

# MISSOURI LTAP

MISSOURI LOCAL TECHNICAL ASSISTANCE PROGRAM  
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WINTER 2024

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Photo by: Sam O'Keefe

## Missouri LTAP Staff

Heath A. Pickerill, Ph.D.  
Director

Nicole Annis, Ph.D.  
Assistant Director

Kristi Barr  
Program Coordinator

Pat Diaku  
Administrative Assistant

Tina Monson  
Education Program Coordinator

Lauren Gehner  
Safety Circuit Rider

Shelby O'Keefe  
Communications Coordinator

## Missouri LTAP Advisory Committee Members

**Ashley Buechter** — Local Programs Administrator, MoDOT

**Bryan Boyce** — Construction Service Team Leader, Great Rivers Engineering & MACCTO representative

**Darryl Griffin** — Presiding Commissioner, Osage County & local agency representative

**Jen Harper** — Research Director, Construction and Materials, MoDOT

**Tom Honich** — Traffic Liaison Engineer, MoDOT

**Ramona Huckstep** — Policy and Membership Associate, Missouri Municipal League

**Eric Landwehr** — Director, Cole County Public Works & APWA Mid Missouri Chapter representative

**Aaron Lock** — Senior Assistant Road Superintendent, Cole County Public Works & MACTO representative

**David Lomax** — Presiding Commission, Marion County & CCAM representative

**Kevin Luttrell** — Road Superintendent, Horseshoe Bend Special Road District & local agency representative

**Sean McGonigle** — Risk Manager, Missouri Association of Counties

**Bruce McGregor** — Director of Public Works, City of Olivette & APWA representative

**John P. Miller** — Safety Engineer, FHWA Missouri Division

**John Myers** — Missouri S&T; Missouri Center for Transportation Innovation Director

**Rebecca Rost** — Environmental Specialist, FHWA Missouri Division

**Brent Shulte** — Senior Research Analyst, Construction and Materials, MoDOT

**Derek Weber** — Director, Northeast Missouri Regional Planning Commission & MACOG representative

**Kurt Wengert** — Technical Division Manager, Jefferson County Public Works & local agency representative

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# FROM THE DIRECTOR



Hello everyone!

As the year draws to a close, it's time to highlight some of Missouri LTAP's accomplishments for 2024. The implementation of our new learning management system (LMS) and integrated website, which allows agencies to both register and pay for classes online, is one I'm most excited about. It took nearly five years to develop, troubleshoot, and deploy, but the system seems to be functioning well. Kristi Barr and Tina Monson continue to answer questions and assist agencies in setting up accounts. It took the entire MO LTAP team to make the project happen. Please see the reminder below on using the new LMS and online registration.

I'm also pleased that we have expanded our services and training. By utilizing other funding opportunities, we are developing the Missouri Community Resilience Workforce Development Program alongside LTAP and RTAP. While the resources will focus mainly on resilience related to energy efficiency and weatherization, in the early stages, the outreach to communities in Missouri will overlap with the local public agencies we have been serving for nearly two decades. The intent is to broaden the subject areas to include additional workforce development training for city planners, building code officials, consultants, and contractors. Our new LMS will allow us to provide a more diverse training platform to include classroom instruction, hands-on learning, and virtual options.

Missouri LTAP recently hosted the 65th annual Missouri Asphalt Conference in Rolla on December 3-4. The attendance has increased each year, allowing us to reach more federal, state, and local agencies along with consultants and contractors involved in the asphalt paving industry. We hope to develop a hands-on workshop to coincide with future conferences.

2024 was also a year of growth for our Safety Circuit Rider Program. Lauren Gehner, the Missouri SCR, assisted in writing a proposal for State Transportation Innovation Council (STIC) Incentive funds to develop a Work Zone Education and Sign Package Program. Five small LPAs will be selected for hands-on training in setting up a proper work zone and be awarded a standard work zone sign package. The program not only aims to deliver more LPAs with MUTCD compliant work zone equipment, but also provide an innovative workforce development training approach where LPAs can learn through hands-on activities. Awards will be based on an application process, which will consider such criteria as agency size, resource deficiency, participation in other LTAP workforce development training, and input from a workshop team based on areas of need in the State. Please contact Lauren Gehner by email at [Lauren@GehnerDandS.com](mailto:Lauren@GehnerDandS.com) or phone at 314.624.0474 for more information.

Happy Holidays!

Heath A. Pickerill, Ph.D.  
Director, Missouri LTAP

**Remember to check out Missouri LTAP's new website at [MLTRC.org](http://MLTRC.org). to request a training, register for classes, or see what classes and resources we offer!**  
**Contact us [training@mltrc.org](mailto:training@mltrc.org).**



## LOCAL AND NATIONAL IMPROVEMENTS TO WORK ZONES

The Bipartisan Infrastructure Law (BIL) has provided increased funding on the nation's infrastructure. This increase means a surge in roadway projects and a rise in work zones.



