Economic Landslide Repair
Sawdust as Lightweight Backfill

Submitted by: Bob Barrett, Soil Nail Launcher

Kentucky Transportation Cabinet (KYTC) maintenance personnel fought two adjoining embankment failures on Highway 144 in Breckinridge County near the Ohio River for two years. What had begun as two small embankment slips coalesced into a large and rapidly deteriorating landslide. KYTC maintenance personnel were adding material daily by the time the repair project began. In fact, they excavated more than 6 feet of asphalt and pavement millings in the top of the slide as part of the repair.

Following two wet years, the smaller slide expanded along the shoulder about 100 feet. The scarp was limited to the first few feet of asphalt in this expansion. There was appropriate concern that the slide would continue to grow, both into and along the roadway.

The major slide was in an embankment that was only about 25 feet high. It was about 80 feet across and the back scarp went to the center of the road. The slip plane was at a relatively low angle and flatter than would be expected for the silty, sandy clay soils in the area. The toe was bulging up in private property about 150 feet out.

Bedrock is quite deep at this slide, thus traditional methods of repair such as piling and caissons would have been both difficult and expensive. The alignment here is a long tangent. Thus, a road relocation, in addition to holding questionable odds for success, would have to be very lengthy and with some compromise in safety. Any repair would be very expensive, and maintaining the roadway surface was becoming prohibitive.

KYTC officials were looking for solutions and invited Soil Nail Launcher, Inc. personnel to look at the site. It was decided that the smaller failure could be repaired and the lane restored with Super Nails and a geosynthetically reinforced soil wall. The major slide could be repaired by removing material from the top of the slide and replacing it with lightweight material.

The landowner allowed KYTC

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Need a little extra cash?
Your knowledge is worth something.

Our center has recently initiated a program to encourage local participation in the publishing of Colorado LTAP’s quarterly newsletter. We would like the recipients of our newsletter to benefit from all the knowledge local agencies have in the areas of roadway maintenance, design, and construction. Colorado LTAP is offering $50 to city, town, or county employees that submit an article that is chosen to be published in our newsletter. Articles can address current methods and procedures, best practices, innovative techniques, or projects in the transportation industry. Content should contain as much detail as possible, without specifically promoting any particular product. Photos are encouraged. For more information, or to submit articles/photos, include author name and contact info, and mail to the Colorado LTAP office at the address listed on page 2, or email to cltap@colorado.edu.

Trust and Respect

In leadership, no word is more important than trust.
-Mike Krzyzewski

How do leaders earn respect? By making sound decisions, admitting their mistakes, and putting what’s best for their followers and organization ahead of their personal agendas.
- John Maxwell

To build trust, a leader must exemplify competence, connection, and character.
- John Maxwell

Few things help an individual more than to place responsibility on him, and to let him know that you trust him.
- Booker T. Washington

The man of integrity walks securely, but he who takes crooked paths will be found out.
- Proverbs 10:9, NIV

http://ltap.colorado.edu

Visit Colorado LTAP online today for online training, class registration, free lending library, and more.
Goodbye and Good Luck
Farewell to Fred Limmel

In June 2005, Fred Limmel retired from Commerce City after 33 years with the City. Fred has worn many hats while working for the city. His family surrounded him at his retirement party while Fred was honored by several departments; police, fleet maintenance, streets, and even the recreation center—just to name a few. Here, Program Manager Renée Koller presents Fred with a plaque for his 4 years of service on the Colorado LTAP Advisory Committee.

Thank you Fred - We’ll miss you!

Utilizing Sawdust as a Lightweight Fill to Repair a Difficult Landslide

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maintenance personnel to push the material in the top of the slide down onto the toe area. This added significantly to the overall effectiveness of the correction. The heavy soil and asphalt from the top of the slide then acted to buttress when it was dozed to the toe.

The excavation at the top was then filled with sawdust from two local mills. The sawdust was hauled in trucks and dumped onto the roadway. A loader pushed the sawdust over the edge and a dozer spread, leveled and compacted the sawdust all in one operation. The sawdust was covered with about 24 inches of asphalt millings and then paved. The sides were covered with a foot or more of clay and topsoil to seal the air. The base of the fill was graded to drain. This is the Kentucky Transportation Cabinet's first modern sawdust fill construction.

