Salt storage and handling getting renewed attention

Many people are aware that salt is our best tool for keeping the roads safe during winter months, but now more attention is being given to how road salt is handled and stored, according to Tara Carson from the MnDOT Office of Environmental Stewardship. Carson, part of an internal task force working to re-evaluate salt storage and handling practices, presented “Are Our Salt Storage and Handling Programs Worth Their Weight in Salt?” during a concurrent session of the 2012 Minnesota Fall Maintenance Expo and Snow “Roadeo” held in October in St. Cloud.

Carson’s presentation addressed the effects of salt buildup in the environment, effective strategies for salt storage, and how to avoid problems near storage areas. Storage issues often are magnified after a mild winter because many salt sheds still contain significant amounts of salt when spring rains come.

Good housekeeping includes regular inspection of salt storage facilities.

Work-zone online tutorial coming this spring!

Roadway work zones can be hazardous to your health. To provide affordable and convenient training for you and your workers, Minnesota LTAP is launching an online tutorial on the fundamentals of work-zone safety and the basic concepts of the work-zone area. The tutorial also addresses many of the hazards inherent in road and street work and how these dangers can be minimized to keep motorists, pedestrians, and employees safe.

This training does not replace traditional classroom and hands-on instruction, such as Minnesota LTAP’s Work-Zone Safety, Temporary Traffic Control, and Flagging workshop this spring. The online course is recommended to introduce employees to the roadway experience and to enhance the formal training they will receive.

The online course encourages workers to develop

Demo Day in Rochester this year

The Minnesota Roadway Maintenance Training and Demo Day will be held this year on May 1 at the Olmsted County Fairgrounds in Rochester.

The topics this year are:

- Gravel road maintenance
- Motor grader operations for blading techniques and safety
- Material identification
- Grader equipment and maintenance
- Vegetation
  - Management and safety for prescribed burning for prairies
  - Chainsaw safety and personal protective equipment
  - Benefits of barefoot planting and pruning techniques
- Asphalt pavement maintenance and rehabilitation
  - Pothole patching
  - Crack sealing
  - Pavement distresses and preventative maintenance
  - Hot-mix patching
- Load securement and commercial driver’s license (CDL)
  - CDL requirements/updates
  - Cargo securement loads/heavy equipment and machinery
- Working load limits and tie-downs

All topics include a classroom-style presentation in

Demo Day continued on page 8
Think like a first responder

When a massive tornado ripped through the city of Joplin, Missouri, in 2011, police and fire weren’t the only first responders on the scene. Public works professionals were quickly dispatched to help clear debris, open roads for emergency vehicles, and set up barricades to protect the public from downdraft power lines and other dangers.

Public works professionals can also play a key role as first responders under many less dramatic circumstances. Mark Ray, an engineer for the City of Golden Valley, and Tony Martin, a public safety dispatcher for the City of Edina, talked about what it means for public works employees to adopt a first responder mindset at the American Public Works Association–Minnesota Chapter fall conference in November.

“As a public works professional, you are a first responder,” Ray said. “This means that you have a duty to take action, even if it is simply notifying the proper people when you see something that is out of place. It’s also your responsibility to support other first responders.”

Critical to that first responder mindset is the idea that “if you see something, say something,” whether it’s a car parked in an unusual location, a downed light pole, or a broken traffic signal. Be proactive, not reactive. Too often it’s easy to adopt a silo mentality, Ray cautioned. If your job is to deal with stormwater issues, don’t turn a blind eye to a stalled car that could endanger other motorists. It’s important to know exactly how to say something in an emergency situation. Dispatch centers can be chaotic and hectic, Martin explained. Providing dispatchers with the right information helps ensure the right resource gets to the right location quickly. It’s important also to say who you are and where you are, and to describe what you see as specifically as possible, he said. Explain what you’re doing at the scene, whether you involved, you’re a witness, or you’re just calling in; and answer any questions.

Public works professionals also fill an essential support function during emergency situations—for example, if a gas line is severed during construction, during the search for a missing child—or closing a road during a fire.

