New outreach materials encourage elected officials to focus on safety

Serious crashes are a major concern on local roads throughout the country. In 2013 alone, more than 12,000 people were killed on local roads—a fatality rate almost three times that of the Interstate highway system.

Local elected officials play a key role in local road safety: they set goals, adopt policies, build coalitions, and approve budgets. These officials, however, typically face many demands for their time and many requests for funding.

To encourage local elected officials to make road safety a priority in their communities, the FHWA Local Rural Roads Program (LRRP) developed two new videos and accompanying brochures:

- **Local Elected Officials: Leading the Way in Local Road Safety**, a call to action for local elected officials.
- **Communicating about Local Road Safety with Local Elected Officials**, techniques for local agency practitioners to use when making the case for safety improvements to their elected officials.

Pollinators

Many pollinating insects—bees and butterflies, for example—are in decline in Minnesota and around the world. These beneficial insects depend on flowering plants for their food and need disturbed ground and vegetation for shelter. Transportation agencies can help reduce the threat to pollinators by making roadsides and other rights-of-way (ROW) a refuge for them. Roadsides and ROW are often the only seminatural habitats remaining in urban or agricultural areas,

Run, hide, or fight? Learn how to respond to a workplace shooter

Homicide is the second leading cause of workplace fatalities in the United States, with approximately 16 workers murdered on the job each week, according to the National Institute for Occupational Safety and Health (NIOSH). Shootings account for the majority of these workplace homicides, and, unfortunately, they are occurring more and more frequently. These disturbing trends are among the main reasons the Minnesota Department of Transportation (MnDOT) has added a new training module on active shooter incidents to its workplace violence prevention program.

The goal of this new training component is to help employees recognize indicators of potential violence by an employee or coworker, learn what to do to help prevent a violent incident, and build skills that increase their chances of surviving an active shooter event should one occur.

Three speakers discussed MnDOT’s Active Shooter Preparedness and Response Program at the American Public Works Association—Minnesota Chapter Fall Conference in November.

Demo Day is near!

The Minnesota Roadway Maintenance Training and Demo Day will be held May 19 at Camp Ripley in Little Falls. The event includes classroom sessions and outdoor demonstrations. Attendees will earn a Road Scholars credit. Interested? Visit mnltap.umn.edu/training/roadway.
Technology Exchange
The Minnesota Local Technical Assistance Program (LTAP) is a state-wide network of local and county governments, plus affiliated organizations, who have dedicated technical assistance representatives to provide information and resources to their peers. The LTAP is a cost-effective and efficient way to improve transportation and safety services to the public.

Technology Exchange is published quarterly. For free subscriptions, mailing list changes, or to order single-copy issues, contact us at the address or phone number below.

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Technology Exchange welcomes contributions and suggestions from its readers. Submit ideas and other comments to editors at the addresses or phone numbers below.

Spring 2016

American Public Works Association – Minnesota Chapter
Director of the Year: Steve Stadler, City of Hopkins
Supervisor of the Year: Kevin Chmielewski, City of Shoreview

Superintendent of the Year: Jim Eiler, City of Bloomington

Hugo G. Erickson Award: Jeannine Clancy, chapter president in 2012

Project of the Year: Two projects were selected: the downtown improvements in the City of Jordan and the Highway 7/Louisiana Avenue Interchange in the City of St. Louis Park.

In St. Louis Park, a grade-separated interchange was constructed to replace the signalized intersection at TH 7 and Louisiana Avenue. The goal of the project was to provide a safe, functional, urban interchange to improve access, safety, and operations for a number of modes of transportation including vehicles, pedestrians, transit, and freight.

The project team included the City of St. Louis Park, Short Elliott Hendrickson Inc., and C. S. McCrossan. In addition, Camp Ripley road and utility infrastructure improvements received an Honorable Mention. The team included the Minnesota Department of Military Affairs, TKDA, Breitback Construction Company, Tri-City Paving, and Eagle Construction Company.

Environmental Stewardship Award: The City of Forest Lake, Bolton & Menk, and the Rice Creek Watershed District received the Environmental Stewardship Award for their Clear Lake Water Quality Project.

This innovative project was designed to enhance and preserve the water quality of Clear Lake, located adjacent to the building site of the new Forest Lake City Center.

