New guide helps you choose the best pothole patch

Selecting the appropriate patching method and materials varies depending on several factors, including the size of the pothole and its location on the roadway. A new guide and accompanying how-to cards from the Minnesota Department of Transportation (MnDOT) help road crews choose patching methods that match specific repair conditions.

Potholes continued on page 7

Submit an entry for ‘Mousetrap’ competition

Now is the time to show off your creativity and help other agencies solve problems by submitting an entry to this year’s Minnesota Build a Better Mousetrap Competition!

Your entry can be anything from the development of tools or gadgets to equipment modifications to processes that increase safety, improve efficiency, reduce costs, or improve the quality of transportation. The purpose of this competition is to collect and disseminate real-world examples of best practices and tips from the field and to assist in technology transfer.

To enter the competition, please complete the entry form at mniltap.umn.edu/research/mousetrap by April 30, 2018. You’re also encouraged (but not required) to submit photos and a video clip that showcase your project along with your entry form.

We’ll pick two state winners; both will be recognized in the Exchange and receive a prize. The winning entries will be automatically submitted to the national competition. Winners will be announced at the annual LTAP/TTAP National Conference. So, start your creative engines and send us your ideas! LTAP

Clearwater County’s tractor-mounted shouldering box won first place in 2017.
Any request, into the city, and including the construction of a 6-foot-wide sidewalk on one side of the corridor and a 10-foot-wide multi-use trail on the other to provide multimodal traffic with a much-needed connection between the residential and commercial areas of Sauk Rapids. Traffic was carried throughout construction to maintain access to businesses and homes along the corridor.

American Public Works Association – Minnesota Chapter

Director of the Year: Craig Eldred, Waconia

Maintenance Professional of the Year: Joshua Dix, Roseville

Supervisor of the Year: Michael Lusian, St. Paul

Superintendent of the Year: Ray Hanson, Mound

Hugo G. Erickson Award: Dave Hutton, SEH, Inc.

Project of the Year: City of Cottage Grove Interim Water Treatment Facilities

Honorable mentions:
• Riverfront Renaissance Improvements, City of Hastings
• CSAH 17 (Lake Elmo Avenue) Corridor Management and Safety Improvements, Washington County, in partnership with the City of Lake Elmo and consulting City Engineer Focus Engineering

Minnesota Toward Zero Deaths Program

Engineering Star Award: Rick West, Otter Tail County

‘Careers in civil engineering’ video, website

The LRRB, working with SRF Consulting, has created a new video and website aimed at increasing the future pool of civil engineers and technicians. The engaging video invites middle school students to explore the world of a civil engineer and learn what civil engineers do.

The animated video highlights the sub-disciplines within civil engineering such as transportation, structures, and so on. It focuses on what young people are interested in today, such as solving problems, working with the latest technologies, and making the world a cleaner and safer place.

The LRRB encourages local agency staff to use the video and website for any career-related presentations they may give. Check it out at becomecivilengineer.com.

Leadership from page 1

have long been a key factor in the success of these programs, and we are eager to continue building on that,” McGinnis says.

“I’m excited to join such a great program— respected not only here in Minnesota, but nationally as well,” Malinoff says. “I look forward to working with all the stakeholders who make this program a success, and I’m especially excited to work with Mindy in this new role.”

Mature trees were added to Nicollet Mall in Minneapolis.

City Engineers Association of Minnesota

2017 City Engineer of the Year: Jean Keeley, Blaine

Municipal Project of the Year: City of Minneapolis – Nicollet Mall Reconstruction

The guiding principles of the project were to create a place for people that is pedestrian friendly and green, actively uses all 12 blocks of Nicollet, integrates transit modes, and provides year-round use. The entire pedestrian and transit mall was reconstructed from building face to building face to prioritize the space for pedestrians, including harder trees, enhanced sidewalk spaces, improved lighting, and new places for people to enjoy the mall such as an amphitheater and public art installations.

