

Weather-Savvy Roads

Managing highway systems and informing travelers when weather conditions are bad

By FHWA

Which route is the best prospect for that rainy commute to work? Should we postpone our road trip to the mountains this weekend because of the snow?

States participating in the [road weather management—weather-savvy roads](#) effort in Every Day Counts round four (EDC-4) can help motorists make those decisions. Road weather management can also help transportation departments deploy snowplows more efficiently and freight companies avoid hazardous wind conditions for truck drivers.

“Road weather management provides the information people need to make better decisions on when to travel, how fast to drive, and what routes to take,” said Paul Pisano, leader of the Federal Highway Administration Road Weather and Work Zone Management Team.

Twenty-two percent of all vehicle crashes in the past decade were weather-related. On average, these crashes resulted in nearly 6,000 deaths and more than 445,000 injuries a year. About 25 percent of nonrecurring traffic delays are due to adverse weather, and weather-related delays add about \$3.4 billion a year to freight costs. Preventing crashes with winter maintenance approaches using anti-icing materials such as salt and sand affects watersheds, air quality, and infrastructure.

In 2017 and 2018, FHWA is encouraging deployment of two strategies that enable State and local agencies to proactively manage the surface transportation system ahead of and during adverse weather events: Pathfinder and integrated mobile observations. “Agencies can choose one or both of these solutions,” Pisano said.

Pathfinder Process

Pathfinder is a collaborative process involving the National Weather Service, transportation departments, and private sector weather service providers to disseminate road weather information to travelers that is clear, concise, consistent, and impact-based.

“The ultimate goal is to make drivers well-informed and able to make safe and efficient travel decisions during weather events,” said Roemer Alfelord of FHWA’s Road Weather and Work Zone Management Team.

Utah is one of several States already using the Pathfinder process to deliver messages about weather events such as snow, freezing rain, and high winds.



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Technology Transfer Newsletter

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Concise, consistent messages on weather events have a positive effect in Utah. - Credit Utah DOT

Learn More

View an EDC-4 [webinar](#) on weather-savvy roads.

See [Collaboration Across the Road Weather Enterprise: The Pathfinder Project](#) for guidance on implementing the Pathfinder process and State DOT examples.

See FHWA's [Road Weather Management](#) Web site for information, training, and upcoming events.

Contact [Paul Pisano](#) of the FHWA Office of Operations or [Ray Murphy](#) of the FHWA Resource Center for information and technical assistance.

"We try to make the message as concise as we can," said Jeff Williams, Utah Department of Transportation weather operations manager, citing highway variable message signs reading "ROAD SNOW 5 PM TUE" as an example. "We typically put out a message like that 18 to 24 hours in advance of a storm."

A Utah study of snow events showed a 40 percent reduction in vehicle miles traveled, indicating that concise, consistent messaging works.

"We've seen a significant influence as far as the Pathfinder project is concerned," Williams said. "When the National Weather Service, the media, and the DOT are saying the same thing about weather impact, we see people react."

Although many highway agencies already work with weather information providers, "Pathfinder is about taking it to another level, particularly focusing on the consistency of the messaging to the traveling public," said Pisano. "Pathfinder is an easy, low-cost solution to implement."

Integrating Mobile Observations

"The goal of integrating mobile observations is to deploy advanced, vehicle-based technologies to collect, transmit, and use weather, road condition, and related vehicle data for improved transportation system management," said Gabriel Guevara of FHWA's Road Weather and Work Zone Management Team.

The data collected can be used for a number of road weather management strategies, such as winter maintenance decision support systems that enable agencies to use the right amount of labor, material, and equipment to pretreat roads.

"Ultimately, integrating mobile observations can help DOTs improve efficiency in terms of costs, effectiveness in terms of results, and accountability in terms of measurement," Guevara said.

One agency using integrated mobile observations is the Michigan Department of Transportation, (MDOT) which equipped 15 vehicles and 310 snowplows to collect camera images of road conditions and data such as air and surface temperature, relative humidity, and brake status. The data help maintenance workers use resources more efficiently. They're also used to post motorist advisories on the MDOT [Mi Drive Web site](#), a mobile application, and changeable message boards.

"You get a microlevel look at the roadway," said Steven Cook, MDOT operations engineer. "You also get better information to provide to the public. We found out from surveys that folks changed their route or delayed their travel because of the information we posted."



U.S. Department
of Transportation

**Federal Highway
Administration**

Welcome Andrea!



The newest addition to the LTAP team, Andrea Jarus and her husband, Gavin, moved to North Carolina from Greenville, S.C. only last summer. Andrea came to LTAP as a temporary worker, but we immediately realized what a great asset she would be to our program and offered her a full time position.

Andrea handles scheduling and registrations for NC LTAP. We're so glad to have her here. Please join us in welcoming her to the team and feel free to contact her with questions or to get more information about LTAP courses.



Get the Picture!

Can you tell what's wrong with this picture? Turn to page 5 to see what the problem is.

