Colorado LTAP

November 2004 *Serving local transportation agencies throughout Colorado* *Winter Issue*

Stay Awake Stay Alive

Photo courtesy of carbuyingtips.com.

The National Highway Traffic Safety Association (NHTSA) conservatively estimates that 100,000 police reported crashes are the direct result of driver fatigue each year. This results in an estimated 1,550 deaths, 71,000 injuries and $12.5 billion in monetary losses.

By Lindsay Nathaniel

Accidents occurring from sleep depravation are a growing problem. With winter quickly approaching and snow on its way, many of you are looking at a change in work schedules. This change will involve moving to night shifts to plow snow and having an unpredictable schedule that is at the mercy of the next snow storm. These kinds of changes can negatively affect the amount of sleep you get. Many of us consider sleep something that we fit into our schedules around work, meeting friends, helping our kids, etc. There has been a lot of research done, though, to show that it is important that people get enough sleep. The National Highway Traffic Safety Administration (NHTSA) believes that at least 100,000 car crashes annually, 71,000 injuries and 1,550 fatalities are the result of drivers falling asleep at the wheel. NHTSA also estimates that an additional 1,000,000 crashes are caused by driver inattention. And remember, it is thought that less than one-half of all crashes are reported. Without enough sleep, people are at risk of becoming one of these growing number of statistics of accidents occurring when one is suffering from sleep depravation.

Our bodies have a natural rhythm which determines when we feel sleepy and awake. According to the NHTSA report *Drowsy Driving and Automobile Crashes*, the sleep cycle is ingrained in us and we can not ignore it. The sleep-wake cycle is determined by homeostatic and circadian factors. The circadian pacemaker is an internal clock that goes through a cycle every 24 hours. Homeostasis is the neurobiological need to sleep. These two factors work together to create the timing of our sleepiness and wakefulness. Light and

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In This Issue

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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Return to:

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Colorado LTAP

STAFF

Yunping Xi
University Administrator

Renée Koller
Program Manager

Lindsay Nathaniel
Program Coordinator

Lydia Abarr
Office Assistant

Jeremy Goldsmith
Webmaster

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.

For more information, contact:

Colorado LTAP
University of Colorado at Boulder
3100 Marine St., A-213
UCB 561
Boulder, CO 80309-0561

Office: (303) 735-3530
Toll Free: (888) 848-LTAP

Fax: (303) 735-2968

Email:
cltap@colorado.edu

Website:
http://ltap.colorado.edu

Program Manager's Corner

The Epidemic of No Shows

Recently Colorado LTAP training courses have been realizing an unacceptably large number of "No Shows". This would occur if pre-registered participants do not show up on the scheduled day of training. These No Shows affect many people.

Luckily this fall there has been many people interested in taking LTAP classes, however, due to the large interest, several classes have had to be cut off at a maximum number of participants. This results in a wait list for the remaining interested agencies.

When the day of training arrives and there are a lot of No Shows, it is too late for any of the waitlisted parties to attend in those free spots. This is most unfortunate for those people on the wait list that may have needed that particular class to graduate from the Road Scholar or Supervisory Skills program and were un able to attend.

Also, LTAP has a guaranteed number of lunches, breaks, and handouts contracted for each training event, for participants that don't show up, that money is lost.

Remember - the agency is charged the full registration fee for all *no shows*. Please *cancel* no later than 36 hours before the class.

Renée Koller

Quotes of the Day

Destiny is not a matter of *chance* but a matter of *choice*.

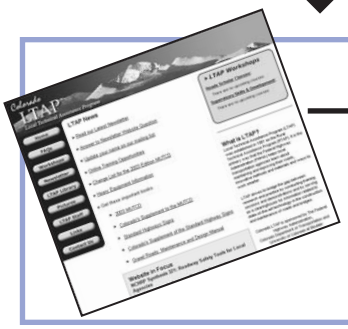
We make realities out of our dreams and dreams out of our realities. We are the dreamers of the dream.

-Roald Dahl

We spend too much of our time worrying about the mosquitoes and not enough time concerning ourselves about the health of the pond.

It's not the biggest, the brightest, or the best that will survive, but those who adapt the quickest.

