en Caliente*
Spanish version of Constructing Quality Hot Mix Asphalt Pavements - Troubleshooting Guide/Construction Reference.
 A must-have resource for HMA Paving Operators and Superintendents. Often, when constructing Hot Mix Asphalt pavements, a problem arises for which the solution is not readily available and which is thus overlooked at the expense of quality. No longer. This handy guide fits into your coat pocket or glove compartment and will help you in identifying possible solutions to a number of potential problems that may occur during paving operations. Easy-to-read format makes problem solving simple and quick.

40 DPR

Deep Patch Road Embankment Repair Application Guide

Provides an application guide that describes the background, performance, design, and construction details of the deep patch road embankment repair technique. Also details a method for designing deep patches.

40 VCT

Vehicle Cleaning Technology for Controlling the Spread of Noxious Weeds & Invasive Species

This publication summarizes the concepts for removing seeds from vehicles and equipment to control the spread of noxious weeds, invasive species, and disease. Many silvicultural and land management activities on national forest land involve moving vehicles and equipment at off-road locations. As a result, seeds and spores can be picked up, transported, and transplanted over great distances.

85 HIC

How to Improve Conditions for Pedestrians: A Handbook for Colorado Transportation Management Associations

This handbook is designed to assist Transportation Management Associations (TMAs) in addressing pedestrian issues within their service area. With many areas suffering from traffic congestion, walking increasingly becomes a viable substitute for a commute vehicle trip for those who live near work or school or for short vehicle trips.

New Videos

Location

Title

V50 LOTO

Lock-Out/Tag-Out Safety Training for Employees

This program can help you easily train your employees on proper lockout/tagout procedures, as required by OSHA under 29 CFR Section 1910.147. Focuses on procedures from shutdown to start-up making it easy to combine with your existing training program, or use for retraining as mandated by OSHA.

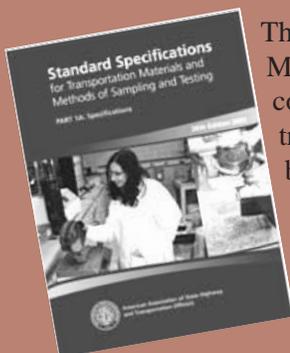
V50 TSS

Trenching & Shoring Safety

Help your employees avoid accidents by teaching them safe excavation-site procedures. This in-depth video focuses on OSHA-regulated safety measures such as protection from hazards with water accumulation, hazardous atmospheres, and design of support, shield underground installations, access and egress exposure to falling loads, stability of adjacent structures, protection from loose rock or soil, inspections design of sloping, and benching systems.

NEW: Standard Specifications for Transportation Materials and Methods of Sampling and Testing

26th Edition and Provisional Standards, 2006 Edition



The Materials Book and AASHTO Provisional Standards are now sold as a set. The 26th Edition Materials Book contains 415 materials specifications and test methods commonly used in the construction of highway facilities. The specifications have been developed and maintained by transportation departments through participation in AASHTO's Subcommittee on Materials. The book edition is organized in two volumes - *Materials* and *Testing*, and each volume consists of two books. AASHTO Provisional Standards includes an additional 41 provisional standards. The Materials Book is available to members for \$575 and \$680 for non-members. To order, call Customer Service at 1-800-231-3475; Item Code: HM-26-M. The table of contents can be downloaded at: https://bookstore.transportation.org/item_details.aspx?ID=384.

In Memoriam

Norm Rutherford

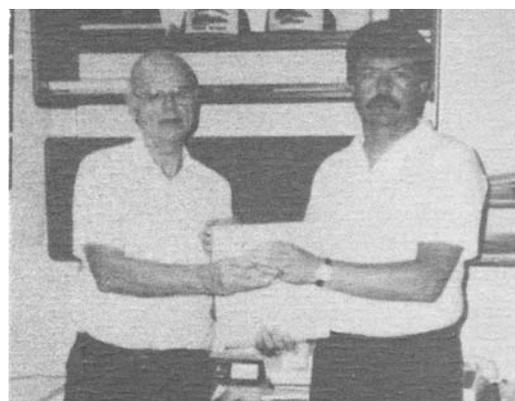
Norm Rutherford, 80, passed away at his home in Lakewood August 5, 2006 after a short battle with cancer. He is survived by his wife Corlee, son Gary & wife Ann, daughter Julie Mullen, two grandsons Robert Mullen, Adam & wife Catherine, and two great grandsons, Sterling & Dalton.