Mid-summer algae blooms are common and occasionally severe enough to affect recreation. Through a Board of Water and Soil Resources Clean Water Legacy grant, Bolton & Menk designed a Best Management Practices project that will treat approximately 520 acres of sediment and phosphorus-laden water that ultimately discharges to Clear Lake.

Minnesota County Engineers Association
Outstanding County Engineer of the Year: John Brunkhorst, McLeod County

Outstanding Service Award: Brian Giese, Pope County

City Engineers Association of Minnesota
Municipal Engineer of the Year: John Maczko, St. Paul

Municipal Project of the Year: Moorhead Comprehensive Flood Mitigation Improvements

Project team: City of Moorhead, Braun Intersect, HEI, and Stantec.

This project began in 2009 shortly after Moorhead experienced its flood of record, and it took several years to complete. The project consisted of the design and construction of more than 12 miles of levees and floodwalls and over 100 pump stations and gatewalls. Honorable Mention awards were also given to the following projects: City of Bloomington for the Lindau Lane Corridor Improvements; City of St. Louis Park for the Highway 7 & Louisiana Avenue Interchange Project; City of Alexandria Broadway Street Complete Street Reconstruction Project. LTAP

APWA Project of the Year: Highway 7 & Louisiana Avenue Interchange

Highway Project of the Year: Olmsted County – Mayowood Bridge Rehabilitation

Project team: Kaye Bieniek, County Engineer; WSB & Associates; Lunda Construction

Built in 1934, the Mayo Bridge bridge was closed to vehicular and pedestrian traffic in 2006 due to continued structural deterioration and the possibility of a structural failure. Damage to the dam from flooding in 2010 allowed the county to use Flood Bonding dollars for the repairs (along with Bridge Bonds and local funds). The new typical section has two 12-foot lanes, 4-foot shoulders, and a path on the downstream side of the bridge. The bridge opened to traffic in November 2014.

Highway Safety Achievement Award: Polk County; Rich Sanders, County Engineer

Award of Appreciation: Eugene Anderson, University of Minnesota, Continuing Education

Special Service Award: Kimberlie DeLaRosa, MnDOT State Aid for Local Transportation

Friends of Minnesota Counties: Tom Wilson, Erickson Engineering

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Local OPERA Project: Asphalt Tailgate Extension

Project leader: Jerry Hayes
Agency: Cottonwood County Highway Department

Problem: The nearest hot-mix asphalt plant is 40 miles away from the Cottonwood County line. During patching operations, highway department crews were experiencing issues keeping the hot mix in the truck while repairing potholes and skin patches. The county needed a better way to control how much material was used per patch while eliminating the cooling of the hot-mix asphalt.

Solution: Engineers designed a covered “gate” for the hot-mix truck that controls the amount of material being distributed and prevents the mix from losing heat. The gate can hold 6 to 12 tons of material and can be used for gravel of various sizes in addition to hot-mix asphalt.

Procedure: The county consulted its maintenance employees and some local welders to come up with a design for the hot-mix gate. After hearing suggestions, county engineers approved the creation of a hot-mix gate that matched the design criteria. The new gate replaced the truck’s existing tailgate, using the original pins and tailgate latch. The gate is also shaped at an angle to the center so that it can be hydraulically operated from the cab of the truck.

Results: Initial tests using the gate went well, and maintenance employees say the jobs performed with the new gate have gone more smoothly than those performed before it was installed. County officials believe the gate will save labor and equipment costs and could also result in a reduction of worker’s compensation claims.

Approximate cost: $3,480

OPERA funding: $3,480

Implementation: Cottonwood County has already placed more than 72 tons of hot-mix asphalt using the new gate. County officials plan to construct a second gate in the future.

Status: Complete LTAP

Fact sheets and reports online
The Exchange regularly highlights projects completed under the LRRB’s Local Operational Research Assistance Program (Local OPERA). Project fact sheets, along with the full project reports, are posted on the OPERA website: mnltap.umn.edu OPERA.
The Freshwater Society announced its Environmental Leadership Awards at the 15th Annual Road Salt Symposium. The awards recognize those who champion efforts to reduce chloride pollution. Below, this year’s champions share how they reduced their road salt while providing excellent customer service and protecting our waters. To nominate candidates or suggest topics for the 2017 symposium, please contact Connie Fortin, 763-478-3606, connie@fortinconsulting.com.

