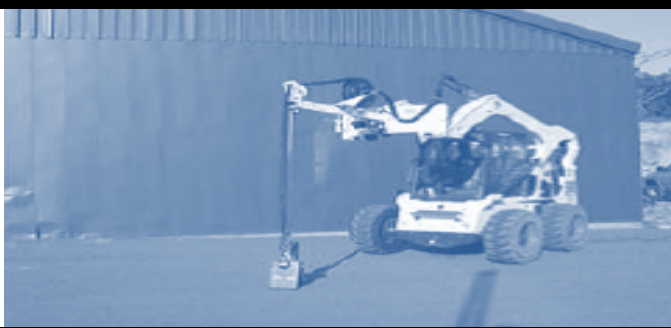




# FHWA LTAP/TTAP Build a Better Mousetrap: National Competition

*National Entry Booklet 2009*



*Images from the 2009 Build a Better Mousetrap: National Competition*

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## **What is the National Entry Booklet 2009?**

The National Entry Booklet is a compilation of all the entries from the FHWA LTAP/TTAP 2009 Build a Better Mousetrap: National Competition, representing LTAP/TTAP Centers from around the country. The Build a Better Mousetrap: National Competition's purpose is to collect and disseminate real world examples of Best Practices, Tips from the Field, and assist in the Transfer of Technology. The competition is a fantastic way for innovative ideas to be exchanged with others that may benefit from different concepts and perspectives. It is also a great way for local and county transportation workers and other LTAP/TTAP clients to get some well earned recognition for their hard work.

## **What is the FHWA LTAP/TTAP Program?**

For over 25 years, 58 Centers that comprise the Federal Highway Administration's Local & Tribal Technical Assistance Programs (LTAP/TTAP) have provided information and training to local governments and agencies responsible for over three million miles of roads and over 300,000 bridges in the United States. The LTAP/TTAP Clearinghouse acts as a central source of information for LTAP/TTAP centers and other industry stakeholders.

The LTAP/TTAP centers enable local counties, parishes, townships, cities and towns to improve their roads and bridges by supplying them with a variety of training programs, an information clearinghouse, new and existing technology updates, personalized technical assistance and newsletters.

Through these core services, LTAP/TTAP centers provide access to training and information that may not have otherwise been accessible. Centers are able to provide local road departments with workforce development services; resources to enhance safety and security; solutions to environmental, congestion, capacity and other issues; technical publications; and training videos and materials.

The mission of LTAP/TTAP is to foster a safe, efficient, and environmentally sound surface transportation system by improving skills and increasing knowledge of the transportation workforce and decision makers.

*If you would like additional information about the FHWA LTAP/TTAP Program, or the Build a Better Mousetrap: National Competition please visit [www.ltapt2.org](http://www.ltapt2.org) or contact Susan Monahan at the FHWA LTAP/TTAP Clearinghouse at [smonahan@artba.org](mailto:smonahan@artba.org) or (202) 289-4434.*

## **Colorado LTAP**

***1<sup>st</sup> Place Winner in the 2009 Build a Better Mousetrap: National Competition***

### **CULVERT INLET IMPROVEMENT TO EXISTING RURAL CULVERTS BY ADDING LOW COST DROP INLETS**

#### **Town of Snowmass Village, Colorado**

##### **Contact:**

Will & Scott Binegar  
Road Division, Public Works Department  
3745 Owl Creek Road  
PO Box 5010  
Snowmass Village, CO 81615  
(970) 923-5110

##### **Problem Statement:**

Old Culvert inlets get covered up, plugged or lost over time.

##### **Discussion of Solution:**

By adding a low cost in-house built drop culvert that is durable, heavy rain, run-off and snowmelt will not stand a chance with this system. Also, maintenance is minimal and quick.

The Town of Snowmass Road Division designed a Drop Culvert using a sonotube, sackcrete, a steel manhole ring and a 24" slotted lid. The final product allows for the preservation of culvert inlets by adding protection from debris, run-off, rocks, etc.

##### **Labor, Equipment, & Materials Used:**

30" Round Sonotube  
24" Round Sonotube  
Sackcrete  
24" Slotted Lid  
24" Steel Sewer Riser Ring



**Cost:**

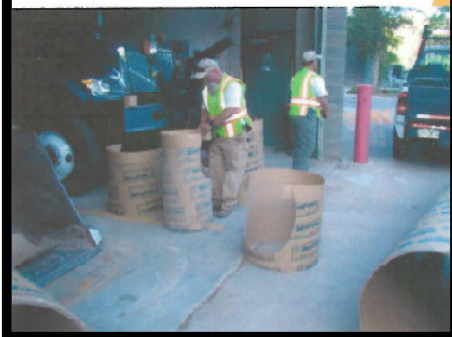
30" Sonotube: approx. \$1.60 per ft.

