

# Build a Better MOUSETRAP

National Recognition Program for  
Transportation Innovation



recolectado  
a foto: "Cuando regresé a mi casa el lunes, 7 de febrero, me di cuenta de que había un hoyo exactamente frente a mi casa. Es un hoyo hondo donde la cámara cae. Hay peligros. Coloque un tablero encima para evitar accidentes. Agradezco su ayuda."



U.S. Department of Transportation  
Federal Highway Administration

OFFICE OF TRANSPORTATION  
WORKFORCE DEVELOPMENT  
AND TECHNOLOGY DEPLOYMENT  
**LOCAL AID SUPPORT**

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*All images featured in this publication were provided by the respective competition entrants.*





## 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 Transportation Workforce Development and Technology Deployment - 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 Spotlights

### Bold Steps Award

#### WINNER

Walsh County Highway Department, North Dakota

### Guardrail Maintainer

Gravel, debris, and vegetation can be a recipe for unsafe conditions if they drift out onto the roadway. The Walsh County Highway Department in North Dakota routinely clears debris from around the guardrails especially before a snowfall. This task required a crew of four people, each with a shovel to remove excess debris, vegetation, or snow buildup alongside traffic. The workers felt they needed a safer, more efficient, and cost-effective way to maintain the guard rails. So, they held a brainstorming session, "We had a nice arrangement of scrap materials to pick from. In between the brainstorming and stuff like that, it was all just kind of throwing ideas off each other. The biggest challenge was looking for some stability. Something safe that lasts also," said Stuart Swartz, Walsh County Highway Department.

At the end of the brainstorm session, the front-line workers came up with the Guardrail Maintainer, which is an attachment tool that easily cleans around guardrail. Instead of using four crew workers, the Department now only needed one to operate the Guardrail Maintainer. "We were surprised it worked so well. You just don't know how it's going to work. The operators are pretty skilled and make it look pretty easy."

Designing and building the innovation cost the highway department \$65 in materials and 16 hours in labor for two people. "Using scrap metal was a big plus. Plus, the time of the year, they were doing a lot of shop work. Down time is mid to later winter when most of the maintenance is complete on the equipment," said Highway Superintendent Jason

Johnston. "I encourage my guys that if they can find anything that can make their jobs more efficient, go for it."

Guard rails provide motorists protection from hazards such as fixed objects and drop offs. The innovative Guardrail maintainer has turned a 1-hour job into a 20-minute job with fewer people. The Highway Department said this solution was a great idea from the start with no challenges and from the beginning, the tool worked the way it was supposed to.

As far as advice on the importance of using innovative solutions, Stuart Swartz said, "Just go for it. Support your employees and let them express their ideas." Jason Johnston agrees, "The idea may seem simplistic but you many never know until go through the process. It's just one of those things. You have to take the change and try. If it doesn't work, it doesn't work."

Congratulations to the Walsh County Highway Department in North Dakota for their innovative Guardrail Maintainer. They are the 2022 Build a Better Mousetrap Bold Steps Award winner.

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 Guardrail Maintainer



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## Fast Facts

- It took roughly two people, 8 hours each to construct
- Equipment and materials include wire feed welder, Acetylene torch, Grinder, steel quick change edge, long pieces of angle iron, curved cutting edge, spray paint, shear bolt
- Total cost for materials was \$65

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# BUILD A BETTER MOUSETRAP

## Award Spotlights

### Innovative Project Award

#### WINNER

Manheim Township, Pennsylvania

## The Sidewinder

Like many small towns and rural communities, South Manheim Township in Pennsylvania is managing their road maintenance projects on limited budgets that do not allow for the rent or purchase of equipment for every job. But one job in particular needed improvements that would increase efficiency and save money. The Township typically fills areas along the roadways called berms with extra dirt and other materials as a method of flood control. However, the process involved the dumping of material on the roadway and then using a backhoe to spread material into areas that needed it. This process caused a loss in materials used, inconsistent application of the material, and road hazards as they had to continuously sweep wasted materials from the roadway. There was also another issue according to the Township's Roadmaster, Corby Lewis, "We owned a berming machine and it works well; however, you are limited to using one truck over and over, which results in a lot of down time while the truck gets loaded, then returns to the site. We needed something more efficient."

Their solution is the Sidewinder, which is a widening tool that attaches to the backhoe and pushes like a paver. Use of the innovative solution allowed workers to use multiple trucks and the design of the Sidewinder eliminated unnecessary loss of wasted material and ensured the roadway stayed on grade. "We were very happy with the design right off. We have to make some small modifications along the way. We added a mirror for the operator to see materials in front of the blade, so they know they needed more material."

The Sidewinder cost the South Manheim Township approximately \$500 in materials. "This invention has been very beneficial to the township. It saves time because we can keep it running continuously. We have a three-man crew that allows one person to operate the sidewinder and the other two haul materials," says Corby.

The Sidewinder also saves the Township on costs of materials and above all they can make the roads safer for residents. Corby says, "I encourage all townships and other agencies to try something new. We are always making things to improve our everyday duties. It makes us better at what we do and become very involved in saving our residents and Township monies that can be used elsewhere."

Congratulations to the South Manheim Township in Pennsylvania for their innovative Sidewinder. They are the 2022 Build a Better Mousetrap Innovative Project Award winner.

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.

# Innovative Project Award Winner

## The Sidewinder



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### Fast Facts

- It took ~60 hours to construct using basic metal-working tools such as welder, Grinder, etc
- A good portion of metal scrap came from the shop and was reinforced to handle material load.
- Materials cost to construct was \$500

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# BUILD A BETTER MOUSETRAP

## Award Spotlights

### Pioneer Award

#### WINNER

Washington County Department of Public Works, New York

### Culvert Cleaner

Beavers looking for a home inside culverts create big problems for drivers and the Department of Public Works in Washington County, New York. The dirt the critters pack inside the culverts not only causes roadway flooding but also a safety hazard for Public Works employees tasked with clearing out the culverts. “The safety concerns of the employees entering a culvert in the water was very high because of the potential of being bitten by beavers, snakes, turtles and even getting leeches. And of course, there’s the possibility of getting Giardiasis/beaver fever from potential ingestion of the contaminated water,” says Michael Newell with the Washington County Department of Public Works.

The solution was to design and build a tool to clean culverts without employees having to risk their safety entering water. “We were looking for a tool that would not damage the plastic culverts and were to fit into a minimum 15” diameter culvert and could reach inside up to 20-24 feet especially since the obstruction tends to occur within 10 ft of the culvert,” says Michael. The Culvert Cleaner accomplished just that. It was developed in-house by the department’s engineering department using parts they already had and approximately 40 labor hours. The innovation saves money, time, and improves safety for the workers and the community. Michael says the idea for the Culvert Cleaner came to him overnight after watching a few YouTube videos and thinking about history. “I thought about how during the medieval time period, they would keep hitting the door and ramming the door until it opened. I knew the Culvert

Cleaner needed to be heavy enough to stay in the culvert without damaging it and no sharp edges to it.”

According to Michael, the first attempt at the Culvert Cleaner was not strong enough among other limitations including not having enough reach. So, they tried it again and successfully built a second one that was stronger with a reach of about 20 feet. The culverts are cleaned out within a couple of minutes using the innovation exceeding their expectations.

Michael’s advice to other agencies is to “be brave and just take the challenge on. Just do it. Don’t be afraid and accept the fact that you have options and that there are other tools that can be used.” He also wants agencies to know that if you are interested in building your own Culvert Cleaner, keep safety in mind, “Safety is very important when it comes to using this tool. Use experienced workers to operate it (Culvert Cleaner) because it has to be moved just right.”

Congratulations to the Washington County Department of Public Works in New York for their innovative Culvert Cleaner. They are the 2022 Build a Better Mousetrap Pioneer Award Winner.

The Pioneer Award recognizes a locally relevant product or tool that is among the first to solve a maintenance problem with a home-grown solution.



# Pioneer Award Winner Culvert Cleaner



## Fast Facts

- It took 40 labor hours to design and construct the innovation
- The agency used their Engineering Dept. to draft a sketch of the tool
- The innovation was built in-house using materials that was already available
- No cost for the steel or box beam because the materials were used



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## Michael Newell

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# BUILD A BETTER MOUSETRAP

## Award Spotlights

### Smart Transformation Award

#### WINNER

Autonomous Municipality of Toa Baja, Puerto Rico

### Public Survey Tool

A major rain event in early 2022, caused flooding, landslides, sinkholes, and damage to highways, roads, and bridges. Due to the wide scale and severity of the event, emergency crews found themselves dealing with a range of issues in their response such as data limitations, personnel shortages, and limited digital tools. The Municipality of Autonomous Toa Baja in Puerto Rico officials knew they needed an easier process for connecting with residents to assess the damage. "A lot of things were going on at the same time during the emergency. We just needed to find ways to get at least a little bit of information to properly respond," said Isabel Olivieri, Toa Baja Geographic Information System (GIS) Tech Specialist.

In the middle of the emergency event, Isabel quickly developed a virtual public survey tool using Survey 123 and GIS. The survey included questions around contact information, location of damage, type of damage and a tool to upload images that would assist emergency responders with damage assessments. She had the electronic survey tool published to the social media pages and the innovation took off from there. Residents immediately began to provide officials with information on heavily damaged areas and they included plenty of photos. From this information, emergency responders were able to not only get a good understanding of the damage, but they were also able to prioritize response.

