



Office of  
Maintenance

Technology  
Transfer  
Discoveries

Collected by:  
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1-13-16

We all have a stake in **A**  **B**

## Introduction

Maintenance Technology Transfer (T2) is an initiative to capture and share useful ideas throughout the state. These ideas typically incorporate small in-house built devices that are stand alone or used as attachments for existing pieces of equipment. These devices are built by personnel in the field that recognize the need for a more efficient and safer method of completing their work. The information that is gathered from those who were involved with its creation, is then entered into a format that is both user friendly and informative. Distribution of this information is intended to benefit all districts by allowing them the opportunity to adopt new ideas and reciprocate with their own ideas, which helps foster a maintenance culture focused on efficiency and safety.

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# Carbide Gauge

# 4

## Product Info

Cost  
(Estimated)

\$5

## Key Features

- ◆ Takes the guess-work out of carbide longevity
- ◆ Saves money by establishing a more consistent means of measuring
- ◆ Utilize a piece of scrap iron to make them
- ◆ Small and cheap enough to have one in each truck
- ◆ More accurate than the “2 finger rule”



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## Description

This idea comes from the Albert Lea Truck Station. Currently they keep 2 of these gauges in the truck. One is for the underbody and the other is for the plow. These gauges are made to measure steel blades. They are considering the development of this further to incorporate a 3-in-1 gauge. One piece of steel that has 3 notches to measure the beveled underbody steel blades, 6" steel plow blades and the Joma blades. With a tool like this at the ready in every truck, our agency can ensure the best cost savings of using the blades to their fullest potential and to deter any user from wearing through the carbide and into the moldboard which can be very cost prohibited.

We all have a stake in 

# Defrost Intake Extension

# 5

## Product Info

Cost  
(Estimated)

\$25

## Key Features

- ◆ Allows clean, dry air into the in-cab heating system
- ◆ Eliminates freezing of the in-cab air filter
- ◆ Easily installed and routed underneath the cab
- ◆ Allows for the defrost vents below the windshield to be covered
- ◆ Very inexpensive correction to a well-known problem



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## Description

This item comes from District 8. They continually had problems with the defrost system in this truck getting plugged up with snow and coincidentally freezing the in-cab air filter. When this happens, it restricts the flow of fresh air from outside into the heating system which causes a drastic drop in air flow causing the windshield in the truck to fog up and not generate enough heat to melt the snow and ice off of it. As any operator knows, without the heating system working properly, your job can not be done effectively. Furthermore, this is also why the defrost is part of your pre-trip inspection. Stay Warm!

# Defrost Vent Snow Deflector

# 6

## Product Info

Cost  
(Estimated)

\$5

## Key Features

- ◆ Designed to keep snow from building up underneath the wipers
- ◆ Helps prevent snow from entering the defrost vents
- ◆ Reduces opportunity for the in-cab filter to become plugged or frozen
- ◆ Easily installed and removable in seconds
- ◆ Very cost effective

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## Description

*This idea comes from the Roseau Truck Station. It is designed to keep snow from building up underneath the windshield wipers and to deter snow from entering the defrost vents. It is especially useful when plowing against a strong crosswind by keeping the snow from packing the area under the windshield that is used to not only to allow the in-cab heating system to breath, but also house the wiper linkage. This design uses a piece of 2" x 2" wood as a frame with a piece of old bed liner material attached to the top using screws. The wood is fastened to the vents using Zip-ties. Leaving no damage to the vehicle when removed. This is currently in the process of being evaluated.*

# Defrost Vent Snow Screen

# 7

## Product Info

Cost  
(Estimated)

\$30

## Key Features

- ◆ Creates a snow particle barrier for the defrost vents
- ◆ Keeps snow and debris from entering the in-cab heating system
- ◆ Mesh material is very similar to fiberglass window screen
- ◆ Snow cannot enter the mesh when introduced to wind
- ◆ Still allows the in-cab heating system to breath
- ◆ Quick removal with the use of hook & loop Velcro

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## Description

This handy attachment comes from the Thief River Falls Truck Station. This design makes removal a cinch by using Velcro. Although, in order to remove it fast, you would have to cut slits above the wiper blade hub. The nice part about this system, is that it seals the entire vent to deter snow from entering the space under the windshield that is used for the fresh air intake of the in-cab heating system and to house the wiper linkage. Using this design allows the system to breath and coincidentally keep snow from building up underneath the wipers.