Right from the source: Read how the champions reduce salt use

Carver County: Clearing the Way for Continued Salt Reduction

The Roseville Public Works Department saved money, reduced application rates, and improved our level of service by plowing more, anti-icing, increasing pre-wet rates, and modifying our brine. We have reduced application rates by 100 to 200 pounds per lane mile. Our snow policy specifically calls out our duty to provide “safe winter driving conditions,” not to provide bare pavement. Also, all of our winter operators have been through the MPCA training. They see the benefits of less salt and are committed to this goal by using the right amount of salt for the conditions.

We increased how often we plow to reduce the amount of hard pack and ice to be melted. We find plowed roads require about one-third less salt than unplowed roads, assuming approximately 1.5 inches of snow on them. Many suburbs still have a 3-inch call-out in their snow policy. We are going out more often at 1 inch on residential and a half to 1 inch on main roads. This has been one of the most important ways to use less salt and provide better service.

MPCA training helps reduce salt use

The Minnesota Pollution Control Agency (MPCA) offers training courses for winter maintenance professionals. Go to paca.state.mn.us and search on “road salt and water quality.”

Carver County has reduced salt use by about 800 tons per year. Beginning in the winter of 2011–2012, we began to focus on smart salting. We calibrated all of our equipment, retrofitted all of our trucks with tanks, reduced the use of salt/sand mix, and started using treated salt. To gear up for liquids, we purchased a 5,000-gallon tank.

In 2012–2013, we wrote, and the board adopted, a snow and ice policy. We calibrated all of our equipment and made this a standard practice. We again reduced salt/sand use and began buying trucks equipped with side tanks. Three new tandems were purchased and we eliminated more of our manual controllers.

We began placing a priority on educating our drivers. All of them were sent to the MPCA road maintenance workshops. We reviewed salt use amounts on routes.

We began to experiment with different cutting edges to reduce the amount of snow and ice left on the road to melt. That same year, we added a second 5,000-gallon tank at the main public works location and 750-gallon storage tanks at our Watertown and Young America locations.

In 2013–2014 we purchased a new water truck that allowed us to spray brine for anti-icing applications, and we purchased a brine slurry tank system for one of our trucks as a way to reduce salt use even more in sensitive areas. Equipment upgrades over the last seven years allow us now to apply the correct rate while moving at traffic speed and cover within a day the 60 miles we anti-ice.

We now purchase all treated salt and no white salt. The benefits of treated salt are the ability to melt at lower temperatures along with better adhesion to the road surface.

We have seen tremendous improvements with the growing knowledge and education of our plow drivers. They see the same results with less salt in town, and rural users now salt only where needed on hills, curves, and intersections. Supervisors have purchased totes of Road Guard to blend with our salt brine and use when temps are below zero.

Three Rivers Park District 1 Baker Park: On the Trail to Successful Salt Reduction by Managing the Details

Before 2000, we applied salt/sand, with each person deciding how much to spread in a given area. Over time we weaned off of the use of sand and went straight to salt. Initial calibration efforts began after staff attended a 2007 Winter Parking Lot and Sidewalk Maintenance workshop funded through the MPCA. We learned we were wasting time and money on the sand/salt mixture as well as having to sweep up the sand in the spring. By calibrating our spreaders, we were able to reduce our salt use by 100%.

We found treated salt was far more effective in colder temps and we could lower overall salt use. From 2007 to 2012, we reduced the use of treated salt between 33 to 50%.

The maintenance crew developed some in-house equipment and brine-making formulas. They built a mixing station and spray equipment using discarded tanks, pumps, and other repurposed materials. The crew tests each batch of brine with a simple hydrometer and controls the amount of brine applied by calibrating the equipment. Most recently we were able to purchase a manufactured spray approach. With the introduction of brining in 2012, we have seen a significant decrease in the use of regular dry salt at Baker.

We found that in most situations where anti-icing takes place, bonding ice is preserved and crew time can be saved. This allows snow removal with one pass.

The younger generation has new ideas and the older generation has years of experience; this puts some friendly competition into our maintenance efforts and makes us better at what we do.

MnDOT and U of M Extension: Snow Fence as another Line of Defense

Snow fences are a non-chemical approach for improving driving conditions. Over the past several years, MnDOT has partnered with the University of Minnesota Extension to conduct snow fence research. Together, they created a state-of-the-art, web-based snow control tool and a snow fence design tool to help road authorities and conservation organizations promote the use of snow fences.