Cost for this solution was half or less compared to more traditional solutions. The entire project took only a few days to complete. The highway was open to one-way traffic during the work, with limited stops for trucks dumping and turning.

Lightweight fill replacement, often under-utilized, can be an inexpensive solution for landslides. There are currently several slides that could be repaired for relatively low cost with lightweight fills - sawdust, expanded shale, and Expanded Polystyrene (EPS) geofoam.

Bob Barrett built sawdust fills while working for the Colorado Department of Transportation and is now the President of Soil Nail Launcher, Inc.

For more information contact: stevem.hall@ky.gov or bob@soilnaillauncher.com
GUIDE TO SURFING THE INTERNET SUCCESSFULLY
Wouldn’t it be wonderful to type a few words into your search engine’s query box and get just the site you wanted? It’s not always possible to find the perfect site and who has the time to search through 5,000 sites looking for it! There’s a better way to find what you need on the Internet, and listed below are three Websites that can help.

For good internet tips:
1. The State University of New York at Albany’s site: http://library.albany.edu/internet
2. “Best Search Tools Chart” is at: http://www.infopeople.org/search/chart.html
3. The Educational Technology Department of San Diego State Univ. lists the “Four NETS for Better Searching”. They are:
   >Start Narrow
   >Use Exact phrases
   >Trim the URL
   >Seek similar pages
Visit their site for details that may help you search the net successfully! http://webquest.sdsu.edu/searching/fournets.htm

Ideas That Work
Saving Your Agency Time & Money

Guardrail Sign Mount
Tony Roberts, Larry Batterton, Bob Taylor, Jeff Vitamanti, WSDOT

The Problem:
Placement and replacement of Carsonite Delineator post used to mark the edges of the paved roadway. Tools available on the market consisted of slide hammer (fence post driver) style installation devices. Each delineator must be driven into the ground approximately 18 inches. In many locations there was asphalt and other barriers making installation extremely difficult. On many occasions requiring the use of a jackhammer to make a pilot hole before installing a delineator. Using this methodology a two-man crew could only install 10 – 20 posts per day.

The Solution:
Develop a tool that would quickly and effortlessly make a pilot hole and to speed up installation operations. The concept was to make a tool that would attach to the stinger of an equipment mounted jackhammer. After receiving permission to test the concept, the WSDOT Colfax shop fellows quickly built the tool and rented the equipment needed. The first tests quickly proved their theories to be correct, and the crew was soon able to dramatically increase production. By using this equipment and changing to a three or four man crew, they are now able to install between 5 and 7 miles of delineator posts per day and average less than 2 minutes per installation. Scrap materials and shop resources were used to build the prototype unit; estimated cost to purchase materials is less then $200. Materials used were a jackhammer spade, Selby tubing, chain and some half-inch plate. It took about two days of testing and modification to develop a working prototype. Larry Batterton, Maintenance Supervisor, supported the men in their inventing and testing.

For more information contact:
Bob Taylor, Maintenance Lead Tech., WSDOT Eastern Region, Colfax Shop, 509-324-6581

This is technology transfer: taking good ideas and documenting them so that they can be shared amongst the communities they impact.

A simple formula: Good Ideas = Savings, and Savings = Good Governance

WA LTAP’s “Build a Better Mousetrap” program was started in 2000, with the purpose to:
  > Recognize the initiative and innovative thinking of public agency transportation staff in the development of tools, equipment modifications, and processes that increase safety, reduce cost, improve efficiency, and improve the quality of transportation.
  > Identify and help distribute ideas created in the field so others can duplicate them and implement them.
  > Promote continued improvement.
Where to Find a Mentor
How to Be a Mentor

Submitted by: David Grouchy

The outlook for the future may look dire. Every city, county and state is being asked to do more with less. The transportation systems cannot handle the volume or the load of the traffic. Salaries of public works employees are much lower than the national average. The driving public is frustrated and openly hostile. Morale is at an all time low. Many good people are leaving the public sector and taking their experience and enthusiasm with them.

What is a supervisor to do?

Obviously, the answer is complicated and different for every city, county and state government. There are some basic remedies that can help in all cases, though. One of these is to find a mentor, someone who has the knowledge and experience to help you handle the problems you now face.