Implementation of the public survey tool completely aligned with the mayor's goals for community engagement, so garnering support for the tool was

not an issue and contributed to staff being able to quickly publish the tool. The greatest challenge in the middle of the rain event, according to Isabel was knowing what technology was available to do what they needed. Another obstacle was ensuring that the information did not get lost among other social media posts, "social media is very quick. You can post something and then you can't find it because people are posting so much. For future events, we will increase the amount of posting and we will expand to use more platforms," says Isabel.

She encourages everyone with ideas to share them, "there are a lot of awesome ideas however when you share that idea, that's when it becomes impressive. We have to communicate." Isabel is also grateful for her support system, "I see them every day. I work in their town and for them, the citizens of this town. They are my motivation mainly. I feel very humbled that we won."

Congratulations to the Autonomous Municipality of Toa Baja in Puerto Rico for their innovative Public Survey Tool. They are the 2022 Build a Better Mousetrap 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 Public Survey Tool



The screenshot shows a web application interface for a survey titled "Encuesta de Inundación Febrero 2022". The main content area displays a large photograph of a deep pothole in a road. To the right of the photo is a sidebar with "Imagen Info" and a "Descripción de evento" section. The description reads: "Cuando regresé a mi casa el lunes, 7 de febrero nos percatamos que hay un hoyo exactamente frente a mi casa. Es un hoyo hondo donde la carretera cedió. Muy peligroso. Coloqué un zafacón encima para evitar accidentes. Agradezco su ayuda." Below the description are four smaller thumbnail photos of the pothole from different angles, each with a unique ID.

**Ejemplo de dato recolectado**

Descripción del evento según ciudadano que subió la foto: *"Cuando regresé a mi casa el lunes, 7 de febrero nos percatamos que hay un hoyo exactamente frente a mi casa. Es un hoyo hondo donde la carretera cedió. Muy peligroso. Coloqué un zafacón encima para evitar accidentes. Agradezco su ayuda."*

## Fast Facts

- Software used to develop the program include Survey 123 from ArcGIS and Microsoft Excel for managing data
- Social media was used for publishing survey
- Staff was used to develop and manage tools eliminating the need for a contractor
- Cost was \$440 annually for software

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Auburn, CA

**Bold Steps Award**

# City Accessibility with the On-Demand Transit System

In Auburn, the hilly topography was limiting transportation options for its residents. The hills made conventional transit options inadequate, making it difficult for its residents to travel throughout the city. For some individuals who do not have their own transportation and rely on the transit, they were unable to travel. For others, the transit did not reach their desired locations.

The city built its On-Demand Transit System to mirror the operations of a TNC (Transportation Network Company) using an application-based software system. The primary focus of this approach was accessibility, as it would be available to anyone with a smartphone, personal computer or tablet.

To implement the On-Demand Transit system the city purchased an application-based software that costs roughly \$30,000. The city also implemented electric buses, to ensure a minimum cost to the public. Utilizing an application-based software, they were able to offset the annual cost of the application by saving on fuel and maintenance of older equipment.



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ÁREA METROPOLITANA DE BAKERSFIELD – RESULTADOS DE HIPÓTESIS DE TODO EL CONDADO PARA 2035

Performance Measures

METRO BAKERSFIELD—2035 COUNTYWIDE SCENARIO OUTCOMES

Performance Measure	2020	2035	Change
Population	1,980,000	3,243,000	+1,263,000
Households	789,000	1,338,000	+549,000
Employment	33,363	74,100	+40,737
Personal Income	\$13,280	\$13,280	\$0
Public Health	\$3.26	\$3.26	\$0
Transportation Costs	\$22,904	\$22,904	\$0
Accessibility	\$14.91	\$14.91	\$0
Land Consumption	\$18.32	\$18.32	\$0
Land Use Change	\$83.09	\$83.09	\$0

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Kern, CA

**SMART Transformation Award**

# Balancing Performance Measures with Public Outreach

For nearly three decades, the Kern Council of Governments (COG) has recognized the importance of how Performance Measures (PMs) can provide accountability to the transportation planning process. The Kern COG’s SMART Transformation project was created to develop an integrated PM process that offers other smaller Metropolitan Planning Organizations (MPOs) a template for integrating and simplifying their PM reporting needs while facilitating public engagement.

It is expected in FY 2021/2022 the Kern COG will spend 1.7M or ~20% of the MPO’s annual budget on the PM development and deployment. This includes labor for the cost of data collection and analyzation as well as the actual software/hardware itself.

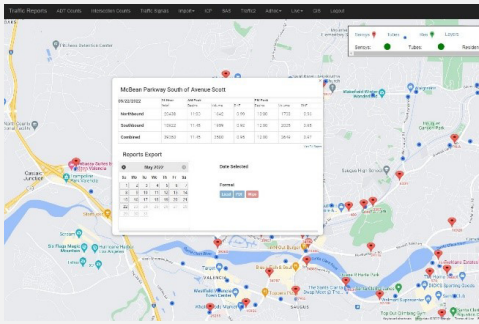
With implementing the SMART Transformation project the Kern COG saw an 700% increase in funding for a new infrastructure and hundreds of hours have been saved in the preparation of documents that require the development of performance measures. There has also been multiple 4-year MPO Federal Certification Reviews have passed with no corrective actions.

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Santa Clarita, CA

SMART Transformation Award

## Traffic Database Improves Community Travel Decisions



© 2022 City of Santa, CA Clarita

With files and records from the City’s Traffic and Transportation Planning Division still being stored physically, the city set out to digitalize this process. A central database was established where all information and data can be accessible to staff in office or in the field. In collaboration with the IT Division, the ITS system developers utilized an Application Programming Interfaces (API). The API shares and requests external traffic data, which is then automatically uploaded into the Santa Clarita Traffic Database. The Database allows users real time access to important data regarding traffic and travel. Now housing more than 20 years of historical data, the database is enhancing safety on roadways and accessing information that allows users to make informed decisions at the tips of their fingers.

The City was very effective in utilizing existing resources to complete the database. Creating the database was done completely in house utilizing current staff, which provided significant cost and time savings not having to hire an external consultant. Once developed, the database was housed on an existing Google Cloud account utilized by the city. The database benefits the community by providing them with better traffic data so they can make informed decisions on technology and other tools to improve traffic and road safety.

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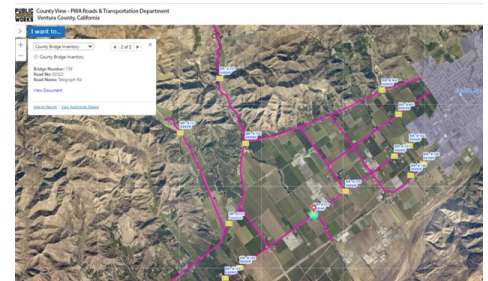
Ventura, CA

Innovative Project Award

## Bridge Management Program Ensures Bridge Safety and Upkeep

With no real system to prioritize bridge maintenance and optimize budget, the Bridge Management Program (BMP) was created to establish a database to alert when and where the National Bridge Inventory (NBI) and non-NBI structures would require rehabilitation or replacement. The BMP database provides all necessary bridge structure information including general structural information, recommended and required repairs, maintenance requirements, detailed reports, and site-specific information.

The only real cost to implement the BMP was the contract with an external consultant to write the code, which was right under \$200,000. The team utilized county computers which included the Microsoft Office Suite, making there no additional cost to use Microsoft Access. The community benefited from the BMP with safer bridges and safer commutes.



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Public Works Agency, Roads & Transportation

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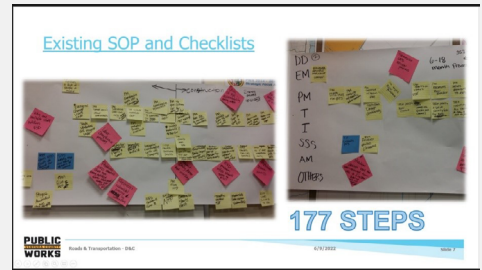
Innovative Project Award

# Tracking Deliverables with a Standard Operating Procedures Checklist

Averaging 177 hand-offs in a single engineering project, the potential for mistakes comes without question. The Design and Construction group team created a desk guide Standard Operating Procedures Checklist (SOP) for engineers to reference and track project deliverables. The goal was to increase consistency by reducing handoffs and the potential for mistakes.

In 2016, the team set out to create the SOP. Armed with an estimated 1,000 Post-it notes - estimated to cost around \$10- and 40 hours of work from about 4 people, the team created the first phase. In 2021, when the project was finalized, an additional 20 hours of time with a group of 4 was utilized. No Post-its were used in 2021.

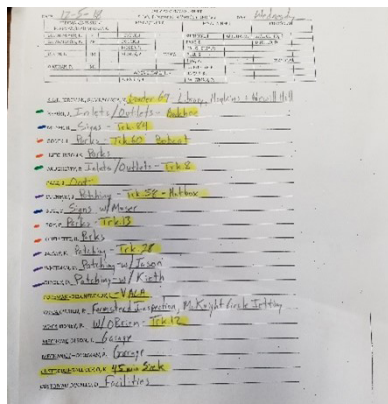
Since finalizing the project, the team was successful in consolidating requirements into an easy-to-use desk guide. It has helped save time and has become a great resource for new engineers to make the on-boarding process more efficient. Utilizing the SOP, the team was able to reduce hand-offs from 177 to 109.



