



transportation

North Carolina Local Technical Assistance Program (LTAP) Newsletter
SPRING 2024

TRACKS

APWA Roadeo

Ray Narvaez

We had a wonderful showing at the APWA-NC Backhoe Roadeo on April 17th! 32 participants joined us from 16 different municipalities to show off their skills using backhoes and mini excavators. After a fierce contest, we have our winners! Jamie Lee from Hickory won the Backhoe event with an astonishing score of 46 seconds and Curtis Crisco from High Point won the Mini Excavator event with excellent score of 1 minutes and 36 seconds. We plan to support both Jamie and Curtis in attending PWX so they can participate in the National APWA Backhoe Roadeo this September in Atlanta, GA. We're thrilled to have had so many folks in attendance and we hope to see you all next year!

Here are some videos of the event! <https://www.youtube.com/>



In This Issue

APWA Roadeo- p. 1

Build a Better Mousetrap- p. 2

Federal Highway Administration: Register Now for your next Online Training!- p. 3

New Traffic Signal Would Improve Travel Time for Both Pedestrians and Vehicles- p. 5

Enhancing Performance with Internally Cured Concrete (EPIC2)- p. 6

Tailgate Talk- p. 8

What's Wrong With This Picture?- p. 9

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Technology Transfer Newsletter
Published by the North Carolina Local Technical Assistance Program
at the Institute for Transportation Research and Education at North Carolina State University



Build a Better Mousetrap

Has a member of your staff dreamed up a new way to tackle a transportation problem?

Has a member of your crew created a new tool or gadget to help make roads safer?

Have you or a team member discovered a better way to get the job done?

Then you've built a better mousetrap.

The North Carolina Local Technical Assistance Program wants to help you show off your innovative solutions to problems faced by local transportation workers. It might be a new tool, equipment modifications, or a new way to increase safety, reduce costs, or improve efficiency.

That's why NCLTAP is holding a local Build a Better Mousetrap competition. Each year the FHWA's Office of Innovative Program Delivery – Center for Local Aid Support sponsors the 'Build a Better Mousetrap' competition with the entries from every state's local competition. It's a great way to share your creative transportation solutions. [Check out previous year's winners](#)

Submit an Entry

To enter, please complete the [entry form](#) by May 31, 2024. You're also encouraged (but not required) to submit photos and a video clip that showcase your project along with your entry form. Videos do not need to be professionally produced; clips shot with a smartphone or tablet are welcome!

Consider submitting a project in any of these categories:

- **Innovative Project**– Any solution that addresses any or all phase(s) of the 'project' life cycle– Planning, Design/Engineering, Construction, Operations and Maintenance. This project shall introduce new ideas, is locally relevant, original, and creative in thinking.
- **Bold Steps**– Any locally relevant high-risk project or process showing a break-through solution with demonstrated high-reward.
- **Smart Transformation**– A locally relevant significant change in any transportation activity or process that is SMART "Specific, Measurable, Achievable, Realistic and Time-bound" in nature that results in improved efficiencies.
- **Pioneer**– A locally relevant product/tool that is among the first to solve a maintenance problem with a home-grown solution.

Entries will be judged using the criteria of cost savings, benefits to the community and/or agency, ingenuity, transferability to others, and effectiveness. We'll pick a state winner, who will be recognized in the North



Carolina LTAP Transportation Tracks newsletter and receive a prize. The winning entry will be automatically submitted to the national competition, where you'll compete for more fantastic prizes—and bragging rights! Winners will be announced at the annual LTAP/TTAP National Conference.

[SUBMIT YOUR ENTRY HERE](#)

More Information

With questions about the competition or for more information, please contact Bill Woods at bill_woods@ncsu.edu

Also check out other state's past winners.

- <http://www.mnltap.umn.edu/research/mousetrap/winners/index.html>
- <https://ttap-center.org/events/build-a-better-mousetrap-competition/>
- https://www.ltap.unl.edu/neltap/Build_A_Better_Mousetrap.asp
- <https://sites.udel.edu/dct/t2-center/build-a-better-mousetrap-competition/national-competition-booklets/>
- https://www.coloradoltap.org/ltap/Local_Innovation_Projects.asp

Federal Highway Administration: Register Now for your next Online Training!

The Federal Highway Administration's (FHWA) Local Aid Support (LAS) team continues to expand its catalog of online training resources specifically designed for local government and Tribal transportation professionals. The courses are available at no cost but registration is required for regular access to the courses and for generating certificates upon completion.