-Charles Darwin



http://ltap.colorado.edu

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

Are Your Salt Domes Safe?

Many public works agencies have erected dome type structures for salt storage. Many are constructed of wood with concrete bases, and some are concrete or thermospheric structures. Dome structures can be very effective, but like any structure, failures can occur if not properly designed, constructed, and maintained. If properly designed, constructed, and maintained, dome structures can serve for quite a while. However, due to the salt environment, the life span of the domes is not infinite and dangerous collapses could occur.

What You Can Do

The quality of maintenance can directly impact the service life of the dome.

- To get the most service out of the dome, be sure no salt or sand is piled against the panels of the domes; and keep loading equipment from damaging the building. Both of these problems will shorten the life of the dome and can lead to structural failure.
- Do not allow snow to accumulate significantly, on the dome roof, especially on one side more so than another. This could lead to an unbalanced load and could potentially result in structural failure of the dome.
- Keep the ground around the dome free of excessive snow. This will allow any snow on the dome roof to slide free of the dome more easily and lessen the load on the roof. Storage buildings should be designed to withstand snow loading of 25 pounds or more per square foot of roof and winds of 80 miles per hour.[1]

What To Look For

The New York State DOT recently conducted an extensive inspection of many of its salt dome structures. As a precautionary measure, the NYSDOT is sharing its experience to ensure the safety of dome storage buildings currently in use.[2]

Below are some of the problems that NYSDOT found with its domes. Remember, there may be other serious defects in the domes that are not listed below.

If you notice any of these conditions, have an engineer inspect your dome.

- Obvious asymmetry of the dome.
- Damage to framing members other than minor nicks and scrapes, especially end splits from the bolt holes in the rings and vertical members that would reduce its structural capacity.
- Leaks in the fan or dormer panels with emphasis on water staining on panels beneath dormers.
- Poor plywood -to-framing glue bonds throughout the dome, particularly in the lower three panels. Look for separation between the roof plywood and the framing.
- More than a few isolated places where the plywood has separated from the framing members.
- Severe buckling or waviness of the plywood adjacent to the entrance.
- Deterioration or rotation of entrance sidewall trusses.
- Rotation in panels including gaps between the rings (horizontal) and/or ribs (vertical).
- Gaps between stringers and ring members.
- Roof shingles allowing moisture to penetrate the interior of the dome.
- Poor fit between adjacent panels at the rings and the ribs of the top panel section.

Also, for larger structures, remember that fumes from front-end loaders and spreader trucks can become obnoxious or hazardous if the facility is not well ventilated.

1. *Proper Salt Storage*, Salt Institute, http://www.saltinstitute.org/39.html.
2. *Salt Dome Warning*, Cornell Local Roads Program, Fall 2003.

"You Show Us" Contest Requirements

Along with their submissions, participants are asked to include the following regarding their projects:

- Photos
- Problem Statement
- Problem Solution
- Labor, Equipment, and Materials Used
- Project Cost
- Agency Savings and Benefits (safety and/or economical)

2004 Region 8 State Winning Projects

South Dakota
1st Place
Broom-Watertank Unit

Colorado
2nd Place
Asphalt Equipment Clean-Out System

North Dakota
3rd Place
Sand Spreader Stand

Nebraska
4th Place
Large Portable Shop Trash Container

Wyoming
Super Blocks Used as Cattleguard Bases (2003)

A Showcase for Innovative County Projects

Colorado State Winning Entry

Each summer, Colorado LTAP administers the "You Show Us How" contest. In it's 11th year, the contest has been found to be a worthwhile way for county agencies to share innovative ideas with others that may benefit from their inventive concepts. It is also a good way for the crews and their departments to get some well earned recognition for their cost saving efforts.

We are all aware that in many instances there are not enough transportation dollars available to maintain our transportation systems to the desired level of service. This is particularly true when it comes to local government transportation programs. The costs for repairs and improvements are increasing while the available finances, at least the real value, are actually decreasing.

Solving these problems requires efficient use of existing funds, and the application of cost-reducing and innovative techniques. Today's problems are not easily solved with yesterday's solutions!