Most mentoring is of an informal nature, involving a new supervisor and a more experienced supervisor or administrator. The relationship can develop a number of ways, including outside interests, work interaction and one party seeking out the other. Obviously, while this method may be very effective in specific cases, it is unreliable as a policy.

Some agencies have structured mentoring as part of their workforce development program. This may be known as formal mentoring or planned mentoring. It primarily focuses on the goals of the organization.

Organizational goals increase productivity, eliminate turnover and reduce absenteeism. Planned mentoring concentrates on the needs of the organization. This usually results in benefits to both the organization and the new supervisor. This type of mentoring promotes a formal approach to the relationship so there is little or no social interaction. The mentor and new supervisor rarely see each other outside the office. The mentor and new supervisor are not concerned with developing a friendship as much as they are interested in meeting the organization’s needs. After all, the basis for the relationship is organizational commitment. This type of mentoring takes a systematic approach that usually involves matching participants based on career paths. The organization trains the participants to understand their roles as mentor and new supervisor. At some point progress is evaluated to determine the results, such as advantages, cost effectiveness, and difficulties.

If none of these options are available to the new supervisor, self mentoring may be the only option.

Self-mentoring can be considered a type of mentoring. It differs significantly from the other two mentoring types because it is more a strategy than a program. There is no mentor who promotes the development of a new supervisor. Rather, the individual cultivates his or her own professional growth through self-tutoring activities and resource-finding techniques. Self-mentoring requires the individual to be highly motivated and self-disciplined. The individual prefers to increase job effectiveness and augment professional talents by building a body of knowledge and skills without the aid of other people.

There are several self-mentoring strategies that successful individuals have used. Here are five strategies that...

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Public Relations
Dealing with the Media & Public

AN UPCOMING LTAP TRAINING EVENT

“Effective spokespeople are made, not born.”¹ Colorado LTAP can help! In October, we will offer two classes on “Public Relations: Dealing with the Media and Public.” The class will offer advice for how to handle interviews confidently and professionally; will contain information on how to be proactive in media and public relations; and offer suggestions on how to build relationships with the media and public so they don’t surprise you with a phone call when you are up to your eyeballs in other work. You may not be able to fend off phone calls when a crisis occurs, but you certainly can learn how to communicate calmly and effectively in those situations.

1. The Kansas LTAP center has developed a Media Relations Guide. The seven-page booklet aims to enhance the credibility of road and bridge representatives who speak with the media. A copy of the Media Relations Guide can be obtained by contacting the Colorado LTAP center, or accessed online at: http://www.kutc.ku.edu/pdffiles/KUTCmediaguide.pdf

Where to Find a Mentor
How to Be a Mentor

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individuals have used to help advance their professional growth:

- Ask and Listen.
  Ask questions & listen carefully to the experts in your field of interest. This includes finding out who is the authority on a subject and asking detailed questions. Talk to people who are in positions to which you aspire.
- Read and Research.
  Read and research materials in the field. Learn new information from trade magazines, books, and periodicals.
- Observe.
  Observe people in leadership positions. Individuals can learn a lot about the inner workings of the city or county and different leadership styles simply by watching those in authority.
- Attend educational programs.
  Educational programs may include conferences, seminars, night classes or city or county training courses.
- Seek new opportunities.
  Volunteer for projects or join professional organizations. You may want to alert your new supervisor to these strategies. A new supervisor should be encouraged to look for opportunities to develop independently, outside of the traditional mentoring arena.

David Grouchy is the former Director of the Louisiana LTAP center.

Five Strategies for Individuals to Help Advance Their Professional Growth

Public Relations Training
October 11, 2005 - Denver
October 13, 2005 - Glenwood

Website Question
Year 1928. What is this piece of equipment called and what is it used for? Visit the Colorado LTAP website for the answer at: http://ltap.colorado.edu

¹ The Kansas LTAP center has developed a Media Relations Guide. The seven-page booklet aims to enhance the credibility of road and bridge representatives who speak with the media. A copy of the Media Relations Guide can be obtained by contacting the Colorado LTAP center, or accessed online at: http://www.kutc.ku.edu/pdffiles/KUTCmediaguide.pdf
Upcoming Events

Upcoming Training

Fall 2005
NOTE: Dates and locations are subject to change. Please contact the Colorado LTAP office for an updated schedule, or check it out online at ltap.colorado.edu.