## BIDEN-HARRIS ADMINISTRATION ANNOUNCES UPDATED RULE TO IMPROVE SAFETY FOR MOTORISTS AND ROADSIDE WORKERS ALONG HIGHWAY CONSTRUCTION WORK ZONES

Updated regulations will help states better manage work zones and reduce travel disruptions, congestion and crashes



## WINTER MAINTENANCE ON GRAVEL ROADS

When should we start thinking about winter maintenance for gravel roads? Or rather, the real question should be, do we ever stop? Winter maintenance should be thought of with every aspect of gravel road maintenance.



## CAN PRE-WETTED SALT BE USED FOR FREEZING RAIN ANTI-ICING?

Freezing rain is among the most challenging conditions we face in winter road maintenance as it creates wet ice. There are few things we encounter in everyday life more slippery than wet ice, and ice binds to pavement more strongly than snow, making it harder to remove.



## USING DIGITAL TOOLS TO PRIORITIZE FUNDING AND MAKE INFRASTRUCTURE MORE RESILIENT

Large weather events such as tornadoes, hurricanes and wildfires have always kept cities' leaders up at night.



## REVOLUTIONIZING WINTER ROAD MAINTENANCE WITH DYNAMIC SPREADING

What is the next big influence in winter maintenance? Perhaps we can look at the past for innovative programs or technologies that truly changed winter maintenance.

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The Local Technical Assistance Program (LTAP) and Tribal Technical Assistance Program (TTAP) are composed of a network of 58 Centers — one in every state, Puerto Rico and regional Centers serving tribal governments. The LTAP/TTAP Centers enable local counties, parishes, townships, cities and towns to improve their roads and bridges by supplying them with a variety of training programs, an information clearinghouse, new and existing technology updates, personalized technical assistance and newsletters. Through these core services, Centers provide access to training and information that may not have otherwise been accessible. Centers are able to provide local road departments with workforce development services, resources to enhance safety and security; solutions to environmental, congestion, capacity and other issues; technical publications; and training videos and materials.



## LOCAL AND NATIONAL IMPROVEMENTS TO WORK ZONES

The Bipartisan Infrastructure Law (BIL) has provided increased funding on the nation's infrastructure. This increase means a surge in roadway projects and a rise in work zones. Therefore, on November 5th, the Biden-Harris Administration announced updates to the Work Zone Safety and Mobility Rule and the Temporary Traffic Control Devices Rule, which will continue to improve safety in work zones. This revision marks the first change to these rules in 20 years.

The changes went into effect on December 2, 2024 and include mandatory positive protection devices, or concrete barriers, in work zones where workers are unable to escape motorized traffic, speeds are over 45 mph and/or where the work zone will last for two weeks or more. Secondly, safety and mobility performance measures must be included in the work zone policies. Additionally, the annual work zone reviews completed by each state will be submitted to the Federal Highway Association every five years, instead of every two.

The increase in BIL funded projects is not the only reason to address safety concerns within our work zones. According to MoDOT data, there were 588 crashes and five fatalities in Missouri Work Zones in 2023, which includes 63 times that truck/trailer mounted attenuators were struck while protecting crews. Most of these crashes are caused by distracted driving or speeding. While the policy updates and positive protection devices may help mitigate crashes, the root causes need to be addressed. Consequently, now is a great time to remind everyone that law enforcement officers will begin issuing citations for the Siddens Bening Hands Free Law on January 1, 2025. I encourage you to look into the law more at [savemolives.com/mcrs/hands-free-law](https://savemolives.com/mcrs/hands-free-law) to see full extent of how phones can, or in truer terms CAN'T, be used while driving. It's important to note that violations occurring in school and/or work zones are not a part of the graduated penalties and include a fine up to \$500 every time.

In related news, Missouri LTAP is working to increase work zone safety at the local level. Missouri LTAP and the Safety Circuit Rider Program were recently awarded a State Transportation Innovation Council (STIC) Incentive grant to provide training, signing, and channelizers to five local agencies in Missouri. Work Zone Safety and Flagger Training is one of our most delivered safety classes, and our instructor has shared that some smaller, under-resourced agencies do not have enough signs or channelizers to provide safe work zones. By providing the right materials and in-depth training, this project will improve worker and driver safety through consistent safer work zones across the state.

Applications to be one of the grant recipients are open now until January 31, 2025 and can be found at <https://forms.gle/83t5Bh1bJwSqnbZA8>. Each recipient will receive a half day workshop training with a Missouri LTAP instructor, the Safety Circuit Rider, and additional state safety personnel. They will also receive two (2) Road Work Ahead signs, two (2) One Lane Road signs, two (2) Flagger Image signs, six (6) frame sign stands, two (2) stop/slow paddles, and fifty (50) trim line channelizers.

Please contact me with any work zone or other roadway safety related questions.

Lauren Gehner, PE (Missouri Safety Circuit Rider)  
Email: [Lauren@GehnerDandS.com](mailto:Lauren@GehnerDandS.com) | Phone: 314.348.0308

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# Biden-Harris Administration Announces Updated Rule to Improve Safety for Motorists and Roadside Workers Along Highway Construction Work Zones

**U** pdated regulations will help states better manage work zones and reduce travel disruptions, congestion and crashes.