24" Sonotube: approx. \$1.40 per ft.

Bags of Sackcrete: \$7.00 per bag

Old Steel Sewer Riser Ring: no cost

24" Slot Cover: \$90.00



## ***2<sup>nd</sup> Place Winner in the 2009 Build a Better Mousetrap: National Competition***

### **MAGNET SYSTEM FOR ROAD DEBRIS**

**District #3, Phillips County, Colorado**

**Contact:**

Mike Salyards  
District #3 Supervisor  
433 E Fletcher  
Haxtun, CO 80731  
mikespc3@schollnet.com

**Problem Statement:**

Rural residents complained of flat tires due to road maintenance.

**Discussion of Solution:**

Devised an automatic, trouble free magnet system. It is intended to remove nails, wires, screws, staples, and any other small metal pieces from the road surface while performing routine road maintenance without added operations. Magnet system raised by the Maintainers built in air system.

**Labor, Equipment, & Materials Used:**

Welder, Metal Saw, and Drill. Miscellaneous square tubing and hardware, air cylinder, electric micro-switch, electric operated solenoid valve, 2 forty-eight in yard magnets. We also used two days of in-house labor.

**Cost:**

Miscellaneous iron and hardware: \$40  
Air Cylinder: \$80  
Electric Micro-switch: \$38  
Electric operated solenoid valve: \$55  
Magnets: \$535  
The total cost was \$748.



**Savings & Benefits:**

No direct savings to Phillips County; however, indirect savings are seen in the motoring public spending less to repair flat tires that occur on Phillips County gravel roads.



*Magnet shown in the "up" position*



*Shows one days collection of nails, screws, and other miscellaneous metal retrieved from the road surface. Approximately 10 lbs*

## **3<sup>rd</sup> Place Winner in the 2009 Build a Better Mousetrap: National Competition**

### **ASPHALT EQUIPMENT CLEAN-OUT SYSTEM**

#### **Boulder County, Colorado**

#### **Contact:**

Ted Plank, Road Supervisor  
 Boulder County Transportation Department  
 1288 Alaska Ave.  
 Longmont, CO 80501  
 (303) 441-3962  
 tplank@co.boulder.co.us

#### **Problem Statement:**

Our challenge was to find a way to clean out oil distributor trucks and tack oil tanks after use, without creating a mess or causing environmental impact. We needed some way to empty our spray bars of the diesel fuel/tack oil without just spraying out on the ground, parking lot or roadway.

#### **Discussion of Solution:**

The current system is the third generation of the idea we had about 12 years ago. A 20-foot section of culvert is cut in half lengthwise. The section of culvert sits in a metal frame with steel plates hinged to create covers that can be closed when the system is not in use. The frame and culvert are elevated at one end to create flow. The ends of the culvert were sealed using a lid from a 55-gal drum, cut in half. A nipple is threaded to the bung of the 55-gal drum lid, and attached to the nipple is a 2 ½ "suction hose that leads to a 300 gallon tank.

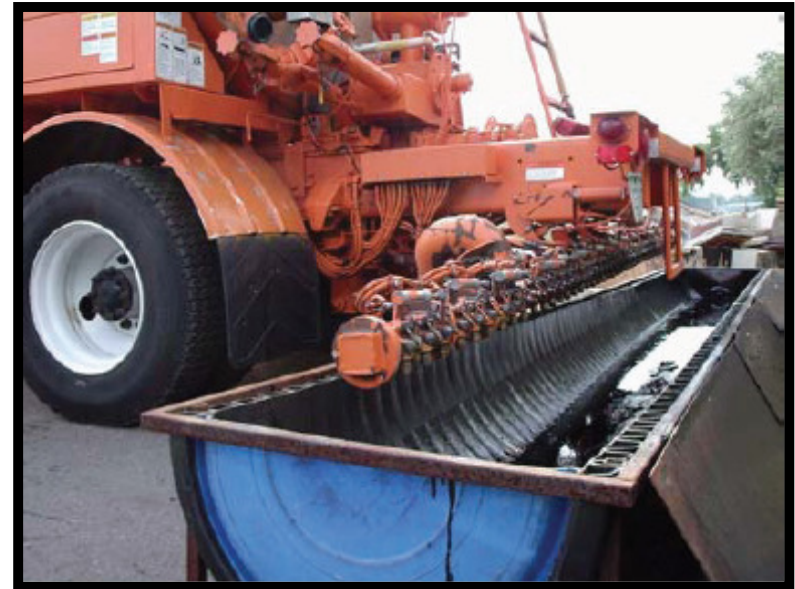
To use the system, a distributor truck backs up to the culvert and empties the spray bars into it. The used diesel/tack flows from the culvert into the tank. When the tank is full, we contact a waste-oil company for pick up.

