

# MISSOURI LTAP

MISSOURI LOCAL TECHNICAL ASSISTANCE PROGRAM  
— LOCATED AT MISSOURI S&T —

FALL EDITION 2021

TRANSPORTATION FUNDING FOR **4**  
CRITICAL INFRASTRUCTURE PROJECTS

MISSOURI RIVER BRIDGE **8**  
CONTRACTS AWARDED

STIGS DEPLOY **10**  
HOMEGROWN INNOVATIONS

Photo by: Sam O'Keefe Photography

Missouri Local Technical Assistance Program (LTAP) located at the Missouri University of Science and Technology  
710 UNIVERSITY DRIVE, STE. 121 | ROLLA, MO 65409 | 1.866.MORoadS | [moltap@mst.edu](mailto:moltap@mst.edu) | [moltap.org](http://moltap.org)

MISSOURI  
S&T



## Missouri LTAP Staff

Heath A. Pickerill, Ph.D.  
Director

Kristi Barr  
Program Coordinator

Doreen Harkins  
Administrative Assistant

Gidget Koestner  
Safety Circuit Rider

Shelby O'Keefe  
Communications Coordinator

## Missouri LTAP Advisory Committee Members

**Bryan Boyce** — Road Superintendent, Cole County Public Works & MACTO representative

**Bill Buttlar** — University of Missouri Professor; Missouri Center for Transportation Innovation Director

**Batina Dodge** — County Clerk, Scotland County

**Steve Devlin** — Senior Director, MU Business & Communities Extension; Associate Dean of MU College of Engineering & MU Extension Representative

**Chad Eggen** — Director, Boonslick Regional Planning Commission & MACOG representative

**Shawn Graff** — Assistant Director of Operations, City of Lee's Summit

**Dave Hinson** — Associate Commissioner, Franklin County & CCAM representative

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

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

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

**Kevin Luttrell** — Road Superintendent, Horseshoe Bend Special Road District

**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

**Dawn Perkins** — Program Implementation Team Leader, FHWA Missouri Division

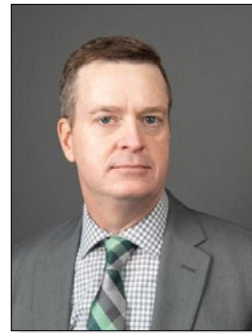
**Elizabeth Smith** — East Central Region Director, MU Extension

**Julie Stotlemeyer** — Local Programs Administrator, MoDOT

**Kurt Wengert** — Highway Division Superintendent, Jefferson County Public Works

The Fine Print  
Missouri LTAP Quarterly is published by the Missouri LTAP office located on the campus of Missouri University of Science and Technology. The opinions, findings and recommendations expressed in this newsletter are not necessarily those of Missouri S&T, MoDOT or the Federal Highway Administration.

# FROM THE DIRECTOR



Hello everyone!

As fall quickly approaches, the conference season is upon us. Many organizations are also hosting hybrid platforms with both in-person and virtual options. I recently attended the American Public Works Association – Public Works Expo (APWA – PWX), held in St. Louis on August 29-September 1.

I participated as part of a National LTAP panel during an education session on August 31. The session, LTAP & APWA – Stronger Together, included the LTAP centers from Indiana, Missouri, Montana, and Oklahoma. Missouri LTAP also conducted two sessions during the operation & maintenance training track on Monday, Aug. 30. Gidget Koestner, Missouri's Safety Circuit Rider, presented safety options for local agencies during the session Enhancing Local Road Safety Utilizing Maintenance and Proven Low-Cost Safety Countermeasures. Linda Webb, MO-LTAP instructor, shared information and suggestions during a session titled Pavement Preservation for Local Agencies' Maintenance Crews.

Gidget Koestner and I attended Missouri's Highway Safety & Traffic Conference on September 20-22 at the Holiday Inn Conference Center in Columbia. We shared information and promoted both Missouri LTAP and the Safety Circuit Rider Program as an exhibitor. Each year, the conference allows us to promote our efforts in increasing roadway safety throughout the state. Additionally, Gidget and I will attend the Missouri Municipal League's annual conference on September 26-28 at Union Station in St. Louis. Also on our calendars, The Missouri Association of County Transportation Officials (MACTO) Conference will be held at the Holiday Inn Conference Center in Columbia on October 6-7.