Norm Rutherford, Suzan Hutchinson, and Darrell Fontane (left to right) of the original Colorado LTAP center at Colorado State University in Ft. Collins.

Colorado LTAP started as the Transportation Information Center part of the Colorado Transportation Information Program (COTIP) at Colorado State University in 1986.

Norm Rutherford became the first *Program Manager* of that program upon retiring from the Federal Highway Administration after 37 years. He worked to continuously improve the original LTAP program and to expand transportation technology sharing for local agencies. In his 6 years with the program, Norm was manager, training coordinator, and field agent. He also developed and coordinated our original *Road Scholar* program.



Norm Rutherford presents Jim Wright with prizes as one of the Technology Sharing Award winners in 1986.

You will be fondly remembered and missed by all.

PAVEMENT PRESERVATION

CHECKLIST SERIES



This continuing series of pocket-size checklists

details the steps involved in each of several preventive maintenance processes (EX: chip seal application, thin hot-mix asphalt overlay, etc.).

Convenient references for maintenance personnel and inspectors, these hands-on booklets spell out requirements for document review, equipment inspections, weather conditions, surface preparation, application, traffic control, and more for each maintenance strategy.

- There are **7 NEW** checklists available:
- #7 Diamond Grinding Of Portland Cement Concrete Pavements
 - #8 Dowel Bar Retrofit For Portland Cement Concrete Pavements
 - #9 Partial Depth Repair Of Portland Cement Concrete Pavements
 - #10 Full Depth Repair For Portland Cement Concrete Pavements
 - #11 Hot In-place Asphalt Recycling Application
 - #12 Cold In-place Asphalt Recycling Application
 - #13 Slurry Seal App.

To obtain **FREE** copies of these handbooks, contact Colorado LTAP. You can also view or download all 13 Checklists from FHWA's website at: <http://www.fhwa.dot.gov/pavement/preservation/PPCL00.cfm>.

Where Am I ?

On a recent LTAP trip around Colorado, my trusty Jetta bounced me through this "shortcut". The person to most closely identify where I am or where I'm headed will receive a FREE registration to an upcoming 1-day LTAP class. For more clues, go to the Colorado LTAP website at <http://ltap.colorado.edu>.



SIMPLIFIED GUIDE TO INCIDENT COMMAND

Transportation professionals are more likely than ever to become involved in incident response and recovery. Responses to such events are often managed through the *Incident Command System (ICS)* approach. Because many transportation professionals may be unfamiliar with the ICS approach, FHWA recently published the ***Simplified Guide to the Incident Command System for Transportation Professionals.***

(FHWA-HOP-06-004)

This guide was designed to introduce ICS to stakeholders who may be called upon to provide specific expertise, assistance, or material during highway incidents but who may be largely unfamiliar with ICS organization and operations.

Stakeholders include transportation agencies, companies involved in towing and recovery, as well as elected officials and government agency managers at all levels.

An electronic version of the guide is available in .pdf and html formats, at the FHWA Traffic Incident Management website: www.ops.fhwa.dot.gov/incidentmgmt/publications.htm

For more information, contact Laural Radow: laurel.radow@fhwa.dot.gov

Controlling Roadside Invasive Species

How Crews Can Help Protect the Environment

A training video to help road maintenance crews recognize and control invasive plants has been developed by the U.S. Forest Service in partnership with the Federal Highway Administration and other agencies.