#### **Labor, Equipment, & Materials Used:**

Two employees (including one with welding experience) can construct the system.

Equipment included hand tools, a welder and a front loader. Materials included:

- 20 feet of 24" diameter culvert
- Steel for frame and covers





2 ½" suction hose  
300 gal plastic tank  
Miscellaneous parts (screws, caulk, etc.)

**Cost:**

The current system is much enhanced over our first attempts at creating a cleanout method; a similar system can be constructed for much less.

Materials: \$845

Labor: \$720

Equipment: \$200

Total: \$1,765

In addition, we paved our approach ramp, and added containment for the holding tank at an additional cost of approximately \$1,500.00. We have a contractor empty the tank about twice annually at a cost of approximately \$500 each time.

**Savings & Benefits:**

Like many counties, cities or paving contractors, we had nowhere to spray the diesel fuel/tack oil residue from cleaning out spray bars and tanks after paving or chip seal operations. This system allows us to quickly and efficiently clean paving equipment and dispose of the residue without impacting the environment or creating a mess.



## SELF LOADING WATER TANKER WITH SPRAY SYSTEM

### Garfield County, Colorado

#### Contact:

Jake B. Mall  
District 3 Road Foreman  
Garfield County Road & Bridge Department  
902 Taughenbaugh Blvd., Ste 305  
Rifle, CO 81650  
(970) 625-8601

#### Problem Statement:

The tanker we used started out as a hot oil tanker that was purchased in Denver. After we received it the insulation was removed from around the tank. It was then plumbed for a gravity flow system with a 6-inch outlet and a splash pan installed to spread water.

We needed a water tanker of that capacity to haul water a long distance for our Mag. Chloride program. We also purchased a self priming trailer mounted pump with a 4-inch outlet and inlet to load with. Loading time was around 30 to 40 minutes under ideal conditions. The tanker was used one season with the gravity flow system and was not very efficient as the water spread would not cover a half a road at a time.

#### Discussion of Solution:

This summer we purchased a 3-inch Honda powered pump to install on the tanker. We built a platform in front of the tires to mount the pump on. We reduced the 4-inch outlet to 3-inch and plumbed it to the inlet side of the pump with a hand controlled lever valve and a tee to install a suction hose so we could load out of any water source. From the outlet we installed a flex pipe with cam lock fittings to another tee. One side of the tee was fitted with an air controlled spray head, the other side of the tee with an air controlled butterfly valve. This was done to re-circulate the water back into the tanker or to the spray head.

The tanker will now spray a road width pattern at a faster speed. This adds 4 to 5 loads of water sprayed in a shift. With both 3-inch and 4-inch inlet fittings the tanker can be loaded in around 15 minutes. The 3-inch pump alone will load the tanker in about 45 minutes in a water source where the 4-inch pump will not work due to low water volume.



**Savings & Benefits:**

The water tanker this year has been the main reason our Mag Chloride program has continued, due to the drought we have had to haul water as far as 20 miles to continue our Mag. program. To rent an equivalent unit would cost \$85.00 per hour, for a 10 hour shift this is a total cost of \$850.00 per day.

The design and labor of my shop mechanic Pat Antonelli and one of my operators Jim Stewart made this conversion from a hot oil tanker to a highly usable water spray tanker an efficient time and money saving project.

## ROCK CRUSHER CAMERA MONITORING SYSTEM

### Routt County, Colorado

#### Contact:

Bernie Andraish  
Road & Bridge Dept.  
P.O. Box 773598  
Steamboat Springs, CO 80477  
(970) 736-1051

#### Problem Statement:

Last fall, the Mining Safety and Health Administration issued a citation for noise violation on the county's gravel crushing operation. The operator on the primary crusher could run it only one hour per eight-hour shift to comply with MSHA noise regulations. This person was exposed to deafening noise levels, choking dust and flying rock chips. It was a hazardous work environment even in good weather. You had to stand on a shaking platform looking down into the jaws usually for eight hours a day.