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Ellington, CT

SMART Transformation Award

# Electronic Daily Work Order Display

In Ellington, CT, daily work orders and task assignments were being communicated verbally between staff and management. The work orders are extremely important as they include all areas of roadside support and maintenance for their community. In the morning, staff were given their work orders and were expected to remember it while in the field all day. At the end of the day, the staff would give verbal status updates to management, who then had to write each update down by memory. The verbal communication process was antiquated and did not allow easy, trackable communication of work orders between staff and management.

A Google spreadsheet was created to combat the verbal assignment process. The document is shared between management and staff to easily communicate work orders, status of work, and details of expected work. The list is also displayed on an overhead projector in the highway garage for easy visibility. This allows the staff to come into work, quickly understand their work order for the day, and waste no time getting into the field. At zero cost to create, the electronic daily work order display has proven to be invaluable for communication of work orders between staff and management allowing them to continue to vital day to day maintenance and support on the community roadways

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Lakewood, CO

Innovative Project Award

## Speed Hump Forms Safety



© 2022 Lakewood, Co

Installing speed humps/bumps is one of the most daunting tasks in road maintenance. It was especially challenging for the Lakewood Street Maintenance crew who had to install new speed humps each year following their annual overlay program. The crew were handling 7-14 tons of 280-degree asphalt for a single speed hump, while single lane flaggers attempt to safely navigate impatient drivers.

Determined to come up with a safer and more effective method, the Lakewood staff created an adjustable form that follows Lakewood's 12-foot and 24-foot speed hump specification. The form is made up with 4x4 timber, flat sock steel sliders and connectors with an interlock connection, allowing the form to extend from 12 feet to 24 feet. The form completely revolutionized the speed hump installation process eliminating speed hump bird baths, reducing the number of staff required, increasing safety of crew and residents, all while maximizing daily production.

The materials needed to create the form were simple, three red cedar posts, one flat stock steel plate, and a singular plain round roc. In total the project cost the county \$517. Before the Speed hump form, only two 12x30 feet speed bumps would be installed in a day. Now, with the speed hump forms and an asphalt paver, the crews can install six speed humps in a day.

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Simsbury, CT

**Bold Steps Award**

## Protocols for Continuation of Essential Services During Pandemic

Like many affected by COVID-19, the public works employees of Simsbury, CT were no exception. During winter seasons the crews must be readily available 24 hours a day, 7 days a week for snow removal and anti-icing treatments, which are critical for emergency services. If an employee had an exposure to covid, they were placed under a 14-day quarantine and unable to work. This led to large gaps in staff availability and staff hesitation to report their exposure.

With the vision to keep staff and their community safe through their work, the department staff created a separate space for each employee. Working with the municipal risk management staff, area public health district personnel and the employee union they devised a plan that would meet all requirements of the CDC. The created space allowed staff access to their plow truck, restroom, food and sleeping quarters without interacting with other staff. Tents were purchased for \$55 and set up in a separate garage bay, which allowed proper distance between staff and allowed an area where it was safe to unmask. The plan was successful in creating a safe environment for crew and keeping them local and available. The department has requested to keep the plan in place, even after the pandemic is over.



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Waterbury, CT

**Bold Steps Award**

### Sand/Salt Loading Ramp Helps Reducing Chemical Spillage

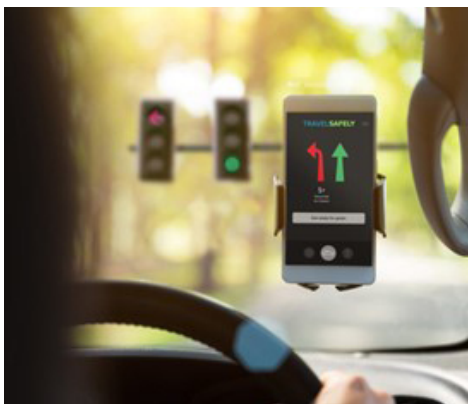
In Waterbury, CT severe winters require strong snow fighting chemicals to treat roadways. These harsh chemicals, especially the chlorides, have not only an effect on the environment but residents began to see an impact on their drinking water. The public works department identified the salt shed as an area of improvement as plow trucks are quickly loading and unloading, making spillage and errors of the chemicals inevitable.

When the new facility was designed, the public works department wanted to ensure a permanent ramp would be created to mitigate spillage and any seepage before it could get into the groundwater. Utilizing materials on hand, the ramp was created with pavement and large pre-cast blocks that are banded together with steel plates. The ramp was moved adjacent to the salt piles, making it a shorter distance for the load operator to walk with full buckets. For any spillage that liquidates will drain into a catch basin that can be filtered and intercepted as needed before entering the sewer system. The loading ramp creates a safe environment for the workers and the community.



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© 2022 City of Marietta, GA

Marietta, GA

**Bold Steps Award**

### Marietta Travel Safely App with Traffic Light Preemption for First Responders

With major state and federal highways running through the city of Marietta, emergency response times for first responders was being affected by travelers. In response to this, the city created the TravelSafely App to implement a location-based traffic signal pre-emption solution that would help reduce emergency response times.

The app was focused on interconnectivity between citizens and first responders. Residents are alerted in real time of upcoming emergency services on the road. The app uses the GPS location of the first responders and an algorithm to anticipate intersections they are headed towards. Then, it will reset the traffic signals to allow a safe crossing for them and the other drivers on the road. Not having to run lights and the other drivers on the road being alerted of their location, the fire department was able to reduce their response time by 1.5 minutes during emergency calls.

To create the app, the City of Marietta partnered with Applied Information, Inc and Temple Technology Services. There was also collaboration between various Marietta departments, including Fire, Public Works, and Information Technology. The cost to upgrade each intersection was \$615,000 (\$5,000 per intersection) and to insert the device on each fire truck costs \$80,000 (\$5,000 per vehicle).

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Broward County, FL

**Bold Steps Award**

## Electric & Hybrid Vehicle Parking Counter Application



© 2022 Broward County Aviation Department

Serving nearly 28.1 million passengers in 2021, the Fort Lauderdale International Airport (FLL) is one of the fastest-recovering airports in the U.S. from COVID-19. With the rise in electric vehicles (EV) sales in Florida, the Broward County Aviation Department (BCAD) wanted to ensure they could fulfil demand for EV charging stations at the airport.

Utilizing ArcGIS QuickCapture, the Electric & Hybrid Vehicle Parking Counter application was created. The app allowed users who are walking through the garage to gather specific information about the garage, vehicles and GPS location and then communicate it back to the BCAD team in real time. This process facilitates the sharing and analysis of EV parking and usage, between users and the BCAD. Using this data, the BCAD can track and interpret data to improve FLL's long-term strategic planning for its visitors. Since implementing the Electric & Hybrid Vehicle Parking Counter Application, FLL has been able to collect data for over 800 parked EVs.

The BCAD already had an enterprise license agreement with ESRI for ArcGIS QuickCapture, making the only cost with creating the app was the salary for the GIS Analyst. The GIS Analyst was already a part of the team and developed the app in 20 hours.

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Cherokee County, IA

**Innovation Project Award**

## Alert Drivers Quickly of Emergencies with a Mobile Barricade

In Cherokee County, an old barricade was being used to alert drivers of closures and flooding events. The lengthy set up and take down process required staff members to physically flip the barricade upside down for transport and had limited space for the legs, sandbags, fence posts, and safety fencing cones.

The staff worked with the Road Superintendent and Sign Foreman to create a trailer with a hanging barricade with separate places to put the legs, fence posts, and safety fencing cones. The creation of the new trailer took roughly 80 hours and \$9,492 as the team utilized as many items they had on hand as possible, such as a 7,000 lbs axel. The new trailer allows staff to efficiently alert drivers of an upcoming emergency, improving the safety for drivers.



© 2022 Cherokee County, IA Secondary Roads

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## HONORABLE MENTIONS 2022

Jones County, IA

Innovative Project Award

### Cold Mix Placer Makes Road Maintenance Efficient

In Jones County, IA basic road maintenance such as filling holes or fixing pavement cracks was a daunting task for their staff. Large dump trucks were used to run cold mix out the front sander after removing the spread wheel or the staff had to physically shovel the mix out of the back of a pickup truck. Using a dump truck was not desirable as it was difficult to place the asphalt exactly where it needs to be and required multiple staff members to control.

Using locally purchased materials and components for \$7,250, the team created a Cold Mix Placer which is an automated unit that contains the material and unloads it out to a more precise location. The placer can be quickly loaded and unloaded with a skid or wheel loader and hold up to 2,000 pounds of cold mix asphalt resulting in quicker maintenance, less material wasted, and less staff required. Creating better roads also benefits the community by less delays for repairs and saving them money on road maintenance programs.



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© 2022 Joe Wood, Madison County, IA

Madison County, IA

Innovative Project Award

### Squeegee Makes for Easy Shop Clean Up

To make the cleanup process of used trucks and bays more efficient, Joe Wood, Mike Hackett and Mark Hanrahan came up with the idea to put a squeegee on a skid steer. On a rainy day, the trio brought the idea to life by attaching the squeegee to the skid steer with reclaimed steel and baler belting for the ground contact material. Between the hours spent and the materials the total cost of the project was under \$500.

Since utilizing the squeegee, the team was able to substantially cut down the cleanup process from 2 hours to 15 minutes, freeing up an hour and 45 minutes for crew to focus on other projects. It has also helped to considerably cut down dust in the shop.

