Ohio LTAP Center Build a Better Mousetrap Competition
Entry Booklet

2013
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What is the Ohio Entry Booklet 2013?
The Ohio Entry Booklet is a compilation of all the entries from the Ohio LTAP Center 2013 Build a Better Mousetrap Competition, representing counties, cities, townships, and villages from around Ohio. The Build a Better Mousetrap Competition’s purpose is to collect and disseminate real world examples of best practices, tips from the field, and to assist in the transfer of technology. The competition is an excellent 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 transportation professionals and other LTAP customers to get some well earned recognition for their hard work. All entries have been printed as explained by the submitters and all questions concerning the entries should be directed to the listed submitter.

What is the Ohio LTAP Center?
LTAP, an acronym for Local Technical Assistance Program, was created in 1982 as part of a nationwide effort by the Federal Highway Administration to provide for transfer of transportation technology and technical assistance to rural and local governments. Through this program, LTAP, or Technology Transfer (T2) Centers have been established in each of the states and Puerto Rico, and in four additional locations to offer assistance to Native American Tribal governments.

The mission of the Ohio LTAP Center is to provide training, technical assistance, advice and other resources concerning roadways to Ohio's local governments.

If you would like additional information about the Ohio LTAP Center, or the Build a Better Mousetrap Competition please visit http://www.dot.state.oh.us/Divisions/Planning/LocalPrograms/LTAP/Pages/default.aspx or contact us at ltap@dot.state.oh.us or (877) 800-0031 (toll free in Ohio) or (614) 466-3129 (all other areas).
Congratulations to the 2013 Winners:

1st Place – **Concrete Bridge Beam Launcher** – Preble County

2nd Place – **Spreader/Auger** – St. Clair Township, Columbiana County

3rd Place – **Rhino Lift** – Colerain Township, Hamilton County

Honorable Mention – **The “Snow Belter” Total Brine System** – Chardon Township, Geauga County

These entries were selected by our panel of transportation professionals after much deliberation. The quality and innovativeness of all the entries made the selection process very difficult. We commend everyone who entered the competition and encourage you to keep following through with your creative, cost saving ideas! We are already looking forward to next year’s Mousetrap Competition and hope everyone will have at least one great new idea to submit.

**NOTE:** The Ohio LTAP Center assumes no liability, express or implied, for the information contained in the submissions included in the entry packet or the implementation of any of the submitted ideas. The entries are solely the ideas and words of those who have submitted them and all questions regarding the entries should be directed to the submitter listed on each entry. Inclusion in the entry booklet does not imply an endorsement by the Ohio LTAP Center, it only demonstrates that the information was submitted as an entry for the competition.
Preble County

1st Place Winner in the 2013 Build a Better Mousetrap Competition

CONCRETE BRIDGE BEAM LAUNCHER

Contact:
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Problem Statement:
Our agency replaces up to eight bridges per year using precast bridge beams that are made by our workforce in our beam shop. Our fabricated pre-cast beam sizes range from 10 to 40 feet. Typically each bridge, depending on the span, would require at least 8 beams. The average beam sizes are 20 to 30 feet in length and 18 to 24 inches thick. Each beam, depending on length, can weigh up to approximately 20,000 pounds. Because of the intense schedule of bridge replacements and rising costs each year, we were looking for ways to save money. We evaluated the costs associated with beam replacement requiring the use of a private crane. There also were challenges at times for the subcontracted crane service to meet our tight schedules of the bridge crew during the busy construction season.

Discussion of Solution:
Build a beam launch devise. Basically it is a heavy duty rail track system with an attached cart that rolls back and forth. During the staging process, the beam launcher is hoisted across the span of the bridge abutments. The cart, simply made of a truck fifth wheel on heavy duty casters, is permanently attached to the rail. The beam launch requires the use of a rubber tired loader, a rubber tired excavator, and a track excavator. All these pieces of equipment are already used at the job site for the bridge construction. The semi-truck, with the loaded beam, backs up to the bridge. The loader attaches to one end of the
beam, while the excavator attaches to the other end of the beam. The beam is then hoisted onto the beam launch. One end of
the beam fits onto the launch cart, while the other beam is still secured to the loader. The loader attached to the rear of the
beam then slowly moves forward. The forward end of the beam that is attached to the cart, then slowly wheels across the
track to the other side of the bridge span. Two excavators, one located at each abutment wall, will then lift the beam off the
cart equally. The beam is then set into place. It takes approximately four hours to set eight beams using the same amount of
labor that it would have taken using a crane.