NCDOT Works to Integrate Drones in Emergency Response

By NCDOT



RALEIGH – The N.C. Department of Transportation is exploring how to best implement unmanned aircraft systems, or drones, into future disaster relief efforts. The department's Division of Aviation recently collaborated with nearly 50 state and local government agencies and industry researchers for a threeday workshop, which included interactive demonstrations of drone operations in simulated scenarios.

"Our goal is to ensure that drones flying within North Carolina are flown safely and responsibly," said Aviation Division Director Bobby Walston. "A better understanding of drone capabilities and evolving regulations will give emergency management professionals tools to safely use this technology during disasters and routine operations."

Without proper coordination, drone operators can unintentionally interfere with emergency management operations. A goal of the exercise was to organize communications with the public, to ensure hobbyist drones do not hinder disaster relief efforts.

The workshop was organized by the NCDOT Division of Aviation and North Carolina State University's Next Generation Air Transportation Consortium, within the school's Institute for Transportation Research and Education. The team is leading research and testing efforts to safely integrate drones into the National Airspace System.

The Federal Aviation Administration has exclusive authority over the use of airspace in the United States, including the airspace used by drones. NCDOT has authority to implement and manage regulations that pertain to state laws concerning operations within North Carolina.

North Carolina has more than 15,000 registered drones, which is almost double the number of registered manned aircraft. A report on best practices for natural disaster response will be available in March.



Get the Picture!

by Timothy B. Baughman, PE

ITRE's Highway Operations and Safety Manager

So what's wrong? You may comment on the condition of the sign. You may worry about the sign located in the roadway – in this lane that is ending. But my concern is for the message. The crew is working in the right lane in the background. So the road is not closed. This should read Right Lane Closed Ahead.

If you have any questions or comments about worker safety and work zone traffic control, give me a call at (919) 515-8654, or e-mail me at tbb@ncsu.edu.

-TB

PS: If you've been through one of classes and do not see the problem, then I've not done my job for you!

Public Roads: Rumble or Mumble?

People from all over the world are coming together to help make our roads safer. In recent years, lane departure crashes have been responsible for over half of vehicle fatalities in the United States. The Department of Transportation has used rumble strips for many years to prevent roadway departure crashes on our roads. Rumble strips can be found on the edges and center of lanes to help prevent running off the road and head-on crashes. They have reduced crashes by almost half in rural areas and over half on urban roads.

While rumble strips have been successful in reducing fatalities, they make an excess of external noise pollution in the surrounding areas, such as parks, nature reserves and tribal lands. They also make riding on the side of the roads difficult for bicyclists.

In order to fix these problems, researchers and engineers from the United Kingdom, Denmark, Britain and America have investigated new solutions to limit external noise while maintaining an effective noise level in the interior of the vehicle. Through their research, they have found that it is more beneficial to limit the noise at the source instead of building noise barriers or installing a noise insulation at the receptor. They have also distinguished the difference between variables that cause internal and external noise.

The internal noise depends on the vehicle type, vehicle speed and rumble strip design, and the external noise depends on the rumble strip design and pavement texture. When the pavement texture is raised the external noise is louder and when the texture is recessed into the pavement it's quieter. This leaves the only common variable to deal with - the rumble strip design.

The current rumble strip, while it may be externally noisy, is more cost efficient, less time consuming and there is significant research that shows they are highly effective in reducing departure crashes. To limit the noise pollution and address other road safety concerns,

engineers have created a new design, while still maintaining an effective internal noise for the driver. The new design is commonly referred to as the mumble strip, but it has its drawbacks, as well. The mumble strip takes longer to implement, is more expensive and like any new innovation, engineers have not been able to conduct long-term studies on the mumble strips to see how effective they will be in reducing departure crashes.

Taking all of this into consideration, engineers have decided to implement the mumble strip where the traditional strip is not publically accepted, and keep the rumble strips in the accepted areas. This will ensure public satisfaction and expand safety measures on our roadways. To find out more information on road-safety strips read FHWA's full article [here](#).



Every Day Counts Online Information

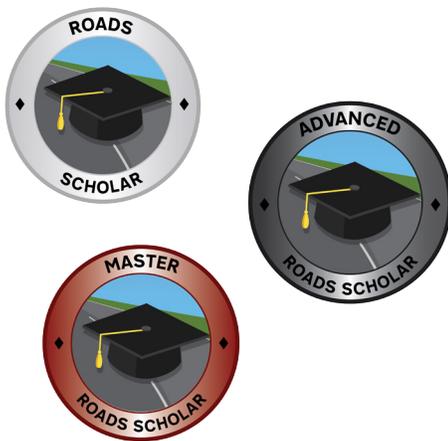
In 2009, the Federal Highway Administration (FHWA) launched Every Day Counts (EDC) in cooperation with the [American Association of State Highway and Transportation Officials \(AASHTO\)](#) to speed up the delivery of highway projects and to address the challenges presented by limited budgets. EDC is a state-based model to identify and rapidly deploy proven but underutilized innovations to shorten the project delivery process, enhance roadway safety, reduce congestion and improve environmental sustainability.