The video, titled *Dangerous Travelers: Controlling Invasive Plants Along America's Roadways* outlines the best management practices that road crews should be following in their day-to-day operations, according to a fact sheet on the effort. Best practices include how to work with botany professionals for plant identification, developing inventory systems, mapping infestations, mechanical removal, herbicide treatments, weed-free products, maintenance techniques to reduce risk of spreading weeds, and equipment cleaning.

"Targeting invasive species is one of the Forest Service's top priorities," the fact sheet said. "In the western United States alone, 17 million acres have been taken over by invasive species. And, the number of acres is growing. It is estimated that an additional 4,600 acres are taken over by noxious weeds every day," the document stated.

Road maintenance crews are the nation's "first responders," the fact sheet said, providing early detection and rapid response to new infestations of invasive plants that could be spread quickly along highway corridors.

The video is the first in a new series of videos on best management practices for invasive species prevention. It also will be part of a series of five videos that cover maintenance practices for unpaved roads titled *Forest Roads and the Environment*.

From a materials perspective:

The video discusses the fact that our aggregate pits can often be a means of transmission for the spores/seeds of noxious weeds. You should encourage your materials suppliers to control any weeds on their property, particularly in the stockpiles that will be used on your projects.



The "Kudzu" plant can grow about 1 foot per day, quickly overtaking natural habitats and destroying native ecosystems. Here is a picture of an area that has been overtaken by this plant. (From Bonnie Harper-Lore's presentation on Invasive Species and also shown in the "Dangerous Travelers" video.)

The above picture adequately demonstrates the need to control harmful species and the video described would be a good educational tool for field staff. The 26 minute video would fit nicely into future roadway maintenance related training sessions.

More information is available through the invasive species program website at, <http://www.fs.fed.us/invasivespecies> or by contacting: USDA Forest Service, San Dimas Technology and Development Center, 444 East Bonita Avenue, San Dimas, Calif. 91773, (909) 599-1267.

The *Dangerous Travelers* video can be accessed and downloaded at <http://www.fs.fed.us/invasivespecies/prevention/dangeroustravelers.shtml>

Colorado LTAP's free lending library also has copies of this DVD video available for loan to local agencies.



From a pavement perspective:

The more these invasive species grow, the greater the amount of resources that will have to be directed toward their control. (Drivers have to be able to see signs to maintain a safe driving environment.) This means even less money for pavements and pavement preservation. It will be less expensive to catch these problems early than have to deal after they've gained a strong foothold.

Upcoming Events

Upcoming Training

2006 FALL COURSES

NOTE: Please contact the Colorado LTAP office for an updated schedule, or check online at <http://ltap.colorado.edu>.

Road Scholar Core Classes

Drainage

October 3, 2006 - Durango
 October 5, 2006 - Glenwood Springs
 October 11, 2006 - Pueblo
 October 12, 2006 - Thornton

Safety on the Job

November 2, 2006 - Greeley
 November 9, 2006 - Glenwood Springs
 November 13, 2006 - Durango
 November 15, 2006 - Pueblo

Road Scholar Electives

Asphalt Mix Design

September 14, 2006 - Castle Rock

Heavy Equipment Training

Grand County, CO (3-days, \$120)
 October 2-6, 2006 - Granby

Easy Methods of Estimating Materials for Roadway Projects

October 30, 2006 - Denver
 October 31, 2006 - Pueblo
 November 2, 2006 - Grand Junction

Small Bridge Inspection

November 15, 2006 - Thornton
 December 5, 2006 - Grand Junction
Plus: Pueblo & Durango to be scheduled.

Roadway Safety Fundamentals

December - Denver
 December - Grand Junction

Remember!

You can register *online* at:
<http://ltap.colorado.edu>

Supervisory Skills Classes

Who's Coming Thru the Door Today?