**Labor, Equipment, & Materials Used:**
An initial design and calculations were made to determine the loading of the device and to compare steel strengths and I-beam
sizes. Approximately 80 hours of county workforce labor was used to fabricate the beam launcher. Most of the work involved
welding and cutting the various steel components. Material for this project include two steel I-beams, square tubing, flat steel,
and angles. The fifth wheel that is used in making the cart came from a non-operational county truck. Other miscellaneous
components included the heavy duty casters, axles, and bearings.

**Cost:**
The total cost of material which included the two steel I-beams and steel members that were used to build the beam launcher
was only $1,100. Additional costs of $2,400 included miscellaneous hardware, welding and torch use, and county workforce
labor. The total investment of this device came to $3,500 which is slightly over the crane service cost of JUST one bridge
replacement project.

**Savings/Benefits to the Community:**
Crane costs from a sub-contractor average $2,500 per bridge. The beam launcher will account for approximately $25,000 per
year savings. Another benefit is that the bridge crews have more flexibility with project scheduling in setting the bridge
beams. Purchasing a crane is not a feasible option because of the expensive initial purchase, the additional maintenance costs,
and having an experienced crane operator. This monetary savings can be applied to other much needed
maintenance/replacement projects. Most importantly, this agency is proud of the hard work and team involvement with the
bridge supervisor, fabricator, and all who were involved with this successful, cost savings solution.
St. Clair Township, Columbiana County

2nd Place in the 2013 Build a Better Mousetrap Competition

SPREADER/AUGER

Contact:
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East Liverpool, OH 43920
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Problem Statement:
Spreader auger wears out too fast due to the abrasive winter mix of salt, #8 slag & #1G-ash.

Discussion of Solution:
Reinforce auger post & auger outer rims with stainless steel.

Labor, Equipment, & Materials Used:
Uses 5 lbs. #ER 308 LSI .030 stainless steel mig wire. About 4 hours of labor by a community service person (free labor).

Cost:
1 lbs. of #ER 308 LSI wire is about $10.00 for about $50.00 total in cost.

Savings/Benefits to the Community:
Depending on the season an auger would last about 1 ½ seasons without the reinforced outer rims & center post. Pictures #1, 2 & 3 are of our 3rd auger built last year. Pictures 4, 5, 6 & 7 are our 1st prototype 3 years ago till 2/13/2013 and going. The
cost of auger about $350.00. It only last about 1 ½ years. Our prototype has already lasted 3 years and still going strong. We should get at least another 3 years out of it easy. So our savings keep growing every 1 ½ years. So every 6 years we get out of an auger is 6/1 ½ yrs. = 4 less augers to buy. 4 x $350.00 = $1,400.00.

$1,400.00 savings every 6 years per truck/6 years = $233.30 per year savings

End Results
$ 233.30 a year savings per truck
X 5 trucks
$1,166.50 a year total savings
Colerain Township, Hamilton County

3rd Place in the 2013 Build a Better Mousetrap Competition

RHINO LIFT

Contact:
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Problem Statement:
We had a need to lift heavy castings for catch basin inlet rebuilding. With our aging infrastructure and over 3300 catch basin inlets we had to get creative to improve efficiency and promote safety for our employees, residents and the traveling public.

