



Colorado LTAP

Importance of Proactive Right of Way Management Practices on Roadways How One Local Town is Handling These Issues

By John Baker, Town of Snowmass Village, LTAP Advisory Committee Member

With the growth and development demands on our roadways, it is critical that we proactively manage our right of ways to help preserve public safety, space for maintenance, access, and future growth of our roadways systems. We are encountering a greater number of obstructions, accesses, and utilities that are causing issues within the right of ways that limit us in trying to maintain positive drainage, store snow, allow space for vehicle run outs, address site distance concerns, and look at future roadway growth. It has become very important to identify the public right of ways and manage the right of ways with proactive regulations. In the Town of Snowmass Village, we are using a permitting system that covers all aspects of work in the right of way from road cuts/excavation, to accesses, to obstructions, to parking, and material storage. Over the years, we have developed and adopted some useful practices.

- Have in place an extensive management plan and permitting system to help educate and deal with all work being performed in the right of way. Work closely with the building and planning departments to have sign offs on all of their permitting, approvals, and Certificates of Occupancy.
- Require all contractors and utility companies to have constructive management plans & permits in place

while working within the right of way. This should include certified traffic control, material storage, dust and mud control of the roadway surfaces, and sign off from police and fire departments.

- Require that there be no improvements above the road surface within 10' of the back of curb or pavement to include rocks, signs, lights, trees and bushes, berms, and above ground utilities (like gas meters, transformers, fire hydrants). This helps with issues such as roadway snow storage, damage to snowplows, vehicle run out, and site distance problems.



LOOK INSIDE
Natural Erosion Control Techniques

- The maximum access of driveways allowed is 20' wide and only one access or curb cut per property.
- There should be positive drainage away from the roadway to keep surface water from draining onto public roads. All uphill driveways must have a swale/valley pan or catch basin and a minimum of an 18" drainage culvert with a flared end section. These requirements prevent the discharge of water from the driveways onto the roadway.

- We have implemented a seasonal weight limit of truck traffic on secondary roads from March 15th to June 15th. By doing this, we are helping to protect the roadways from spring thaw and structural damage.
- It is very important to have an asset

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Routing Slip

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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.

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Director's Note

Spring is upon us! Included are a few articles to help you prepare for a busy construction season. Colorado LTAP is switching to a fiscal year cycle, and in doing so are currently planning for the 2009 - 2010 training year. Our Advisory Committee has suggested providing some Train-the-Trainer courses for local agencies to develop on-staff trainers. Please let us know as soon as possible if there are any specific topics you would like us to offer as a Train-the-Trainer program.

As the new secretary of the Colorado Association for Road Maintenance (CARMA), I would be remiss if I did not remind you all of the upcoming *Spring Street Conference* in

Grand Junction. For just \$95, you get 2.5 days of workshops, a lunch, vendor displays, outdoor equipment, social hour, horseshoe tournament, and poker night! There will be three dynamic guest speakers this year, and sessions in three tracks: Safety, Operator, and Management. The conference is April 15 - 17, 2009. A pre-conference golf tournament will also be held on April 14th. More information and a full agenda is available at Colorado LTAP's website: <http://ltap.colorado.edu>.

Happy Spring!

Renée Koller

In honor of our recent Math classes - some Math related thoughts...

Quotes

"There is no Royal Road to Geometry."

- Euclid

of

"Like the crest of a peacock so is mathematics at the head of all knowledge."

- An old Indian saying.

the

"The length of your education is less important than its breadth, and the length of your life is less important than its depth."

- Marilyn vos Savant

Day

"Perfect numbers like perfect men are very rare."

- Descartes

"Mathematics is a more powerful instrument of knowledge than any other that has been bequeathed to us by human agency."

- Descartes



<http://ltap.colorado.edu>

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

Natural Erosion Prevention Techniques

By Justin Pelletier, New Hampshire LTAP

This article discusses ways to prevent erosion by using natural techniques as opposed to modern construction. Natural techniques do not involve the use of steel, concrete, or other synthetic material which are commonly used in construction. Instead, natural techniques make use of living plants and trees as the source of anchoring soil. This helps drier soil areas retain water instead of allowing it to run off. It also helps to remove and evaporate excess water in damp areas to prevent dangerous unstable soil.

Soil Bioengineering

Soil bioengineering is the use of live cut brush layers as an alternative to reinforced or mechanically stabilized earth (MSE). Live cut brush, woody stems, and roots are used to create stable soil, which is quite resistant to erosion. The live cut stems and branches provide immediate reinforcement. Secondary stabilization is created by rooting, which occurs along the length of buried stems. Three techniques of soil bioengineering are *brush layering*, *live staking*, and *live fascines*. This article will discuss each technique.