WASHINGTON – The Biden-Harris Administration today announced updates to the Work Zone Safety and Mobility Rule and the Temporary Traffic Control Devices Rule to improve safety in and around work zones. These regulations are designed to improve work zone safety for roadway workers as well as the movement of motorists traveling through work zones using comprehensive management strategies to ensure safety while also minimizing impacts and traffic disruptions to the traveling public.

To maintain the nation's roadway network and manage increased road construction funded by the Bipartisan Infrastructure Law (BIL), work zones are necessary to repair, rehabilitate and upgrade the aging infrastructure. The updated rules will add safety and mobility performance measures for use by states when developing their work zone policies.

"With USDOT's commitment to Vision Zero – a future where no one dies on our roads – it's critical that we keep people safe in work zones, including travelers and those constructing our roads," said Acting Federal Highway Administrator Kristin White. "This work zone safety rule took years in the making to engage communities, partners and public and private sectors to ensure we prioritize work zone safety and reduce congestion to keep us all safe every day."

The final rule is the first update in 20 years and makes important changes to support the U.S. Department of Transportation's Federal Highway Administration principal mission: to ensure America has the safest and most modern transportation system in the world. The updated rule also supports the U.S. Department of Transportation's National Roadway Safety Strategy to address the safety

crisis on our nation's roadways, including crashes in work zones.

Though highway workers are often among the victims of work zone crashes, reckless driving more often affects those behind the wheel and their passengers. Four out of five work zone fatalities involved drivers or passengers, according to FHWA data.

By updating these regulations, FHWA is meeting current and future work zone management needs while making the regulations compliant with the Bipartisan Infrastructure Law.

#### Key updates include:

- Requiring the use of positive protection devices, such as temporary concrete barriers, to protect workers from motorized traffic operating at high speeds during construction, utility, and maintenance operations
- Encouraging the use of work zone programmatic reviews, which are more comprehensive, holistic, and data-driven

As part of the process of updating the regulations, FHWA published a Notice of Proposed Rulemaking on September 20, 2023, and incorporated feedback from all public commenters, including state departments of transportation, trade associations, planning, engineering, traffic, safety, design, construction, contractors, and private industry.

In the coming months, FHWA will develop various support materials and conduct outreach activities to help stakeholders implement the latest updates.

#### Please see here for the updated regulations.

[federalregister.gov/documents/2024/11/01/2024-25065/work-zone-safety-and-mobility-and-temporary-traffic-control-devices](https://www.federalregister.gov/documents/2024/11/01/2024-25065/work-zone-safety-and-mobility-and-temporary-traffic-control-devices)

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## WHEN SHOULD WE START THINKING ABOUT WINTER MAINTENANCE FOR GRAVEL ROADS? OR RATHER, THE REAL QUESTION SHOULD BE, DO WE EVER STOP?

Winter maintenance should be thought of with every aspect of gravel road maintenance. Mowing back vegetation in the summer months will provide more sunlight for the colder months and help promote melting. Installing culverts, drop inlets, and other drainage will also be of benefit come winter. Three of the most important gravel road maintenance techniques are drainage, drainage, and DRAINAGE!

Drainage should start at the center of the road with the crown. Some agencies I have spoken with remove or lower the crown for the winter months. The thought process is that with less crown there is less tendency to slide off the road. If vehicles are sliding off the road, it is usually because the road has ice on it. Unless there is a current freezing rain event, ice comes from standing water. Standing water comes from a lack of crown!

Paved roads keep their crown in the winter, and so should gravel. If temps allow for any melting, gravel roads should have sufficient crown to move that water towards the ditch. How much is enough? The South Dakota Manual on Gravel Road Maintenance and my good friend Matt Ulberg, Montana's LTAP Director, say  $\frac{1}{2}$  inch per foot—and I concur. Less than  $\frac{1}{2}$  inch per foot leads to water staying on the roadway and creating hazardous conditions for winter driving.

**Once we get into winter and the gravel roads are frozen, there are a few different things to think about. Perhaps one of the most important is melting agents or chlorides. Any type of melting agent used on a gravel road will have very little time to dilute before entering the environment.**

So, all melting agents should be limited in their use on gravel roads. They can also cause an otherwise frozen gravel road to begin thawing. This makes plowing very difficult and damaging to both the road and the plow equipment.



# WINTER MAINTENANCE

## *on gravel roads*

Abrasives or sand can be used as a traction agent. The type of sand that is applied should be chosen with year-round maintenance in mind. I recommend a minimum of ½ inch minus crushed sand for winter gravel roads. This adds a more robust traction agent, and any material that is pushed/plowed off to the shoulder can be brought back onto the road in the spring with the use of a grader. When creating a sand specification, keep the passing at the 200 sieve very low, 4 percent or less, for a higher quality, coarse, winter sand.

Plowing gravel roads in the late fall and early spring can be especially challenging if the roads are not frozen. I equate plowing muddy gravel roads to trying to shave a wet sponge. The use of better plow blades for gravel roads is something I implemented when I was a department of public works director. We called them mud plows. In simple terms, it is a standard plow with a plow blade or “cutting edge” that is folded back (see pictures). This allows the plow to float along the top of the road without gouging or biting in. One way to accomplish this is to build them. Start by removing the existing plow blade. Have a piece of angle iron stamped out to match the hole spacing of your plow and blade. Have both angles stamped out. Bolt the angle iron to the plow

and the plow blade to the other edge of the angle iron. Another option is to purchase a bolt-on blade made for sensitive pavements.

