

# Build a Better **MOUSETRAP**



# 2023

National Recognition Program  
for Transportation Innovation



U.S. Department  
of Transportation

**Federal Highway  
Administration**

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## Transforming Transportation Through Innovation

FHWA annually recognizes innovation among local agencies and tribes through the Build a Better Mousetrap (BABM) national competition. BABM shines a spotlight on those frontline workers who use their expertise and creativity to solve everyday problems that improve safety, reduce costs, and increase efficiency.

The FHWA Office of Innovation and Workforce Solutions - Local Aid Support administers the BABM national competition. Entrants are winners from competitions throughout the country.

This year's winners were selected based on an innovation's cost savings, benefits to the community or agency, ingenuity, importance and impact, time savings, and ease of transference to other agencies.

## Innovation Among Local and Tribal Agencies

Local and tribal agencies are responsible for more than three million miles of roadways and roughly 50 percent of the bridges in the United States. These transportation networks are vitally important to both the economic health of the country and the quality of life for all Americans. These agencies must use limited budgets and resources to serve the needs of their customers. Innovation can be the mission-critical factor that helps bridge that gap. Local and tribal road practitioners continually implement incremental changes in their processes, tools, and services to reflect groundbreaking technologies and best practices. In their roles as innovators, agency staff leverage their considerable creativity, technical expertise, and diverse talent pool to suggest changes that are useful, valuable, and impactful to their local system. BABM showcases the most clever and creative practices and tools from across the country. By sharing these innovations with one another, local and tribal road departments can adapt these new tools and practices, and deliver more efficient, cost-effective services to their communities.

For more information on previous Build a Better Mousetrap winners and how to participate, visit:

<https://www.fhwa.dot.gov/clas/babm/>

# BUILD A BETTER MOUSETRAP

Award Winners

## Bold Steps Award

WINNER

New Jersey Department of Transportation

## Road Diet to Preserve Old Bridge

The Route 71 Drawbridge is an historic bridge built in 1923 in New Jersey and is heavily traveled. The mechanical span lock equipment that allows the bridge to open and close safely failed in 2021 causing damage to the structural steel. The bridge is slated for replacement within the next 10 years. So, the New Jersey Department of Transportation (NJ DOT) needed a short-term solution that would keep the bridge in operation. "Our options were to either restore the bridge back to pre-failure condition, which would have involved a lot of steel work, cost millions of dollars and require the bridge to be closed for extended periods of time or close the bridge entirely," says Gerald Oliveto, P.E., Supervising Engineer in Operations Support for NJDOT.

However, there was another alternative solution that would provide a much faster and less expensive response to the issue. The NJ DOT decided to implement a road diet, which meant reducing the roadway to one-lane in each direction, moving the balance of traffic away from the damaged center-section of the bridge. "Initially we had extreme opposition from the local townships. They were not happy hearing about the lanes being reduced. They were worried about heavier congestion, and they just didn't understand how this works," says Gerald. "We (NJ DOT) developed an outreach campaign to help them better understand why this was needed and how the community would benefit."

Implementing the road diet project took one month and only cost the state \$150,000. Additionally, residents saw improved signal timings, extended bike lanes, and high visibility crosswalks. "In the end it was a huge safety improvement. We took what could have been a negative with this bridge and turned it into a positive," says Gerald. "The innovative solution has exceeded expectations as traffic is no longer an issue with the bridge. We knew people were going to use the new bike lanes and crosswalks but not to the extent that we've seen."

The New Jersey DOT is looking to implement the road diet with some other draw bridges. Gerald's advice to other agencies is if you are pretty sure it is going to work, you will have to work through the obstacles. "Push through and you'll have a positive outcome. This project was a homerun. The coordination among the DOT was better than anything I've seen. Everyone did their part."

Congratulations to the New Jersey Department of Transportation as the Bold Steps Award Winner for the Route 71 over Shark River Road Diet project. The Bold Steps Award recognizes any locally relevant high-risk project or process showing a break-through solution with demonstrated high reward.

# Bold Steps Award Winner Road Diet to Preserve Old Bridge



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## Fast Facts

- Roadway reduced to one-lane in each direction to move traffic flow away from damaged areas of the bridge
- Work completed in phases over one month
- Solution saved millions
- The Solution also enhanced bicycle, pedestrian, and motorist safety along the bridge and roadway.

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# BUILD A BETTER MOUSETRAP

Award Winners

## Innovative Project Award

WINNER

Confederated Tribes and Bands of the Yakama Nation

## Mobile Unit Sensing Traffic (MUST) Device

The Confederated Tribes and Bands of the Yakama Nation is one of the federally recognized tribes in Washington state. Within the Yakama Nation reservation, there are approximately 1,200 miles of public roads. Most of the roads are in rural agricultural settings and crashes happen every day on these roadways. Of the land governed by Tribal Governments, Yakama Nation has both the highest number of pedestrian and vehicle fatality rates in Washington State. Yakama Nation Department of Natural Resources (DNR) Engineering program has been deeply concerned by these crashes and high fatality rates and determined to work on solutions addressing the safety issues and reduce and eliminate serious injuries and fatal accidents. One of the significant challenges faced by Tribal and rural communities is the lack of real-time traffic and safety data, particularly on low-volume rural roads. This data scarcity hinders effective planning and decision-making processes. Moreover, when applying for grants or funding opportunities, the absence of comprehensive data undermines the credibility of their proposals and reduces the chances of securing financial support. Hollyanna Littlebull, Assistant Director of the Northwest Tribal Technical Assistance Program says, "Everything was outdated. The data was like five years or older. We knew that the trending issues did not accurately reflect the data that we had."

Hollyanna was working on a data portal project when she came across the Mobile Unit Sensing Traffic (MUST) device during a visit to the University of Washington Star Lab. "When I saw the sensor, I immediately knew this was the solution," she said. She found two funders for the sensor and the Yakama Power Company donated manpower and a bucket truck for install.

The Mobile Unit for Sensing Traffic (MUST) device was customized specifically for use along Tribal and rural roads with limited infrastructure support, including limited internet connectivity. The device is equipped with camera, environment sensor, computing, and communication capabilities. It is ideal for monitoring traffic, detecting dangerous events, and providing real-time warning messages to road users. Hollyanna says, "I worked with the Star lab to program the device to differentiate between farm vehicles, freight vehicles, horseback riders. The device was also programmed to differentiate between fog and smoke.

The programming required me to ride around and take a lot of pictures for the sensor. It was a lot of work but once the project started rolling, it went really fast." A key advantage of the device is the computing capabilities that allows it to operate individually without infrastructure support, which helps in areas without reliable internet connectivity. The device can also individually perform data processing and analysis functions without the use of servers or cloud platforms, thus securing the data. "The device does not record faces or license plates. It only counts the vehicle itself. The cost benefit alone is invaluable. That thing is working 24 hours a day, 7 days a week and it's constantly getting data," says Hollyanna. "There's an app that you can download on your phone to see the information in real time. There is no one needed to service it. You can query any of the data like average temperature or average humidity. The amount of data we can get from this thing is amazing!"

Implementation of the device includes attaching it to a roadside pole, ranging from 20 to 30 feet in height using a bucket truck. Successful deployment of the device has yielded invaluable data that supports traffic planning efforts with efforts to expand system along the entire corridor. This project marks the beginning of a comprehensive approach to enhance transportation and infrastructure within the Tribal and rural community. "This project was truly a team effort between the University of Washington, Washington State Department of Transportation, and the private sector. Even though we were different entities, we were a real team and that's what it takes to solve problems," says Hollyanna.

Congratulations to the Confederated Tribes and Bands of the Yakama Nation for their innovative Mobile Unit Sensing Traffic (MUST) device. They are the Build a Better Mousetrap 2023 Innovative Project Award winners.

The Innovative Project Award recognizes 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 Award Winner

## Mobile Unit Sensing Traffic (MUST) Device



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### Fast Facts

- The MUST device
  - Monitor traffic
  - Detect dangerous events
  - and provide real-time warning messages to rural road users
- Specifically designed for use along rural roads with limited infrastructure support, including limited internet connectivity.
- Safety data supports traffic planning efforts
- Comprehensive approach to enhance transportation and infrastructure within the Tribal and rural community.

#### **HollyAnna DeCoteau Littlebull**

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# BUILD A BETTER MOUSETRAP

Award Winners

## Pioneer Award

WINNER

City of Walnut Creek, CA

### Safe Sightings of Signs and Signals (SSOSS) Software

Traffic signals are crucial to helping drivers properly and safely navigate the roadway system. They provide visual cues for when to stop, go, yield, giving the driver sufficient time to make informed decisions. When these traffic signals are obstructed in anyway, this can create major safety hazards for everyone on the roadway including pedestrians and cyclists. The City of Walnut Creek in California would often conduct regular inspections to ensure their traffic signals are clearly visible to drivers, but this process was often labor intensive and involved trained personnel to verify visibility for traffic signal lights. City officials wanted to improve the process to be safer for the workers and more proactive.

