

# Colorado LTAP

February 2007

Serving local transportation agencies throughout Colorado

Spring Issue

## Who's Responsibility Is It? Regulations for Railroad Crossings



By: Lindsay Nathaniel, Colorado LTAP

**R**egulations defining the responsibilities of municipalities and the railroad have been in short supply since the 1920's. Questions about who is responsible for materials, maintenance, signing, etc have not. As of April 2006, there are new regulations in place that define the responsibilities of municipalities and of the railroad.

The Code of Colorado Regulations defining who is responsible for upgrading and replacing railroad crossings can be found at <http://www.dora.state.co.us/puc/rules/723-7.pdf>.

Part 7, Rule 7211 (A) states, "The roadway authority shall bear the cost of materials to maintain, repair, or replace the crossing surface. The railroad, railroad corporation, rail fixed guideway, transit agency, or owner of the track shall bear the cost of installation,

maintenance, repair, or replacement of the crossing surface." This means that governmental and quasi-governmental entities are responsible for paying for the materials needed to replace the crossing.

The railroad is responsible for the repairs and for maintenance of the crossing. Governmental and quasi-governmental entities are responsible for maintaining and paying for the maintenance of the highway approaches to the railroad crossing. This includes the cost of improvements to the highway, including the approaches and the "initial cost of the necessary crossing surface extension" when the railroad crossing is widened. This regulation is outlined in Part 7, Rule 7211 (B).

**LOOK INSIDE**  
**Sign Inventory Management Systems**

As a general rule, the crossing warning devices at railroad crossings shall be maintained by the railroad. The regulation states that the entity that owns the track at the crossing is responsible for keeping the warning devices in good operating condition and in Colorado this is usually the railroad. If there is a spur track, there is a chance that this might belong to a municipality. All governmental and quasi-governmental

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### Routing Slip

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

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

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

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## Program Manager's Corner

*Winter's not over yet...*

We've been enjoying some warm weather lately. Let's not fall into a false sense of security. Winter's not over yet. Agencies could still be hit hard. So let's be prepared. Agencies should take this opportunity to make sure all equipment and labor forces are up for the task. I've been made aware of several accidents occurring lately due to failing equipment, plows falling off, etc. Don't let this happen to you. Included in this issue are a few safety tips and inspection checklists. Be safe and take the time to check important aspects of your major vehicles.

This Spring Colorado LTAP will be partnering with the Colorado Contractor's

Association to offer the Traffic Control Supervisor-TCS **certification**. It is a two-day certification program designed to train those who will be actively involved in designing or setting up and maintaining temporary traffic control in a work zones; and covers how to read and implement traffic control plans along with techniques for installation and removal.

An additional list of upcoming training programs is listed in the back. Don't miss the FREE flagger certification classes.

But then again, I hear the answer to the ultimate question of Life, the Universe, and Everything is.....42.

*Renée Koller*

## Quotes

of

the  
Day

Many people have revered **Albert Einstein** as a genius. Well then let's take some of his words of wisdom to heart!

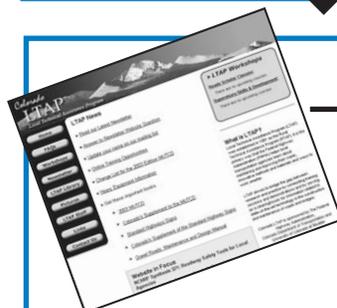
*"Everything should be made as simple as possible, but no simpler."*

*"A person who never made a mistake never tried anything new."*

*"Any fool can make things bigger, more complex, and more violent. It takes a touch of genius - and a lot of courage - to move in the opposite direction."*

I came across this one by Einstein and just couldn't resist:

*"Any man who can drive safely while kissing a pretty girl is simply not giving the kiss the attention it deserves."*



<http://ltap.colorado.edu>

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

# Maintaining Traffic Sign Retroreflectivity Tools and Guidance

By: *Stuart Thompson, Utah LTAP Center*

Although there is no legal date for setting minimum levels of retroreflectivity for traffic signs, the Federal Highway Administration (FHWA) has posted a scheduled date of 11/30/07 for publication of the final rule. The comment period for the proposed minimum levels listed below was closed on 11/6/06 nearly three and a half years after the rulemaking initiated in 2003.

The proposed minimum levels are outlined in Table 1, which identifies acceptable sheeting types and minimum levels of retroreflectivity as a function of the color of the sign, whether they are ground mounted or overhead, and the text and symbol types, either bold or fine. Fine symbol signs are those not listed as bold and not covered in the special cases section.

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**Table 1: Proposed Minimum Levels of Retroreflectivity**