We have continued offering a variety of online videoconferencing training sessions. We recently hosted free right-of-way virtual training on August 10-12 in partnership with MoDOT and FHWA. We also held another round of the LPA Basics – Person of Responsible Charge online training on September 9, 14, & 23. We are coordinating with the Missouri Pavement Preservation Council to host a four-part webinar. The first was held on August 24. The upcoming sessions are scheduled for September 28, October 19, and November 16. Look on our website, [www.moltap.org](http://www.moltap.org) for more information. Finally, we have been scheduling several in-person classes for agencies such as Cole, Lincoln, and Platte Counties as well as the cities of Lee's Summit, Liberty, and Neosho. Many of these counties and cities are actively participating in the MO-LTAP Scholars Program. We will also be scheduling classes in central locations as we did prior to the pandemic, while following current CDC and university guidelines, which currently only require masks for any indoor training. We continue to adapt to ongoing changes and adjust our training programs as necessary to ensure we provide the training needed by the local agencies we serve.

My best,

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

# In this ISSUE

THIRD QUARTER 2021



## TRANSPORTATION FUNDING FOR CRITICAL INFRASTRUCTURE PROJECTS

Governor Mike Parson has signed SB 262 into law, which will increase transportation funding for critical state and local infrastructure projects across the state of Missouri.



## OPEN YOUR WINTER TOOLBOX

What language is your snowplow talking?



## MISSOURI RIVER BRIDGE CONTRACTS AWARDED

A new report says Missouri State officials have turned another page in the replacement of the Interstate 70 bridge over the Missouri River at Rocheport. They're about to hand out a quarter of a billion dollars.



## UHPC FOR BRIDGE PRESERVATION AND REPAIR

Ultra-high performance concrete (UHPC) offers enhanced durability and improved life-cycle cost performance for bridge preservation and repair.



## STICS DEPLOY HOMEGROWN INNOVATIONS

Check out these National State Transportation Innovation Council (STIC) Network Showcase which highlight 245 innovations in six categories developed and deployed by agencies throughout the country.



## COLLABORATION IS KEY

Public Works officials and meteorologists work together to prepare for flash flood events around the country.

FOLLOW US ON SOCIAL MEDIA!



Missouri LTAP | @LTAPMO



Missouri LTAP | @Missouri LTAP

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.



# GOVERNOR PARSON SIGNS SB 262: TRANSPORTATION FUNDING FOR CRITICAL INFRASTRUCTURE PROJECTS

## JEFFERSON CITY — GOVERNOR MIKE PARSON HAS SIGNED SB 262 INTO LAW, WHICH WILL INCREASE TRANSPORTATION FUNDING FOR CRITICAL STATE AND LOCAL INFRASTRUCTURE PROJECTS ACROSS THE STATE OF MISSOURI.

"With nearly \$1 billion in unfunded transportation needs each year, we can no longer wait for another day or another generation. We must change course and address these problems head-on," Governor Parson said. "SB 262 provides vital revenue that will help us fund essential road and bridge projects all across the state. Quality roads and bridges increase the efficiency and safety of our roadways, invite travelers and business investment, and save Missourians money."

Missouri has the seventh largest transportation system in the nation but only ranks 45th in available revenue per road mile. Over the last 25 years, the state has not significantly increased funding streams for state or local transportation projects, while the cost to maintain Missouri roadways has continued to increase significantly.

SB 262 could increase transportation funding by more than \$450 million once its provisions are fully implemented. An estimated \$330 million per year would be available for the State Road Fund administered by the Missouri Department of Transportation (MoDOT), and nearly \$125 million – approximately 30 percent of total revenue – would go directly to cities and counties for local transportation projects.

All revenue that SB 262 will generate is constitutionally required to be used to maintain roads, bridges, and the overall transportation system. MoDOT will use these funds to help cover the more than \$8.25 billion funding gap for high priority annual transportation needs that have been identified over the next 10 years.

Under SB 262, revenues for the State Road Fund and local transportation projects will increase by 2.5 cents per gallon of fuel annually for five years, starting in 2021. However, Missourians that do not wish to increase their contributions to state and local roadway repair and replacement projects can submit the required documentation – including fuel receipts – to the Missouri Department of Revenue each year for a refund.

"Whether rural, suburban, or urban, all Missourians benefit from better roadways," Governor Parson said. "SB 262 is an investment in our state that will benefit Missourians for generations to come, and we thank Lt. Governor Kehoe, Senator Schatz, and Representative Ruth for getting this legislation passed and helping move Missouri forward."

Photos will be available on Governor Parson's Flickr page.