Their solution was the Safe Sightings of Signs and Signals (SSOSS) Software. The innovation added an automated process to assessing traffic signal visibility using readily available, off-the-shelf hardware components such as a cell phone with built-in camera and lots of storage, GPS receiver, a cell phone mount for windshield, and a laptop computer. After setting up smartphone on vehicle dash to record GPS points and video, the vehicle is driven through as many intersection approaches as desired, ensuring data is being recorded the entire time. Once the route is completed, the collected data/video is transferred to a computer and processed using the SSOSS program to save images of each of the driven intersection approaches. Matt Redmond, Associate Transportation Engineer with the City of Walnut Creek says, "I was very surprised at the accuracy of the data. It (the SSOSS) just gives you clear insight about whether a signal is blocked or not. With this software-based system, all of our agency's intersection, about 350 approaches, can be checked for sight distance in a single day without anyone getting out of their car.

Moreover, this solution has promoted a proactive approach to ensure traffic signals are visible to drivers, rather than a reactive approach that may leave traffic signals obstructed for longer than necessary."

The innovative solution has resulted in significant time-savings and increased productivity for the city's staff. According to Matt, conducting sight distance checks could take 15 to 45 minutes per intersection, depending on location, which includes parking and measuring the required sight distance for each of the four approaches. "Implementing the software-based system required a lot of driving and recording data, but once you have the information, you don't have to do it again," says Matt. "There were so many times, I didn't think I could do it. It required me to learn to program and then I had to keep wracking my brain about how to get this angle or that angle."

Matt's advice to anyone on using innovative solutions is three-fold, 1) Innovation takes time and that this was not an overnight solution. 2) Explore the potential for an innovation by asking the questions, "what if we could do this" or "what if this is a possibility". And 3) Collaboration is important, "I spent a lot of time talking to other professionals about this innovation, making sure the solution makes sense to them," says Matt.

Congratulations to the City of Walnut Creek, CA for the innovative SSOSS software-based system. They are the Build a Better Mousetrap 2023 Pioneer Award Winner.

# Pioneer Award Winner

## Safe Sightings of Signs and Signals (SSOSS) Software



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### Fast Facts

- An automated process for identifying and addressing obstructed traffic signals
- Used off the shelf equipment (cell phone, laptop) and a \$25 phone mount
- Required lots of driving to gather initial data
- Proactive approach to safety compliance
- Saves time and Increases accuracy
- Significantly reduces the risk of error and danger

#### **Matt Redmond**

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# BUILD A BETTER MOUSETRAP

Award Winners

## Smart Transformation Award

WINNER

St. Louis County, MN Public Works Department

## Solar-powered Remote Cameras

The St. Louis County, Minnesota Public Works Department is responsible for maintenance and snow removal of approximately 3,000 miles of roads. Road conditions can vary greatly at any given time during winter storms. The agency needed more accurate and immediate access to information to assist with emergency response. Traditional methods for gathering this information can be too expensive for a county budget. “We looked at numerous game cameras costing anywhere from \$25,000 to \$100,000 per station. Budgetarily, these cameras did not meet our needs,” says, St Louis County Deputy Public Works Director in Maintenance Operations, Brian Boder. He says their task was to find a game camera with an on-demand trigger. Game cameras are rugged and weatherproof and can be activated to record based on movement.

The St. Louis County Public Works Department’s solution was implementation of inexpensive solar powered remote cameras. They include a user-friendly operating system capable of capturing still images day and night and can provide short video clips. The cameras are battery operated but the County chose the solar panel option with a rechargeable internal battery that would require less maintenance. According to Brian, “The game cameras have exceeded expectations in how they function. The most difficult part was finding the proper locations or infrastructure to mount the cameras. Some places had low light areas.” Initially, there was a concern that the solar cameras may not function well in pretty remote areas of the county, but that proved to not be the case.

St. Louis County purchased 51 game camera units at \$374 per unit. Total cost to implement was \$27,612. Brian says the camera system has the potential to assist any agency or municipality with the decision-making process regarding level of response and deployment timing to winter storm events. Aside from purchasing the equipment, an agency must be able to identify areas where weather conditions seem to change frequently, remote locations that are difficult to access, existing infrastructure for camera mounting and the ability to access it in a timely manner and identify any new infrastructure necessary to accommodate camera placements.

Brian’s advice to other agencies, “You never learn anything from the status quo. Fortunately, for St. Louis County, we have a group of individuals who are continuously thinking outside the box and willing to try something new.”

Congratulations to the St. Louis County Public Works Department in Minnesota for your innovative solution to install solar-powered remote cameras for improving emergency response. They are the Build a Better Mouse-trap 2023 Smart Transformation Award Winner.

The Smart Transformation Award recognizes 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.

# Smart Transformation Award Winner

## St. Louis County, MN Public Works Department



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### Fast Facts

- Features rechargeable internal battery that decreases service intervals and improve cold weather performance
- Compatible with virtually any cellular network
- Can be remotely operated to assist with gathering current conditions
- Access to instant information

#### **Brian D. Boder P.E.**

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## HONORABLE MENTIONS 2023



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City of Bloomington, MN  
Bold Steps Award

### Sidewalk Snow Blower Castors

The City of Bloomington, Minnesota spent a lot of time and money replacing snow blower shoes during winter storm maintenance projects. Additionally, the snow blower operators had issues with the constant grating noise from the shoes and there would be injuries from the snow blower coming to a sudden stop after getting caught on concrete slabs that may have shifted up from ground moisture caused by wintry wet weather.

The City of Bloomington's innovative solution was to create castors that will eliminate the shoe wear, are quieter for operators, and no longer can catch on the sidewalk concrete slabs. The City tried a few different wheels before finding a style and material that worked well. The design took 15 hours to complete. The City says the Castors saved time and money and created safer work environments for the snow blower operators.

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Washington County, NY  
Bold Steps Award

### Easier Clean-up with Guiderail Grader

Washington County, New York had an issue with Gravel build-up alongside the highway shoulders' guiderails that causes surface water to accumulate in the travel lanes, creating unsafe conditions for drivers and their passengers.

The County's solution was to build from scratch a guide rail grader that can easily fit between the guiderail posts to clear away excess buildup of gravel and sod. The grader was made with multiple blades and features an angled blade to cut the shoulders first and then push materials away from under the guide rails. Cost to build the innovation was \$1200. Benefits include a faster and more efficient way to clear away the build-up, increased safety for road users and work crews, and increased longevity of the pavement. The County says a bonus benefit is that at least one lane of the highway can remain open during the maintenance.

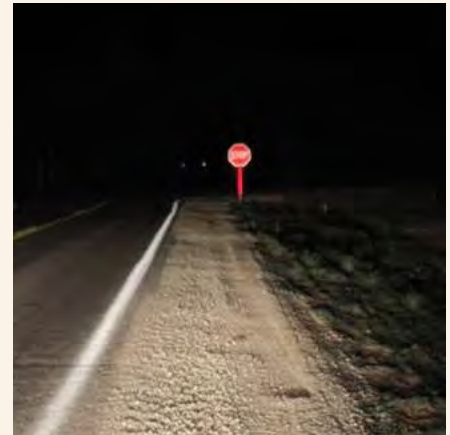
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## Saline County, KS Bold Steps Award

### Stop Sign and Advance Warning Enhancements

In Saline County, Kansas, reducing high speed collisions at rural intersections was a challenge. Since a disproportionate number of crashes occurred during hours of darkness, the county's goal was to enhance the visibility of both stop signs and stop ahead warning signs.

The County's solution was to increase the size of stop signs, along with adding a red retroreflective vertical strip and a yellow reflective strip on each stop sign post at various intersections. Some signs were replaced immediately, and additional signs will be replaced over the next 10 years. The cost of each sign is approximate \$72 per sign. These modifications are expected to lead to a reduction in intersection crashes for rural areas in the county.



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### Jon Bigness

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## Illinois Tollway, IL Bold Steps Award

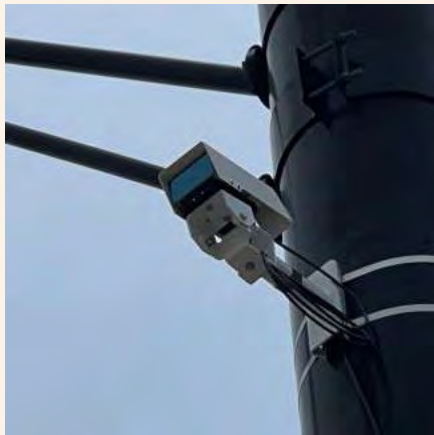
### Go the Extra Mile for Safety Award

The Illinois Tollway wants to ensure that safety is a top priority not just for their customers but also their workers in the Road Maintenance Department. Their challenge/goal was to strengthen their internal culture of safety among the staff.

The Illinois Tollway created the "Go the Extra Mile Safety Award" to positively reward safe behavior and strengthen the culture of safety at its maintenance facilities among staff members. The name of the award was selected based on ideas submitted by Illinois Tollway employees to give them ownership over the project. To support this effort, the Illinois Tollway also created a series of videos, called "Protect your Assets", which featured the employees who demonstrated the safest ways to avoid injuries on the job. As a result of the program, the Illinois Tollway saw a reduction in the number of workers compensation claims. The workers conducted more than 100 'Tool-box Safety Talks' activities and for the first time ever, the Tollway saw at least three facilities go without a single injury in one year.