The contest is open to all county governments in Colorado. The contest solicits the great ideas or projects that have been implemented by county agencies within the last few years. Entries are often related to safety solutions, or economical and operational efficiency improvements.

The Colorado LTAP Advisory Committee evaluates all entries and selects the state winning entry at its August committee meeting.

The 2004 Colorado state winning entry was submitted by Ted Plank of Boulder County. The following is an overview of their project.

ASPHALT EQUIPMENT CLEAN-OUT SYSTEM

Problem Statement:

The challenge was to find a way to clean out oil distributor trucks and tack oil tanks after use, without creating a mess or causing environmental impact. It was necessary to develop a way to empty the spray bars of the diesel fuel/tack oil without just spraying out onto the ground, parking lot or roadway.

Solution:

The current system is the third generation of an idea that was first developed about 12 years ago. A 20-foot section of culvert is cut in half lengthwise. The section of culvert sits in a metal frame with steel plates hinged to create covers that can be closed when the system is not in use. (Shown in Photo 1 below.) The frame and culvert are elevated at one end to create flow. The ends of the culvert were sealed using a lid from a 55-gal drum, cut in half. A nipple is threaded to the bung of the 55-gal drum lid, and attached to the nipple is a 2 ½ " suction hose that leads to a 300 gallon tank. (Shown in Photo 2.)

To use the system, a distributor truck backs up to the culvert and empties the spray bars into it. The used diesel/tack

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PHOTO 1

PHOTO 2

State and Regional Winning Entries

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flows from the culvert into the tank. When the tank is full, a waste-oil company is contacted for pick up.

Labor, Equipment and Materials Used:

Two employees (including one with welding experience) can construct the system. Equipment used included hand tools, a welder and a front loader. Materials used included:

- 20 feet of 24" dia culvert
- Steel for frame and covers
- 2 ½" suction hose
- 300 gal plastic tank
- Miscellaneous parts (screws, caulk, etc.)

Cost:

The current system is much enhanced over the first attempts at creating a cleanout method; a similar system can be constructed for much less.

Materials	$845.00
Labor	$720.00
Equipment	$200.00
Total:	**$1,765.00**

In addition, the approach ramp was paved, and containment for the holding tank was added at an additional cost of approximately $1,500.00. The contractor has had to empty the tank about twice annually at a cost of approximately $500.00 each time.

Benefits:

Like many counties, cities or paving contractors, the county had nowhere to spray the diesel fuel/tack oil residue from cleaning out spray bars and tanks after paving or chip seal operations. This system allows them to quickly and efficiently clean paving equipment, and dispose of the residue without impacting the environment or creating a mess.

Ted Plank of Boulder County receives his award at the County Rd. Advisors Conference.

"You Show Us" Regional Contest

Each year, the winning entry of the Colorado contest is submitted to compete with counties in the states of Nebraska, North Dakota, South Dakota, and Wyoming to determine a *regional* "You Show Us" contest winner. The regional award is presented at the *County Road Advisors Conference* held in Rapid City, SD. Colorado LTAP sends two representatives from the Colorado winning agency to represent their project in Rapid City.

This year, the conference was held on October 20 & 21, 2004. Ted Plank of Boulder County was in attendance to receive his award for being the Colorado state winner. Boulder County's project won second place in the regional contest.

The 2004 regional winner of the "You Show Us How" contest was submitted by Pennington County in South Dakota. The following is an overview of their project.

BROOM & WATER TRUCK UNIT

Problem Statement:

A portion of Pennington County is located within an air quality zone. This zone encompasses rural portions of the County and the City of Rapid City. According to the County/City Air Quality Ordinance, open brooming is prohibited without the use of water to minimize dust and airborne particles.

During winter months, Pennington County utilizes abrasives for snow and ice control. These abrasives have a tendency to collect at the centerline and shoulders of the roadway. During the dry periods these abrasives have a tendency to create airborne particles and dust that is prohibited according to the Air Quality Ordinance. The County also has many miles of rural roads that need

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Equipment Rodeo Winners

Each September the West Slope chapter of APWA holds a Snow & Ice Conference and Equipment Rodeo in Gunnison, Colorado. Colorado LTAP would like to congratulate this year's winners. It's always amazing to witness the skill and ease in which the operators handle the equipment. They exhibit true skill. It's a pleasure for our staff to be a part of the event each year.