[governor.mo.gov/press-releases/archive/governor-parson-signs-sb-262-transportation-funding-critical-infrastructure?fbclid=IwAR1RDwjaqci1K-aUKvIXFWMjmq4EfbejiDMp\\_HP1CZiCo42HCpfjdLN0VRA](http://governor.mo.gov/press-releases/archive/governor-parson-signs-sb-262-transportation-funding-critical-infrastructure?fbclid=IwAR1RDwjaqci1K-aUKvIXFWMjmq4EfbejiDMp_HP1CZiCo42HCpfjdLN0VRA)



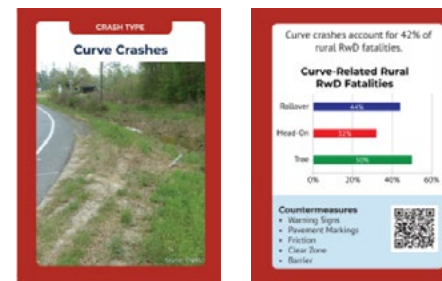
# MISSOURI'S SAFETY CIRCUIT RIDER PROGRAM MAINTAIN YOUR WAY TO SAFER ROADWAYS

## ASSISTING LOCAL AGENCIES IN REDUCING THE NUMBER OF FATALITIES AND CRASHES ACROSS MISSOURI'S ROADWAYS.

### The Federal Highway Administration's (FHWA) Focus on Reducing Rural Roadway Departure (FoRRRwD) initiative consists of four pillars:

1) all public roads, 2) proven countermeasures; 3) systemic approaches, 4) safety action plans. Previous newsletters have discussed the need to focus on all public roads, the benefits of systemic approaches and safety action plans as well as introduced a few of the countermeasures.

FoRRRwD also sites three objectives for reducing the number or severity of rural lane departures: **1) keep vehicles in their lane, 2) reduce the potential for crashes, and 3) minimize crash severity.** Multiple proven low-cost countermeasures are associated with each of these objectives. FHWA has developed a very useful resource, new quick reference countermeasure trading cards showing crash types with suggested countermeasures and pertinent data.



[safety.fhwa.dot.gov/FoRRRwD/TradingCards/PrintFiles/RRRwD\\_TradingCards\\_Desktop\\_UpdatedInstructions.pdf](http://safety.fhwa.dot.gov/FoRRRwD/TradingCards/PrintFiles/RRRwD_TradingCards_Desktop_UpdatedInstructions.pdf)

I want to highlight that many proven countermeasures fall into the maintenance category. Increased roadway safety should not necessarily equal higher costs or difficult planning. An agency can readily increase the safety of their roadway system by including or emphasizing the following countermeasures during routine maintenance activities.

- Note and replace damaged signs as soon as possible
- Ensure proper sign retroreflectivity
- Add retroreflective surface to post

- Add/maintain reflective roadway striping
- Add/maintain wider stripes
- Add Chevrons or other advanced warning signs
- Install larger signs with increased visibility
- Install breakaway signposts
- Add lighted beacons
- Remove trees from clear zone
- Manage vegetation
- Fill edge ruts
- Plumb Signs
- Update or add guardrail end treatments
- Maintain proper drainage, Note areas with drainage issues
- Keep roadway higher than shoulders
- Clear debris from drainage structures
- Clear debris from roadway
- Add delineators
- Note areas with repeated strikes, or skid marks
- Shield objects on roadside if cannot move
- Note curves with off-tracking
- Widen roadway at curves with off-tracking if possible

Missouri's Safety Circuit Rider Program can assist agencies in reducing fatalities and crashes on their local roadway systems. If you are a local agency that has identified a specific safety issue to address or are interested in learning the current crash/safety statistics for your local roadway system and potential low-cost improvements, please contact me. I can help decipher the data and discuss solutions. I look forward to hearing from you!

P.S. Please watch for a Local Road Safety Plan workshop coming this fall.

Safe Travels,  
Gidget Koestner, P.E., Safety Circuit Rider, (573)246-0720  
GidgetK@candidengineering.com

Information on FHWA Proven Safety Countermeasures:  
[safety.fhwa.dot.gov/FoRRRwD/countermeasures.cfm](http://safety.fhwa.dot.gov/FoRRRwD/countermeasures.cfm)  
[safety.fhwa.dot.gov/provencountermeasures](http://safety.fhwa.dot.gov/provencountermeasures)  
[safety.fhwa.dot.gov/roadway\\_dept/countermeasures/horcurves/](http://safety.fhwa.dot.gov/roadway_dept/countermeasures/horcurves/)  
[safety.fhwa.dot.gov/provencountermeasures/pdfs/fhwasa17058.pdf](http://safety.fhwa.dot.gov/provencountermeasures/pdfs/fhwasa17058.pdf)





