Do You Know Your Material?

New Missouri LTAP Class Held in Three Locations

Did you ever wonder why a project fails prematurely? There are three main reasons: inadequate design, poor construction and/or poor materials. Missouri LTAP recently held a new class that explores how to prevent poor materials from being the cause. Introduction to Materials: Concrete, Asphalt & General Materials discusses the importance of using the proper materials in road construction and maintenance and how best to obtain these materials. The class focuses on and covers the basic properties of materials used in road and bridge projects. It also explains why it is important for an agency to care about materials. Agencies do not want to rebuild projects for many years. If an agency can add even five years to the life of a road, bridge or sidewalk, they may easily recoup the cost associated with the testing and inspection of materials. Time and money spent ensuring the use of quality materials will be returned with better performing and longer lasting products or in this case projects. Therefore, it is critical to determine the properties of materials correctly and what the proper frequency of testing is to ensure that what is being incorporated into a project meets the specification limits. Attendees discuss acceptance methods, the process for testing, and the importance of having a quality plan. The following topics are covered:

- Acceptance methods for materials
- Concrete
- Asphalt
- General materials
- How to get testing done
- Having a quality plan
- Conflict resolution
- Specifying what you need

The class was held at Greene County Highway Department in Springfield on February 26, Boone County Public Works in Columbia on March 12, and Joplin City Hall on April 17. The new training opportunity is a Level II Road Scholar class and available to local government agencies and engineering consultants. It is instructed by Mr. Jeff Huffman, retired MoDOT Senior Materials Specialist. It will be held again this fall at various locations around the state as well as at the Missouri Association of County Transportation Officials (MACTO) Conference on October 21 at Lake of the Ozarks. Watch the training calendar to see when this exciting training opportunity will be offered in your area or contact the MO-LTAP office to make a request that it be held at or near your agency.
It is once again time to write about the news and events of Missouri LTAP. After a winter that was one of the harshest in recent memory, longer days and warmer temperatures tell us that spring is just around the corner. This time of year brings a flurry of activity for MO-LTAP. We have been busy offering a variety of classes throughout the state, The ADA Construction Requirements taught by Mr. Ron Elland with MoDOT has been offered several times already and will continue to be offered across the state through the summer. We also recently offered a new class, Introduction to Materials: Concrete, Asphalt & General Materials. It was offered for the first time at the Greene County Highway Department on February 26. Please see the article on page 1 for more information.

The spring is also a busy time for conferences. Last month I attended the Traffic Engineers Association of Missouri (TEAM) Conference in St. Louis on March 12-14. I have the honor of serving on their governing board where I am able to represent the needs of locals in this statewide organization. If you’ve never attended a TEAM Conference, I encourage you to consider attending next year. It is held each March and offers topics that serve everyone involved in the delivery of transportation infrastructure, from local road and bridge crews to departments of transportation and consulting engineers. I will also attend the Traffic and Safety Conference in Columbia on May 13-15. I will participate as an exhibitor to share information on and resources about MO-LTAP. Find out more about this conference by visiting http://www.mdot.org/tsc/.

We recently met with our Advisory Committee on April 3. It allowed us to update them on our recent activities and plans for the remainder of the year. A few highlights of the meeting included an update on the Road Scholar meeting, a discussion of future training development and information on the leadership and workforce development training series. There are now 154 Road Scholar Level I graduates, and we are excited to announce that we have our first Level II graduate. There are currently 444 participants in the program representing 49 agencies. A brochure outlining each class offered in Road Scholar Level III, which focus on leadership training through management and workforce development, was mailed earlier this year. It was sent to consulting firms, city and county clerks, and other local government administrators as a way of promoting these classes. Our intent is to offer more advanced level classes in 2014. Level III classes will start being offered later this summer. Another training development idea that we are pursuing is POST certification for our Defensive Driving Training and DNR classes. Our intent is to offer more advanced level classes in 2014. Level III classes will start being offered later this summer.

Finally, we are pleased to announce that the National LTAP/TTAP Conference will be held in Missouri this summer. The annual conference is held each July in various locations throughout the country. The LTAP centers are broken up into regions, and it is up to each region based on a rotation to host the conference. Missouri is a part of region 7, which also includes Colorado, Iowa, Kansas, Montana, Nebraska, North Dakota, South Dakota, and Wyoming. St. Louis was selected as the site location. The conference will be held at Hilton at the Ballpark on July 21-24. We look forward to the challenge of showing off our great state and hosting the other LTAP and TTAP centers. We are seeking sponsorships from companies and organizations that share LTAP’s goal of providing safe efficient transportation services. The conference is an opportunity for companies to inform technology transfer agents (LTAP centers) nationwide of technologies and how they can benefit local government agencies. If you have an interest in attending the conference as a sponsor/exhibitor, please visit the conference website at http://www.nltapa.org/ nltapa/content/33rd-annual-national-ltapatap-conference or contact me at (573) 341-7637 or pickerillh@mst.edu.