**Winter maintenance on gravel roads has its own complexities and requires different techniques than paved roads.**

It is important to devote the needed time to plan and implement a winter maintenance program for gravel roads. This lessens the environmental and economic impacts and allows for a higher level of service. A gravel road may not seem like a high-priority road to some, but to those who live on one, it sure is.

Michael Smith | University of Massachusetts Transportation Center | Technical Training Specialist | Amherst, Massachusetts. Michael Smith can be reached at 413.834.3975 or [mdsmith@umass.edu](mailto:mdsmith@umass.edu).

[apwa.partica.online/reporter/october-2024/features/winter-maintenance-on-gravel-roads](https://apwa.partica.online/reporter/october-2024/features/winter-maintenance-on-gravel-roads)

## CAN PRE-WETTED SALT BE USED FOR FREEZING RAIN ANTI-ICING?

### FREEZING RAIN IS AMONG THE MOST CHALLENGING CONDITIONS WE FACE IN WINTER ROAD MAINTENANCE AS IT CREATES WET ICE.

There are few things we encounter in everyday life more slippery than wet ice, and ice binds to pavement more strongly than snow, making it harder to remove. And there are indications that climate trends may be increasing the frequency of freezing rain events.

One of the most effective tools developed in recent years for winter road maintenance, in general, is anti-icing, and it would be wonderful if we could use anti-icing to help us deal with the unique and difficult challenges of freezing rain, but can we? One of the first things we learn about anti-icing is that it is generally not recommended around rain events because the applied chemical will be washed away too quickly. This is undoubtedly the case for typical anti-icing with brines. Brines start out in a diluted form and while very well suited for standard anti-icing, they have very little capacity for further dilution from rain. But what about using rock salt as an anti-icer for freezing rain? Rock salt has roughly 34 times the dilution tolerance of brine at 0°F (and about five times more at 28°F) and should remain effective correspondingly longer to the extent it stays put on the road (more on that important point



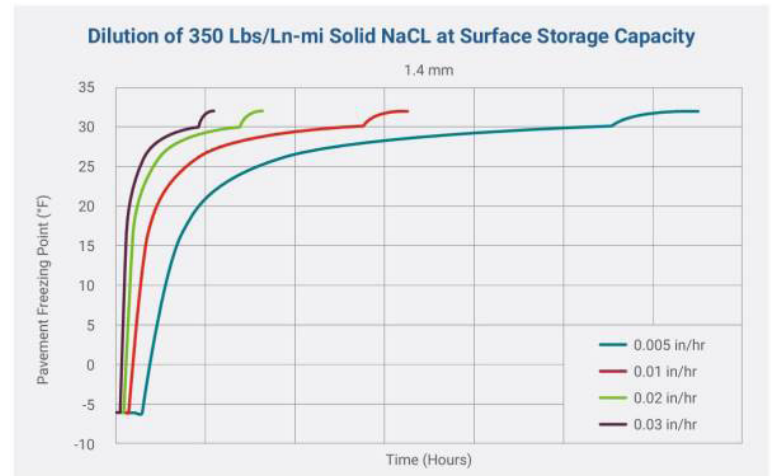
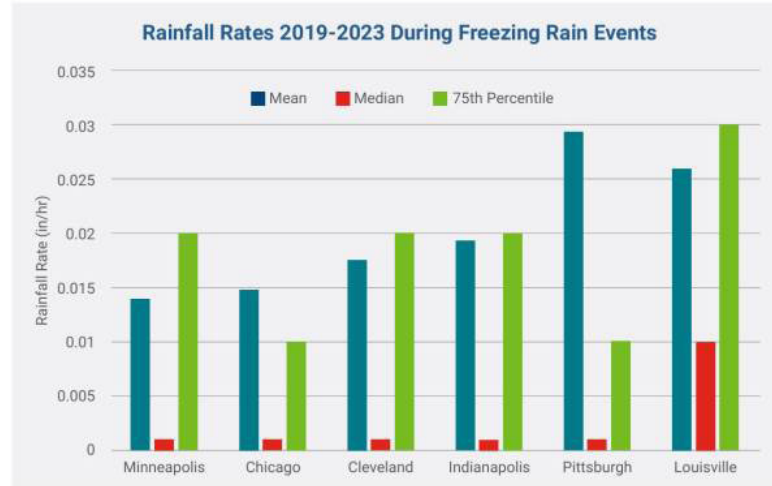
coming up!). But how long can rock salt remain effective as an anti-icer when exposed to freezing rain? There have been few, if any, studies on this question to date, so I have been exploring this myself and will share a few things I have been learning and some thoughts for consideration.