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Linn County, IA

Innovative Project Award

## Easily Remove Salt/Sand Spreader With a Lifting Jig



© Alexander Thad, Linn County, IA

The process of removing the salt/sand spreads from the back of the truck when they are brought to the shop for repairs, was difficult and unsafe. The mechanics of Linn County set out to create an efficient process to remove them, while ensuring the safety of the crew.

A lifting device that could be attached to the sander from the outside of the truck was created. The lift jig made removal of the spreaders efficient and eliminated the need for an employee to physically climb over the truck bed and into the sander to attach lift chains. Utilizing mostly steel pieces on hand at the weld shop, the total cost to create the lift jig was \$300 for only a few hours of work and materials. Using the lifting jig allows trucks to be repaired more quickly and be utilized during a winter storm event.

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DeKalb County, IL

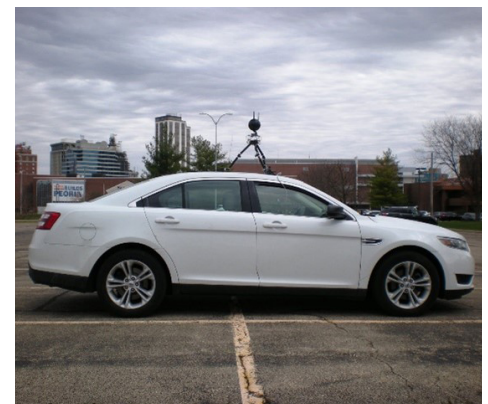
SMART Transformation Award

## Updating the County's Google Street View

Since it was originally driven by Google in 2007, the Google Street View of many roads in DeKalb County were not visible or outdated. This led to problematic travelling as citizens were looking for old landmarks. Realizing the outdated imagery was costing the public time and money, the County Planner and the County Engineer set out to come up with a solution.

The team decided to collaborate with DeKalb-Sycamore Area Transportation Study (DSATS) and collect their own data to submit to Google. An 8K 360-Degree camera was purchased and mounted on a vehicle to be driven for approximately 500 miles through Dekalb County. Closely following the acceptance standards set by Google, the team was able to collect, process and upload new imagery in some of the rural subdivisions, that will for the first time have imagery on the Google Street View.

The total cost of the project was \$12,500 for the camera, tablets, accessories, and labor. The public responded extremely favorably to the new updated Google Street View, viewing it 3 million times in the first six months.



© 2022 DeKalb County

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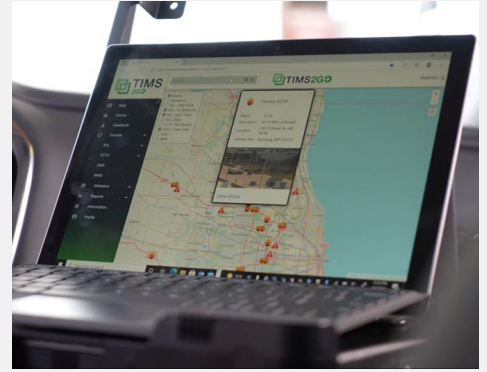
Downers Grove, IL

SMART Transformation Award

# Illinois Tollway Goes Mobile with the Power of TIMS

The Illinois Tollway Traffic Operations Center (TOC) operates 24 hours a day, seven days a week, 365 days a year, however it is not always possible to have staff on-site in case an incident needs to be reported. While traffic and incident managers may be on the clock, it's possible they are working off-site on other tasks. In the event of an incident managers absence on-site, the TOC needed to find an effective way to communicate the specifics and severity of the crash in real time.

Partnering with TranSmart Technologies and Parsons the TIMS2GO Mobile Incident Response Tool was created for about \$288,000 and 1,850 hours of labor. The app was developed specifically for the Illinois Tollway, to provide incident management that is accessible remotely on any smartphone, tablet or laptop. The app integrates an active traffic software system and a video streaming platform, Wowza. Using the app, incident managers who are off-site, can receive the same information they would as on-site, to make real time life saving decision in response to a crash.



© 2022 Illinois Tollway

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© 2022 City of Carmel, IN

Carmel, IN

**Bold Steps Award**

# City of Carmel Roundabouts

The city of Carmel is one of the fastest-growing cities in Indiana and their Mayor Jim Brainard, wanted their roadways to reflect that. For nearly two decades the city has worked to install roundabouts instead of the standard signalized intersections. Historical data shows installation of roundabouts leads to a 90% reduction in traffic fatalities, 75 % less conflict points than four-way intersections and numerous environmental benefits.

Over the past 20 years, the city of Carmel has invested in over 140 roundabouts, averaging \$1 million per roundabout. The installation process takes around 6 months to create level surfaces, install storm drains and lighting, and develop necessary signage. The city has identified it costs less to build and maintain roundabouts than signalized intersections, while maintaining the safety of its drivers.

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© 2022 Village of Niles, IL

Niles, IL

Pioneer Award

## Real Time Digital As-builts for Utilities

The Village of Niles oversees maintaining GIS maps of their utilities as well as performing requests made to the State of Illinois One-Call center, also known as the Joint Utility Locating Information for Excavators (JULIE). The process of collecting GIS field data was lengthy and left gaps between when a GIS database is finalized, and when the project is completed.

Tasked with updating the Niles Fiber Network, the team decided to purchase two receivers for \$16,337. The receivers allow real time transformation of data to usable web-based GIS field maps with sub meter accuracy to support any GIS or Survey-grade workflow. Working by collecting horizontal and vertical infrastructures as it is installed, the Trimble receivers improve accuracy of the as-built drawing by 700%. In the six months since implementing the receivers, there has been over 2,773 data points updated.

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Dubois, IN

Pioneer Award

## Wash Used Equipment Using the Mobile Elevated Wash Platform

The process for the Dubois County Highway Department to wash equipment after snow events was dangerous, as staff had to climb on top of the equipment with a high-pressure sprayer. Prioritizing the safety of its staff, the department knew the process must be updated. The limited real estate made it infeasible to create a new shop or renovate one to create an indoor wash bay.

Using the current space of the outdoor wash pit, the department created a structure that is movable and high enough for staff to stand on adjacent to the equipment. The structure allows staff to safely clean the large equipment, without having to climb over it. The structure was created in just two weeks using angel iron and expanded metal.

Since utilizing the mobile elevated wash platform, the Dubois County Highway Department was able to create a system of effectively washing equipment and returning them back to use during snow events. Most importantly, the staff are protected from dangerous situations.



© 2022 Dubois County Highway Department

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Fishers, IN

Pioneer Award

## The City of Fishers Partial Depth Concrete Joint Repair

In 1999, the city of Fishers invested in a substantial roadway improvement project. Following industry standards at the time, the roads were constructed of concrete using an unproven design mix. . In 2012 after many freeze-thaw cycles, the city began to see deterioration in the road at joints and cracks. Over the next five years, the rate of deterioration increased, and major repairs had to be made.

The street maintenance supervisors decided to use a partial depth milling technique, that would remove the old mix, replace it with FasTrac concrete and then seal and bond it. Using this method, the Fishers Department of Public Works have repaired 43,873 feet of partial depth concrete joints. One of the main priorities of this project, was to keep costs to the public at a minimum. By keeping the project in-house, repairs totaled \$955,141 for equipment, labor, and materials.



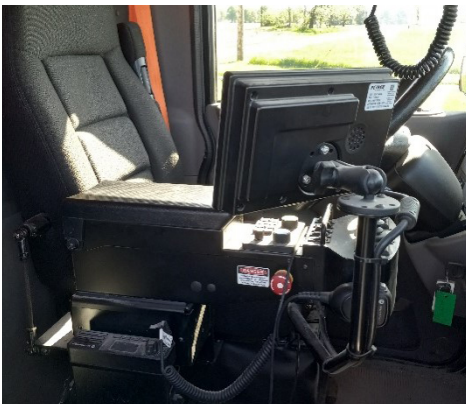
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White County, IN

Innovative Project Award

## Truck Hand Control Center

The transportation Drivers in White County were having difficulties adjusting control knobs while operating heavy machinery. The stationary arm was difficult for drivers of all heights and sizes to reach. The driver had to take their eyes off the road to see or adjust the control. To make this a safer process for the driver and those on the road, the county redesigned the control arm to be fully functioning with seat mobility. The total cost to install the new control arm was \$500 for steel plates. The new control arm makes it possible for drivers to easily adjust controls of the machinery, without taking their eyes off the road.

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Hamilton County, IN

Innovative Project Award

## Underbody Truck Wash



© 2022 Hamilton County Highway Department

Without a washing system in place, the highway department staff were not able to properly or safely clean under vehicles and equipment. Not cleaning the equipment prevents them from being inspected and deterioration of their service life. The team wanted a more efficient solution for cleaning that would keep debris away from hoses, rails, wiring, and other important components of the equipment.

For under \$1,000 for labor and materials, The Under Body Truck Wash was created. The wash was built into the ground with 3x9 inch metal pipe with a cap on one end and an elbow with a firehose coupler on the other. Holes were drilled at different angles to spread the water thoroughly across the bottom of the vehicles. Now, cleaning the underbodies of the equipment was efficient, safe, and extended the equipment's service life.

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White County, IN

SMART Transformation Award

## Fuel Depot Usage Monitoring System

During a fuel shortage, the White County Highway Department decided to implement a fuel tracking system to manage fuel usage across all their vehicles. A fuel controller and monitor were purchased for \$14,000. The monitoring system provides data in real time on usage of every gallon, ensuring fuel optimization during the shortage. Monitoring fuel usage allows the county to allocate and save fuel for vehicle use across all of its projects in the community.