Best wishes,

Heath Pickerill
Director, Missouri LTAP

LETTER from the Director

Missouri LTAP Newsletter - Page 2

New Traffic Incident Management

Traffic Incident Management Training is Improving Safety, Transforming Incident Response Across Missouri

By: Christine Becker and Sherry Appel

On December 13, 2013, a minor two - car accident on Interstate-44 turned into a deadly, multiple-vehicle incident, resulting in one fatality and numerous tractor trailer pile ups, blocking the west bound lane for four hours. Just two days prior to the accident, traffic incident responders from across the Springfield, Joplin and Branson areas began training on the latest techniques in responding to such incidents – and this information really paid off. One trooper who helped at the scene said “I applied some of the training techniques and it made a difference.”

More than 500 incident responders are now on Missouri roads and highways using more effective ways to position their vehicles to protect the police, fire and others on the scene. Now, first responders can better manage the traffic flow around incidents, work more efficiently as a team, and put in place other key techniques to quickly and safely clear crash sites.

Master Sgt. Bill Johnson, a crash re-constructionist for the Kansas City Police Department, said the Department’s participation in the National Traffic Incident Management (TIM) training program has changed how responders approach traffic crashes. “We are using a different thought process that emphasizes quick, effective action to keep traffic moving which dramatically reduces the risk of secondary accidents,” Johnson said.

In the Kansas City area, exposure to the quick clearance philosophy began in 2007 at the Missouri Traffic Incident Management Summit sponsored by the Federal Highway Administration (FHWA). Since then, the Kansas City Scout program has reported that incident responders in the Kansas City metro area have shaved 111 minutes off the average time it takes to clear major traffic accidents, including those involving multiple vehicles, overturned trucks, serious injuries and crime scenes. The Kansas City Scout is a joint traffic management program of the Missouri and Kansas Departments of Transportation.

Secondary crashes like the one on Interstate-44 are often worse than the initial accident. Ten to 25 percent of all incidents are secondary crashes caused by backups and inattentive drivers in the crash area. In fact, every minute spent clearing a traffic incident increases the chance of a secondary crash by 2.8 percent. Mortality rates for responders are staggering; on average, six to eight responders from local fire, rescue and emergency medical services; ten to 12 law enforcement officials; 50 towing or recovery providers; and 100+ highway workers are struck and killed each year while working in or near traffic incidents.

Missouri traffic incident responders understand the high risks involved in clearing accidents. In 2012, Clifton Scott, a Missouri Department of Transportation employee, was working a traffic incident scene in Independence. He was killed when a driver barred his way while warning cones and flares and slammed into Scott’s truck. In another Kansas City area traffic incident, a police officer ended up on permanent medical disability when he was injured in a secondary crash that occurred in backed-up traffic.

Cpl. Ben Barbarick, a deputy assigned to the traffic unit of the Cass County Sheriff’s Office, said the training program opened his eyes to better ways of managing traffic incidents. “I always thought closing the highway was the best option for working an accident,” Barbarick said. “But the training program showed me that keeping as many lanes open as possible is safer because it gives drivers a place to go rather than wait and risk a pile up.”

At a recent truck-car crash during an ice storm, Barbarick said he quickly pushed the damaged car off the road using his cruiser rather than risk having other cars slide into it creating a bigger pile up and serious injuries. “I wouldn’t have done that before the training program,” he added. In addition to focusing on quick clearance, Barbarick said providing much earlier warning alerts to motorists of an incident ahead further enhances safety at the scene. “Our overall approach is to notify folks that’s ahead, use the right traffic control strategies, and keep it flowing,” he added.

(continued on page 6)
Counties are an essential part of the nation’s transportation system. They are responsible for building and maintaining 45% of the public roads, 230,690 bridges and are involved in a third of the nation’s transit and airport systems that connect residents, businesses and communities. The impending expiration of the federal surface transportation funding law, Moving Ahead for Progress in the 21st Century Act (MAP-21), presents an opportunity for counties to discuss their role in the national transportation network.

Go to https://www.youtube.com/watch?v=tm4bg07-b1w for video coverage of NACo’s Transportation Rally during the Legislative Conference. An analysis of county transportation (roads and bridges only) funding sources, challenges and solutions across the 48 states with county governments shows that:

- **Federal and state highway funding for county transportation projects is increasingly inadequate.** Based on Federal Highway Administration (FHWA) data, the share of federal and state funding to local governments for highways decreased by 10% between 1998-2011. The latest federal surface transportation law (MAP-21) further skewed the allocation of funds away from local governments. While local governments own 43% of the federal-aid highways system, local areas receive a suballocation that is equal to 16% of the MAP-21 National Highway Performance Program (NHPP) and the Surface Transportation Program (STP) funding for federal-aid highways. A combination of federal budget cuts, the effect of the recession on state governments and the fixed gas tax nature of state and federal highway funding are contributing to a widening gap in transportation funding available to counties.