Sign Color	Sheeting Type (ASTM D4956-04)				Additional Criteria
	Beaded Sheeting			Prismatic Sheeting	
	I	II	III	III, IV, VI, VII, VIII, IX, X	
White on Green	W*; G ≥ 7	W*; G ≥ 15	W*; G ≥ 25	W ≥ 250; G ≥ 25	Overhead
	W*; G ≥ 7	W ≥ 120; G ≥ 15			Ground-mounted
Black on Yellow or Black on Orange	Y*; O*	Y ≥ 50; O ≥ 50			Ⓡ
	Y*; O*	Y ≥ 75; O ≥ 75			Ⓢ
White on Red	W ≥ 35; R ≥ 7				Ⓣ
Black on White	W ≥ 50				-
Ⓡ The minimum maintained retroreflectivity levels shown in this table are in units of cd/lx/m <sup>2</sup> measured at an observation angle of 0.2° and an entrance angle of -4.0°. Ⓢ For text and fine symbol signs measuring at least 1200 mm (48 in) and for all sizes of bold symbol signs Ⓣ For text and fine symbol signs measuring less than 1200 mm (48 in) Ⓤ Minimum Sign Contrast Ratio ≥ 3:1 (white retroreflectivity ÷ red retroreflectivity) * This sheeting type should not be used for this color for this application.					
<b>Bold Symbol Signs</b>					
<ul style="list-style-type: none"> <li>W1-1, -2 – Turn and Curve</li> <li>W1-3, -4 – Reverse Turn and Curve</li> <li>W1-5 – Winding Road</li> <li>W1-6, -7 – Large Arrow</li> <li>W1-8 – Chevron</li> <li>W1-10 – Intersection in Curve</li> <li>W1-11 – Hairpin Curve</li> <li>W1-15 – 270 Degree Loop</li> <li>W2-1 – Cross Road</li> <li>W2-2, -3 – Side Road</li> <li>W2-4, -5 – T and Y Intersection</li> <li>W2-6 – Circular Intersection</li> <li>W3-1 – Stop Ahead</li> </ul>		<ul style="list-style-type: none"> <li>W3-2 – Yield Ahead</li> <li>W3-3 – Signal Ahead</li> <li>W4-1 – Merge</li> <li>W4-2 – Lane Ends</li> <li>W4-3 – Added Lane</li> <li>W4-5 – Entering Roadway Merge</li> <li>W4-6 – Entering Roadway Added Lane</li> <li>W6-1, -2 – Divided Highway Begins and Ends</li> <li>W6-3 – Two-Way Traffic</li> <li>W10-1, -2, -3, -4, -11, -12 – Highway-Railroad Advance Warning</li> </ul>		<ul style="list-style-type: none"> <li>W11-2 – Pedestrian Crossing</li> <li>W11-3 – Deer Crossing</li> <li>W11-4 – Cattle Crossing</li> <li>W11-5 – Farm Equipment</li> <li>W11-6 – Snowmobile Crossing</li> <li>W11-7 – Equestrian Crossing</li> <li>W11-8 – Fire Station</li> <li>W11-10 – Truck Crossing</li> <li>W12-1 – Double Arrow</li> <li>W16-5p, -6p, -7p – Pointing Arrow Plaques</li> <li>W20-7a – Flagger</li> <li>W21-1a – Worker</li> </ul>	
<b>Fine Symbol Signs – Symbol signs not listed as Bold Symbol Signs.</b>					
<b>Special Cases</b>					
<ul style="list-style-type: none"> <li>W3-1 – Stop Ahead: Red retroreflectivity ≥ 7</li> <li>W3-2 – Yield Ahead: Red retroreflectivity ≥ 7; White retroreflectivity ≥ 35</li> <li>W3-3 – Signal Ahead: Red retroreflectivity ≥ 7; Green retroreflectivity ≥ 7</li> <li>W3-5 – Speed Reduction: White retroreflectivity ≥ 50</li> <li>For non-diamond shaped signs such W14-3 (No Passing Zone), W4-4p (Cross Traffic Does Not Stop), or W13-1, -2, -3, -5 (Speed Advisory Plaques), use largest sign dimension to determine proper minimum retroreflectivity level.</li> </ul>					

## Colorado LTAP Advisory Committee Members

◆  
**Marlene Crosby**  
Gunnison County

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**John Baker**  
Town of Snowmass

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**Adam Lancaster**  
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FHWA

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**Yunping Xi**  
University of Colorado at Boulder

◆  
**Renée Koller**  
Colorado LTAP

## National Work Zone Awareness Week

April 2 - 6, 2007

Scheduled in April each year, *National Work Zone Awareness Week* is a national campaign that helps increase public awareness of work zone safety. Local community activities help educate the nation on work-zone related injuries and fatalities and the hazards and dangers that can be encountered and avoided when driving through a road construction zone. The theme for this year's NWZAW will focus on the importance of signing - "**Signs of Change**" [www.atssa.com/cs/work-zone-safety-awareness](http://www.atssa.com/cs/work-zone-safety-awareness)

## National Public Works Week

May 20 -26, 2007

NPWW is a celebration of men and women in North America who provide and maintain the infrastructure and services collectively known as public works. Instituted as a public education campaign by the APWA in 1960, NPWW calls attention to the importance of public works. The week has been celebrated in many different ways from parades to open houses to media events. To learn more about activities to promote this event, to learn how other agencies are celebrating, or to download an *How To Guide* visit online.

**Moving Life Forward**  
<http://www.apwa.net/About/npww/>

# Public Works Management System Safety Software Initiative

The LTAP community has been challenged for 20 years to provide low-cost, easy to use, sustainable public works software programs. Building on the historic 5,000 RSMS user base, LTAP is in the process of updating current software and programs to meet today's ever changing technical and data needs, in a sustainable manner.

The New Hampshire and Utah LTAP centers are working closely with the LTAP Exchange, LLC and professional software developers in a public/private partnership for the development of sustainable GIS-enabled Public Works Management Software (PWMS) modules.

These modules are the next generation software tools from those that were originally introduced by the LTAP centers. They include:

> **Road Surface Maintenance System:** Pavement management system (evolved from an initial distribution started in 1982.)

> **DrainsMS:** Data collection and reporting tool for EPA's phase 2 NPDES compliance.

> **Road Safety Audit/Signs:** Project level safety analysis and sign inventory management.

> **GPS Tracker:** Pick and place assets on a GIS map via stylus or GPS receiver. Useful for graphically representing assets, conditions, etc.

> **Network Safety Analysis:** Overall data analysis tool utilizing information obtained in each of the modules collected, along with other pertinent locality information (i.e., schools, hospitals, etc).

These modules will all be spatially enabled, meaning they will be tied to a GIS map and database. The suite of modules is being programmed to Windows interface standards. They are designed to

allow non-proprietary data exchange via ACCESS, Excel, Shapefiles, etc.

An internet user forum has been established at [www.ltapexchange.net](http://www.ltapexchange.net).

### Interactive Poll

The developers are encouraging feedback and comments on module content from everyone. We would like to open communications with all municipalities across the country. Feedback on state of technology, what your current needs are, and what your future needs will be. We want to invite your participation in this new user forum.