Take the transportation training anytime, anywhere and at your own pace. New topics include Federal Requirements to know when Applying for Grants; Grant Applications 101; Safety Edge Solution; Work Zone Fundamentals; and, Safe Transportation for Every Pedestrian and much more!

To access all training, visit https://www.fhwa.dot.gov/clas/online_training.aspx. If there are topics of interest not listed on the webpage, please email the FHWA Local Aid Support team at CLAS@dot.gov.

Don't delay! Visit the FHWA Local Aid Support website to learn more about the webinars and online courses designed just for you!

[Access Training Catalog](#)

UNC Board of Governors names Dean Emeritus Mike Smith winner of 2023 Governor James E. Holshouser, Jr. Award for Excellence in Public Service

UNC School of Government Dean Emeritus Mike Smith has been awarded the 2023 Governor James E. Holshouser, Jr. Award for Excellence in Public Service. This prestigious honor recognizes his 35 years of dedication to advancing public service and community engagement at UNC-Chapel Hill. Smith's leadership transformed the Institute of Government into the School of Government in 2001, expanding its reach across the state. He is commended for championing nonpartisan public service and ensuring the school's mission benefits all North Carolinians. Under his guidance, the School of Government has become the largest university-based organization offering local government training, advising, and research in the U.S., serving over 12,000 public officials annually. Smith's contributions include pioneering online education programs, fostering collaborations between faculty and local communities, and strengthening connections between the university and the state through various initiatives. His exemplary commitment to ethical and accountable public service has earned him this well-deserved recognition.



[Read More!](#)

NHTSA Finalizes Key Safety Rule to Reduce Crashes and Save Lives

The U.S. Department of Transportation's NHTSA has finalized a new safety standard requiring automatic emergency braking (AEB), including pedestrian AEB, in all passenger cars and light trucks by September 2029. This aims to reduce rear-end and pedestrian crashes, potentially saving 360 lives and preventing 24,000 injuries annually. The standard mandates AEB systems to operate at speeds up to 62 mph for vehicles and 45 mph for pedestrians, aligning with the National Roadway Safety Strategy. It applies to nearly all U.S. light vehicles and includes a Final Regulatory Impact Analysis. A similar rule for heavy vehicles is also in the finalization process.

[Click Here to Learn More!](#)

2024 NLTAPA Conference

On July 21 @ 8:00 am - July 25 @ 5:00 pm EDT the National LTAP & TTAP Association will be hosting their annual conference in Albuquerque, New Mexico! NC LTAP's Kate Davison, Ray Narvaez, and Lee Thomas will be in attendance!

[Click Here to Read More!](#)



What's Wrong With This Picture?

Can you tell what's wrong with this picture? See answer on page 9.

New Traffic Signal Would Improve Travel Time for Both Pedestrians and Vehicles

Matt Shipman

REPRINTED FROM NORTH CAROLINA STATE UNIVERSITY NEWS

Adding a fourth light to traffic signals – in addition to red, green and yellow – would shorten wait times at street corners for pedestrians, as well as improve traffic flow for both autonomous vehicles and human drivers. And the more autonomous vehicles there are in the traffic network, the shorter the wait times for everyone.

[“Our earlier work](#) introduced the idea of a fourth traffic signal called a ‘white phase,’ which taps into the computing power of autonomous vehicles (AVs) in order to expedite traffic at intersections – but we had not yet incorporated what this concept would mean for pedestrians,” says Ali Hajbabaie, corresponding author of the paper and an associate professor of civil, construction and environmental engineering at North Carolina State University. “We’ve now expanded our computational modeling to account for foot traffic, and the results are extremely promising for both pedestrians and vehicles.”

The white phase concept makes use of AVs’ ability to communicate wirelessly with both each other and the computers that control the traffic signals. When enough AVs are approaching the intersection, this would activate a new traffic light – the white light. While red lights mean stop, and green lights mean go, white lights tell human drivers to simply follow the car in front of them. In short, the white light is a signal that AVs are coordinating their movement to facilitate traffic through the intersection more efficiently.

“Our [previous research](#) found that the more AVs there are on the road, the more efficiently the traffic moves,” Hajbabaie says. “To be clear, this improves travel time, fuel efficiency and safety for all of the cars on the road – not just AVs.”

To account for pedestrian traffic, the researchers incorporated a suite of new parameters into the optimization model that assessed the impact foot traffic would have on all traffic through an intersection.