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City of Arlington, TX  
Bold Steps Award



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## Equitable Street Solutions for Pedestrians and Bicyclists

The City of Arlington is a large city without a regular public transit system, leaving many residents to walk or bike for transportation. Therefore, the City of Arlington is looking towards technology to upgrade its roadways while improving safety and equity for residents. The goal is to combat the city's high rate of pedestrian fatalities at roadway intersections.

The City implemented a groundbreaking LiDAR-based system at intersections, which offers several advantages over traditional radar and video sensors. The LiDAR system features superior performance detection in dark and foggy conditions; strong perception of slow and stationary objects; and high quality, future proof raw data that ensures flexibility in more challenging environments. With this innovative solution, the City of Arlington aims to improve safety for pedestrians and bicyclists, reduce traffic control delays, and improve the use of data collected to better identify potential crashes under certain conditions.

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Rolette County Highway Department, ND  
Bold Steps Award

## Hydraulic Side Disc Improves Safety

Rolette County, North Dakota experienced difficulty clearing gravel and vegetation build-up along the road shoulders and ditches. The gravel would shift from the roadway to the side of the road causing a safety hazard for drivers when it would rain due to a lack of rock. The County needed an easier way to move the gravel and vegetation back onto the roadway without leaving clumps, which is another safety issue for drivers.

To mitigate, the County designed and built a hydraulic side disc. It can cut and chop down the vegetation so that material pulled back onto the roadway has fewer clumps. And, the disc works faster using less time to layout the retrieved gravel back onto the roadway. The innovative solution saves time, money and improves safety for the hundreds of vehicles that travels the gravel roads daily.

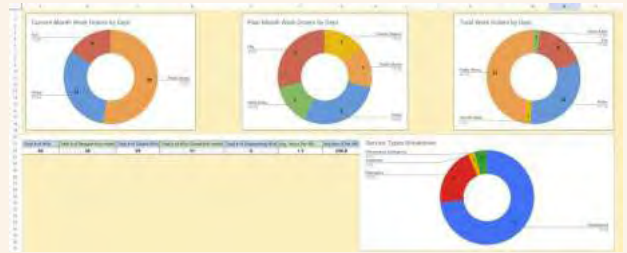
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Bedford, NH  
Bold Steps Award

### Vehicle Work Order System

The Bedford’s Department of Public Works (DPW) is responsible for maintaining all government department vehicles and equipment information, including recordkeeping. Their tracking service methods consist of paper documents, various informal communication and vehicle ID data information. This method makes work history records nearly impossible to keep current. Without a digital tracking system there is no simple way to analyze any data that was kept.

The Bedford team utilized the Chat Generative Pre-Trained Transformer (ChatGPT) Artificial Intelligence (AI) platform to develop a work order system at no cost to the organization. By utilizing this cutting-edge technology, the Bedford DPW implemented better data management practices; applied scripted automation; and created a more robust system, including improving its call log system for the vehicle work order system.



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Lee County Transit, FL  
Bold Steps Award

### LeeTran Bonita Springs Ultra Mobility on Demand (MOD) Service

Lee County, Florida is a sprawling community with many low-income residents and retirees, however there is a lack of convenient transportation options. Many either do not own a vehicle or for the ones that do, have difficulty locating parking. This causes difficulty to travel to their destinations.

Through collaboration between Lee County Transit (LeeTran) and the City of Bonita Springs City, the Mobility-on-Demand (MOD) service pilot was created to provide an on-demand, shared-ride service, available to the public known as the Ultra On-Demand Service.

Since launch of the innovation, ridership has increased by 84% since November 2022 and by 50% overall. Residents have an easier and safer access to maneuver to their various destinations.

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## HONORABLE MENTIONS 2023



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## Redwood County Highway Department, MN Innovative Project Award

### Road Widener Improvements, Redwood County Highway

The Redwood County Highway Department in Minnesota needs upgrades to its roadway equipment that tackle road shoulder maintenance to fix drop offs and correct pavement edges. The equipment used was heavy for the user and broke down frequently due its age.

The County solved the issue by modifying the road widening machine by attaching a motor grader or skid loader to it. The modifications were created in the County's welding shop and as a result, improved road shoulder maintenance operations. This innovation saved time when conducting shoulder maintenance for drivers' safety when they have to pull off of the road.

#### **Anthony Sellner**

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## Village of Cleveland DPW, NY Innovative Project Award

### A Better Mousetrap

The Village of Cleveland's Department of Public Works (DPW) in New York, experienced some unwelcomed guests (i.e. mice) at its facility, which can cause unsafe and unsanitary conditions for its workers and visitors.

The DPW designed a newer version of a mousetrap that consist of using a five-gallon bucket, 2x4, doll, empty water bottle and peanut butter, all items currently in their shop. The mousetrap current keeps the shop clean and free from mice. The cost to implement this innovation was between \$5 and \$10.



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#### **Tyler Rice**

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SC DOT  
 Innovative Project Award  
 Value of Communicating Research  
 Through Multi-Media

In the past prior to video usage, the South Carolina Department of Transportation (SC DOT) relied on over 100 research report pages to provide the overview of its projects, which were lengthy to produce and time-consuming, leaving little room for project details or visuals.

In collaboration with the Local Technical Assistance Program (LTAP), along with a contractor, SC DOT created five-minute videos of its various projects, including testimonies. The video creation was at least a two-year project and the cost to develop these videos was \$3,000. The videos are currently available on YouTube for others to view. The solution of this innovation provided a shorter overview of SC DOT projects include more details to present to other organizations.



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City of New Haven, IN  
 Innovative Project Award  
 Trainfo© Project

The City of New Haven's railroad crossings are at street level, which means that there are no tunnels or bridges that would allow traffic to be re-routed when these crossings are blocked. This causes significant delays, traffic congestion, and increased response time for public safety.

The City partnered with Trainfo©, a transportation system company, to implement a sensor and communication system that collects and shares information regarding the movement of trains. They installed sensors and a message board near the train tracks, allowing access to the tracking portal remotely, which can be integrated with their dispatch system. This new system will support public safety among train and vehicle users.

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## HONORABLE MENTIONS 2023



© 2023 Warwick Township Lancaster County, PA

## Warwick Township, Lancaster County, PA Innovative Project Award Tar Kettle turned Hydroseeder Project

The Warwick Township in Pennsylvania maintains over 89 miles of roadway, 80 acres of parkland, and five miles of trails. The township schedules annual road improvement and park maintenance projects to ensure residents and park visitors' safety. Historically, the Township would seed and straw these areas by hand requiring an inordinate amount of time away from other projects and intensive labor by workers. A more efficient process is needed for restoration, seeding and reseeding post township paving projects.

Warwick Township considered retrofitting an existing equipment that could be used to construct a hydroseeder instead of purchasing a new, costly one. The township public work employees converted its 1995 Crafcoc® EZ Pour 100 Crack Sealing machine to a commercial hydroseeder.

This piece of equipment provides a much more efficient and reliable restoration process than the previous hand seeding and spreading hay method. Now, the township can simply drive and spray the seed as needed. The cost to restore this equipment was approximately \$1500. The Township saved money and time by using an existing machine in their shop and converting it into the needed hydroseeder, that made the process more efficient than seeding and spreading hay by hand.

### Brian Harris

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## Benson County Highway Department, ND Innovative Project Award

### Push all Dozer – enhanced

The Benson County Highway Department in North Dakota uses snowdrifts and v-plows for snow removal. When the snowdrifts experience snowfall and high winds, the maintainer front wheels can compact the snow leaving extra snow on the road. The v-plow is a big and clumsy device that increases snow fog and difficulty seeing the road. Both of these devices can cause hazardous conditions for the workers and vehicles users.

Also, the County uses a dozer for gravel and sand stockpiling, and dirt and tree removal. The County uses multiple devices to remove various items that makes this task time-consuming and in some cases, dangerous to use, depending on the environmental conditions.

The County designed and built the 'push-all' dozer. This innovation, originally built in 1996, was enhanced by adding quick attach hooks so it can be easily attached and used on many of the road department's maintainers. This innovation has multiple purposes including stockpiling gravel, removing trees in ditches, moving dirt piles, and rock and snow removal. As a result, fewer motorized vehicles are needed to conduct various road maintenance projects, which saves time in conducting removal tasks. The total cost to develop this equipment, including labor, is \$1,760.



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### Lester Elingson

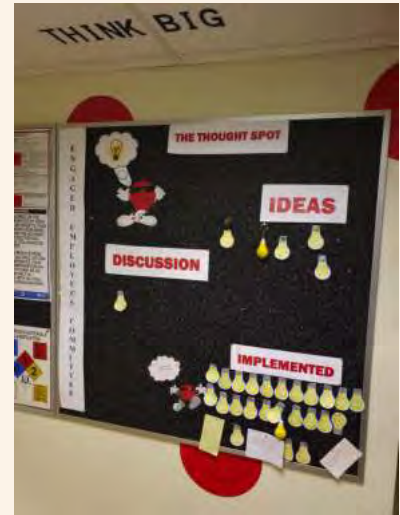
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Arapahoe County, CO  
Innovative Project Award

The Thought Spot-Operational Efficiency

Arapahoe County, Colorado had a backlog of road repairs due to budget constraints. The County decided to get employees involved and engaged to provide solutions for this issue. However, it was difficult to get employees engaged in generating solutions for budget restraints that were beyond their control. The first attempt in this tasks was unsuccessful as the first set of ideas were costly and only benefitted the employee.

