



moving FORWARD

SUMMER 2026

A quarterly review of news and information about Pennsylvania local roads.

2026 Build a Better Mousetrap: Pennsylvania Recognitions

Winner

DIY Speed Tables: Save Yourself Money and Time



The speed table was a success for traffic calming and saved the township money.

Photo: South Londonderry Township

South Londonderry Township, Lebanon County

Contact Person: Richie Deibert
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What was the challenge?

Residents of the Carriage Park Development petitioned South Londonderry Township to address excessive speeding along Woodlawn Avenue. This was mainly due to traffic diverting from Schoolhouse Road to Woodlawn Avenue to bypass a troublesome intersection at Schoolhouse Road and SR-322.

Vehicle speeds consistently

exceeded the posted limit, creating safety concerns for pedestrians, bicyclists, and neighborhood families. The township conducted a traffic study and found the 85th percentile speeds to be more than 11 mph over the posted speed limit of 25 mph.

How did you develop and implement your solution? The township followed *PennDOT Publication 13 (DM-2), Chapter 18* to develop a compliant approach. After receiving a formal

request from residents, the township adopted a Traffic Calming Policy and worked closely with a resident-led community group to design and prioritize improvements. The township identified raised speed tables as the most effective and economical option.

To reduce costs, the township's Highway Department constructed forms for the tables in-house. Crews designed a custom form for the flat top of the tables and hand-formed the asphalt ramps. Each table location was selected based on traffic data — focusing on areas with the highest speeding and near existing streetlights for visibility.

What labor, equipment, plans, or material did it take to make the solution work? The project was completed entirely by township staff using township-owned equipment and a four-man crew within four days. The process included milling two inches into the existing roadway, installing new asphalt at a five-inch depth compacted to four inches, and leaving the form in place overnight to achieve clean, defined edges. The traffic table form was constructed using two-inch x six-inch boards,

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Retrofitting Stormwater Basins

Susan Giannantonio, PE, CPESC, NTM Engineering, Inc.

For over 50 years, federal and state regulations have implemented requirements for stormwater runoff controls to be constructed. Detention and retention basins were constructed initially to focus on the rate at which runoff occurs to mitigate flooding. As understanding of the environmental impacts evolved, regulations added volume and quality requirements to the stormwater runoff control criteria. As criteria change, the ponds and basins of the 1970s have evolved to be known as Stormwater Best Management Practices (BMPs), and most recently Stormwater Control Measures (SCMs) that are designed to address these additional control criteria.

Why Retrofit?

With aging facilities and increasing regulatory compliance requirements, many municipalities are exploring retrofitting existing basin SCMs. The need for retrofitting generally falls into three categories:

Maintaining original function through repairs – As with any built feature, age-related deterioration can require extensive repairs to maintain the original intended function. Metal and concrete components in the SCMs deteriorate and lead to impaired inflow and outflow. Vegetation can be overrun with invasive species, and self-seeded (weed) trees can jeopardize pipes, outlet flow control structures or earthen berm stability. This type of retrofit is performed to restore the original permitted basin function by ensuring the system is functioning according to the original plan design.

Increasing capacity to reduce downstream flooding – When recurring surface water flooding issues exist, modifying existing upstream basins may help mitigate the concerns. Early basins focused on controlling only large storm events. Through modification of existing outlet flow control structures, the peak release from more frequently occurring smaller storms can be reduced as well. To achieve even greater control, the storage volume of the basin can be increased by making the storage area deeper by raising the low-flow orifice or enlarging the footprint of the basin alongside outlet flow control structure redesign. These modifications require detailed calculations performed by a licensed professional, including modeling of the basin and the entire drainage area to the location of the concern.

Targeted component improvements for performance goals – Stormwater regulations now include requirements to manage volume increases and to improve runoff water quality in addition to peak runoff rate. Small, often lower cost improvements to one or two components of a basin can be selected to target one or more of these regulatory requirements. A common example is the installation of a water quality forebay at inflow points into an



Pipe deterioration requires retrofit repairs. Photo: NTM Engineering, Inc.

existing basin. Forebays function to capture sediment and debris before it enters the main basin storage area to prevent it from being discharged with the released flows. Other modifications can also target improving the ease of service life routine maintenance and lowering costs. For example, turf grass, which has traditionally been the vegetative cover provided in basins, requires mowing several times a month throughout the growing season. Recent design approaches often use meadow seed mixes, which require much less frequent mowing and also provide better water quality benefits than turf grass.

Permit and Compliance Considerations of Retrofitting

Basins are installed to mitigate the changes to stormwater flow characteristics caused by changes to the landscape caused by humans. Changing trees to grass and grass to pavement all result in changes to the flow characteristics. SCMs are designed as required by state and local regulations to mitigate these changes.