- **Counties face the dilemma of rising costs of transportation projects, increasing traffic volumes and limitations on their ability to generate revenue.** The cost of construction and materials increased by 44% between 2000 and 2013, more than the 35% rise in the overall rate of inflation. Among other factors, regulatory costs contributed to this trend, as shown by California counties. Fast-changing economic environments put pressure on county transportation systems, especially in states with rapidly expanding oil and gas industries. At the same time, most states limit counties’ ability to raise revenue. Forty-three (43) states have some type of limitation on the property taxes collectible by counties, including 38 states that impose statutory limitations on property tax rate, property tax assessments, or both. Only 12 states authorize counties to collect their own local gas taxes, which are limited to a maximum rate in most cases and often involve additional approvals for implementation.

- **Counties have adopted additional funding and financing mechanisms, but they are not sufficient to cover the needs of their businesses and residents.** Counties increasingly use local-option sales taxes to fund transportation projects, if allowed under state law. Twenty-nine (29) states allow counties to collect local-option sales tax for transportation purposes or general purposes including transportation. Over the years, county residents in 15 states voted for local-option sales taxes for road and capital projects. In addition, partnerships with state and local governments, allowed counties in Pennsylvania and Ohio to pool resources and materials to save money on transportation projects. Counties in states such as Iowa, Missouri and Nevada implemented land-value capture options such as tax increment financing, special assessment districts and development impact fees, linking transportation investments to the economic growth in their counties. For large and complicated capital projects, counties partnered with the private sector in Public-Private Partnerships (PPPs) such as Miami-Dade County’s Port of Miami tunnel project.

**Resource:** FHWA (http://www.fhwa.dot.gov/research/Pages/county.transportation.aspx)

Innovative intersection and interchange geometrics are gaining momentum across the country. The Federal Highway Administration is promoting them through its Every Day Counts initiative to accommodate traffic volumes more efficiently while enhancing safety for motorists, pedestrians and bicyclists. These proven techniques increase the safety of intersections—where about half of the nation’s severe crashes occur—by eliminating or relocating left-turn conflicts that can cause problems. FHWA recommends that highway agencies include these designs in their evaluation processes for intersection projects and use them where appropriate.

Every Day Counts is focusing on four designs:

- The **diverging diamond interchange** eliminates the signalized left-turn phase at the two intersections in the interchange by shifting the cross-road traffic to the left side of the road between the ramp terminals. This enhances safety by reducing the number of traffic conflict points and improves traffic flow by decreasing the number of signal phases.

- The **displaced left turn** interchange enhances safety and operations by eliminating the main intersection conflict between left-turning vehicles and oncoming traffic. Left-turning traffic makes a coordinated signalized turn before the main intersection into left-turn bays on the opposite side of oncoming traffic.

- U-turn intersections are a family of intersection geometrics that share a similar strategy for using indirect left turns. Those promoted through Every Day Counts include the restricted crossing U-turn intersection, sometimes called a J-turn, the median U-turn intersection and the Thru-U-turn intersection. These strategies boost safety and improve traffic flow by eliminating, relocating or modifying intersection conflict points.

- The modern roundabout is a circular intersection in which traffic travels counterclockwise around a central island and entering traffic yields to circulating traffic. It improves safety by replacing perpendicular crossings and opposing direction turns with low-speed merging and diverging maneuvers.

**State Leaders**

Examples of these geometrics abound, said Mark Doctor, safety and design engineer at FHWA’s Resource Center. The Salt Lake City, Utah, area has the greatest concentration of the four designs: four diverging diamond interchanges, eight displaced left turn intersections, numerous roundabouts, several Thru-U-turn intersection applications and more in the works.

Missouri has the most diverging diamond interchanges, with 10 in place and more in development. Doctor said the state also has numerous roundabouts, several restricted crossing U-turn intersections and one displaced left turn intersection.
New Traffic Incident Management
Traffic Incident Management Training is Improving Safety, Transferring Incident Response Across Missouri

(continued from page 3)

A Team Of Skilled Responders

The National Traffic Incident Management training (TIM) program is building teams of highly-skilled responders who work together efficiently and effectively from their initial arrival on the incident scene to its investigation and eventual clearance. Developed through the second Strategic Highway Research Program (SHRP2), the training program is a collaborative effort of FHWA, American Association of State Highway and Transportation Officials (AASHTO), and the Transportation Research Board (TRB). It has been endorsed by the National League of Cities and Appel is the former NLC director of Transportation Research Program (SHRP2), the training program is a collaboration among various federal, state, and local agencies to improve incident response and management across the United States.

