

# 2014 Entries



Michigan LTAP  
**Great Ideas**

## CHALLENGE

*Identifying, sharing, and rewarding innovative ideas from local road agencies*



## Important

This document describes equipment and practices developed by employees of local road agencies for use within their agencies. The equipment and practices described herein have not necessarily been tested and/or approved to meet engineering design or safety standards. Agencies considering adopting the practices described in this document should first verify the practice is appropriate and safe for their agency's use. The Center for Technology & Training (CTT) is not responsible for damage to equipment or facilities, or for bodily injury as a result of reproducing and/or using the equipment or practices described herein.

## What is the Great Ideas Challenge?

Working through Michigan's Local Technical Assistance Program (LTAP), members of the Center for Technology & Training staff get to visit dozens of local road agency facilities every year. Every time we stop at a county road commission or a city department of public works, we are impressed with what goes on behind the scenes. The men and women who manage and maintain local agency roads, facilities, and equipment are intelligent, ambitious, passionate, innovative, and productive. No matter the obstacle, they figure out how to get stuff done. And they do it well.

The *Great Ideas Challenge* is meant to help identify, share, and reward the great work that gets done at local road agencies in Michigan. The Challenge is open to all employees of road agencies that serve counties, townships, cities, and villages in Michigan. All entries are considered for the state-wide competition, and the entry that wins first place in Michigan is automatically entered in the Federal Highway Administration's LTAP Build a Better Mousetrap national competition.

The 2015 *Great Ideas Challenge* will open in March 2015.

## Special Thanks to the Judges

Judges for the *Great Ideas Challenge* took time out of their busy schedules to evaluate, discuss, and score each entry based on five criteria: Cost, Ingenuity, Effectiveness, Ease of Adoption, and Return on Investment. Judges include:

Chris Gilbertson, Ph.D. P.E. - Senior Research Engineer, Center for Technology & Training

Mark Jahnke - President, Specialty Claims Services, Inc.

Jeff Silagy - Transportation Specialist, Michigan DEQ

Ron Young, P.E. - Engineer-Manager (retired), Alcona County Road Commission

Kurt Zachary, P.E. - Local Program Manager, FHWA Michigan Division

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# Grader Paver



## Ottawa County Road Commission

### Contact Information

Randy Nagelkirk  
rnagelkirk@ottawacorc.com  
(616) 638-0384  
*Address:*  
14110 Lakeshore  
Grand Haven, MI 49417



## Problem Statement

Before the Road Commission would stone seal a road, they would send out a crew to crack seal the road first. This would hopefully make for a better and longer lasting road. The problem was that most of the road edges were badly deteriorated with numerous cracks. The center of the roads however, seemed to be in good shape, with much less cracks.

## Summary of Solution

The solution seemed to be just repair the outside edge and bring it back to its original shape. Then you could stone seal the whole road and have one that should last a for a long time. To bring in an asphalt contractor would be too expensive, hence the Grader Paver. We made a wing that bolts to the grader moldboard. The wing is controlled with a two-way cylinder that is operated by using the front plow controls and hydraulics. This gives the operator control of how much material is needed to keep a straight level edge. We also made wedges to put in the truck boxes. These move the asphalt over to the passenger side, which gives a nice narrow band of material to work with.

## Labor, Equipment, Materials

Labor:

- Approx. 60 hours to fabricate the wing and wedges

Equipment:

- Grader and Dump Trucks

Wing Material:

- 5/8" x 5' x 2' sheet metal
- 1/2" x 3" x 8' flat stock
- 1 1/4 x 12" round stock
- 2 sets hydraulic quick couplers
- Approx. 30' - 3/8 hydraulic hose
- 2 way hydraulic cylinder

Wedge Material:

- 1/4" x 30" x 6' sheet metal, 1/4" x 2" x 25" angle





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# Grader Paver (continued)

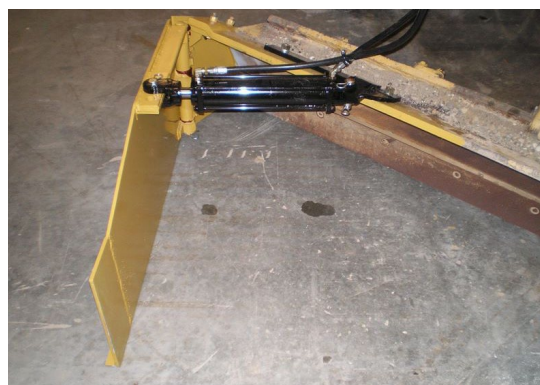
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## Summary of Expenses

The cost has variables depending on what materials your agency may already have available. Also, the time it takes depends on the Mechanic's ability to fabricate equipment.