Honorable mentions:
• City of Cottage Grove – Interim Wastewater Treatment Facilities
• City of Saint Anthony Village – Advanced Oxidation Water Treatment Plant
• City of Virginia – Highway 53 Utilities Relocation

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LTPAP Program Director: Mindy Carlson

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Rich Sanders, Polk County; Minnesota County Engineers Association

Lyndon Robjent, Washington County, Minnesota County Highway Managers

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Chris Peters, City of Lakes; American Public Works Association – Minnesota Chapter

Lynne Robinson, Clay County; Minnesota LRRB

Rich Sanden, Polk County; Minnesota County Engineers Association

Linda Taylor, Research Services Section, MnDOT

Printed on 50% recycled fibers, including minimum 35% post-consumer waste.
Addressing citizen requests for traffic safety concerns

A new guidebook from the LRRB provides local agency staff with a best-practice approach for addressing common citizen requests for traffic safety concerns. The guidebook focuses on the importance of communication with citizens when responding to traffic safety concerns or requests.

Topics included in the guidebook—Addressing Citizen Requests for Traffic Safety Concerns—(LRRB 2017RIC05) include:

- How to address social media
- Steps to address typical requests
- Keeping record of requests
- Case studies
- Example response template letters/emails

The document provides general guidance that can be modified to meet each agency's needs.

Tips to create an open dialogue

- Take the time to listen to citizens to understand where the request is coming from, and try to find the true reason for their concern. Sometimes citizens may request something because it's the only option they are aware of, not realizing that it may not be the appropriate solution. Confirm the understanding of what the true concern is by asking clarifying questions. Example: A citizen might request a stop sign at an intersection, but the true issue may be perceived speeding.
- Showing genuine empathy for their request can help you identify the concern or help ease their concern by knowing someone is looking into it. If resources are tight, simply performing additional follow-up emails and phone calls to see if the concern is continually occurring may help direct where resources should be allotted.
- If you are emailing or leaving a message with the citizen, consider mentioning “I will wait until I hear back from you before investigating further.” This will engage them in the process. Sometimes the effort of talking through the issue with citizens and helping them understand the situation is enough to satisfy their needs, and no further investigation is necessary.
- If possible, meet the resident at the location of the issue to observe and review the concern.
- Engaging in a two-way conversation with the citizen to understand the concern thoroughly will help confirm your understanding and reinforce with the citizen that you have received their request and are taking action.
- Once you determine your course of action to investigate the concern, notify the citizen of the plan.
- Let the citizen know the anticipated timeframe for your evaluation. If the timing changes, give the citizen periodic updates throughout the process so they know you are working on it.
- Once a decision is made about how to address the situation, notify the citizen. If the decision is made to not implement the strategy requested, be sure you take the time to explain why and offer other possible alternatives. Frame your response with an approach such as, “I can’t implement what you requested, but here’s what I CAN do…” Focus on what you CAN do and what the citizen can possibly do. Examples: Conduct traffic counts, perform site visits to identify the problem yourself, police monitoring/speed, etc.

- Provide resources (website, brochures, videos, etc.) specific to the topic to educate the citizen on the issue they are concerned about.

Engaging the public in local road funding decisions

Members of the public often hear news about the deteriorating state of the nation's infrastructure, but in general they are unaware of the efforts and costs required to maintain and operate the transportation systems they rely on every day. A recent study analyzed stakeholder attitudes, knowledge, and engagement about financing for local road system management. The project was sponsored by the LRRB and MnDOT.

Researchers collected data through media analysis, case studies, interviews, and surveys of county government leaders. The researchers also examined public engagement efforts in four local jurisdictions: Chanhassen, Brooklyn Park, Mille Lacs County, and Beltrami County (see sidebar).

A number of recommendations emerged from the study:

- Organize community dialogue based on high-quality information, impartial analysis, and thoughtful explanations of policy options.
- Use multiple communication channels for targeted outreach. Traditional methods such as newspaper announcements are no longer sufficient; new approaches such as geotargeted communications, social media, and smartphone-compatible messaging formats are needed.
- Build resources to support stakeholder participation, including accessible information (e.g., infographics) and staff capacity to conduct outreach and communications.
- Employ an inclusive process and thoughtful, timely responsiveness from public managers.
- This research was successful in building public engagement to help smaller county agencies like ours work through a project," says Bruce Hasborgen, county engineer in Beltrami County. LTAP

More resources:

- Stakeholder Attitudes, Knowledge and Engagement in Local Road Systems Planning and Decision Making (LRRB/MnDOT, 2017-39, Oct. 2017)

Case study: Beltrami County

Policy issues. Large county road network in poor condition and very little funding for repair.