Fourteen additional training sessions have been scheduled for members of Transportation.

management program of the Missouri and Kansas Department of Transportation, “said William ‘Rusty’ James, incident Management Coordinator for MoDOT’s Southwest District, is targeting 21 counties in southwest Missouri, focusing on Interstate-44, Interstate-65 and Interstate-49, with emphasis on Interstate-44 due to its high traffic volumes and significant truck traffic. “It is important that we responders work together so motorists across the state will see consistency in how responders react to accidents,” said Pettus.

The program was designed by responders for responders. It uses a train-the-trainer model to broaden the impact, create stronger connections among responders, and draw on shared real-life experiences in the region where training modules are flexible and can be modified to fit state and local regulations or practices. The training includes case studies, tabletop role-playing sessions and field instruction to simulate real-life situations and maximize participant engagement.

“The key to building stronger incident response teams is to train instructors with representatives from all responder agencies in the same room,” said Paul Jodoin, Traffic Incident Management Program manager in the FHWA’s Office of Operations. “Then these trained responders train other responders, expanding the reach of the program across the region or state.”

Saving Lives, Money And Time

Johnson said that because responders from many disciplines take the training together, a ‘train the trainer’ approach develops. Everyone knows what he or she should be doing, potentially saving lives, time and money at every accident scene. “When we arrive on an accident scene, we no longer assume that we’ll automatically close the road and proceed from there,” Johnson said. “Instead, we show up with a mission and a plan to clear the accident and keep traffic moving. If we can take action that prevents someone else from being hurt or killed, that’s what our job is all about.”

An added savings is that expensive equipment – from fire engines and police cars to towing vehicles – can be moved out of harm’s way more quickly and safely, making them available to respond to the next emergency in a more timely fashion. This also reduces the potential damage to expensive public safety vehicles that can lead to real budget savings for a community.

In addition, with fewer crashes and delays, both local and cross-country freight moves in a more predictable manner, providing an economic stimulus.

For James, the benefit of the training is clear. “The chances of all responder personnel going home at the end of the incident is greatly increased as a result of the training,” he said. “So there is no down side to this program.”

Why The Training Works

Barbaric said the training process improves collaboration on site and encourages regular communication in between incidents to maximize effectiveness. “If we are all on the same page, all working from the same philosophy, we will get the accident cleared more successful and make the situations safer for everyone.”

Both in Springfield and in the Kansas City metropolitan area, traffic incident responders are meeting regularly to review their actions and plan for the next time. Anticipating possible traffic incident scenarios further contributes to improved incident response. “When you know it will be a long-duration incident, there are specific steps to take to ensure safety and prepare to open the highway as quickly as possible,” Johnson said.

Traffic Incident Management Training Produces Measurable Results

The training has already produced significant results in communities across the country. In Washington state, a team using the quick clearance philosophy opened a freeway blocked by an overturned tractor-trailer nearly five hours faster by dragging the truck off the road rather than uprighting it first. An Indiana crash involving a tractor trailer on Interstate 70 that generated a hazardous waste spill was handled faster than expected with minimal environmental damage by a recently trained group of responders. The successful outcome drew a positive editorial in the Terre Haute Tribune-Star. “Last week’s I-70 incident certainly qualifies for the ‘could have been worse’ category,” the newspaper wrote. “You can thank the traffic incident group for that. The cooperation of multiple disciplines is a direct result of the National TIM First Responder Training Course…”

After seeing significant reductions in clearance times and improved safety, several states, including Georgia, Tennessee, South Carolina and Arizona, are now requiring their highway patrol or state police to take the training. Arizona also is requiring all DOT-related managers, responders and construction contractors to take the training as well. Pettus said that 150 MoDOT employees in his district will take the training.


Traffic Incident Management Responder Training

FHWA Traffic Incident Management Training. This is the Strategic Highway Research Program 2 training. The training is open to all public safety agencies: police, fire, towing & recovery and EMS. This program equips responders with core competencies to address responder safety on highway incidents; safe, quick clearance practices for incidents and supports prompt, reliable, interoperable communications.

Who Should Attend: Those who respond to and work high-way traffic related incidents. Law Enforcement, fire, towing & recovery, EMS and others from the private and public works who may respond to traffic crashes.

Cost: No Charge

Credit Hours: This training is P.O.S.T credit hours. To register please contact: Sgt. Rusty Rives RRivers@joplnmo.org or (417) 627-8880
Bruce Pettus bruce.pettus@modot.mo.gov or (417) 766-3265

Training Sessions

5/7/2014 - Greene County Safety Center, 330 West Scott, Springfield MO 65802
5/14/2014 - Greene County Safety Center, 330 West Scott, Springfield MO 65802
5/22/2014 - Mt. Vernon MARC, 822 W. Mount Vernon Blvd, Mount Vernon MO 65712
6/18/2014 - Springfield Fire Training Center, 2620 W. Battlefield, Springfield MO 65801
7/10/2014 - Joplin Public Safety Training Center, 5501 Dennis Weaver Dr., Joplin, MO 64801
7/17/2014 - Greene County Safety Center, 330 West Scott, Springfield MO 65802
9/10/2014 - Joplin Public Safety Training Center, 5501 Dennis Weaver Dr., Joplin, MO 64801
9/18/2014 - Mt. Vernon MARC, 822 W. Mount Vernon Blvd, Mount Vernon MO 65712