#### Discussion of Solution:

We had to do something to stay in business. Most of the rock crushers are set up with an operator's booth. The cost of an operator's booth was between \$10,000 and \$90,000. Cameras and monitor's allow you to operate this piece of equipment from a safe location. This option was clearly the most cost effective and safest choice.

#### Labor, Equipment, & Materials Used:

The setup was installed and field-tested by two highly skilled mechanics in less than 100 hours. Two cameras were located on the primary crusher. One looking down into the jaws and another viewing the control speed setting were all we needed.

A third camera was mounted on a nearby van to help keep an eye on the rest of the operation. One of the two control motors fabricated on this camera is a windshield wiper motor. It lets us scan the gravel pit for incoming inspectors and other VIPs. The camera cables were strung to the monitors mounted inside the van next to the rest of the control panels. The crusher boss can now run two pieces of equipment from inside the climate controlled van.



We purchased a total of two monitors, four cameras, and enough camera cable to view any distant equipment in the pit. One monitor can view two cameras. The cameras have audio capabilities so we can tell when parts sound like they might be breaking.

**Cost:**

The cost of the cameras, monitors, and cables was about \$2,000.

**Savings & Benefits:**

Our biggest savings were in eliminating an operator's position and salary. Nobody liked this dirty job anyway. It was a tough position to fill. The five-month crushing season per year costs \$18,545 in wages to pay someone to stand on the primary crusher. The first year we will save about \$16,545. Since the cameras and equipment are paid for, we should save at least \$18,545, possibly more depending on insurance and other cost increases next year.



## ONE MAN CULVERT LOADER

### Gilpin County, Colorado

#### Contact:

Earl Robinson or Gordon Thompson  
 278 Jankowski Dr.  
 Golden, CO 80403  
 (303) 582-5004  
 erobinson@co.gilpin.co.us  
 gthompson@co.gilpin.co.us

#### Problem Statement:

Having the manpower and the equipment needed to load, transport, and unload culvert safely.

#### Discussion of Solution:

We originally purchased a 25 foot gooseneck trailer to transport our mini excavator and various other small equipment and products, including culvert. Thinking it usually takes two men, a truck with trailer, and a piece of equipment to load culvert, we began looking at adding a crane to our trailer. After looking at several types of cranes we purchased an N H Log Loader. This crane is equipped with a continuous rotation 39" grapple; it will lift 893 pounds at its maximum reach of almost 14' and is powered by a 16 hp electric start hydraulic power pack.

The assignment to modify the trailer and make this an efficient piece of equipment was given to David Rich, an Equipment Operator II with an abundance of skills and talents. With many suggestions from almost everyone in the department Dave began cutting apart a brand new trailer and crane. The deck planks were cut and the crane was lowered and mounted between the main frame beams. The power pack was removed from its original stand and fit under the decking. The outriggers were cut from the crane and fit to the trailer. The original fuel tank was replaced with a more suitable tank for our application. Access doors were fabricated for easy access to the power pack and lower crane. Deck plate was added to the section of deck the grapple will operate most times. An operator's station with all hydraulic controls, ignition switch, choke, and throttle, adjustable seat with seat belt and foot rests was all fabricated and mounted to the main upright boom of the crane. This allows a bird's eye view and a safe location for the operator. This project took about 160 total hours, including design, locating and obtaining parts and materials, and build time.



Photo 2

**Cost:**

Trailer: \$10,850.00

Crane: \$10,700.00

Steel and Misc. Parts: \$700

Total: \$22,250.00

**Savings & Benefits:**

One man can now safely load, transport to jobsite, and unload culvert saving us countless man hours. This piece of equipment will also be a one man operation for log hauling, rip rap hauling, and ripping and hauling willows from road shoulders. More uses remain to be discovered and when not being used for crane operations it is still used to transport our equipment.



## PHILLIPS COUNTY LANDFILL

### Phillips County, Colorado

Matt Meusborn  
221 S. Interocean  
Holyoke, CO 80734  
(970) 854-2166

#### **Problem Statement:**

In 2004 we upgraded from burning trash to our new bailing system. We needed an efficient way to haul our bails to the cell.

#### **Discussion of Solution:**

We discussed whether or not to use a truck with its own hydraulics or a trailer with a loader. We decided on a trailer as it would be more efficient in our application. The loader hauls the trailer to the cell, dumps the trailer, unhooks and stacks the bails all in one trip. The operator never has to leave the cab. To make it most efficient we built two trailers, one is being filled while the other is being dumped. This way the bailer never has to shut down.