CONGRATULATIONS

Motor Grader
Marvin Henry
Gunnison County
Spencer Esch
Town of Breckenridge
Dale Frey
Summit County

Loader
Gabe Hardies
Mesa County
Spencer Esch
Town of Breckenridge
Marvin Kramer
Garfield County

Backhoe
Dan Goin
Garfield County
Dan Thorne
City of Grand Junction
Spencer Esch
Town of Breckenridge

Skidster
Matt Woodring
Mesa County
Dan Thorne
City of Grand Junction
Chris Sheffield
City of Grand Junction

Are You Familiar with "Maggie's Law"?

New Jersey recently passed landmark legislation that addresses the dangers of drowsy driving. With "Maggie's Law", New Jersey has given the nation its first law that specifically states that a sleep-deprived driver is a reckless driver who can be convicted of vehicular homicide.

As a result of a college student being killed when a driver crossed three lanes of highway traffic and hit her car head on, "Maggie's Law" passed the NJ State Senate on June 23, 2003. The law establishes fatigued driving as recklessness under the existing vehicular homicide statute. The bill defines "fatigue" as being without sleep for a period in excess of 24 consecutive hours.

It has been found that sleepy drivers are as much of a danger, and sleep deprivation can cause impairment equal to drugs and alcohol. Two recent Australian studies demonstrate that being awake for 18 hours produces impairment equal to a blood alcohol concentration of 0.05% and 0.1% after 24 hours; 0.08% is considered legally drunk.

For more information, visit www.drowsydriving.org

Get Some Sleep to Stay Safe

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dark also affect the sleep and wakefulness cycle in humans.

Studies by the National Sleep Foundation have found that adults need between 7 and 9 hours of sleep per night in order to reach their required need. By continually getting fewer hours of sleep, you start a sleep deficit. When you are operating on a sleep deficit it is dangerous because it reduces reaction time, increases the time it takes to process information, and your attention span decreases, among other things. The loss of these critical performance skills creates a risky situation when you are behind the wheel of a snow plow, motor grader, and even your car.

At least 15% of all heavy truck crashes involve fatigue.

We can't always control the amount of sleep we get. Emergencies happen and life takes over, but there are some important tips from studies done by NHTSA that you can remember.

1. During your sleeping time, whether it is at night or during the day, try to get the required amount of sleep.
2. If you must forgo the required amount of sleep, try to make it up as soon as possible so your sleep deficit does not get too large.
3. Sleeping disorders such as sleep apnea and narcolepsy can really interfere with the quality of your sleep. If you have these disorders or suspect that you might, ask your doctor or look for information online on how to cope.
4. Alcohol increases drowsiness. If you are going with little sleep, avoid consuming any alcohol.
5. Doing things like turning up the volume of the radio, singing loudly, chewing gum or eating, getting out of the car and running around, slapping yourself and sticking your head out the window have not been shown to decrease tiredness.
6. There are two short-term actions you can do to help stay awake.

- **Naps:** Take a short 15 to 20 minute nap. More than 20 minutes can make you groggy for at least 15 minutes after awakening.
- **Caffeine:** Consume the equivalent of 2 cups of coffee. Caffeine is available in various manners and amounts (soft drinks, energy drinks, coffee, tea, chewing gum, etc.). Remember, caffeine takes about 30 minutes to enter the blood stream and will not greatly affect those who regularly consume it.[3]

For best results, try taking caffeine and then a short nap to get the benefits of both.[3] Most importantly, the best way to reduce tiredness is to get plenty of rest.