For more information about the Missouri strategy and opportunities to participate in the National Traffic Incident Management Responder Training, contact Rusty James at william.james@modot.mo.gov; Bruce Pettus at bruce.pettus@modot.mo.gov; or Marc Thornberry at marc.thornberry@dot.gov or email TIMTraining@dot.gov at FHWA.
The Keys to Lockout/Tagout

Picture yourself performing maintenance inside of a huge machine. Suddenly, the machine springs to life, powerful metal gears grinding around you, placing you in mortal danger. That is exactly the sort of terrifying scenario that lockout/tagout is meant to prevent. Lockout/tagout is a procedure to disable equipment to protect workers from either an unexpected release of energy or an accidental start-up while performing job activities.

When the Occupational Safety and Health Administration recently revealed the 10 most-violated OSHA standards, based on citations issued from Oct. 1, 2004, through Aug. 30, 2005, lockout/tagout was the fifth most-cited standard.

Obviously, companies should comply with lockout/tagout regulations so they don’t receive citations and fines from OSHA, says Benjamin Mangan, president of MANCOMM and American Safety Training Inc., two companies that align to provide OSHA compliance products and safety training. “But most importantly, companies should comply because lockout/tagout prevents accidents and saves lives.”

During lockout/tagout, a person authorized by the company places locks and/or tags on energy-isolating devices before working on equipment, and only that person can remove those locks and tags. Isolation devices are mechanical appliances, such as circuit breakers, used to stop energy from being released to the equipment. Lockout is usually accomplished with a keyed lock holding an isolating device in an “off” position. Tagout, which is often used when lockout can’t take place, uses tags to warn people that the equipment and isolating device may not be operated.

I/T in the Workplace

Lockout/tagout is required when servicing or performing maintenance on equipment. Effective lockout/tagout should occur in three phases: applying lockout/tagout, servicing and repairing equipment, and returning equipment to proper operation.

Applying Lockout/Tagout

The authorized worker should notify workers in the area that lockout/tagout procedures will be taking place. Those workers should listen to any instructions given by the authorized worker and move to a safe location, away from the equipment. Note that locks and tags must be marked with names or pictures identifying them with the authorized workers placing them, and other people can’t attach or remove locks or tags on behalf of authorized workers.

Servicing and repairing equipment: Workers should stay away from the equipment during this phase, which is when the authorized person will be working on the equipment and is most vulnerable to the unexpected release of hazardous energy.

Returning equipment to proper operation: During this phase, the authorized worker should tell workers in the area when locks and tags will be removed. Workers should stay clear while locks and tags are removed and the equipment is prepared for normal operation. Workers should be informed when lockout/tagout is complete.

“Workers may need training from time to time to refresh their lockout/tagout skills, or to introduce new or revised lockout/tagout control procedures,” says Mangan. “Plus, they may need refresher training when there are changes in their job assignments, machines, equipment or work processes.”

Refresher training also may be needed if the company finds out a worker has not been following the rules. Lockout/tagout training is an ongoing process. Like any other type of training, it’s never a one-shot deal. For more information on this subject, visit www.mancomm.com.

Resource: Reliable Plant. http://www.reliableplant.com/Articles/Print/1624

Test Your L/T Knowledge

So, do you think you know lockout/tagout? Take this test and see.

1) What is the purpose of lockout/tagout?  
   a) To make sure the work is being completed on time.  
   b) To protect people from serious harm due to accidental release of energy.  
   c) To make sure the workplace is secure after-hours.  
   d) To make sure employees are in top physical condition.

2) What is an energy-isolating device?  
   a) A lock.  
   b) A mechanical device like a valve or a circuit breaker.  
   c) A tag.  
   d) A and C.

3) Who can service equipment?  
   a) Any employee.  
   b) Management.  
   c) Authorized workers.  
   d) Custodians.

4) What must happen before removing a machine guard?  
   a) You must put on eye protection.  
   b) Ask a trusted co-worker to watch the controls so no one else will touch them.  
   c) Tell everyone you see in the work area they need to be especially careful.  
   d) Lock/tag the equipment.

5) What is a tag used for?  
   a) To hang around a worker's neck.  
   b) To identify company products.  
   c) A warning to not operate equipment.  
   d) None of the above.

6) You can help an authorized person by fastening their lock to a disconnect switch.  
   a) True  
   b) False

7) When are tags used?  
   a) When a lock can’t be used.  
   b) When products go on sale.  
   c) When a government official says they can be used.  
   d) All of the above.