#### **Labor, Equipment, & Materials Used:**

Two landfill employees

Normal shop tools and welder

We stripped down the old burner and used 65% of the metal to build the trailer frames (two trailers). We used two old truck axles for the main wheels. The only money spent was on the two small wheels and 35% of the metal was purchased.

#### **Cost:**

In the two trailers was \$2,000 in materials and about \$1,800 in labor.

#### **Savings & Benefits:**

Materials, labor, and engineering of the two trailers saved \$4,000 per trailer. By using the loader and trailers together we are saving more than 50% in haul time. We are saving in down time with the bailer. There is only one piece of equipment to maintain. Fuel cost is cut in half because trips are cut in half. Operation can be run efficiently with one person when necessary.







HAULING BAILS



STACKING BAILS

## **ROUTT COUNTY ROAD ROLLER**

### **Routt County, Colorado**

#### **Contact:**

Steve Kernen,  
Routt County, District 2 Heavy Equipment Mechanic  
P O Box 773598  
Steamboat Springs, Colorado 80477  
(970) 276-4603 or (970) 879-0831

#### **Problem Statement:**

When doing maintenance on a gravel road, compaction and moisture are lost creating an unstable surface. In the past, our operators usually wheel rolled the bladed section or a drum roller and operator were brought to compact the newly bladed road section.

The problem with using a roller is that there are never enough operators to man the roller so ultimately no rolling occurred so the blading of the road did not last as long and repeat blading occurred more often. This added additional costs to the operation of gravel road maintenance.

#### **Discussion of Solution:**

Why not do the blading and rolling all in a single pass with one piece of equipment? After doing some research I discovered there are commercial motor grader mounted roller attachments available. Pricing on commercial roller attachments start at approximately \$11,000; I knew that the \$11,000 price tag would be out of reach for Routt County Road & Bridge. So I started checking at our local salvage yards and metal distributors. I found that a great deal of the materials needed for such a roller attachment could be purchased at salvage cost or at a reduced price. So I decided to make a motor grader mounted roller.

#### **Labor, Equipment, & Materials Used:**

It took approximately 2 weeks to design and fabricate this attachment. Using 1" plate doubled up, I made the lift frame portion of the roller. This lift frame attaches into two ripper pockets on the ripper lift frame. Then using a piece of 4 x 6 x 1/2 "wall box tubing and some 1" plate the roller frame was built. The roller itself was made from 24" gas line 3/8 wall. 2" shafting was used to rotate the drum with bulk heads welded into both end and one in the center. A local concrete company donated the concrete to fill the drum for added ballast. Two pillow block bearings were used for the drum to roll on.



**Cost:**

Materials: \$2,061

Labor: \$1,300

Total Cost: \$3,361

**Savings and Benefits:**

By using the motor grader mounted roller attachment the road surface can immediately be compacted saving moisture and insuring a more stable road surface. The stable road surface requires less maintenance. The other added benefit is the elimination of the need for an additional operator to man a roller.



## **CATTLEGUARDS**

### **Morgan County, Colorado**

#### **Contact:**

Richard Early  
Morgan County  
17303 MCR S  
Fort Morgan, CO 80701  
(970) 542 -3560  
Fax (970) 542-3569  
dearly@CO.Morgan.CO.US

#### **Problem Statement:**

How to construct CHEAP cattle guards that were heavy enough as to be immune to road graders, farm machinery, oilfield traffic, blowing sand, and were wide enough for all the aforementioned, but would be relatively maintenance free or easy to maintain. The problem was meeting all those requirements and also keeping cattle from walking across the open gateway.

#### **Discussion of Solution:**

We designed a cattle guard using scrap 2 -3/8" oilfield pipe, pieces of 16 x 42lb per foot bridge girders. The base is constructed of the girder steel welded into a rectangle 24 feet long and 8 feet wide, with two separate grates constructed from the oilfield pipe that are supported from inside the base and may be removed separately.

#### **LABOR, EQUIPMENT, AND MATERIALS USED:**

30 - 2-3/8" x 11'-4" pipe  
86 - 16" x 42lb Steel I-beam  
Approximately 160 man hours  
Cutting torches, angle grinders, arc welders

#### **Cost:**

Zero materials cost! The materials we used were all scrap from our bridge construction. Our only cost was the labor involved. We only worked on this project when there was inclement weather or we had slack time between other jobs. We probably used \$50.00 of cutting torch gases and \$50.00 worth of welding rod.