Brush Layering

Brush layering consists of inserting live cut branches or brush between successive layers of compacted soil. This works best in conjunction with the construction of a *fill slope*. Make branch cuttings 1/2 - 2 inches in diameter. Leave the side branches intact for installation.

Follow these steps when installing brush layers:

- Starting at the toe of the slope, excavate benches horizontally, on the contour, or angled slightly down the slope, if needed to aid drainage. Construct the bench 2 - 3 feet wide.
- Slope the surface of the bench so that the outside edge is higher than the inside.
- Place live branch cuttings on the bench in a crisscross or overlapping configuration.
- Align the branch growing tips toward

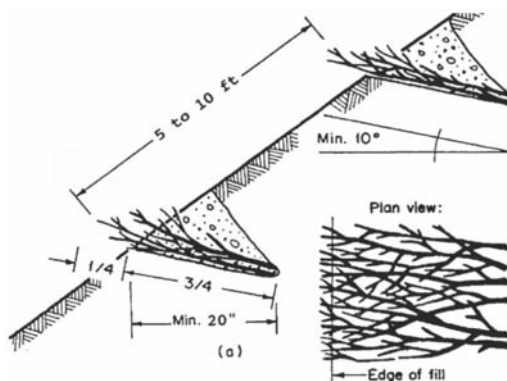


Figure 1: Brush Layering Spacing and Slope Requirements

the outside of the bench. Place backfill on top of the branches and compact it to eliminate air spaces. Make sure the brush tips extend slightly beyond the fill to filter sediment.

- Backfill each lower bench with the soil obtained from excavating the bench above.
- Space the brushlayer rows 3 - 5 feet apart, depending on the slope angle and stability.
- Seeding is best accomplished between brushlayer rows when a mulch is used. Place long straw or similar mulching material between rows on 3:1 or flatter slopes. Use jute mesh or similar material in addition to the mulch on slopes steeper than 3:1. Use brush layering on relatively uncomplicated upland site conditions, and uncomplicated shoreline sites with low velocities and wave heights, or to control erosion on moderate, dry land slopes.

Live Staking

Live staking is another technique used to reduce erosion on vulnerable slopes. Live staking involves the insertion and tamping of live but dormant vegetative cuttings into the ground. If done correctly, the live stake will root and grow.

Utilize the following guidelines when selecting the stakes to be used in your project:

- Cuttings are usually 1/2 - 1.5 inches diameter and two to three feet long.
- Take cuttings from vigorous, undamaged, disease and insect free stock. Make sure the stock is either native or adapted to the planting site.

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BEST PRACTICES HANDBOOK FOR ROADSIDE VEGETATION MANAGEMENT

* UPDATED *

Maintaining roadsides for safety and aesthetics is an important issue for all levels of government. In 2000, the Minnesota LTAP in conjunction with their Local Road Research Board (LRRB) published the *Best Practices Handbook on Roadside Vegetation Management*, which has served as a valuable resource for maintenance and engineering staff and has been used widely in many states.

The LRRB and Mn/DOT have recently published update of this handbook.

The 2008 edition retains all information from the original that is still accurate. It also includes a new chapter—**“Managing Roadside Vegetation for Wildlife and Vehicle Safety”**—that reflects recent research about roadside habitats and their effects on driver safety. The new chapter’s primary conclusion is that roadside habitats can be managed to balance biological diversity and safety by selectively reducing woody vegetation without entirely removing grass habitats.

The main conclusion from the handbook is that

...continued in next column

Natural Erosion Prevention Techniques

continued from page 3...

- Materials must have side branches cleanly removed and bark intact.
- Cut the basal ends at an angle for easy insertion into the soil. Cut the top to make it square. Plant stakes with the butt ends into the ground. Make sure buds are oriented up.
- Install the materials the same day they are prepared. They must not dry out. Store materials in water or in a cool, shaded, and wet environment.
- Cut and install plants when they are dormant; that is, prior to bud swell and leaf emergence in the spring and after leaves have turned color and fallen off in the fall. Periodic pruning or replanting may be required.