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## HONORABLE MENTIONS 2022

White County, IN

**Bold Steps Award**

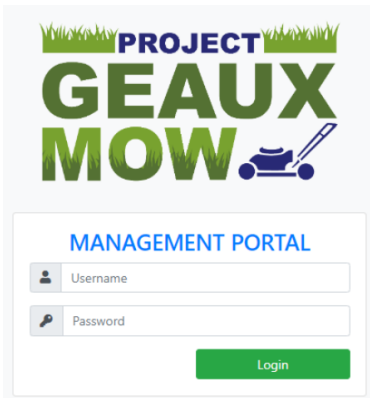
### Road Salt & Sand Mixing Operations

Transportation Personnel in White County, IN were running into issues mixing the salt/sand solution for winter distribution. The inconsistent mixtures were insufficient against the harsh weather and were causing damage to their equipment. Focused on receiving consistent results, the team purchased and installed a mixer and moved the process to an enclosed building. For \$115,000 the process was completely transformed and began producing consistent mixtures ready to be spread across roadways.



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Lafayette, LA

**Pioneer Award**

### Bidding Out Grass Maintenance with Geaux Mow

With over 1,600 acres of grass to mow, the City of Lafayette did not have the staff or equipment to keep up with the necessary grass maintenance. This led to the department falling behind with the public's mowing requests. The Geaux Mow web application was developed and allowed vendors to bid on the mowing work, in an open bidding system. The process stimulated the local economy by bidding the work out to local vendors while ensuring a fair price for the city.

The Geaux Mow system was hosted on Amazon Web Services and used a LAMP stack to run. Altogether, the system costs the city \$100 per month. Since using the open bidding system, the city has been able to cut 8 different divisions grass, exceeding the public's demand.

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White County, IN

Pioneer Award

## Snowplow & Salt Spreader Storage



© 2022 White County Highway Department

The process of removing and installing salt spreaders on snowplows was resulting in damage to the spreaders lights, hydraulic hoses, framing, and spinners. To improve this process the White County Highway Department welded two hooks and added a chained spread to hang the salt spreader to the front of the plow. It is estimated that with a \$200 investment in the hooks and chains, the county will be able to save \$17,500 annually on damage repairs to the salt spreader.

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Lafayette, LA

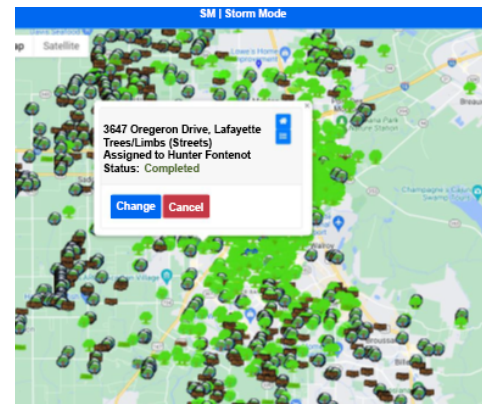
Bold Steps Award

## Improved Emergency Response Times with Storm Mode

In Lafayette County, the disaster response process was outdated and led to errors during critical response times. The current paper request process was leading to miscommunication between the dispatcher and the responder, such as duplication of orders.

The Traffic Roads and Bridges Department created an online platform where dispatchers could place and assign requests, eliminating the paper process. The online map allows staff to see the status of a request, ensuring a timely response and preventing duplication of orders. Along with the new web-based server, the city supplied the emergency response units with iPads, to provide updates, requests, and map issues while in the field.

The creation of the online platform was done on the AWS Server, costing \$100 a month. The iPads provided to the responders were a one-time cost of about \$300 per iPad, and the cell service on them is \$40 a month. The community benefits from the online platform with improved emergency response times during storm events.



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Kalamazoo County, MI

Pioneer Award

## Pavement Marking Layout Machine

With over 100 miles of road to lay down temporary markings during road improvements, the long current process of creating layouts was inefficient. The RCKC wanted to find a machine that was able to produce temporary markings, eliminating the layout process. The markings are crucial to define centerlines, lane lines, edge lines and non-passing zone designations on road surfaces to be permanently painted when the project is complete.

Unable to find a machine that would leave temporary markings with repetitive consistency, the RCKC made their own. Utilizing a GPS system donated to them and a \$6,700 Bobcat, the pavement marking layout machine was created. The machine was able to mark pavement using GPS technology, to accurately map the placement markings and minimize repetitive time laying out the roads. The markings were then used by the final team to place the permanent pavement markings on the new road surface.



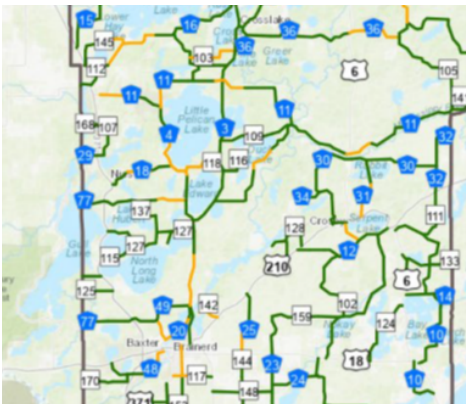
© Road Commission of Kalamazoo County, MI

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Crow Wing County, MN

SMART Transformation Award

## Pick A Mile (Crow Wing County's version of Adopt a Highway)

In Crow Wing County, there was no official Adopt a Highway roadside cleanup program. Although there were already volunteers cleaning the roadside ditches, their efforts were difficult to track and then give their work public recognition. After multiple asks from residents about a Adopt a Highway Program, the Crow Wing County Highway Department decided to create one.

The Pick A Mile roadside cleanup program was developed in collaboration between the Crow Wing County Highway Department, GIS, Land Services, Admin Services Departments, and a passionate resident. A software was integrated into the program to let the public stay informed of clean up plans, easily sign up to volunteer, and receive recognition for their work.

The software was created using ESRI and Survey 123 programs the county already owned. Overall, there were no outside costs for the development of the Pick A Mile roadside cleanup program. For no cost of the program, citizens could easily sign up to give back to their community. Additionally, roads are cleaner with less chance for debris to get out into the roadway and creating a potentially unsafe situation for drivers.

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Crow Wing County, MN

Innovative Project Award

## Filling More Sandbags with Less Staff



© 2022 Crow Wing County, MN

Filling sandbags was typically a two-person job. One person had to hold the bag and the other used a shovel to add the materials. This process was inefficient as it led to potential spillage and required two people, for a one-person job. Using scrap materials and a plastic sandbag chute, one of the staff members created a funnel like process to fill the sandbags. Using the new Sandbag Quick Filler, made the job manageable for one person and increased the productivity of the number of sandbags filled and, the community can be more quickly prepared for an emergency flood event.

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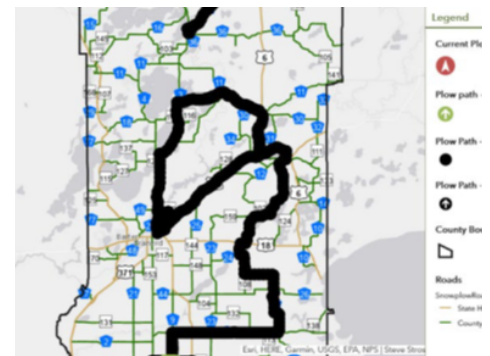
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Crow Wing County, MN

Innovative Project Award

## Where's My Snowplow?

The Where's My Snowplow? application was created to provide residents with real time information on the location of snowplows and the condition of the surrounding roads. The information allows residents to make safe decisions when planning to drive during hazardous conditions. The app was created using ESRI and Survey 123 programs that the county already owned a license for and is designed to be accessible from any smartphone, tablet or laptop. Providing information on road conditions allows the citizens to stay informed and safe.



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## HONORABLE MENTIONS 2022

Lake of the Woods County, MN

Innovative Project Award

### Modified Dozer Blade for Excavator for Clearing Ditches in the Spring

The snow and plow truck drivers in Lake of the Woods, MN are tasked with removing snow from the roads and ditches during large snow events. To do this, they are constantly removing snow and opening-up ditches. They began to run into difficulties as their normal bucket was filling up with slushy snow that could not be compacted on the snowbanks. Welding an old blade from an unused bulldozer to the excavator, the team created a tool that was able to open ditches that are full of slush preventing flooding and ensuring safe roads.



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©2022 City of Rochester, MN Public Works

Rochester, MN

Pioneer Award

### Using Gravity to Assist Pre-Wetting Roads

The plow truck drivers in Rochester, MN pre-wet the roads before laying down salt which allows the treatment to stick to the road better than if it were dry. When going up or down hills, the brine sloshes out of the two tanks causing the pre-wet function to error. Working with the force of gravity, the department mounted a small nurse tank below the two saddle tanks. The nurse tank collects the brine that has splashed out from the to higher tanks and pumps it back into use, allowing the plow to function without erroring. The total cost to install the nurse tank to the plow was \$1,778 for labor and materials. Attaching the nurse tank to the plow, has allowed the drivers to consistently pre-wet the roads resulting in better snow removal and less salt used.

