

Colorado LTAP

November 2007

Serving local transportation agencies throughout Colorado

Winter Issue

Snow & Ice Control Procedures City of Westminster



By Pat Sexton, Street Maintenance Supervisor, City of Westminster DPW

The City of Westminster Department of Public Works & Utilities' goal is to provide the citizens of Westminster with safe streets and open thoroughfares through the most efficient means possible even during adverse weather conditions.

The population of Westminster is approximately 107,000. Total lane miles for the city are 1,061. Out of that 1,061, Westminster services 371 primary lane miles and 200 secondary lane miles, which does not include residential streets.

Beginning in September each year, we check out all equipment assigned to snow removal (e.g., plows, sanders and trucks) and make appropriate repairs.

Additionally, all trucks will be calibrated to apply 200 lbs. of deicer per lane mile.

A good snow removal program starts with a good training program. During the month of September we conduct a one-day class for all Public Works & Utilities employees that are involved in snow removal operations. This class goes over the Snow & Ice Control Manual, procedures and Snowfighters'

responsibilities. Each employee will be instructed on the proper installation of plows and salters along with training for the hydraulics system. All employees are required to do a "dry run" exercise, which also gives them the opportunity to familiarize themselves with their route and look for any obstructions, changes or anything different.

Westminster is equipped with 18 trucks which are used for snow removal: 15 are tandem dump trucks and 3 are single-axle dump trucks; 10 are equipped with v-box spreaders and 8 are equipped with drop-type sanders. All trucks are equipped with plows and Force America hydraulic

systems. We also have 4 front-end loaders and one motor-grader which are used during major snow storms. Each year all of the employees in the Department of Public Works and Utilities that do snow removal are required to participate in Westminster's Snowplow Rodeo competition. This training/competition sharpens the skills of



**LOOK
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**NEW Colorado
Chain Laws**

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Colorado LTAP

STAFF

Yunping Xi

University Administrator

Renée Koller

Program Manager

Lindsay Nathaniel

Training Coordinator

**Nattapong, Haideh
and Marty**

Library/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

Welcome Winter!

The weather has just started to get chilly in our area of the state, but I'm sure many of you have already gotten your snow removal procedures into full swing.

Remember, we're here to help during what could be a busy time of year for you. If you ever have any questions related to your work, please give us a call. We'll search out the answer for you.

Other News!

It is with great pleasure that I announce that the University of Colorado at Boulder's bid to run the Colorado LTAP center has been ACCEPTED!! The University of Colorado will host the center for the next five year contract. So you're in luck - Lindsay and I will be around for a little longer.

We are busy wrapping up 2007 training and developing a full 2008 program. In 2008, we will continue with the Agency Traffic Counts and the Retroreflectometer Loan Program. We are glad so many agencies were able to use the meter in 2007. The new federal standards on retroreflectivity are scheduled to be announced in January so LTAP has planned to offer full training on this topic in the Spring once the standards have been released. Colorado LTAP is also revisiting the NIMS & ICS requirements and will offer this certification training next Spring. Additional upcoming training topics are listed on page 11. And don't forget - mark your calendars! Colorado is hosting the National LTAP conference in Breckenridge, July 14-17, 2008. Hope to see you all there!

Renée Koller

Quotes

of
the
Day

"Plowing snow looks mighty easy when your plow is a pencil and you're living in Florida."

- Dwight D. Eisenhower

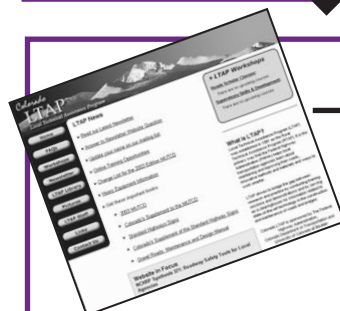
"I am less affected by the heroism of those who stood up for half an hour in the front lines of war, than by the steady and cheerful valor of the men who inhabit the snow plow for their winter quarters; who go to sleep only when the storm sleeps or the sinews of their iron steed are frozen."

- Henry David Thoreau, author

"Every mile is two in winter."

- George Herbert

And...don't test the ice with both feet!