## Benefits

- Saves Money
- Road repair should make for a longer road life
- Uses equipment most road agencies already own
- Faster and better than trying to seal numerous road cracks
- Repairs broken road edges
- No need to hire a Paving Contractor



# Hub Plug Retainer



## Ottawa County Road Commission

### Contact Information

Randy Nagelkirk  
rnagelkirk@ottawacorc.com  
(616) 638-0384  
Address:  
14110 Lakeshore  
Grand Haven, MI 49417

### Problem Statement

The fill plugs on the passenger side of plow trucks were getting pulled off as a result of being rubbed against hard packed snow. This caused lube to drain out, and dirt and water to fill the wheel, which removed trucks from their routes for repairs.

### Summary of Solution

The problem was fixed with a very simple solution: bolting a piece of flat stock over the plug. This allows the fill plugs to cut through the snow when they rub against snow banks.

### Labor, Equipment, Materials

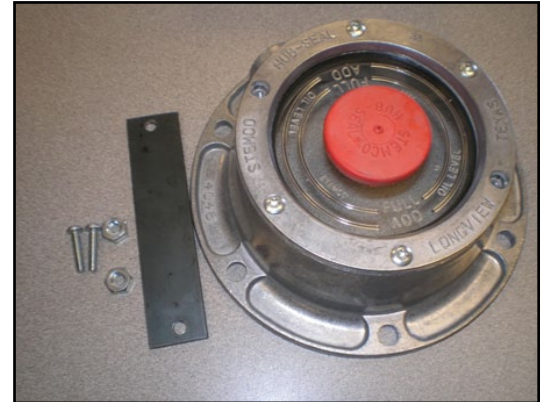
- 1 hour of labor
  - Drill and screwdriver
  - 2 - 10/32" x 3/4" panhead machine screws
  - 2 - 1/4" nuts
  - 1 - 1x4x1/8" flat stock steel
- Key part: wheel hub with screws on the front. The Ottawa County Road Commission uses Stemco hub caps.

### Summary of Expenses

Labor time to cut steel, drill two holes and install the new cap

### Benefits

The Hub Plug Retainer is an inexpensive and simple solution to what can be an expensive problem. The installation of the plug will result in time savings, as one lost plug means one truck is out of commission for repairs. In addition, once installed, the proper oil level can still be checked and refilled by simply removing one screw.





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# 2013 Millage Campaign

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## Grand Traverse County Road Commission

### Contact Information

Jim Cook

[jcook@gtrc.org](mailto:jcook@gtrc.org)

(231) 922-4848

Address:

1881 LaFranier Road

Traverse City, MI 49696

### Problem Statement

In 2013, the Grand Traverse County Road Commission was faced with passing a much-needed road millage on the November ballot. With only a short amount of time between receiving permission to be on the ballot and Election Day, Road Commission supporters had to act quickly.

### Summary of Solution

A major target audience for the initiative was absentee voters. The group recognized that many community residents spent the winter months in warmer locations but were still registered to vote in the county. By sending brochures to all absentee voters, posting YouTube videos online and gathering local leader support, the millage passed with 50.3 percent of the vote.

### Labor, Equipment, Materials

210 Salaried employee hours working on: sharing the funding need, touting our Asset Management Plan through live radio interviews, personal meetings with local environmental and trail groups, welcoming the media participation, providing input to local township and other groups earned us our first road millage. Other key tools were absentee mailers, newspaper inserts and an educational video.

### Summary of Expenses

\$15,900 (not including staff time) for materials including: drafting brochures, newspaper insert, collaboration on video, arranging presentations; printing and postage; video filming/editing; board road tour.



### Benefits

Address local road user's need by supplying additional funding to bring our roads to an acceptable and maintainable level - county-wide.

### Supporting Materials

The GTCRC [rehttp://www.gtrc.org/General/Road\\_Millage\\_Information.htm](http://www.gtrc.org/General/Road_Millage_Information.htm)

# County Strategic Plan

## Road Commission for Oakland County

### Contact Information

The Road Commission for Oakland County

dcsmail@rcoc.org

(877) 858-4804

Address:

31001 Lahser Road

Beverly Hills, MI 48025

### Problem Statement

In 2013, the Road Commission for Oakland County desired an opportunity to discuss “big picture” issues with local leaders and created the opportunity by updating their county strategic plan.