“You’re our eyes and ears out there,” Martin told the group.

Knowing how police and fire approach a situation can also help ensure the most efficient response and help to build an environment of trust and collaboration, Martin said. Public safety officials are trained to address a specific hierarchy of need: people, property, and then the environment. Their duty is to save lives first, he added. Public works employees can also provide key logistical support, planning and setting up detours near roads (82 percent net support). Read more about the findings, along with a story about ASE usage in Illinois and Iowa, in the December CTS Catalyst newsletter (cts.umn.edu/catalyst).

A record-setting 955 people attended the TZD conference, which was offered by Minnesota TZD and the Minnesota Departments of Public Safety, Transportation, and Health, and hosted by CTS. Selected conference presentations, as well as many other resources, are available on the TZD website: minnesottazd.org.

Public works professionals can also be first responders. They can also provide key logistical support, planning and setting up detours near roads, transporting materials, and setting up equipment and communicating about road closures.

In developing a relationship between public works and public safety, Ray emphasized the need to build trust. “Cops don’t trust people because that is the nature of their job,” he said. “It’s important to be consistent. If they call, respond. Their lives may depend on it,” he added.

Lastly, Ray and Martin urged the audience to think about day-to-day opportunities in their local jurisdiction where both departments can benefit. As many communities struggle to make do with dwindling resources, the contributions departments can work together, the better it is for everybody. LTAP

—J. Trout Lowen, LTAP freelancer

Toward Zero Deaths conference: automated speed enforcement and much more

One of the topics on the program of the 2012 Minnesota Toward Zero Deaths (TZD) Conference in October was automated speed enforcement (ASE). ASE uses radar and cameras to identify a speeding vehicle and capture images of the license plates, and, in some systems, the driver. Citations are then mailed to the vehicle’s registered owner or, alternatively, the identified driver.

ASE has been deployed in 14 states and in many countries, and it is proven to reduce speeding and improve road safety. Its use in the United States, however, has been limited in part due to a perception by policymakers that it is unpopular and controversial.

As part of a recent study, U of M researchers surveyed Minnesotans to see what they think of ASE. They found that a majority (56 percent) either are very supportive (20 percent) or somewhat supportive (36 percent) of the concept of ASE. Support is even higher for using ASE in specific, limited locations, such as construction zones where workers are endangered (83 percent net support) and on roads

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Implementation of an Anti-Icing Calibration Unit

**Project leader:** Bert Tracy  
**Agency:** City of Golden Valley  
**OPERA funding:** $3,200  
**Problem:** For the City of Golden Valley, protecting its watershed while effectively providing snow and ice control on its streets is an important priority. Ensuring the appropriate application of anti-icing materials is one way to accomplish this goal. However, the city’s plow trucks did not have a method for accurately quantifying the application rate of materials on city streets.

**Solution:** The city purchased an anti-icing calibration unit so its trucks could be calibrated for consistent salt and sand application. A goal of this consistent calibration was to reduce the city’s material use, resulting in both a cost savings to the city and benefits to the watershed and surrounding environment.

**Procedure:** After the calibration of the plow trucks, drivers recorded the start and end mileage and the amount of material spread every time a vehicle left the city shop. The information was combined for all plows to determine how much material was used during each snow event. The city then compared the amount of anti-icing material spread during the 2011–2012 season with the amount used during the 2010–2011 season.

**Results:** Overall analysis results indicate that the calibration unit reduced the amount of material applied. Specifically, salt/sand usage in the 2011–2012 season was down 62 percent compared to the 2010–2011 season. However, there were approximately 50 percent fewer events in 2011–2012—the season was very warm and there was significantly less snow. Looking at individual events, the median deployment of sand/salt mixtures decreased 42.8 percent, suggesting that the calibration unit significantly decreased the amount of material deployed for a typical event. For salt-only applications, there was no significant change.

One challenge was that mileage information collected during the 2011–2012 season was estimated to exceed the actual distance over which material was applied. This is because plow routes do not start immediately upon leaving the city shop, and drivers do not apply material during the entire trip.