<http://ltap.colorado.edu>

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

Snow & Ice Control Procedures

City of Westminster

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the truck drivers and equipment operators prior to the first snow fall. The results of the competition are tabulated and analyzed by supervisory personnel to determine the assistance that employees may need in their snowplow technique. Hopefully, this will reduce accidents that may occur during the season.

The competition also gives the department an opportunity to select the best drivers to represent the City of Westminster in the Western States Snow & Ice Conference National Snowplow Roadeo where they compete against other cities in a similar obstacle course.

By combining Utilities' field personnel and the Street Operations Division personnel, a two-crew system has been implemented. Two employees are assigned to one of the 18 snow route areas and to the specific truck designated for use in that area for the entire season. The crews are referred to as "Crew I" and "Crew II."

All Snowfighters are issued pagers and supervisors are issued two-way pagers. This ensures that employees are prompt and that they are able to arrive at the City's Municipal Service Center within 20 min of being paged. This allows the supervisors to summon individuals separately or an entire crew with only one page.

A crew consists of 21 employees as follows: 18 truck drivers, 1 loader operator and 2 storm supervisors. New employees are also called in to train with a veteran in his assigned area and to learn all the idiosyncrasies of that area and the assigned vehicle. When we bring in someone for training, we require that they get a minimum of 40 hours hands-on training before being permanently assigned to a snow route. The loader operator affords the truck drivers an opportunity to get out of the trucks for a short break while their truck is being loaded without costing valuable time. This is very important because it helps ensure continued alertness of all Snowfighters to provide safety to the public and protection of City property.

The City of Westminster has a Snow and Ice Control Manual which is updated each year with the newest routes and policies and procedures. Each employee is given a



copy of this manual as reference.

All efforts are used to keep material usage to a minimum, applying at a sensible rate to assure cost effectiveness and minimize environmental impact.

Westminster's application rate is 200 pounds per lane mile. We have calibrated our snow trucks to be able to dispense salt settings at ten different settings, from one through ten. The lowest setting is one, at 100 pounds per lane mile; and the highest setting is ten, at 325 pounds per lane mile. Each setting increment goes up 25 pounds per increment. This allows the storm supervisors to communicate to all the drivers on what setting they should use during a specific storm.

- **Primary Routes** – All arterial and major collector streets considered to be the minimum network which must be kept open to provide a transportation system covering the major traffic volume streets and providing access to hospitals, police stations, fire stations & rescue squad units.
- **Secondary Routes** – Collector streets and select residential areas providing access to emergency stations, schools and bus routes.
- **Residential Areas** – Dangerous intersections, hills and curves.

Residential streets will only be plowed & deiced with a Category III or IV storm:

- **Category I** – One inch or less of snow resulting in icy conditions throughout the city. All primary, secondary, dangerous intersections, hills, curves and emergency facilities are salt/sanded.
- **Category II** – Two inches of snow resulting in slick, slushy conditions

...continued on page 4

Colorado LTAP Advisory Committee Members

◆
Marlene Crosby
Gunnison County

◆
John Baker
Town of Snowmass

◆
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◆
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◆
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Beth Moore
CDOT

◆
Craig Larson
FHWA

◆
Yunping Xi
University of Colorado
at Boulder

◆
Renée Koller
Colorado LTAP

◆

Need a little Extra cash?



Your
knowledge
is worth
something.

Our center is continuing its 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 **\$50.00** 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 particular product. *Photos are encouraged.* To submit articles and/or photos, include author name and contact info, and mail or email to

cltap@colorado.edu

Snow & Ice Control Procedures City of Westminster

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throughout the city. Primary and secondary streets, plus dangerous intersections, hills, curves and all emergency facilities are salt/sanded.

- **Category III** – Greater than two inches of snow with wind causing blizzard conditions. All primaries are plowed, salt/sanded until the storm subsides, then secondary and residential affected by drifting are plowed and salt/sanded.

- **Category IV** – A major snow storm greater than 8 inches of snow, possible closures due to drifting and blizzard conditions. Concentration is given to primaries and emergency facilities. Priorities to secondary and residential streets are plowed and salt/sanded as soon as possible thereafter. When plowing is required, windrows of snow across driveways are created and opening of driveways are the responsibility of the property owner.