**As an incentive for participating in the interactive poll, there will be a raffle for an I-Pod give away!**

### Software Rollout Schedule:

*June 1:* GPS Tracker

*July 15:* DrainMS

*July 30:* RSMS

*September 15:* Road Safety Audit/Signs

*November 1:* Network Safety Analysis

### Projected Cost Model:

The individual module retail pricing is as follows:

RSMS	\$2,000
Drains	\$1,000
RSA/Signs	\$1,000
GPS Tracker	\$500
Network Safety	<u>\$850</u>
<b>Total Suite Retail:</b>	<b>\$5,350</b>

**Discounted Action Pack Suite/Subscription Price:** **\$1,100\***

\*The discount pack includes a 12-month license, data archiving on an LTAP Exchange server, and technical support. Maintenance, future product upgrades, all included for this annual subscription rate.

We invite everyone to provide feedback and to contribute to the success of this effort!

[www.ltapexchange.net](http://www.ltapexchange.net)



*Providing Innovative Software Solutions  
for Field Data Acquisition,  
Sustainable GIS Mapping, and  
Municipal Asset Management*



# PWMS-SAFETY SUITE

*Public Works Management System and Safety Analysis*

**LTAP Exchange is pleased to announce the development and release of the first professionally-developed, fully-supported, GPS-enabled, and GIS-compatible suite of municipal asset management and safety analysis tools based on the time-tested concepts and expertise of the LTAP/T<sup>2</sup> community.**

## **The PWMS-Safety Suite includes:**

### **GPS TRACKER**

- Rapid field data acquisition platform

### **DrainsMS**

- Drainage asset management tools
- Phase II NPDES compliance reporting

### **RSMS**

- Roadway Surface Maintenance System
- Budgeting and forecasting tools

### **RSA/SIMS**

- FHWA road safety audit tools
- Signs management

### **Safety Advisor**

- Expert tool for network safety analysis
- Incorporates data from RSMS, Drains, RSA/SIMS
- Prioritize repair scheduling based on conditions and compliance

## **SPECIAL OFFER!**

**Help Contribute Info to  
PWMS-Safety Suite**

For a limited time, municipalities and others are invited to visit us online to complete a simple survey and become eligible for substantially discounted pricing on PWMS-Safety Suite and bundled data acquisition packages.

[www.ltapexchange.net/survey](http://www.ltapexchange.net/survey)

Help contribute to the success of this software launch by including notice of these discounts in your newsletters so that we can fully address the needs of the user community!

### **About LTAP Exchange**

LTAP Exchange's mission is to provide sustainable, cost-effective solutions to spatial data acquisition and asset management by forming innovative partnerships between the public (local, state, federal, NGO, and university) and private (software, internet, tax mapping, engineering, and GIS professionals) sectors and by offering custom software, web-based data hosting, GIS mapping, and time-saving municipal transaction services. As part of our mission, we are committed to leveraging and expanding the substantial resources of the nationwide LTAP/TTAP (Local/Tribal Technology Assistance Program) / T<sup>2</sup> (Technology Transfer) community, whose 57 centers play a vital role in the development of asset management solutions and the education and training of personnel at the local and state level.

**FOR ADDITIONAL INFORMATION ON SOFTWARE AND GIS SERVICES, PLEASE VISIT:**

[www.ltapexchange.net](http://www.ltapexchange.net)

**FOR SOFTWARE SALES AND PRICING, PLEASE E-MAIL:**

[sales@LTAPexchange.net](mailto:sales@LTAPexchange.net)

15 Emerson Rd, Milford, NH 03053 (603) 459-2117 office (603)672-5599 fax



*Providing Innovative Software Solutions  
for Field Data Acquisition,  
Sustainable GIS Mapping, and  
Municipal Asset Management*



# GPS TRACKER

*Rapid Data Acquisition Software*



**LTAP Exchange Service Provider, LLC, is pleased to introduce GPS TRACKER and the associated suite of Public Works Management System and Safety Analysis (PWMS-Safety) add-in modules.** GPS TRACKER is an extremely affordable software platform for rapid field data acquisition. The base software package is easily user-configured and customizable to collect and characterize a wide variety of spatial data for GIS mapping and database analysis. Pre-configured PWMS-Safety add-in modules allow for point and click collection of roadway, drainage and sign asset conditions, road safety audits, and provide easy to use tools for compliance reporting, budgeting, and prioritization via a network level analyses.

## **GPS Tracker Features:**

### *GIS Compatible*

- Import common geospatial objects (shapefiles, raster images) for basemap generation
- Create / edit / export shapefiles

### *GPS Enabled*

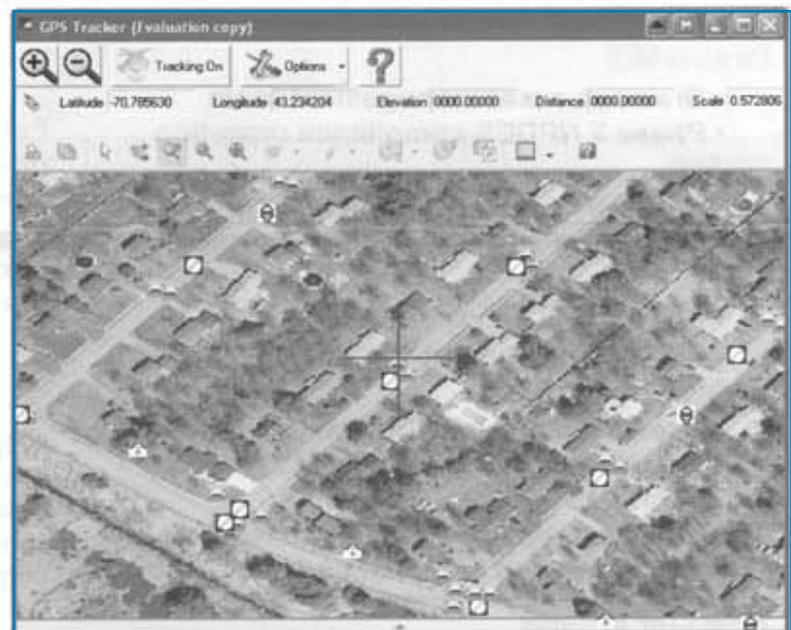
- Supports standard GPS devices
- Auto-tracking map features
- GPS is not required for data collection w/ proper basemap

### *Database Support*

- Asset data is collected in standard database formats
- Supports multiple users and database versioning

### *User Customizable*

- Wizard function allows for custom programming applications
- User forum support



**For More Information on GPS TRACKER,  
including pricing and special promotions:**

[www.ltapexchange.net](http://www.ltapexchange.net)



LTAP Exchange owns the software distribution rights to GPS TRACKER and the associated PWMS-Safety modules. Development of this software was made possible through innovative partnerships with IMAGINiT Technologies, the New Hampshire and Utah Technology Transfer Centers, and other contributors.