# LED Plow Lights

# 8

## Product Info

Cost  
(Estimated)

\$300/piece

## Key Features

- ◆ Much brighter light than traditional halogens
- ◆ Very directional focused
- ◆ Uses a lot less power to run them
- ◆ They have a small forward facing lip to prevent the snow from packing and hanging onto the front of them
- ◆ Operators claim that the reflectivity of the snow is not a problem with these and also note that they can see a lot more with these lights than they can with just the fog lights in low visibility situations

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## Description

These LED plow lights are mounted onto a District 4 plow truck. They like them so much, that they would like to outfit every truck with them. However, the cost seems to be the deterring factor for them. This particular LED plow light has a very small forward facing lip surrounding the headlight that helps prevent the lights from accumulating snow build-up that other LED plow light companies are plagued with at the moment.



# Pronovost Snow Blower

# 9

## Product Info

Cost  
(Estimated)

\$18,000  
With the  
upgraded gear box

## Key Features

- ◆ Outperforms the larger Sno-go's
- ◆ Lighter and easier to maneuver even off road
- ◆ The jagged drum blades effectively chew up hard chunks of ice
- ◆ The fan spins a much higher rate than competitors
- ◆ Loading chutes are available for them.

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## Description

This snow blower comes from district 4. They are widely utilized throughout this district and they have now outfitted every truck station with them. It is a Canada built machine. District 4 has used these blowers exclusively for many years and claim that they are extremely durable. They can be mounted in a forward or rear facing direction. As far as power needed to drive these units; a 165 hp rental tractor is said to be more than enough power. These units have enough power to blow snow across the road and over the power lines without any residual falling onto the roadway if you open the "throat" to the left or right. They also have easily adjustable hardened steel feet.

# Sander Gate Cable Prop

# 10

## Product Info

Cost  
(Estimated)

\$15

## Key Features

- ◆ Ensures the sander gate does not fall while cleaning or servicing the inside of the sander.
- ◆ Easily installed.
- ◆ Required parts are easily obtained locally.



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## Description

This attachment comes from the Baxter Truck Station. The need for something safer than propping the sander gate open with a shovel is very welcomed. This will ensure that the sander gate will not fall from the upright position. There is a clear safety issue with propping up the sander gate in a manner that is not secure. This should alleviate that concern. Caution should be taken with this sander gate when propped up in this manner due to the angle that it sits in the upright position. Operators have noted that they have forgotten that it is propped open and when walking around the truck, they have hit their head on the sander gate. Shortening the cable to heighten the sander gate may correct some of this.

# Sander Gate Latch & Hinge System # 11

## Product Info

Cost  
(Estimated)

\$30  
Without Labor

## Key Features

- ◆ Enables the tailgate and sander gate to be opened fully to dump any material that may be hung up in the box
- ◆ Bolt-on configuration can be removed if needed
- ◆ Sander gate can be disconnected easily by removing the pivoting pins as seen on the bottom right
- ◆ A latch is attached to the tailgate prop wing to secure the sander gate in the upright position, as seen in the bottom right

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## Description

This modification was designed by an employee in the Morris Truck Station. It addresses several safety concerns and includes a much easier method of dumping material that hangs in the box. With that being said, this design may not be suitable for every truck station. One noted drawback of this system is if your truck station hauls snow frequently, removing the sander gate adds another step and requires 2 people. Truck stations that haul snow once a week may not be affected by this nearly as much as one that could haul snow every other day. The existing top pins of the sander gate are removed to allow the gate to pivot from the hinge seen on the bottom right. This device has some great benefits that operators are sure to like.