### Summary of Solution

After arranging meetings with each community’s leaders, RCOC staff created two documents- a broad overview of the county’s standings and a personalized review of discussion from each local meeting. These documents were distributed to community leaders, local government, libraries, schools and the media. Feedback on the reports was positive and community leaders commented they appreciated the issues being discussed directly and concisely.

### Labor, Equipment, Materials

Salaried staff hours.

### Summary of Expenses

Staff hours - varies based on staff pay

### Benefits

The report drove home the point that “now is the time” to increase road funding.

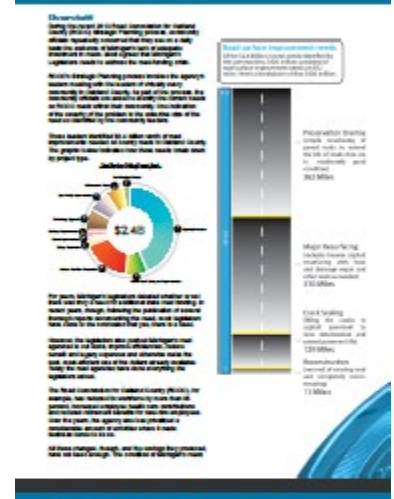
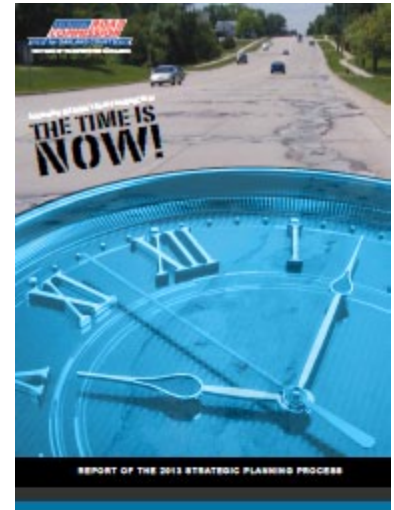
### Benefits

Strategy Planning Report

<http://www.rcocweb.org/Lists/Publications/Attachments/171/2013StratPlanfinal.pdf>

Strategy Plan Summary of Meetings

<http://www.rcocweb.org/Lists/Publications/Attachments/172/Summary%20of%20the%202013%20Strategic%20Planning%20Process.pdf>





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# Road Education Workshop

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## *Presque Isle County Road Commission*

### Contact Information

Presque Isle County Road Commission

piroad@piroad.com

(989) 734-2216

Address:

657 S. Bradley Hwy

Rogers City, MI 49779

### Problem Statement

The Road Commission faced a unique challenge when eleven firsttime officials were elected in eight of their fourteen townships during the November 2012 elections. None of the newly elected officials had served on township boards before and therefore were not familiar with the work of the County's Road commission.

### Summary of Solution

To educate and build relationships with these new officials, the Presque Isle County Road Commission hosted an informational workshop. The workshop not only helped educated the new officials but built a rapport between these community leaders and the Road Commission. Feedback from those in attendance was overwhelmingly positive and some suggested the workshop be held for every new official elected in the future..

### Summary of Expenses

Salaried staff hours

### Benefits

New officials quickly became educated on the work of the Presque Isle County Road Commission allowing them to better work together and ultimately better serve the community.

### Benefits

See workshop materials on following pages

# **New Township Board Member Road Informational Workshop**

## **Agenda**

- 9:00 a.m.            Introductions – coffee & doughnuts
- 9:10 a.m.            County Road Association of Michigan presentation
- 9:30 a.m.            Presque Isle County Road Commission Information  
                          History  
                          Directory  
                          Several important policies  
                          Township participation  
                          Mailbox  
                          Brushing & tree removal
- 9:40 a.m.            Asset Management  
                          PASER ratings
- 10:00 a.m.           Questions and answer session
- ?????????           Conclusion

# FACT SHEET

201.5 Primary Road miles

614 Local Road miles

108 State Highway miles

22 Full time employees – 15 Truck/Equipment Operators – 1 mechanic

2 temporary employees: December – March

13.6 years – average years of experience per employee

100+ pieces Equipment – Trucks, trailers, graders, tractors, etc.