The County defined the goal and innovation by executing an idea and requested a solution that benefits both the company and customer. They created a "Thought Spot", which is a pre-existing cork board where employees can present innovative solutions to solve road maintenance problems. This new process increased employee engagement by 61% and produced innovative ideas including the Smashed culvert repair program and Wide crack repair, saved significant costs in their respective processes each year. The total cost for this innovation is \$50.



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Des Moines County, IA  
Innovative Project Award

The Culvert Inspector

Des Moines County in Iowa, uses cross drain culverts that carry ditchwater from one side of the road other another in intervals. The County wants a safe way to inspect the inside of the culverts for pipe issues as it is too small for a person to inspect it. They attached a small camera to a cord for small diameter pipes to inspect the culverts. However, the camera would fall into the water when using larger pipes and had difficulty seeing through the pipe. Due to this issue, a solution is needed to better maneuver the camera.

The innovation was a remote-controlled car with a Go-Pro camera that can stand up to water and easily attach a camera. The County purchased a remote-controlled car and attached the camera, along with a flashlight to test run the process. The Go-Pro camera which links to the app to successfully see and steer the car while in the pipe. Zip ties were added to keep the camera in place and duct tape for the flashlight. The innovation was a success, and the County is able to view a pipe leak and instead of replacing an entire pipe, just the bad connection that can easily be fixed, saving the County time and money. The total cost of the innovation including materials and labor was \$510.

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## HONORABLE MENTIONS 2023



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## Buchanan County Secondary Roads Dept, IA Innovative Project Award Excavator Snow Plow

The Buchanan County Secondary Roads Department in Iowa is responsible for removing snow from the roadways to keep travelers safe during wintry weather conditions. The County sold their OshKosh truck with a Snow Go Blower, and needed a solution for snow removal as the snow blower used didn't push the snow as far back as needed in extreme conditions.

The County repurposed an old truck plow from the salvage metal storage in the shop. This innovation allows the County to efficiently conduct maintenance projects in the summer and adapt to snow removal in the winter. The innovation saved time and money as more efficient equipment is used to remove snow that the snowblower could not, and the County salvaged materials in the shop.

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## Road Commission of Kalamazoo County, MI Innovative Project Award Dual Broom Tracker

Broom tractors are used for chip seal operations, sweeping intersections, and for clearing vehicle accident debris and material spillage from the roadways. The Road of Kalamazoo County (RCKC) was looking for a more efficient way to carry out Broom Operations. The speed range gaps only operate as a standard transmission with minimum power shift options within each gear, making it difficult to operate. If the speed of the broom rotation and tractor speed do not match, debris placement is difficult to control.

After researching a range of various tractors, RCKC purchased a tractor and developed modifications to make the tractor better fit their needs. They installed two rotary power brooms to the front of the tractor with a hitch that includes a sliding arm for width adjustment. A water system was added to minimize dust while sweeping as well. The "Dual" broom tracker system accomplishes the work of two units with one tractor and operator. This innovation saves time as it allows RCKC to perform operations more efficiently. The RCKC also shared the project with interested agencies, including a showcase at the County Road Association of Michigan Highway Conference and Road Show.

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AZ DOT  
Innovative Project Award

Portable and Removable Traffic Control Trailer Module

Prior to traffic control trailer modules being created, a contractor or unit staff had to load and off load traffic devices each time a road closure was needed or requested. The barricades, light and signs were all in separate locations. Once the traffic control trailer module was designed, various electrical equipment, including power, control box switches, and lights, inside the work area was needed to function properly, as well as a mounting system to secure the module to the trailer.



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The Arizona DOT's innovation was a Traffic Control Trailer Module, an all-in-one removable unit. All items can stay on the trailer when being moved, and the module can be removed if the trailer is needed to haul equipment. The traffic control trailer is versatile, allowing it to be utilized for many closures. The barricades can be picked up quicker so traffic can return to normal operations, thus reducing the possibility of secondary accidents. This innovation improves safety, time, and money.

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City of Nampa, ID  
Innovative Project Award  
Name that Snowplow

The City of Nampa in Idaho wanted to engage with its citizens to improve the city's pretreatment and response to winter weather events, keeping the community informed of weather events, keeping them healthy and safe.

The City created a "Name That Snowplow" competition where elementary school students can name six snowplows. A list of suggested names were given to each grade level and classrooms voted on their favorite. A total of 85 classrooms participated. Also, the City provided a resource for citizens to track the location of the named snowplows. Residents are able track the daily progress and routes on an interactive map created by the City's GIS staff. The GPS allow staff and citizens to see which plows were active and where they plowed, facilitating transparency while engaging with our citizens. The City received public positive feedback and their story was placed in multiple publications and received national interest of the program design.

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HONORABLE MENTIONS 2023



© 2023 Portsmouth, NH Dept of Public Works

Portsmouth Department of Public Works, NH  
Innovative Project Award

Bike Sharrow Installation Tool

The Portsmouth Department of Public Works in New Hampshire needed a better process for using pre-formed thermoplastic bike sharrow symbols, a bike and arrow combination also known as a shared lane marking, for pavement maintenance. The materials are placed in separate boxes in multiple pieces to assemble. When using the equipment, multiple workers would blow the pavement with a leaf blower, heat the pavement, assemble the sharrow, and finally melt the preform into the pavement. Due to lack of training, the team had difficulty sorting the pieces into the correct spot while the pavement was heated to the correct temperatures.

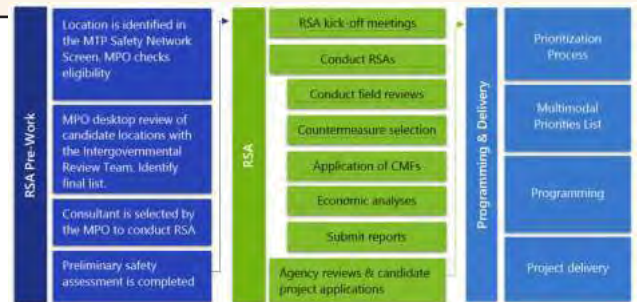
The team printed the bike sharrow on their 54" latex Hewlett Packard® (HP) 365 sign printer using white vinyl, and applied it to a thicker piece of plastic sheeting currently in the shop. The bike sharrow was laminated for durability and alleviated friction. The new process allows one team member to align it on the printout while other team member prep the pavement, and then slides the template into place, with minor adjustments. This new method saves time and cost as the materials used were already in-house and it takes half the time to complete the task with fewer workers. The community benefit is that bicyclists will be able to utilize the bike lane quicker with the bike sharrow symbols placed.

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Broward MPO, FL  
Innovative Project Award  
Off-System Safety Program

Broward County has some of the highest pedestrian fatality rates in South Florida due to street design and making safety a priority. The County's solution is to collaborate with FHWA and FL DOT to create their own safety program.

The County developed a new process to identify, analyze, and prioritize off-system projects throughout the jurisdiction. The innovation is to modify the Road Safety Audit (RSA) process for high crash, off-system locations identified through the County's Metropolitan Transportation Plan. Under this plan, at least two RSAs will be developed per year with project development, engineering, and construction taking place in a subsequent five-to-six year project implementation cycle. Smaller safety projects may be designed and implemented quickly in the RSAs by municipalities taking the lead. The methodology helps Broward MPO make efficient use of funds and results in a plan to utilize available funding for construction of safety projects. Although this project is in its early phase, the County anticipates a decline in injuries and fatalities. Also, the County will do traffic safety studies and projects for municipalities, reducing cost and labor for these cities.



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Port of Long Beach, CA  
Innovative Project Award

### Connecting Kids to a Promising Future: The Academy of Global Logistics

The Port of Long Beach want to broaden community access to Port-related opportunities and economic benefits, especially attracting, developing and retaining a diverse, high-performing workforce for international trade, global logistics and related industries for high school students.

The Port partnered with the Long Beach Unified School District (LBUSD) to launch a four-year high school pathway called the Academy of Global Logistics (AGL) at a local high school. The school was selected because of its close proximity to the Port. The Academy provides real-world and experiential learning opportunities relevant to daily life. The program inspires and motivates students to learn and offers a concrete path to a brighter future. So far, 91% of students who enter the Academy in ninth grade stay with the pathway all four years.



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Port of Long Beach, CA  
Innovative Project Award

### No Bridge too Far: The Mark Bixby Memorial Bicycle-Pedestrian Path

The local community wanted expanded bicycle and pedestrian access to the Port of Long Beach. When the Port announced plans, in circa 2010, to replace the Gerald Desmond Bridge with a new structure, community members pursued to include a bicycle path. The Port’s challenge was to provide a safe connection for cyclists and pedestrians from Long Beach’s existing bike paths and pedestrian areas in downtown Long Beach to the bike path at the southern edge of the bridge.