IMAGINiT



**GPS Tracker v1.0**

## Encouraging Kids Into Public Works Tell them to

**I**ntroduce young people in your life to *Go!* This entertaining, free, online magazine produced by CTRE (a part of the Iowa LTAP) will open their eyes to the variety of careers in transportation. *Go!* includes upbeat feature articles, up to five rotating departments - School Spotlight, Train your Brain, Historically Speaking, Green Scene, and Mystery Photo- puzzles and quizzes.

The January–February 2007 issue focuses on winter-related topics like “How do they do that?” (keeping airplanes and runways clear of snow and ice) and “Learning to drive a snowplow” (students struggle to maneuver a virtual snowplow via a state-of-the-art driving simulator). In addition to being fun, even a little quirky, feature articles provide basic information—general qualifications, educational requirements, working conditions, etc.— about specific transportation careers.

*Go!*'s advisory board includes high school and college students who help keep the editor, Michele Regenold (still a kid at heart), in touch with their interests and issues. For more information, contact Michele at the Iowa LTAP center, 515-296-0835, mregenol@iastate.edu.

Several Iowa organizations are



sponsoring this startup effort. So, initially they are focusing their efforts toward Midwest subscribers and featuring Midwest educational programs. **HOWEVER**, the sponsors want to know if this service would be of interest/value nationally. **So, tell us what you think, and spread the word.**



**Do not let your kids pass *Go!***

<http://www.go-explore-trans.org/>

The **Winter Works** issue can be accessed at <http://www.go-explore-trans.org/2007/jan-feb/index.cfm>

If you'd like to promote this no-cost service in your area, feel free to use the attached newsletter article available at: [http://www.ctre.iastate.edu/pubs/Tech\\_News/2006/nov-dec/go\\_magazine.pdf](http://www.ctre.iastate.edu/pubs/Tech_News/2006/nov-dec/go_magazine.pdf)



In March 1933, Germany's first concentration camp for political prisoners was established near Munich, Germany. It served as a model for all subsequent camps. In its 12 years of existence, over 200,000 persons from throughout Europe were incarcerated here and surrounding subcamps. Although the camp was only originally designed to hold ~8,000 prisoners, Dachau reached its peak in 1944 and held more than 60,000 prisoners. On April 29, 1945, U.S. troops liberated the remaining 32,000 survivors. The prisoner camp became a Memorial Site in 1965.

All arriving prisoners had to pass through the gate shown above with its inscription

“Arbeit macht frei”

(“Work brings freedom”).

## Who's Responsibility Is It? Regulations for Railroad Crossings

*continued from page 1...*

agencies should know the ownership of any spur tracks in their jurisdiction. This is according to Part 7, Rule 7301 (A).

Section (B) of Rule 7301 addresses the highway traffic signals that are interconnected with crossing warning devices. The governmental and quasi-governmental agencies are required to maintain the highway traffic signals only. The railroad crossing warning devices are still the responsibility of the railroad.

This article addresses just a few of the questions Colorado LTAP has received from agencies recently. More information on these topics can be found at the *Public Utilities Commission* website at

<http://www.dora.state.co.us/puc/>.

The rules that regulate the railroad are at <http://www.dora.state.co.us/puc/rail/RailRules.htm>.

For additional information or questions, contact Pamela Fischhaber, the Chief of Rail and Transit Safety Section, at 303-894-2529 or [pamela.fischhaber@dora.state.co.us](mailto:pamela.fischhaber@dora.state.co.us).



*LTAP Program Manager Renée Koller had the fortunate/unfortunate opportunity to visit the Dachau camp on Christmas Eve. The history behind the site is disturbing and humbling to say the least. Signs are an important part of our life in Public Works. Let's remember that signs can often be harmful, and let's work toward a safer world with our signs.*

**2007  
COLORADO  
PEDESTRIAN  
SUMMIT**

**September 20-22  
Vail, Colorado**

*Colorado Walks* is hosting the 2007 Colorado Pedestrian Summit in Vail, CO. The Summit will bring together elected officials and citizens from communities throughout Colorado with professionals from health, fitness, schools, & transportation to learn the critical steps necessary to create strong community coalitions to ensure that pedestrians of all ages and abilities have the opportunity to walk safely throughout their community. The format of the Summit is a short lecture followed by roundtable discussion of actual Colorado case studies. You will leave the Summit with knowledge of the physical, political, and economic components of making communities walkable and the tools necessary to implement change in your community. A few of the workshop topics include:

**Building Multidisciplinary Partnerships, Walkable Community Policies, Action Plans, & Implementation Strategies, and Sustaining Walkable Communities.**

**ColoradoWalks.org**

## Maintaining Traffic Sign Retroreflectivity Tools and Guidance

*continued from page 3...*

Highway agencies may exclude the following signs from the retroreflectivity maintenance guidelines.

- A. Parking, Standing, and Stopping signs (R7 and R8 series)
- B. Walking/Hitchhiking/Crossing signs (R9 series, R10-1 through R10-4b)
- C. Adopt-A-Highway signs
- D. All signs with blue or brown backgrounds
- E. Bikeway signs that are intended for exclusive use by bicyclists or pedestrians

### Maintaining Minimum Retroreflectivity

FHWA offers the following management and assessment methods for use by agencies to aid in the maintenance of their traffic signs. Combining two or more of the proposed methods may prove useful depending on the agency size and available resources.