1. National Sleep Foundation's website at http://www.sleepfoundation.org/
2. National Highway Traffic Safety Administration's website covering information learned in their studies at http://www.nhtsa.dot.gov/people/injury/drowsy_driving1/index.html
3. www.DrowsyDriving.org
4. AAA Foundation for Traffic Safety: Drowsy Driving www.aaafoundation.org/projects/index.cfm?button=drowsyfinalreport
5. Car Crash Photos www.carbuyingtips.com/disaster.htm

Website Resources Related to Shift Work and Sleep

www.shiftlag.com
www.shiftwork.com
www.aaafts.org
www.bettersleep.org
www.sleepfoundation.org
www.circadian.com
www.drowsydriving.org
www.aaafoundation.org/projects
www.nhlbi.nih.gov
(For nhlbi, click *Nat'l Center on Sleep Disorders.*)

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. Library materials can also be ordered online on our website at http://ltap.colorado.edu.

Below is a list of the most recent materials added to the library.

New CDs

Location	Title
CD WMTM	*Winter Maintenance Training Materials: Volume 2* This CD covers important preparations prior to operations, discusses actual plowing and spreading operations, including the use of a variety of equipment, materials and techniques. It emphasizes sensible salting, looking at the various ways that salt can be used, by itself or in conjunction with other materials with a discussion on application rates. It also covers deicing, prewetting, anti-icing and pickup and disposal operations along with relevant information for special areas and considerations, including post storm cleanup and record keeping. Included is a technical information sheet and reference documents addressing salt and the environment. It is directed at local government public works technical personnel from the Public Works Director and Engineer, to the Road/Street Superintendent and public works technicians.
CD NESO	*New Employee Safety Orientation PowerPoint Presentation* Meet OSHA's requirement for new employee safety orientation training with this PowerPoint¨ presentation, delivered by email. Each subject is explained in detail to give your new employees a better understanding of OSHA requirements. Written material and an employee quiz are included. Customization is permitted.

New Publications

Location	Title
40 LVR1	*Eighth International Conference on Low-Volume Roads 2003; Volume 1&2 - TRB Record No. 1819* This report Contains papers from the 2003 Transportation Research Board Conference on Low Volume Roads. The papers cover topics on Management and Planning, Technology Transfer, Safety, Traffic and Design, and Maintenance.
50 PCMS	*Portable Changeable Message Sign Handbook* The purpose of this handbook is to present basic guidelines for the use of portable changeable message signs (PCMS). This handbook presents information on the PCMS and is intended to illustrate the principles of proper PCMS use.
25 CLR	*A Critical Review of High-Performance Corrosion Reinforcements in Concrete Bridge Applications* This review of high-performance reinforcement for concrete bridge applications includes an overview of the corrosion-induced concrete deterioration process, corrosion control alternatives, and the utility of corrosion (pitting) resistant alloys for applications in chloride containing environments. Also included is a review of the pitting mechanism, and performance of various metallic reinforcement types in aqueous solutions, cementitious embedments, test yard exposures, and actual structures.
60 ESSM	*Evaluation of Slope Stabilization Methods* This report evaluates soil containment products used in tests to contain the soil on the west side of Berthoud Pass on US 40.

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What's New in the Library

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70 OPQ *Optimal Procedures for Quality Assurance Specifications*
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 neccessary instruction and illustrates examples to lead the agency through the entire process of acceptance plan development.

New Videos

Location **Title**

V70 BMD *Better Mousetrap Demos*
This is a 28 minute video of the 'Build a Better Moustrap Competition' at the Iowa Maintenance Training Expo. This is a competition in which local agencies enter innovative items they made in their own shops using used materials to make something that will make a specific task easier.

V20 GDC *Guidelines for Dust Control on Unsurfaced Roads*
This 12 minute video explains basic treatment options for dust control and examines two treatments in depth: calcium chloride and lignosulfonate, a byproduct of the paper industry.

V50 BS *Backhoe Safety*
This 18 minute video focuses on tractor-loader backhoes and is written in cooperation with over 20 experienced operators. This program is filled with real world tips and advice on safe backhoe operation. Pre-inspection/start-up hazards - Safely loading, transporting & unloading trailers - Safe work practices for crew personnel - Proper positioning, excavation techniques and emergency procedures.

V50 BSO *Backhoe Safety & Operations*
This 11 minute video talks about how versatile backhoes are common but potentially dangerous pieces of equipment. It covers: Personal protective equipment - Equipment: both capabilities & limitations - Inspection & maintenance checklists - Operation rules, including startup, driving, transporting, refueling and more.