Developing the new bridge, bicycle-pedestrian path and connector, included collaboration with local, state and federal agencies, elected officials, environmental groups, Port customers, and other stakeholders – but especially the Port community. The new bridge was completed first while the bicycle-pedestrian connector was under construction. In May 2023, the Port opened a one and a half (1.5) mile Mark Bixby Memorial Bicycle-Pedestrian Path and Ocean Blvd. Connector (named after a Long Beach bicyclist advocate). The first project was providing public access to the working Port with the connected bike/walk paths while allowing Long Beach residents and visitors to safely observe the nation’s largest seaport complex.

The second project, bicyclists and pedestrians can observe panoramas of downtown Long Beach and Catalina Island from three observation platforms 200 feet above the water and learn the Port’s history from multiple informational signs posted at the outlook points. This innovation provides non-vehicle commuters a safe, clean and pleasant pathway to the Port and other nearby trails for the community and visitors alike.

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## HONORABLE MENTIONS 2023

City of Moreno Valley, CA  
Innovative Project Award

### SR-60/Moreno Beach Drive Interchange Construction



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The City of Moreno Valley, with a population of 210,000, has seen rapid population growth within the last ten years, and struggles to upgrade its infrastructure. One of its important transportation improvement projects is the reconstruction of the State Route 60 (SR-60)/Moreno Beach Drive Interchange to enhance safety, reduce traffic congestion, and provide multi-modal transportation mobility for the future build-out of the city.

The objective of the innovative solution is to use low-cost technology, specifically live cameras and drones, to capture live construction activities throughout the life of the project. The images and videos will be used to educate the community on construction processes, as well as safety and traffic control obedience; monitor construction activities for safety issues and quality control and workmanship compliance; and increase awareness of engineering and construction management to acquire skilled workers

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### Otter Tail Highway Department, MN Pioneer Award

#### Extendable Culvert Cleaner

The Otter Tail Highway Department in Minnesota searched to find a way to clean the end of culverts without physically going inside of them because they are confined spaces.

The County developed the Grapple & Expanding Culvert Cleaner, an extendable culvert cleaner with attachments, that were available in-house. This innovation improves maintenance and helps with placement of riprap alongside culverts where water swirls and erodes the dirt. It also helps with tree removal during storms. This innovation saves time to remove the trees, debris, and other items easily and keeps the workers safe from injury.



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## Town of Riverhead Highway Department, NY Pioneer Award

### Riverhead Highway Arch

Salt trucks must be thoroughly washed to prevent rotting and breaking of the equipment. It is extremely unsafe for workers to stand on top of the sander and wash the equipment in freezing temperatures.

The Riverhead Highway Department constructed a strong arch to safely stand above any piece of equipment. This innovation enables every area of the equipment to be cleaned, better and safely. The innovation increases safety for the workers as they no longer have to climb the trucks in the freezing temperatures to clean them. They clean their salt trucks/sand hoppers to prevent rot and breakdowns, which allows the equipment's longevity.

The cost to implement this innovation saves time, money and the community benefits from trucks availability to service the community, making the roads safer during wintry weather.



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© 2023 Town of Rutland Highway Dept., NY

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## Town of Rutland Highway Dept, NY Pioneer Award

### Cold Patch Application

For Cold Patch Applications, the workers placed cold patch in the back of a dump truck and then climbed the truck to open the lift, which is hazardous for workers and released excess material roadway spillage.

The Rutland Highway Department's innovation involved leaving a sander in the back of the truck and remove the spinner to assist with only dropping material that is needed, and eliminates the need to climb the truck. Also, the conveyor chain helps against rusting of the chain, paddles and bed plate, expanding the life of the equipment. This innovation increases safety for the workers. The community benefit is that road users will not run into excess material that can spill on the road causing hazardous conditions.

## HONORABLE MENTIONS 2023



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### Washington County, NY Pioneer Award Guiderail Grader

Washington County, New York had an issue with Gravel build-up alongside the highway shoulders' guiderails that causes surface water to accumulate in the travel lanes, creating unsafe conditions for drivers and their passengers.

The County's solution was to build from scratch a guide rail grader that can easily fit between the guiderail posts to clear away excess buildup of gravel and sod. The grader was made with multiple blades and features an angled blade to cut the shoulders first and then push materials away from under the guide rails. Cost to build the innovation was \$1200. Benefits include a faster and more efficient way to clear away the build-up, increased safety for road users and work crews, and increased longevity of the pavement. The County says a bonus benefit is that at least one lane of the highway can remain open during the maintenance.

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### Stark County Highway Department, ND Pioneer Award

### Cutting Edge Carrier

The Stark County Highway Department in North Dakota operates motor graders to blade gravel roads which has various grade raises. Since there are various grade raises, the cutting edges on the grader wears out and needs to be replaced. Sometimes the motor grader would be 25-30 miles from the shop when the cutting edges are needed, which causes the operator to either drive at a very slow speed to retrieve the new cutting edges at the shop or a tool truck must haul them in. The height of the bed on the tool truck made it a challenge to load cutting edges. Also, there was no way to secure the cutting edges in the tool truck once loaded for transport except to slide them under the toolbox.

The County developed two cutting edge carriers and receiver tubs to secure the cutting edges on the tool truck during transport. Each carrier is designed with a bracket and a couple of holes that slides into the receiver tubs and is pinned to secure it while another hole and pin holds the cutting edge in place.

This innovation has increased efficiency and safety for the workers and presents a savings in time and money. The total cost of the innovation was \$250.



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## Lee County Highway Department, IL Pioneer Award

### Concrete Slab Bridge Deck Drain Insert

In the 1950s and 1960s, the deteriorating of concrete slab bridges were a very common issue. The Lee County Highway Department in Illinois searched for ways to slow the deterioration and extend the life of the bridges.

The County determined that the best solution to this problem was to build drain inserts for the bridges. The County fabricated the inserts by choosing 4 X 4 PVC post sleeves to build the drains so they would not rust. The post sleeves were then cut lengthwise and riveted together to fit the width of the deck drains.

The inserts were installed prior to pouring the new micro silica bridge deck wearing surface which sealed the top of the gaps between the insert and the drain sides. The micro silica was then shaped to direct runoff to flow into the inserts. The County suggested extending the sides higher for poured overlays to help hold the concrete in place. This option has been added to the insert detail drawing for future projects.

This innovation saves time and money as the insert with made in-house. The community benefits from the extended life of the bridge doesn't need to be replaced in the near future.



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## London Grove Township, Chester County, PA Pioneer Award

### Inlet Replacement Tools

The London Grove Township in Chester County, Pennsylvania discovered a significant number of inlet (an opening in a storm drain used to collect stormwater runoff) top and riser failures in 20–30 year old developments. The county needed to find a safe and cost-effective method and limit repairs beyond what was necessary and outside of the traditional process.

The County developed a lifting mechanism that can safely lift the inlet from the inside. The innovation allows the inlet to rotate during the install and keep the inlet level. This innovation resulted in significant cost savings in both material and labor. The lift resulted in a safer solution for inlet top installation and led to less disruptions to vehicle and pedestrian traffic. The total cost for the innovation was under \$200.

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## HONORABLE MENTIONS 2023



© 2023 Delaware Township, Pike County, PA

## Delaware Township, Pike County, PA Pioneer Award

### Truck Tamper Transporter

The Delaware Township in Pike County, Pennsylvania have difficulty using a backhoe to move the tamper of a truck when patching potholes with separated roads. It is not always feasible to maneuver the tamper or drag it around the area that has been patched between the two trucks, which is also time consuming.

The County used an old plow frame to hold the tamper directly behind the truck, so workers didn't have to leave the area between the two trucks. This innovation creates a safer working environment for the workers, less time wasted dragging and/or lifting a tamper, to the back of the truck, and eliminates always bring a backhoe. The cost to create the innovation was \$100, using materials already on hand in the shop.

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## Clay County Secondary Roads Department, IA Pioneer Award Barricade Weight

Clay County in Iowa worked with frozen or damaged sandbags that caused many issues including back injuries while moving them to and from the pickup bed, while filling them without waste, or finding a place to stockpile the sandbags. The County wanted to find a better solution to moving and placing the sandbags safely and without injury.

The County turned a stockpile of unusable snowpile truck tires into barricade weights, by using a Sawzall blade to cut the tires. Using these tires eliminates the need to purchase, haul or fill sandbags. This innovation saved time and money as the County used tires that were already in house and additional materials and little cost. The tire barricade weights have a 20-year shelf life and can be used repeatedly and workers will have materials that are easier to handle, less worker injury and less damage than transporting sandbags.



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Wright County, IA  
Pioneer Award

## Auger Safety Valve

Wright County needs a safer way for workers to clean out the auger (a tool with a helical part to drill holes or move loose material) area of plow trucks without the auger motor being able to turn on its own.

The County developed a safety valve that disables the hydraulic auger motor on the sander of a plow truck for the bottom tailgate to open. The innovation keeps plow truck drivers safe when working around the auger with little inconvenience. This innovation saves time and money as the cost of materials to assemble each safety valve is \$105 and it takes roughly 1-2 hours to produce, as well as improve safety for the truck drivers.



