On August 15, 2014, the Federal Highway Administration (FHWA) posted Interim Approval 17 that permits the optional use for a protected/permissive turn phase of a three-section flashing yellow arrow (FYA) signal face that uses the middle section to show both the FYA and the steady yellow arrow.

A three-section FYA signal face that uses the middle section to show both the FYA and the steady yellow arrow was not included in the 2009 MUTCD because no research supporting this type of signal face had been conducted at that time. A research project titled “Evaluation of the Flashing Yellow Arrow (FYA) Permissive Left-Turn and Yellow Arrow Change Indications in Protected/Permissive Left-Turn Control: The Impact of Separate and Shared Yellow Signal Sections and Head Arrangements” was completed by the University of Wisconsin-Madison and University of Massachusetts, Amherst. The final report for this project, NCHRP 20-07/Task 283, was published in June 2014 and is available online. The research results demonstrated that a three-section FYA signal face in which the middle yellow arrow signal indication is used to display both the steady change interval and the flashing yellow permissive interval provides a safe and effective operation for road users.

Although the research did not evaluate the use of three-section FYA...
We appreciate everyone voicing their concerns regarding the Roads Scholar II program requirements. We need to receive this feedback in order to design the best training program for all interested parties. The original RS II requirements were developed with thorough research and discussion with the LTAP Advisory Board. The LTAP Advisory Board consists of your peers, City/Town and County Road and Bridge employees. Since the RS II program’s initiation, we’ve received comments questioning the program’s RS I Core class prerequisite, especially considering the more technical focus of the RS II topics offered. LTAP staff actively considered what the best decision for the future of RS II, without impulsively disregarding the work and reasons that initially went into developing the program. We also solicited comments and experience from other LTAP Centers that have several higher level Roads Scholar programs. Ultimately, considering local agency’s limited resources and training opportunities, we have decided to remove the 4-Core RS I requirement from the RS II program for those participants that just want access to training and courses best suited to their field. It was never our intent to withhold training opportunities from local agencies. However, the program’s graduation requirements remain. Although RS I and RS II classes may be taken simultaneously, participants wishing to receive graduate recognition from RS II, need to first complete the RS I graduation requirements. We hope your agency will continue to reference any aspect of LTAP’s available resources, such as technical assistance questions, lending library, or training if your transportation agency has a future need. Please contact us if you have any additional questions: 303-735-3530, cltap@colorado.edu.

Follow Colorado_LTAP on twitter
Receive event updates and webinar announcements.

COLORADO LTAP

Renée Railsback
Program Director

Cassandra Guild
Manager of Technical Assistance and Customized Training

Becky Miller
Webmaster

The Local Technical Assistance Program (LTAP) is sponsored by the Federal Highway Administration, the Colorado Department of Transportation, and the University of Colorado at Boulder to provide information on the latest transportation issues facing Colorado’s state and local governments.

For more information:
Colorado LTAP
University of Colorado
Boulder
UCB 561
3100 Marine St, A213
Boulder, CO 80309

Office: (303) 735-3530
Toll Free: (888) 848-LTAP
Fax: (303) 735-2968
Email: cltap@colorado.edu
Web: http://ltap.colorado.edu

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Fax: (303) 735-2968
Email: cltap@colorado.edu
Web: http://ltap.colorado.edu
Upcoming Classes - FALL 2014

ROADS SCHOLAR I

CORE: Drainage
October 20 - Colorado Springs
October 22 - Loveland
October 24 - Rifle
October 27 - Durango

CORE: Safety on the Job
November 13 - Montrose
November 18 - Fort Morgan
November 20 - Pueblo

ELECTIVE: Chainsaw Safety
September 15 - Durango
September 16 - Alamosa
September 17 - Frisco

ELECTIVE: HET - Motor Grader
September 29 - Classroom, Durango
Sept 30 - Oct 1 - Infield, Group 1
October 2 - 3 - Infield, Group 2

ELECTIVE: Winter Survival
October 14 - Colorado Springs
October 15 - Glenwood Springs
October 16 - Loveland

ELECTIVE: Asphalt Pavements
October 28 - Hugo
October 30 - Granby
November 4 - Grand Junction
November 6 - Alamosa

ROADS SCHOLAR II

SAFETY: Designing Pedestrian Facilities for Accessibility
November 5 - 6 - Rifle
November 18-19 - Castle Rock

TRANS. MGMT: Chip Seal Applications
October 30 - Montrose
November 12 - Brighton
November 13 - Colo Spgs

ENVIRO.: Stormwater Mgmt & Erosion Control
November - Castle Rock
November - Grand Junction