112,816 gallons Diesel fuel and gas used in equipment during 2012 - \$374,055

102,800 gallons Diesel fuel and gas used in equipment during 2011 - \$325,996

105,318 gallons Diesel fuel and gas used in equipment during 2010 - \$252,987

125,667 gallons Diesel fuel and gas used in equipment during 2009 - \$211,549

143,655 gallons Diesel fuel and gas used in equipment during 2008 - \$377,124

104.1” – Average annual snowfall – November thru March

58 Miles – Average snowplowing route for each driver

35 MPH – Maximum speed for snowplowing

14 hours maximum time allowed for snowplowing per day per driver

36.5% - Roads within County that have hard surface (asphalt) = 294 miles

69 Primary Road miles rated “6” or better, good condition

82 Primary Road miles rated “4” or “5”, these need wedging, overlays or sealcoat

All local hard surfaced roads have been rated.

\$150,000 average cost to place 2” asphalt in 2012, not including prep work

\$1,000 average cost to paint centerline and edge line on 1 mile

\$24,000 average cost to sealcoat 1 mile of asphalt

5- 7 years – average extended life expectancy of asphalt road sealcoated



*Presque Isle County Road Commission*

## Mailbox Policy

The Presque Isle County Road Commission would like to work with the owners of rural route mailboxes to ensure uninterrupted mail delivery and to protect mailboxes during the winter season. The following policy may help prevent mailbox damage.

1. If you are leaving for the winter, please remove your mailbox and post.
2. If you have an expensive decorative mailbox, please put up an inexpensive mailbox for the winter.
3. Make sure your mailbox and base are securely attached to your post and place a "snow board" if possible to take the impact of plowed snow and prevent it from hitting your mailbox.
4. Keep the snow cleared away from your mailbox and post.
5. Mount no more than two mailboxes on one support post.
6. As a general rule, the mailbox, support or base may be no closer than 4 feet from the edge of the paved or the main traveled portion of the road. If you know the plow line, another guide is to have the door of the mailbox a minimum of 12 inches from the plow line.
7. Embed supports no more than 24 inches into the ground **and do not embed** in concrete.
8. All mailboxes shall be erected on **wood post not to exceed** five inches in diameter or **hollow metal post not to exceed** two inches in diameter.

It should also be noted that the Presque Isle County Road Commission does not replace mailboxes hit by plowed snow. This is the time to check your mailbox to ensure it is properly mounted to withstand the harsh conditions of winter. Remember that it is the responsibility of rural postal customers to keep the access to their mailboxes clear for the mail carriers.

# 2012 Primary and Local Hard surfaced Roads Paser Ratings

Paser Rating	Primary Miles	Local Miles	Suggested fixes	"Estimated" repair cost per mile
10	0	0.8	No maintenance necessary, new road	\$ -
9	5.2	4.4	No maintenance necessary, smooth surface	\$ -
8	0.8	1.8	Crack filling or shoulder patching	\$ 1,000
7	5.6	5.8	General crack sealing and/or minor patching	\$ 2,500
6	43	1.7	Patching - sealcoat - ultrathin asphalt overlay	\$ 24,000 - 60,000
5	7	8.3	Asphalt wedging - sealcoating - ultrathin asphalt overlay	\$ 40,000 - 100,000
4	50	55.6	Asphalt wedging - asphalt overlay	\$ 150,000
3	43	28.5	Pulverize, gravel and asphalt surface - surface poor condition	\$ 200,000 - 250,000
2	10	17.2	Reconstruction - very poor condition	\$ 260,000 +/-
1	1.9	12	Reconstruction - failed road surface	\$ 260,000 +/-
total miles	166.5	136.1		

# Tail Light Clearer

## City of Wyoming, MI

### Contact Information

Daniel Gard

gardd@wyomingmi.gov

616-745-2084

Address:

City Of Wyoming - Motorpool

2660 Burlingame SW

Wyoming Michigan 49509

### Problem Statement

The LED truck lighting does not get warm enough to prevent the accumulation of snow on truck tail lights and rear flashers. A way to keep drivers from having to exit their trucks to clean the lights off during their routes was needed.

### Summary of Solution

Daniel Gard created the Tail Light Clearer using the truck's air system to clear the lights at adjustable and timed intervals.

They were installed on seven trucks and were tested throughout last winter. He then redesigned them by adding a washer solvent dispenser to aid in keeping tail lights clear.

### Labor, Equipment, Materials

A local supplier helped to find an air valve and timer, and also supplied the nozzles.