**Approximate cost:** $3,200  
**Implementation:** The City of Golden Valley will continue using the calibration unit to ensure appropriate anti-icing material application rates. To fully realize the benefits of the unit, the city will also continue to add automated vehicle locating systems on its plows and other anti-icing vehicles. This will allow the city to track more precisely when and where material is being applied.

**Status:** Complete LTAP

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**Fact sheets online**

The Exchange regularly highlights projects completed under the LRRB’s Local Operational Research Assistance Program (Local OPERA). Project fact sheets, along with all project reports, are posted on the OPERA website as they are completed throughout the year. All are available at www.mnltap.umn.edu/opera.

**New resources from the LRRB and MnDOT**

**Salt brine blending report**

A study evaluated the ice melt capacity and field performance factors of deicers and deicer blends and then developed a temperature-based cost model for comparing their relative field performance. Both solid and liquid deicers were evaluated for both desiccating and anti-icing methods. Salt Brine Blending to Optimize Deicing and Anti-Icing Performance (MN/RC 2012-20) is available at lrrb.org.

**Material testing rates for low-volume roads**

A new Schedule of Materials Control (SMC) has been created for low-volume roads. It is tailored specifically to the construction project risks encountered by local agencies in order to reduce materials testing rates for low-volume projects without an unacceptable increase in risk. These guidelines include changes that remove some testing and inspection requirements and make others less stringent. Material Testing Rates for Low-Volume Roads (2012-17) is available at lrrb.org.

**MnDOT Research Services annual report**

MnDOT’s Research Services has published its FY12 annual report. It includes a quick reference table of all active research contracts and multi-state pooled-fund projects, providing summary financial information, contract dates, and contact names. It also includes two-page technical summaries of completed research projects, organized by research topic area. It’s online at dot.state.mn.us/research.

**Other recent reports at lrrb.org**

- Construction Manager/General Contractor Issue Identification (2012-25)
- Concrete Slurry, Wash and Loss Water Mitigation (2012-21)
- Subgrade Stabilization ME Properties Evaluation and Implementation (2012-18)
- Field Evaluation of Built-In Curling Levels in Rigid Pavements (2011-16)
- Use of StreetPave for Design of Concrete Pavements for Cities and Counties in Minnesota (2012-10)

**TERRA fact sheet: next generation concrete surface**

Increasing concerns about pavement noise from the public prompted researchers to explore quieter road surface options, resulting in the development of next generation concrete surface (NGCS), also known as innovative diamond grinding. NGCS made history as the first new concrete pavement texture to be introduced in the last several decades and as the quietest texture yet developed for nonporous concrete pavements. NGCS produces a consistent surface without positive or upwardly spiked texture, which leads to a substantial reduction in sound.

A new fact sheet about NGCS—Quiet, Safe, and Smooth Concrete Pavements—provides an overview of the innovative technology, complete with a list of benefits and resources for road-building and restoration programs. The new fact sheet is one of a series from the Transportation Engineering and Road Research Alliance (TERRA), online at terraroadalliance.org. The LRRB is a TERRA member. LTAP

**Image:** NGCS diamond grinding on I-35 in Duluth, Minnesota
The main points of vulnerability for salt contamination are loading and unloading areas for rock salt and truck washing stations. In particular, it’s important to prevent stormwater from mixing with rock salt and washing into storm sewer systems or nearby grassy areas, Carson said.

Salt handling can be a challenge. Once salt has mixed with water, the chloride and sodium break apart, and the chloride forms a strong bond with water. The only ways to separate the salt out of the solution are reverse osmosis and distillation. But those processes, which are used to create drinking water in arid countries, are prohibitively expensive and require a lot of energy. That means preventing salt-laden storm water is the best option, Carson said.

Chlorides move with the water through soil into groundwater or surface water. Much of the water in Minnesota eventually makes its way to the Mississippi River and on to the Gulf of Mexico. When the chlorides wash away, sodium stays behind in the soil and leaches out important metals such as magnesium and calcium—both of which are important for plant growth. Over time, Carson said, salt weakens the structure of soil, making it difficult to regrow plants. In areas with high salt concentration, this can lead to another problem—erosion.