V40 PTST *CDL Pre-Trip Inspection, Straight Truck*
This 25 minute video shows how you can reduce driver anxiety about the CDL testing process by showing a simulation in advance. It covers: Vehicle inspection covers air brakes, systems - Review of all federal minimum requirements - Examiner discussing problem areas.

V40 PTTT *CDL Pre-Trip Inspection, Tractor-trailer*
This 28 minute video shows how you can reduce driver anxiety about the CDL testing process by showing a simulation in advance. It covers: Vehicle inspection covers air brakes, systems - Review of all federal minimum requirements - Examiner discussing problem areas.

V40 IMF *Inspection & Maintenance of Forklifts: A Workplace Safety 7-Minute Solution*
This 7 minute refresher program emphasizes the need for forklift inspection and maintenance without hampering productivity. It is a clever introduction and the use of insights from an actual operator deliver information. It covers: Two levels of inspection: frequent and periodic - Items that operators must inspect: tires, gauges, fluid levels, brakes, lift and tilt systems, etc. - Requirements for periodic inspections and special circumstances.

Repairing Frost Damaged Roads

Temperature fluctuations above and below the freezing mark can have pronounced effects on subgrade and aggregate base stability and pavement performance. Frost related pavement damage is caused by ***frost heave***, the expansion and heaving of frost-susceptible subgrade materials as they freeze, and ***frost boil***, the subsequent weakening of those materials as they thaw in spring, decreasing load-carrying capacity. For frost related roadway damage to occur, freezing temperatures, frost-susceptible materials and a source of water capable of saturating those materials must all be present.[1]

Researchers have compiled a practical guide to effectively repairing frost-damaged roadways as part of the Minnesota Local Roads Research Board (LRRB) Research Implementation Series (RIS). Michael Marti, Andrew Mielke, and Charles Hubbard are authors of the report, *Effective Methods to Repair Frost-Damaged Roadways*. Specifically, the report contains discussions concerning the mechanics of ground freezing and frost related roadway damage, the environments in which such damage occurs, and measures to evaluate the contributing factors along with recommendations to mitigate them and/or reduce the potential for additional roadway damage. A worksheet is also provided to allow prospective users of the manual to record the results of their work and help them both evaluate prospective repair methods and track their successes. As part of the research implementation process, a brief e-mail survey of local governments was conducted to gather information on frost experience and repair procedures and is highlighted in the report.[1]

Copies of this report (RIS #27), are available from CO LTAP or online at: http://www.lrrb.gen.mn.us/ (In the Search window, type the report number: RIS #27). The Local Roads Research Board is a partner of the Minnesota LTAP center.

1. *Effective Methods to Repair Frost-Damaged Roadways*, RIS #27, May 2003.

Road Weather Management Tools

The Federal Highway Administration's (FHWA) offers a sophisticated weather information tool, the *Maintenance Decision Support System* (MDSS) to assist winter road maintenance managers in predicting the impact of adverse weather conditions and planning treatment. It is currently a prototype that is available for field testing on FHWA's Road Weather Management website at www.ops.fhwa.dot.gov/weather/index.htm The MDSS system displays various maintenance alternatives and their resulting benefits, which allow highway agencies to deploy snowplows more effectively and improve road conditions while also reducing response costs.

FHWA's *Road Weather Management Program* seeks to develop and promote effective tools to observe and predict the impacts of weather on the roads, and to alleviate weather impacts.

Additional resources such as the *Best Practices for Road Weather Management* guide are also available on their Mitigating Impacts: Projects & Programs page. This resource contains road weather management case studies of systems from every region of the country that improve roadway operations under inclement weather conditions. It also includes a listing of road weather publications, an overview of environmental sensor technologies, and related online resources.

Anti-icing/RWIS Training Program

A comprehensive, interactive training program for winter operations was jointly developed by FHWA, AASHTO's Snow and Ice Cooperative Program (SICOP) and a pooled-fund research program known as AURORA. The computer-based training program incorporates scenario based training exercises for equipment operators, supervisors, and middle managers.