# OPEN YOUR WINTER TOOLBOX: WHAT LANGUAGE IS YOUR SNOWPLOW TALKING?

**"You may not think that your snowplows (or indeed, any other vehicles) speak any language at all, but increasingly, vehicles are capable of "speaking" not only to other vehicles but also to the infrastructure through which they drive."**

Wilf Nixon, Ph.D., P.E., PWLF, President, Professional Snowfighters Association, Iowa City, Iowa, and member, APWA Winter Maintenance Subcommittee

## **And I think that this ability is going to have significant benefits for winter maintenance operations.**

While we are only at the beginning of the things that will be possible with fully connected vehicles (and in particular, when vehicles are fully connected to infrastructure), there are at least two applications of this connected vehicle technology that have some great implications for operations.

The notion of signal pre-emptions is not new, of course, but the extension of signal pre-emption to snowplows appears to be a growing trend. The basics are simple—as a plow approaches a traffic light, it sends a signal to the lights so that they turn green to allow the plow to continue, without the need for a stop at the lights.

This will have obvious benefits when you have one of those long stretches of highway with many consecutive lights, which may be timed so that once you get one green you will hit greens all the way through as long as you drive at the speed limit. The problem is that plows will often drive slower than the speed limit, especially during a winter storm, and in that sort of situation getting through all those wonderfully timed lights takes a long time! Pre-emption is going to increase efficiency substantially in that situation. There are no doubt other situations where pre-emption will also be extremely valuable. I have heard some supervisors indicate that having pre-emption has reduced their route times by up to 20% in certain circumstances. Of course, your mileage may vary (sorry, couldn't resist!) depending on the number of signalized intersections on a route, but improvements in efficiency of that nature should definitely be considered.

Do note on the pre-emption issue that the barrier to implementation is not technology (or rather, the technology has been available for several years now). Rather the issue is legal—will your state or your city allow you to use pre-emption for snowplows? They are typically allowed for other emergency vehicles, but until recently this has not included snowplows in most locations. Apparently, the word is getting out that the so-called "regular" emergency vehicles like ambulances and fire trucks cannot get to places in a winter storm without the assistance of the snowplows. Who would have thought!

Another, and somewhat newer, example of snowplows "talking" to infrastructure was tested by the Minnesota

Department of Transportation this past winter. They equipped a small number of their plows so that they could send a signal to a variable message sign when they passed it. This caused the sign to display a message indicating "snowplows ahead" and thus providing warning to road users that they may need to slow down as they approached the snowplows on the road ahead of them. The goal here is obviously one of safety. A distressing number of plows get hit from behind each winter by drivers who either could not see them or were too distracted to see them.

You can argue that an overhead message is not likely to get the attention of a driver who would otherwise not be able to figure out that the big cloud of snow on the road up ahead likely contains a snowplow. That may well be true, but sadly we can only deal with the driving public that we have, not the driving public that we would wish! And while warnings of this type may not get the attention of every driver, the concept can be thought of as a test of systems that interact with other vehicles directly (thus providing a warning to the driver inside their car rather than on a sign outside the vehicle) and that might, over time, become an interaction with fully automated vehicles (although current technology suggests that they will not be out on the road in bad weather for a few years at least).

## **Technology that can improve safety for our operators is extremely valuable.**

The truly exciting thing about these two developments for me is not what they can do right now (although that could well be quite impactful) but the promise that they give of future developments that can have an even greater impact. When our operators are out on the road plowing, the weather is typically bad, and visibility is often reduced. Technology that can improve safety for our operators is extremely valuable, and well worth keeping a lookout for as these new technologies get developed. Stay safe out there!

Wilfrid Nixon can be reached at (319) 594-4447 or at wilf@psassoc.org.

[apwa.partica.online/reporter/june-2021/columns/open-your-winter-toolbox-what-language-is-your-snowplow-talking](https://apwa.partica.online/reporter/june-2021/columns/open-your-winter-toolbox-what-language-is-your-snowplow-talking)



# MISSOURI RIVER BRIDGE CONTRACTS AWARDED

**State officials have turned another page in the replacement of the Interstate 70 bridge over the Missouri River at Rocheport. They're about to hand out a quarter of a billion dollars.**

The Missouri Department of Transportation Thursday morning announced the selection of the team of Wisconsin-based Lunda Construction and Washington, D.C. based Parsons Transportation Group to design and build two new bridge spans, beginning later this year.