Carson gave an overview of the Twin Cities Metro Area Chloride Project, which is developing a chloride management plan for surface waters in the seven-county metropolitan area. The project, led by the Minnesota Pollution Control Agency (MPCA) with an interagency advisory team and a wide range of stakeholders, began with a comprehensive study to better understand the extent, magnitude, and causes of chloride contamination in the Twin Cities and to explore options and strategies for addressing chloride impairments and other impacts to water resources.

The chloride management plan will include implementation activities for reducing chloride in metro area waters and eventually could serve as the basis for a statewide chloride management plan. One of the reasons the MPCA initiated the chloride management project is because it noticed that salt water is affecting several metro lakes. Heavier salt water has settled at the bottom of the lakes and doesn’t allow the water to naturally turn over in the spring and fall, preventing nutrients from the bottom of the lake to be released and recirculated within the water body.

To reduce salt runoff and contamination, Carson said, MnDOT is looking at ways to improve salt handling practices, design better salt storage facilities, and increase inspections of those facilities. Good housekeeping includes implementing regular inspections, making repairs promptly, protecting piles at shed openings, loading under cover, and sweeping up spills promptly. Good storage facility design—and proper use of the facility as designed—not only prevent salt contamination but also prevent building corrosion.

Carson also reminded the audience that sand alone is not enough to prevent salt runoff, though it is effective at holding down the edges of tarps. For new construction, proper site grading around salt storage facilities is the best way to limit runoff.

Carson concluded that everyday good housekeeping measures are most important. “Prevention right at the source is the best thing you can do,” she said.

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**Snow & ice control handbook updated**

Minnesota LTAP and MnDOT have updated the *Minnesota Snow and Ice Control: Field Handbook for Snowplow Operators*.

The handbook helps promote the understanding of the tools, best practices, and limitations for snow and ice control. It also helps users understand when to use and when not to use these tools and practices. In addition, it encourages progressive changes in snow and ice control practices that will help agencies reduce salt/sand use and environmental impacts while meeting the safety and mobility needs of roadway users.

Sections include:

- Basic concepts
- Before the winter
- Before the storm
- During the storm
- After the storm
- Application rate guidelines
- Materials and quality control
- Additional resources

The new version includes updates from CTAP instructor Kathy Schaefer and other experts at MnDOT. It incorporates new data and other changes since the original was published in 2005. It is published by Minnesota LTAP, MnDOT, and the LRBB. It’s available for download at mnltap.umn.edu.

The handbook was used as the course material for the Winter Maintenance Supervisor – Certificate Workshop held in November by APWA-Minnesota. The PDF of the entire workshop presentation is on the APWA-MN website: minnesota.apwa.net.

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**Excerpt from the handbook:**

**Guidelines for pretreating**

Pretreating is mixing a liquid into the stockpile of salt or sand before it is applied. Unlike prewetting, it does not require equipment changes and requires no new capital investment for equipment. You can also switch from dry application to wet application immediately—just turn down the application rate.

**Salt stockpile**

- Treat the salt stockpile with a liquid deicing chemical. It may be purchased pretreated or mixed on site by the vendor or your crew.
- When treating the stockpile at the shop, apply at 4 to 6 gallons/ton. Salt must be very dry for the chemical to stick.
- Because leach risk at a stockpile is increased, store it covered on an impervious pad.

**Sand stockpile**

- Pretreat the stockpile to keep it flowable.
- Apply to stockpile at 4 gallons of salt-brine mix.
- Store the stockpile under cover.
All about roundabouts

In 2007, Washington County opened the state’s first “fully” two-lane roundabout at the southern edge of the City of Woodbury. At the American Public Works Association—Minnesota Chapter fall conference in November, Washington County traffic engineer Joe Gustafson shared some lessons learned and offered insights for other communities considering multilane roundabouts.