### Purpose

The intent of this document is to show the design variations and beneficial aspects of 2 different hinge systems that were created and implemented by field maintenance personnel and their mechanics.

Date: 7-8-14

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### Findings

The 2 different designs are stationed in the Paynesville and Morris Truck Stations. Although there are slight differences in the 2 designs, they both function in the same manner and achieve benefits beyond what we are currently using. The purpose of this modification is to improve our trucks ability to dump salt at the end of your shift. As we all know, salt tends to get lumpy and sometimes even freezes inside the box of a truck. When this happens, it is a very labor intensive process to remove it after an already long day of plowing. Since the salt tends to clump/freeze near the tailgate of the box, it will restrict the flow of any salt at the time of dumping. This design allows that sander plate to be mounted onto the tailgate of the truck which then increases the space to the rear of the truck to allow the material to flow freely or at least in one large clump if your material is in that poor of condition. One other aspect that is shown with these designs is the locking lever that is used to keep the sander plate from dropping down when in the upright position during Post-Storm cleanup (truck washing). This feature will greatly reduce the amount of severe injuries sustained during this operation.

### Conclusion

With the information that has been gathered from these 2 locations and the assigned operators of the trucks that these are installed on, the feedback has been overwhelmingly positive. Operators strongly feel that this modification should be on all trucks.

Thank you to all who participated in this project!

Tailgate Sander Plate Hinge Comparison  
Detailed Illustrations

Paynesville

Morris

Notice with the box in the full upright position; there is plenty of clearance between the sander plate and the ground. As long as the operator does not park directly over a pile of salt when dumping, the plate would not make contact with the ground or get bent up.

The Paynesville truck has a bracket welded onto the tailgate with bolts to disconnect the hinge plate.

The Paynesville and Morris hinges have a quick-pin feature for mounting the sander plate to the truck. You will notice that both designs have a bolt or a pin that is used as the main connection and also doubles as the swivel for the hinge. A hairpin keeper is then used to hold it in place.

When cleaning the truck after your shift, flipping the sander plate upward to lay against the tailgate allows you easy access to the sander. A locking lever has been installed onto these trucks. The only suggestions about the locking lever on the Paynesville truck is that the operators would prefer the pocket to be larger and mounted on the inside (or opposite) of the sander plate.



Morris's design uses 2 hinges on the outer parts of the tailgate mounted to the chain pockets. Note that with these designs, the truck must be outfitted with tailgate prop wings. The use of a chain to adjust the tailgates maximum open position will not work with this modification.

Both designs accomplish the same task. The main differences between these designs are whether the hinge brackets are welded into place or bolted on. Morris is bolted onto the chain pocket and is completely removable.

One thing to keep in mind when installing this hinge modification is that you must make sure that the tailgate prop wings are adjusted and securely mounted so that after your load has been dumped, the wings line up properly and reset themselves into the tailgate latch correctly. If this is not done properly, you (the operator) will have to fight with the tailgate to get the wings to line up and that could be a potential safety hazard.

# Sander Hydraulic Lockout Aide

# 14

## Product Info

Cost  
(Estimated)

\$7

## Key Features

- ◆ Nearly eliminates injuries to hands
- ◆ Disconnect the hydraulics without removing gloves.
- ◆ Simple to install. A mechanics help would not be necessary.
- ◆ This does not bypass the current safety feature in place.
- ◆ Can be built with common parts found in most shops.
- ◆ Extremely cheap to make.