The Missouri River Bridge has carried traffic across the Missouri River between Boone County and Cooper County since 1960. It's useful life is pretty much over.

"The rehabilitated bridge that we had planned would have only extended the life of the bridge by ten years and was expected to see three to eight hours' worth of back-ups," said MoDOT project manager Brandi Baldwin.

**The Missouri Department of Transportation's plan now is to replace one bridge with two.**

This fall, a new westbound bridge will begin to go up. Sometime in early 2023, when that span is finished, all traffic in both directions will move there. Then crews will demolish the old structure and replace it with a new eastbound bridge, to be finished by the end of 2024.

"With the innovative procurement techniques, there will be minimized traffic impacts while we're doing that amazing work," said Patrick McKenna, the director of MoDOT.

The current bridge carries 12.5 million vehicles, about 30% of which are big trucks, every year. Analyst says the cargo rolling over it will reach all 48 lower states within 48 hours. It is a lynchpin to the nation's economy.

**"It's not very often that we get to award a contract that impacts not only Missouri, but really the entire nation," said Michael Water, the chairman for the Missouri Highway Commission.**

Long before there was talk of a Biden infrastructure plan, Missouri cut a deal with Washington for a federal grant of \$81.2 million on condition the state approved more than \$300 million in new bonds. Lawmakers said, 'yes.'

When asked if the \$81.2 million is locked in, regardless of what Congress and the current administration does, Gov. Mike Parson said that was his understanding.

"That's correct, I believe it is," he said. My understanding when we went up there and got the approval, that's a done deal... and that's why we were able to move forward with that."

The total project also included a rebuild of the Rocheport exit interchange, just east of the bridge.

While each of the new spans will be able to handle four lanes of two-way traffic during emergencies, the normal flow will be three lanes of traffic on each bridge.

[krcgtv.com/news/local/missouri-river-bridge-contracts-awarded?fbclid=IwAR3rYJnNiHXKhYpMxaqQNmOR3gj5ckLSOQ3-kOr6cR4IIMsZ9swFF9Q8heg](https://krcgtv.com/news/local/missouri-river-bridge-contracts-awarded?fbclid=IwAR3rYJnNiHXKhYpMxaqQNmOR3gj5ckLSOQ3-kOr6cR4IIMsZ9swFF9Q8heg)

## UHPC FOR BRIDGE PRESERVATION AND REPAIR

**Ultra-high performance concrete (UHPC) offers enhanced durability and improved life-cycle cost performance for bridge preservation and repair.**

Keeping bridges in a state of good repair is essential to keeping the transportation system operating efficiently. Agencies at all levels can deploy UHPC for bridge preservation and repair to maintain or improve bridge conditions cost effectively.

### Stronger Repairs, Extended Service Life

UHPC is a fiber-reinforced, cementitious composite material with mechanical and durability properties that far exceed those of conventional concrete materials. This has made it popular for bridge construction, especially for field-cast connections between prefabricated bridge elements (PBE). Bridge infrastructure preservation and repair (P&R) is a new application of UHPC that offers enhanced performance and improved life-cycle cost over traditional methods. Because of its strength and durability, UHPC can be an optimum solution for some repairs. UHPC can be used in situations that normally use conventional concrete or repair mortars, and in some cases those that use structural steel. Some UHPC mixes gain strength rapidly, so bridges could be opened to traffic 24 hours after completing the necessary repairs. Additionally, UHPC repairs are long lasting and resilient, requiring less maintenance and fewer follow-up repairs than conventional methods. In some cases, they can outlive and outperform their conventional counterparts—UHPC repairs could be the strongest and most durable part of the bridge.

### Applications

A few examples of UHPC P&R applications include bridge deck overlays, girder end repairs, expansion joint repairs, PBE construction joint repairs, and column or pile jacketing. Some applications, such as bridge deck overlays and replacing expansion joints with UHPC link slabs, can

extend the service life of bridges well beyond that of traditional repair strategies and are more cost-efficient than bridge replacement.

### Benefits

**Versatility.** UHPC can generally be used anywhere other types of concrete would be used, and due to its strength and durability, it can be the optimum material for many applications.

**Durability.** UHPC-based repairs are long-lasting and require less maintenance and fewer follow-up repairs.

**Cost Savings.** UHPC repairs can outlive and outperform their conventional counterparts, resulting in life-cycle cost savings. UHPC bridge deck overlays and link slabs can extend the service life of bridges well beyond that of traditional preservation and repair strategies.