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Lake of the Woods County, MN

Innovative Project Award

## Modified Shear Attachment for Excavator



© 2022 Lake of the Woods County, MN

The tree removal process in the Right of Way was labor intensive, expensive and unsafe. The crew in Lake of the Woods County used expensive logging equipment to cut down the trees by hand. Purchasing a shear head from a logger, the team welded it to be attached to their excavator. The new modified shear attachment allowed staff to cut down more trees from a safe distance without the use of expensive logging equipment.

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Ravalli County, MT

Pioneer Award

## Snowplow LED Taillight Air Diverter

In Ravalli County, MT the newer snowplows were equipped with LED taillights that were not warming up enough to melt the snow packed in the back of the snowplows. This led to visibility problems for the drivers making it unsafe for them and other drivers on the road. Valuable time was also being wasted as the drivers would have to get out of the vehicles and manually wipe the snow away.

To increase visibility, the Ravalli County Road Department realized they needed to increase air flow over the flat surface of the tailgates. Using an 8x 5-inch 90° rubber boot to compress air, the air is channeled to move directly over the lights with an air diverter. This allows for the warm air to be reused to melt the snow on the back of the snowplow.

The tubing was created for under \$100 using tubing and mounting pins. The mounting pins made the tubing easily added to existing plows and removable when not in use. The air diverted ensured a safe and efficient process of clearing the roads of the dangerous snow.



© 2022 Ravalli County, MT Road Department

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## HONORABLE MENTIONS 2022

Billings County, ND

Innovative Project Award

### New Oil Change Process Increases Efficiency

For the Billings County Highway Department in North Dakota, the process for collecting and disposing of used oil on vehicles required staff to manually dump 55-gallon barrels, that weigh more than 100 pounds, into a chemical holding tank. Not only was this physically demanding on the staff, but accidents were inevitable leading to unsafe conditions and inefficient use of their time. The vehicles were also unable to be used during this time, leaving road safety concerns to wait until after their maintenance was complete.

An oil saver system was designed using three components: a portable low-profile trailer, a stationary oil collection table and a chemical holding tank. The portable low-profile trailer is easily put under a vehicle on a lift, then drains the oil into the chemical holding tank using an air pump and hoses. The stationary oil collection table serves as an oil filter drainage pit. The discarded oil is pumped through a pipe into a 250-gallon chemical holding tank.

The total cost to create the oil saver system was \$1,200 for all the materials and labor. Eliminating the labor-intensive process, the oil saver system allows for an efficient and safe way for staff to collect and dispose of used oil. Oil changes are now quickly completed, returning the vehicle back to maintain public safety.



© 2022 Billings County, ND Highway Department

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© 2022 Stark County ND, Highway Department

Stark County, ND

Innovative Project Award

### Steaming Frozen Corrugated Pipes

The harsh winters in Stark County, North Dakota were causing corrugated pipes to freeze and become plugged with ice. When the pipes are frozen, the roads and ditches cannot drain water, resulting in the roads becoming soft and easily vulnerable to damage. Cleaning the pipes required hiring an expensive external contractor. The Highway Department team knew they needed a more effective solution that would save money and time.

They came up with the Culvert Steamer, which was designed to be a portable heated power washer to clean corrugated pipes. It was created for \$16,100 using a 4-wheel trailer, a power washer, a 300-gallon holding tank, 150 feet of hose and a water heater. The steamer heats up the water from the holding tank to spray high pressure water into the blocked corrugated pipes. The culvert cleaner allows the team to clean the pipes in house versus having to wait for a contractor. The innovation also enables the Highway Department to respond quicker, keeping the roadways safe against damage and creating a safer commute for drivers.

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Dunn County, ND

Innovative Project Award

## Inside Rack Prevents Cutting Edges From Freezing



© 2022 Dunn County, ND Highway Department

A cutting edge is one of the most important parts to a snowblade, first contacting the snow then cutting into it so the snow, so it can be removed. Limited space in the Dunn County North Dakota Highway Department's shop, resulted in the crew leaving cutting edges outside. This caused problems in the winter as the cutting edges froze or were buried in snow, making them almost impossible to use. The crew would have to wait for the metal to defrost before using it, wasting their time and energy.

Mobile racks were created and installed for \$426 to store the cutting edge inside the shop, while not taking up any additional space on the shop floor. The cutting edges were placed on racks with a mobile lift, making the process manageable for one person. Bringing the cutting edges inside also ensures the cutting edges will always be at room temperature, saving the crew time and energy.

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Traill County, ND

Innovative Project Award

## Trading A Plow for A Pickup Truck for Smaller Projects

In Traill County, ND, traveling to and from smaller projects in the chip spreader plow was slow and cumbersome. The top speed of the chip spreader was 17 mph, making transportation on roadways consume vital project time.

The Traill County Highway Department found a solution that would trade in a plow for a pickup truck to get their time back on projects. They developed a new chip seal bucket spread that attaches to a skid steer that is easily hauled using a pickup truck that can travel at 55 mph. The innovation was built in-house costing the County \$1,133.48 for parts. Utilizing the skid steer with the bucket chip spreader has increased the number of projects that can be completed in a day by significantly reducing travel times.



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Bedford, NH

SMART Transformation Award

## Accessible On-Demand Call Log

The Department of Public Works in Bedford, NH was not able to effectively communicate information on road maintenance projects to staff in the field. The field staff would have to call into the office for instructions, work requests, and project updates. The crew would also reach out by email, which led to delays in connecting with each other. The DPW team knew they needed a solution that would improve communication between the office staff and staff in the field.

DPW created a Google Sheet that can be shared between office staff and field staff to manage, assign and track project orders. Now, when office staff receive a request from the public, they can input all necessary data in the log. The centralized web-based log is accessible through the field workers smart phones, removing all communication barriers.

Implementing the log has allowed a streamlined communication process of vital information between the office and field staff. Field staff now respond faster to road local road maintenance issues, resulting in safer roads and travel for the public.



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Laconia, NH

Innovative Project Award

## Pipe Measuring Tool Improves Safety

In order to obtain pipe sizes for design build applications, a staff member would have to climb into the drains catch basin to measure the diameter. This was not only dangerous for the staff member to climb into the drain but was a time-consuming process that limited the amount of work that could be completed in a day.

Craig Borgeson assembled a tool in house at no cost out of spare wood that allows staff to measure the pipe through the grate into the catch basin. Now, staff simply insert the device through the grates to accurately measure the diameter of the pipe without having to climb into a confined space. Using the new pipe measuring tool facilitates the safe measurement of pipes for design build and allows staff to have more time to keep the roadways safe for the public.

**Craig Borgeson**  
City of Laconia, NH DPW  
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Claremont, NH

Pioneer Award

## Funnel System Effectively Refills Salt/Sand Mixture in Skid Steers



©2022 City of Claremont, NH  
Public Works Department

During winter storms in Claremont, NH, a skid steer with a salt/sand spreader is used to clear and treat the city's sidewalks. When a skid steer runs out of the salt/sand mixture, another worker had to drive a pickup truck over, climb a steep ladder into the bed of the truck, and shovel the mixture into the skid steer hopper. The process was dangerous and time consuming, as staff were shoveling hundreds of pounds of the mixture by hand.

Using scrap metal on hand, three team members created a conveyor/funnel that is connected from the pickup truck to the skid steer spreaders hopper. The salt/sand mixture is then easily funneled between the two vehicles, with no manual labor required by staff.

The salt/sand mixture can now be loaded from one vehicle to the other in about 30 seconds without either staff member having to exit their vehicles. The process is safer for staff and extremely efficient. Staff no longer must climb up a steep ladder in wintery conditions, freeing up more time for them to focus on clearing and treating the sidewalks for public use.

### Alex Gleeson

City of Claremont, NH Public Works Department

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Montgomery, NJ

Innovative Project Award

## Streamlined Process of Inlet Repairs with Mobile Trailer

Hand tools, concrete, bricks/blocks, wood for forms, and a concrete mixer are among just some of the materials needed to complete road inlet repairs. To transport all the equipment required for the job, multiple trucks and staff members had to load and unload all the heavy equipment by hand. This was time consuming and labor intensive for staff, leaving inlets unworking and unable to protect against flooding.

Ensuring a more streamlined process, the department created an inlet repair trailer, with all the materials readily available on one trailer. The trailer was equipped with a generator, electric cement mixer, electric crane, electric water pump, and all the tools necessary for inlet repairs.

Using the inlet repair trailer, staff can prevent potential flooding of roads by fixing more inlets in less time. Additionally, the process is efficient and safe for the staff. The total cost of the project was \$3,500.



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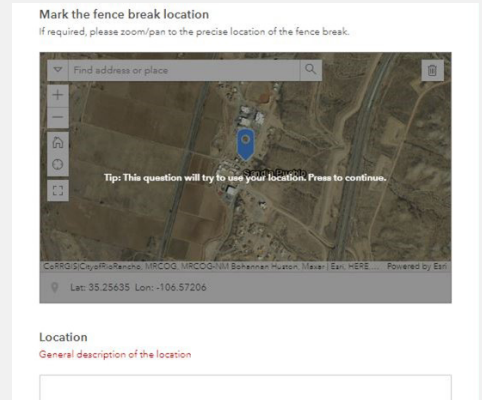
Pueblo of Sandia, NM

Pioneer Award

## Keeping Roads Safe with the Transportation Reporting Mechanism

In the Pueblo of Sandia New Mexico, there are 850 acres of pastures used for agriculture where some animals are free to graze. Broken fencing along the pastures is a major problem, as the animals can enter the main roadways causing extreme danger for the animals, area pedestrians, and the drivers. According to Pueblo of Sandia officials, reporting a broken fence would take days, because of an outdated paper process. The Pueblo needed to find an efficient way to report road issues in real time, to make potential lifesaving roadside repairs.