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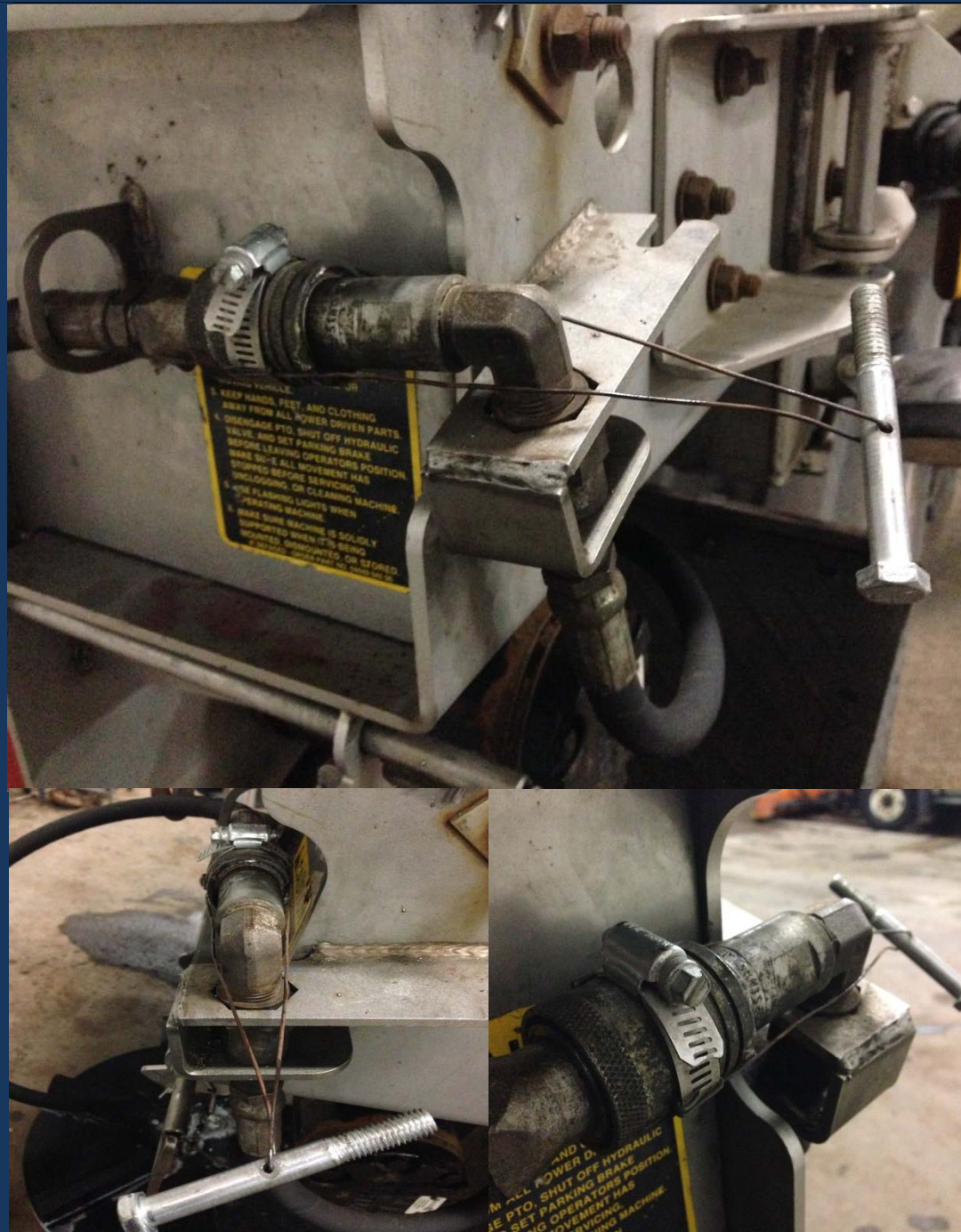
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## Description

Anybody that is assigned to a truck with this safety feature can attest to the difficulty this has added to the end of their shift. This idea comes from an operator in the Nopeming truck station. As we all should know by now, if anyone bypasses this safety feature, it could lead to grounds for time off (without pay, of course). With that in mind, this idea doesn't bypass the safety feature. It simply makes it much easier for the operator to disconnect the hydraulic connection regardless of the type of gloves he or she is wearing. All of this can be done safely and without losing skin on your knuckles. All that is needed is a pipe clamp, a bolt with a hole drilled into it & some bailing wire.

