



2021 Build a Better Mousetrap Competition

transfer technology through collecting and disseminating real-world examples of best practices and tips from the field.

West Virginia LTAP
wvltap.org



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ltap
West Virginia
WV Local Technical
Assistance Program

West Virginia University
BENJAMIN M. STATLER COLLEGE OF
ENGINEERING AND MINERAL RESOURCES

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- development of tools or gadgets
- equipment modifications
- processes that
 - enhance safety
 - reduce costs
 - improve efficiency
 - or improve transportation

Innovative Solutions

Highlighting innovative solutions to everyday challenges that local transportation professionals encounter

wvltap.org/mousetrap

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Tack Coat Sprayer

WVDOH-D4 Everett Sine

1st Place – New Tools Category

Problem Solved

The steps involved with tack coat, from the initial mixing stage to transporting to applying to potholes needed to be more efficient. Previously, tack coat was taken to the job site in five-gallon buckets, mixed on-site, and applied using paint brushes or brooms to get the tack coat material into the hole.

~ \$200 for materials & two-hours of labor.

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Savings/Benefits

- Allows crew to mix/haul 1-gallon to 55-gallons of tack and spray instead of brushing or brooming it on.
- Makes the process quicker and more efficient. Ability to patch holes faster benefits our crews and public.

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Self-Batching Concrete Mixer & Silo

City of Buckhannon

1st Place – Sustainability Category

Problem Solved

City street crews pour, on average, ~1200 cu. yds. of concrete annually. In our location we have only one vendor to purchase ready mix concrete. We were constantly having to try to schedule concrete sometimes ahead of time to meet our needs. This coupled with the ever-increasing costs of buying concrete got us brainstorming.

Public Works Director Jerry Arnold; Street Supervisor Brad Hawkins;
Council Member CJ Rylands

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EQUIPMENT & COST
FIORI DB460 Self-Loading Concrete Mixer and an HS 15.0 Silo
\$150,000

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Savings/Benefits

- Projected cost savings of over \$660,000 over five-years.
- Making us much more PROWAG compliant. Able to do about twice as much sidewalk and ramp work for the same money.
- Able to quickly remediate road cuts - reduces liability
- Can batch concrete for our other departments

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City of Asheville Public Works, North Carolina

Sidewalk Assessment App Prioritizes Projects

The citizens of Asheville demanded to know why certain sidewalk projects have priority over others. Asheville Public Works staff needed to justify sidewalk maintenance decisions with an objective rating system like the one used for street projects. Public Works staff needed a tool that would identify sidewalks in need of repair based on pavement condition surveys but off-the-shelf software and apps did not completely meet their needs. Loading the existing inventory dataset of sidewalks into geographic information system software that works with online maps started the process of customizing the app. Inspectors used the web map on their mobile devices to capture and edit sidewalk data. The streets division manager and streets operation manager performed quality checks on data, which now assigns priority based on condition severity. The app helps minimize mobilization costs by grouping nearby projects together and informs planning for larger capital improvements. Using data to estimate preventive maintenance funding needs, increase general awareness of sidewalk upkeep and accessibility needs, and respond to citizen inquiries and grant opportunities is a win for everyone.



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North Carolina.

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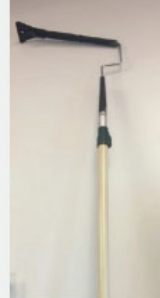
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HONORABLE MENTION: MAINTENANCE TOOLS AND METHODS

City of Papillion Public Works, Nebraska

LED Signal Scraper Provides Bright Way to Remove Snow and Ice

Each winter, the City of Papillion Public Works encounters heavy, wet snow that sticks to LED traffic signals during storms. The snow blocks out the signal because, unlike older incandescent versions, LED lights do not produce enough heat to melt snow. Public Works wanted to find a way to remove this snow and ice without forcing road crews to spend long periods of time in harsh winter weather. Staff mated an ice scraper to a paint roller and mounted both atop an adjustable extension pole. This allowed crews to reach the tool into a hooded light to clear the lens, either from the ground or from inside a pick-up cab. Completing the entire project in-house using basic hand tools meant a cost of only \$50 per scraper. Armed with this low-cost solution, Papillion crews effectively cleared traffic signals throughout the winter, ensuring signal visibility for the driving public while also exposing crews to less snow, ice, and cold during their workday.



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City of Papillion Public
Works, Nebraska.

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DE-CLOGGING THE DE-ICER

It is important to properly flush and clean de-icing equipment. If the de-icing chemicals used on the roads are left in the pumps, gears can deteriorate and ruin the pump beyond repair. The town of Cheshire, CT, recently replaced five pumps at a cost of \$2,500 and 10 hours of labor. Personnel wanted to avoid this time and expense in the future, so they developed a maintenance tool to flush the de-icing equipment on trucks between storms and at the end of each winter season. They installed a valve and coupler on each de-icing system to isolate its pump and filter. This allowed them to flush the de-icing system with water. Additionally, during this process, staff added recreational vehicle antifreeze with lubricant to prepare the de-icing system for seasonal storage and maintenance. Installation of the valve, coupler fitting, and hose can take approximately 1 hour. Materials cost about \$50 per de-icing system.



Source: Town of Cheshire, CT

For more information contact:

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Local Public Agency: Town of Cheshire

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Public Works and Water Resources,
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Public Works and Water Resources, City of Newark, Delaware

Street Sweeper Gets a Second Chance to Serve

The Public Works and Water Resources Department in Newark, Delaware, wanted to repurpose the city's inoperative street sweeper. While the back engine that powered the sweeping machine no longer worked, the truck's front engine and chassis were fully functional. By installing a flatbed for moving materials and adding a removable brine tank for pretreating roadways before winter storms, the remodeled truck allowed Newark to add two capabilities to the city's fleet while simultaneously reducing waste by keeping a functioning vehicle out of the landfill. In addition, the team added emergency lighting as well as new electric valves and PVC piping for brine application that perform exceptionally well at accepted brine application rates. Creating the entire project for the "new" truck in-house for \$2,795—far less than the cost of purchasing a new one—demonstrated how an old street sweeper can live on with a few innovative modifications.

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HONORABLE MENTION: FACILITIES IMPROVEMENTS

Schuyler County Highway Department, Illinois

Recycled Oil Cuts Energy Costs

The Schuyler County Highway Department wanted to reduce energy costs for its shop spaces. After implementing a few energy-saving upgrades, they decided to tackle their most costly consumption expense: heating the four bays for the County's snowplow trucks as well as their front office space. For \$6,985, the Department acquired a used oil burner for heating the bays, and for the first few years, supplied and stored its own oil in a self-fabricated, 500-gallon tank at a cost of \$1,500. Wanting to make the system even more economical and efficient, Schuyler partnered with local mechanics to repurpose used oil from their shops into heating oil for the system, supplying the burner through a rotation of recycled 275-gallon intermediate bulk totes. Today, the facility meets 90 percent of its heating needs using recycled oil, dramatically reducing energy costs. Before implementation, the annual utility budget ranged from \$12,000 to \$14,000; with the new system, the annual budget for the last three years has ranged from \$2,000 to \$3,000, resulting in a savings of roughly \$10,000 each year.



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Department, Illinois
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Swatara Township Highway Department,
Pennsylvania Steel Guard Keeps Salt
Spreader Out of Harm's Way



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Pennsylvania.

Facilities Improvements WINNER:
OLD GUARDRAILS FIND NEW PURPOSE



Source: Clearwater County, ID, Road and Bridge Dept.