

YOU SHOW US CONTEST 2012



FHWA LTAP/TTAP
**BUILD A BETTER MOUSETRAP
NATIONAL COMPETITION**
National Entry Booklet 2012



Images from the 2012 Build a Better Mousetrap National Competition

www.ltap.org/resources/mousetrap.php

2012

National Better Mousetrap Winners

- **1ST PLACE:** Repurposing Used Truck Tires for Wing Plow Cutting Edge: *Michigan*
- **2ND PLACE:** Under Vehicle Washer: *Connecticut*
- **3RD PLACE:**
Snow Pusher
North Dakota



“YOU SHOW US” CONTEST

Judges

- Monty Sedlak; *f. County Street Supervisor (CH2M Hill)*
- Wayne Lupton; *f. DOT Maintenance/ Winter Ops (Envirotech)*
- Laura Kroeger; *Urban Drainage and Flood Control District*
- Mark Hood; *PA LTAP Traffic/Safety Engineer (Pennoni)*
- Mark Sandifer; *f. LTAP Manager (FHWA Technology Deployment)*
- John Bemelen; *Trainer (ATSSA)*
- Cathy Satterfield; *FHWA Office of Safety Design*
- Dahir Egal; *FHWA Safety and Traffic Operations*

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Judges Ranking Sheet

Please use the following simple score sheet to rank nominees from highest/best (4) to lowest (1).

PROJECT	Intake Backing Plates	Spray Bar System	Wheel Rake	Loader Scaffold
Safety Improvement				
Operational Efficiency				
Innovation				
Cost Savings				
Ease of Implementation by Others				
TOTAL:				

Please provide a comment or two as to why you selected your *first* choice:

North Dakota: Wheel Rake

- Matt Monson and Jim Anderson
Griggs County



North Dakota: Wheel Rake

Problem

- Mowed grass from ditch blows onto roadway.
- When blading, grass mixes with gravel causing big mounds and ridges.
- 2- 3 feet of mowed grass ends up narrowing road width
- Hazard to the traveling public, potential for accidents

North Dakota: Wheel Rake

Solution



- Modified wheel rake to mount on front end of a motor grader to remove loose grass prior to road blading.
- Rake attaches to dozer blade with multiple adjustments for angle and height.
- Loose grass raked into the ditch blows away or deteriorates.

North Dakota: Wheel Rake

Labor & Materials

- Wheel rake discarded by local farmer = \$0
- Modifications: flat iron, telespar tubing, nuts & bolts = \$50.
- Labor: 2pp x 8 hrs x \$35/hr = \$280
- **Total cost: \$330**



North Dakota: Wheel Rake

Savings & Benefits

- Safety to traveling public greatly improved by eliminating mounds/ridges of mixed grass and gravel.
- Road is wider and gravel is more evenly distributed.
- Making just one pass while blading saves time and money.
- Employee and public safety is improved with limited time spent on road surface.

Colorado: Asphalt Spray Bar System

- John McMinn
El Paso County



Colorado:

Spray Bar System

Problem



- When patching large areas, like "blade patching", used truck mounted spray wands to apply the tack oil
- Doing by hand resulted in uneven application, too much product, or during wind – getting covered in tack oil
- A distributor truck for relatively small jobs was "overkill"

Colorado:

Spray Bar System

Solution



- A "spray-bar" that hung on back of asphalt patch truck, on lift arms for patch roller.
- The hand wand can be quickly disconnected, and hose attached to the spray-bar.
- Has several valves to control width of spray area
- Roller lift can raise/lower bar changing thickness of pattern
- Can all be turned on/off from inside cab while on move

Colorado: Asphalt Spray Bar System

Labor & Materials

- Spray nozzles, 1/2" iron pipe, 1/2" tees, ball valves
- Total Cost: ~ \$40



Colorado: Asphalt Spray Bar System

Savings & Benefits

- More even application, resulting in better final product
- 1/3 less oil used - saving money
- Operators no longer going home "wearing" layer of oil, keeping it out of eyes and off clothes

South Dakota: Loader Scaffold

- Dennis Clark
Brookings County



South Dakota:

Loader Scaffold

Problem



- Need to cut trees or limbs that overhang roads
- Crew members stood in loader bucket while cutting with chain saw. Safer operation needed since a man fell from bucket after cutting a large limb.
- Cost prohibitive to purchase a bucket truck
- Difficult to hire service in emergencies

South Dakota: Loader Scaffold

Solution



- A safety scaffold that mounts at front of loader bucket
- Railing surrounding front and sides of bucket
- Strong mesh floor for safety in preventing slips
- Safety harness and lanyard attached to a ring

South Dakota: Loader Scaffold

Labor & Materials

- All material salvaged, except safety mesh for floor.
- Materials: \$200
- Labor: \$800 (estimate)
- **Total cost: ~\$1,000**



A locking device installed on loader controls in cab so bucket cannot be tilted or raised/ lowered while work is being done from bucket.

South Dakota: Loader Scaffold

Savings & Benefits

- Risk manager for public liability pool inspected the scaffold and gave approval for doing overhead work
- One serious or minor injury from fall far outweighs cost of building scaffold
- No injury of any kind sustained in overhead work since its use

MONTANA: Intake Backing Plate

- Steve Kurk
*City of Bozeman
Street Dept*



MONTANA: Backing Plate Problem



- Backing plates covering stormwater drains damaged by heavy equipment or struck by snow plows in winter
- Backing plates are required by City's Engineering Dept to protect debris from getting into stormwater drain systems
- Old method of replacing damaged plates required digging out old broken plates embedded in concrete

MONTANA: Backing Plate

Solution



- Removal of concrete and infrastructure took approx 3 days in labor to replace entire backing structure
- A viable solution was to bolt a metal cap onto the remaining infrastructure of the damaged plate

MONTANA:

Backing Plate

Labor & Materials



- Shop time to cut and mold cap plate to specific intake plate location + labor to replace plate:
- 1pp @ \$25/hr x 3 hours = \$ 75
- Equipment: Metal Cutter; Metal Folding Equip, Wrench
- Materials: $\frac{3}{16}$ Metal Plate, Bolts, Paint to Match = \$ 25
- **Total Cost: \$100**

MONTANA: Intake Backing Plate

Savings & Benefits



- Less time & materials to repair damaged intake plates
- 3 hours vs. 3 days, for a savings of \$700
- Quicker replacement of damaged plates meets requirement of City's Engineering Dept to protect stormwater drain system

AND THE WINNER IS...