### Summary of Expenses

Air valve: \$80

4 nozzles: \$15 each

Box: \$25

Timer: \$70

Truck protection valve: \$70

Tubing: \$10

Solvent container: \$75

Switch with override button: \$45

Numerous fittings: \$60

Total Cost: \$495

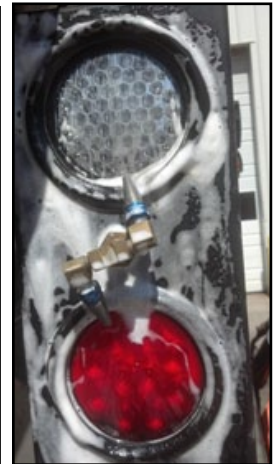
### Benefits

The tail light clearers provide safety to the public and drivers by eliminating the need to exit the truck to clean the tail lights in adverse weather.



Before

After





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# Tail Light Snow Deflector

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## **Barry County Road Commission**

### **Contact Information**

Rob Richardson  
administration@barrycrc.org  
269-945-3449

*Address:*

P.O. Box 158  
Hastings, MI 49058

### **Problem Statement**

Drivers were required to exit the truck to remove the snow build-up on tail lights throughout the day.

### **Summary of Solution**

The air deflector keeps lights clean while the truck is on route.

### **Labor, Equipment, Materials**

The Tail Light Snow Deflector was originally designed by Blade Man - Bob Miller, from a pie tin and duct tape! A mechanic perfected the design by using a drill, stainless steel and two bolts.

### **Summary of Expenses**

\$25 for the deflector plate, bolts and washers  
1/2 hour mechanic rate

### **Benefits**

The tail light snow deflector helps keep drivers inside the truck and helps motorists to consistently see tail lights throughout a snow event, resulting in increased safety for everyone.



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# Ford Super Duty Engine Lifting Tool

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## *Lenawee County Road Commission*

### Contact Information

Rob Crowell

robc@lenaweeroads.com

517-673-0071

*Address:*

2461 Treat Hwy.

Adrian, MI 49221



### Problem Statement

The manufactured tool is very expensive to purchase.

### Summary of Solution

The Ford Super Duty engine lifting tool was developed in-house to assist in removing a truck engine. The lifting tool mounts between the chain lift brackets on the engine, allowing the engine to be lifted from the center.

### Labor, Equipment, Materials

Bolts

D-ring

Steel tubing

Labor for welding it together

### Summary of Expenses

Total cost: \$20

### Benefits

Removing an engine is easier and safer.

# Blade Jack

## Huron County Road Commission

### Contact Information

Tom Donnellon

tdonnellon@yahoo.com

(989) 269-6404

Address:

417 S. Hanselman Street

Bad Axe, MI 48413

### Problem Statement

Changing under-body blades is a challenge; they are heavy and difficult to get in the right position for attachment.

### Summary of Solution

The Blade Jack makes it easier to position the blade under the truck for attachment. It also lowers the risk of injury caused by the weight of the blade. Many attempts have been made to use floor jacks as a solution; it took many alterations to this model including larger rubber wheels and a swivel mount for the blade. This can be done at many road commissions throughout the state.

### Labor, Equipment, Materials

Labor and Shop hours

Basic jack

Customized wheels

Front counterweight

### Summary of Expenses

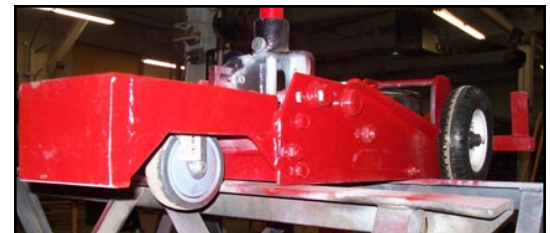
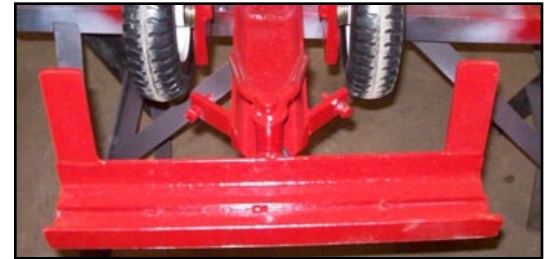
Basic jack: \$80 from TSC, Harbor Freight

Wheels, add-ons: \$40

Labor & Shop, 4 - 6 hours: \$200

### Benefits

Changing blades can be done by one person, more quickly with a lower risk of injury.





# Snow Plow Training Manual

## City of Livonia Department of Public Service

### Contact Information

Jim Williams

jwilliams@ci.livonia.mi.us

(734) 466-2648

Address:

12973 Farmington Road

Livonia, MI 48150

### Problem Statement

Training new employees to operate front V-plow trucks safely and efficiently.