Dealing With People
 September 13, 2006 - Glenwood Springs

Successful Employees Make Successful Supervisors

October 19, 2006 - Denver

Ethics for New Supervisors

November 14, 2006 - Grand Junction

Developing the Leader Within

December 8, 2006 - Glenwood Springs

Conferences

West Slope Snow & Ice Conference

September 6-8, 2006
 Gunnison County Fairgrounds

APWA Snow & Ice Conference

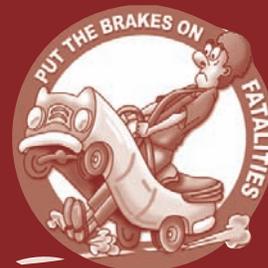
September 26-28, 2006
 Holiday Inn, Estes Park
 Visit <http://www.westernsnowandice.com/> for registration information.

Annual Local Roads Conference

October 25-26, 2006
 Rapid City, SD
 Contact Colorado LTAP for registration info.

CCI 24th Annual Fall Conference

November 27-29, 2006
 Sheraton Hotel, Colorado Springs
 For registration and information, visit CCI online at: <http://www.ccionline.org>



Each year 42,000 Americans are killed on our Nation's Roadways. **Imagine... a day with ZERO traffic fatalities.** You can become involved to promote the reduction of fatalities by utilizing resources and information available on the "Put the Brakes on Fatalities" website at: brakesonfatalities.org Use this information to initiate and create your own event or program. Mark **October 10, 2006** on your calendars as "Put the Brakes on Fatalities Day". Change your driving habits and encouraging others to do the same. Tell your family, coworkers, and friends, AND...

Drive as if Your Life Depends on It

Did You Know?

42,000 traffic fatalities occur every year.

That's about 115 fatalities every single day

— one fatality every 13 minutes!



UPCOMING CLICK, LISTEN, LEARN PROGRAMS

September 28 *Ready, Set, Plow: Tips & Tasks for Preparing Your Fleet for Snow Season*
October 11 *Context Sensitive Design*
October 26 *Qualifications Based Selection (QBS) for Public Agencies*
November 9 *S.O.S. for Sidewalks*
December 7 *Developing an Effective Safety Program*
 For more info on the Click, Listen, Learn program, visit <http://www.apwa.net/Education/CLL/>

NEW FREE PUBLICATIONS

The following is a list of **FREE publications** available to Colorado local government agencies in the transportation field. Quantities are limited and available on a first-come, first-serve basis.

Contact the Colorado LTAP office to put in a request for these free publications.

**Check out our website for additional free materials not listed here.

<http://ltap.colorado.edu>



F50 FTM ***CDOT Flagger Training Manual, 2006 Edition***

This new manual replaces the 1994 version. It is designed to help a flagger learn the job, and prepare for the flagger certification exam. It tells you WHAT your job is, how you will perform the job duties, what you wear, and how you fit into the overall temporary traffic control system. There have been specially designed review exercises included in the manual.

F50 BTC ***Basic Traffic Control for Utility Operations: Guide to Temporary Control for Utility Operations***

Provides a quick reference to utility companies working with temporary traffic control. It covers: introduction to utility operations, applicable national standards, fundamentals of TTC, pedestrian considerations, component parts of a temporary traffic control zone, traffic control devices, minimum devices needed, typical applications/practices common to utility operations, documentation, and closing.

F85 CBM ***Colorado Bicycling Manual, 7th Edition***

This compendium of bicycling information has been prepared by the CDOT Bicycle pedestrian Program. It is designed to encourage the use of bicycles for transportation by providing information about bicycling in Colorado, and to encourage the development of facilities and programs to accommodate safe and efficient travel options.

FCD RRR ***Riparian Roads and Restoration: An Electronic Short Course about Roads and Riparian Areas***

This CD addresses minimizing impacts on riparian/wetland areas and restoring or improving riparian wetland ecosystem health.

F22 STT ***Summary of Trenchless Technology for Use with USDA Forest Service Culverts***

Summarizes trenchless technologies most appropriate for Forest Service roadway culvert operations. It emphasizes techniques for replacing or rehabilitating corrugated metal pipe culvert, 18 inches diameter. Covers trenchless technology versus open-cut excavation; pipe inspection; pipe maintenance; pipe rehabilitation; pipe replacement; and new pipe constructions.

Colorado LTAP

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