To rebuild a catch basin, we had to take extra equipment to the job site, such as an extra dump truck pulling a drag with a backhoe. This took up valuable residential street parking and was necessary to give us room needed to park the equipment and perform the job. This also required an extra person and time for advanced posting of temporary no parking signs on the day prior to the work beginning. Another concern was a safety issue of unloading and loading the backhoe on the street. Also there was a lot of extra travel time and a piece of equipment tied up for an extended period that was needed and used only at the start of the rebuild to remove the casting and set it off to the side and then not needed again until the end of the rebuild which would be placing the casting back in place on the following day. Another item was a safety issue because workers would attempt to lift the lighter but still too heavy single catch basin inlet castings by hand to prevent all the inconveniences mentioned above which caused a major concern for back safety or additional injuries. The double catch basin inlet castings were just entirely too heavy and required the equipment and the inconveniences above.
Discussion of Solution:
Working as a team – Road Supervisor Tim Lange, Maintenance Workers Steve Rader, Paul Schwab & Kraig Rieman used years of experience & outside the box thinking to come up with a solution to address our problem as stated above. The goal was to increase productivity, save cost & improve safety. The key factors we addressed were to use the least amount of equipment possible while reducing lost travel time and to avoid using valuable street parking while also addressing personal and public safety issues. The solution was to utilize our single axle dump truck with the snow plow frame attached and putting to use the trucks hydraulics to perform the heavy lifting. We discussed, designed and fabricated a lifting arm with an easy to install system that attached to our existing snow plow frame and designed a clamp attachment for a secure and balanced hold on the casting. We named this the “Rhino Lift” – see the attached pictures and use your imagination and you will probably see how we came up with this name.

Labor, Equipment, & Materials Used:
The total labor thru design, building and modifications was about 30 hours. The equipment we used to construct The “Rhino Lift” attachment was simply utilizing our welder, cutting torch, grinder, drill and various hand tools. Materials we used were the scrap recycled beam, other pieces of scrap metal for the beam attachment to our existing plow frame and the clamp attachment, a section of chain, a plow marker bolted to the top of the frame in the front for visibility, and finally paint.

Cost:
Our Cost besides our labor hours were at a minimum. We used a recycled/scrap metal beam that had been in our possession and not used for about 25 years and scrap metal pieces and chain we had around the garage. The minor cost was the plow marker we installed after some trials so the driver could see the lifting arm in front of the truck from the driver’s seat and the paint. Estimated cost is $75.00.

Savings/Benefits to the Community:
The savings & benefits of this innovativeness are dramatic. This creative tool was developed and designed for a minor cost with a major payback to Colerain Township and its residents. Overall efficiency was greatly improved from reducing the extra equipment to and from the job site twice. Labor hours were reduced as to not needing to post street in advance and moving the equipment to and from the job site twice. There will be a great savings in fuel usage. The residents will have less
disruption and street parking issues will be reduced to only the area of the catch basin inlet repair. Safety for the township employees in regards to loading and unloading equipment on the street and for their personal back safety which is vitally important and will help reduce the chance for worker compensation claims. The “Rhino Lift” will greatly improve the ease of lifting and resetting castings thus making it safer, significantly reducing cost, improving the time needed and quantity of catch basin inlet rebuilds. The “Rhino Lift” is already paying dividends now and will way into the future.

Pictured from Left to Right, Colerain Township Road Supervisor Tim Lange, Maintenance Workers Steve Rader, Paul Schwab and Kraig Rieman
Chardon Township, Geauga County

Honorable Mention in the 2013 Build a Better Mousetrap Competition

THE “SNOW BELTER” TOTAL BRINE SYSTEM

Contact:
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Problem Statement:
How could a small Township Road Department in the “Snow Capital” of Ohio get the benefits of adding Brine to its snow fighting arsenal without spending an exorbitant amount of money on a fully functional, turn-key Brine System complete with mixing, distribution and storage?

Discussion of Solution:
ANSWER: We challenged one of the largest plastics/fluid handling companies in the Midwest to develop a total turn-key brine system made specifically for small towns at a price somewhere near $10,000. Indelco Plastics Corporation of Minnesota accepted the challenge. Together we designed, developed and refined a turn-key system that now puts us in the same league as ODOT. During the initial design of the distribution tank we increased the challenge to have the tank double as a Hydro-seeding system during the off season. This additional use of the system greatly impressed our Trustees when it came time to attempt to get the purchase approved.

Labor, Equipment, & Materials Used:
Design phase; Received significant input from our Brine/Liquids Mentor, John Thorpe, retired ODOT/35 years. 850 gallon mix-tank with 5 HP Honda pump to agitate and dissolve the solution. 2,100 gallon storage tank. 725 gallon, skid mounted distribution tank, with 5 HP Honda Pump, spray bar with drag hoses. We modified the mix-tank agitating header to our own
design which cut batch time from 2 hours to 30 minutes. We also designed a front mounted spray bar for applying liquids in icy conditions ahead of the wheels. Installed Firestone Air-Bag system on 2003 F-550 4x4 dump to accommodate the 725 gallon tank's weight. Simple manual valves, not costly electronic.