“We found that, when pedestrians are added into the mix, the white phase concept still improves traffic efficiency for everyone,” Hajbabaie says. “And, again, the higher the percentage of traffic that is made up of AVs, the more efficiently traffic moves through intersections.

“If at some point in the future we see almost universal adoption of AVs, our models suggest that delays at intersections would decrease by more than 25%. More realistically, we will eventually see a lower percentage of wirelessly connected AVs on the road, but there would still be meaningful improvements in traffic time.”

The researchers know that governments will not be adopting these new traffic technologies in the immediate future, but are already taking steps to ensure that future pilot projects will be safe and effective.

“We are currently setting up a physical testbed that will allow us to experiment with this concept in the physical world – not just in a computer model,” Hajbabaie says. “However, the vehicles we are using in the testbed are small enough to hold in your hands. This will help us identify challenges in implementation without the expense – and safety risk – involved with using full-scale vehicles. In the meantime, we are open to working with industry and research partners to explore ways to move forward with these technologies.”

The paper, [“Advancing the White Phase Mobile Traffic Control Paradigm to Consider Pedestrians,”](#) is published open access in the journal *Computer-Aided Civil and Infrastructure Engineering*. First author of the paper is Ramin Niroumand, a former Ph.D. student at NC State. The paper was co-authored by Leila Hajjibabai, an assistant professor in NC State’s Edward P. Fitts Department of Industrial and Systems Engineering.



Enhancing Performance with Internally Cured Concrete (EPIC2)

Internal curing increases concrete's resistance to early cracking, allowing the production of higher-performance concretes that may last more than 75 years.

Shrinkage cracking in concrete is a key limiting factor in achieving acceptable long-term performance in concrete bridges, roads, and repairs. When this cracking occurs at an early age, it leaves the concrete and embedded reinforcement exposed to degradation, reducing the service life of the structure. Unlike conventional curing where water is supplied on the concrete's surface, internal curing provides a source of moisture from inside the concrete mixture, improving its resistance to cracking and overall durability.

IMPROVED INFRASTRUCTURE THAT LASTS LONGER

Internal curing targets and mitigates the source of shrinkage cracking by providing curing water integrally to the concrete mixture. Over the last 30 years, [extensive studies](#) have shown that internal curing addresses the root cause of self-drying shrinkage that is particularly problematic in lower water-to-cementitious materials ratio concretes.

This material-level technology can be employed in any concrete mixture with an adjustment to mixture proportions. The most widely used approach includes pre-wetted lightweight aggregates, which have a high-absorption capacity and are naturally compatible with common concrete production practices. A portion of the normal-weight fine aggregate is replaced with a pre-wetted lightweight fine aggregate. The saturated, porous fine aggregates in the concrete mixture distribute the curing water throughout the concrete body. As the concrete loses water naturally due to continued hydration or environmental exposure, water is pulled out of the lightweight aggregate and creates internal curing. This allows cementitious microstructure pores to be refilled before they become empty, avoiding the negative pore pressures that cause concrete to shrink.

APPLICATIONS

Internal curing is primarily used in concrete bridge decks where a reduction in shrinkage coupled with lower-permeability mixture designs can provide substantially improved protection to the steel reinforcement. In paving and overlays, the technology reduces the magnitude of crack widths and curling deformations and can be used to extend the spacing between engineered joints. For patching and repair materials, internal curing minimizes the potential for restrained shrinkage cracking associated with high cement content mixtures designed to develop strength rapidly.

Biden-Harris Administration Announces Investments in Innovative Transportation Technology Projects

The U.S. Transportation Secretary announced over \$50 million in grants for 34 technology projects nationwide under the SMART Grants Program. These projects, funded by President Biden's infrastructure law, aim to improve transportation safety and efficiency through innovative technologies. Initiatives include using smart sensors for road safety, deploying smart traffic signals for pedestrian protection, and streamlining paratransit services for better accessibility. The program supports Stage 1 activities, focusing on planning and prototyping to advance smart community technologies for transportation.

[Click here for more information!](#)

Biden-Harris Administration Announces Nearly \$45 Million in Available Funds to Improve Bicyclist and Pedestrian Connectivity and Safety

The U.S. Department of Transportation's Federal Highway Administration (FHWA) has launched a \$44.5 million grant program to improve biking, walking, and public transit infrastructure. The Active Transportation Infrastructure Investment Program (ATIIP) aims to create safe pathways connecting schools, workplaces, and other destinations, especially in underserved areas. This initiative supports efforts to reduce carbon emissions and enhance community health. FHWA will conduct webinars to provide information on applying for grants.