The Pueblo created a Transportation Safety Reporting Mechanism using Survey123 forms, ArcGIS Geoevent Server and Web App Builder Applications. The form allows users to report hazardous damage to Pueblo operations in real time, allowing them to respond quickly and prevent accidents. The data is accessible across all the Pueblo departments, allowing them to track and analyze damage patterns. Eliminating the paper reporting process, the department ensures issues are fixed quickly, resulting in safe roadways for its community.



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Department of Public Works

Chenango County, NY

Innovative Project Award

## Custom Built Water Truck in Response to Water Truck Shortage

In Chenango County, NY, the availability to use or purchase a water truck was extremely limited. The Department of Public Works utilizes the truck for many vital tasks for the community such as unclogging culvert pipes, washing down bridges and roads of excess salt/sand and dust control. With minimal options to buy a water truck, the department decided to build their own.

The department installed a 2,000-gallon water tank they had on the back of a dump truck. A hydraulic water pump with a quick connect was included to change the water pressure for various jobs. Two hoses were installed. One was used to draw water in the field if necessary and the other connected to a fire hose. All-together, the project cost about \$1,000.

With the creation of their own custom built water truck, the Department of Public Works now has a water truck readily available. This allows the department to use the capabilities of a water truck to continue to maintain roadways, improving safety for the community.

**Jeremiah Smith**  
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Broome, NY

Pioneer Award

## Frame Makes Sander Chain Installation Easier



© 2022 Town of Broome, NY Highway Department

Replacing the sander chain in a truck was almost impossible due to its heavy weight. The process required staff to hold the chain away from the spinner without reversing the hose on the chain motor, forcing the chain to feed from the top and not the correct direction. The staff knew there was a more efficient way to feed the chain and avoid removing corroded hoses that could cause messy oil leaks.

Using a couple of 2x4 boards and a 2x6 board the team built a frame to fit between the floor and the chain sprocket guide, allowing the chain to be fed in the correct direction. Both chains were connected which allowed the new chain to be pulled through, while the slack of the old chain was pulled by a loader to keep it from getting in the way of the new chain.

The process of replacing the sander chain in a truck was completely revolutionized with the use of the frame. Staff can now easily replace the sander chain safer and more efficient than ever before, spending less time in the shop and more time making improvements to the roads. The total cost to create the frame was \$40.

### Carter Warner

Town of Broome, NY Highway Department

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Granville, NY

Pioneer Award

## Vibrating Shaker Cleans Snowplow Chutes

In Granville, NY plow truck drivers treat the roads with a sand and salt mixture when plowing. Switching between plowing and releasing salt was causing the sand to build up in the chute. This released an uneven salt pattern on the road and backed up the chute. To unblock the chute, drivers had to get out of their vehicles and use a hammer to knock the buildup out. This was not only unsafe for them to do in the snowy conditions on the side of the road, but the constant back and forth was wasteful of their time.

The team created a 200-pound vibrating shaker that attaches to the chute and knocks off the materials when using the salt, preventing backups and maximizing salt distribution. The shaker is connected through 100ft of wire that is ran from the cab of the truck, down the frame of the back of the truck, and bolted to the front side of the chute. The total cost of installing the shaker is \$300 per truck.

The chute shaker has had a positive impact on the truck drivers and their work. They are now working more efficiently by clearing more roads and safely by shaking the materials out of the chute from the cab of their truck.



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### Nicholas Loomi

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# HONORABLE MENTIONS 2022

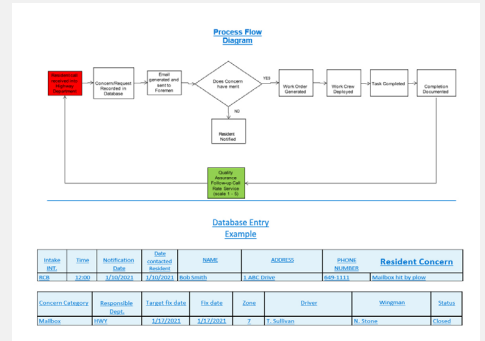
Hamburg, NY

SMART Transformation Award

## An Innovative Way to Track Resident Concerns

With over 60,000 residents in the town of Hamburg, the town needed an effective way to track and manage calls from residents over their roadway concerns. Their calls directly result in the daily scheduling and deployment of work orders. Without a system in place, completing requests is inefficient and almost impossible to track.

The Hamburg Highway Department implemented a Resident Concern Tracking Process to track and manage the questions, comments and concerns of the residents in a timely and efficient manner. In 8 steps, the department can gather information of the caller, prioritize the request, schedule work orders and track the completion of the work order. Since implementing the Resident Concern Tracking Process, the department has been able to effectively manage and fulfil resident concerns.



© 2022 Town of Hamburg, NY Highway Department

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Village of Warwick, NY  
 Innovative Project Award

## Maintaining Ice Rink Made Simple

The Village of Warwick, NY created the FinzBoni to maintain their ice rink while delivering a smooth surface for skaters. The creation was designed to mimic the results of a Zamboni, but as a handheld device with minimal cost to the Village. Through the FinzBoni water is applied through six-inch holes as propane is fed through a pipe, heating up the ice and melting the slush. A door sweep then squeegees the warm water to a smooth glossy finish, desirable for skaters. The FinzBoni was created for \$150 and ensures the ice rink is safe and usable for the public.

**Mike Moser**  
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© 2022 Town of Riga, NY  
Highway Department

Riga, NY

Pioneer Award

## New and Improved Shoulder Backup Roller

After any road improvement project, using a shoulder backup is crucial to protect the outside edges of the pavement against edge cracking and edge loss. The area for shoulders is typically steeper making it unsafe to navigate with a roller. After seeing a DOT tow behind offset roller, Jeff Flager knew the department needed a safer way to use a shoulder backup.

“I can build something better than that” Jeff said as he worked tirelessly to create a new and improved backup roller. A frame was created using multiple cylinders, a valve, steel, and used scrap material. The frame was then mounted on an unused tractor. The new shoulder backup roller was safe on steep shoulders and ensuring effective road maintenance. The total cost of the project was \$5,600.

### David Smith

Town of Riga, NY  
Highway Department  
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Washington County, NY

SMART Transformation Award

## Safety Days Provides All Around Training

Safety is the number one core value for the Washington County Public Work Department. To reflect this, the county implemented a safety day for employees, where group training sessions occur all day on a variety of different topics. A system was developed to ensure group sizes are manageable and schedules allocate time for employees to attend each training session. Food and drinks are provided for all attendees.

The only real cost associated with a safety day is the food and drinks, which runs about \$20 per person. To date, all trainers have volunteered to provide training without payment. Since providing training on a variety of different topics during safety days, the county has reported increased safety across all job sites.



© 2022 Washington County, NY

### Phil Spiezio

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## HONORABLE MENTIONS 2022

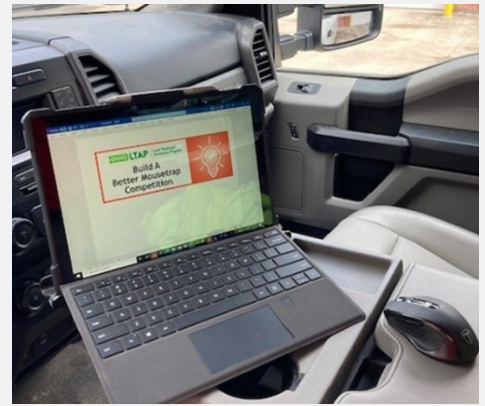
Centerville, OH

Innovative Project Award

### Vehicle Computer Mount

In Centerville Ohio, road inspectors had to take notes and then return to their office to complete and submit the results of their Right of Way and Construction inspections. After conducting inspections, there was no comfortable way to report the results from the inspector's car so they had to wait until they returned to the office, leading to delay of information. Communicating results are especially important in the event of a road or bridge failure that could pose an immediate threat to the public.

Using materials on hand, the Centerville mechanic created a mount out of an old headrest that would attach to the center console of the car. The stationary area allows inspectors to report the results of their inspections in real time. In the case of a failure, projects were stopped which is important for the public and the crew to be aware of. The vehicle computer mount facilitates quick communication of important inspection results, ensuring road safety for its community.



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© 2022 Municipality of Añasco, PR

Municipality of Añasco, PR

Pioneer Award

### Old Truck Converted into Asphalt Distributor Truck

The Municipality of Añasco needed an asphalt distributor truck to pave the municipality's roads that had been damaged in 2017 by Hurricane María. To purchase one would cost \$140,000 and take up to six months to receive, which in turn resulted in six months of roads being unattended to. Instead of waiting, the team decided to engineer their own asphalt distributor truck. An unused vehicle with a 300-pound capacity was modified to include a 500-gallon asphalt emulsions tank and a 20-pound liquid gas tank. By being proactive and creating their own machine, the Municipality saved money and time eliminating the possibility of six-months with no activity. Instead, they were able to utilize the time making repairs and ensuring road safety for their community.