**Savings & Benefits:**

We got price quotes from different sources that were in the five to six thousand dollar range. Their durability was possibly equal, but not superior to what we built. We have been building and using these cattle guards for over fifteen years and have only repaired one. The removable grates allow us to leave half of the roadway open to local traffic while we are cleaning accumulated trash and gravel out of the base box, or under the grates. They are wide enough that most farm machinery can fit through without tearing up the machinery. Thus, making the taxpaying landowners happy! They are strong enough to support any type of legal truck load. We have had numerous houses moved across these cattle guards and none the worse for it. Building cattle guards when the weather is bad allows us to keep our employees occupied. The cost is minimal and the product is superb!



## TRAILER WALKWAYS

### Yuma County, Colorado

#### Contact:

Leroy Wright & Terry McArthur  
Yuma County Road & Bridge  
1310 S. Blake Street  
Wray, CO 80758

#### Problem Statement:

An employee suffered a broken leg after slipping and falling while performing maintenance on a belly-dump trailer tarp. There is no good place to stand while lubing or adjusting the tarp. A walk-way was needed for good footing. Ranco Trailers, our supplier, did not have a step or walk-way offered.

#### Discussion of Solution:

We were able to purchase light weight "galvanized grip strip" from Wray Machine Shop, a local business. Each piece was 12 feet by 12 inches by 2 inches thick. The cost was \$120.00 per piece. 12 feet of "grip strip" is enough to do 1 trailer when cut in half, 6 foot for each, front and back. Each trailer required 8 5/16 inch by 6 1/2 inch carriage bolts and 8 5/16 lock nuts. These were purchased from our local hardware store for about \$1.00 each for a total of \$8.00 per trailer. Each trailer required 16 inches of 1 by 1/4 inch strap iron. This was cut into 4 inch lengths with a 3/8 inch hole drilled into each end. The strap iron was scrap from another project. Our best estimate would be \$2.00 for strap iron per trailer. Labor was 30 minutes to cut, drill, and install; approximately \$7.00 total labor cost for each trailer.

#### Cost:

Labor: \$7.00  
Bolts & Nuts: \$8.00  
Strap Iron: \$2.00  
Grip Strip: \$120.00  
Total: \$137.00



**Savings & Benefits:**

Our employee was injured in April, and still had not been released for full duty in August – best estimate for workers compensation claim, including doctor's bills and x-rays, MRI, mileage, and lost wages is \$15,000. There has also been 90 days of lost productivity.

We hope that our walkways will prevent a repeat incident. We operate up to ten tractor trailers, so the opportunity for a repeat incident is likely. Our walkways are completely portable and can be removed from one trailer and attached to another in the event that we trade trailers.



## **Connecticut LTAP**

### ***Honorable Mention in the 2009 Build a Better Mousetrap: National Competition***

#### **SAFETY INCENTIVE PROGRAM**

##### **City of Milford, Connecticut**

##### **Contact:**

Bruce C. Kolwicz  
 Director of Public Works  
 City of Milford  
 83 Ford Street  
 Milford, CT 06461  
 (203) 783-3269  
 BKolwicz@ci.milford.ct.us

##### **Problem Statement:**

To control the escalating costs associated with Worker's Compensation.