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Appanoose County Secondary Roads Dept., IA  
Pioneer Award

## Hideaway Stairs

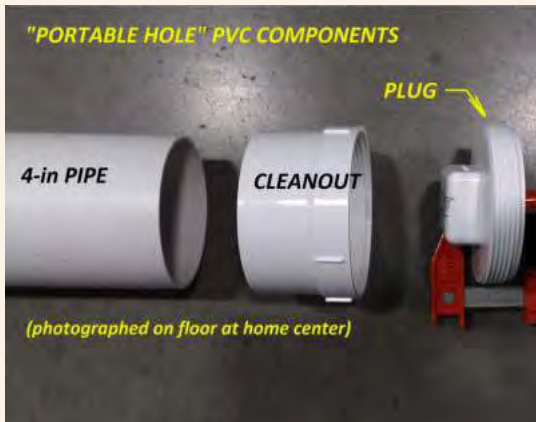
Appanoose County needed a large workbench to properly work on equipment and organize tools, as well as a safe way to fill bulk oil tanks that currently sit on an elevated platform.

The County created a hinged design on an extension of the oil platforms to lift the stairs, providing additional space for the additional workbench. The cost of the innovation is approximately \$800 and 30 hours of labor. This innovation provides efficiency and safety for the workers as it meets OSHA safety standards and provides a safe space to fill tanks.

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## HONORABLE MENTIONS 2023

City of Bristol, TN  
Pioneer Award



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## “Portable Hole” Reusable Temporary Sign Socket Assembly

The City of Bristol installs temporary signage for events at the Bristol Motor Speedway, including NASCAR visits, for proper traffic operations. Current conventional methods used for temporary sign placement for these events creates difficulty to control traffic keep pedestrians safe, as well as inconveniences adjacent property owners, Also, permanent signage is inappropriate and prone to theft, vandalism, crash or element exposure.

The City developed a "Portable Hole" using standard PVC components to eliminate tripping hazards and mowing inconveniences. The "Portable Hole" allows temporary sign installations to be deployed in compliance with MUTCD standards and decrease installation time to a few minutes, reducing labor costs and enhance traffic operations for special events. The city has over 25 portable holes installed near the Bristol Motor Speedway and estimates that these devices save approximately 14.7 hours of labor in each use cycle.

The cost of this innovation is approximately \$30, and it pays for themselves in three usage cycles.

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City of Knoxville, TN  
Pioneer Award

## “Night Vision” Traffic Signal Cabinet

Many agencies throughout the country are faced with malfunctioning equipment inside traffic signal cabinets. The many traffic signal cabinet components, complicated wiring, and typically tight arrangement of equipment inside the cabinet leads to a challenging working environment, especially during nighttime hours with less-than-ideal lighting conditions.

The City of Knoxville painted the internal traffic signal cabinets in white to create a brighter contrast with the lighting source used by technicians to increase nighttime visibility. The City also installed LED strips inside the cabinet that light up once the door is opened (Figure 2). The internally painted cabinets not only provide better lighting conditions but also help minimize the service time during troubleshooting service calls, saving city resources. Also, there was decrease in equipment malfunctioning at locations equipped with an additional fan system and the white painted cabinets. Therefore, there has been a significant reduction in internal temperatures (up to 40 degrees Fahrenheit) in locations operating with the modified cabinets, leading to further savings for the city.



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## West Point Highway District, ID Pioneer Award

### Aerosol Tack Applicator

The West Point Highway District in Idaho needed to make improvements to their standard practices for filling potholes. The current process requires a lot of equipment, time, and workers.

The District created a uniform spray gun to enhance the pothole filling process. By using a work truck- installed air-compressor several hoses were applied to clear debris, suction the uniformly apply tack to patched area, and to clean it out. The uniform spray provides a better layer of tack for the patch to bond to and less tack than the brush method.

This faster technique requires less time on the road, reducing road maintenance risk.



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## New Hampshire DOT Pioneer Award

### Plow Head Frame Stand

The New Hampshire DOT goes under the loader to manually remove and install the headgear on the plowtruck. The DOT is searching to improve methods to remove a plow truck head frame safely for their workers and effectively move it in the shop.

The DOT developed a Plow Head Frame Stand allowing removal and installation of the head frame to a plow truck using loader or backhoe forks. This innovation saves time removing and installing headgear and makes it easier to move. It also is safer for workers as there is no swinging headgear from or overhead lifting.



## HONORABLE MENTIONS 2023



© 2023 Town of Lansing Highway Department, NY

## Town of Lansing Highway Department, NY SMART Transformation Award Informational Renovation Project

The Town of Lansing is in the process of building a new highway garage and wants to inform and invite the community to learn more about their facility using multiple forms of media, meet the staff, and discuss what the highway department has to offer. The Town wants to engage with the community to inform them of their responsibilities.

The Town, with the help of Bergman Engineering, created postcard mailers to send to the community, as well as a video to illustrate the current depreciating conditions in the existing highway garage. The video discussed the importance of the new highway barn, and the roles of the Highway Department.

The cost of the mailers was \$1500, and the program created engagement opportunities with the community to inform them of the duties and responsibilities of the Town.

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## Town of Preble Highway Department, NY SMART Transformation Award Informational Card

Multiple roads from other jurisdictions run through the Town of Preble, New York. This makes it difficult for the Town to address complaints from residents about issues with those roads. The Town needed a better process for addressing the complaints even though the roads were not within their jurisdiction.

The Town created informational cards for the community that inform them of who owns what road, and who to contact if there is a problem. This helps direct the residents to the right location and it shows proactivity in the Town's effort to assist the residents with addressing their complaints.

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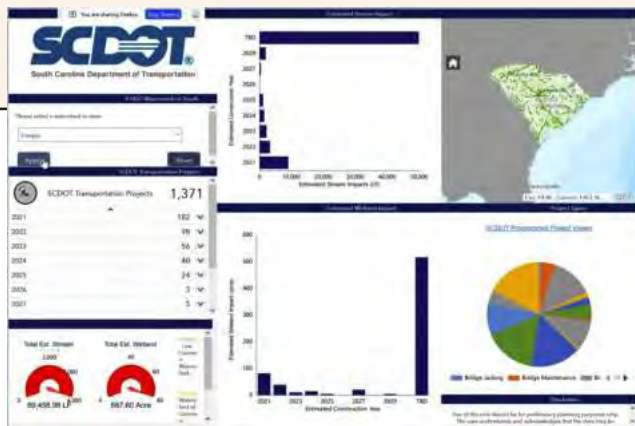
## Boone County Highway, IN SMART Transformation Award Sign Post Installation Modernization

Boone County needed a safer, more efficient way to install signs due to the initial process being labor-intensive and non-mechanized.

The County purchased an electric jackhammer for installing square signposts. This innovation is user-friendly, attached to the work truck, and has breathed life into the sign maintenance program. The cost of the innovation is estimated at \$3500.



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## South Carolina DOT SMART Transformation Award SPR 741

The South Carolina Department of Transportation’s Environmental Services Office (SCDOT’s ESO) identified three areas that have significant impact on delivering projects on time and on budget: 1) inconsistent permit application submittals that lead to delays in approval by the U.S. Army Corp of Engineers (USACE), 2) inability to identify “red flags” early in the project development process, and 3) lack of mitigation credit coverage.

SCDOT-ESO created three web applications and two web-based smart forms. The apps were produced as part of a research project. The innovation improves time and increases productivity by saving four-to-six hours per project screening, and has strengthened relationships and improved transparency between SCDOT and the mitigation banking community.



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## HONORABLE MENTIONS 2023



© 2023 City of Valdosta, GA

## City of Valdosta, GA SMART Transformation Award

### Valdosta On-Demand Providing Public Transportation to Residents

The City of Valdosta lacks public transportation for their citizens to effectively maneuver as needed.

The City developed Valdosta On-Demand, a turnkey micro-transit platform that provides on-demand public transit across the 35-mile city limits. This innovation has a fleet of nine mini-van vehicles servicing the entire city at \$2 per trip per person. Since the launch, Valdosta averages 315 rides daily, with 10% of citizens creating an account, 80% of riders booked their rides using the app, and 56% of the riders have an income of less than \$25K.

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## Howard County Secondary Roads Department, IA SMART Transformation Award

### Pile Bearing Test

The Howard County Secondary Roads needs a pile bearing tester that was safer and easier to use, while still proving the data that is needed to calculate bearing treatment.

The solution was a Pile Bearing Tester with the minimum specifications calculated to create the device. The new tester is a tube that slides over the pile with an internal cap. They use the jaws of the vibratory pile driver to lift and drop the tester for each blow. This is a time saver and creates a safer situation with all the testing done from the safety of the excavator cab and on the ground as a guide.

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Secondary Roads Department  
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## New Hampshire DOT SMART Transformation Award Guardrail Sand Curb Scraper

The New Hampshire DOT is having difficulty with removing sand curbs under guardrails. They are hard to reach with conventional maintenance equipment, time consuming and labor intensive to remove, and blocks drainage from going under the guardrail.

NH DOT bent a 1/2" thick by 4" wide flat bar to fit the inside of a ditching bucket on a backhoe. It is secured with bolts at the drain holes, so no welding or cutting is needed. This design can be modified to fit other buckets and equipment, such as an excavator for larger projects. The innovation was tested and modified based on crew feedback. With less bending, twisting an injury risk reduction, this innovation saves time and labor costs.