### **It is relatively simple to calculate the rate of anti-icer effectiveness loss to a first approximation due only to rain dilution and runoff (i.e. ignoring loss of salt from the road by bounce, spray, or scatter as this is much more difficult to model).**

This only requires knowing how much water a pavement will hold on the surface (studies show that it varies from 0.2 to 2.4 mm with an average in the US of about 1.3 mm) and the rainfall rate. To understand the latter, I analyzed weather station data from six major cities in the US snowbelt over the last five years around freezing rain events (beginning three hours before the onset of freezing rain to three hours after its end). The results are given in the graph below and show that the median freezing rainfall rate is very low at 0.001 inch/ hour, and 75 percent of the time, it is 0.03 inch/hour or less. Using these values, the dilution rate of 350 pounds of rock salt per lane mile (a suggested application rate for freezing rain taken from a Clear Roads study) at a pavement surface storage capacity of 1.4 mm (due to rain dilution and runoff only) at different rainfall rates. Once the salt dilution has been calculated, it is straightforward to look up how the freezing point of moisture on the pavement (i.e. the temperature to which the anti-icer will be effective) changes over time as it is diluted. This is shown for a range of typical freezing rainfall rates in the graphs. At 0.005 inch/hour, i.e., even at five times the median freezing rainfall rate, it takes about six hours or more before the salt nears the end of its anti-icing ability. As rainfall rate increases, of course, the time to exhaustion decreases proportionally.

### **Another important consideration for freezing rain antiicing is when the salt is applied.**

In general, anti-icers are preferably applied before precipitation begins, but this is especially critical for freezing rain events. If anti-icing salt is applied to pavement after it is already water-saturated, it is too late since most of the effectiveness will be lost by the immediate dilution from the accumulated water at typical surface storage capacities. Thus, since the rock salt must be applied to dry or nearly dry pavement, it is critical to



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apply it as a pre-wetted or pre-treated salt to minimize the amount lost by bounce and scatter before the freezing rain begins.

These estimates are only a preliminary effort to start better understanding the factors affecting the anti-icing effectiveness of pre-wetted rock salt for freezing rain. Certainly, more research and field experience will be needed to better understand the practicality of anti-icing for freezing rain, but these first approximation estimates are encouraging in that they show a rock salt application may resist being exhausted by dilution for many hours when exposed to typical freezing rain rates.

Scott Koefod, PhD, can be reached at 952.742.9920 or [Scott\\_Koefod@cargill.com](mailto:Scott_Koefod@cargill.com).

[apwa.partica.online/reporter/october-2024/regulars/can-pre-wetted-salt-be-used-for-freezing-rain-anti-icing](https://apwa.partica.online/reporter/october-2024/regulars/can-pre-wetted-salt-be-used-for-freezing-rain-anti-icing)



# USING DIGITAL TOOLS TO PRIORITIZE FUNDING AND MAKE INFRASTRUCTURE MORE RESILIENT

**L**arge weather events such as tornadoes, hurricanes and wildfires have always kept cities' leaders up at night.

As the effects of climate change continue to impact communities across the country, local leaders are seeing how extreme weather events influence the overall health and wellness of a city's residents, as well as the long-term efficacy of its infrastructure and economy.

As cities make investments in their infrastructure, spurred by funding from the Bipartisan Infrastructure Law, which centers climate resilience throughout every program,

having a better understanding of local infrastructure baseline performance and comparing it against climate forecasts using scenario modeling is a key means of achieving community resilience.

Tools such as City Simulator can help cities with future scenario planning — illustrating natural and man-made threats and revealing how the interdependent systems synonymous with city life are impacted. These systems include physical infrastructure, utilities and even social networks. If damage to one of these areas occurs, issues can quickly cascade into others in unexpected ways.

Here are some examples of how climate data from the City Simulator has informed decision-making in communities:

## Impact of rising temperatures on people's mode choices

The Atlanta Regional Commission (ARC) helps 75 cities and 11 counties within the region plan for effective investments and programs needed to improve the quality of life for all residents. As part of a recent resiliency study through the ARC, an assessment was conducted to project how modes of transportation will be used differently when local temperatures rise and quantify the resulting impact on travel-related carbon footprint.

A digital twin of a portion of Atlanta was built to simulate avatars, making the choice of walking, taking public transit or using a single occupancy vehicle (SOV) each workday. The analysis told a powerful story. As ambient temperatures increased for transit users as they walked to transit and waited for high-occupant vehicles like buses and trains, the study predicted that residents will become more motivated to switch to an SOV. Past studies on such mode-switch during times of low transit availability — such as the COVID pandemic — have shown high resistance to making the switch<sup>1</sup>. But, any switch to an SOV is undesirable, as the effects of this are staggering — increasing demand on the existing roadway network, reduced reliance on transit and bicycle/pedestrian networks, greater air pollution and less money in people's pockets — and the result is a positive feedback loop, where the more residents make this decision, the worse the heat exposure problem will get.

The ARC is presently collaborating with its member jurisdictions to build collective resilience against the impacts of rising temperatures on the transportation

network. Using a similar digital twin approach, it is expected to understand how to prioritize investment to maintain current mode split, reduce flood disruption and keep the city productive.