Public process. Identification of diverse stakeholders and outreach. Facilitated small interest-group meetings of businesspeople, related jurisdictions, and residents, followed by a roundtable of all stakeholders. Open-ended discussion of needs, multiple options, and extended Q&A with county engineer. Many stakeholders changed their minds, resulting in strong unified support for local option sales tax (LOST) and taking care of less-used but critical roads in more rural areas.

Outcome. LOST was unanimously adopted with a work plan to cover rural as well as urban areas of the county.

Takeaways for transportation leaders.

Q&A with the public—works leader and dialogue with other stakeholders led to new appreciation for the nature, extent, and urgency of the road issues. Stakeholders found themselves changing their minds, finding unexpected alignments of policy options with their values, sympathy with others (e.g., rural residents), and desires for more comprehensive solutions. Communication enhanced confidence in the policy direction and leaders.
Sign maintenance: questions and answers

Last year’s Minnesota Association of Townships (MAT) Summer Short Courses included a workshop presentation about traffic sign maintenance and management. The instructor was Ken Schroeper, retired MnDOT sign expert and instructor for Minnesota LTAP’s Traffic Sign Maintenance/Management and Sign Retroreflectivity course. Here are some highlights from his workshop.

Am I required to have a sign management plan? Are there sample plans for guidance?
All public road authorities (township, city, county, and state) are required to have a plan or policy on how they intend to take care of the signs on their roadways. The first step is to make an inventory of your signs. Then, create an assessment or management plan that will work for you. Use the sample plans found on the MnDOT State Aid website—there are samples for townships, cities, rural counties, and metro counties. The plans also serve as a general guide for complying with traffic sign retroreflectivity requirements.

Where can I learn about retroreflectivity requirements?
A Federal Highway Administration mandate, effective June 2014, requires all highway agencies to establish a sign assessment or management method that assures sign retroreflectivity levels are at or above minimum levels required in the Manual on Uniform Traffic Control Devices (MUTCD). In September of that year the Minnesota LRRB published the Sign Retroreflectivity Toolkit to provide local governments, especially small cities and townships, with guidance on the requirements as well as resources they can use to meet this requirement.

What signs should we replace first?
You should replace the most important signs first. Here is a simple list of signs from the most to the least important:
- Regulatory signs (red and white, and black and white, signs) in the following order: STOP signs; warning signs (black and white signs) in this order – STOP Ahead, YIELD Ahead, curve warning signs, and chevron signs; and then other warning signs (cattle crossing, farm equipment, bridge clearance, etc.).
- Other signs such as culvert markers and street name signs.

What about the signs at railroad crossings?
At a railroad crossing, the railroad is responsible for the black and white “Railroad Crossing” sign and anything else on that structure. It is also responsible for the STOP sign and the sign post. The township, city, county, or state would be responsible for each “Railroad Crossing” advance warning sign placed on your roadway. This advance warning sign is required on each approach to a railroad crossing.

How do I know what size sign posts I have holding up my road signs?
Most of you probably have “U” posts. Their size (2.5, 3, or 4 pound) is actually a description of their weight per foot. So, a 3-pound post 8 feet long would weigh 24 pounds. A round or square metal post is sized based on the diameter of the post. If you are unsure what size “U” posts are out along your roadway, this is a simple solution. Look around your maintenance yard for some extra or scrap “U” posts lying around. Weigh one of them, dividing its weight by its length (assuming that it is of an even foot length). What you want to find is a 3-pound “U” post. Then cut a piece 2- to 6-inches long from the 3-pound “U” post. Label it “3 pound” and carry it in your truck when you go out to look at your signs and sign structures. Compare the design/shape of the sample against any posts placed in the ground. If the in-ground post is larger than your sample, it is a 4-pound post.

Anytime you find a 4-pound post stuck in the ground along your roadway, remove it and replace it if necessary with a 3-pound post. Four-pound posts do not meet current MnDOT crash testing. Section 2A.19 of the current MUTCD states:

“Post-mounted sign and object marker support shall be crashworthy (breakaway, yielding, or shielded with a longitudinal barrier or crash cushion) if within the clear zone. There is a compliance date of January 17, 2013, which applies to those roads with posted or statutory speed limits 50 mph and greater. All other roads with speed limits less than 50 mph are to comply through attrition (as signs and structures are repaired/replaced).”