Snow removal doesn't stop at the end of deicing and plowing. Post-storm activities can carry on for days and sometimes weeks after a major storm. After all these tasks are accomplished, trucks and equipment are cleaned and checked for repairs prior to the next storm. Additionally, supervisors must complete a "storm report" calculating the amount and cost of materials used, number of lane miles sanded/salted and plowed, overtime hours and cost for employees, a complete breakdown of contract equipment, storm duration and classification, and a brief summary of problems encountered and recommendations.

Routinely, we always stock two sets of tire chains for all trucks and every piece of equipment used for snow removal. This proved to be very beneficial during the 2006/2007 blizzard(s).

Material – Use


Westminster uses two different types of material, rock salt from Kansas City; and ice slicer out of Redmond, Utah.

One of our biggest problems experienced during the 2006/2007 blizzard was a shortage of deicing materials. Westminster is building a new 4,000 ton



storage facility at the newly renovated Municipal Service Center and a new 2,500 ton storage facility at the Big Dry Creek Wastewater Treatment Plant site, located at West 138th Avenue and Huron Street. This will provide for a total of 6,500 ton storage capacity to help alleviate any deicing material shortages in the future. Our policy is to replace the material as soon as it is used.

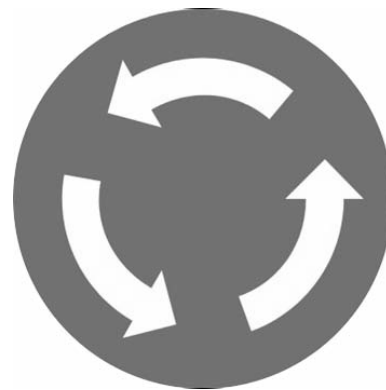
New for the 2007/2008 snow season is the use of Global Positioning Satellite (GPS) and Automated Vehicle Locating (AVL) systems purchased from Force America Equipment for all 18 snow trucks. This system will track the speed of the vehicle, the amount of material and where the material was applied; plow position (up or down) and the location of the truck. The GPS/AVL system is a tool that can help supervisors tremendously in making adjustments for routes, directing equipment and answering a variety of questions that always come up after a major storm. This equipment will definitely take snow and ice control in Westminster to the next level in providing efficiency and dependability to the citizens of Westminster.

Westminster continues exploring and experimenting with different deicers and is always searching for better technologies and ways to make improvements. 



WESTMINSTER

Colorado Roundabout Survey



In 1998, the ITE Colorado-Wyoming Section sponsored a national roundabout conference in Loveland, Colorado. Since that event, well over 150 roundabouts have been built in Colorado. The Colorado-Wyoming Section in conjunction with CDOT is conducting a comprehensive inventory of roundabouts in Colorado in order to quantify the safety benefits of roundabouts in Colorado. We are asking for your assistance in completing the following survey form and inventory sheet for each roundabout in your jurisdiction.

For the purpose of this survey, roundabouts are defined as circular intersections with yield control of all entering traffic, channelized approaches, and appropriate geometric curvature to ensure travel speeds of less than 30 mph. Neighborhood traffic circles would typically not be considered modern roundabouts.

While the inventory will assist in quantifying the number and type of roundabouts in Colorado, of critical importance is traffic volume and accident data. We know that such data may not be readily available, but we hope that you can assist us in collecting this data. The objective of this part of the survey is to calculate accident rates for different types of roundabouts. A parallel effort being conducted by CDOT for traffic signals will allow planners and engineers to compare accident rates between signals and roundabouts when considering which form of traffic control to implement.

Please return completed survey forms to Renée Koller by mail or email at the Colorado LTAP office. Survey results will be posted on the ITE Colorado-Wyoming website or provided upon request. A full report is anticipated next spring. Thank you for your assistance in this important study.

1) Jurisdiction _____

2) Person Completing Form: _____

Title: _____

Address: _____

Phone: _____

Email: _____

3) Does your jurisdiction have any roundabouts? Yes _____ No _____

4) If No, what factors have prevented their construction or consideration? (Check all that apply)

_____ No suitable intersections

_____ Too expensive

_____ Governing body opposes them

_____ Public opposes them

_____ Developers oppose them

_____ Don't know enough about their benefits

_____ Never discussed as an option

Other: _____

5) Does your jurisdiction have roundabout standards, Council/Board adopted policies or other items supporting their use?