**A. Visual Nighttime Inspection** – The retroreflectivity of an existing sign is assessed by a trained sign inspector conducting a visual inspection from a moving vehicle during nighttime conditions. Signs that are visually identified by the inspector to have retroreflectivity below the minimum levels should be replaced.

**B. Measured Sign Retroreflectivity** – Sign retroreflectivity is measured using a retroreflectometer. Signs with retroreflectivity below the minimum levels should be replaced.

**C. Expected Sign Life** – When signs are installed, the installation date is labeled or recorded so that the age of a sign is known. The age of the sign is compared to the expected sign life. The expected sign life is based on the experience of sign retroreflectivity degradation in a geographic area compared to the minimum levels. Signs older than the expected life should be replaced.

**D. Blanket Replacement** – All signs in an area/corridor, or of a given type, should be replaced at specified intervals. This eliminates the need to assess retroreflectivity or track the life of individual signs. The replacement interval is based on the expected sign life, compared to the minimum levels, for the shortest-life material used on the affected signs.

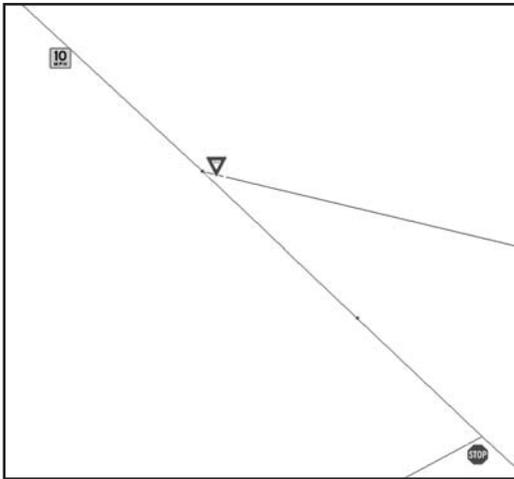
**E. Control Signs** – Replacement of signs in the field is based on the performance of a sample of control signs. The control signs might be a small sample located in a maintenance yard or a sample of signs in the field. The control signs are monitored to determine the end of retroreflective life for the associated signs. All field signs represented by the control sample should be replaced before the retroreflectivity levels of the control sample reach the minimum levels.

Whether or not the proposed publication date proves true, data shows that assessment and management of traffic signs when coupled with crash analysis saves lives, suffering, and reduces property damage. One example of this is the Mendocino Model whereby a local agency was able to realize a 50% percent decrease in fatalities over six years with a cost benefit of one-hundred and fifty dollars for every dollar spent improving signing.

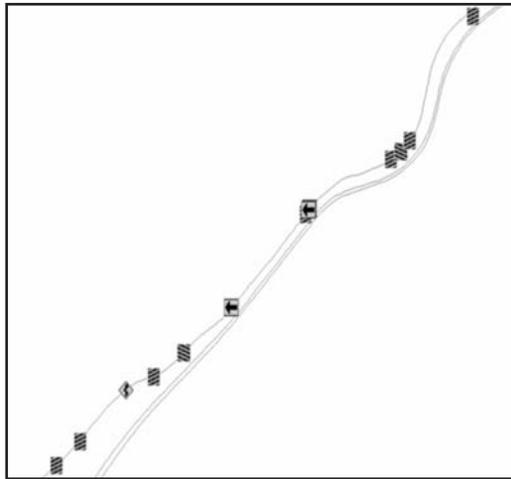
Realizing that implementation of these methods is costly, the Utah LTAP Center has worked to identify low cost user friendly tools that agencies may choose to use. One tool that local agencies may find useful is a safety software suite available for download at:

<http://waylon.engr.usu.edu/>. This suite is royalty free; it is GIS based and includes a sign management module as well as a crash analysis module. Technical support is handled through a forum where users can post and respond to queries sharing their experience with other users. On site implementation may be available through contractors or student help facilitated by various LTAP Centers. Alan Green, the

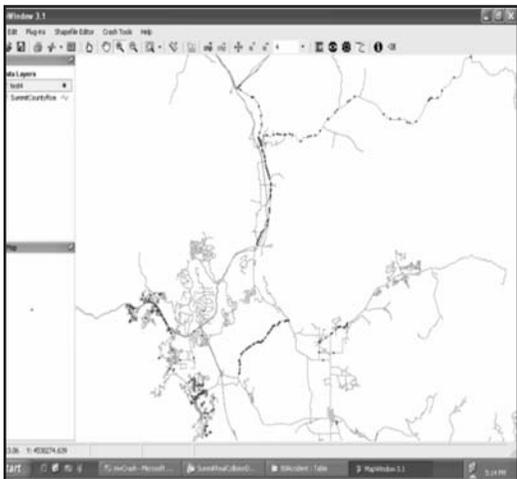
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**SIGN INVENTORY**



**SIGN INVENTORY**



**CRASH ANALYSIS**



**CRASH ANALYSIS with DENSITY GRID**

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Safety Coordinator for Grand County, Colorado said, "I think this software is exactly what the municipalities need to get a sign program up and running. By using their own GIS road data they can go right to any given area and see which signs are in place in that given area. This program is going to be a great tool for Grand County Road & Bridge to use in managing its signs."