One of our local owners wants us to put “Watch for Children” signs on our township road because their children like to cross the road to visit grandparents. We really don’t want to put up any more signs than we have to. What do you suggest?
You are correct to discourage the use of “Watch for Children” signs. They tend to give a false sense of security to children and parents. Just because a sign such as this is installed along the roadway doesn’t mean that a motorist will necessarily see the sign nor does it mean that parents or children should just walk out onto the roadway without looking both ways for oncoming vehicles.

If there are several homes clustered together in a rural area, this area could be called a residential district. As such, it would then qualify for 35 mph speed limit signs as drivers enter into the area. In this situation, the township supervisor should request the county engineer review the situation before the town board approves the installation of the 35 mph signs on each approach to the residential district. You also must install “End 35 MPH Speed Limit” signs as the motorists leave this residential district. LTAP (Adapted with permission from the Minnesota Township Insider, summer 2017)

More resources:

MnDOT updates MMUTCD
After close to a two-year effort, the Minnesota Temporary Traffic Control Field Manual has been updated into a January 2018 edition. Because the field manual is part of the Minnesota Manual on Uniform Traffic Control Devices, a Commissioner’s Order was required to make the document official; MnDOT’s Office of Traffic, Safety and Technology received said order January 30, 2018. This edition is now the document to use when controlling traffic (vehicles and pedestrians) for work of three days or less on any road open to the public in Minnesota. No layout went unscathed—and no layout even has the same number—so please archive all 2014 editions to make sure the latest standard is being followed.

Copies will be provided to MnDOT staff at no cost, but other agencies, contractors, and permittees will need to order the manual through the website. To order hard copies, contact Burdell Buss of MnDOT Map & Manual Sales, but you may want to coordinate efforts with the other functional areas in your coordinate district. MnDOT is working on a plan to train staff about the major changes in the field manual. Details will be forthcoming. Regular field manual training already scheduled in the districts will use this edition.

Please let me or Jeff Morey know if you have any questions. LTAP
— Ken E. Johnson, State Work Zone, Pavement Marking & Traffic Devices Engineer, MnDOT

More resources:
- Minnesota Temporary Traffic Control Field Manual: mndot.gov/fieldmanual
- MnDOT Map & Manual Sales: dot.state.mn.us /mapsales
- Ken Johnson: ken.johnson@state.mn.us, 651-234-7386
- Jeff Morey, MnDOT work zone standards specialist, 651-234-7058
Environmental Leadership Awards were presented at the 18th Annual Road Salt Symposium on February 8 in Plymouth.

Individual awards were given to Brooke Asleson, Minnesota Pollution Control Agency; Lloyd Law, MnDOT Metro District; and Mike Gesch, Steve Brown Apartments, Madison, Wisconsin.

Two cities were also honored; highlights from their submission materials follow.

Plymouth, Minnesota

Over the past several years, city maintenance staff implemented best management practices (BMPs) for chloride reduction. These include:

- All plow trucks are equipped with a pre-wetting system. To make the pre-wetting process more efficient, staff adjusted the delivery system to allow for salt to better stick to the roads when applied, leading to 30% less salt use.
- Truck spreaders and anti-ice units are calibrated twice annually.
- Two anti-icing units were used to treat all roads with speeds over 35 mph, which accounts for 150 lane-miles. By using anti-icing units, salt usage decreased from 400 lbs./lane-mile in 2000 to 200 lbs./lane-mile in 2016–2017.
- All plow trucks have temperature sensors.
- Good housekeeping is practiced; spills are swept up promptly.
- Loading is indoors/under roof.
- Road salt is stored in a separate covered building.
- Equipment operators attend chloride trainings.
- A variety of materials—such as brine, rock salt, and calcium chloride—are used.
- To increase efficiency, Plymouth purchased an Accubrine brine maker. Previously staff were able to make about 4,000 gallons of brine per day; the new system is able to produce approximately 5,000 gallons/hour.
- Salt application rates are tracked with the Precise GPS system.

Plymouth staff have been implementing these BMPs and techniques since 2010. Their efforts have resulted in a decrease of salt usage over time. During the 2009–2010 season, Plymouth staff applied 3,200 tons of salt for 17 snow events, which equates to 188 tons per snow event. In the 2016–2017 season, Plymouth staff applied 1,300 tons of salt (regular and treated) for 16 snow events, which equates to 81.25 tons per snow event.