[Click Here to Read More!](#)

BENEFITS

Versatility. Internal curing can be used anywhere traditional concrete is used. It follows the norms of industrial concrete production, making it accessible to any producer already familiar with the state of practice.

Durability. Internal curing mitigates shrinkage cracking that is particularly problematic in low water-to-cementitious materials ratio concretes, allowing construction with lower permeability concretes to improve durability.

Cost Savings. Higher-durability concrete mixtures can last several times longer than traditional concretes, reducing the need to rehabilitate or replace critical elements such as bridge decks during the design life of the bridge, resulting in life-cycle cost savings.

Embodied Carbon Reduction. Internally cured concrete mixtures can be designed with lower water-to-cementitious materials ratios and increased utilization of natural, waste, or alternative recycled cementitious products without reduced performance or increased risk of cracking.

STATE OF PRACTICE

State departments of transportation (DOTs), local public agencies, and transit authorities have begun implementing internal curing to meet their needs.

- Bridge Decks: New York State, Indiana, Louisiana, North Carolina, Ohio, and Utah DOTs; Western Federal Lands Highway Division; and the Illinois State Toll Highway Authority.
- Pavements: Kansas and Texas DOTs and the North Texas Tollway Authority.
- Pavement Patches: City of West Lafayette, Indiana; Texas DOT; and Michigan municipalities.



NCDOL’s Free Consultative Services: Partnering with Employers for Safer Workplaces

The N.C. Department of Labor offers free Consultative Services to assist employers with safety and health issues. These services include on-site visits by experienced professionals who identify hazards and provide recommendations. Participation does not result in penalties or OSH inspections, and employers can address identified hazards at their own pace. Labor Commissioner Josh Dobson encourages employers to take advantage of this proactive program to improve workplace safety.

[Click Here for More Information!](#)

Biden-Harris Administration Announces New Milestone in First-of-its-Kind Supply Chain Initiative

FLOW, a public-private partnership led by the U.S. Department of Transportation, celebrates its second anniversary by providing data on inland freight hubs to enhance supply chain efficiency. It helps anticipate import volumes and traffic patterns, reducing delays and costs for consumers. President Biden’s focus on supply chain disruptions supports these efforts. FLOW aggregates data from major industry players and offers a comprehensive view of the supply chain, aiding decision-making. Industry feedback has been positive, highlighting FLOW’s role in improving visibility and resilience.

[Click Here for More Information!](#)

Tailgate Talk

Outdoor Work



Working outdoors has its rewards but it can present some health risks. If you're aware of the risks and take precautions against them, you can work safely and reap the healthy benefits outdoor work has to offer.

Working outdoors in the sun and around reflective or hot surfaces and equipment puts workers at risk for overexposure to the sun. Shield the skin from harmful, cancer-causing ultraviolet (UV) rays of the sun by wearing light-weight clothing that covers the skin, including a wide-brimmed hat which covers the head, neck, and ears; a long-sleeved shirt; and long pants. And protect the eyes with UV-absorbent sunglasses.

Fifteen minutes before going outdoors, apply a sun screen with a sun protection factor (SPF) of 15 or higher, reapplied periodically and waterproofed if around water or actively perspiring.

Stay hydrated in hot working environments. The body is designed to cool itself by sweating water from its internal system to the skin surface. If more water is removed from the system than is replaced, it could result in heat illness and sometimes even death. When working in hot conditions, drink plenty of water before, during, and after work. The general recommendation is to drink at least one cup of water every 20 minutes.

Watch out for snakes and other biting critters like bees, wasps, spiders, ticks, etc. Immediate attention is required for bitten workers who experience nausea, dizziness, hives, stomach cramps or severe swelling. Wear high-top, heavy boots, gloves, and clothes that cover exposed skin areas. Tuck plant legs into socks or boots. Apply insect repellent containing DEET and avoid cologne, aftershave or perfumed soaps. Watch where you put your hands, where you step, and where you sit, so as not to accidentally disturb a critter's nest or hiding place.

Exposure to certain outdoor plants, such as poison oak, can cause a mild to severe reaction. Certain times of year, even the bare wood or roots can cause a reaction. The best way to deal with nuisance plants is to learn to recognize them and, where possible, avoid them. Protect against skin exposure by wearing long-sleeved shirts, long pants tied around the ankles, leather gloves with gauntlets, and a widebrimmed hat and neck scarf. Don't touch any skin, clothing, tools or animals that have come into contact with the plant. And after any outdoor work, shower with a strong soap and wash all clothing in detergent.