When installing live stakes, follow these steps:

- Tamp the live stake into the ground at right angles to the slope face.
- Install live stakes 2 - 3 feet apart using triangular spacing. Place stakes with 2 - 4 stakes per square yard.
- Make sure the buds are oriented up.
- Install four fifths of the length of the live stake into the ground and pack the soil firmly around it after installation.
- Remove and replaced stakes that split during installation.
- An iron bar can be used to make a pilot hole in firm soil. Drive the live stake into the ground with a dead blow hammer (hammer head filled with shot or sand).
- Bare slopes may be seeded and mulched.

Figure 2 illustrates what a stake should look like at the time of installation. It also depicts the spacing between stakes and other appropriate uses of live stakes.

Live Fascine

Live fascines, or wattles, are long bundles of live dormant branch cuttings bound together into a long, cylindrical structure. Live fascines are inexpensive to construct and install, and offer immediate protection from surface erosion when securely anchored. They are a very effective soil stabilization technique once roots are established. The installed fascines reduce the overall slope into a series of

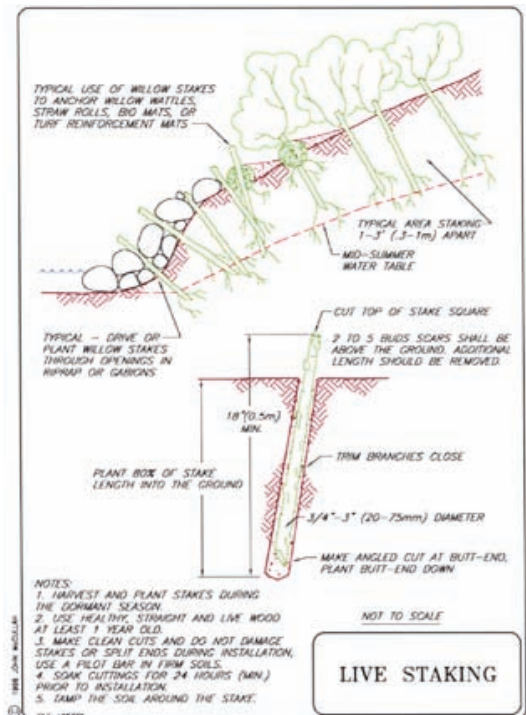


Figure 2: Live Stake Spacing and Stake Size Requirements.

smaller slopes by acting as mini-dam structures that hold fill soil on the face of a stream bank. Typical wattles along a stream embankment are shown in Figure 3.

Install live fascines as follows:

- Prepare the live fascine bundles and live stakes immediately before installation. Do not allow the bundles to dry out.
- Beginning at the base of the slope, dig a trench on the contour just large enough to contain the live fascine. The trench will be 12” to 18” in width depending on the angle of the slope to be treated. The depth will be 6 - 8 inches depending on the individual bundle’s final size.
- Drive the dead stout stakes directly through the live fascine every 2 - 3 feet along the length. Use extra stakes connections or bundle overlaps. Leave the top of the stakes flush with the installed bundle.
- Live stakes are generally installed on the downslope side of the bundle. Drive the live stakes below and against the bundle between the previously installed dead stout stakes. Allow the live stakes to protrude two to three inches above the top of the live fascine. Place moist soil along the sides of the live fascine. Leave the top

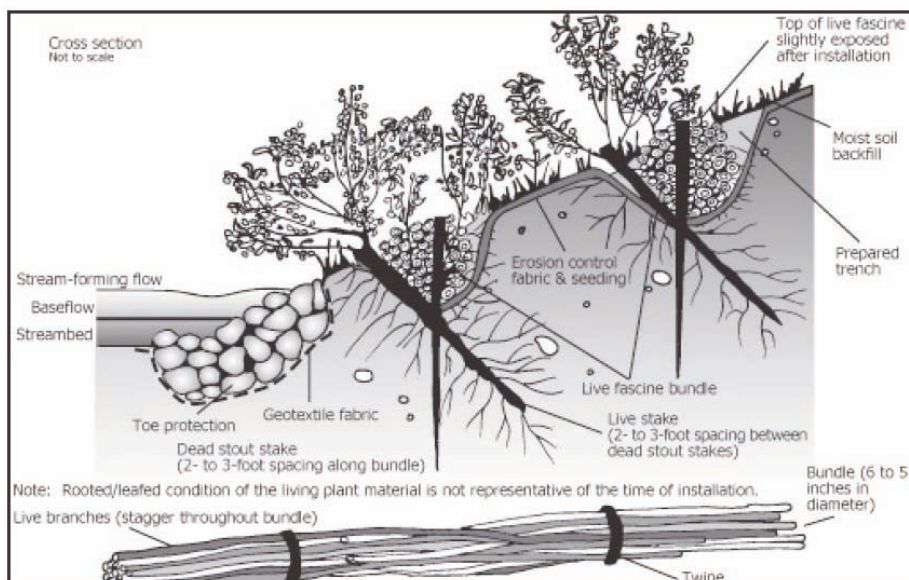


Figure 3: Typical Wattles Along a Stream Embankment

of the fascine so it is slightly visible when installation is complete.