Yes _____ No _____ Comments: _____

6) Would your staff or governing body be interested in a presentation of the safety and operational benefits of roundabouts?

Yes _____ No _____

7) How many roundabouts does your jurisdictions have? Constructed _____ In Design _____
 Planned _____ Under Consideration _____

~ Please fill out the Inventory Sheet on the backside of this form for each of your roundabouts. ~

Colorado Roundabout Survey

Roundabout Inventory Sheet

Contact Person _____ Date _____

1) Jurisdiction _____ 2) County _____

3) Intersection: Major Street _____ Minor Street _____
 Classification: Arterial _____ Arterial _____
 Collector _____ Collector _____
 Local _____ Local _____
 Ramp _____ Ramp _____

4) State Highway Yes _____ No _____

5) Previous Intersection Control _____

6) Current Status: Constructed _____ Year Opened _____
 Designed _____ Projected Open Date _____
 Planned _____ Projected Open Date _____
 Under Construction _____

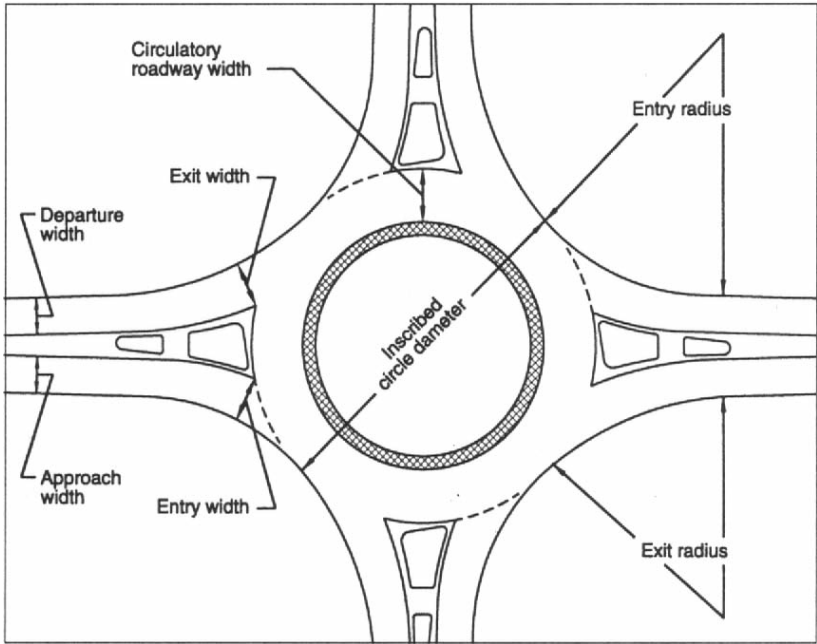
7) Environment: Urban _____
 Suburban _____
 Rural _____

8) On the drawing to the right, sketch in the number of lanes on each approach and in the circulating roadway. (Provide picture or aerial, if available)

9) Provide inner circle and outside inscribed diameter dimensions on the sketch, if available.

10) Speed limit in advance of roundabout. not advisory speed.
 Major street _____
 Minor street _____

11) Total Entering Traffic Volume (all approaches) (Enclose recent traffic counts if available.)
 Peak Hour _____
 ADT _____



12) Average Accidents per Year (Provide any accident data or reports if available.) Injury _____ Total _____

13) Are there pedestrian crosswalks? Yes _____ No _____

14) Was FHWA's *Roundabouts: An Informational Guide* used in the design?
 Yes _____ No _____ Don't Know _____

15) For constructed roundabouts, how satisfied are you with:

	<u>Very Satisfied</u>	<u>Satisfied</u>	<u>No Opinion</u>	<u>Dissatisfied</u>	<u>Does Not Apply</u>
Design _____	_____	_____	_____	_____	_____
Operations _____	_____	_____	_____	_____	_____
Safety _____	_____	_____	_____	_____	_____
Appropriateness of Roundabout Application _____	_____	_____	_____	_____	_____
Improvement Over Previous Traffic Control _____	_____	_____	_____	_____	_____



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 CDs

Location

Title

CD RSP

Ready, Set, Plow! Tips and Tasks for Preparing Your Fleet for Snow Season

Winter weather is an annual force to be reckoned with. Learn how to plan ahead to ensure that both your equipment and plow operators are up to the task. This program features checklists, tips on alternate vehicle usage, and how to stretch your budget dollars.