**Cost:**
Since we were the design, development and testing partners with Indelco, we received a significant discount on the system and purchased the prototype for $9,999.95. When the system goes to market this year it is anticipated to sell for $15,900. We purchased a used 2,500 gallon storage tank locally to increase our total storage to 6,100 gal. We hope to add 10,000 gallons of additional storage this year and another distribution tanker truck with 2,000 gal. capacity.

**Savings/Benefits to the Community:**
First year cost analysis is not complete yet, but here's the facts. The tanker has been out countless times by itself where in the past 3-4 salt trucks would be used to treat road conditions. Roads pre-treated with brine no longer hard-pack which gives us MUCH SAFER roads and buys us time before plow trucks are needed, saving us man hours. We have been able to eliminate the salt/cinder mix and use straight salt which performs much better, and eliminates high berm conditions that damage roadways and are costly to clean up. Subdivisions that had been snow packed in the past are now cleared quickly and icy road conditions are nearly a thing of the past.
THE "SNOW BELTER" TOTAL BRINE SYSTEM
WITH OUR ADDITIONAL 2,500 GALLON TANK
The Left Lane was treated less than 5 minutes earlier at 50 Gallons Per Lane Mile
HIGH PRESSURE FRONT SPRAY BAR BLASTS THROUGH ICE ON CONTACT. ANOTHER PLUS FOR A PRESSURIZED SYSTEM VERSUS A GRAVITY FED SYSTEM.
A Filter wall separates the suction side from the mix side. This keeps large particles from entering Storage or Distribution.
THE NEW HEADER IS SUSPENDED 2 ft ABOVE THE BOTTOM OF THE TANK WITH NOZZLES FACING DOWN. THIS GIVES MORE AGITATION AND FASTER DISSOLVE TIME.
MIX TANK AFTER MODIFICATION TO HEADER
ORIGINAL MIXING HEADER MOUNTED ON BOTTOM WITH 72 HALF INCH HOLES FACING DOWN. ONLY 1/4 BUCKET OF SALT COULD BE ADDED AT A TIME.
City of Centerville

PUBLIC WORKS WORK ORDER & SPECIAL SERVICE REQUEST DATABASE

Contact:
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Problem Statement:
Being a Public Works Department that provides services to a City with a population of approximately 24,000 citizens we have a lot of various work orders that are generated for many requests. Our past system required our Public Works Secretary to write a work order that was a triplicate form that would allow for the Public Works Director to receive a copy, the Public Works Supervisor to receive a copy that would be handed down to the crews and finally an original that would be filed separately by location for future reference. Our Street Department would also assist our Refuse Department with bulk pickups that were recorded on triplicate forms as well. These special service requests were also used to bill the Refuse customer. Researching status of a particular work order or special service request required communication among staff members and/or the research through filing cabinets to find the desired information. Finding history for a particular address or request would take some time even though we had an organized filing system for the processed requests. Time is money and efficiency makes the difference especially when dealing with the public. Being able to sort out sign requests, asphalt requests, catch basin requests, tree requests etc. was nearly impossible under our old system.

Discussion of Solution:
Computerizing the work orders and special service requests would be the ideal arrangement so that at a click of the mouse we
could generate the required information for any work order or special service request whether it was being processed, been processed or if a new work order was needed. Streamlining the process so that being able to go back multiple years would still be only a click away would be the focus of our goal. Having the ability to track required maintenance patterns or the ability to pull stats for various requests such as sign requests, asphalt complaints or catch basin repairs just to name a few would provide an efficient foundation for managing our resources. Allowing multiple employees in the organization to have access to the same information at the same time while sitting at their computer would be the ideal goal for efficiency for our organization. Customer service could be expanded throughout our department without the unnecessary research through file cabinets or communication with among employees to locate answers related to past or current work orders. The system would have to be user friendly, economical and accessible for all involved and Microsoft Access seemed to offer the answer.

**Labor, Equipment, & Materials Used:**
One of our Public Works Supervisors utilized his time for the labor on the project, the equipment used was a City owned computer and the materials were Microsoft Access program all of which the City already owned.