Road Scholar Core Classes

Drainage
November 1 - Alamosa
November 3 - Montrose
November 9 - Frisco
November 15 - Greeley
November 17 - Colorado Springs

Roadway Safety & WZTC
December 5 - Ft. Morgan
December 7 - Castle Rock
December 8 - La Junta
December 13 - Glenwood Springs
December 15 - Durango

Road Scholar Elective Classes

Heavy Equipment Training
Ouray, CO (3-days, $120)
September 12 - Classroom
September 13-14 - In-field, Group 1
September 15-16 - In-field, Group 2

Defensive Driving
September - Denver

Erosion Control
October 5 - Denver
October 7 - Grand Junction

Public Relations: Dealing with the Media and Public
October 11 - Denver
October 13 - Glenwood Springs

Roadway Surveying
October 17 - Denver
October 18 - Pueblo
October 20 - Durango
October 21 - Grand Junction

Introduction to Roundabouts
October 25 - Denver
October 27 - Grand Junction

Culvert Installation & Maintenance
November 7 - Denver
November 8 - Pueblo
November 10 - Grand Junction

Designing Pedestrian Facilities
November 21 - Grand Junction

Winter Maintenance
December - Denver, Glenwood Springs, Pueblo, Durango

Supervisory Skills Classes

Are You Understood?
Verbal Communication
September 14, 2005 - Grand Junction

Successful Employees Make Successful Supervisors
September 19, 2005 - Rifle

Who’s Coming Thru Door Today?
Dealing with People
October 3, 2005 - Castle Rock

Developing the Leader Within
November 21, 2005 - Commerce City

A Whole New World
Nuts & Bolts of Local Government
December 5, 2005 - Grand Junction

Workshops

CDOT Research Expo
December 12 - Denver

Conferences

APWA West Slope Snow & Ice
September 7-9 - Gunnison, CO

APWA Western Snow & Ice
September 27-30 - Estes Park, CO

County Road Advisor’s Conference
October 12-13 - Rapid City, SD

CCI Winter Conference
November 28-30 - Colorado Springs, CO

BUILDING SAFER WORK ZONES
In the summer edition newsletter, there was an article congratulating those who received a score of 100% on the Flagger Certification exam. Due to a printing error, one name was edged off the page by mistake - our apologies.

Congratulations
John Combs
City of Central City
# FREE PUBLICATIONS*

**CDs**
- FCD PP2  Pavement Preservation 2: State of the Practice
- FCD DEWZAP  Driver Education Work Zone Awareness Program
- FCD FPT  RC Flagman Priority Technology
- FCDNITSA  National ITS Architecture
- FCD WZO  Work Zone Operations: Improving Mobility & Safety on Both Sides of the Barrel-Best Practices Guidebook

**VIDEOS**
- FV50 NL  Night Lights: How Retroreflectivity Makes Roads Safer
- FV50 DS  Danger Signs

**SPANISH**
- F50 FHS  Manual del Abanderado
- F50 CWZBPS  Guía de Mejores Prácticas de Seguridad en las Zonas de Trabajo en Colorado

**SAFETY GUIDES**
- F50 CWZBP  Colorado Work Zone Best Practices Safety Guide
- F50 SIG  Sign Installation Guide
- F50 WZS  Work Zone Safety: Guidelines for Municipalities
- BSHWZ  Building Safer Highway Work Zones: Measures to Prevent Worker Injuries from Vehicles and Equipment

**FLIPBOOKS**
- F50 FHE  Flagging Handbook: English
- F50 PSIP  Pedestrian Safety Information Packet
- F50 FGURR  Field Guide for Unpaved Rural Roads
- F50 PCMS  Portable Changeable Message Sign Handbook
- F40 MTRR  Management and Techniques for Riparian Restoration
- F40 TCH  Traffic Control Handbook for Mobile Night Operations

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**Contact Information**

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3100 Marine St., A-213  
UCB 561  
Boulder, CO 80309-0561  

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**Additional Information**

The following is a list of **FREE publications** available to Colorado local government agencies in the transportation field. Quantities are limited and available on a first-come, first-serve basis. Contact the Colorado LTAP office to put in a request for these free publications.

**Check out our website for additional free materials not listed here.**  
http://ltap.colorado.edu

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Nonprofit Org.  
U.S. Postage  
PAID  
Boulder, CO  
Permit No. 257