## Prioritizing infrastructure investment, creating a resilient network for the future

Localized flash flooding is a common occurrence throughout the Front Range of Colorado, which is home to many cities and towns, including Boulder. Prompted by a 2013 rainstorm bringing nearly twice the recorded 24-hour rain in its 100-year plus record, the Boulder County Department of Transportation (DOT) commissioned a study that sought to understand floodplain management with respect to transportation infrastructure. The goal was to understand the potential adverse impacts on this infrastructure in the future as severe weather strikes with even greater intensity, as well as the resulting impacts this may have. This was done by developing a common platform that incorporated buildings, roads, and flood models. The result was a detailed picture of how Boulder County residents will be impacted by future floods, where the flood hot spots were, what challenges to citizen safety will arise, what the loss in productivity will be and where the opportunities are for improvement.

The Boulder County DOT leveraged the results of their study to successfully apply to the Federal Emergency Management Agency (FEMA) for funding to redesign and construct the projected top-disrupting bridges and culverts. The county-wide resilience plan is using the funds to create a more resilient transportation network, able to withstand impacts from severe flooding.

Local leaders can learn from these examples and use City Simulator to make data-informed decisions to strengthen their infrastructure in the face of extreme weather events.

This information is presented by AtkinsRéalis, along with a showcase of their digital tool, City Simulator. AtkinsRéalis is an Executive Partner of the National League of Cities.

*Authored by Stephen Bourne, Project Director at AtkinsRéalis and Adam Howell, Senior Director of Strategic Initiatives at AtkinsRéalis*

[nlc.org/article/2024/10/03/using-digital-tools-to-prioritize-funding-and-make-infrastructure-more-resilient/](https://nlc.org/article/2024/10/03/using-digital-tools-to-prioritize-funding-and-make-infrastructure-more-resilient/)



*Revolutionizing Winter Road*  
**MAINTENANCE WITH  
 DYNAMIC SPREADING**

**What is the next big influence in winter maintenance? Perhaps we can look at the past for innovative programs or technologies that truly changed winter maintenance.**

Potentially, the biggest influence in the past 30 years is how agencies incorporated liquid use into their programs. Incorporating pre-wetting, anti-icing, and blending products truly changed how agencies performed their winter maintenance and the results they achieved when incorporating these programs. Of course, one change influenced another as liquid use evolved, and the need for more precision applications and better forecasting became even more vital. So, we saw computerized dispensing and decision support systems evolve to meet the needs of agencies.

There have been many equipment changes as well, such as improved pumps and delivery systems, all kinds of liquid storage tanks, and a move to more stainless steel beds and better hydraulic and wiring systems. All these cascading changes are due to the proven effectiveness of a liquid de-icing program.

So, what will be the next big influencer? When winter weather strikes, road safety becomes paramount. Icy, snow-covered roads can increase traffic accidents, injuries, and fatalities. Traditional methods of salt application, even with incorporating liquids, while effective, have significant environmental consequences. Enter dynamic spreading, a forward-thinking solution that combines vehicle-mounted sensor data with computerized dispensing to optimize salt usage.

Dynamic spreading leverages real time road weather data and mobile sensors to adjust salt application rates based on actual conditions. This innovative approach ensures the right amount of material is used, reducing over- and under application. By integrating onboard computers and real-time data, dynamic spreading provides a comprehensive picture for smart treatment decisions, enhancing safety and efficiency.

Dynamic spreading is possible because sensor technology has advanced. Traditional mobile sensors gave the operator air and pavement temperature. This huge step helped the operator make decisions based on the data they were seeing. As sensors advanced, new parameters like dew point and relative humidity were added. In the past 10 years, new sensors have been developed that nearly mirror the rich data sets coming from traditional road weather information systems (RWIS). These roadside



stationary non-intrusive sensors can read additional parameters such as surface state, grip, layer thickness, and more. The early releases of these sensors opened new possibilities as they were traditionally mounted on supervisory vehicles and brought awareness of the overall conditions of the roads as the vehicles traveled the network. About seven years ago, these sensors were redesigned to work on snowplows. This is a harsh environment, and the design parameters demanded that they be rugged, sealed, and clear of snow and ice accumulation. This was achieved, and after several years of piloting in the harshest conditions, they became a market product.

These sensors supplied the operator in the plow with real-time data on road conditions in the cab. The sensor is mounted behind the cutting edge (whether a front plow or an underbody) to read the roadway after the plow has removed the snow or ice layer. This helps the operator determine if treatment is needed. Operators immediately grasped the value of grip. The grip value tells us how slippery the surface is. The lower the number, the more slippery the road. They also tended to look at pavement temp and surface condition. How cold is the road, and is it wet, slushy, snowy, or even ice-packed? Again, this helps them correctly determine if a treatment is needed and how much to apply. All the data is also sent back to the agency so they can get a situational awareness of the road conditions.

This is where dynamic spreading takes over. If we have the data from the sensor, why can't we apply based on the data we receive? The answer is we can, and it is being proven in pilots across the US and other parts of the world. **So why will this change the industry?**

**Environmental benefits:** Dynamic spreading minimizes the environmental impact of road salt by using precise amounts tailored to current conditions. This reduces the harmful effects of oversalting on ecosystems and water sources.