The training program covers an introduction to anti-icing and winter maintenance, winter road maintenance mgmt., winter roadway hazards and principles of overcoming them, weather basics, weather and roadway monitoring for anti-icing decisions, computer access to road weather information, and anti-icing practice in winter maintenance operations.

Two versions of the training program are available, one generic and the other customized. The customized versions are specifically tailored to the strategies and chemicals used in the snow and ice control operations of a particular state.

More detailed course information can be found in the .PDF file *Training - the Key to Technology Implementation* at http://ops.fhwa.dot.gov/weather/resources/training.htm.

Drowsy Driving Warning Signs

When you are driving it is important to be aware of how drowsy you really are.

Some of the warning signs are:

- Can't stop yawning
- Eyelids droop or blink frequently.
- Trouble keeping your eyes open and focused especially at stoplights.
- Mind wanders or you have disconnected thoughts.
- Can't remember driving the last few miles.
- Driving becomes sloppy - you weave between lanes, tailgate or miss traffic signals.
- Hitting the grooves or rumble strips on the side of the road.

Remember - doing things like turning up the volume of the radio, singing loudly, chewing gum or eating, getting out of the car and running around, slapping yourself and sticking your head out the window DO NOT WORK FOR MORE THAN A MINUTE OR TWO.

"You Show Us How" Regional Winning Entry

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to be swept and kept clean.

Discussion of Solution:

Pennington County currently utilizes an open broom and a water truck to wet the material prior to brooming it from the roadway. In order to cut costs and enhance the operation of removing these abrasives with one unit, Pennington County purchased a used broom with a 3-point hitch from the South Dakota Federal Property Agency. The broom was mounted to a quick attach snowplow hitch. (Shown in Photo 3.) The County also designed a side shift into the hitch that allows the broom to shift approximately 36 inches to the right. Live hydraulic power and the hydraulic controls that operated the snow equipment were utilized to operate the broom attachment.

In addition, a slide-in self-contained water tank with water pump with controls to provide water to a spray bar mounted on the front of the broom were also added. (Shown in Photo 4.) The use of the quick attach hitch and slide-in water tank allows the versatility to mount this equipment on other trucks in the fleet.

Labor, Equipment and Materials Used:

The shop foreman and mechanic designed and fabricated the quick attach hitch with side-shift in the County shop. Steel plate and angle iron were used to build the mounts and attachments. Other materials used were hydraulic fittings, hoses, hydraulic cylinders, valves, water tank, and water pump.

Cost:

Used Broom	$750.00	
Water Tank	$2104.00	
Water Pump	$400.00	
Labor Cost	$1070.00	
Steel, plumbing & controls		$950.03
Total:	**$5274.03**	

Savings/Benefits:

By adapting the broom to a snowplow quick hitch and the water tank with pump as a self-contained unit, these units can be mounted on other trucks in the fleet. This allows the use of the water tank on another truck or projects, and the broom will also be used to sweep back the centerline during chip seal projects, eliminating the need of a broom on site.

Pennington County has eliminated the cost of having an additional water truck preceding broom operations. The operator and equipment cost per hour for a separate water truck was approximately $49.00. The average usage of the water truck to provide water for removing the abrasives for the last three years was over 300 hundred hours. Pennington County therefore estimates a projected savings of over $14,700.00 the first season of operation.

For more information on either of these innovative projects, please contact:

Ted Plank
Boulder County Road Supervisor
1288 Alaska Ave.
Longmont, CO 80501

Hiene Junge
Pennington County Superintendent
3601 Highway 79 South
Rapid City, SD 57701

PHOTO 3

PHOTO 4

Upcoming Events

2004 Training

Remaining Fall 2004

Road Scholar Elective Classes

Equipment Maintenance/Inspection
November 22, 2004 - Montrose
November 23, 2004 - Silverthorne
December 2, 2004 - Pueblo
December 3, 2004 - Ft. Morgan

Advance Computer Skills (Word/Excel)
Lakewood, December 8 or 15, full-day

* We are currently working on finalizing our 2005 Work Plan. The following is a list of the proposed Spring classes. Please contact the CLTAP office for the most up-to-date schedule.