8) What kind of lock is used for lockout?  
   a) A lock from the worker’s personal locker.  
   b) A piece of strong wire.  
   c) A plastic zip tie.  
   d) A lock specifically identified for lockout.

9) What can be used to remove a lock from an isolating device?  
   a) A hacksaw.  
   b) A key.  
   c) Bolt cutters.  
   d) A cutting torch.

10) What types of lockout/tagout records should be kept?  
    a) Written lockout/tagout procedures.  
    b) Inspection documents.  
    c) Training records.  
    d) All of the above.

A score of 10 correct answers is the only acceptable score for total OSHA compliance. When it comes to safety, knowledge is power, and comprehensive training on lockout/tagout is the best way to assure that workers are familiar with that lifesaving procedure.
Your Department is Only as Good as Your Writing
Sixteen Tips for Compelling Public Works Communications

Mary Pat Baldauf; Sustainability Facilitator, City of Columbia, South Carolina; Member, APWA Lé-M Knowledge Team

“You can have brilliant ideas, but if you can’t get them across, they won’t get you anywhere.” – Lee Iacocca

Iacocca was absolutely right, and his advice is especially important when it comes to business communications. Good communication skills are imperative for any business and can often mean the difference between success and failure.

Because so many public works communications are written—including e-mails, letters and proposals—we’ve compiled the following tips for improving your business writing. Use these tips to make your communications clearer, more concise and easier to understand, all characteristics of good business communications.

1. **Consider an informal tone.** Just because you are writing for work doesn’t mean you need to be formal. Writing like a businessperson makes you use longer words and a complicated sentence structure. Adopting a more informal tone often helps you be direct and concise.

2. **One idea per paragraph.** Novels hold several complex ideas and emotions in a single paragraph. In business writing, limit your thoughts to one per paragraph. When you have another suggestion, thought or idea, start a new paragraph.

3. **Make it “scannable.”** Few people read every word in an e-mail. Use headers and bullet points so that your audience can quickly scan your message and understand your point. Use bulleted lists to break down large blocks of text and make it easier to digest.

4. **Plain is preferred.** Save the decorative fonts for personal use; use standard fonts and sizes to make your writing easier to read. The generally accepted font for business communications is Times New Roman, size 12. Other standard fonts include Arial and Georgia. Never go smaller than size 11; it’s better to use a second page.

5. **Use active verbs instead of passive verbs whenever possible.** Active-voice stresses the doer of an action by making the doer the subject, while passive voice stresses the receiver. Instead of writing “The meeting was led by Ben,” write “Ben led the meeting.”

6. **Think twice before capitalizing.** People often think that capitalization should be applied to any word that’s deemed “important,” but not every word deserves to be capitalized. Check a reference guide when in doubt, but capitalization is generally reserved for:
   - Titles
   - The first word in a sentence
   - Proper nouns

7. **Never use a long word where a short one will do.** For example, there’s no need to write “utilize” when “use” works just as well.

8. **Avoid wordiness.** When you add words like “real” or “very,” you aren’t adding anything. It’s better to call the day endless instead of very long.

9. **The words “which” and “that” are not interchangeable.** Both begin clauses, but “which” clauses are unnecessary to the meaning of a sentence (and thus set off by commas) and “that” clauses are essential.

10. **Don’t confuse “its” and “it’s.”** Writing “it’s” when you mean “its” is probably the most common grammar error American writers make. Memorize that it’s is a possessive pronoun—and a possessive pronoun never takes an apostrophe. Think of his, hers, yours, ours, its.

11. **Be aware of commonly confused words, such as affect and effect, and look them up if you have any doubt as to which to use.**

12. **Avoid jargon, lingo and acronyms.** Even when communicating to “like-minded” people, they can clutter your writing and make it harder to understand.

13. **Apostrophes can be especially tricky.** In general, use them:
   - To show possession (the street’s width, the contractor’s issue)
   - To show that something has been left out in contractions (don’t for do not, ‘80s for the decade of the 1980s)
   - With a pronoun to form a contraction: it’s (for it is)

14. **Curb your enthusiasm.** Avoid overusing exclamation points, regardless of how energized or friendly you might feel. The same is true with smiley faces and other “emoticons.”

15. **Proofread carefully.** Spell check doesn’t catch everything. Have someone unfamiliar with the material review it. Another trick is to read the material backwards; this disconnects your mind from the content and helps you focus on the text.

For more writing tips, consult books on writing and grammar. The one I keep at my desk is Working with Words, by Brian S. Brooks. Other classics include The Elements of Style, by William Strunk and E.B. White; The Associated Press Stylebook; and The Chicago Manual of Style.

**Resource:** APWA Reporter, January 2014

New Intersections Move Traffic Efficiently and Safely

(continued from page 5) It covers applicability criteria, safety performance, design, access management, pedestrian and other considerations. Details are at www.nhi.fhwa.dot.gov. Technical assistance on analysis and design questions and peer reviews by experts involved with successful implementation are available. This on-call support for state and local agencies is handled mostly through email, conference calls and Web meetings.