While some other metro-area cities were already experimenting with roundabouts in 2007, Gustafson said, Washington County was the first to build a roundabout with multiple lanes on all four approaches. Development had been expanding rapidly in the south end of Woodbury, and the intersection, controlled at the time by a four-way stop, had experienced some long queues, especially during peak hours. Traffic projections suggested the need for a six-lane road with dual left turns, but area residents resisted, concerned that a road of that size would make it difficult for pedestrians. A roundabout emerged as the best option for the area, Gustafson said.

“Before it went in, we knew it was going to be something new for the city, not just for drivers but for officials, police, and driver educators,” Gustafson said. To help educate drivers, the county developed a public information campaign, “Roundabout U,” which included events, mailings, a DVD, and a web site. One of the most well-received tools for educating drivers, Gustafson said, was a “magic carpet” printed with the roundabout on it that allowed residents to essentially walk through the intersection.

One of the biggest challenges has been overcoming drivers’ experience with traffic circles and rotaries, which are in use in different areas of the country and in other countries. Rotaries and traffic circles operate by different rules, and drivers relying on that past experience can end up in a fender bender, Gustafson explained.

Even in the planning stage, Gustafson cautioned, roundabouts stir up politics and emotions. Some residents see them as a left-wing conspiracy; others are convinced that local drivers won’t adapt or that roundabouts can’t be pedestrian-friendly. Despite those early concerns, Gustafson said, public opinion in Woodbury of roundabouts has grown from 54 percent in 2009 to 68 percent in 2011, and traffic delays at that intersection have decreased. Compared to a nearby signalized intersection with similar traffic flows, peak delays for thru traffic in the roundabout were 58 percent lower; reductions were greater for traffic turning left.

Drivers have appeared to adapt to the roundabout fairly well, Gustafson said. There have been no reported injury crashes and no wrong-way crashes; side-swipe crashes and center island crashes have been rare. However, fender benders have been more common—140 in the first four years. Most were minor and were not reported to the state, but are an ongoing concern for the county.

Two crash types predominate. Failure to yield is the most common, and in many cases, the driver at fault believes the other driver was at fault, Gustafson said. The most frequent scenario involves a driver approaching the roundabout in the right-hand lane failing to yield to cross traffic using the left lane. The second most common crash type involves drivers ignoring lane signs and turning left from the right-hand lane.

“Drivers assume, or they’ve been told, that entering a roundabout is a merge or a right turn,” Gustafson explained, noting that the state driver’s manual once described roundabouts in that way. Planners need to communicate the difference, he said.

Clear signage is essential. Initial signage featuring a fish-hook design opened the door to driver confusion. The county intends to replace these with standard lane-use signs with an added dot depicting the island. The county also added some destination-based lane assignment signs and signs instructing drivers to yield “to both lanes.”

Although the roundabout appears round, Gustafson also urged planners not to use the word circle to describe a roundabout. “There is no circular road in a roundabout,” he noted. “There’s a circular island. The roundabout itself is just two overlapping pairs of one-way roads.”

For other communities considering multi-lane roundabouts, Gustafson said, planners need to be consistent in defining what constitutes a roundabout, educate drivers, and provide clear signage and road markings. It is also important to develop a close relationship with enforcement agencies, Gustafson said, because police often have the same misconceptions about roundabouts as the general public. Traffic enforcement handouts are a good idea.

“They’re the ones who are going to be out explaining this,” he added.

For more information on the Woodbury roundabout, view Gustafson’s PowerPoint presentation online at http://minnesota.apwa.net/events;2012fallconference. —J. Trout Lowen, LTAP freelancer

Roundabouts in Minnesota

Brainerd roundabouts

The City of Brainerd installed three roundabouts last summer. The project, in cooperation with Crow Wing County and the City of Baxter, involves upgrading a corridor from a three-lane road to a four-lane divided roadway. A combination of traffic signals and roundabouts will be used.

“The roundabouts have been fairly well accepted by residents,” says Jeff Hulsether, Brainerd city engineer and member of the LTAP Steering Committee.

The city has created a website about roundabouts for residents including information about the benefits of roundabouts and examples in Minnesota: ci.brainerd.mn.us/engineering/roundabouts.