### State of the Practice

State departments of transportation (DOTs) and other highway agencies have repaired or strengthened more than 20 bridges using UHPC in recent years, with half of these completed in 2019. These projects used multiple repair techniques and strategies to return the bridges to a state of good repair and extend service life. Examples are listed below.

- **Bridge Deck Overlays:** Iowa DOT, Delaware DOT, New York State DOT.
- **Link Slabs:** New York State DOT, Maryland DOT, New Jersey DOT.
- **Beam End or Girder Repair:** Connecticut DOT, Rhode Island DOT, Florida DOT, St. Clair County (Michigan) Road Commission.

[fhwa.dot.gov/innovation/everydaycounts/edc\\_6/uhpc-bridge\\_preservation.cfm](https://fhwa.dot.gov/innovation/everydaycounts/edc_6/uhpc-bridge_preservation.cfm)





# STICS DEPLOY HOMEGROWN INNOVATIONS

Photo by: Sam O'Keefe

**THE SIXTH ROUND OF EVERY DAY COUNTS (EDC-6) KICKED OFF WITH A VIRTUAL SUMMIT IN DECEMBER 2020 THAT INTRODUCED THE SEVEN INNOVATIONS FHWA IS PROMOTING OVER THE NEXT 2 YEARS.**

The summit also featured a National State Transportation Innovation Council (STIC) Network Showcase that highlighted 245 innovations in six categories developed and deployed by agencies throughout the country. The following are just a few examples of the expertise and ingenuity agencies are putting into action to save lives, time, and money in the areas of safety, planning, and environment.

Many of the homegrown innovations featured in the STIC Network Showcase are aimed at improving safety.

**THE GOAL OF THE MISSOURI DEPARTMENT OF TRANSPORTATION (MoDOT) BUCKLE UP PHONE DOWN (BUPD) CHALLENGE CAMPAIGN IS TO DRAW ATTENTION TO AND COMBAT DISTRACTED DRIVING STEMMING FROM CELLPHONE USE.**



Photo by: MoDOT

MoDOT places videos and graphics on its social media channels and BUPD website encouraging individuals and business to accept the challenge to buckle up and put their phones down while driving.

Another traffic safety problem is wrong-way driving (WWD). WWD crashes tend to be more severe than other types, and highway agencies are working to implement systems to prevent them. The showcase includes WWD initiatives from Arizona, Florida, and Texas.

The Arizona DOT's I-17 pilot proved to be an effective corridor-level system of WWD countermeasures including

thermal cameras for detection, dynamic messaging for driver notification, and decision-support software for immediate notification and verification.

The Florida DOT initiative found LED-highlighted wrong-way signs to be one of the most effective countermeasures to warn a wrong-way entering motorist, notify other motorists, and send alerts to transportation management centers. The Central Texas Regional Mobility Authority's pilot project on a newly constructed toll road was designed to detect wrong-way motorists, activate roadside signage to alert drivers, and notify law enforcement.

At the local level, city and county engineers often receive a variety of communications from residents about traffic safety concerns, including requests to install traffic-control measures such as stop signs or warning signs. Minnesota's Local Road Research Board developed a guidebook for Addressing Citizen Requests for Traffic Safety Concerns that provides recommended procedures for evaluating and responding to these requests. The guidebook also reviews various traffic safety devices and their appropriate uses.

Another homegrown innovation focus is planning and environment, which often involves public communication

and outreach. The Massachusetts DOT is using the Public Involvement Management Application (PIMA) to manage the full public involvement process on all its projects. PIMA was developed by Iowa DOT in 2015 and is now in use by a consortium of over 15 transportation agencies to meet a variety of public engagement needs.

The Oklahoma DOT saw a significant increase in public responses following use of the U.S. Postal Service Every Door Direct Mail® service, which enables targeted outreach based on census data. The agency was able to provide hard-to-reach communities with the same materials that would have been distributed at a face-to-face meeting.

The Texas DOT used performance-based planning and programming elements to create corridor prioritization and evaluation tools that guide data-based decision-making based on the department's top priority goals. The Nebraska DOT is creating a Nebraska Environmental Documentation System (NEDS) that will provide a web-based ecosystem and an enhanced documentation process for all of its environmental professionals and specialists to complete their reviews, analyses, and documentation.