**Cost:**
As noted above the labor was provided by the City and the equipment and materials were already purchased. Time involved for designing the data base totaled approximately 80 hours and requires an additional 25 hours on a yearly basis to reorganize for the next year.

**Savings/Benefits to the Community:**
The entire project was performed in house so there was no upfront cost incurred. Future savings is difficult to measure since this is the type of project that gets better with time. When it comes to looking up a past records the older the record the longer it can take to locate. With a database that shows multiple years the answer can be generated at a click of the mouse preventing wasted hours looking through past records. Another savings is the reduced cost for paper. The past system required triplicate work orders and special service requests that cost 32 cents each in 2007. With the computerized Access system normal printer paper can be used to generate the work orders eliminating the third copy for the secretary's file since the program will store the information. The ease and convenience of looking up information and pulling specific reports for “types of complaints” allows our Department to see where our efforts are utilized. It allows us to track if there are patterns for
maintenance that may be red flags for future planning. It provides special service request information for billing of our Refuse customers through our Finance Department. The new system has improved our efficiency and ability to provide excellent service for our residents.
Old System

Special Service Request Form

Work Order Form

Handwritten work orders & special pickups that had to be distributed, retrieved and filed.
New System

Multiple years of information at your fingertips

Work Order menu

Choose from the menu
- Create New Work Order
- Close Out Work Order
- Create Special Service Request
- Close Out Special Service Request
- Print Service Request
- Print Work Order
- Completed Work Orders
- Return to Main Menu (previous years)

System allows for a combination of forms that are utilized by the Street Department.
Example: Work Order & Special Service Request on the same menu
Generating a Work Order

Database allows for multiple forms to be utilized in the same program.

Saving time by creating drop downs to reduce redundancy.

Print preview of generated Work Order

From your desktop to the crews in the field!
Closing out a Work Order

Click on Close Out Work Order

Closing out a Work Order

Crew's response are entered
- Action
- Completed by
- Follow-up
- Data

All Work Order information securely stored in the database for future reference.
Generating a Special Service

Database allows for multiple forms to be utilized in the same program.

Again drop downs are created to reduce redundancy.

Generating a Special Service

From your desktop to the crews in the field.

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Benefits of a computer based Work Order system

- Ability to generate, store and access Work Orders from multiple years in one location!
- Ability to utilize the database for multiple forms used within the department to streamline efficiency!
- Multiple people within the organization can access and utilize the system at the same time to communicate and document work requests!
- Supervision can access open Work Orders at any time to keep the Department on task so all requests are addressed!
- Ability to assist our Waste Department with billable Special Service Requests.
- Requests are documented for crew’s response and billing for our Finance Department.
- Reduce cost by eliminating expensive triplicate Work Orders that were previously hand written!
- Improved efficiency by having one location that past Work Order information can be quickly accessed for multiple years by multiple people at the same time!
- Ability to pull stats for sign repairs, catch basin repairs, pot hole complaints etc., for past maintenance and future infrastructure planning!
City of Cuyahoga Falls

BRINE DELIVERY SYSTEM

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Problem Statement:
To find a better way to fully utilize our salt brine supply in an efficient, easy to operate, and cost effective way, giving us the ability to anti-ice and de-ice roadways and parking lots, fill satellite brine tanks as well as the ability to flush bridge sidewalks with brine in the winter or bridge underpasses and raised islands with straight water in warmer months.

Discussion of Solution:
From a functionality perspective, we wanted something easy to operate, easy to take off and on if necessary, the ability to handle the harsh environment, and it had to at least handle all of our current application needs. We didn’t want something that was too complicated to work on and it needed to be cost effective to build. An old plow frame, which was going to be scrapped out, was utilized for the framework. This gave us the ability to use it on any of our trucks, it was of sturdy construction, it had raising/lowering as well as power angling abilities, and it did not cost us anything extra for our project. By having our brine-dispensing unit in front of the truck, it gave the driver better vision of what was happening while looking forward and driving. The idea that it was better to push the snow from the front rather than to coat the snow from the back made this an even better idea. 2" flexible plastic tubing was used. This low cost material can handle the harsh environment while not rusting under the brine usage. The plastic tubing had gave us less friction loss for pressure through a smoother interior surface and fewer hard angles compared to steel plumbing. Simple brass ball valves were used to give the operator the different functionality. They could just use the front fan sprayers to de-ice, just used the side flusher for sidewalks, or adjust the valves to simply fill/refill the brine storage tanks at each salt barn.
Ohio LTAP Center Build a Better Mousetrap Competition Entry Booklet 2013