Roundabouts and pedestrian safety

U of M researchers examined the experience of pedestrians and bicyclists at two roundabouts in the Twin Cities. Findings show that drivers at the Richfield roundabout yield only about 45 percent of the time; the yielding rate in Minneapolis averaged about 83 percent. Read more in an article in the November CTS Catalyst newsletter (cts.umn.edu/catalyst). LTAP

Michigan DOT public education campaign

The Michigan Department of Transportation initiated the study “Educating the Public to Navigate Roundabouts” to better understand driver behavior in roundabouts and develop effective educational countermeasures to improve safety and efficiency. The research team developed a comprehensive public education campaign to counteract the crash factors, including animated videos, presentations, and brochures. The materials and the fall research report—Improving Driver’s Ability to Safety and Effectively Use Roundabouts: Educating the Public to Negotiate Roundabouts (RC-1542)—are online at michigan.gov/roundabouts.

Mini-roundabouts

A Federal Highway Administration (FHWA) study offers recommendations for constructing mini-roundabouts to reduce congestion and improve safety at intersections. Read the article in the November/December 2012 issue of FHWA’s Better Roads. LTAP

More roundabout resources

Featured image: Photo: David Gonzalez, MnDOT
The eight pillars of trust

Trust is the one element that is unique to the greatest leaders and the most successful organizations, according to David Horsager, business strategist and author of "The Trust Edge: How Top Leaders Gain Faster Results, Deeper Relationships, and a Stronger Bottom Line.

With the enthusiasm of a barnstorming evangelist, Horsager took his message of trust on stage as the keynote speaker at the American Public Works Association–Minnesota Chapter fall conference. He delivered an hour-long, high-energy address that mixed folksy stories of growing up on a farm with the enthusiasm of a barnstorming evangelist. Horsager terms the "trust edge" provides a significant advantage. "The advantage of being trusted, as a mom and dad, as a volunteer, as a senator, as a public works director, as a civil engineer. It doesn't matter. The greatest advantage we can have is being trusted."

To develop the trust edge, however, organizations have to develop what Horsager terms the "Pillars of Trust," eight distinct qualities that form the foundation of any organization's competitive advantage: Competence: The most successful organizations and brands in the world are successful because they're consistent. They deliver the same product the same way every time. "In our office, it's the little things that are done consistently that make the biggest difference," Horsager said. "Most leaders are inconsistent because they don't do the little things consistently."

Clarity: People trust the clear and distrust the ambiguous. In an organization, clarity starts with a vision. "With visions, people come together. They do the little things differently."

Compassion: The best way to show compassion in the workplace, Horsager said, is to follow the LAW—listen, appreciate, and wake up. "When you start to appreciate people, you start to see the best in them," Horsager said.

Character: The most successful leaders do what needs to be done, when it needs to, whether they feel like it or not, Horsager said. "We see companies, organizations, and teams build a culture of high integrity and character where people actually do what they ought to do instead of what they feel like doing, but it's less and less common. Those that don't…never get the trust edge."

Video, audio clips online
A 1.35-minute video of Mike Colestock's presentation on the Minnesota LTAP website, along with a 9-minute audio version. Check them out mnltap.umn.edu/training/fallexpo.

Preparing for leadership and supervisory roles

Most people don't want to lead or be "the boss" because leadership is hard. According to Mike Colestock, leading people can be a very different job, and you can't do it well if you don't really like people. Colestock, an instructor with Hennepin Technical College, presented "Leadership Skills for New and Upcoming Supervisors" during a general session at the 2012 Minnesota Fall Maintenance Expo and Snow "Roadeo" at the St. Cloud Public Works Facility, held October 3–4.

Colestock provided an overview of what it takes to prepare for a leadership or supervisory role. His presentation focused on the challenges and difficulties associated with taking a leadership position. Colestock also offered tools, tips, and techniques needed to build personal influence and succeed as a leader.

"Leadership is about people because it's about influence—understanding what's important to people, what motivates them, why they get out of bed everyday," Colestock said. "Can you motivate your people?"