- Repeat these steps at intervals on the contour or at an angle up the face of the bank to reach the top of the slope. Place one or two rows over the top of the slope if possible.

- Place long straw or similar mulching material between rows on 2.5:1 or flatter slopes. Place jute mesh or similar material on slopes steeper than 2.5:1 in addition to the mulch. The slope may be seeded before mulching.

Consider the following guidelines when installing live wattles:

- Cuttings tied together to form live fascine bundles vary in length from 5 - 30 feet, depending on site conditions and limitations in handling.

- Make completed bundles 6 - 8 inches in diameter with all of the growing tips oriented in the same direction. Stagger the cuttings in the bundles so that the tops are evenly distributed throughout the length of the fascine.

- Fascines may be secured with live stakes or dead stout stakes. Make sure live stakes used to anchor the fascines are 2.5 feet long in *cut slopes* and 3 feet long in *fill slopes*.

- Make sure the dead stout stakes used to secure the live fascines are 2.5 feet long, untreated 2 x 4 lumber. Cut each length again diagonally across the 4" face to make two stakes from each length. Use untreated twine for tying the bundles.

- The best planting times are in late fall at the onset of plant dormancy or in early spring before growth begins. Periodic pruning or replanting may be required.

Contact the Natural Resources Conservation Service (NRCS) or the Soil and Water Conservation District (SWCD) in your county for more info.



NH LTAP, UNH Technology Transfer Center, Technical Note #12, Winter 2008.

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Live Staking with Willow Cuttings. Berkeley, CA: Urban Creeks Council of California, 2002.

ARE YOU INTO BLOGGING?

The *National Journal Group* has launched a **transportation blog**.

Their site has several "expert blogs" on hot topics including Health Care, Economy, Energy, Transportation, and National Security. Under Transportation, NationalJournal.com's Lisa Caruso leads a discussion among key policy makers and other experts on the issues facing the nation's transportation systems and infrastructure.

National Journal Group is a leading source of nonpartisan reporting on the current political environment and emerging policy trends.

<http://transportation.nationaljournal.com/>

ROADSIDE VEGETATION MANAGEMENT HANDBOOK

continued...

successful roadside vegetation management depends on an integrated approach. This includes a wide variety of best management practices to address the many issues involved.

Download a PDF version of the **Best Practices Handbook for Roadside Vegetation Management** at: www.lrrb.org/pdf/200820.pdf

**Need a little
Extra cash?
Your
knowledge
is worth
something.**



We would like the recipients of our newsletter to benefit from all the knowledge local transportation agencies have in the areas of roadway maintenance, design, and construction. We are offering **\$50.00** to city, town, or county employees that submit an article to be published in our newsletter. Articles can address current methods and procedures, best practices, innovative techniques, or projects in the Public Works industry. *Photos are encouraged.* To submit articles and/or photos, include author name and contact info, and mail or email to

cltap@colorado.edu

Did You Know?

Composting yard waste
recycles nutrients back
into the yard and saves
landfill space.

Composting reduces yard
waste volume by
50% - 75%!

Spring Yard Cleanup Compost Waste

By Carl Wilson, Denver County
CSU Cooperative Extension horticulture agent

One of the first yard tasks of the growing season is to clean up garden debris left from last year. This generally includes leaves blown between shrubs and into corners of the yard. Other materials are dry, matted grass raked up from shaded north exposures where snow has lain for long periods. Add this to flower and vegetable plant remains from last year's gardening, as well as some woody tree and shrub prunings. These wastes cleaned up from many yards, adds up to a heavy load in our landfills.

Denver Solid Waste Management finds that one-third to one-half of residential waste collection is plant yard waste, depending on the time of year. This amounts to thousands of tons per year going into landfills. What use can be made of this natural resource?

Denver and other communities have started fall leaf collection efforts. Denver Recycles reports that the City collected some 350 tons of leaves last fall. This part of our yard wastes are composted and sold as broken-down organic materials for soil improvement. It may make more sense to do this than to mine peat and transport it for gardeners to use as a soil amendment. Soil amendments are mixed into soil to break up our heavy clays and retain moisture in sands for better plant growth. Nationally, only a few communities, such as Oceanside, California, are collecting yard plant wastes for composting year-round.