### Summary of Solution

Jim Williams developed a training program that includes a 2 hour classroom session, a 25 page manual and 1-2 hours of field training.

### Labor, Equipment, Materials

Instructor and students

### Summary of Expenses

Employees are paid an hourly wage for training.

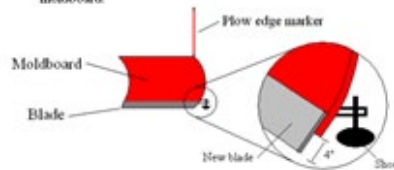
### Benefits

Training new employees to plow snow properly, safely, and efficiently saves the city and the citizens both time and money.

**Fundamentals of snow plowing with front V-Plow trucks.**

**Pre-shift safety check-out.**

1. Check engine oil and other fluid levels of the truck, ie, coolant overflow tank, windshield washer fluid, etc.
2. Check all the lights, 4 way flashers, brake lights and strobe.
3. Check all the tires for proper inflation.
4. Check the 2-way radio, set it to channel 3 (S-R-F).
5. Check fluid level, top it off before leaving the yard.
6. Visually inspect the plow blade for wear, broken or missing bolts, and worn shoes. Blade should be no less than 1" below the moldboard.



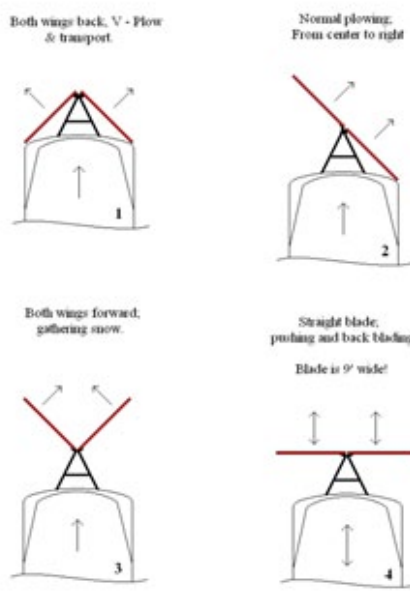
New plow blades are 4" below the moldboard so if it looks to be 1" or less, it may need to be replaced. When in doubt, ASK a mechanic. Many plows have a "curb feeder" that extends beyond the moldboard. This can make the inspection more difficult, but it must be checked!

7. Start the truck and check the plows operation. Lift and extend both wings forward and back. If it seems to strain in any operation, it may need hydraulic fluid. Look for any signs of leaks underneath. To add fluid to the system, ask a mechanic for help.
8. Check the plow blade for wear, every 2-3 hours!

**DO NOT** transport in 4 wheel drive on bare pavement!  
**DO NOT** plow in 'Overdrive' or 4 wheel 'Low Gear'!

**V - Plow configurations**

TOP VIEWS



1. Both wings back, V - Plow & transport.
2. Normal plowing, From center to right.
3. Both wings forward, gathering snow.
4. Straight blade, pushing and back blading. Blade is 9' wide!

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# Fork Hitch

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## Jackson County Department of Transportation

### Contact Information

Al Roden

allenr@jcrc-roads.org

(517) 740-0312

Address:

2400 N. Elm Rd.

Jackson, MI 49201

### Problem Statement

Maneuvering trailer-mounted equipment was being done by securing a long bolt through the end of a fork lift to rest a ball or pintle on. One day, the trailer jumped the bolt and got away. There wasn't a lot of damage but it was a wake up call to the agency.

### Summary of Solution

Using some scrap steel and a hitch, their fabrication shop made an attachment for the forks, utilizing the existing hole.

### Labor, Equipment, Materials

3 labor hours

New hitch

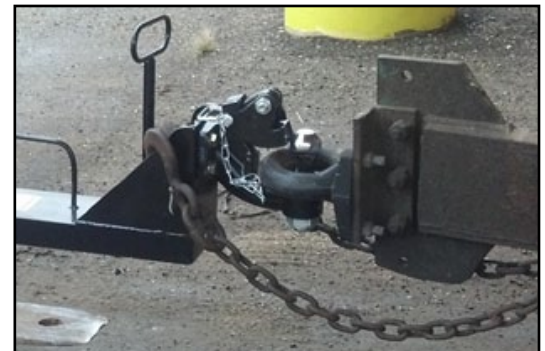
Scrap metal

### Summary of Expenses

Approximately \$300

### Benefits

The Fork Hitch makes maneuvering equipment a much safer task for employees, and reduces the risk of damage to equipment.