Help with applying the designs is also offered through peer-based information exchanges, which are tailored to the interests of participating agencies. Various formats—in person, virtual or a combination—are possible to accommodate participants’ travel needs, Doctor said. FHWA encourages holding a forum as part of an already planned event.

For information on obtaining technical assistance or scheduling a peer exchange, contact Mark Doctor at mark.doctor@dot.gov or (404) 562-3732.

If you consider personal safety equipment inconvenient and uncomfortable to wear, you may want to consider the alternatives.

When you cannot engineer, administratively eliminate or guard against a hazard, personal protective equipment is the only thing between you and serious injury. It is, in other words, the last line of defense utility workers have from injury. When I perform safety audits, I often hear the same excuses for not having PPE on at the time. “It’s too uncomfortable,” “I can’t work with these on,” “I can’t be productive if I follow all these rules.”

Let’s deal with the first one: “It’s too uncomfortable.” Hard hats are required where there is a hazard to the head. Hard hats are designed and tested to withstand tremendous impacts, and those used in our industry are electrically tested to 20k. They are not tested in the backwards position. With the exception of welders, a worker wearing a hard hat backwards is not in compliance with OSHA standards. Are they uncomfortable? The real question should be, “Are they more uncomfortable than stitches, a concussion, or recovering from having a titanium plate placed in your skull?”

Safety glasses, or more specifically, not wearing them is the most common violation I find during audits. “I can’t see well enough wearing them,” or “They are hot around my eyes while I am working” are the usual excuses. While I can see how hanging them around your neck reduces that uncomfortable feeling, is it more uncomfortable than the surgery to remove a foreign object or more uncomfortable than losing your eyesight? Try this—put on a blindfold and walk around your home for a few hours. Then, go to the kitchen and make a peanut butter and jelly sandwich. Which is more uncomfortable, protecting your eyes or losing your eyesight? Consider this—ask yourself this question: Who depends on you? That’s right, who depends on you monetarily and emotionally? Why would you place yourself in harm’s way for something you don’t own? Is your comfort level so important that you would lose your eyesight, a limb or two, or your life?

Line workers are not the only professionals who have to deal with uncomfortable PPE. Would a racetrack driver not wear a “Hans” helmet system because it was too hot or he or she could not see out very well? What about firefighters and all the gear they wear? I once was called to a house fire to disconnect the service so the firefighters could put water on the fire. I had my climbing gear, rubber gloves, hardhat and safety glasses on when I went up to disconnect the service. When I got to the ground, the firefighters told me they wouldn’t do what I do for any amount of money. Then they turned around and went into a burning house. They had on all of their personal protective equipment and clothing. Do you think they were uncomfortable? You bet they were, but they would never fight a fire without that equipment. They, like you, are professionals.

Personal protective equipment may be uncomfortable and sometimes inconvenient, but it is the last line of defense from serious injury and permanent disabilities.

About LTAP
LTAP is comprised of a national network of centers - one in every state, Puerto Rico and regions. The LTAP centers enable local communities, parishes, townships, cities and towns to improve their roads and bridges by supplying them with:

• a variety of training programs
• an information clearinghouse
• new and existing technology updates
• personalized technical assistance and newsletters

Through the core services, LTAP centers provide access to training and information that may not have otherwise been accessible. Centers are able to provide local road departments with:

• work force development services
• resources to enhance safety and security
• solutions to environmental, congestion, capacity and other issues
• technical publications
• training videos and materials

Contact Information
Missouri LTAP
710 University Drive, Suite 121
Rolla, MO 65409
Phone: 1.866.MO-ROADS
Fax: 1.573.341.7245
Email: moltap@mut.edu
Website: www.moltap.org

Missouri LTAP Staff
Heath Pickrell, Director
Kristi Ruer, Program Coordinator
Doren Harkins, Administrative Assistant
Nicole Amos, Graduate Student Assistant
Lauren Kroening, Undergraduate Student Assistant

Publication Information
Printed by Missouri University of Science and Technology Printing Services

Online Training Resources
National Highway Institute (NHI)

Web-Based Training
• Administrative Record #142062

Web-Conference Training
• Implementation of LRFD Geotechnical Design for Bridge Foundations #132083

Instructor-Led Training
• An Overview of the Railroad-Highway Grade Crossing Improvement Program #38097
• Introductions to Federal Aid Right of Way (ROW) Requirements for Local Public Agencies (LPA)s #141030

Contact: www.nhi.fhwa.dot.gov

Missouri LTAP Ambassadors
Northwest
Dan Fagan, St. Louis County Public Works
Greg Willard, Missouri DOT

Northeast
Ronald Watts, Elgin-Randall
Southeast
Marcela Ward, Chad Zeckhouse
Central
Don Knipp