Where does this leave you with your yard wastes from spring clean-up? In Colorado, the alternative to filling landfills is to compost in your backyard. The best, most environmentally friendly way to handle plant wastes from spring yard cleanup is to bag and save them for a few weeks. This first spring clean-up of the year provides a lot of "browns" (dried

plant materials, such as leaves and dead grass) but not many "greens" (fresh plant material). Equal amounts of both type of yard wastes are needed for good composting.

If you save these first "brown" wastes of spring for a few weeks, the spring flush of "green" yard wastes from lawn mowing and spring flower deadheading soon will be upon us. By then, composters will be looking for "browns" to add to the compost mix. Saving the first "brown" plant wastes of spring makes sense if you are beginning to compost in your yard this year.

Beginning composters in Colorado can obtain specific guidelines to composting by contacting their county Colorado State University Cooperative Extension office. Ask for a fact sheet titled "Composting Yard Wastes."

Photograph courtesy of Judy Sedbrook.



You can access a
Composting Fact Sheet
on the CSU Extension
website at:
[www.ext.colostate.edu/
Pubs/Garden/07212.html](http://www.ext.colostate.edu/Pubs/Garden/07212.html)

Web Based Training Opportunities



Public Infrastructure Inspector Study Guide
May 6 - Part 1 May 13 - Part 2 May 20 - Part 3

Public Fleet Manager Study Guide
June 3 - Part 1 June 10 - Part 2 June 17 - Part 3

For more information visit: <http://apwa.net/Events/>



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/ltaplibrary>

New CDs

CD DDD *Doing Due Diligence: What Lawyers Want Public Works Directors to Know*
Why is it important to do due diligence? You reduce risk for your agency. Are your current practices as comprehensive as they should be? Learn how due diligence can help you avoid common complications that occur daily in public works projects both in the planning and delivery stages. From APWA's Click, Listen & Learn online training program - this topic was presented on July 22, 2004. Handout materials are included on the disk.

CD AGA *Application of Ground Anchors and Soil Nails in Roadway Construction*
This CD contains 3 programs to assist public works professionals in becoming leaders within their communities. Learn how to create a community awareness plan that builds support for infrastructure projects, assures taxpayers and elected officials that funding is wisely spent, attracts positive attention from the media and increases employee morale. It also will teach you how to get along with elected officials, engage the public, gain support for critical projects and enhance your city's image and reputation.

New DVDs

DVD BTS *Bucket Truck Safety*
This DVD shows your bucket truck operators where the hazards are ... and how to avoid them.

DVD CRI *Conflict Resolution- Industrial*
Whenever two or more people come together, eventually they will experience conflict. Give your employees the skills to work toward a solution in a productive, positive way. Techniques and strategies to limit the damage and disruption are discussed in this straightforward video as well as: Consequences of conflict and how it can disrupt the workplace, The common causes of workplace conflict and how to recognize them, Diffusing disagreements before they get out of hand, How collaboration can be a tool in resolving conflicts.

DVD FAS *First Aid Safety*
In most facilities, not a day goes by without some type of injury occurring. It can be as minor as a small cut or as serious as a chemical burn. But any injury can be painful and affect an employee's work performance - as well as their life off the job. This video demonstrates to employees that knowledge of basic first aid can often limit the severity of any type of injury, or even prevent a death. This video includes: Cuts and bleeding; Muscle pulls and sprains; Burns; Broken bones; Shock; Artificial respiration / CPR; and AEDs (Automated External Defibrillators).

DVD ST *Slips, Trips, And Falls: Updated*
Slips, trips, and falls account for more workplace injuries every year than any other type of accident. Teach your employees to recognize, prevent, and avoid potentially hazardous situations. This program covers: - Why slips, trips, and falls occur; fall physics - Common causes of accidents (wet and oily surfaces, ice, poor visibility, stairway, ladder, storage hazards); how to fall safely - Techniques to avoid slips, trips, and falls - and The importance of safety shoes.