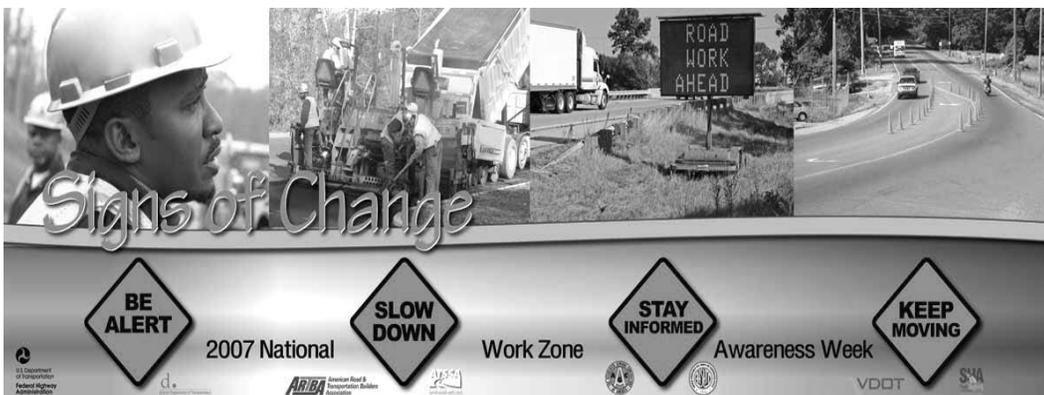
**VILLAGE MILE WALK / RUN**

**Sat, September 22**

The Colorado Pedestrian Summit will conclude on Saturday morning with conference attendees joining Vail residents and visitors in the Village Mile Walk/Run. The Village Mile is the final event in America's Downtown Mile Race Series (<http://www.americasdowntownmile.com/>) and Colorado Walks Miles 2007 season. Summit attendees are encouraged to bring their families for this exciting and fun one-mile walk/run in the heart of Vail's pedestrian district.

**For more information, regarding the Pedestrian Summit or Village Walk/Run, contact:**

Gay Page  
 President  
 Colorado Walks  
 PO Box 24007  
 Denver, CO 80224  
 303-549-5081  
 Fax 303-756-3063  
 Email: [gaypage@ColoradoWalks.org](mailto:gaypage@ColoradoWalks.org)  
 Website: [ColoradoWalks.org](http://ColoradoWalks.org)



## VEHICLE AND EQUIPMENT SAFETY

**Preventive maintenance** is safety. Good preventive maintenance insures the vehicle will operate with optimum performance and less breakdowns resulting in safer operation. You as an operator are an important part of a successful preventive maintenance program.

**Daily safety checks and pre-trip inspections** you make on your trucks are important at any time. Relative to winter operations: **check fluid levels, tire tread and inflation, brakes, windshield wipers and wiper blades, heater, defroster, clean windows and mirrors.**

**Check all lights!** All lights are needed while plowing and spreading. You are out there because of unsafe conditions. Lights aren't only for you to see, but to also be seen!

.....continued on page 13

## Did You Know?

**A 10-inch snow storm can cover a 3' x 100' sidewalk with about 1,650 pounds of snow!**

# Importance of Equipment Maintenance

## Even When Times Get Hectic, Don't Forget to Check for Necessary Repairs

**T**his winter many maintenance programs have been challenged and, in many cases agencies came up short without necessary resources (equipment, deicing materials, and trained labor) to do the job. However, if agencies don't review after large events and find weak links in the system, then when Mother Nature decides to repeat herself agencies could be singing the blues and come up short in the good winter maintenance department.

Accidents caused by malfunctioning equipment can cause hazardous situations for operators as well as the motoring public, not to mention the liability issues. Don't wait until it's too late. As professional snowfighters, safety should be your #1 priority. Provide operators the opportunity to go over their snowplows (truck, motor grader, loader, or backhoe). Is the equipment ready for the challenge of the next big storm? Have equipment inspections and operational functionality been checked?

The following checklist can help you make sure your snowplows and other maintenance equipment are in good working condition before the next big storm.

### Ground Engaging Components

#### **Cutting Edges and Guards**

- ⦿ Inspect all cutting edges. Replace those that are broken or excessively worn.
- ⦿ Inspect wear guards. Replace those that are broken or worn.



#### **Running Gear**

- ⦿ Inspect running gear shoes. Replace those that are broken, worn, or missing.
- ⦿ Inspect adjuster leg components, and replace all that are damaged.
- ⦿ Grease internal threads and sliding members.

#### **Hardware**

- ⦿ Replace all missing or broken bolts. Use grade 8 plow bolts for steel cutting edges.

### Hydraulics

#### **Hoses**

- ⦿ Plug or cap any QC fittings and any open hose ends.
- ⦿ Inspect hoses for any leaks or potential leaks. Replace as needed.
- ⦿ Secure hoses with hose clamps.

#### **Cylinders**

- ⦿ Check for leaks (If V-rod end seals are leaking, try tightening the pack nut 1/4 turn. This method will often stop a small leak.)
- ⦿ Inspect the cylinders for any chrome rod dents or scratches.
- ⦿ Apply a light coat of oil or grease on the exposed rod surfaces.

### Frame and Moldboard

#### **Hoses**

- ⦿ Check pins, bushings, and pivot bolts for wear.

...continued on page 13



# 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 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 GSWBBT

#### *Guidelines for the Selection of W-Beam Barrier Terminals*

This CD provides information for designers and construction/maintenance personnel responsible for selecting and properly installing the most appropriate terminal design at any site. In addition to showing the actual crash performance of each terminal type, this CD provides guidance on proper site grading and presents real-world examples of both appropriate and inappropriate installations.

#### 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.

#### 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 TC

#### *Traffic Calming*

In this program, traffic calming experts will provide you with information on traffic calming practices that work; information on new trends, models and devices. They will also cover how to prevent/avoid common pitfalls and how to effectively involve constituents in the process. Equip yourself with the knowledge to make the right traffic calming choices for your community. If you want to succeed with traffic calming this program is for you!

#### CD SSHB

#### *Standard Specifications for Highway Bridges*

In this program, traffic calming experts will provide you with information on traffic calming practices that work; information on new trends, models and devices. They will also cover how to prevent/avoid common pitfalls and how to effectively involve constituents in the process. Equip yourself with the knowledge to make the right traffic calming choices for your community. If you want to succeed with traffic calming this program is for you.

## New Publications

### Location Title

11 FSU *Financing Stormwater Utilities*  
Urban storm water management deals with two components--quantity and quality. This booklet covers the user charge and the utility concept as the most dependable and equitable approaches available to local governments for financing storm water management.

17 GLD *Good Until the Last Drop - A Practitioner's Guide to Water Reuse*  
This book is for the public utility/public works professional, to provide an understanding of the important considerations needed to capture the greatest value from the recycled water resource. The book raises many questions and provides guidance to help resolve many issues.