# Sander Latch Pre-Wet Bar

# 15

## Product Info

Cost  
(Estimated)

\$600 Total

*The air actuator is roughly half the cost*

## Key Features

- ◆ Fast deployable
- ◆ Light enough for one person to handle
- ◆ Inexpensive to build
- ◆ Useful for bridge application and other trouble areas
- ◆ Attaching it to a truck is as simple as latching your sander gate. No bolts or pins are required

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## Description

This device was designed and built by a mechanic that now resides in the Hastings/Lakeville area. It allows trucks to be deployed as a Pre-Wet applicator with very little initial adjustments needed to the existing plumbing systems. This could be considered an effort to creating multi use trucks with the added benefit of utilizing attachments that are able to be moved from truck to truck with very little initial setup. This design uses nozzles with holes measuring 7/32" which are ideal for an application rate of 10 gallons per mile at a traveling speed of 30 MPH. This setup uses the 2 saddle tanks on the outside of the truck for material handling. No pump is needed to use this attachment. It's design holds true to the gravity fed system that we currently use.

# Spinner Extension

# 16

## Product Info

Cost  
(Estimated)

\$10

## Key Features

- ◆ Significantly Reduces Salt Bounce
- ◆ Better Control of product placement
- ◆ Use of a chute is not needed
- ◆ Easily produced and installed
- ◆ Easily Adjustable



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### Description

This idea comes from the Plymouth Truck Station. There have been many design ideas to help prevent the "bounce" effect that salt has when it comes into contact with the roadway. This attachment does so without adding additional weight to the spinner. A benefit to this design over a chute is that you have no concern about crushing your chute when dumping your load at the end of your shift. When installing these extensions, it is important to note that you must raise the box all the way up when measuring the length of the extensions needed so the spinner motor is about 2" from the road surface.



# Strobe Light Deflector

# 17

## Product Info

Cost  
(Estimated)

\$10

## Key Features

- ◆ Relieves eye fatigue
- ◆ Reduces night time “plowing headaches”
- ◆ Easy installation
- ◆ Very cheap to make using an old road sign



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## Description

Have you ever noticed that after plowing at night, your eyes start to hurt or you begin to get headaches? Chances are, it is due to the strobes on the cab guard reflecting light off of your mirrors and into the cab. This simple, but affective shield will help relieve some of that. The maintenance crew from the Baudette Truck Station came up with this idea and has been using it since. The plate that is used to reflect the light coming off of the strobes measure roughly 20" X 12". Anyone can re-create this attachment with very little time and money.

# Underbody Convex Mirror

# 18

## Product Info

Cost  
(Estimated)

\$13

## Key Features

- ◆ Allows a dedicated downward view of the underbody and it's output.
- ◆ Uses existing mirror mounting to attach to truck.
- ◆ When mounted on the top rail, it eliminates sight visibility issues.
- ◆ Can help with determining the position of your truck easier by improving the visibility of centerline stripes during scraping procedures.
- ◆ Easy to adjust and clean.

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## Description

*This idea comes from the Mankato truck station. It allows a better view of the underbody and the amount of scraping output. It can also give you better visualization of the centerline markings after you scrape the road to help you determine where your truck is in the lane. The mere cost of this mirror is all that is necessary in order implement this idea. Give it a try (with your supervisors approval of course)!*

# Upgraded Tailgate Flow Plate

# 19

## Product Info

Cost  
(Estimated)  
\$40 - \$200

*The cost varies due to the extent of work needed to be done on the existing flow plate to fit the locking pin shown below on the bottom right picture.*

## Key Features

- ◆ Enhanced safety by reducing the chances of getting fingers pinched.
- ◆ Less physical exertion needed for removal and installation.
- ◆ Integrated handle for easy handling of this awkward attachment.
- ◆ Simple retrofit that would not require outsourcing to complete.
- ◆ Plates are secure and do not move once in place. There is no side to side movement.