# Using Truck Mounted Hook-lift Systems to Reduce Fleet

## City of Wixom

### Contact Information

Mike Howell  
(248) 624-0141

*Address:*

49045 Pontiac trail  
Wixom, MI 48393

### Problem Statement

Maintaining services with reduced capital improvements funds has been a challenge for the City of Wixom.

### Summary of Solution

The City of Wixom purchased a 2008 Ford F550 equipped with a new 'hook-lift' system. Hook-lifts allow one truck to complete the tasks of several. The F550 was equipped with a 3 yard salt box, a dump box and four utility boxes. In 2012, Wixom refurbished a 2001 Sterling L line to a hook-lift. This truck is outfitted with a 5 yard salt box, a 1,000 gallon anti-ice brine tank and a dump body.

### Labor, Equipment, Materials

Not applicable

### Summary of Expenses

2008 F550 with salt box (with pre-wetting capabilities)

Dump and utility boxes: \$80,000

Refurbished 2001 Sterling

New hook-lift system

Retrofitted 5 yard salt box (with pre-wetting capabilities)

1,000 gallon anti-ice tank and a utility dump box: \$90,000

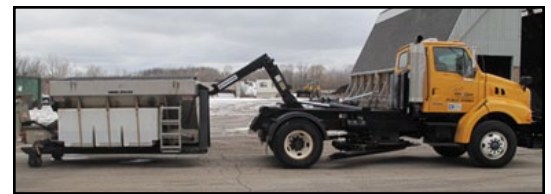
### Benefits

The hook-lift allows one truck to perform the seasonal tasks of several trucks, saving shrinking capital and reducing single task trucks from the fleet.

**2008 Ford F550  
with new Hook-lift System**



**Refurbished 2001  
L line with Hook-lift System**



# In-house Carbide Underbody Scraper Blades

## Bloomfield Township

### Contact Information

Duane Poole

dpool@bloomfieldtwp.org

(248) 594-2800

Address:

4200 Telegraph Rd

PO Box 489

Bloomfield Hills, MI 48303-0489

### Problem Statement

Eight inch by ten foot underbody blades with carbide inserts are not being manufactured. Underbody blades without the carbide reinforcements have a lifespan of only 8-10 hours of use. The time it takes to plow the township's roads takes 12-14 hours per route. This results in excess of 12 hours of repair time per event and costs a total of \$3,655.08 in labor material.

### Summary of Solution

The Bloomfield Township mechanics add carbide blocks to the face of the underbody blades. This increases the lifespan from approximately 8-10 hours to approximately 3/4 or more of a winter season.

### Labor, Equipment, Materials

1 mechanic, approximately 15 minutes per set

1 welder

2 steel 8 inch x 5 feet underbody blades

1 - 6 1/4 inch x 2 inch x 1 inch carbide block

4 - 12 1/2 inch x 2 inch x 1 inch carbide blocks

### Summary of Expenses

15 minutes of mechanic wage: \$7.36

Underbody blades: \$52.08 per section, x 2 = \$104.16

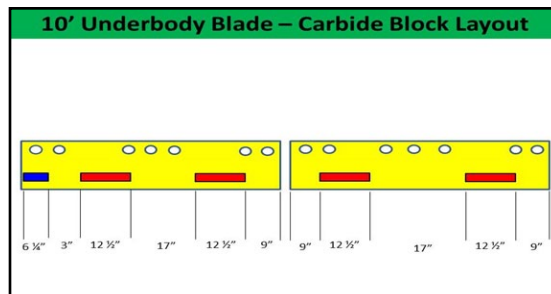
1 - 6 1/4 inch x 2 inch x 1 inch carbide block: \$89.78

4 - 12 1/2 inch x 2 inch x 1 inch carbide blocks: \$646.00

Total cost to build one set of blades: \$847.30

### Benefits

Trucks do not need to stop plowing for blade changes, which saves time, money and allows for better customer service. The reduction in blade changes also decreases the potential for personal injuries including back injuries, broken bones, and lacerations.





# Blade Change Ramp

## Roscommon County Road Commission

### Contact Information

Scott Eckstorm

eckstorms@roscommoncrc.com

989-366-0333 ext #20

Address:

Roscommon County Road Commission

820 E. West Branch Road

Prudenville, MI 48651

### Problem Statement

Changing the blades on underbody scrapers is challenging for the Roscommon County Road Commission, who does their blade changes on the floor of their garage.

### Summary of Solution

Elevating the truck allows the blade to hang straight down, making blade changes an easier task.