[fhwa.dot.gov/innovation/innovator/issue84/page\\_04.html](http://fhwa.dot.gov/innovation/innovator/issue84/page_04.html)



# COLLABORATION IS KEY

By the American Meteorological Society Committee on Emergency Management



## Public Works officials and meteorologists work together to prepare for flash flood events around the country.

The National Weather Service (NWS) prepares community stakeholders for a diverse arena of weather impacts across the United States. Many public works agencies throughout the country have developed strong relationships with the meteorological community, where these partnerships have helped save many lives in different types of flooding events through effective communication and collaboration efforts.

Some areas of the country may not see active weather as often as others, but when major events do strike, large populations can be impacted. Many of these impacts can build off of one another, resulting in the local weather community keeping a close eye on how seasons progress. One of these is the relationship between the Southern

California fire season and the following potential wet season. Strong Santa Ana winds and very dry air have been known to fuel raging wildfires across the region during the fall months, sometimes lasting into the early winter months. After they are extinguished, they leave behind what are known as “burn scars,” areas of burned vegetation and loose debris that often reside on sloping terrain. As the wet season takes hold in the winter months, these burn scars are now extremely vulnerable to flash flooding and debris flows: moving runoff that carries various forms of debris down hillsides and through small creeks and canyons. This has been known to produce devastating damage to homes and other infrastructure below, even leading to loss of life.

## Many public works agencies throughout the country have developed strong relationships with the meteorological community.

The NWS has partnered with local agencies across the West, such as Orange County Public Works (OCPW), to provide detailed weather briefings for forecast rainfall across burn areas, where these serve to give insight on potential impacts and proximity to reaching hourly rainfall thresholds determined by the U.S. Geological Survey (USGS) for each specific burn area. Briefings for urban area rainfall are also initiated to monitor contaminated runoff from river basins even during light precipitation events. The OCPW has also set up the Automated Local Evaluation in Real Time (ALERT) rain gauge network across parts of Orange County to help the NWS monitor rainfall rates. This past year has been no exception, where large wildfires from last fire season have led to flash flooding and debris flows this winter season. This has included those near the Bond and Silverado fire burn scars in Orange County, where storm rainfall brought mud and debris flows to the Silverado Canyon area, making several roads impassable, homes and vehicles damaged, along with multiple evacuation orders of residents.

Flash flooding has become increasingly common along the U.S. Gulf Coast, where both incredible rainfall totals and rainfall rates of 5 to 6+ inches per hour have been observed. These events can happen anytime of the year, although they are most likely during the spring through hurricane season. While the impacts of terrain are less of an issue along the Gulf Coast, the infrastructure is still often no match for the sheer volume of rainfall that can occur there. Expansive urban sprawl in cities like Houston, Tex., has certainly exacerbated the issue. As more and more development occurs, the capacity for rainfall runoff becomes less and less without special flood control projects to offset the difference. The City of Houston and Harris County rely on several different methods of flood control and advanced warning mechanisms, including a robust system of bayou canals to help manage runoff from the frequent bouts of intense rainfall with a fairly dense network of rainfall and river gages all across the area.

## The use of flood control reservoirs managed by the U.S. Army Corps of Engineers (USACE) offers at least some storage capacity for floodwaters, assuming the heavy rainfall falls over the reservoir or upstream basins.

Area roads and highways are also designed to hold excess floodwaters in order to attempt to keep water out of homes and businesses, and the city is equipped with an underpass pump system to drain notoriously flood-prone underpasses and quickly restore access for traffic. Local parks and other greenspaces are also used to help mitigate the effects of excess rainfall by providing temporary floodwater storage.

The National Weather Service office in Houston works closely with the Harris County Flood Control District (HCFCD) and Emergency Management personnel to communicate the latest rainfall and river forecasts and to coordinate the severity and messaging of the event. NWS Houston even implemented a flash flood messaging system for the Houston metropolitan area that is included with their partner briefing emails leading up to a heavy rainfall event. This system is comprised of several “levels” of messaging severity that the NWS and their core partners developed together so that everyone can reference a set collection of appropriate public messaging for whichever level is declared in the briefing. These levels can also be adjusted as the event is unfolding to either escalate or deescalate the severity of the messaging.

Additionally, special attention is given to not just the amount of rainfall expected, but also the rainfall rates expected since higher rainfall rates can quickly cause flash



flooding across the urban area. The City of Houston uses this information to preposition resources like high water vehicles in areas known to stay dry during floods, so that they are able to respond more quickly and effectively to water rescue calls throughout the city. Further strides in advanced warning and mitigation capabilities are on the horizon as both flood extent and flood inundation mapping become more accurate and widely available. These will undoubtedly impact the response to and mitigation of flood events for years to come.