City staff have four years of chloride-monitoring data for the water leading into Parkers Lake and Plymouth Creek in the southern and central parts of the city. Based on the results, the practices being implemented by Plymouth maintenance staff are having a positive impact on the water quality.

River Falls, Wisconsin

River Falls has worked aggressively to reduce its dependence on road salt. The community is blessed by a Class 1 trout stream and is working hard to protect it.

- Application rates and timing are critical to the city’s efforts to reduce salt use. Trucks are dispatched at the start of a snowfall to minimize compaction.
- A detailed map of all plow routes is created annually based on these priorities: traffic volume, emergency service’s needs, schools, and unique terrain throughout the community.
- City-owned sidewalks in the downtown business district are hand-shoveled during events to prevent bonding of snow from foot traffic.
- All trucks are calibrated and rechecked at mid-season; they are recalibrated additionally if problems are noted.
- All five plow trucks are equipped with liquid applicators, road temp monitors, side wings, and underbody scrapers. The newest truck in the fleet is using this system for a beta test with Henderson Products, Inc., for a slurry application.
- The city uses rubber-coated carbide blades for better snow removal. It routinely tests other new style blades for effectiveness and switches if results are positive.
- Anti-icing occurs prior to winter events whenever weather (temperatures and/or precipitation) allows along mapped routes.

The city estimates that 10 years ago it would have been applying approximately 500 lbs./lane mile, if not more. Calibration and training have improved that greatly. It is now down to approximately 200 lbs./lane mile. While it is still early in testing with the slurry application, staff are finding that the city is down to 100 lbs./lane mile if not less. As of November, all operators and supervisors were certified on winter road maintenance and chemical application through APWA and its Winter Maintenance Supervisor Certificate program. All have also attended winter maintenance certification through Fortin Consulting.

The city also assists with educating county, township, university, school, and contractor staff. It conducts two meetings annually, one focused on general public works items (which includes snow maintenance items) and the other specifically on winter maintenance operations, including anti-icing, snow removal, and salt/chemical usage.

The city purchased its own brine maker this season, allowing it to produce enough for its needs and offer brine to neighboring communities, towns, ships, agencies, and contractors at a competitive rate. It is also experimenting this year with different non-chloride products to further decrease chloride usage.

Otter Plow Cushion absorbs shock of rough roads

Winter roads, especially late in the season, can be especially rough, causing more stress on snowplow lift chains and plow lift parts as the heavy plow assembly bounces more. Broken plow lift chains are a common result and can take maintenance vehicles and personnel out of service for hours.

Industrious maintenance personnel with the Otter Tail County Highway Department created the Otter Plow Cushion with spare parts during downtime on a cold winter day. The device absorbs the shock of rough roads on the plow assembly and lift chains, improving ride quality and reducing the failure of the plow lift chains and parts. Once their stock of used parts was depleted, the maintenance staff found they could purchase the needed parts new for about $431 per plow.

The Otter Tail County Highway Department received a grant through the LRRB’s Local Operational Research Assistance (OPERA) Program to produce more Otter Plow Cushions. So far, they have outfitted 12 of 28 plows, and they have significantly reduced their incidence of broken plow lift chains and improved ride quality.

OPERA, which encourages maintenance employees from all cities and counties to get involved in operational or “hands-on” research, helps to develop innovations in the construction and maintenance operations of local government transportation organizations and share those ideas statewide. OPERA is a program of the LRRB and Minnesota LTAP.
Environmental Quality Board: finding solutions for Minnesota

As a newly appointed Minnesota Environmental Quality (MnEQB) Public Board member, I recently had the opportunity to have a good conversation with Will Seuffert, executive director of the MnEQB. I would like to share what I learned with local government transportation agencies. From long experience, I know they share respect for preserving and enhancing the environment, as well as a mission of constructing and maintaining safe and effective road and bridge systems.