FHWA has been on the frontlines of innovation for more than a century. Their Every Day Counts initiative features technologies and practices that can shorten the project delivery process, enhance safety and improve environmental sustainability. FHWA is working with state transportation agencies and their partners to deploy these innovations, saving time, resources, money and lives. Learn more: <http://www.fhwa.dot.gov/everydaycounts/>



[Check out this video on YouTube EDC: Past Present, Future \(2015\)](#)

[EDC Progress Report](#)



NC LTAP Roads Scholar Program: Master Roads Scholar

Hopefully, you are familiar with the North Carolina Local Technical Assistance Roads Scholar Program, Roads Scholar and Advanced Roads Scholar training. I also hope you have heard that third level, Master Roads Scholar, was introduced in 2016.

This is the third level of training for NC municipal transportation workers. Once you complete the Roads Scholar program, then become an Advanced Roads Scholar graduate, you are eligible for the Master Roads Scholar courses.

To become a Master Roads Scholar, one must first become an Advanced Roads Scholar and then complete 6 of the 10 courses listed below and write a case study which focuses on a local transportation project.

Check the LTAP website and training schedule for dates and locations.

<https://itre.ncsu.edu/focus/ltap/>

Training topics include:

ADA Regulations and Requirements

Asset Management

Basic GIS

Communicating with the Public and Media

Effective Leadership Skills

Ethics of Public Works

Fundamentals of Government

Productive Team Building

Stepping Stones for Success

*Emergency Management
(coming in early fall 2017)*



NC LTAP News & Updates

To update your mail information, add a colleague to the database, or obtain information about Roads Scholar Program fax this sheet to 919-515-8897 or complete online at go.ncsu.edu/NCLTAPcontact.



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Your Name _____

Company/Organization _____

Address _____

City _____ **State** _____ **Zip** _____

Phone _____

Fax _____

Email _____

Check Appropriate Items

- Add/Update email information to NCLTAP listserv NCTROADS
- Send information about Roads Scholar program
- Send schedule of training opportunities

NCTROADS Listserv

Subscribe to the NC LTAP listserv. It is free and easy. Send a message to linda_collier@ncsu.edu and ask to be added to NCTROADS.

This is an informal network for the exchange of news about current research, discussion of problems and solutions, request for advice and assistance, and announcements of upcoming conferences, events and training opportunities for transportation personnel. Once you are subscribed, you can send a message all the listserv members at NCTROADS@lists.ncsu.edu

North Carolina Local Technical Assistance Program 2017 Schedule



For Online Registration: itre.ncsu.edu/training/ltap-training/

Questions or Email Registration: aljarus@ncsu.edu

Date	Class Title	RS/ARS/ MRS	Cost	Location	To Sign Up
Tuesday, May 2	Asset Management	MRS	\$135.00	Raleigh	Click Here
Wednesday, May 3	Fall Protection	ARS	\$150.00	Matthews	Click Here
Friday, May 5	Concrete: What? When? and How?	RS	\$175.00	Raleigh	FULL
Tuesday, May 30	Flagger Training AM	RS	\$90.00	Raleigh	Click Here
Wednesday, May 31	Flagging Instructor RECERTIFICATION	ARS	\$150.00	Raleigh	Click Here
Thursday, June 1 to Friday, June 2	Flagging Instructor Training (2 day)	ARS	\$225.00	Raleigh	Click Here
Tuesday, June 6	Stepping Stones to Success	MRS	\$150.00	Raleigh	Click Here
Wednesday, June 7	Basic Work Zone Safety Training	RS	\$125.00	Emerald Isle	Click Here
Thursday, June 8	Flagger Training AM	RS	\$90.00	Emerald Isle	Click Here
Tuesday, June 20	Asphalt Pavement Maintenance	RS	\$125.00	Raleigh	Click Here
Wednesday, June 21	Soils Fundamentals	RS	\$125.00	Raleigh	Click Here
Thursday, June 22	Maintenance of Repair of Utility Cuts	RS	\$90.00	Raleigh	Click Here
Tuesday, August 16	Snow and Ice Control	RS	\$150.00	Raleigh	Click Here
Monday, August 28	Trenching "Competent Person" Training	ARS	\$150.00	Raleigh	Click Here
Monday, September 11	Work Zone Supervisor RECERTIFICATION	ARS	\$150.00	Raleigh	Click Here

LTAP Links on the Web

Transportation Information at your fingertips!

NC LTAP	https://itre.ncsu.edu/focus/ltap/
Narional LTAP/TTAP	http://www.ltap.org/
NC Department of Transportation (NCDOT)	https://www.ncdot.gov/
Federal Highway Administration (FHWA)	https://www.fhwa.dot.gov/
US Department of Transportation (USDOT)	https://www.transportation.gov/
UNC School of Government	https://www.sog.unc.edu/
Institute of Transportation Engineers	http://www.ite.org/
NC Section of ITE (NCSITE)	http://ncsite.org/
Summer Driving Tips - staying safe	https://icsw.nhtsa.gov/nhtsa/tips/summer/

NC LTAP Advisory Board

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