They have also launched a program that offers incentives for snow fence establishment by farmers and landowners and they are continuing their research on snow fence innovations.

The team developed a website to host the two snow fence web tools, webinars, and resources. If you need help or guidance in creating or enhancing your snow fence operations, visit snowcontrotools.umn.edu.

Photos: John Dix, City of Roseville

These photographs show two roads next to each other with similar sun exposure during the same event. They were treated with the same amount of salt: the top row was plowed and treated, the bottom row was only treated. It was gray when originally treated, the sun came out later in the day. The third photo is from the next day when it was gray again.

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Pollinator BMPs for roadsides and other rights-of-way

The Minnesota Department of Agriculture (MDA) developed voluntary best management practices (BMPs) to protect wild and managed insect pollinators. Highlights are below.

Reduce negative impacts to pollinators

- Prevent the spread of invasive species by not moving through weeds with ripe seed and by cleaning mowers and other equipment frequently. Not only will this reduce weed control costs, it will also reduce the negative impacts to pollinator habitat caused by invasive species.
- Control invasive species infestations early before they spread from roadsides and degrade additional habitat. Early detection and control will also reduce the amount of herbicide needed in the long term.
- Spot-spray invasive weeds with a well-targeted technique. Avoid broadcast spraying. Targeted sprays help to preserve desirable plants that make roadside vegetation more resilient. Spot treatments also allow nearby flowering plants to continue blooming so pollinators have a constant food source.
- Spray weeds before they flower to provide more effective control and to reduce impacts on pollinators.
- Use registered herbicides according to label directions and prevent drift. Herbicide drift is the off-site movement of herbicides through the air to adjacent areas. Drifting herbicides can reduce the number of flowers available for pollinators.
- Prevent encroachment into legal roadside ROW. Spraying, plowing, or cropping that extends into the roadside can degrade pollinator habitat.

Improve existing habitat

- Protect roadsides with native plant communities from invasive species and other disturbances. These sites often provide great pollinator habitat and have highly functional roadside vegetation that would be nearly impossible to re-create.
- Limit roadside mowing to the first eight feet of the roadside inslope. Mow other areas only when there is a clear vegetation management objective, such as maintaining sight lines, controlling brush, or managing weeds. Reduced mowing saves money, allows for healthier vegetation, and protects pollinator habitat.
- Delay roadside mowing. Roadside laws require that mowing be delayed until after August 1. However, waiting to mow until even later in the season will provide more food for pollinators, benefit wildlife, and allow flowering plants to set seed.
- Use prescribed fire to maintain roadsides with prairie remnants and to stimulate growth of native plants. Fire will stimulate vegetation and reduce the amount of spraying needed for weeds and brush. Leave unburned patches that provide shelter for pollinators.
- Leave standing dead trees on backslopes if they will not cause problems to roadside or adjacent landowner activities. Dead trees and woody shrubs provide nesting sites for native bees and other wildlife.

Create new pollinator habitat

- Plant native seed mixes during ROW construction or where revegetation is needed. Seed mixes with a wide variety of native grasses and flowering plants will create functional roadside vegetation and provide season-long benefits to pollinators.
- Choose sites for new pollinator habitat that are protected from disturbances such as rest areas, weigh stations, and stormwater ponds.
- Plant living snow fences. Some shrub species provide critical nesting sites and food sources for bees. Adding native grasses and flowers to the planting can further improve both snow storage and pollinator habitat.

Tips for helping bees and butterflies

The Minnesota Department of Natural Resources (DNR), in cooperation with the Xerces Society, published a brochure about pollinators and roadsides. It includes these tips for helping bees and butterflies:

Enhance flower diversity

- Plant seed mixes that include flowers with differing but overlapping bloom times. Pollinators need a succession of blooming flowers.
- Use local ecotype grasses and wildflowers best suited to the climate, soil type, and location of the intended habitat site.
- Use a mix of about 50 percent forb seed and 50 percent grass seed to create optimal pollinator habitat.
- Plant a range of wildflowers of varying colors and shapes. Bees mainly visit blue, white, yellow, and purple flowers. Butterflies tend to visit orange, red, yellow, and purple species. Hoverflies go to flowers of white and yellow.