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Description

*This idea came out of the Pine City truck station. It allows the user to remove and install the tailgate flow plate simply by sliding it onto the locking pin of the tailgate and pivoting it forward to lock the plate in place using a U-shaped stainless steel bracket (with incorporated handle) around the tailgate frame. The main benefit to this idea is to eliminate the need to pin the plate on top (which cannot be done without a ladder for most people) and to reduce the chance of getting your fingers pinched with the use of the handle which makes handling and control of these plates much easier.*

# Mastic Lute Skid

# 20

## Product Info

Cost  
(Estimated)

\$200

## Key Features

- ◆ Reduces over-exertion
- ◆ Cleaner end product
- ◆ Easily attached/removed
- ◆ Very little cost to build
- ◆ Keeps your boots cleaner and in turn lasting longer.



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## Description

This noteworthy device comes from District 7. It allows the operators the control to apply mastic on a long stretch of parallel cracks with minimal effort. The end result equals a cleaner finished product because it does not have to be lifted such as traditional hand lutes which can be hard to handle. The chute is complimentary to the skid itself. The weight of the skid itself has enough down force onto the road surface to be adequate to create a nice smooth finish with very little run-off.

# Epoxy Machine Wand

# 21

## Product Info

Cost  
(Estimated)

\$100 –Aluminum & Steel

\$280 –Longer Steel braided  
lined hoses

**Total = \$380**

## Key Features

- ◆ Much lighter than original wand promoting a great reduction in user fatigue
- ◆ Made from an old weed whip wand
- ◆ Trigger was salvaged from original wand
- ◆ Mid-point handle increases control
- ◆ Radial rubber boot used to create a very efficient squeegee.
- ◆ Sump pump hose extension used to protect braided hosing

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## Description

*This upgrade emerges from the Plymouth Truck Station. This can definitely be considered a safety conscience improvement. Ever held a crumb-rubber machine wand? This is less than half the weight of that. Prolonged use of this device will have a very minimal negative effect on your body. The addition of the hose extensions give you a much larger area to work in and were also relocated from the front/bottom of the machine to be routed to the boom to promote cleaner equipment and reduce hose snags. The rubber boot acts as a squeegee that produces a very clean and smooth end result.*

# Loader Mounted Wedge Paver

# 22

## Product Info

Cost  
(Estimated)

\$1,200

## Key Features

- ◆ Patch large stretches of wheel tracks in little time
- ◆ Mounted to the loader gives you more control and makes this device more nimble
- ◆ Produces a nice even patch with virtually no lip on the edge
- ◆ When built with the proper safety devices, it can occupy 2 workers on a stable walking platform while in motion
- ◆ Fully adjustable
- ◆ Fast and easy to connect and

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## Description

This device comes from district 4. It is capable of laying a 4' x infinite patch primarily used for wheel tracks. It can be utilized as a make-shift paving machine as the seams between 2 patches are relatively insignificant. The process of laying down the bituminous is done using a tandem truck with a conveyor belt sander mounted on the back. You then windrow the material in front of the machine and use this device to push the material down the road to create a nice smooth and uniform patch. All of the adjustments on this particular machine are manual (crank) controls.