New Publications

- | Location | Title |
|--|---|
| 24 GCO | <i>Guide to Concrete Overlays Sustainable Solutions for Resurfacing and Rehabilitating Existing Pavements</i> |
| This Guide to Concrete Overlays (second edition) was developed to fill a “knowledge gap” identified in the National Concrete Pavement Road Map, a coordinated, long-term research plan for improving concrete pavements. | |
| 40 ATC | <i>At the Crossroads: Preserving Our Highway Investment</i> |
| This book, which was written to stimulate serious discussion among highway agencies, legislators, motoring organizations, the highway contracting community, and highway advocacy groups, comes at a time when the nation's public road systems are facing serious deterioration and funding problems. | |
| 40 BMC | <i>Best Management Practices for Chemical Treatment Systems for Construction Storm water and Dewatering</i> |
| Chemical treatment systems (CTS) are implemented in areas where traditional, physical erosion and sediment control practices will not meet water quality goals for construction site runoff. The purpose of CTS is to reduce the amount of suspended sediment which would be released using conventional erosion control systems. The primary mechanism is the introduction of chemical flocculants into runoff, resulting in a binding of the suspended clays and silts together into larger particles which settle more quickly or can be filtered from the stormwater. Flow control through CTS is of vital importance for the proper dosing of stormwater runoff. The overall objectives of this book are twofold. First, it is designed to provide a technically credible basis for best management practices for the use of CTS for turbidity reduction on road construction projects. Secondly, it is designed to identify the most important variables to address when selecting chemical treatment best management practices for a particular site. | |
| 50 BP | <i>Back Protection: Defending Your Safety Zone</i> |
| This employee handbook is one of a series of fully-illustrated employee handbooks. It covers: Introduction; Back Basics; Stay in the Game; The Zone Defense; Get a Grip on Power; Lifting; Safety; Repetitive Stress; Get Flexible; Mechanical Advantage; Summary; Quiz . | |
| 20 HCS | <i>Low Cost Treatments for Horizontal Curve Safety</i> |
| Designed to provide practical information on low-cost treatments that can be applied at horizontal curves to address identified or potential safety problems. It describes multiple treatments w/ examples; suggests when the treatment might be applicable; provides design features; information on the potential safety effectiveness and costs. The publication concludes with a description of maintenance activities that should be conducted to keep the treatments effective. FREE copies are also available from the Colorado LTAP library or from the FHWA Report center online. Download the PDF version at: http://safety.fhwa.dot.gov/roadway_dept/pubs/sa07002/index.htm . | |
| 60 PIS | <i>Polyurethane Resin (PUR) Injection for Rock Mass Stabilization - 2008</i> |
| FHWA recently investigated the application of polyurethane resin (PUR) injection as a rapidly deployed, cost-effective ground and structure stabilization method. Application objectives included the preservation of historic, cultural and other environmentally sensitive natural and man-made features, while maintaining the original visual characteristics and aesthetic appeal. Full-scale PUR demonstration projects have occurred throughout historic areas of Colorado. Based on the “lessons learned” from the investigations, application guidance has been developed for the selection of polyurethane resin products and injection methods to (1) stabilize failing rockmasses (e.g., rock slopes, unique rock promontories, escarpments), and (2) preserve aging and/or deteriorating man-made structures (e.g., historic retaining walls, archeological structures). | |

Proactive Right of Way Management Practices

How One Local Town is Handling These Issues

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management and inventory system of the roadway system in place. This helps to identify and manage all of the right of way assets like pavement surfaces, culverts, guardrails, signs, retaining walls, and bridges.

Having a proactive right of way management system in place will help with day to day maintains, future demands of your roadways, tort liability, and safety. In developing right of way management plans, we have found it very useful to work with and learn from other towns, counties, and state highway departments to see what they use for their regulations and permitting practices. A good, positive, proactive management plan can save a lot of future headaches, money, and time, and allow your maintenance personnel to be more productive and safe in their day to day operation of the roadways.



Resources on Right of Way Issues

CDOT Right of Way Manual Page

The purpose of the CDOT Right of Way Manual is to provide guidance in all phases of acquiring, managing and disposing of

real property. It is based on federal and state statutes, rules, policies, and procedures related to the real estate, condemnation, and relocation. By this manual CDOT strives to ensure the use of uniform procedures and the compliance with federal and state law to achieve an effective right-of-way program. The acquiring agency is responsible for adhering to this manual. Their Right of Way Manual is a living document, and changes to them are posted quarterly (January, April, July, October) unless a substantial change is made which requires immediate updating. It is the responsibility of the user to check for revisions.

http://www.dot.state.co.us/ROW_Manual

Colorado LTAP Library:

Understanding the Value of Your Right of Way (CD UV)

The Nature of Roadsides and the Tools to Work with It (Book, 40 NOR)

Highway Utility Issues (CD HUI)

Why Manage the Public Right-of-Way? (Free Publication, F12 WMPRW)

The LTAP library is searchable online at: <http://ltap.colorado.edu/ltaplibrary/>

RESOURCES FOR FLEET MANAGERS

The *Rocky Mountain Fleet Management Association* (RMFMA) has a website that provides some valuable information and a great opportunity for information sharing. The website has an area where people can post and respond to questions; post and look for equipment for sale; and advertise and search for jobs.