**Operational efficiency:** With dynamic spreading, snowplow operators can focus on vehicle operation rather than constantly adjusting salt application rates. This technology removes the guesswork, even for experienced personnel, and ensures optimal treatment for each location.

**Cost savings:** By optimizing salt usage, dynamic spreading can lead to significant cost savings for transportation agencies. Less salt used means lower material costs and reduced environmental cleanup expenses.

**Future of winter maintenance:** As environmental awareness rises, dynamic spreading represents a crucial step toward sustainable winter road maintenance. This technology empowers agencies to balance road safety with environmental responsibility, revolutionizing the industry.

Dynamic spreading is not just a technological advancement; it's a paradigm shift in how we approach winter road maintenance. By harnessing real-time data and smart technology, we can create safer, more efficient, and environmentally friendly roadways.

I hope this version highlights the revolutionary potential of dynamic spreading in the industry!

Mark DeVries | Business Application Manager and Brett Murillo | Head of Roads North America Vaisala Inc | Louisville, Colorado

Mark DeVries can be reached at [mark.devries@vaisala.com](mailto:mark.devries@vaisala.com). Bert Murillo can be reached at [bert.murillo@vaisala.com](mailto:bert.murillo@vaisala.com).

[apwa.partica.online/reporter/october-2024/features/revolutionizing-winter-road-maintenance-with-dynamic-spreading](https://apwa.partica.online/reporter/october-2024/features/revolutionizing-winter-road-maintenance-with-dynamic-spreading)



Linda Webb, of rural Monroe City, presented at the First Kirkpatrick Summit held June 4-6 at The Executive Center in Washington DC. The First Kirkpatrick Summit celebrated the 70<sup>th</sup> year of Kirkpatrick Model's development by Donald Kirkpatrick as his Ph.D. dissertation, "Evaluating

a Human Relations Training Program for Supervisors" in 1953-54. In just a few years, Donald's methodology was well-known and integrated into college books. Donald authored several books. Later Jim and Wendy Kirkpatrick followed in his footsteps, authoring several more books and getting copyrights, patents and trademarks on the model, the Kirkpatrick Partners® LLC, and the Certification Programs.

Webb stated, "It was an amazing Summit as most came as strangers across the globe and left as family in the short two and a half days. Presenters from around the globe offered insights on how powerful the Kirkpatrick Model can be as an evaluation tool for performance. Sessions were presented by Jim Kirkpatrick, Wendy Kirkpatrick, Vanessa Altez (the new owner of Kirkpatrick Partners®), Meagan Martinez (a Kirkpatrick Affiliate from Switzerland) and many others. Linda Webb, owner of Training & Beyond, LLC presented "Training is a Process... not Just a Checklist."



Linda was one of the first 22 recipients world-wide to received "Kirkpatrick Four Levels Evaluation" Gold Level Certification status 2012 by Kirkpatrick Partners®. There were only 235 Gold Level, 571 Silver Level, and 11,346 Bronze Level Certifications in the world at the end of June, 2024. The Kirkpatrick Partners® Model and Methodology is the most recognized and widely used training evaluation model in the world. Therefore, it is considered the Gold Standard with the United States Federal Government Entities as well as globally in the business and training professionals' industry.

On the evening of June 5<sup>th</sup>, the Summit held a celebration and awards to honor the professionals utilizing the Kirkpatrick Model. Linda was pleased to be one of the 16 recipients awarded the Kirkpatrick® BrightLight® Professional Award at the Summit. The following is a brief award description: *"Kirkpatrick® BrightLight® Professionals inspire others through humble, yet bold implementation of Kirkpatrick evaluation principles that contribute to organizational performance and results. They directly or indirectly assist other training and business professionals to improve their performance and business or mission outcomes."*

In addition, Linda received the very first prestigious Kirkpatrick® Content Excellence Award (Whitepaper and Case Study).

**Linda K. Webb bio:**

Linda owns Training & Beyond, LLC and is a contract instructor for MO- LTAP. She trains city and county employees to become more efficient and effective in their daily job tasks with safety as a top priority. She knows how important formal training is for the safety of highway maintenance employees and emphasizes that on-the-job training should reinforce safety awareness.

Linda retired from the Missouri Department of Transportation (MoDOT) with 27 years of experience. She spent 14 years as a maintenance worker; three years as a highway construction inspector, and 10 years in Employee Development designing and delivering training programs state-wide.

**Linda is currently a:**

- Certified ATSSA (American Traffic Safety Service Association) Flagger Instructor
- IMSA (International Municipal Signal Association) Moderator for the Work Zone course as well as the Signs and Pavement Markings Courses in Level I and Level II
- An OSHA Authorized Construction Industry Trainer for the 10 and 30 hour courses
- Kirkpatrick Partners® Gold Level Certified and BrightLight® Professional.

**Linda holds the following college degrees:**

- Associate of Applied Science
- Bachelor of Science in Organizational Management
- Master of Business Administration
- Specialist in Safety and Health for the Construction Industry Certificate

Linda believes in continuously educating herself, so she can provide the most accurate and up-to-date training information available. She utilizes the "Work Smarter not Harder" philosophy in all her training programs as many agencies are doing more with less.