**Labor, Equipment, & Materials Used:**
Labor – 2 persons @ 5 days each

Material – 1 used plow frame $0
4 ball valves $360
20’ vinyl 2” hose $40
Assorted 2” plumbing fittings $340
Rust-proofing paint $20

**Cost:**
Total cost to fabricate - $700-$800

**Savings/Benefits to the Community:**
Salt brine is free to the Street Department while dry rock salt costs $48.96 per ton. While using this unit to anti-ice, we are saving 5-7 times the amount of rock salt it would take to de-ice. When we are using it to de-ice, we are saving 100% in dry material! When used as a sidewalk flusher, the brine cuts right through even deep, heavy snow leaving wet sidewalks in no time. This works great for helping children get to school since State Route 8 and the Cuyahoga River bisects our city and bridge access is of great importance. We have a low cost solution that allows us to effectively remove snow and ice utilizing existing vehicles. We feel that it is easier and safer for our drivers as well as better for our citizens and the entire driving community!
Jackson Township, Ashland County

COMPUTERIZED SIGN MAINTENANCE AND MANAGEMENT RECORD KEEPING

Contact:
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Cwelch12@frontier.com

Problem Statement:
To automate the record keeping associated with road sign management and maintenance

Discussion of Solution:
When it became a federal mandate to implement sign retroreflectivity guidelines our township was faced with many concerns:

1) Once we determined which signs needed replaced how would we ultimately keep track of the signs that were being replaced, since municipalities have been given the flexibility to deal with the regulations on their own schedules we would not be replacing all of our signs at once.

2) Once a sign was replaced how would sign life retroreflectivity be tracked (as a HIP rated sign may last up to 10 years).

3) How would we track the replacement of an HIP rated sign that was damaged?

4) If we measured a signs retroreflectivity at different times of the year, where and how would we record that information?

5) Off-the-shelf road and traffic sign asset management software was costly and too complex for our township. (We have a budget of about $225,000 – 23 miles of road to maintain).

6) The need was for something inexpensive and customizable to our immediate needs.
It became imperative that the solution be addressed in Microsoft Access because there was a need for multiple tables. At a minimum 2: Master sign and Sign Maintenance. Therefore a relational database was developed. A solution utilizing Microsoft Access had flexibility and expandability:

- Amount of data is irrelevant. A township with 10 signs vs one with 500 can be accommodated.
- Type of data is irrelevant which is why townships which require more information to be tracked on their signs can be easily accommodated.
- Complex queries can be built for any type of data retrieval.

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

1) Used my own personal digital camera as well as the one owned by the township to take pictures of all the signs in the township (traffic, road, parking lot and others).

2) Assigned a unique code to each sign and recorded it in the database along with any other relevant data. NOTE: Easy to add fields to capture any other data a township would deem important to their sign maintenance and management program.

3) Conducted a 30 minute training session with road crew and other two trustees on how to use application.

**Cost:**

Really nothing.

- Digital camera already owned by township for zoning department.
- Computer already owned by township.
- Software developers application tool was Microsoft Access which was already owned by the township as part of the Microsoft Office Suite.

This project was really just a matter of pulling all three components together – developing the application in Access and teaching everyone on how to use it.
Savings/Benefits to the Community:
Community of Township Officials:
   1) The ease and simplicity of collecting data on paper can still exist – let’s face it the road guy is still going to write down notes on paper or mentally record in his head what he’s done with a sign – but the benefit is in using access to store and analyze that data, giving it meaning and order. Paper could be eliminated if road crew has a laptop that can go into the field.

   2) Satisfies the FHWA’s recommendation (from Chapter 4 of Publication No. FHWA-HRT-08-026) that agencies keep track of their sign inventory and periodically extract information on signs that are reaching the age at which they need to be replaced.