Non-members can view the information that is posted, but in order to reply to questions, post jobs or equipment for sale, or ask your own question, you must be a member. There are two different levels of membership, Regular and Associate. The two levels serve different needs and sizes of agencies. More information on RMFMA, including membership information and services provided by RMFMA can be found on their website at www.rmfm.org.

WorkZone

A Resource for Employers and Job Seekers

Colorado LTAP often get requests from employers and job seekers wanting to know where they can post jobs and look for job openings. The American Public Works Association (APWA) has a website to benefit both job seekers and employers looking for new hires. Their website, *WorkZone*, is at www.apwa.net/Workzone/index.asp.

Employer

The WorkZone website allows employers to go online and enter information about their job openings including description, location, and pay. There is a fee for posting job openings. The fee for posting an ad on the WorkZone site is \$3.00 per word with a

\$150 minimum. The ad will run for 45 days. Once a job has been posted, employers can change up to 10 words during the run time at no additional charge.

Job Seeker

There is no fee to search for jobs on WorkZone. Job seekers must set up an account, but this is free and seekers do not have to be members of APWA in order to do this. Job seekers can search by location, keywords, and job category. Job seekers can set up job agents. This allows the seeker to set specific job search criteria. Seekers will receive an e-mail once a week listing the jobs that match those criteria.



Did You Know?

The *National Fleet Management Association* offers annual **Green Fleet Awards** honoring individuals who have implemented pioneering and innovative programs to promote their company's overall "going Green" initiative. www.nafa.org

Ideas That Work Saving Your Agency Time & Money

CULVERT INLET IMPROVEMENT TO EXISTING RURAL CULVERTS BY ADDING LOW COST DROP INLETS

Town of Snowmass Village, CO

2008 You Show Us Contest
Colorado State Winner

Problem Statement:

Old culvert inlets get covered up, plugged, or lost over time, and treacherous edge drop offs are a hazard to the traveling public.

Solution:

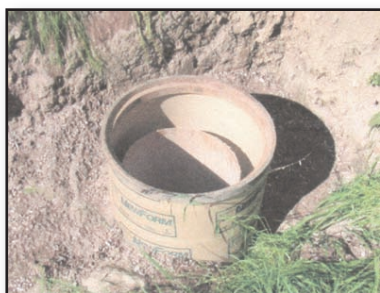
Staff designed a culvert inlet improvement program for existing rural culverts by adding low cost drop inlets. The drop culvert was designed using a sonotube, sackcrete, a steel manhole ring, and a 24" slotted lid. By adding a low cost drop culvert built in-house that is durable - heavy rain, run-off, and snowmelt will not stand a chance with this system.

Labor, Equipment and Materials Used:

- 30" Round Sonotube @ \$1.60 per ft.
- 24" Sonotube @ \$1.40 per ft.
- Sackcrete @ \$7.00 per bag
- 24" Slot Cover @ \$90.00 each
- Old Steel Sewer Riser Ring, no cost

Savings and Benefits to Agency:

The final product allows for the preservation of culvert inlets by adding protection from debris, run-off, rocks, etc. Maintenance is minimal and quick. The pictures show the safety concerns that have been addressed by installing these drop inlet devices so ditches are not as deep at the inlets, and the hazard to the traveling public for shoulder drop off or vehicle run off roadway accidents is reduced. In some areas, the improvements have reduced drop offs from ~50-inches to just 16-inches while still providing for proper drainage.



For more information, contact: Will or Scott Binegar, Town of Snowmass Village, 970-923-5110

Upcoming Events

Upcoming Training

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

Road Scholar Core Classes

Roadway Safety & WZ Traffic Control

April 20, 2009 - Thornton (FULL)
 April 21, 2009 - Fort Morgan
 April 22, 2009 - Pueblo
 April 24, 2009 - Grand Junction

Drainage

November - Loveland, Colorado Springs, Frisco, Montrose

Safety on The Job

October - Greeley, Denver, Pueblo, Montrose

Road Scholar Electives

Heavy Equipment Training

Brush, Colorado
 April 27, 2009 Classroom
 April 28-29 - In field, Group 1
 April 30-May 1 -In field, Group 2

Heavy Equipment Training

Southwest, Colorado
 August 2009

Road Materials: Soils and Gravel

September - Fort Morgan, Colorado Springs, Grand Junction

Operating a Sign Shop

October - Denver, Pueblo, Glenwood

Winter Maintenance

October - Denver, Pueblo, GJ

Low Cost Safety Improvements

November - Loveland, Colorado Springs, Grand Junction

Small Bridge Inspection

December - Ft. Collins, Castle Rock, Montrose

Public and Media Relations

December - Denver, Grand Junction

Remember!