Provide nest sites

- Nearly 70 percent of bee species nest underground. Some species prefer sunny exposed slopes while others prefer level ground.
- Bees that nest in the ground often prefer to dig their nests in patches of exposed earth. Native bunch grasses such as little bluestem and Indiangrass tend to grow in dense clumps, leaving small patches of bare ground exposed.
- Native shrubs along roadside borders encourage cavity-nesting bees.
- Butterflies and moths require the correct plants for their caterpillars to eat. Monarchs need milkweed and fritillaries need violets.
- Butterflies, moths, and hover flies often overwinter in leaf litter or under dead vegetation.

The buzz at the Bee Lab

The University of Minnesota’s Bee Lab is a rich source of information about bee-related flowers, pesticides, education opportunities, and much more. Visit beelab.umn.edu. LTAP

Some Minnesota wildflowers with very high pollinator value include aster, bergamot, culver’s root, goldenrod, giant hyssop, leadplant, milkweed, partridge pea, pentatom, prairie clover, spiderwort, and sunflower (Minnesota DNR & Xerces Society).

Food requiring pollinators includes apples, pumpkins, many berries, peppers, melons, sunflowers, squash, and canola (Minnesota DNR & Xerces Society).
SAFETY

"The workplace is not what it was 20 years ago," said DeLorah Curry, organizational development specialist. "There has been a steady rise in the number of workplace shooting incidents, the number of people shot (during each incident), and the number of people killed. Statistically, it is not a matter of if an incident will occur—it is when."

Since most active shooter incidents are over before law enforcement arrives to stop the shooter, individuals must become stakeholders in their own safety and security. Research shows that survivors prepare themselves both mentally and emotionally to do whatever it takes to survive. "One of the things we are trying to accomplish with this e-learning program is to get our employees into a survivor mindset," explained Beverly Farraher, former acting state bridge engineer. "The program provides tools employees can use to reduce panic and help them develop a survival plan that involves running, hiding, or fighting."

The survivor mindset is really about awareness and planning, added Ted Krinke, a MnDOT dispatch supervisor. "Perpetrators of workplace violence do a lot of planning and practicing—and so should we."

Employees need to take personal responsibility for their own safety and develop a survival mindset:

**What you should do: highlights from MnDOT’s e-learning program**

**Prevention**

Employees need to recognize indicators of violence or "behaviors of concern" that may be warning signs of potential violence. Take appropriate action—inform a supervisor or manager or contact HR—and report concerns.

**Survival mindset**

Employees need to take personal responsibility for their own safety and develop a survival mindset:

- Raise your awareness of your surroundings and have a plan in any work environment.
- Commit to do whatever it takes to survive.
- Prepare yourself by asking "what if" questions to develop effective response strategies.
- Prepare yourself both mentally and emotionally to survive.
- Rehearse your responses—mentally, or through a drill—so you can reduce your response time, increase your confidence, and execute your survival plan.

What to expect when law enforcement arrives:

- The purpose of law enforcement entering an active shooter scene is to take action to stop the shooter as soon as possible.
- Law enforcement usually arrives in teams.
- Law enforcement may be in regular patrol uniforms or "SWAT" uniforms, and will likely have pistols, rifles, or more sophisticated automatic weapons, including tear gas or pepper spray.
- Law enforcement may shout commands and push people to the ground for their safety.

How to react when law enforcement arrives:

- Be prepared to calmly, quickly, and accurately tell them what they need to know.
- Remain calm and follow law enforcement’s directions.
- Put down any items in your hands.
- Immediately raise your hands and spread your fingers wide open.
- Keep hands visible at all times.
- Do not make any sudden movements toward law enforcement.
- Do not yell or scream at law enforcement officers.
- Do not expect law enforcement to assist you until the situation is under control.
- Remember, law enforcement is there to stop the shooter first—you must not present a threat to them. They have no way of knowing immediately who is a threat and who isn’t.

**Response strategies**

**RUN:**

- If there is an escape route, attempt to evacuate and get yourself out of harm’s way.
- Try to help others escape, but if they insist, go yourself.
- Leave your belongings behind.
- Call 911 when you are safely out.
- Quiet your electronic devices.

**HIDE:**

- If you can’t get out safely, find a place to hide.
- Lock or block the door and/or windows.
- Silence your phone or other electronic devices.
- Hide behind large objects.
- Stay out of the shooter’s view.
- Remain very quiet.