Users of this tailgate talk are advised to determine the suitability of the information as it applies to local situations and work practices and its conformance with applicable laws and regulations.



What's Wrong With This Picture?

Craig Baird

This is a photo taken by a loyal reader of "What's Wrong with This Picture." It is a work zone operation they encountered while walking in their community. They wanted to share it with the rest of our readers.

It appears to be a typical road paving operation where the construction workers are directing the vehicle traffic through the work zone. These workers are also known as "flaggers." How many workers do you see? Look closely. Do you notice the person that is highlighted in the red circle? They are hard to see, aren't they? Do you think this person is a flagger or possibly a pedestrian just waiting to cross the road? Not sure?

It appears to me this person in the picture is part of the work zone construction crew so they must wear the approved safety apparel and utilize the Stop-Slow paddle to alert motorists as they direct them through the work zone.

Work zone flaggers must be trained and certified in proper safety operations and are required to wear the proper high visibility safety apparel. They also use a "Stop - Slow" paddle or sign to safely direct motor vehicles through a temporary work zone while ensuring the safety of themselves and their coworkers.

Do you notice any other safety issues in this picture? Look closely. There are several more safety issues that need to be addressed and corrected. Please let us know what you see.

Be safe out there and always be alert and on the lookout for work zone construction workers!



NC LTAP News & Updates

To update your mail information, add a colleague to the database, or obtain information about Roads Scholar Program complete the form online at go.ncsu.edu/ncltapcontactform.



For more special offers and news, like us on [Facebook](#) and follow us on [Twitter](#).

Your Name _____

Company/Organization _____

Address _____

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

Phone _____

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 kbdaviso@ncsu.edu or call Kate Davison at 919-515-3983 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

NC Local Technical Assistance Program May 2024 Schedule

For Online Registration see calendar at: <https://itre.ncsu.edu/training/ltap-training/>

Questions or Email Registration: wewoods@ncsu.edu or kbdaviso@ncsu.edu

Date	Class Title	RS/ARS/MRS	Cost	Location	To Sign Up
May 7, 2024	Trenching Competent Person and Hands-On Soil Classification	ARS	\$175	Charlotte	Click Here
May 9, 2024	Flagger Training	RS	\$100	Raleigh	Click Here
May 9, 2024	Advanced Computers: Practical Applications	ARS	\$150	Raleigh	Click Here
May 10, 2024	Chainsaw Safety	RS	\$100	Havelock	Click Here
May 13, 2024	ADA Self Evaluations/Elements of PROWAG	ARS	\$150	Raleigh	Click Here
May 14, 2024	Reducing Roadway Departure Crashes	ARS	\$150	Raleigh	Click Here
May 15, 2024	Road Safety 365	RS	\$150	Raleigh	Click Here
May 16, 2024	Ethics in Public Works	MRS	\$150	Raleigh	Click Here
May 16, 2024	Inspecting Curb Ramps	ARS	\$100	Raleigh	Click Here
May 17, 2024	ADA in Temporary Traffic Control	ARS	\$100	Raleigh	Click Here
May 21, 2024	Basic Work Zone Installer	RS	\$150	Havelock	Click Here
May 22, 2024	Intermediate Work Zone Safety Training	RS	\$175	Havelock	Click Here
May 22, 2024	Basic Computer Skills: Reports and Presentations	RS	\$150	Raleigh	Click Here
May 23, 2024	Work Zone Traffic Control Supervisor Recertification	ARS	\$175	Havelock	Click Here

LTAP Links on the Web

Transportation Information at your fingertips!

NC LTAP	https://itre.ncsu.edu/focus/ltap/
National LTAP/TTAP	http://www.nltapa.org/
NC Department of Transportation (NCDOT)	https://www.ncdot.gov/
Rural Road Safety Center	https://ruralsafetycenter.org/
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/
APWA - NC Chapter	http://northcarolina.apwa.net/
NLTAPA Tailgate Talks	https://nltapa.org/information-exchange/nltapa-tailgate-talks/
Conversations in Transportation	https://ncsite.org/conversations
Help for Employers	https://www.osha.gov/employers
Conversations in Transportation Intersection Safety	https://highways.dot.gov/safety/intersection-safety/about
Conversations in Transportation Speed Management	https://highways.dot.gov/safety/speed-management
Pedestrian and Bicycle Safety	https://highways.dot.gov/safety/pedestrian-bicyclist



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