   3) Satisfies the FHWA’s recommendation (from Chapter 4 of Publication No. FHWA-HRT-08-026) that agencies track the installation date of their signs. Eliminates the practice of placing an installation date sticker on the sign.
Additional information:
#1) The uniqueness of this application is its *simplicity*. Initially capturing any and all “sign” history. Sign history can consist of single or multiple entries regarding:
- Purchase date
- Installation date
- Replacement date
- Retroreflectivity reviews

Very user-friendly and requires minimal computer literacy.

#2) The 2nd unique feature of this application is its *expandability*. Fields can be added or removed to accommodate any data collection an agency would deem appropriate for its needs.

#3) Reports are very basic as of right now. Can easily be modified to meet the needs of the users.
Any report can be run by clicking the report tab and then the corresponding report name.

Reports are real time, meaning: any edits or additions are immediately reflected on the report.

**Basic: Master sign inventory.** Lists and totals signs by category.

**Below Retro:** Interactive. User enters minimum sign reflectivity measurement and any sign below that level is identified.

**Never inspected:** Lists by category a sign which has no inspection.
Logan County

PILE CUT OFF TOOL

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Problem Statement:
While building Ohio’s 1st recycled thermoplastic bridge outside the Village of West Liberty in Logan County Ohio our crews were faced with the requirement of the design engineers for a level pile cut off. The level pile cut off was integral for the pile cap bearing and the stability of the thermoplastic structure. Even with extra care while driving to keep the piles plumb the crew knew that cutting the pile level using carbide tipped chainsaw chain to meet engineering requirements was going to be a challenge.

Discussion of Solution:
To achieve the design goals the chainsaw would need to be mounted securely while being free to pivot in the horizontal position. The pivot point would need to be connected to a platform that was secured to the pile. The end result would allow for the employee to just guide chainsaw through the cut.

The tool was based on a platform with a circular hole in the center a few inches larger then the pile diameter. The platform created the foundation for the chainsaw to “ride” on while being guided through the cut. On the platform were a scored arced guide and a chainsaw anchoring bolt that also served as a pivot point. A hole was drilled in the chainsaw bar near the end allowing the anchoring and pivot bolt to be inserted. The chainsaw was also outfitted with a piece of PVC pipe near the engine which allows the weight of the saw to ride on the platform. The design allowed for the PVC pipe to “ride” in the arced guide during the cut. The platform was welded to a circular two tiered cage also a few inches larger then the pile diameter. When fitted with bolts the circular cage solved both the leveling and anchoring of tool relative to the installed pile.
Labor, Equipment, & Materials Used:
1. One (1) Logan County Employee to fabricate (Six (6) hours at $18.30/hour)
2. Two (2) Logan County Employees to assist in fabrication and testing (three (3) hours at $18.50/hour for two (2) employees)
3. Bridge Superintendent for design and oversight (Eight (8) hours at $21.00/hour)
4. Bending of cage rings and cutting of platform hole from fabrication shop – No Charge

1. Angle Steel – 1 1/4” x 1 1/4” x 72” at $12.40/10’ stick
2. Flat Steel – 2” at $11.76/8’ stick
3. Square Tube – 1” at $15.92/8’ stick
4. Sheet Steel – 20ga at $11.62
5. Mics - $20.00

Cost:
- Labor: $388.80
- Materials: $71.70

Total Cost: $460.50

Savings/Benefits to the Community:
The Pile Cut-Off Tool was part of a complete bridge construction project. The Onion Ditch Bridge is the longest single span structure of its kind in the world and only the 2nd of its kind placed in service on the federal highway system. It is made of 100% recycled thermoplastic materials with stainless steel and galvanized bolted connections. The structure was funded through The Innovative Bridge Research and Deployment Program available from FHWA. The bridge has received national exposure in the February issue of Roads and Bridges Magazine. While common techniques and tools were used in construction often it took the ingenuity of the crew to get the days task completed. The Onion Ditch Bridge replaced a 1908 structure and is built to current standards. The lifecycle cost of the structure is projected to be much less then the typical bridge and will serve the public for many years.
Mad River Township, Champaign County

STAINLESS STEEL SALT AUGER FOR COLD PATCH

Contact:
Harold Dixon
5714 Rt. 55
Urbana, OH 43078
937-788-2521
dixonhnb@ctcn.net

Problem Statement:
Cold patch used for pot hole repair and broken pavement repair can be very difficult to shovel from a dump truck. It can be difficult to apply due to lumps in the material especially in cold weather.