11 ICS *Incident Command System (ICS)- Pocket Guide*  
Many incidents--whether major accidents (such as Haz-Mat [hazardous materials] spills), minor incidents (such as house fires and utility outages), or emergencies and major disasters (such as tornadoes, hurricanes, floods, and earthquakes) require a response from a number of different agencies. All incidents require a coordinated effort to ensure an effective response and the efficient, safe use of resources. To achieve this coordination the Incident Command System was created.

50 QGTTCD *Quality Guidelines for Temporary Traffic Control Devices Handbook*  
Quality Guidelines for Temporary Traffic Control Devices is a handy pocket sized handbook which illustrates various condition levels of TTC devices. The guidelines classify traffic control devices as acceptable, marginal or unacceptable for use in work zones.

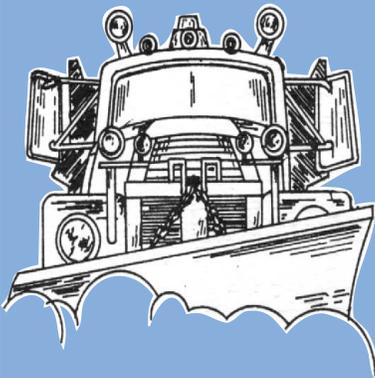
40 RR *RIPARIAN RESTORATION: Road Field Guide*  
The US Forest Service's Riparian Restoration: Road Field Guide addresses practical issues involved with road design and building in relation to riparian areas. Topics discussed include retaining walls, slope rounding and revegetation, soil bioengineering, invasive species, ditch treatments, low water crossings, culverts, fish passage, and many more.

## New Videos

### Location Title

V101 SRIS *Snow Removal In Safety*  
Snow clearing and removal is a seasonal task that increases accident risk. To reduce these risks, you must train employees with the proper health and safety measures before winter. This video covers topics such as planning before departure, road safety, first aid, breakdown of vehicles, clearing out roads and parking lots, collection and loading of snow on public roads and sidewalk maintenance.

## NEW: A Snowplow Operator's Guide to Snow and Ice Equipment



This winter has been one that has brought a lot of snow to the state and it's not over yet. Colorado LTAP has an addition to the library that will help make the rest of the winter a little bit easier. The Idaho Department of Transportation and the Idaho LTAP center developed an interactive DVD for snowplow operators called *A Snowplow Operator's Guide to Snow and Ice Equipment*. Through video clips and interactive elements, this DVD helps snowplow operators learn about types of snow fighting equipment, maintenance, inspection, and operation. The DVD is self paced and has interactive quizzes at the end.

## Importance of Equipment Maintenance

*continued from page 10...*

- ⦿ Make sure all keepers are in place.
- ⦿ Make sure shear bolts and pins are the same grade as those originally in the equipment (usually grade 2 or 5). Although you may be tempted to replace these bolts with a grade 8 bolt to reduce the need for replacement when plowing, the original-grade bolts are designed to shear, protecting the driver and the equipment.

### Weldments

- ⦿ Check for cracks.

### Setup

- ⦿ Replace worn or broken parts found by above inspections.
- ⦿ Position plow in storage/parking space on a solid surface.
- ⦿ Adjust running gear, if equipped, to hold plow frame at the level needed to reconnect to the truck. This adjustment will also properly set the running gear for plow operation.

### Replacement Stock

- ⦿ Check your stores of replacement stock.
- ⦿ Order replacement stock by mid-fall to avoid shortages when a storm hits.

### Visibility

- ⦿ Check the visibility of your truck.



If your old equipment just can't hold up to prolonged use during back-to-back storms or survive an extended snowstorm which dumps 2-3 feet or more, then down time should be used to leverage public awareness for new equipment of more snowplows. In between storms, repair equipment, or explore any new techniques, material or equipment you want to add to your winter maintenance resources. This is the time to get those items ordered and installed so you won't be in competition with all the other highway and street agencies wanting to add or upgrade the same equipment or programs.

Don't forget to evaluate your labor needs as well. What do you need to do to make sure that all your labor force is adequately trained on new or borrowed equipment when a storm hits? You certainly don't want to be training the day before the Big One hits.

Make the commitment to put your needs in writing and submit them to the powers-that-be (a city council, the county commissioners, the town supervisors) so they know exactly toward what type of winter maintenance performance your agency is striving.

### References:

*You Survived Last Winter...Did You Learn Anything*, Andrew C. Briscoe III, Salt Institute.

*Pre-Season Winter Maintenance Checklist*, Vol. 20, #3, Fall 2004.

*Safe Winter Operations for Professional Snowfighters*, Salt Institute.

## VEHICLE AND EQUIPMENT SAFETY

**Back-up alarm, plow flags, and warning signs** on the rear of the truck are good safety items for you and others in preventing accidents.

**Radio communications** are a necessity for efficient operations but are also a necessity for safety. Every truck should be required to have a mobile radio for communications.

With a **full fuel tank**, and a **final walk around inspection**, your last safety practice when you climb into the cab before driving off is to **BUCKLE UP**. The use of your safety belt should become habit, a natural action prior to turning the key in the ignition. When that plow hits that raised manhole, you will realize the value of your safety belt habit.

## Did You Know?

**A falling snowflake may take up to TWO hours to reach the ground, and even the heaviest snowflake falls at only ONE mile per hour!**

Contact CO LTAP for a sample Snow & Ice control inspection sheet.

## Congratulations

### Recent Training Program Graduates

Colorado LTAP would like to congratulate the recent graduates of our two training programs. The following participants successfully completed program requirements of attending the nine prescribed courses for each program.