**FIGHT:**

- Fight as a last resort and only if your life is in danger.
- Commit to your actions 100 percent—give it your all.
- Act with aggression.
- Attempt to incapacitate the shooter.
- Improwse weapons.

**Interaction with law enforcement**

When you can safely call 911 for law enforcement, be sure to:

- Give your name, work location, and the estimated number of employees at the site.
- Give the location of the active shooter, if you know it.
- Provide physical description(s) of the active shooter.
- Give information on the number and description of weapons.

What to do when law enforcement is on the scene:

- Do not yell or scream at law enforcement officers.
- Do not present any sudden movements toward law enforcement.
- Do not answer any questions until a law enforcement officer asks you.
- Do not make any sudden movements toward law enforcement officers.
- Do not expect law enforcement to assist you until the situation is under control.
- Remember, law enforcement is there to stop the shooter first—you must not present a threat to them. They have no way of knowing immediately who is a threat and who isn’t.

**More resources:**


For more information on the MnDOT program, contact DeLorah Curry (delorah.curry@state.mn.us). LTAP

—Nancy Strege, LTAP freelancer
Minnesota LTAP partners with the MnDOT Library to operate a state-of-the-art service that can help you track down almost any resource from Minnesota or beyond. Questions? Contact Marilee Tuite, Minnesota LTAP librarian, 612-626-8753, ctslib@umn.edu.

THE SHELF

State of the Practice for Managing, Maintaining, and Operating Culverts: A Review of Deterioration Curves and Tools (MnDOT, Trs 1506, Dec. 15) Considers best practices for quantifying the benefits of culvert maintenance and existing deterioration models and curves for culverts.

Mitigating Frost Heaves and Dips Near Centerline Culverts (MnDOT, Trs 1517, Jan. 16) Explains possible causes of heaves and dips near centerline culverts during cold winter months and lists recent research on the topic.

Shrub Willows Make for Effective, Inexpensive Snow Fences in Minnesota (MnDOT, 2013-4673, Jan. 2016) Evaluates the potential of shrub willow living snow fences by identifying appropriate plant varieties, analyzing planting designs effective for trapping snow, and evaluating the cost and benefits of using these species.

Evaluate and Develop Innovative Pavement Repair and Patching: Taconite-Based Repair Options (Natural Resources Research Institute, University of Minnesota Duluth, Mn/RC 2016-01, Jan. 2016) Evaluates two repair options using taconite-related approaches for pavement patching and repair of both asphalt and concrete pavements.


Evaluation of Pavement Markings on Low-Volume Rural Roadways in Iowa (Institute for Transportation, Iowa State University, Mn/TRANSM Project 13-478, Dec. 2013) Discusses the state of practice related to the installation and maintenance of pavement markings along low-volume rural roads in Iowa to guide the pavement-marking decision-making process.

Could Cattle Guards Augmented with Electrified Pavement Prevent Mule Deer and Elk Access to Highways? (Upper Great Plains Transportation Institute, North Dakota State University, MPC 18-297, Dec. 2015) Evaluates the combination of cattle guards and electrified pavements that were designed to reduce deer and elk intrusions through fences.

Evaluation of Flared-End Inlet Protection Products for Sediment Retention (University of Illinois at Urbana-Champaign, FHWA-ICT-16-004, Jan. 2016) Analyzes the effectiveness of flared-end inlet protection products to prevent sediment from entering curb and gutter inlets via site runoff.

Evaluation of Ditch Checks for Sediment Retention (University of Illinois at Urbana-Champaign, FHWA-ICT-16-002, Jan. 2016) Analyzes the effectiveness of various ditch checks to ensure they could be used in real-life construction sites to mitigate soil transportation.

Next Generation Bridge Management Tools and Inspection (Institute for Transportation, Iowa State University, MnDOT 2015-47, Dec. 2015) Identifies inspection methods, manuals, training, and timetables for bridge owners, and how to use new inspection process when determining annual bridge projects.