CD TFRS

Training First-Rate Snowfighters

Put an end to persistent and inadequate snowfighting once and for all! If you didn't attend the 2005 North American Snow Conference, you can still experience the excitement of being onsite. This program discusses how to get the most value from your snowfighter training program. Training resources will be identified, as well as key concerns and practical tips for training both experienced and inexperienced snowfighters.

CD GPISRRP

Good Practices: Incorporating Safety into Resurfacing and Restoration Projects

CD IGT

Introduction to Geosynthetics in Transportation

This CD includes Separation Stabilization Base Reinforcement, Subsurface Drainage, Asphalt Overlay, Reinforced Soil Systems, and Erosion and Sediment Control

CD CSR

Construction Site Runoff: A Proactive Approach to NPDES Compliance

Stormwater flowing over a construction site often picks up a variety of pollutants that can upset the ecological balance of streams and lakes. NPDES Phase II regulations cover construction areas of one to five acres in size. Learn what steps you should take during the construction planning stage to meet these requirements and minimize pollution runoff on your projects.

CD ECCNP

Erosion Control Compliance with NPDES Phase II

Is development putting enormous pressure on you and your agency's efforts to enforce local erosion and sediment control ordinances and NPDES Phase II regulations? In this two-hour program, learn tactics for conducting inspections and enforcing the ordinances and regulations, get information on EPA's new Construction General Permit and electronic application system, how to more effectively implement erosion control programs, and much more.

CD LNAPW

Leadership in the New Age of Public Works

Dr. John Luthy, long-time public works advocate insists that it is time for public works to step into a new era of visible and proactive community leadership. This 2-hour program will stimulate leadership thinking at all levels. Don't miss this opportunity to explore evolving new roles for public works leaders, leadership competencies needed for embracing these new roles, hard realities of recruitment, retention, and employee development and more.

New Publications

Location	Title
40 ESMDGR	<i>Environmentally Sensitive Maintenance for Dirt and Gravel Roads</i>
Provides insight into using natural systems and innovate technologies to reduce erosion, sediment and dust pollution while more effectively and efficiently maintaining gravel roads.	

New DVDs

Location	Title
DVD RC	<i>Remember Charlie</i>
56 minutes - Imagine being burned over 45% of your body....and you have no one to blame but yourself. This critically acclaimed video presents the story of Charlie Morecraft, an Exxon refinery worker who was seriously injured in an explosion. It is a deeply moving portrayal of the devastating real-life consequences of the abuse of safety procedures and it dramatically changes safety attitudes from uncaring and routine to safety first and always.	
DVD NMTE	<i>Now, More Than Ever: Safety, Productivity and Profitability</i>
25 minutes - A part of the "Remember Charlie" safety series; Charlie Morecraft delivers an inspiring call for workers to pull together with management to make the workplace safer and more productive and profitable as we face the threat of war, terrorism and serious competition from workers outside the USA Charlie is more motivating than ever in these difficult times. Use this effective training tool to reduce unsafe acts and increase productivity in your facility.	