#### Road Scholar

John Carlson - City of Arvada  
 Jim Ellison-City of Arvada  
 Jim Hatheway - City of Delta  
 Al Gomez - City of Lafayette  
 Bob Hosier - City of Lafayette  
 Allen DeBelly - City of Lakewood  
 Mike Stadler - City of Longmont  
 Mark Tafoya - City of Longmont  
 Robert Zufelt - City of Golden  
 Dawn Fosket - City of Greeley

Alfred Rios - City of Greeley  
 Marcos Dominguez-City of Greeley  
 Clarence Sandoval-City of Greeley  
 Will Binegar - Snowmass Village  
 Paul Trujillo - Snowmass Village  
 Mike Garretson - City of Thornton  
 Rob Dinnel - City of Westminster  
 Rob Winter - City of Windsor  
 Keith Wilcox - Woodland Park  
 Donna Pisel - Arapahoe County  
 Kenneth Ross - Arapahoe County  
 Mark Krumpelmann-Arapahoe Cnty  
 Russell Babcock - El Paso County  
 Mike Vander Pol - Garfield County  
 James Fahrni-Gilpin County  
 Bill Clark - Grand County  
 Steve Prather - La Plata County  
 Ken Briar - La Plata County

Gerard Gurule - La Plata County  
 Patricio Montoya-Las Animas Cnty  
 David Livingston - Mesa County  
 Brent Denney - Otero County  
 Ed Ehrlich - Otero County  
 Darryl Schulz - Otero County  
 Jim Linn-Park County  
 Eugen Swick - Phillips County  
 Mike Borland - Phillips County  
 Bill Ziegler - Pitkin County  
 Bryan Kincaid - Teller County  
 Steve Vahsholtz - Teller County

#### Supervisory Skills Program

Mike Stadler - City of Longmont  
 Mike Hillis - Weld County  
 Bob Snidow - Weld County



#### Entire Street Division Certified

The City of Golden's Streets Division recently accomplished a goal, set for itself several years ago, of having the entire crew certified as "Road Scholars" through Colorado LTAP. "We were very close many times but, with employees coming and going, we were just never able to hit our target," said Streets Superintendent Ron Reavis. Pictured above from left to right, Robby Zufelt, Dale Seitz, Mike Councilman, Rob Gibson, Bryan Wellensiek, Dan Garramone, Dave Ackley (the tall one), Chad Mills, Scott Ota, Dave Henkel, Mark Dugan and Steve Kurtz are all certified. Kurtz and Ackley also have completed the *Supervisory Skills and Development Program* courses. There are currently five other employees that are attending the Supervisory Skills Program. Both of these programs have been a tremendous asset to our training and education programs, according to Reavis. The crew is wearing jackets that were given to them as awards in 2005 for having reduced property claim losses by 20% from the previous year.

## 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 & Work Zone TC

March 7, 2007 – Castle Rock  
 March 9, 2007 – La Junta  
 March 12, 2007 – Glenwood Springs  
 March 14, 2007 – Durango

#### Road Scholar Electives

##### Low Cost Safety Improvements

March 27, 2007 – Longmont  
 March 28, 2007 – Colorado Springs  
 March 30, 2007 - Grand Junction

##### Construction Grade Stake & Blueprint

April 23, 2007 – Fort Morgan  
 April 24, 2007 – Colorado Springs  
 April 26, 2007 – Montrose

##### Roadside Vegetation Maintenance

Spring 2007 - 3 Locations

##### Heavy Equipment Training

May 14, 2007 – Byers, CO  
 May 15-16 - In-field Group 1  
 May 17-18 – In-field Group 2

##### Traffic Control Supervisor Certification (TCS)

May 9-10 - Englewood

### Supervisory Skills Classes

#### Developing the Leader Within

March 16 - Denver

#### Ethics

April 16 - South Denver

#### Written Communications

April 17 - South Denver

### Workshops

#### Flagger Certification

May 7, 2007 – Sterling  
 May 8, 2007 – Greeley  
 May 10, 2007 – Frisco  
 May 11, 2007 – Grand Junction

### Conferences

This spring brings conferences you don't want to miss! Come visit the LTAP booth at the following events.

#### Concrete Pavement Workshop

March 21 - 22, 2007  
 Greeley, CO  
[www.paveconcrete.org/workshop.php](http://www.paveconcrete.org/workshop.php)

#### APWA-CARMA Street Conference

April 18-20, 2007  
 Grand Junction, CO  
<http://ltap.colorado.edu/>

#### APWA N. American Snow Conference

April 22-25, 2007  
 St. Paul, MN  
<http://apwa.net/snow>

### Web Based Training Opportunities



**March 22** - Advanced Construction Inspection  
 Part 1: Project Management

**April 5** - Advanced Construction Inspection  
 Part 2: New Technology

**April 12** - Advanced Construction  
 Inspection Part 3: Contract Administration

**April 19** - State-of-Art Technologies for  
 Stormwater Management

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

### 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](mailto:cltap@colorado.edu)

# FREE MATERIALS

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>



## **F11 FSU**      *Financing Stormwater Utilities*

Urban storm water management deals with two components--quantity and quality. This booklet covers the user charge and the utility concept as the most dependable and equitable approaches available to local governments for financing storm water management.

## **FCD GSWBBT**      *Guidelines for Selecting W-Beam Barrier Terminals*

This CD provides information for designers and construction/maintenance personnel responsible for selecting and properly installing the most appropriate terminal design at any site. In addition to showing the actual crash performance of each terminal type, this CD provides guidance on proper site grading and presents real-world examples of both appropriate and inappropriate installations.

## **F11 ICS**      *Incident Command System (ICS)- Pocket Guide*

Many incidents--whether major accidents (such as Haz-Mat [hazardous materials] spills), minor incidents (such as house fires and utility outages), or emergencies and major disasters (such as tornadoes, hurricanes, floods, and earthquakes) require a response from a number of different agencies. All incidents require a coordinated effort to ensure an effective response and the efficient, safe use of resources. To achieve this coordination the Incident Command System was created.

## **F50 QGTTCD**      *Quality Guidelines for Temp. Traffic Control Devices*

This pocket sized handbook illustrates various condition levels of temporary traffic control devices. These guidelines classify traffic control devices as acceptable, marginal or unacceptable for use in work zones.

## **F5 RSG**      *Roadway Safety Glossary Handbook*

The purpose of this glossary is to foster the use of commonly used business terms uniformly used throughout the roadway safety industry and to provide a tool to facilitate effective communication among roadway safety workers. .

**Colorado LTAP**

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