Colestock began the presentation by saying that employees who aspire to leadership need to know why they want to be leaders. "The best bosses are the ones who are good leaders," he said. "Supervision is about tasks—leadership is about people. People want to be led well."

To lead well, Colestock continued, a supervisor must be aware of his or her own leadership style. Along with educational and technical competence, leaders need to understand the kind of person they are and the way they best communicate. Colestock also stressed the importance of supervisors knowing the communication styles of their employees. "Part of leadership is knowing how you communicate and how your people communicate," he said. "Don't take your workers for granted. You need to get to know them."

Though leaders may be unable to change the attitudes of their worker, Colestock said, leaders can create an environment where people can be fully engaged in their work. An engaged employee is someone who has a larger perspective on what the company is trying to accomplish, knows the most efficient ways to do the work, and thinks for the organization. "Good leaders engage their people," Colestock said. "I want to hire what's between their ears, not just their hands."

According to Colestock, good leadership traits are critical to success. Indecisiveness, lack of direction and organization, vindictiveness, and micromanagement are all signs of bad leadership, and these methods disengage workers. Colestock explained that in conflict, good bosses shouldn't be frustrated by their people, but instead should focus on the behavior that needs to be changed. "Good leaders focus on the tangibles—here's what's wrong, and this is the behavior I need corrected. You have to get to the bottom of the issue," Colestock said.

Fostering respect in the workplace is also critical for engaging employees. Colestock believes that when leaders respect their employees, employees will respect their leaders. "We have to realize that we're both professionals and we're here to do our jobs. I can't get work out of a worker if he doesn't respect me. Without respect, that worker is disen-gaged," Colestock said.

Instead, Colestock suggested leaders practice "window-and-mirror" maturity with their employees. When something goes well, good bosses should look out the window and give credit to their work- ers. When something goes wrong, good leaders should look in the mirror and take it upon themselves to fix the problem. "Your reputation as a leader shows up before you do and hangs around well after you leave," Colestock said. "You need to know what creates success."

 ultimately, when leaders can demonstrate to their employees that they are valued, Colestock said, it helps motivate those employees to engage in their work. "Good leaders fight for their folks," he con- cluded. "The more people who understand that I care about them as a human being, the more they will engage and give all of their effort." —Michael McCarthy, LTAP editor

PREPARED BY MINNEAPOLIS SURFACE TREATMENT SERVICES

The Minnesota Department of Natural Resources estimates that small lakes account for one-third of all bodies of water in Minnesota. Smaller aquatic ecosystems generally have fewer pollutants than larger ones, which means people can enjoy outdoor activities like swimming, boating, and fishing without the worries of degraded water quality. Just how these small lakes developed is a topic of increasing interest and study. The project described below is the first step to understanding the small lakes system in the state of Minnesota.

MINNESOTA TECHNOLOGY EXCHANGE

—J. Trout Lowen, LTAP freelancer
Performance Testing for Superpave and Structural Validation (Federal Highway Administration, Nov. 2012)

This report discusses topics covered at a Highway Safety Manual (HSM) workshop, including successful HSM applications and the institutionalization of new HSM quantitative safety methods.


This guide includes lessons learned and sample materials from a successful pilot project conducted by the Michigan DOT.

Evaluation of Low-Cost Treatments on Rural Two-Lane Curves (Iowa State University Center for Transportation Research and Education, July 2012)

Researchers evaluated two low-cost treatments in Iowa to determine their effectiveness in reducing speeds on rural two-lane roadways.

Simplified Techniques for Evaluation and Interpretation of Pavement Deflections for Network-Level Analysis & Guide for Assessment of Pavement Structure Performance for PMS Applications (FHWA, June 2012)

Step-by-step instructions for interpreting and evaluating pavement deflection data for network-level pavement management system (PMS) applications are available in a new guide developed by the FHWA’s Long-Term Pavement Performance program.

Guide for In-Place Treatment of Wood in Historic Covered and Modern Bridges (U.S. Department of Agriculture, Forest Service, Forest Products Laboratory, March 2012)

This guide describes procedures for choosing and applying in-place treatments to prevent fire and biodeterioration from damaging historic covered bridges.