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LTAP Build a Better Mousetrap People's Choice and Innovation Challenge

Each year, the Build a Better Mousetrap Innovation Challenge gives LTAP the chance to celebrate something that often goes unseen but makes an enormous difference in communities across Pennsylvania: the creativity, resourcefulness, and problemsolving spirit of our local road crews.

This program highlights practical, homegrown innovations from clever tools and equipment modifications to new processes that improve safety, reduce costs, or simply help crews do their work more efficiently. These ideas don't come from laboratories or research centers. They come from the people who know the work best, who see the challenges firsthand, and who take the initiative to build something better.

This year, LTAP is recognizing two outstanding examples of that ingenuity.

2025 Build a Better Mousetrap People's Choice Award North Centre Township, Columbia County – Truck Hitch Mounted Blower

Their challenge was a familiar one: clearing grass from the roadway after berm mowing. Traditionally, crews used backpack blowers, a method that required workers to stand in the roadway with limited awareness of oncoming traffic. After one worker was struck by a vehicle and several others experienced close calls, the township knew they needed a safer approach.

Their solution was simple, smart, and highly effective: keep the operator inside the truck. Using a modified walkbehind blower,



PennDOT Secretary Michael Carroll (right) presented the award to Township Supervisor and Roadmaster, Steven D. Hess Sr. (left) and Road Crew Member, Cody Kline (center).
Photo: Pa. State Association of Township Supervisors

old signposts, a repurposed bridge sign, and a day's worth of fabrication, the team created a hitch-mounted blower system that allows grass to be cleared while the operator remains safely in the vehicle.

2026 Build a Better Mousetrap Innovation Challenge Winner

South Londonderry Township, Lebanon County – Do-It-Yourself Raised Speed Tables

Their challenge began with a community concern. Residents of a local development were experiencing excessive speeding, largely due to cutthrough traffic avoiding a nearby intersection. A traffic study confirmed the issue: speeds averaged more than 11 miles per hour over the posted limit. The full write up of the innovation is on page 1. [📄](#)



PennDOT Secretary, Michael Carroll (right) presented the award to Township Highway Foreman Brian Bachert and Operators Cory Jurell, Jeff Kline, and Scott Eckenrode.
Photo: Pa. State Association of Township Supervisors

Enter Your Innovation Today! Applications Accepted All Year

Go to the LTAP Website and click on the Build A Better Mousetrap Innovation Challenge icon to learn more about the program. There is a Past Winners book on the website to get ideas of what others have submitted and learn about innovations that would work well in your municipality.

2026 Mousetrap continued from page 1

spanning 32 feet to cover the roadway width while leaving a two-foot gap along each curb line to maintain stormwater runoff. The table platform was built to a 10-foot width in accordance with PennDOT specifications, with the boards securely fastened together and lagged to the roadway to maintain uniform shape and elevation.

A backhoe, skid loader, and hand tools were used to place and lute standard 9.5-mm warm-mix asphalt for both the table surface and ramps. Approximately 19 tons of asphalt were used for each speed table. Retroreflective pavement markings were applied using a propane torch to ensure durable adhesion and improved nighttime visibility. One reusable form was utilized to construct both speed tables, demonstrating efficiency and cost savings in the field process.

What was the cost of implementation? The total cost of the project was approximately \$5,000 for two speed tables, achieved through significant savings by utilizing in-house labor and township resources instead of contracted services and equipment.

What was the positive impact/result/outcome of your efforts? Pre- and post-installation traffic studies showed a reduction of over 5 mph in both the average and 85th percentile speeds — from approximately 36 mph down to 30 mph. We also reduced trips by 150 trips per day. The new traffic tables have improved pedestrian safety, reduced through traffic speeds, and strengthened community satisfaction. Residents have expressed appreciation for the township's responsiveness and cost-effective approach.

Runner-Up

Guide Rail Debris Remover

Washington Township, Indian County

Contact Person: Jesse Shotts

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What was the challenge? Over the course of time, materials and debris builds along the shoulders of the road, and this is usually addressed with equipment to reestablish slope and grade to allow water to run off from the road surface. The challenge is getting this build-up from under guidrails. Guidrails that have additional rails with very little clearance to the road are even more challenging. These tight areas normally get neglected for long periods of time and result in overgrown vegetation.

How did you develop and implement your solution? After measuring the distance between the guidrail posts we realized we could use our backhoe with the fork attachment if we had something to slip over the forks and would be able to push the debris far enough away from the guidrails and at an adequate slope to allow water runoff.



The new innovation worked so well that in one day 1,000 feet of guidrail was cleared and only another half of a day of light shovel work was needed to finish the work.