What is the MnEQB?
The MnEQB is a small agency that has evolved over the years since its 1970s establishment by the state legislature. Once having a major role with energy transmission projects, a large staff and a part of the State Planning Agency, it now stands alone with its current mission:

- Environmental review—developing and implementing rules under the Minnesota Environmental Protection Act (MEPA) and Minnesota Environmental Rights Act (MERA)
- Coordination of environmental issues shared by several state agencies
- Special environmental projects

The board structure has evolved also. After last year’s legislation, it currently consists of nine state department heads and eight public members. The 2017 legislation ensured a greater public voice geographically representing the entire state by requiring a public member from each of the Congressional Districts.

Environmental review
The MnEQB develops rules and implements Minnesota’s environmental review process, primarily environmental assessment worksheets (EAWs) and environmental impact statements (EISs) for large and complex projects, including road and bridge projects above a set size threshold. This is a complex area overlapping with federal environmental review requirements. Seuffert indicates the states rules date back to the 1970s and are in the process of being updated. Current permits require a substantial amount of information, perhaps reducing the need for environmental review documents. A couple of interesting facts: two-thirds of EAWs and EISs are administered by local Responsible Government Units (RGUs). At the suggestion of counties, the MnEQB is currently considering changing the threshold for environmental review from 1 mile of new road to 2 miles.

Coordination of environmental issues between state agencies
Environmental issues are often complex and cut across several state agencies. A core purpose of the MnEQB is to bring these agencies together to ensure a quality discussion across these agencies and inject a greater public view. An example: the legislation established an interagency climate project with a goal of reducing greenhouse gases by 80 percent by 2050. To achieve this goal, state agencies must work together—including the DNR, DOT, Administration, Commerce, and more.

Special projects
The MnEQB providing legislation allows the MnEQB to pursue special environmental projects. The focus has been on environmental projects that cut across several state agencies where the MnEQB provides a structure and process for the agencies to collaborate. It also, by reaching out to the public, provides a greater public voice. Current examples include establishing continuous vegetative corridors for pollinators, climate change, and water quality. Certainly, agriculture and water quality will continue to be an important issue, with the governor setting a goal of 25 percent better water quality by 2025.

Energy production and transmission are undergoing substantial changes that also need to be better understood.

The MnEQB and the future
I believe the MnEQB has a strong future, considering the environmental challenges ahead of us and the absolute need to develop collaborative solutions between state and local agencies, the public, and private sector. Its core mission of collaboration and actively seeking a greater public voice will help build a stronger Minnesota.

—Alan Fansberg, PE, retired Blue Earth County Engineer

Integrating mobile observations helps agencies gather data, issue alerts

Integrating mobile observations (IMOs), one of the road weather management—weather savvy roads solutions in Every Day Counts round four (EDC-4), is a cost-effective way to gather weather and road condition information using agency fleet vehicles.

Vehicle-based technologies provide agencies with data to manage transportation systems and issue traveler advisories before the negative effects of road weather occur. Highway agencies in Michigan, Minnesota, and Nevada collaborated with the Federal Highway Administration on a pilot program to deploy IMO equipment on snowplows and fleet vehicles and are sharing their experiences through EDC-4 events.

A site visit in Reno, NV, provided participants from 14 state DOTs with a firsthand look at how the Nevada Department of Transportation (NDOT) uses IMO to improve safety, reliability, and mobility of the road system during weather events.

NDOT demonstrated a snowplow equipped with sensors to measure air pressure, air and surface temperature, spreader rate and materials, windshield wiper status and rate, and relative humidity. The demonstration included a driving tour of the I-580 corridor used to test the communications network, where participants saw traffic cameras, dedicated short-range communication antennas, and roadside road weather information system stations used for data acquisition and weather monitoring. They also observed a high-profile vehicle wind warning system, LTAP.

(Condensed from EDC News, Jan. 18, 2018)

More resources:
- FHWA Road Weather Management Program: ops.fhwa.dot.gov/weather
Potholes

“...We wanted to develop a decision tree for choosing the right pothole repair method that could be laminated for use in the field,” says Susan Lodahl, assistant state maintenance engineer with the MnDOT Office of Maintenance.

Researchers from the University of Minnesota Duluth reviewed existing literature to identify the four repair methods best suited to Minnesota: cold mix, hot recycled asphalt, mastic material, and mill-and-fill with hot-mix asphalt. Next, they identified five sites near Duluth, where they oversaw 20 pothole repairs. They then monitored these repairs for two years to assess the methods and their best applications.