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

Supervisory Skills Classes

Whole New World

Local & State Government Operations
 September - Glenwood springs

So You Are a Supervisor Now

Supervisory Roles and Responsibilities
 November - Castle Rock

Successful Employees Make Successful Supervisors

November - Castle Rock

Dos & Dents: Legal and Liability Issues

December - Grand Junction

Workshops

Free Flagger Certification

Tentative dates
 May 5 - Grand Junction
 May 6 - Frisco
 May 12 - Fort Morgan
 May 13 - Fort Collins

Conferences

CARMA - APWA Street Conference

April 15-17, 2009
 Grand Junction, CO
 Visit <http://ltap.colorado.edu> for more information.

APWA Management Conference

May 7-8, 2009
 Red Lion Hotel
 Quebec St, Denver
 For information visit: <http://colorado.apwa.net/?MODE=EVENTS&id=4241>



WINTER ROADS SCHOLAR GRADUATES

City of Boulder

*Dick Chaussart
 Mark Hauptmann
 Jim Bish
 Jesus Escobedo
 Abel Gonzalez
 Ralph Grimaldo
 Bob Reese
 Lonnie Stephenson
 Don Sanger
 David Meddaugh*

Arapahoe County

*Robert Garcia
 Keven Martens
 Jerry Parkison
 Virgil Halliburton*

Montrose County

*Randy Trounce
 Jeff Jeffries*

City of Lakewood

Brandon Powell

City of Evans

Bobby Gallegos

Douglas County

Ron Goss

City of Fountain

Bill Hughes

City of Grand Junction

Dan Thorne

Weld County

Jerry Joseph

City of Brighton

David Delgado

City of Windsor

Brian Rowe

City of Arvada

Rick Marino

FREE MATERIALS

F5 CI *Cave In! Trenching & Shoring Safety*

Working in trenches can be dangerous! When excavation sites are unsafe, workers risk injury or death. Protect yourself with this handbook by learning more about trench soil, trench protective systems, atmospheric hazards and safety practices for excavation work.

F5 LT *Lockout Tagout: An Open and Shut Case*

When it comes to your safety, lockout/tagout is no big mystery. This handbook includes nine basic steps that keep you safe in your work. In fact, it's so simple, it's an open and shut case. OSHA created the lockout/tagout standard to protect you from the unexpected start-up of machines or release of stored energy during service or maintenance. To protect yourself from injury, you need to know: What lockout/tagout is; When to perform lockout/tagout; OSHA's six steps for controlling sources of hazardous energy; and OSHA's three steps for safely restoring energy once your work is done. It also explains the specific steps you must follow.

F50 DDACC *Defensive Driving: A Crash Course*

Each year, thousands of people are injured or die in job-related motor vehicle accidents. In fact, motor vehicle accidents are the number-one cause of employee injuries and deaths. Most of these accidents could have been avoided simply by driving defensively. This handbook will take you on a crash course in defensive driving by explaining how to apply these techniques whenever you're behind the wheel—even when you are not on the job.

F22 USPC *10 Issues In Urban Stormwater Pollution Control*

As pollution from traditional point sources is reduced, it is clear that much of the remaining pollution in most rivers, lakes, and streams is the result of stormwater discharges from urban systems. This booklet addresses the steps that municipalities are using to adapt stormwater management practices to counteract the problem.

F50 DR *Disaster Response: Roadway Safety Awareness Program*

This Trainee Booklet illustrates Disaster Response. It contains the answers on the following questions: What is Disaster Response, and How does it differ from regular road work? What is an "Incident Command" system? What is the minimum training required for Disaster Response work? What is our role in the ICS? What special health issues arise during Disaster Response? What are some hygiene issues in Disaster Response? What is heat stress? What special safety issues arise during Disaster Response? What are recommendations for heavy equipment in unstable conditions? How do we deal with an angry public? How do we deal with emotional trauma during and after a Disaster Response? How can workers prepare to respond? What is required to wear a respirator? What is a travel health kit? What immunizations may be needed?

*The following is a list of
FREE materials
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>



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