# Belly Dump Wedge Paver

# 23

## Product Info

Cost  
(Estimated)

\$6,000 - \$8,000

## Key Features

- ◆ More efficient than our traditional wedge pavers attached to a skid loader
- ◆ Less expensive to operate compared to several plow trucks.
- ◆ Mounting takes about 1.5 Hours
- ◆ Built strong to withstand age and elements.
- ◆ Uses self-contained electronics over hydraulics and requires only an electrical

Questions or Comments?  
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Or

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## Description

This device comes from District 8. They currently have 2 of these wedge pavers that are capable of mounting onto any belly dump. They were built roughly 17 years ago by a talented welder who has since retired. This unit makes quick work of filling in wheel tracks. The belly dump is able to haul more than 2 tandem trucks of bituminous and is about 40% faster at applying it onto the road when compared to a skid loader mounted wedge paver.

# Screed Trolley

# 24

## Product Info

Cost  
(Estimated)  
\$200-\$300

## Key Features

- ◆ Accurately controlled thickness
- ◆ Reduces overexertion
- ◆ Ideal for uniform compaction when using a steel drum roller
- ◆ Infinite adjustability
- ◆ Uses existing parts/scrap to fabricate
- ◆ Helps prevent segregation of rock

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## Description

The In-House design of this device comes from District 1. They have used it and found it to be quite the beneficial tool in their arsenal of pavement resurfacing equipment. The Screed Trolley is useful because it helps create a uniform thickness on the final lift of asphalt that is raised from the existing surface to account for compaction with a steel-drummed roller. It significantly reduces the washboard affect by leveling the material off in a uniform manner relative to the adjacent road surface. This particular model uses a plow cutting edge as its screed. The design can be modified to fit any project.



# Epoxy Paint Gun Handle Extension # 25

## Product Info

Cost  
(Estimated)

\$35

## Key Features

- ◆ Greatly reduces user fatigue by eliminating the need to bend over
- ◆ Made from scrap steel
- ◆ Gun is easily removed
- ◆ Keeps the epoxy paint at a safer distance from the operator
- ◆ Handles are designed so you can take an over or under grip to relieve muscle strains
- ◆ The weight of the hoses are strategically placed onto the operators shoulders

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## Description

*This device comes from the Golden Valley Truck Station. It was built by an employee to eliminate the need to bend over with the spray gun to paint turn lane indicators, railroad crossings and such. The main issues that this device resolves are that it is hard on the back and the volatile fumes are hazardous to the operator. The trigger on the spray gun is activated by a small steel braided cable connected to a lever placed on one of the extension handles on one end and wrapped around the guns' proprietary trigger on the other end. This idea surely has benefits of safety for anyone using it.*

# Guardrail Screed Creeper

# 26

## Product Info

Cost  
(Estimated)

\$500

## Key Features

- ◆ Built In-House
- ◆ Replaces the use of rakes and shovels
- ◆ Reduces overexertion risks
- ◆ Uses existing Bobcat quick-coupler for fast deployment
- ◆ Proprietary steel plow cutting edge used as the adjustable leveler
- ◆ Quickly level areas for water shedding

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## Description

*This device was built in District 3B. It is used as a quick-couple attachment for a Bobcat to level off areas of washouts underneath guardrail. It is especially useful for moving and leveling material around guardrail posts. It can also be used to cut the shoulder API in an event that water has built up and is not draining properly. It is simple to operate and can be used in a forward or reverse motion. The design can be easily modified to best suit each districts needs.*

# Guardrail Tool Skid

# 27

## Product Info

### Cost

No estimate has currently been assessed.

## Key Features

- ◆ Quickly Deployable
- ◆ Significant savings compared to an enclosed trailer
- ◆ All tools necessary are readily available
- ◆ Artificial lighting included
- ◆ Safety features such as flip down gate with steps and a sturdy gas and acetylene cage
- ◆ Weatherproof toolboxes to keep your tools and hardware clean and dry

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## Description

*This admirable device comes from the Eden Prairie Truck Station. They started with a platform that was not being used and just laying around the shop. The inventors mounted a used aluminum toolbox and 2 additional weatherproof toolboxes that they purchased to fulfill their needs for a wealth of enclosed storage space. It can be easily loaded into a 1 ton pickup using a fork attachment with a front-end loader. The fact that the tools are located on this device and are ready to be deployed at a moments notice, makes this piece of equipment a real time saver. No need to chase down that pry bar or socket set any more. It is ready for you when you are.*