### Labor, Equipment, Materials

Approximately 40 labor hours

Wire welder

Angle grinder

Approximately 40 feet of 2 inch square tubing

20' of 3"x 4" angle iron

4 foot piece of grating

1 gallon of paint

### Summary of Expenses

Total cost: approximately \$500 in materials

### Benefits

Changing the blades on an underbody scraper is easier.



# Pre-wet Chute to Optimize De-icing Material Application

## City of Novi Department of Public Services Field Operations Division

### Contact Information

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### Problem Statement

The “bounce and scatter” problem occurs when rock salt doesn’t receive maximum pre-wet coverage. This creates the problem of keeping de-icing materials on the roadway, which wastes materials and negatively impacts the environment, roadway infrastructure and motorist safety. In addition, de-icing material is wasted and spray tips used to coat the salt with liquids get damaged from the physical impacts of the salt.

### Summary of Solution

Novi’s Winter Maintenance Advancement Team (WMAT) developed a removable, self-contained, stainless steel pre-wet chute for trucks outfitted with liquid application capabilities. The chute can be used on any type of standard auger box and ensures that dry rock salt gets covered with the maximum amount of dispensed liquid while protecting liquid application components. The chute also ensures that the pre-wetted salt is placed in the center of the spinner so that it can then be uniformly applied to roadways.

### Labor, Equipment, Materials

WMAT partnered with a Novi-based metal fabricating shop to manufacture the chute’s stainless steel box and mounting bracket. The shop equipment used included a press brake to bend the steel and a drill press to create the holes needed to mount the chute. Equipment used to complete installation of the units at the garage included a knife to cut the hose to the proper length, and wrenches to secure the spray tips and mounting brackets. The bill of materials for each chute included:

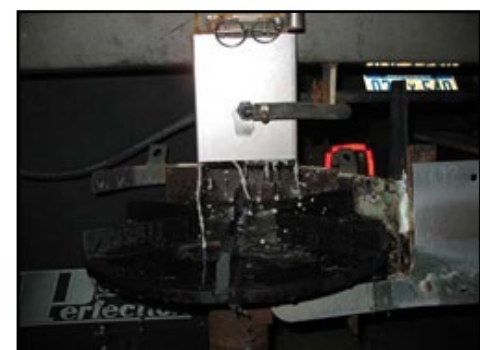
- 1 stainless steel chute body
- 2’ of low pressure 1/2” rubber hose
- 2 brass spray tips (size 11020 BR)
- 1 brass tee fitting

(continued on next page)

Before



After



## Pre-wet Chute to Optimize De-icing Material Application *(continued)*

- 2 brass elbows
- 2 stainless steel mounting plates
- 4 small bolts
- 4 lock nuts
- 2 presto pins

### Summary of Expenses

Labor for installation: (1 hour @ fully-loaded rate): \$50

Fabrication of body and mounting bracket: \$100

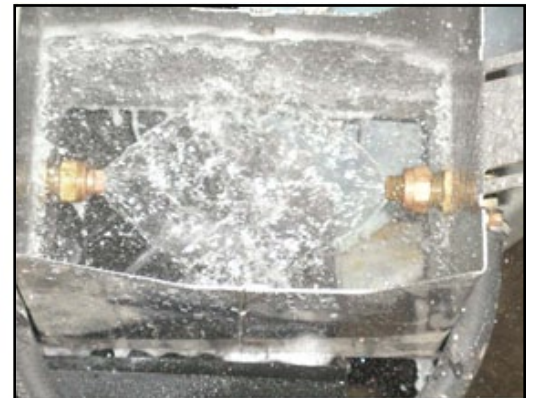
Materials (tips, hose, fittings, couplers, pins, bolts, etc.): \$25

Total cost: \$175

### Benefits

Enhanced liquid coverage yields quicker hydration and activation of salt, resulting in safer roads sooner rather than later. Reduced bounce and scatter associated with thoroughly pre-wetted salt means that less salt is wasted, resulting in lower operational costs and decreased detrimental impacts to infrastructure and the environment. Material is 30% more likely to stay on the pavement not only when the liquid thoroughly coats the salt, but also when pre-wetted material is placed in the center of the spinner. Redirecting pre-wetted material to the center of the spinner also provides more uniform distribution over the pavement. Material usage has decreased from 194 tons per event in 2011-2012 down to 131 tons per event in 2012-2013. In addition, the use of the pre-wet chute has reduced labor costs associated with fewer repairs on spray tips.

### Operating









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