Photo: Washington Township

What labor, equipment, plans, or material did it take to make the solution work? One rainy morning we scouted our scrap and discovered two seven-inch pipes that we cut to 65 inches so that they would slide over our six-inch-wide forks and cut an eight-inch "I" beam to fit between the guidrail posts with a little clearance to spare. We welded the pipe to the beam at a perpendicular angle. The last thing we needed was a way to keep this contraption from sliding off the forks when backing out, so we welded a large bolt between the top and bottom of the beam to run a chain from the beam the fork attachment.

What was the cost of implementation? Less than \$100. It was a half-day labor for one employee. The material was scrap from the stockpile.

What was the positive impact/result/outcome of your efforts? Our expectation was to break in our little invention but to everyone's surprise it worked like a charm. In just one day we cleaned 1,000 feet of guidrail with another half of a day of light shovel work to get the little bits directly in front of the posts. We were glad this turned out so well and it saved us many days of facing this challenge with hand tools. Not only was this a back-saver, it cut right through the small tree roots and poison ivy. We named it "Push it".

Runner-Up

Salt Spreader Deflector

Borough of Everett, Bedford County

Contact Person: Jarred Bulger

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What was the challenge? Trying to figure out how to keep the salt off the back of the truck so it wouldn't rust the bumper and hinge points and still be able to use the back-up camera.

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Have Extra Winter Maintenance Materials? Make Sure to Store Them Properly Over the Summer

Q: What happens if we have a light winter and we do not have room to store the remainder of the salt estimate to reach the 60% minimum requirement of the COSTARS contract?

A: You should contact the supplier when this occurs. The contract states that the supplier may charge storage fees for any entity that does not meet its 60% minimum requirement. When reviewing your winter operations, you may want to implement a long-term plan to increase storage capacity. A best practice for winter maintenance is at minimum to keep the amount of salt you spread during a typical winter. Possessing enough salt to handle an average winter's needs can eliminate the need for stockpile replenishment during the heavy demand periods caused by severe weather.

It is recommended that COSTARS members keep a record of the amount of salt used each year to have an average tonnage used. PennDOT (per Pub 23 – Maintenance Manual) uses a five-year average to determine their baseline capacity.

Q: Does road salt go bad over the summer?

A: Road salt does not go bad if it is stored properly. Salt that has been stored is just as effective as salt that has been recently removed from a mine. However, to be able to use road salt from one winter to the next, proper storage is crucial. If salt is exposed to moisture, the affected salt will clump and a crust will form on the outer layer of your pile.

Q: Are there any issues with storing unused liquid material over the summer?

A: If the liquid is not circulated regularly, some materials will settle to the bottom of the tank. If this occurs, agitation

or circulation may be required to get the material back into suspension.

Q: How about storing unused antiskid over the summer?

A: Abrasives used in winter maintenance fall into the category of pollutants and should be stored to prevent stormwater runoff. Antiskid that has been treated with salt needs to be stored the same as sodium chloride on an impervious surface, covered or under roof. 🚧



Good housekeeping protects the material and the environment. This salt is being stored properly for the next winter season by Summit Township, Erie County. Photo: PennDOT LTAP

2026 Mousetrap *continued from page 4*

How did you develop and implement your solution? We used an old metal bed frame and welded it to fit where we wanted to put it.

What labor, equipment, plans, or material did it take to make the solution work? A metal bed frame, metal welder, grinder, and paint.

What was the cost of implementation? With a donation of the bed frame, the cost came to \$15. It took two-and-a-half hours to build the deflector.

What was the positive impact/result/outcome of your efforts? The back of the truck will not rust and we can still use the backup camera. 🚧



The barrier keeps the salt from going under the truck and the back up camera still works. Photo: Everett Borough

Retrofitting *continued from page 2*

Before beginning any retrofit, the original permit and stormwater ordinance requirements must be assessed. Three primary permitting types in Pennsylvania are:

Construction Stormwater NPDES Permits – Sometimes known as a “Chapter 102 Permit,” this is a Pennsylvania Department of Environmental Protection-issued permit required for construction sites disturbing one or more acres of land. The permit requires SCMs of some kind to be constructed to manage stormwater runoff for most projects.

Municipal Stormwater Ordinance Permits – Most municipalities across Pennsylvania have stormwater ordinances that require stormwater control construction as part of construction projects in their jurisdiction.