Discussion of Solution:
Find a better method to apply cold patch.
1. We use a stainless steel salt auger to apply the cold patch.
2. We drive over the pot hole or damaged area. One employee signals the driver to start and stop the auger. Only the required amount is applied.
3. The material is mixed by the auger providing a more uniform and smooth surface.

Labor, Equipment, & Materials Used:
We already had the auger. No labor or expense required.

Cost:
$0
Savings/Benefits to the Community:
The patching operation is safer due to reducing (1) person in the traffic. We also now spend less time in the traffic. We use less cold patch material. Labor reduction by not hand shoveling. The quality of the repair is better due to better mix of the cold patch material.
Village of New Lexington

3 IN ONE

Contact:
Chuck Hicks, Public Service Director
215 South Main Street
New Lexington, OH 43764
740-342-4227
nlstreet@netpluscom.com

Problem Statement:
Truck Repair – Water Line Repair – Sewer Repair in one truck instead of 3 trucks.

Fire Dept. had old EMS Squad and gave to public service

Discussion of Solution:
Repair Trucks 1 truck
Repair Water Line 1 truck
Repair Sewer line 1 truck
Now 1 Truck is set up for all.

Labor, Equipment, & Materials Used:
Truck – Free
Air Comp. 1400.00
Paint 70.00
2 Labor 21Hrs. 504.00
Total 1974.00

Cost:

Savings/Benefits to the Community:
Less fuel.
Less men because 1 truck
Truck broke down on road. Do not have to tow back. Can work on site, faster response time pull up on site. Less time moving 2 other trucks, space for parts, and tools.
pump hose - ladder... water pump inside
inside - parts.
Painesville Township, Lake County

SALT SPREADER SUPPORTS

Contact:
Bill Thompson, Service Director
558 Fairport-Nursery Road
Painesville, OH 44077
440-352-2661
wthompson@painesvilletwp.com

Problem Statement:
We were storing our salt spreaders in a separate location from our snowplows and wanted a way to keep them stored in the same area to better utilize our inside storage space. We wanted to be able to keep the salt spreaders off the floor.

Discussion of Solution:
Using existing holes in our Wassau plow frame, we designed and built spreader supports to store the spreader for each truck with the truck plow. They are now stored off the floor and we are using less storage area for both plows and spreaders.

Labor, Equipment, & Materials Used:
Our welder/maintenance man used angle iron and round stock to design and build the hangers. Each one had to be custom welded due to varying hole locations on plow supports.

Cost:
Material cost: $25.00/set  8 sets = $200.00
24 hours to cut & weld & paint

Savings/Benefits to the Community:
Better use of inside storage area allows us to keep more of our equipment stored inside out of the weather.
Supports are attached prior to storing spreaders. Removed during plowing.
Salt spreader stored with plow on support brackets
**Painesville Township, Lake County**

**COLD PATCH PORTABLE STORAGE BIN**

**Contact:**
Bill Thompson, Service Director  
558 Fairport-Nursery Road  
Painesville, OH 44077  
440-352-2661  
wtompson@painesvilletwp.com

**Problem Statement:**
Cold patch stored outside would get wet and the moisture would freeze. Using the cold patch was difficult due to ice and if the stockpile was not used quickly enough we would scrap it and purchase new material that was ready to use.

**Discussion of Solution:**
We needed a way to store the cold patch inside so it would be warm & ready to use at any time. We didn’t like leaving it on a truck for extended periods because it limited the availability of the truck. We decided to build a wooden storage bin inside the Service Garage big enough to hold 1.5 tons of material. It was built so that it could be moved with a forklift if needed. We are able to load our truck inside using a skidsteer and dump any unused material back into the bin at the end of the day.

**Labor, Equipment, & Materials Used:**
Two men spent 12 hours building the bin out of 2x4 studs and treated plywood.

**Cost:**
Approx. $150.00 for lumber and hardware

**Savings/Benefits to the Community:**
Less waste of cold patch stock due to extended periods of outside storage. We now are able to use 100% of purchased cold patch material.
Loading truck using skidsteer
Dumping cold patch into storage bin
Moving storage bin with forklift
Storage bin w/about 1 Ton of cold patch