Using the findings from this study, researchers developed decision trees in both flowchart and how-to-card form to help road crews choose the most suitable method for each repair (see samples at right). They also compiled best practice guidelines for patching method selection, placement, compaction practices, and moisture control to provide further guidance.

MnDOT plans to mail a laminated poster (folded up like a map) with the decision trees to all Minnesota State Aid cities and counties, as well as to MnDOT operations staff. Additional copies are also available. LTAP

More resources:
- How-to cards and decision tree (lrb.org)

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.


Identifies and evaluates vegetation management practices to increase efficiency and cost-effectiveness of roadside maintenance activities that improve worker safety, foster safe highway use by the traveling public, and improve roadside aesthetics.


Documents agencies’ outcomes when applying the principles from Roadside Revegetation: A Practical Guide to Working with Native Plants.

Expanding the Adoption of Blowing and Drifting Snow Control Treatments on Private Lands (MnDOT, Nov. 2017)

Designs and evaluates an outreach program for the implementation of snow fences across MnDOT districts.

Reducing Stormwater Runoff and Pollutant Loading with Biochar Addition to Across MnDOT districts.

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Some transportation news stories these days may seem fake but are actually real. Can you guess which story below is the fake one? The answer is on page 7.

The term “fake news” became common in 2017. It was even declared the official Word of the Year for 2017 by a major dictionary (Collins Dictionary, based in the UK).

Online training: Anytime, anywhere!

Culvert Design and Maintenance
(1 RS credit) LTAP

Sign Maintenance and Management for Local Agencies
(1 RS credit) LTAP

Gravel Road Maintenance and Design
(1 RS credit) LTAP

Work-Zone Safety Tutorial
(0.5 RS credits) LTAP

Transitioning into Leadership: Essential Skills for New Operators
(1 RS credit) LTAP

April 10, Duluth
April 12, Willmar
April 19, Rochester
April 25, Saint Paul

Gravel Road Maintenance and Design
(1 RS credit) LTAP

April 10, Duluth
April 12, Three Rivers Falls

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The Minnesota Roadway Maintenance Training and Demo Day will be held May 17 at the Beltrami County Fairgrounds in Bemidji. Attendees will earn a Roads Scholar credit. The event includes classroom sessions and outdoor demonstrations.

Topics will include cargo securement, gravel road maintenance and design, CDL updates and driving requirements, blading techniques and proper equipment, culvert management and ditch maintenance, and surveying techniques and drainage. Home-grown Minnesota equipment innovations will also be on display.

Minnesota LTAP is looking for motor grader trainers

Minnesota LTAP’s motor grader training is always a big hit—so popular, in fact, that we need more trainers to help meet demand. Would you be interested in becoming a trainer? If so, please contact Mindy Carlson for details at 612-625-1813, carlson@umn.edu.

Transportation news stories these days may seem fake but are actually real. Can you guess which story below is the fake one? The answer is on page 7.

The Carcass-Claw uses radar and GPS to detect dead animals and adds a heat-sensor to help detect decaying animals. The device is designed for durability with dustproofing, water resistance, and an anti-corrosive build. It can be set to automatically return to a nearby truck or shop to recharge. The company estimates a one-hour flight time between charges.

Claw-equipped drones may soon deliver packages to our doorsteps—and grab roadkill from our streets and roads. A South Dakota company is developing a powerful drone with articulated “claws” that can remove animals weighing up to 50 pounds, eliminating a smelly job for road workers while keeping them out of harm’s way.

Nano-bionic trees could replace streetlights

Scientists from the Massachusetts Institute of Technology and the University of California are studying how to replace artificial lighting with light-emitting plants. Plant nano-bionics, a new research area, aims to give plants new features by embedding them with different types of nanoparticles. The goal is to engineer plants to take over many of the functions now performed by electrical devices.

The researchers hope to develop a way to paint or spray the nanoparticles onto plant leaves, which could make it possible to transform trees and other large plants into light sources—even streetlights. Their work is described in the journal Nano Letters.

Is it real...or is it fake?

The term “fake news” became common in 2017. It was even declared the official Word of the Year for 2017 by a major dictionary (Collins Dictionary, based in the UK). Some transportation news stories these days may seem fake but are actually real. Can you guess which story below is the fake one? The answer is on page 7.

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