TECH SKILLS: TBD

SUPERVISORY SKILLS & DEVELOPMENT

So You’re A Supervisor Now
October 1 - Grand Junction

Successful Employees Make Successful Supervisors
October 2 - Grand Junction

Dos & Don’ts: Legal & Liability Issues
October 8 - Denver

Whole New World: Nuts & Bolts of Local Government
November 6 - Westminster

2014 Spring Graduates

ROADS SCHOLAR I
Jim Benkelman – Summit County
Terrie DeLorme – Yuma County
Rick Speer – Summit County
Frank Biggerstaff – El Paso County
Nora Stiles – El Paso County
Richard Holmes – Teller County
Tom Edmisten – El Paso County
Scott Wear – Mesa County
Lee Tvaroika – Teller County
Amber Rehfeld – Town of Erie
John Turgeon – La Plata County
Daniel Looman – La Plata County
Alta Bryant – La Plata County
Jeffrey Watkins – El Paso County

ROADS SCHOLAR II
Rob McArthur - Green Mountain Falls

SUPERVISORY SKILLS AND DEVELOPMENT PROGRAM
Bob Spaid – Grand Junction
Jack Albright – Grand Junction
Chad Helmke – Golden
Brian Matzke – Golden
Jim Kelley – Arapahoe County
Jeremiah Unger – S.E.M.S.W.A.
Mark Ballard – Longmont
Mike Gruba – Winter Park

Recognize Your Roads Scholar Graduates!

REMEMBER anyone can take Roads Scholar II classes - review changes to the program requirements, Page 5.
HAZARD IDENTIFICATION TRAINING TOOL

The US Department of Labor – Occupational Safety and Health Administration (OSHA) has created an interactive, online, game-based training tool for small business owners, workers and others interested in learning the core concepts of hazard identification. After using this tool, users will better understand the process to identify hazards in their own workplace.

This training tool is intended to:
• Teach small business owners and their workers the process for finding hazards in their workplace,
• Raise awareness on the types of information and resources about workplace hazards available on OSHA’s website.

To begin the Hazard Identification Training Tool go to: https://www.osha.gov/hazfinder/.

Source: United States Department of Labor – Occupational Safety and Health Administration

PAVINARS: WEBINARS FOR THE PAVEMENT COMMUNITY

The Louisiana Transportation Research Center is sponsoring a monthly series of webinars on various pavement topics. These “Pavinars” are one-hour sessions presented by Dr. Danny Xiao. Each Pavinar is made up of a 40 minute presentation and 20 minute discussion.

To participate in a Pavinar, connect to the Pavinar website (http://www.pavinars.com) and follow the instructions on the “Watch a Pavinar” page. Be advised that you will need to allow Adobe Connect to download to your computer in order to view these webinars.

October 7: A virtual tour of accelerated pavement testing facilities in United States
November 4: Roller-compacted concrete: What is new?
December 2: Reflective cracking: best practices and models

Miss a Pavinar in this series? Don’t worry! You can view a recording of a past presentation and discussion online or download a copy of the presentation slides on the “Watch a Pavinar” webpage. You can also access Pavinars from previous years presented by Dr. Andrew Braham.

Recent topics available online:
• Towards zero deaths: What can pavement engineers help?
• Improve pavement management system to meet MEPDG’s needs

You are also invited to submit a Pavinar topic of your interest for future Pavinars!
We at Colorado LTAP are keeping an eye out for new trainers. We would like to build a list of potential trainers to contact when a training need arises. We hire trainers on a part-time contract basis, so it’s perfect for retirees. We know there is a lot of knowledge out in the field and we hope you’ll help!

We are looking for people who are effective at teaching one or more of our three main audiences: 1) front-line workers, 2) supervisors/foremen, or 3) road and bridge or public works officials. Prior experience in the subject area being taught is a big plus.

We will take your training topic suggestions, but we are always looking for new courses in our Roads Scholar II Technical Skills and Environmental focus areas.

- **Technical Skills:** Addresses a wide array of topics from equipment mechanics, preventive techniques, fleet services to engineering and road design aspects.
- **Environmental:** Addresses issues such as Environmental BMPs, Dust Suppressants, Chemicals, Environmental Hazards, Erosion Sediment Control, Context Sensitive Design, etc.

Interested? To add your name to the list, or to learn more about our specific needs, please contact Colorado LTAP at (303) 735-3530, cltap@colorado.edu.

We look forward to hearing from you!
Educational Guide to Covered Bridges

Covered bridges are charming remnants from America’s history and are excellent examples of the development and evolution of civil engineering. Sponsored by the Federal Highway Administration under the National Historic Covered Bridge Preservation Program, this training curriculum was developed by bridge historians at the Institute for the History of Technology and Industrial Archeology. This guide contains full lesson plans, for teachers of grade levels from kindergarten through senior year in high school, on the history and preservation of covered bridges in the United States. The interactive CD is intended to stimulate students’ interest and understanding of the engineering aspects and development of bridge design technology. The training materials are available for loan from the Colorado LTAP library; or available online from the National Center for Wood Transportation Structures website: http://www.woodecenter.org/.