2005 Electives Con't

Heavy Equipment Training
Yuma County
April 18, 2005 - Classroom (required)
April 19-20, 2005 - In-field, Group 1
April 21-22, 2005 - In-field, Group 2

Culvert Maintenance & Inspection
March 21, 2005 -Denver
March 22, 2005 - Pueblo
March 24, 2005 - Grand Junction

2005 Training

Upcoming Spring 2005*

Road Scholar Core Classes

Signing, Pavement Markings, MUTCD
January 18, 2005 - Trinidad
January 19, 2005 - Durango
January 21, 2005 - Glenwood Springs
January 24, 2005 - Castle Rock
January 31, 2005 - Akron

Safety on the Job
April 5, 2005 - Fort Morgan
April 12, 2004 - Montrose
April 14, 2004 - Eagle
April 26, 2004 - Walsenburg
April 27, 2004 - Castle Rock

Road Scholar Elective Classes

Road Materials: Soils & Gravel
February 8, 2005 - Greeley
February 10, 2005 - Rifle
February 23, 2005 - Limon
February 24, 2005 - Walsenburg

Preventive Pavement Maintenance
March 7, 2005 - Grand Junction
March 9, 2005 - Pueblo
March 10, 2005 - Denver

← continued

2005 Conferences

Transportation Research Board (TRB) Annual Meeting
January 9-13, 2005
Washington D.C.
Info and registration available at
http://www.trb.org/meeting

Rocky Mt. Asphalt Conference
February 9-11, 2005
Holiday Inn-DIA, Denver
Info and registration available at
http://www.cahs.colostate.edu/cm/RMACES.stm

Annual Concrete Pavement Workshop
February 15-16, 2005
Greeley, CO
Info and registration available at
http://www.cowyacpa.com/Workshop.html

2005 Workshops

Flagger Certification & WZTC
March 14, 2005 - Fort Collins
March 15, 2005 - Sterling
March 16, 2005 - Silverthorne
March 17, 2005 - Rifle

International Conference on Best Practices for Thin Whitetoppings
April 13 – 15, 2005
Denver, Colorado
This is an LTAP partnered event, for registration information you can access the conference brochure on our website.
http://ltap.colorado.edu/

Supervisory Skills and Development Program

Who's Coming through the Door Today
December 7, 2004 - Glenwood Springs

Verbal Communication
January 13, 2005 - Grand Junction

So You Are a Supervisor Now
January 26, 2005 - Castle Rock

Legal-Liability Issues
February 7, 2005 - Glenwood Springs

Ethics
February 22, 2005 - Lakewood

Congratulations to recent Road Scholar Graduates!

Jay McDonald
Weld County

Dave Aragon
Greenwood Village

Joe Costanzo
Garfield County

Rob Enoch
City of Monument

Mark Shaw
Yuma County

Eugene Valdez
City of Cañon City

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.

Requests can also be made through the library page of our website, http://ltap.colorado.edu.

Comprehensive Intersection Resource Library
This CD offers a compilation of resources about traditional signalized and unsignalized intersections, roundabouts, highway/rail grade crossings, and other nontraditional intersection designs.

Driver Education Work Zone Awareness Program
This powerpoint presentation was developed for driver's education programs to make new driver's aware of dangers in highway work zones. It is perfect for public awareness programs on highway work zones.

RC Flagman Priority Technology
This 11 minute video (on CD-rom) includes interviews, RC Flagman in operation, and an evaluation report.

National ITS Architecture: A Framework for Integrated Transportation into the 21st Century
Designed to guide you through the National ITS Architecture and assist you in regional planning and architecture development, this CD includes a complete set of National ITS Architecture documents, along with the Physical and Logical Architecture databases used to develop the National Architecture.

Work Zone Operations: Improving Mobility and Safety on Both Sides of the Barrel
This best practices guidebook is designed to give state and local transportation agencies, construction contractors, transportation planners, trainers and others with interest in work zone operations access to information and points of contact about current best practices for achieving work zone mobility and safety.

Colorado LTAP

University of Colorado at Boulder
3100 Marine St., A-213
UCB 561
Boulder, CO 80309-0561

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