This document is the final report for transportation pooled-fund project, TPF-5(128), which includes MnDOT and 11 other participating state DOTs. LTA P

Supervisory and management training options

APWA-Minnesota programs

The American Public Works Association–Minnesota Chapter partners with several organizations to offer supervisory and management education. For example:

• The Leadership Academy is a mini-master’s program that provides practical knowledge, tools, and skills public works professionals need to manage effectively. Offered through Hamline University, the academy meets one and a half days a month for seven months.
• The Public Works Certificate Program is a 22-credit program consisting of four semesters of public works classes and two semesters of English classes. It is offered through North Hennepin Community College.

New from Minnesota LTAP

We’re exploring our own leadership/supervisory training options and plan to introduce a new workshop this fall. Please keep an eye out for updates. LTAP

Truck-weight compliance resources

Spring is just around the corner, which means it’s time to think about spring weight-load restrictions. One resource is the Truck-Weight Education Program. Funded through 2013, the program addresses concerns from state, county, city, and township transportation authorities. It promotes voluntary compliance to reduce damage to public roads and highways from overweight vehicles.

Workshops are scheduled throughout the state over the next few months. The goal is to provide information and explanations to attendees on how to haul the most legal weight without violating the truck weight laws. The program also has a website with many useful resources, including:

• A clickable, county-level Minnesota state map for finding basic county-level truck weight information, including restrictions for bridges and seasonal loads
• A schedule for upcoming Minnesota Truck-Weight Compliance Training workshops
• Links to key resources for state and national information on load restrictions, permits, and regulations
• Sample truck-weight calculations
• Training videos Roads and Loads: Finding a Balance and How Heavy Is Too Heavy

Interested? See mnltap.umn.edu/truckweight. LTAP
safe habits. It begins with what a worker should do before getting into a vehicle, and it doesn’t end until the worker is off site and out of the work zone area. The training includes a slide presentation, pictures, video, and exercises to check comprehension of the material.

The objectives of the course are:
- Define “work zone.”
- Identify three things you need to know before working in traffic.
- Identify the component parts of a work zone.
- Explain how to safely exit traffic flow and enter the work zone.
- Identify safety techniques to use in the work zone.
- Explain how to safely exit the work zone and re-enter traffic flow.
- We’ll have more information about the launch in the next Exchange and on our website, LTAP.

LTAP Workshops

LTAP workshops, along with events cosponsored by Minnesota LTAP, are marked with an LTAP above. Check the web for details and to register online: mnltap.umn.edu/training. To be added to our print or electronic mailing lists, contact Minnesota LTAP on-site technical assistance and training. Current LTAP training courses and special presentations are:
- Asphalt Pavement Maintenance and Preservation (0.5 cr)
- Culvert Installation and Maintenance (0.5 cr)
- Gravel Road Maintenance / Dust Control (0.5 cr)
- Roadsides Maintenance, Management and Erosion Control (0.5 cr)
- Snow and Ice Control Material Application (0.5 cr)
- Snowplow Controller Hands-on Workshop (0.5 cr)
- Truck and Equipment Washing Best Practices (0.5 cr)

• Work-Zone Traffic Control and Flagger Training (0.5 cr)

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.

Roads Scholar credit

You can earn credits in Minnesota LTAP’s Roads Scholar program by attending LTAP and CTAP workshops and other cosponsored events (credits are indicated above). To learn more or enroll in the program, visit mnltap.umn.edu/roadscholar. LTAP

Gravel road training online

Don’t forget that Minnesota LTAP offers another online course—Gravel Road Maintenance and Design. It’s designed for supervisory, operators, and township officials responsible for maintaining gravel roads, as well as anyone interested in gravel road maintenance. It provides a high-quality training option at a low cost, and it counts as one required credit in the Roads Scholar Program.

The course was developed by Minnesota LTAP in partnership with the LRRB. LTAP

Tutorial from page 1

Demo Day from page 1

Workshop poster enclosed!

Please take a look to see what Minnesota LTAP has for you in 2013.