##### **Discussion of Solution:**

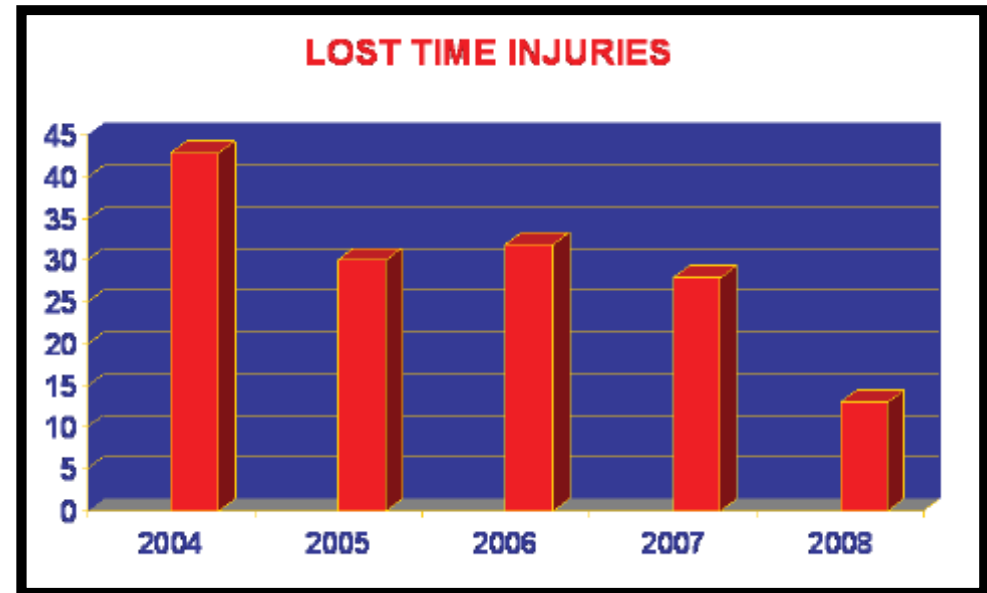
Teams are created in each of the Public Works Divisions. A Team that remains accident free per quarter (3 months) is then eligible for the Safety Luncheon and Award. Any individual who remains accident-free for the entire year is eligible for a \$500.00 cash drawing.

##### **Cost:**

Approximately \$2,000.00 to \$2,200.00 quarterly; cost includes lunch and then award. 150 employees – average 110 winners per quarter.

##### **Savings & Benefits:**

Each team tends to work just a little bit safer than they did before this program was initiated. "Peer Pressure Works."





## ***Honorable Mention in the 2009 Build a Better Mousetrap: National Competition***

### **PINCHIE THE BASIN CLEANER**

#### **Town of Simsbury, Connecticut**

#### **Contact:**

Tony Amaral and Don Bordanaro  
 Town of Simsbury, Public Works Department  
 P.O. Box 495, 66 Town Forest Road  
 Simsbury, CT 06070  
 (860) 658-5278  
 cbelli@simsbury-ct.gov

#### **Problem Statement:**

We cannot call a Vac Truck for one clogged catch basin. Running water limits the use of a Vac Truck in the event of a flooded basin.

#### **Discussion of Solution:**

Unit quick couples to a skid steer machine and offers a 30' depth of debris removal capability. Operator can choose a sand-removal bucket or a debris-removal bucket.

#### **Cost:**

Approximately \$1,015.00

#### **Savings & Benefits:**

This will clean a clogged catch basin without sending a man down in it. It will also remove a catch basin top that has been dropped in.



## REUSE OF SWEEPER BROOMS ON A BOBCAT

### Town of Mansfield, Connecticut

**Contact:**

Lon Hultgren, Director of Public Works  
Town of Mansfield  
4 South Eagleville Road  
Mansfield, CT 06268  
(860) 429-3332  
hultgrenlon@mansfieldct.org

**Problem Statement:**

We were sweeping with our Bobcat with a rotary broom.

**Discussion of Solution:**

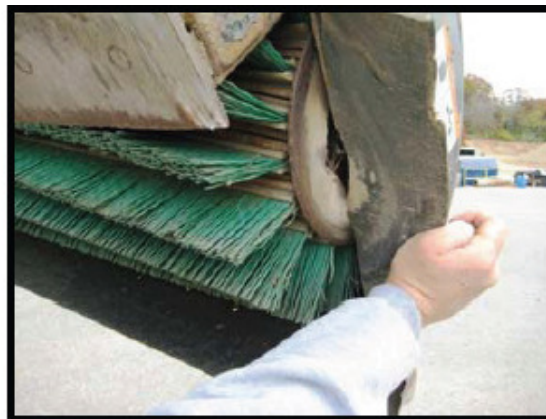
Adapted the front broom attachment of the Bobcat Skid-steer loader so that used sweeper brooms could be reused on the Bobcat.

**Cost:**

No cost to implement the program. However, there have been substantial savings associated with the program.

**Savings & Benefits:**

A cost savings has been realized in reusing brooms that would otherwise be thrown away.



## **LOCAL WORK ZONE SAFETY POSTERS**

### **Town of Mansfield, Connecticut**

#### **Contact:**

Lon Hultgren, Director of Public Works  
Town of Mansfield  
4 South Eagleville Road  
Mansfield, CT 06268  
(860) 429-3332  
hultgrenlon@mansfieldct.org

#### **Problem Statement:**

Crews were experiencing fast work zone traffic.

#### **Discussion of Solution:**

Locally designed signs (posters) displayed at town facilities and some businesses to help raise awareness for work zone speeds and safety.