Flash flooding in the northeast is extremely common and leads to many accidents, loss of property, and most importantly, loss of life. It is the deadliest storm-related weather hazard. Flash flooding occurs throughout the year in this region. During the spring, summer, and fall, flash flooding is often the result of short duration, intense storms. In the late winter and early spring, snowmelt following large snowstorms causes flash floods.

**Preparing for flash floods is essential, as there is often little to no time for warning before the weather phenomenon begins.**

Preparation is especially important for public works services in order to minimize the impacts of flooding, including roadway and structural repairs.

In Pennsylvania, local emergency management agencies collaborate with the Pennsylvania Emergency Management Agency's State Meteorologist, the NWS Weather Forecast Offices (WFOs) and local broadcast meteorologists to ensure consistent information is disseminated when flash flooding occurs. NWS WFO State College holds a Flood Awareness Week each year for partners and the general public. For the 2021 Flood Awareness Week, they offered two different lectures on flood safety information and preparedness resources.

Additionally, municipalities work with the Pennsylvania Department of Environmental Protection to document

implementation of stormwater management programs, which include a rainstorm component. West Manchester Township, in York County, PA, is a model municipality of this program. They even provide residents with tips on how to do their part to keep runoff water as clean as possible before or after a rainstorm (West Manchester Township, 2015). This information is beneficial for public works and residential handling of water after flash flood events as well.

**Everyone has the common goal of saving lives and property. The most effective way to achieve that goal is through collaboration, preparedness, and mitigation efforts.**

The above stories of flash flooding events and local response efforts across the United States highlight the importance of the partnership between local officials, including emergency managers, those in public works, and meteorologists, during blue sky days. Working together, we can minimize the impacts of inevitable flash flooding events.

For more information, contact Matthew Moreland, National Oceanic and Atmospheric Administration, at [moreland@noaa.gov](mailto:moreland@noaa.gov).

[apwa.partica.online/reporter/june-2021/features/collaboration-is-key](https://apwa.partica.online/reporter/june-2021/features/collaboration-is-key)



**YOUR TRUSTED "SAFETY SIDEKICK" TO MAKE RURAL ROAD TRAVEL SAFER!**

The National Center for Rural Road Safety opened in December 2014. Funded by the Federal Highway Administration, this Center of Excellence is focused on enhancing safety on rural roads by supporting local, state and tribal road owners and their stakeholders. Resources include education, training, tools and technical assistance.

*To learn more about the National Center for Rural Road Safety, visit their website [ruralsafetycenter.org](https://ruralsafetycenter.org)*

**Please visit our website for other training courses:**

[MOLTAP.ORG](https://MOLTAP.ORG)

**Level I**

\$45/person  
8:00 AM - 12:00 PM

**Level II and Super Scholar (LIII)**

\$55/person  
10:00 AM - 3:00 PM  
Lunch is included

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

**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](https://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/](https://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](https://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](https://nhi.fhwa.dot.gov/home.aspx)





Photo by: Sam O'Keefe Photography

## UPCOMING EVENTS

Please follow us on Facebook and LinkedIn for the most up to date information regarding events. (Online viewers click on the conference title to direct you to the online information)

### MACTO CONFERENCE

October 6-7 2021  
Columbia, MO

### MO APWA MOVITE FALL CONFERENCE

October 6-8, 2021  
Spring field, MO

### NATIONAL SAFETY COUNCIL SAFETY CONGRESS AND EXPO

October 11-13, 2021  
Orlando, FL

### AASHTO ANNUAL MEETING

October 26-29, 2021  
San Diego, CA

### MAC 50th ANNUAL CONFERENCE & EXPO

November 21-23, 2021  
Lake Ozark, MO

FOLLOW US ON  
SOCIAL MEDIA!



Missouri LTAP | @LTAPMO



Missouri LTAP | @Missouri LTAP

## MISSOURI STATE SAVINGS SURPLUS

MISSOURI STATE AGENCY FOR  
SURPLUS PROPERTY

Check out the thousands of items in  
stock at MOSASP!

2846 Highway 179 | Jefferson City, MO 65109  
888.295.7796 (Toll free | 573.751.3415)

For information about the program,  
visit:

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)



## MODOT SAVINGS SURPLUS

MAKE YOUR DOLLARS GO FURTHER WITH  
MODOT SURPLUS PURCHASING!

Prices, mileage, condition, and purchasing  
instructions can be viewed online:

[modot.mo.gov/business/surplus](http://modot.mo.gov/business/surplus)

**NO EQUIPMENT FOR SALE  
AT THIS TIME**