More fun with words!
Who’s afraid of a little deer tick? Whose bottle of repellent is this? Who knows? The examples above are correct. “Who’s” is a contraction of “who is.” Whose is the possessive form of who or which in the example above, the answer could be “It’s mine” or “It’s yours.” LTAP

Salt from page 4 into pre-wet and anti-icing operations. Most of our trucks had a very small fan nozzle for pre-wetting. After the MPCA class, we checked how much brine was actually coming out. We found it was only 2 gallons per ton, likely the reason our seasoned veterans doubted the value of pre-wetting. We removed the nozzles and let the quarter-inch hose spray directly onto the salt. This gets us 10 to 15 gallons per ton. We now purchase our plow trucks with hydraulic pumps that can be calibrated. Higher pre-wet application rates show a better spread pattern and less bounce, and operators agree on its value.

We blend salt brine with Ice Bite SS. It is both cost- and space-effective. We do not have the space for a brine-making system. We put up a large rack that holds four tote tanks at a time and one on the floor. This is plumbed to a large pump with 2-inch hoses. We fill totes with salt brine from the county and then blend it with Ice Bite SS. We generally blend 90/10 for anti-icing, greatly improving adhesion to the road surface. For pre-wet, we blend around 70/30.

We are always discussing our rates amongst ourselves during an event, talking about pavement temp, what we’re all seeing in different parts of town, and trying to make sure we’re using just enough to do the job—and nothing more. LTAP

Spring 2016
There are no safe UV rays or safe suntans. OSHA suggests these steps:

• **Cover up.** Wear tightly woven clothing that blocks out light.
• **Use sunscreen.** Choose one with a sun protection factor (SPF) of 15 or higher, and apply it frequently.
• **Wear a hat.** A wide brim hat—not a baseball cap—is ideal because it protects your neck, ears, eyes, forehead, nose, and scalp.
• **Wear UV-absorbing shades.** Sunglasses don’t have to be expensive, but they should block 99 to 100 percent of UVA and UVB radiation.
• **Limit exposure.** UV rays are most intense between 10 a.m. and 4 p.m.

Find the hidden answer...and win an online course registration!

Pollinators are a key part of our landscape. In fact, you might say they’re as American as baseball, hot dogs, and … something else. When you finish our spring puzzle, the letters in the shaded boxes, moving from top to bottom, will spell out the answer. Puzzle answers are taken from articles in this issue and from our online courses. **LTAP**

### Patriotic Pollinators?

#### Across
1. Wear these to help prevent cataracts… and look cool.
4. An autumn holiday food requiring pollination
5. A big one could swallow a small car in the spring.
7. A wrongful act or an infringement of a right
8. The most commonly used dust control chemical is calcium ______.
11. A long-running reality show… and the mindset to have in an active shooter event
13. One method for making sign supports break away.

#### Down
2. Calibrating these can reduce salt use.
3. If there’s an active shooter, do this as a last resort.
6. One way to improve drainage on a gravel road is to use drain ______.
9. Roseville does this more often to reduce hard pack and ice.
10. Camber culvert installation must use a flexible ____ type.
11. Nearly 70 percent of bee ____ nest underground.
12. You don’t want this on your turfgrass … or brake lines.

### Roads Scholar credit

You can earn credits in Minnesota LTAP’s Roads Scholar (RS) program by attending LTAP and CTAP workshops and other cosponsored events. To learn more or enroll in the program, visit [mnltap.umn.edu/roadsscholar](http://mnltap.umn.edu/roadsscholar).

### LTAP workshops

LTAP workshops, along with events cosponsored by Minnesota LTAP, are marked with an LTAP at left. Check the web for details and to register online: [mnltap.umn.edu/training](http://mnltap.umn.edu/training). To be added to our print or electronic mailing lists, e-mail [mnltap@umn.edu](mailto:mnltap@umn.edu) or call 612-625-1813.

### CTAP workshops

Circuit Training and Assistance Program (CTAP) workshops bring LTAP services to your neck of the woods. CTAP uses a fully equipped van to provide on-site technical assistance and training. Each CTAP workshop earns 0.5 RS elective credit. For more information or to schedule classes, call the CTAP instructor, Kathy Schaefer, at 651-366-3575, or e-mail [Kathleen.Schaefer@state.mn.us](mailto:Kathleen.Schaefer@state.mn.us).

### Calendar

If your professional organization meets on a regular basis, let us include the information here. Contact us at [mnltap@umn.edu](mailto:mnltap@umn.edu). For details and an up to date list of events in Minnesota, please see [mnltap.umn.edu/training](http://mnltap.umn.edu/training).