New Videos

Location	Title
V50 AVWC	<i>A Visit With Charlie</i>
15 minutes - In this compelling video, Charlie addresses the struggle of co-workers supporting one another in being safe on the job; the need for labor and management to work together and on the same team; the possibility of cultural change; and the bottomline of why accidents happen. He also talks about the difference between a "near miss" and a "direct hit." This video will touch the toughest, long-term workers, as well as new hires, with a clear safety message: "It's not just business, it's personal."	
V30 WIAI	<i>What Is Anti-Icing</i>
9 minutes - Colorado Department of Transportation Info Program on Anti-Icing	
V50 EODDT	<i>Eye on Defensive Driving Training</i>
45 minutes - This video challenges drivers with a fast paced program using Keller's 'hazard perception' methodology. This popular format helps your drivers to enhance their skill levels and immediately apply the training material for defensive driving.	
V5 RRVWS	<i>Ready Response: Violence in the Workplace for Supervisors</i>
9 minutes - Empower your employees to detect and diffuse potentially violent situations. This program: Explains how a hostile work environment can affect employee morale and productivity; Illustrates how to spot potentially dangerous circumstances; and Discusses how to resolve conflicts.	
V40 BPSWAI	<i>Backhoe, Pre-Shift Walk-Around Inspection</i>
11 minutes - Backhoe inspection is the law. Backhoes must be inspected every time they are operated. A proper inspection protects the operator by ensuring the equipment is mechanically safe. This precautionary video discusses general safety practices, operating rules and maintenance procedures with your backhoe operators. It covers: Pre-shift inspections; Accurate and consistent inspection; and Insuring the safety of those nearby.	

Computer Training Options for Local Agencies

By Lindsay Nathaniel, Colorado LTAP

We often get requests for computer training from our annual and class surveys. Because there are quite a few options for computer training around the state, Colorado LTAP has decided to limit the computer training we provide so that we may focus on offering training that is harder for agencies to acquire elsewhere.

FRONT RANGE OPTIONS

Colorado Free University - This non-profit organization offers computer training, among other types of training. There are three training locations in the Denver area. Averaging \$159 per class, Colorado Free University offers beginning, intermediate and advanced classes in Excel, Word, Access, and Power Point. They also offer a computer basics class. I have taken several of their classes and they have been very good. Their class size has been very small providing a better learning environment. More information is available through their website (<http://www.freeu.com>) or by calling 303-399-0093 or 800-333-6218.

Arapahoe Community College - This college in Littleton offers computer classes for the community in Microsoft Excel, Word, Access, Internet and computer basics. For more info, visit their website at www.arapahoe.edu/communityed/schedule.html or call 303-797-5722 or 303-797-5608.

New Horizons - This is a private company that offers a variety of training including computer training in Broomfield, Denver, Englewood, Loveland, and Colorado Springs. Their classes tend to be a little more expensive than some other training options. They run around \$235 for a one day class \$470 for a two day class. We have taken several classes from them and they have been excellent classes.

Rocky Mountain Education Center- The RMEC offers a unique option for computer training classes. Instead of publishing a schedule, they hold their computer classes on a need basis. Individuals and agencies can call the center and request training. The center will then schedule the requested training. They try to have the training scheduled within one week of the call. RMEC staff will also work with you to tailor a class to meet your employees' specific needs. They can offer training classes on Excel, Word, Access, Power Point and

Outlook. The Rocky Mountain Education Center is located in Lakewood. However, if you want to hold a class for your agency outside of Lakewood, the staff are pretty flexible and willing to travel. Their website is <http://www.rccc.edu/rmec/index.html> and number is 303-914-6420, 1-800-933-8394.



WEST SLOPE OPTIONS

Mesa State University - Mesa State, located in Grand Junction, offers classes for non-degree seeking students. The classes offered vary, but they offer Microsoft Word, Access, Excel, as well as, a class on conquering your computer fears. Their website www.mesastate.edu/community/enrichment/index.htm and they can be reached by phone at 970-255-2800.

Mesa State also offers some computer classes online. Some of these upcoming classes are "Introduction to the Internet", "Introduction to Windows Vista", and "Keyboarding". For more information on online classes offered through Mesa State, visit <http://www.ed2go.com/mesastate> or call 970-248-2398.

Colorado Mountain College - There are 12 campuses throughout the north, central, and western part of Colorado. Each campus differs in the classes that it offers. Some (Glenwood Springs, Carbondale, Steamboat Springs) offer non-credit one or two day computer classes. Other campuses (Aspen, Rifle, Summit County, Leadville) offer one credit classes that last about a month and are offered in the evenings. To get more information on the classes offered, visit the website for all of the campuses (www.coloradomtn.edu). From this website, select the classes tab at the top of the page and then click on class schedules. This page will allow you to select the class schedules for the individual campuses. The campuses may be able to offer requested classes. If you don't see a class you're interested in, call the individual campus. The phone number for the Central Services Office is 800-621-8559.