The cost for this innovation was approximately \$200. This innovation saves time and money as it is less labor intensive for the workers and keeps them from injury, as well as less damage to the state infrastructure.



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## FDOT District 7 (Tampa), FL SMART Transformation Award The US98 at Citrus Way Roundabout

The goal of the Tampa FDOT is to eliminate fatalities and reduce injury crashes through construction of a Modern Single-Lane Roundabout at the intersection of US 98 (SR 700) and Citrus Way.

The solution was a modern single-lane roundabout which can result in an 82% reduction in fatal and injury crashes. However, the oversize/overweight (OSOW) trailers must be able to pass over the roundabout's truck apron without dragging and cause damage or delay traffic to a stuck trailer. The roundabout's circulatory path was crowned forcing the trailer tire to ride higher through the turn to provide vertical clearance at the bottom of the trailer and truck apron. A temporary diversion was created to allow US 98 traffic to continue during the roundabout construction. The roundabout construction was completed on March 23, 2023 and has a positive and impact on the safety and function of the intersection of US 98 and Citrus Way, which will significantly reduce injuries and fatalities.

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## Big Stone County Highway Department, MN SMART Transformation Award

### Self-Performed Calcium Chloride

In Big Stone County, calcium chloride for dust control was not applied properly in a timely manner, causing unhappy customers. Also, the cost to manage the dust control program was higher than neighboring counties. The County needed to create calcium chloride solution more efficiently.

The County was trained to mix the calcium chloride for dust control, creating their own mixing operations. This innovation saved time and money by increasing the flexibility to apply dust control and making the mixture in advance for future use, which reduces the costs making it significantly lower than neighboring cities.

#### **Darwin Karsky**

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## List of LTAP Centers

| State/Territory | Center Name   | Address  | Phone Number            | Website   |
|-----------------|---|--|-------------------------|---|
| Alabama         | Alabama Transportation Research Institute           | Samuel Ginn College of Engineering<br>1301 Shelby Center<br>Auburn, Alabama 36849                | 334.844.2308            | <a href="http://eng.auburn.edu/atap/">http://eng.auburn.edu/atap/</a>   |
| Alaska          | Alaska Research, Development, & Technology Transfer | Statewide Design & Engineering Services<br>Alaska DOT & Public Facilities<br>Anchorage, AK 99501 | 907-269-7383            | <a href="http://www.dot.state.ak.us/stwddes/research/">http://www.dot.state.ak.us/stwddes/research/</a>   |
| Arizona         | Arizona LTAP  | 1130 North 22nd Avenue<br>Phoenix, AZ 85009  | 602-712-4050            | <a href="https://www.azltap.org/">https://www.azltap.org/</a>   |
| Arkansas        | Arkansas Technology Transfer Center                 | 1 University of Arkansas<br>Fayetteville, AR 72701   | 501-569-2380            | <a href="https://cttp.uark.edu/technology-transfer/index.php">https://cttp.uark.edu/technology-transfer/index.php</a>   |
| California      | California LTAP Center                              | 3000 State University Drive<br>Sacramento, CA 95819-6103   | 916-278-4433            | <a href="http://www.californialtap.org/">http://www.californialtap.org/</a>   |
| Colorado        | Colorado LTAP                                       | 4616 S. Shields St, Suite BP171<br>Fort Collins, CO 80526  | 720-616-8982            | <a href="http://www.ColoradoLTAP.org">http://www.ColoradoLTAP.org</a>   |
| Connecticut     | Connecticut Technology Transfer Center              | 270 Middle Turnpike<br>Unit 5202<br>Storrs, CT 06269-5202  | 860-486-5400            | <a href="https://t2center.uconn.edu/">https://t2center.uconn.edu/</a>   |
| Delaware        | Delaware T2 / LTAP Center                           | 355A DuPont Hall University of Delaware<br>Newark, DE 19716                                      | 302-831-6241            | <a href="https://sites.udel.edu/dct/t2-center/">https://sites.udel.edu/dct/t2-center/</a>   |
| Florida         | Center for Urban Transportation Research            | University of South Florida  | 352-273-1670            | <a href="https://floridaltap.org/">https://floridaltap.org/</a>   |
| Georgia         | Georgia Department of Transportation LTAP Center    | 3993 Aviation Circle Atlanta, GA 30336   | 404-507-3437            | <a href="http://www.dot.ga.gov/PartnerSmart/Local/Pages/LTAP.aspx">http://www.dot.ga.gov/PartnerSmart/Local/Pages/LTAP.aspx</a>   |
| Hawaii          | State of Hawaii Department of Transportation        | 2530 Likelike Highway<br>Honolulu, HI 96819  | 808-832-3405<br>Ext 105 | <a href="http://hidot.hawaii.gov/highways/other/hawaii-local-technical-assistance-program/">http://hidot.hawaii.gov/highways/other/hawaii-local-technical-assistance-program/</a>   |
| Idaho           | LHTAC T2 Center                                     | 3330 W. Grace Street Boise, ID 83703   | 208-344-0565            | <a href="https://lhtac.org/">https://lhtac.org/</a>   |
| Illinois        | Illinois Technology Transfer Center                 | 2300 S. Dirksen Parkway<br>Springfield, IL 62764   | 217-782-7820            | <a href="http://idot.illinois.gov/transportation-system/local-transportation-partners/county-engineers-and-local-public-agencies/technology-transfer-center/index">http://idot.illinois.gov/transportation-system/local-transportation-partners/county-engineers-and-local-public-agencies/technology-transfer-center/index</a> |
| Indiana         | Indiana LTAP  | 504 West State Street West<br>Lafayette, IN 47907-2058   | 765-494-2900            | <a href="https://docs.lib.purdue.edu/inltap/">https://docs.lib.purdue.edu/inltap/</a>   |
| Iowa            | Iowa LTAP   | 2711 South Loop Drive Suite 4700<br>Ames, IA 50010-8664  | 515-294-8103            | <a href="https://iowaltap.iastate.edu/">https://iowaltap.iastate.edu/</a>   |
| Kansas          | University of Kansas Transportation Center          | 1536 W 15th Street Suite G 520<br>Lawrence, KS 66045   | 785-864-5658            | <a href="http://kutc.ku.edu/ltap">http://kutc.ku.edu/ltap</a>   |

## List of LTAP Centers

| State/Territory | Center Name  | Address  | Phone Number | Website   |
|-----------------|--|--|--------------|---|
| Kentucky        | Kentucky Transportation Center                                       | 176 Raymond Building<br>Lexington, KY 40506-0281   | 800-432-0719 | <a href="https://www.kyt2.com/">https://www.kyt2.com/</a>   |
| Louisiana       | Louisiana LTAP Technology Transfer Center                            | 4101 Gourrier Avenue Baton Rouge, LA 70808   | 225-767-9131 | <a href="http://www.ltrc.lsu.edu/ltap/">http://www.ltrc.lsu.edu/ltap/</a>   |
| Maine           | Maine Local Roads Center   | 24 Child Street<br>Augusta, ME 04330   | 800-498-9133 | <a href="https://www.maine.gov/mdot/mlrc/">https://www.maine.gov/mdot/mlrc/</a>   |
| Maryland        | Center for Advanced Transportation Technology and Maryland T2 Center | 5000 College Avenue 2200 Technology Ventures Bldg.,<br>College Park, MD 20740                | 301-403-4623 | <a href="http://www.mdt2center.umd.edu/">http://www.mdt2center.umd.edu/</a>   |
| Massachusetts   | Massachusetts LTAP - Baystate Roads                                  | 214 Marston Hall<br>Amherst, MA 01003  | 413-545-2604 | <a href="https://www.umasstransportationcenter.org/umtc/Baystate_Roads.asp">https://www.umasstransportationcenter.org/umtc/Baystate_Roads.asp</a> |
| Michigan        | Michigan Local Technical Assistance Program                          | 309 Dillman Hall<br>1400 Townsend Drive<br>Houghton, MI 49931                                | 906-487-2102 | <a href="http://www.michiganltap.org/">http://www.michiganltap.org/</a>   |
| Minnesota       | Minnesota LTAP   | University Office Plaza,<br>Suite 440<br>2221 University Avenue, SE<br>Minneapolis, MN 55414 | 612-626-1077 | <a href="http://www.mnltap.umn.edu/">http://www.mnltap.umn.edu/</a>   |
| Mississippi     | Mississippi LTAP   | 401 North West Street<br>Jackson, MS 39201   | 601-359-7685 | <a href="https://mdot.ms.gov/portal/LTAP/">https://mdot.ms.gov/portal/LTAP/</a>   |
| Missouri        | Missouri LTAP  | 710 University Drive<br>Suite 121<br>Rolla, MO 65409-1340                                    | 573-341-7200 | <a href="https://mltrc.mst.edu/moltaphome/">https://mltrc.mst.edu/moltaphome/</a>   |
| Montana         | Montana Local Technical Assistance Program                           | 2327 University Way<br>Room 230<br>Bozeman, MT 59715   | 406-994-6100 | <a href="http://www.montana.edu/ltap/">http://www.montana.edu/ltap/</a>   |
| Nebraska        | Nebraska Local Technical Assistance Program                          | 650 J Street, Suite 215 A<br>Lincoln, NE 68508   | 402-472-5748 | <a href="https://www.ltap.unl.edu/neltap/default.asp">https://www.ltap.unl.edu/neltap/default.asp</a>   |
| Nevada          | Nevada LTAP Center   | Airport Plaza Office Bldg.<br>1755 E. Plumb Lane, Suite 264<br>Reno, Nevada 89502            | 775-420-4811 | <a href="https://nvltap.com/">https://nvltap.com/</a>   |
| New Hampshire   | UNH - Technology Transfer Center                                     | 33 Academic Way<br>Durham, NH 03824  | 603-862-0030 | <a href="https://t2.unh.edu/contact-us">https://t2.unh.edu/contact-us</a>   |
| New Jersey      | New Jersey Local Technical Assistance Program                        | 100 Brett Road<br>Piscataway, NJ 08854-8058  | 848-445-0579 | <a href="https://cait.rutgers.edu/njltap/">https://cait.rutgers.edu/njltap/</a>   |
| New Mexico      | New Mexico LTAP  | 1 University of New Mexico<br>Albuquerque, NM 87131  | 505-277-0767 | <a href="http://ltap.unm.edu/">http://ltap.unm.edu/</a>   |
| New York        | Cornell Local Roads Program  | 106 Riley Robb Hall<br>Ithaca, NY 14853  | 607-255-8033 | <a href="https://www.clrp.cornell.edu/clrp/about.html">https://www.clrp.cornell.edu/clrp/about.html</a>   |
| North Carolina  | North Carolina LTAP  | 909 Capability Drive<br>Research Building IV<br>Raleigh, NC 27606                            | 919-515-8899 | <a href="https://itre.ncsu.edu/focus/ltap/">https://itre.ncsu.edu/focus/ltap/</a>   |
| North Dakota    | North Dakota LTAP  | 515 ½ E. Broadway Suite 101<br>Bismarck, ND 58501  | 701-328-9855 | <a href="https://www.ndltap.org/">https://www.ndltap.org/</a>   |