DID YOU KNOW?

Why Were Covered Bridges Covered?

Covered bridges were actually covered to protect the wooden skeleton (the truss and the deck) from rotting. Bridges were covered for preservation. A wooden bridge that was uncovered would last only about 5 years, but adding a roof would extend its life indefinitely.

Are You Smarter than a 5th Grader? Test Your Bridge Knowledge

**ACROSS**
7. Foundation upon which weight-bearing beam rests
8. Bottom member of truss
10. Triangular system of timbers that support structure weight over a span
12. Truss in which an upright divides original triangle in two
13. Type of bridge that carries water
14. Arch type containing a keystone
16. Wedge-shaped piece of stone found in arch
19. Thick strong rope made of fiber or steel
20. Reason bridges were important in warfare
23. Horizontal beam placed on top of columns

**DOWN**
1. Bridge made of vines
2. Central wedge-shaped stone at the top of an arch
3. Type of arch in aqueducts
4. The act of pressing together, flattening or condensing
5. Force that stretches a material apart
6. Covered bridge whose roadway is laid on lower chords between trusses
9. Type of bridge where traffic uses top of truss
11. Heavy post or pillar used to support a bridge; intermediate foundation
13. Curved structure used to span open space such as a door
15. Slanted parts under tension in a deck truss
17. Fiber, wire, etc. twisted to form cable, rope, etc.
18. Provide water for agriculture and city life
21. Portion of a bridge between two supports
22. Primitive bridge made of single log

*Puzzle and Answers available on the Colorado LTAP website, cltap@colorado.edu.*

*Additional word games are available in the Guide!*

6   Assisting Local Road & Bridge Agencies for Over 25 Years
The Build a Better Mousetrap National Competition highlights innovative solutions to everyday problems and issues that local and county transportation workers encounter. They can be anything from the development of tools, equipment modifications, and/or processes that increase safety, reduce cost, improve efficiency, and improve the quality of transportation. Similar regional competitions are known as the You Show Us Contest. The Federal Highway Administration’s LTAP/TTAP Clearinghouse holds an annual competition of the state winning projects from across the country. The 2014 National Winners were announced at the LTAP/TTAP Conference in St. Louis; and awards will be sent to the top three winning local agencies. A booklet of all the 2014 entries is available online: http://ltap.org/resources/mousetrap.php.

Discharge Control Door
City of Bowling Green, Kentucky

Problem Statement
Bowling Green Public Works needed a way to avoid throwing debris onto vehicles while mowing. The mowers come from the manufacturer equipped with a plastic chute that deflects debris, but it does not prevent discharge onto nearby vehicles.

Solution
The Public Works fleet division developed a flap to replace the plastic chute that comes standard with the mower. The flap has three positions - fully closed (doesn’t allow any debris to be discharged), half open (allows debris to be discharged and directed down), or fully open (allows debris to be discharged freely).

Labor/Materials/Cost
$25 and it took approximately 2 hours to build and install.

Savings/Benefits to the Community
The door provides a safer means of mowing rights-of-way. This cost efficient device reduces the company’s liability and is easy to operate.

Tire Changer/Roll Tube Bender
City of Buckhannon, West Virginia

Problem Statement
The City needed 1-1/4” pipe-roll formed to add the arch supports for our farmers market structure in Jawbone Park. The metal shop used in the past could not get to the job for several weeks, so they had to develop a method to bend the tubing in-house.

Solution
They found they couldn’t just bend the tubing with a pipe bender. It would kink and was not consistent. While mounting truck tires one day, they realized that machine had all of the functions needed to form the tubing. The tire changer rotates and creates downward force.

Labor/Materials/Cost
$100

Savings/Benefits to the Community
Immediate savings were about $1,200. The dual purpose machine allowed the City to complete a giant project on time; and provide a state of the art farmers market that has become a gathering place for the community during festivals and events.

Pipe Puller
City of Cañon City, Colorado

Congratulations Colorado! Cañon City’s Pipe Puller was featured in the Colorado LTAP Newsletter, Fall 2013 - http://ltap.colorado.edu/newsletter.
Answers to Common Questions About Gravel Roads

A new informational video addresses common questions and concerns about gravel roads. The video is intended to provide a useful tool for county engineers and township supervisors to educate the public about gravel road maintenance. It aims to facilitate communication of more consistent information on gravel road maintenance. Developed by the Minnesota Local Road Research Board, the video describes the basic materials and construction of a gravel road, common problems with gravel roads, and what's involved in keeping a gravel road in the best condition. In addition, the video provides tips for gravel road users to prevent damage to the road. The common problems with gravel roads addressed in the video include dust, potholes, washboarding, ruts, loose aggregate, and poor drainage. The Video can be found at: https://www.youtube.com/watch?v=9Fumt9yrV_k.