TIRE CHAIN GUIDELINES

Colorado's chain law applies to every state, federal, and interstate highway in CO. Metal chains must consist of two circular metal loops, one on each side of the tire, connected by not less than nine evenly spaced chain loops across the tire tread. **Commercial vehicles with four or more drive wheels must chain four wheels. Dual tire chains are acceptable.** Approved Alternate Traction Devices include *wheel sanders*, which must carry sand sufficient to get the vehicle through the chain law area, and *pneumatically driven chains*, which spin under the drive wheels automatically as traction is lost. The fine for not carrying chains on I-70 Sept 1-May 31 is \$50 plus \$17 surcharge. Statewide, the fine for not chaining up is \$500 with a \$157 surcharge. The fine for not chaining up and subsequently blocking the road is \$1000 with a \$313 surcharge.

**Did
You
Know?**

NEW in 2007
Commercial vehicles operating between mileposts 163 (Edwards) and 259 (Morrison) on I-70 from September 1 to May 31 must carry sufficient chains to be in Compliance with Colorado's Chain Law.

Ideas That Work

Saving Your Agency Time & Money

Large Tire Trailer, Towner County, ND 2007 You Show Us Contest *Regional Winner*

Problem Statement:

With motor graders and front end loaders located throughout the county, it is necessary to do tire repair on sight, hauling tires in for repair. Manually handling these tires is very difficult and can be unsafe for the individual if not handled properly.

Discussion of Solution:

Larry and his staff built a small trailer as shown in the photo to transport the large tires to and from the work site as necessary. The trailer has a two (2") inch axle with 16 inch wheels. The trailer carriage is five (5) feet long, two (2) feet wide and thirty nine (39) inches high, using 1 1/2 inch square steel tubing. The trailer bed is pinned at the front to the trailer hitch for easy tilting in the back. The tail gate is hinged and can then be dropped to the ground level, making it very easy to roll the tire into the cage. The top of the tailgate has a chain attached to partially raise the tailgate when the tire is placed thereon. When the trailer is tilted down in front the tire rolls ahead and the tailgate can be closed. There is a winch located on the trailer hitch to assist in pulling the trailer carriage into place and the pin reinserted. The procedure is reversed for unloading the tire. With this design they are able to transport the tire on the roadway within the posted speed limit to the repair shop. This trailer design is working out very well. Three trailers will be built to serve the road maintenance shops in the county.



Labor, Equipment, and Materials Used: Two Landfill employees, normal shop tools, and a welder were used. The two employees stripped down an old burner and used 65% of the metal to build two trailer frames. Two old truck axles were used for the main wheels. The only money spent was for two small wheels and 35% of the metal was purchased.

Total Cost: New material was purchased for this at a cost of approximately \$600.00. All labor was done in the shop by the operators, working on this during slack time in the winter when there was no snow removal required. The 16" wheels were purchased to have more availability of used tires.



Savings and Benefits:

Handling these large tires is very difficult. The process required two individuals to load them into a truck (pickup), with the heavy lifting required, increasing the possibility for injury. With the trailer, very little lifting is required; therefore, there is less possibility for injury. One individual can handle the removal, loading, unloading and replacement of the tire alone.

For more info contact:

Larry Halvorson, Road Foreman Towner County, RR 1, 850 9TH St. Cando, ND 58324, 701-968-4366.

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

Signing, Pavement Markings, MUTCD

January 23, 2008 - Denver
January 30, 2008 - Fort Morgan
February 5, 2008 - La Junta
February 26, 2008 - Grand Junction

Roadway Safety & Work Zone Traffic Control

March, 18 2008 - Montrose
March 20, 2008 - Fort Collins
March 25, 2008 - Colorado Springs
March 27, 2008 - Trinidad

Road Scholar Electives

1.5-Day NIMS & ICS Incident Command Systems 100 (Full Day-First Day) and

National Incident Management Systems 700 (Half Day-Second Day)
January 24 and 25, 2008 - GJ
February 28 and 29, 2008 - Denver

NHI: Design, Construction and Maintenance of Highway Safety Appurtenances

January 28, 2008 - Denver

Chip Seal Applications

March 31, 2008 - Denver
April 1, 2008 - Pueblo
April 3, 2008 - Grand Junction

Basics of a Good Gravel Road

April 21, 2008 - Durango
April 24, 2009 - Glenwood Springs
April 29, 2008 - Fort Morgan
May 1, 2008 - Pueblo

NEW Federal Retroreflectivity Standards & Maintenance Procedures

April 7, 2008 - Montrose
April 9, 2008 - Denver
April 11, 2008 - Pueblo

Remember!