## List of LTAP Centers

| State/Territory | Center Name   | Address   | Phone Number | Website   |
|-----------------|---|---|--------------|---|
| Ohio            | Ohio LTAP Center  | 1980 West Broad Street<br>Columbus, OH 43223  | 614-466-7170 | <a href="http://www.dot.state.oh.us/Divisions/Planning/LocalPrograms/LTAP/Pages/default.aspx">http://www.dot.state.oh.us/Divisions/Planning/LocalPrograms/LTAP/Pages/default.aspx</a>                   |
| Oklahoma        | Oklahoma Local Technical Assistance Program               | 5202 N Richmond Hill Drive<br>Stillwater, OK 74075  | 405-744-7496 | <a href="http://ltap.okstate.edu/">http://ltap.okstate.edu/</a>   |
| Oregon          | Oregon Technology Transfer Center                         | 355 Capitol Street NE, MS 11<br>Salem, OR 97301-3871  | 888-275-6368 | <a href="https://www.oregon.gov/odot/programs/t2/Pages/default.aspx">https://www.oregon.gov/odot/programs/t2/Pages/default.aspx</a>   |
| Pennsylvania    | PennDOT LTAP  | 400 North Street 6th Floor<br>Harrisburg, PA 17120  | 800-367-5827 | <a href="https://gis.penndot.gov/ltap/">https://gis.penndot.gov/ltap/</a>   |
| Puerto Rico     | Puerto Rico Transportation Technology Transfer Center     | Puerto Rico Transportation Technology Transfer Center Civil Engineering and Surveying Department<br>University of Puerto Rico – Mayagüez Campus<br>P.O. Box 9000<br>Mayagüez, P.R. 00681-9000 | 787-832-4040 | <a href="http://prltap.org/eng/">http://prltap.org/eng/</a>   |
| Rhode Island    | Rhode Island Department of Transportation RILTAP          | 2 Capitol Hill, #119<br>Providence, RI 02903  | 401-222-2450 | <a href="http://www.dot.ri.gov/about/RILTAP.php">http://www.dot.ri.gov/about/RILTAP.php</a>   |
| South Carolina  | South Carolina Transportation Technology Transfer Service | 202 Hugo Drive<br>Clemson, SC 29634   | 864-656-4183 | <a href="https://www.scltap.org/">https://www.scltap.org/</a>   |
| South Dakota    | South Dakota Local Transportation Assistance Program      | 1175 Medary Avenue<br>Brookings, SD 57006   | 605-688-4121 | <a href="https://www.sdstate.edu/jerome-j-lohr-engineering/sd-local-transportation-assistance-program">https://www.sdstate.edu/jerome-j-lohr-engineering/sd-local-transportation-assistance-program</a> |
| Tennessee       | Tennessee Transportation Assistance Program               | 309 Conference Center Building<br>Knoxville, TN 37996-4133  | 865-974-5255 | <a href="http://ttap.utk.edu/">http://ttap.utk.edu/</a>   |
| Texas           | TxLTAP  | 140 W. Mitchell Street<br>Arlington, TX 76019   | 817-272-9617 | <a href="http://www.txltap.org/">http://www.txltap.org/</a>   |
| Utah            | Utah LTAP Center  | 4111 Old Main Hill Logan,<br>UT 84322-4111  | 435-797-2918 | <a href="https://www.utahltap.org/">https://www.utahltap.org/</a>   |
| Vermont         | Vermont Local Roads Program                               | 1716 US Route 302<br>Montpelier, VT 05633-5001  | 802-828-3537 | <a href="https://localroads.vermont.gov/">https://localroads.vermont.gov/</a>   |
| Virginia        | UVA Transportation Training Academy                       | 351 McCormick Road<br>Thornton Hall, Room B122A<br>Charlottesville, VA 22904-4742   | 434-982-2897 | <a href="http://uva-tta.net/">http://uva-tta.net/</a>   |
| Washington      | Washington State LTAP Center                              | 310 Maple Park Avenue SE<br>Olympia, WA 98504-7300  | 360-705-7355 | <a href="https://www.wsdot.wa.gov/">https://www.wsdot.wa.gov/</a>   |
| West Virginia   | West Virginia LTAP  | 395 Evansdale Drive,<br>Morgantown, WV 26505  | 304-293-9924 | <a href="https://www.wvltap.org/">https://www.wvltap.org/</a>   |
| Wisconsin       | Wisconsin Transportation Information Center               | 432 North Lake Street<br>Madison, WI 53706  | 800-442-4615 | <a href="https://epd.wisc.edu/tic/">https://epd.wisc.edu/tic/</a>   |
| Wyoming         | Wyoming Technology Transfer Center (WYT2/LTAP)            | 1000 E. University Avenue<br>Dept. 3295<br>Laramie, WY 82071  | 307-766-6743 | <a href="http://www.uwyo.edu/wyt2/">http://www.uwyo.edu/wyt2/</a>   |



## List of TTAP Centers

| State/Territory | (BIA) Region(s)                      | Address  | Phone        | Website   |
|-----------------|--------------------------------------|--|--------------|---|
| Eastern         | Eastern and Midwest                  | University of Wisconsin-Madison (UW-M)<br>2205 Engineering Hall<br>1415 Engineering Drive<br>Madison, WI 53706               | 608-265-1882 | <b>TBA</b>  |
| Southern        | Eastern Oklahoma and Southern Plains | Oklahoma State University (OSU)<br>1201 S Innovation Way Drive<br>Stillwater, OK 74074                                       | 405-744-9907 | <a href="https://ceat.ok-state.edu/extension/t-tap/">https://ceat.ok-state.edu/extension/t-tap/</a> |
| Southwestern    | Navaho and Southwest                 | NAVAJO AND SOUTHWEST LENEA CORPORATION (LC)<br>100 SUN AVE NE SUITE 650<br>ALBUQUERQUE, NM 87109                             | 480-738-8989 | <a href="https://www.swt-tap.com/">https://www.swt-tap.com/</a>                                     |
| Northern        | Rocky Mountain and Great Plains      | North Dakota State University (NDSU)<br>Bismarck, North Dakota<br>608 East Boulevard Avenue                                  | 970-217-9076 | <a href="https://www.northernt-tap.org/">https://www.northernt-tap.org/</a>                         |
| Western         | Western and Pacific                  | <b>TBA</b>   | <b>TBA</b>   | <b>TBA</b>  |
| Northwestern    | Northwest                            | University of Washington (UW)<br>Civil and Environmental Engineering<br>More Hall Room 121F<br>Seattle, WA 98195-2700        | 206-616-2696 | <a href="https://nwttap.org/">https://nwttap.org/</a>   |
| Alaska          | Alaska                               | University of Alaska Fairbanks (UAF)<br>1764 Tanana Loop,<br>ELIF Suite 240<br>PO Box 755910<br>Fairbanks, Alaska 99775-5910 | 907-474-5552 | <a href="https://aidc.uaf.edu/t-tap">https://aidc.uaf.edu/t-tap</a>                                 |

# Build a Better **MOUSETRAP** 2023

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