#### **Cost:**

The only cost incurred was the price of the paper.

#### **Savings & Benefits:**

A higher awareness displayed by the crews and others of work zone safety and speeds.

## PIPE SITE TRUCK

### Town of Thomaston, Connecticut

#### Contact:

Paul Pronovost  
 Superintendent of Highways  
 Thomaston Highway Department  
 158 Main Street  
 Thomaston, CT 06787  
 (860) 283-4030  
 towngarage@snet.net



#### Problem Statement:

We needed one truck that could carry our pumps, compactors, signs, barricades, fittings, tools, etc.

#### Discussion of Solution:

We obtained a truck that the Town of Thomaston Fire Department was planning to use in a "jaws of life" training drill. After replacing the clutch, the entire crew from the Highway Department went to work in their spare time to install shelving for various items. We also installed a trailer hitch which has allowed us to tow our mixer; light tower and trailer that we made to haul 20' lengths of pipe.

#### Cost:

\$165.00 for a new clutch and one of the guys' fathers painted a "Hagar the Horrible" to match our department.

#### Savings & Benefits:

All the supplies you need are on site. The truck has a security system so it can be locked and kept on the jobsites overnight. This eliminated going back and forth to the garage for supplies and reduced the use of fuel. Also, set-up and clean-up times have been reduced by leaving the truck on site for the duration of the job. We've gained about 45 minutes per day in construction time.

## Hawaii LTAP

### *Honorable Mention in the 2009 Build a Better Mousetrap: National Competition*

#### **SUCK'EM DRY MOLOKAI**

#### **Maui District, Hawaii**

#### **Contact:**

Jordan Canha

Hawaii Department of Transportation, Maui District

#### **Problem Statement:**

The Molokai Maintenance crew has long been burdening other agencies by borrowing their pumps during the rainy periods for flooding in the low-lying areas of Kamehameha V Highway.

#### **Discussion of Solution:**

Maui District Highways Division recently fabricated the "Suck'em Dry Molokai" all-weather, portable hydraulic pump. This "Frankenstein" was created using a demolished variable message board sign as the trailer base, a used motor from a disposed herbicide sprayer, old sign posts, and old highway signs. The only new parts used are the pump, hoses and fittings, gas tank, and muffler.

Bridge Maintenance Worker Jordan Canha, cut, bent, hammered, and welded the surplus materials to create this all-weather workhorse. This pump is light, versatile, and can be towed using a small pickup and can run in the worst inclement weather because of its vented, enclosed shell.

Don't let its "showroom" good looks fool you, it's equally as functional. This motorized "sponge" is outfitted with a rebuilt four-stroke, 8-horsepower, gas-operated, automatic ignition Briggs and Stratton motor that can pump 300 gallons per minute.



## Montana LTAP

### *Honorable Mention in the 2009 Build a Better Mousetrap: National Competition*

#### SCARIFYING BLADES

##### Missoula County, Montana

##### **Problem Statement:**

There is the need to reshape a gravel road periodically to restore overall shape and drainage. The material is primarily recovered gravel that can be used on the road. When cutting gravel road surfaces, cutting edges can wear unevenly.

##### **Discussion of Solution:**

The bits of these scarifying-blade systems are easily replaced and are made of carbide steel for greater resistance to abrasion. These large picks allow for deep cutting with less wear. They require less horsepower to pull. Scarifying blades perform better where there is embedded shelf rock.



## TEMPORARY SIGN POST

### Hill County, Montana

#### **Problem Statement:**

When repairing roads Hill County Road Supervisor Jerry Otto knew the importance of temporary traffic control signs to keep his crew members safe and to warn the traveling public of an existing work zone. His problem was the wind blowing the signs down.

#### **Discussion of Solution:**

Given that repairs take place on gravel roads, Hill County devised a rod on the warning sign that could be driven into the ground thereby keeping the sign upright during the temporary road repair job.



## SIGN TRUCK

### Chouteau County, Montana

#### **Problem Statement:**

The importance of signage and sign replacement was brought to the attention of Chouteau County Road Department Supervisor Russ Albers when attending his first Safety Congress sponsored by LTAP. His problem was transferring signs, a generator, miscellaneous sign equipment, and a drill to different trucks when installing or replacing signs in a timely manner.

#### **Discussion of Solution:**

Assign one truck with all equipment components and thereby have other vehicles available for other jobs. This keeps all sign equipment organized and ready to go at all times.