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

Heavy Equipment - Motor Grader

Northwest - Routt County
April 28, 2008 - Classroom, Hayden
April 29-30, 2008 - 1st In-field Group
May 1-2, 2008 - 2nd In-field Group

All About Asphalt Pavements

Dates to be determined
Greeley, Colorado Springs, Grand Junction

Work Zone Safety Inspection

Dates to be determined
Fort Collins, Colorado Springs, Glenwood Springs

Supervisory Skills Classes

Who's Coming Thru Door Today?:

Dealing with People
January 15, 2008 - Castle Rock

Are You Understood?

Verbal Communications
January 16, 2008 - Castle Rock

Developing the Leader Within

March 27, 2008 - Grand Junction

Ethics for New Supervisors

April 28, 2008 - Grand Junction

Written Communications

April 29, 2008 - Grand Junction

Conferences

2008 Concrete Pavement Conference

February 5, 2008
The Pavillion @ Denver Merchandise Mart
For information visit <http://www.paveconcrete.org/>

2008 Rocky Mountain Asphalt Conference

February 20-22, 2008
Holiday Inn, Denver International Airport
For registration and information, visit
www.cm.cahs.colostate.edu/RMACES/hotel_info.stm



FALL COLORADO SUPERVISORY SKILLS GRADUATES

Walter Garcia - *Town of Mead*

FALL COLORADO ROADS SCHOLAR GRADUATES

Theresa Ladenburger - *Eagle County*

Robert Denison - *Teller Cnty*

Michael Olson - *City of Lafayette*

Jeff Hinkle - *Arapahoe Cnty*

Lenny Croxton - *Arapahoe County*

Frank Behrens - *Arapahoe County*

Todd Anderson - *City of Westminster*

Russell Harris - *LaPlata Cnty*

Bob Alexander - *City of Idaho Springs*

Ken Berkhimer - *City of Boulder*

Peter Rosato - *City of Boulder*

Greg Summer - *City of Gunnison*

Mike McElhaney - *City of Idaho Springs*

Nick Radtke - *City of Alma*

Kim Rains - *Otero County*

Gerald Belew - *Otero County*

Robert Patten - *Phillips Cnty*

Steve Triplette - *Phillips Cnty*

Bill Wilson - *San Miguel Cnty*

Tim Caton - *Montrose Cnty*

Gary Moore - *San Miguel Cnty*

Eric Cottingham - *Summit County*

Bob Hughston - *Jefferson County*

Edward Russell - *Routt Cnty*

ACROSS

1 A severe winter storm condition characterized by low temperatures, strong winds, and heavy blowing snow.

5 Snow and ice control practice of applying liquid chemicals to prevent the formation of frost or the bonding of snow or ice to pavement; operations usually begin before or just as a storm hits.

8 A series of metal loops capable of providing improved traction on the roadway.

10 Popular term for a very thin coating of clear ice which forms on a pavement or bridge deck surface.

11 A flow of snow down a mountainside often causing road closures.

12 Winter weather removal equipment.

DOWN

2 Chemical or mechanical means to break the bond between the pavement and the snow and ice on its surface.

3 Range of pavement temperatures at which chemical will effectively melt ice.

4 Ensure that you can see clearly in poor weather conditions.

6 No matter how far you are driving or what the weather conditions, always wear your...

7 The addition of liquid agents to salt and sand. Helps the mixture stick to the road instead of blowing off to the shoulder.

9 There may be loss of this during icy slippery conditions.

13 Do this to your vehicle after snow storms to remove any material or liquid chemical buildup.



Winter Maintenance



www.CrosswordWeaver.com

The completed puzzle can be found on our website at:
<http://ltap.colorado.edu>

Colorado LTAP

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

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