# Impact-Driven Cable Guardrail Spreader # 28

## Product Info

Cost  
(Estimated)

\$100 - \$200

## Key Features

- ◆ Allows for a more controlled method of spreading cable guardrail
- ◆ Safer method versus the T-handle spreader tool
- ◆ Great to use during cold weather
- ◆ Can be easily adapted to use a hand crank instead of a power tool
- ◆ Light weight and hand held for easy transportation
- ◆ Simple to use

Questions or Comments?

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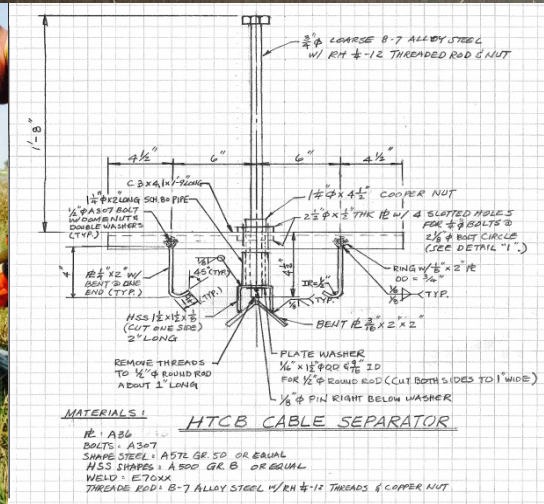
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## Description

This tool comes from the Albany truck station. This is a tool that will be greatly used especially in the colder months as the lower the temperatures drop, the tighter the cable guardrail gets from the shrinking of the steel strands. This will safely allow one operator to spread the cable (even near the anchor end) in order for someone else to set the replacement post. One thing that is required when developing this tool is a clasp of some kind attached to the threaded rod in case failure of the tool or it slip off of the cable to stabilize it from further injuring anyone around it. Please contact Steve Blaufuss (bottom left) to request detailed drawings and specs for further development.

# Manual Cable Guardrail Spreader

# 29

## Product Info

Cost  
(Estimated)

\$50

## Key Features

- ◆ Improved design over the original.
- ◆ Reduces the amount of friction from the cable to the corners of spreader
- ◆ Requires less physical exertion to spread the cables.
- ◆ Simple enough to develop without outsourcing.
- ◆ Use existing cable spreader to implement this change.

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## Description

*This idea comes from the Anoka truck station. What this upgraded version of a manual cable guardrail spreader aims to accomplish is to make it easier for an operator to spread cable guardrail in the event that a post needs to be replaced. With the corners of this tool being converted to a pipe that is meant to rotate on a solid dowel rod, it greatly reduces the amount of friction that occurs when the cable comes in contact with the sharp corners of the original design of the tool.*

# Post Pulling Hook

# 30

## Product Info

Cost  
(Estimated)

\$15

## Key Features

- ◆ Easy to make
- ◆ Inexpensive
- ◆ Saves time by only needing to drive one lag bolt into the post instead of 4
- ◆ Build efficiency by making 3 of these and drive them into the posts while the operator's pulling the others
- ◆ Most areas will have these items laying around as spare parts

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## Description

This device is known to be located in a few areas. This one was captured in the Albert Lea Truck Station but was originally designed in the Metro. It uses a 12" X 3/4" lag bolt and a chain hook of your preference. Cut the hex head off of the lag bolt, weld the hook in its place onto the shank and then precisely position the hex head onto the top of the hook. Be sure to center this as much as possible! Use a large air compressor (100psi or above) and drive the lag into the post using an impact wrench. This device is intended to replace the lifting plate with an eye-hook that uses 4 small lag bolts to attach to a post. It was noted by the operator that you may occasionally have difficulty starting the threads. Move to another area on the post and try again.