Missouri LTAP Advisory Committee
Larry Benz, Director
Cola County Public Works
Patrick Bonnette, Low Control and Identiﬁer Services Director
MMRA
Tony DeLong, County Council Coordinator
University of Missouri Extension
Batinas Dodge, Benton County Clerk
Ken Foster, Bridge Engineer
FHWA Missouri Division
Mike Geisler, Director
City of Chesterﬁeld Public Works
Nam McConigly, Risk Manager
Missouri Association of Counties
Bonnie McCord, Provost Commissioner
Vernon County
John P. Miller, Traffic Safety Director
MoDOT
Bonnie Prigge, Executive Director
Missouri Rural Development Commission
Dan Ross, Executive Director
Missouri Municipal League
Greg Sager, Director
Platte County Public Works
Gary Scheipeter, Supervisor
City of Clayton Public Works
Bill Stone, Research Administrator
MoDOT
Marc Thornsberry, Systems Engineer
FHWA Missouri Division
Kenney Voss, Local Programs Administrator
MoDOT
Randy White, Executive Director
Pomona Trails Regional Planning Commission
Skip Wilson, District Bridge Inspector
MoDOT

Topics Include:
• Traffic Signals
• Traffic Flow Theory
• Intermodalism
• Corridor Management
• Deploying ITS
•oose of ITS
• Traffic Signals
• Traffic Flow Theory

IT&E Online Learning Gateway offers transportation professionals the opportunity to earn professional development hours and to gain current, relevant training. IT&E’s online courses are primarily geared toward transportation practitioners, designers and planners. Costs vary and are reduced for IT&E members. Courses are available online at any time. IT&E’s courses cover pedestrian facility design, capacity and safety analysis at signalized intersections, site impact analysis and traffic signal needs determinations.

Contact: www.itl.org/education/itl.asp

Consortium for ITS Training & Education (CITE)

CITE provides more than 30 online courses providing advanced transportation training for transportation technicians and professionals. CITE also offers online certificate programs in Intelligent Transportation Systems (ITS) Project Management, ITS Systems and Traffic Engineering & Operations.

Topics Include:
• Systems Engineering
• Traffic Engineering
• Deploying ITS
• Intermodalism
• Telecommunications Technology
• Road Safety Audits

Contact: www.citeconsortium.org

Fax Back Form

Missouri LTAP Fax Number: 573.341-7245

Today’s Date:
Name: ____________________________
Agency: __________________________
Address: __________________________
City/State: _________________________
Zip: ______________________________
Phone: ___________________________
Fax: ______________________________
Email: ____________________________

Please check your affiliation:
□ City □ State □ Federal □ University □ Other

Library Checkout Form: Publications, Videos & CDs

Just list the item(s) you wish to borrow below, fill out the information above and fax the page to us. It’s that easy!

Registration for Classes
To register for a training course, please fill out the information above, indicate which class you would like below and attach a list of all attendees. Fill out a separate form for each class you would like to attend and fax all pages to Missouri LTAP.

Course Date: ________________
Course Name: ____________________________
Course Location: ____________________________
Attendees: (Name & Title) ____________________________

For non-government or for profit organizations, call 1.866.MOBROADS for rates

Registration for Classes
To register for a training course, please fill out the information above, indicate which class you would like below and attach a list of all attendees. Fill out a separate form for each class you would like to attend and fax all pages to Missouri LTAP.

Course Date: ________________
Course Name: ____________________________
Course Location: ____________________________
Attendees: (Name & Title) ____________________________

Need Training But Don’t Have the Budget to Pay for Travel Expenses?
We can train your employees on location for a minimum of 20 people. You can invite other interested agencies in your area if necessary to meet the minimum. Call and discuss your training needs with our staff. Call Us to Find Out More!
MoDOT Cooperative Procurement Program

Become part of the joint purchasing program with MoDOT to purchase procurement items at MoDOT’s rates. Contact us to receive a Coop packet on how you can become a partner.

Call: 573.341.7200
Email: kristib@mst.edu
Website: www.moltap.org

Use our Fax Back Form to check out any of these materials. The normal check out time is two (2) weeks. If you have further questions or would like to inquire about other library items, please contact Kristi Barr at 573.341.7200 or by email at kristib@mst.edu

on the Horizon

2014 MCMA Spring Conference
April 30-May 2 • Lake Ozark, MO

2014 North American Snow Conference
May 4-7 • Cincinnati, OH

2014 Missouri Concrete Conference
May 6-7 • Rolla, MO

Traffic and Safety Conference
May 13-15 • Columbia, MO

APWA 2014 Mid-America Conference
May 21-23 • Overland Park, KS

NACo Annual Conference
July 11-14 • New Orleans, LA

National LTAP Conference
July 21-24 • St. Louis, MO

2014 APWA International PW Congress & Expo
August 17-20 • Toronto, ON (Canada)