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Municipality of Santa Isabel, PR

Pioneer Award

## Homemade Trash Picker Tool



© 2022 Municipality of Santa Isabel, PR

The plastic pickers used by staff in the Municipality of Santa Isabel Puerto Rico were made of nonresident plastic that can easily break during cleaning and maintenance jobs. When the pickers would break, there would be gaps between buying the new equipment and receiving it, leaving the work incomplete.

Using an old trimmer and a broom handle, the municipality created a homemade trash picker tool recycled from old equipment. The tool was sturdy and would not break, allowing the trash to accumulate on it before depositing in the trash. Using the new tool, the staff saves time and money replacing plastic pickers. They can effectively continue to remove trash that could cause damage to the roadway systems.

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Municipality of Hormigueros, PR

Pioneer Award

## Roadside Barrier Vegetation Control

The Municipality of Hormigueros is a tropical environment with rainfall greater than 80 inches per year. This leads to vegetation on the medians to grow excessively, requiring lots of maintenance. The outgrown vegetation is a safety hazard for drivers that affects their normal driving behavior. On highways with speeds of 40-45 miles per hour, the typical vegetation removal process required seven workers on the dangerous highway.

In order to keep up with the maintenance of the median vegetation growth, the crew created a blade out of materials from the Municipality's workshop, that is welded to the side of the digger's bucket. The sharp blade is now able to cut the vegetation that grows adjacent to the medians. Now, staff can keep up the overgrown vegetation quickly with the bucket digger.

The process of median vegetation maintenance was simplified using only 4 workers, freeing up the time of three workers to focus on other roadway issues. Cutting the vegetation is now quicker and safer for the crew and for the drivers on the road. For no cost to create, the municipal can ensure the safety of its roadways and drivers.



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Municipality of Mayagüez, PR

Pioneer Award

## Sledge Used to Transport Portable Tamper

In the Municipality of Mayagüez, PR, pothole maintenance was inefficient and physically draining on staff. Without a hydraulic system to load and unload the 200-pound portable tamper in and out of the truck, staff had to do it by hand. The process was tiring and dangerous for crew and wasted time between each repair.

Using a wooden plank as a sledge, José Olán and José Monte created a towing platform truck attachment to use for transporting the portable tamper once it was initially lowered. The towing platform, also called The Sledge, has allowed staff to tow the heavy equipment from the back of a truck, eliminating the load and unload process for each pothole. For under \$100, the sledge created an efficient way to transport the tamper between jobs. This saved the crew time and energy allowing them to prioritize keeping the roads safe from hazardous potholes.



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## List of LTAP Centers

State/Territory	Center Name	Address	Phone Number	Website
<b>Alabama</b>	Alabama Transportation Research Institute	Samuel Ginn College of Engineering 1301 Shelby Center Auburn, Alabama 36849	334.844.2308	<a href="http://eng.auburn.edu/atap/">http://eng.auburn.edu/atap/</a>
<b>Alaska</b>	Alaska Research, Development, & Technology Transfer	Statewide Design & Engineering Services Alaska DOT & Public Facilities 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>
<b>Arizona</b>	Arizona LTAP	1130 North 22nd Avenue Phoenix, AZ 85009	602-712-4050	<a href="https://www.azltap.org/">https://www.azltap.org/</a>
<b>Arkansas</b>	Arkansas Technology Transfer Center	1 University of Arkansas 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>
<b>California</b>	California LTAP Center	3000 State University Drive Sacramento, CA 95819-6103	916-278-4433	<a href="http://www.californialtap.org/">http://www.californialtap.org/</a>
<b>Colorado</b>	Colorado LTAP	4616 S. Shields St, Suite BP171 Fort Collins, CO 80526	720-616-8982	<a href="http://www.ColoradoLTAP.org">http://www.ColoradoLTAP.org</a>
<b>Connecticut</b>	Connecticut Technology Transfer Center	270 Middle Turnpike Unit 5202 Storrs, CT 06269-5202	860-486-5400	<a href="https://t2center.uconn.edu/">https://t2center.uconn.edu/</a>
<b>Delaware</b>	Delaware T2 / LTAP Center	355A DuPont Hall University of Delaware Newark, DE 19716	302-831-6241	<a href="https://sites.udel.edu/dct/t2-center/">https://sites.udel.edu/dct/t2-center/</a>
<b>Florida</b>	Center for Urban Transportation Research	University of South Florida	352-273-1670	<a href="https://floridaltap.org/">https://floridaltap.org/</a>
<b>Georgia</b>	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>
<b>Hawaii</b>	State of Hawaii Department of Transportation	2530 Likelike Highway Honolulu, HI 96819	808-832-3405 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>
<b>Idaho</b>	LHTAC T2 Center	3330 W. Grace Street Boise, ID 83703	208-344-0565	<a href="https://lhtac.org/">https://lhtac.org/</a>
<b>Illinois</b>	Illinois Technology Transfer Center	2300 S. Dirksen Parkway 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>
<b>Indiana</b>	Indiana LTAP	504 West State Street West Lafayette, IN 47907-2058	765-494-2900	<a href="https://docs.lib.purdue.edu/inltap/">https://docs.lib.purdue.edu/inltap/</a>
<b>Iowa</b>	Iowa LTAP	2711 South Loop Drive Suite 4700 Ames, IA 50010-8664	515-294-8103	<a href="https://iowaltap.iastate.edu/">https://iowaltap.iastate.edu/</a>
<b>Kansas</b>	University of Kansas Transportation Center	1536 W 15th Street Suite G 520 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
<b>Kentucky</b>	Kentucky Transportation Center	176 Raymond Building Lexington, KY 40506-0281	800-432-0719	<a href="https://www.kyt2.com/">https://www.kyt2.com/</a>
<b>Louisiana</b>	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>
<b>Maine</b>	Maine Local Roads Center	24 Child Street Augusta, ME 04330	800-498-9133	<a href="https://www.maine.gov/mdot/mlrc/">https://www.maine.gov/mdot/mlrc/</a>
<b>Maryland</b>	Center for Advanced Transportation Technology and Maryland T2 Center	5000 College Avenue 2200 Technology Ventures Bldg., College Park, MD 20740	301-403-4623	<a href="http://www.mdt2center.umd.edu/">http://www.mdt2center.umd.edu/</a>
<b>Massachusetts</b>	Massachusetts LTAP - Baystate Roads	214 Marston Hall 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>
<b>Michigan</b>	Michigan Local Technical Assistance Program	309 Dillman Hall 1400 Townsend Drive Houghton, MI 49931	906-487-2102	<a href="http://www.michiganltap.org/">http://www.michiganltap.org/</a>
<b>Minnesota</b>	Minnesota LTAP	University Office Plaza, Suite 440 2221 University Avenue, SE Minneapolis, MN 55414	612-626-1077	<a href="http://www.mnltap.umn.edu/">http://www.mnltap.umn.edu/</a>
<b>Mississippi</b>	Mississippi LTAP	401 North West Street Jackson, MS 39201	601-359-7685	<a href="https://mdot.ms.gov/portal/LTAP/">https://mdot.ms.gov/portal/LTAP/</a>
<b>Missouri</b>	Missouri LTAP	710 University Drive Suite 121 Rolla, MO 65409-1340	573-341-7200	<a href="https://mltrc.mst.edu/moltaphome/">https://mltrc.mst.edu/moltaphome/</a>
<b>Montana</b>	Montana Local Technical Assistance Program	2327 University Way Room 230 Bozeman, MT 59715	406-994-6100	<a href="http://www.montana.edu/ltap/">http://www.montana.edu/ltap/</a>
<b>Nebraska</b>	Nebraska Local Technical Assistance Program	650 J Street, Suite 215 A 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>
<b>Nevada</b>	Nevada LTAP Center	Airport Plaza Office Bldg. 1755 E. Plumb Lane, Suite 264 Reno, Nevada 89502	775-420-4811	<a href="https://nvltp.com/">https://nvltp.com/</a>
<b>New Hampshire</b>	UNH - Technology Transfer Center	33 Academic Way Durham, NH 03824	603-862-0030	<a href="https://t2.unh.edu/contact-us">https://t2.unh.edu/contact-us</a>
<b>New Jersey</b>	New Jersey Local Technical Assistance Program	100 Brett Road Piscataway, NJ 08854-8058	848-445-0579	<a href="https://cait.rutgers.edu/njltap/">https://cait.rutgers.edu/njltap/</a>
<b>New Mexico</b>	New Mexico LTAP	1 University of New Mexico Albuquerque, NM 87131	505-277-0767	<a href="http://ltap.unm.edu/">http://ltap.unm.edu/</a>
<b>New York</b>	Cornell Local Roads Program	106 Riley Robb Hall 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>
<b>North Carolina</b>	North Carolina LTAP	909 Capability Drive Research Building IV Raleigh, NC 27606	919-515-8899	<a href="https://itre.ncsu.edu/focus/ltap/">https://itre.ncsu.edu/focus/ltap/</a>
<b>North Dakota</b>	North Dakota LTAP	515 ½ E. Broadway Suite 101 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 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 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 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 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 University of Puerto Rico – Mayagüez Campus P.O. Box 9000 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 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 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 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 Knoxville, TN 37996-4133	865-974-5255	<a href="http://ttap.utk.edu/">http://ttap.utk.edu/</a>
Texas	TxLTAP	140 W. Mitchell Street 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, 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 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 Thornton Hall, Room B122A 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 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, 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 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 Dept. 3295 Laramie, WY 82071	307-766-6743	<a href="http://www.uwyo.edu/wyt2/">http://www.uwyo.edu/wyt2/</a>

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