**For more information contact:**

Training & Beyond, LLC  
 Linda K. Webb | Chief Learning Officer  
 312 County Road 212 | Monroe City, MO 63456  
 Phone: 573.248.9146 | webb.trainingbeyond@gmail.com

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### **Attendance Policy**

The Missouri LTAP staff would like to remind all agencies registering for classes that it is important to sign-up before the registration deadline to allow us time to plan for course materials, refreshments, etc. It is equally important that you let us know at least 48 hours before the class if some of your employees will not be attending. Please note that you will be charged for any no-shows; therefore, it is very important that you let us know at least 48 hours before. This policy was approved by our Missouri LTAP Advisory Board and ensures that we have an accurate count for class attendance. Thank you and we look forward to meeting your training needs.

### **Need training but don't have the budget to pay for travel expenses?**

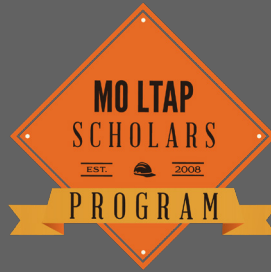
We can train your employees on location for a minimum of 20 people. You can invite other interested agencies in your area if necessary to meet the minimum. Call and discuss your training needs with our staff.

## **CONTACT US TO FIND OUT MORE!**

**T: 866.MO ROADS  
(667-6237)**

**E: [moltap@mst.edu](mailto:moltap@mst.edu)**

## **MO-LTAP SCHOLARS PROGRAM** A Training & Recognition Program



### **About The Program**

The primary purpose of the MO-LTAP Scholars Program is to recognize skilled transportation and public works personnel in local agencies throughout Missouri. The program is intended to enhance the skills of all those involved in the maintenance, delivery, and management of local transportation and infrastructure. Training is aimed at increasing each participant's technical, maintenance, administrative, and supervisory skills depending on the program level. Electives can be selected to meet the individual's area of responsibility. Special emphasis will be given to safety in the workplace as well as in the field and in the development of a local transportation system. The program will allow participants to attain three levels of achievements: Level I, Level II, and Level III Super Scholar. Participants must complete the requirements for Level I before completing Level II.

### **Getting Started**

Registration is available on the Missouri LTAP website ([www.moltap.org](http://www.moltap.org)). There is no registration fee for the program, but there is a fee for each class, which varies for each level. Classes are offered on an ongoing basis at various locations throughout the state. Contact Missouri LTAP for classes in your area or view the online training calendar.

### **Recognition**

Certificates will be awarded by the Missouri LTAP Director to those individuals who successfully complete the requirements of the program during award ceremonies held at various conferences throughout the state and/or at a ceremony held at the graduate's place of employment.

## **LTAP TRAINING RESOURCES**

### **FHWA Essentials for Local Public Agencies**

Federal-aid Essentials for Local Public Agencies is a transportation resource designed to help local agency professionals navigate the Federal-aid Highway Program. Federal-aid Essentials is structured for busy agency staff who want further understanding of Federal-aid policies, procedures, and practices.

[fhwa.dot.gov/federal-aidessentials/indexofvideos.cfm](http://fhwa.dot.gov/federal-aidessentials/indexofvideos.cfm)

### **Missouri Local Public Agency Program**

The Federal Highway Administration (FHWA) and MoDOT offers a free 4-hour training class designed to meet the recently implemented requirements for a Full Time Sponsor Employee to serve the role as the Person In Responsible Charge in order to receive Federal-aid funding for Locally Administered Projects. Local public agencies and consultants will be required to have taken this basic training course.

[design.modot.mo.gov/lpatraining/](http://design.modot.mo.gov/lpatraining/)

### **APWA – Professional Development**

APWA offers online, face-to-face, and on-demand programs, with educational content that fits within your time and travel constraints. The Donald C. Stone Center provides professional development opportunities for the next generation of public works leadership.

[apwa.net/learn](http://apwa.net/learn)

### **NHI – Training Resources**

National Highway Institute, NHI, is the training and education arm of the Federal Highway Administration (FHWA) with its rich history of innovation and expertise in delivering transportation training.

[nhi.fhwa.dot.gov/home.aspx](http://nhi.fhwa.dot.gov/home.aspx)

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## UPCOMING EVENTS

### TEAM CONFERENCE

March 11-13, 2025

Marriott St. Louis Grand  
800 Washington Ave.  
St. Louis, MO 63101

### MISSOURI CONCRETE CONFERENCE AT MISSOURI S&T

April 29-30, 2025

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visit: [oa.mo.gov/purch/surplus.html](http://oa.mo.gov/purch/surplus.html)

Eligibility requirements can be found under  
"Read about the Program"

### REALTY FOR SALE

The Missouri Department of Transportation is responsible for managing realty assets owned by the Missouri Highways and Transportation Commission. Realty assets are periodically reviewed to determine if they are essential to current operations, or are expected to be in the near future. When realty assets are no longer essential to operations, they may be made available for sale to the public.

**VISIT:**  
[www6.modot.mo.gov/  
PropertyForSale](http://www6.modot.mo.gov/PropertyForSale)



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AT THIS TIME**