Municipal Separate Storm Sewer System NPDES Permits – Municipalities located in areas designated as “urban areas” according to the U.S. Census Bureau are required to hold a Municipal Separate Storm Sewer System (MS4) NPDES permit issued by PADEP. This is a permit that runs in perpetuity with renewal cycles approximately every five years. Currently 493 municipalities¹ located in PA urban areas are required to have coverage under an MS4 NPDES Permit, which requires implementation of stormwater controls to achieve stipulated pollution reductions. SCMs constructed associated with MS4 permits are a more recent occurrence. The 2013-2018 and 2018-2023 MS4 permit cycles included requirements for some permit holders to implement measures to reduce pollution, called Pollution Reduction Plans (PRPs), through a variety of methods including use of SCMs. *(Note the 2018-2023 permit cycle is administratively extended and in effect at the time of the writing of this article).* The draft of the next permit cycle anticipates a change to the PRP approach, replacing it with Volume Management Plans (VMPs) which will still involve SCMs as a method to



Amended soil placement in basin floor. Photo: NTM Engineering, Inc.

satisfy the requirements. MS4 permit holders may construct new SCMs or explore retrofitting existing SCMs to achieve the MS4 requirements.

Existing basins that were built as part of a Chapter 102 NPDES permit and Municipal permits may generally be repaired to the original permit plan designs with no permit impacts. Prior to starting, always confirm permitting requirements and install required Erosion and Sedimentation (E&S) pollution controls! Retrofits that would change the function of the basin require coordination with the original construction permit grantor (municipality and/or PADEP). A few examples of changes that require original permit notification include:

- Basin storage size changes,
- Changes to total drainage area (inflow),
- Changes to outlet flow control structure, and
- Installation of forebays (not on original plans).

When municipalities have a need to improve flooding issues or achieve MS4 permitting requirements, retrofitting existing basin facilities often offers a more economical approach over purchasing land and constructing a new SCM. Improvement designs must be prepared by a licensed professional with experience in stormwater facility designs.

¹ – total number 493 according to PADEP Draft PAG-13 NPDES General Permit Reissuance training video accessed 2026-03-26

Can LTAP help answer questions about stormwater facilities?

Yes! LTAP offers free technical assistance on stormwater issues for your roads. You can request help by calling 1-800-FOR-LTAP or emailing LTAP@pa.gov. LTAP also offers two courses on stormwater. Check out the LTAP website for offerings near you: <https://gis.penndot.pa.gov/ltap/>. 📄



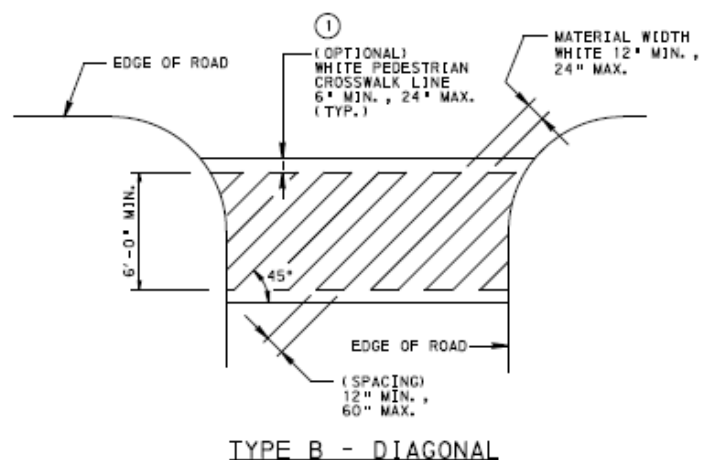
Basin outlet structure with E&S protection during retrofit project.

Photo: NTM Engineering, Inc.

Crosswalk Markings Q&A

I am trying to find details for the Type B – Diagonal crosswalk marking but can't seem to find them anywhere?

As part of the updates to the MUTCD, this crosswalk marking style was replaced with more high-visibility crosswalk markings. Therefore, to conform with the MUTCD updates, PennDOT's *Traffic Control-Pavement Markings and Signing Standards*, Publication 111 was updated to reflect this change. Therefore, the Type B – Diagonal crosswalk marking is no longer an approved marking style.



This is a graphic of the Type B – Diagonal crosswalk no longer in Publication 111.

Graphic: PennDOT Publication 11, June 2013

What are the new approved crosswalk marking styles from PennDOT's Pub. 111?

In alignment with the MUTCD, Section 3C.03, crosswalk markings are classified as either transverse line or high-visibility. Transverse crosswalk markings consist of two transverse lines. High-visibility markings consist of longitudinal lines parallel to traffic flow with or without transverse lines.

There are five approved crosswalk marking styles from Pub. 111:

- Type A – Transverse
- Type B – Longitudinal Bar (High-Visibility)
- Type C – Ladder (High-Visibility)
- Type D – Bar Pair (High-Visibility)
- Crosswalk with Aesthetic Surface Treatment

Where would high-visibility crosswalks be most appropriate?

High-visibility crosswalk markings may be used where additional conspicuity is desired for a crosswalk over transverse line crosswalk markings. High-visibility crosswalk markings include the longitudinal bar, ladder, and bar pair designs. High-visibility crosswalk markings can provide benefits to crosswalk operations, including:

- A) Providing greater detection distances for the approaching driver.
- B) Emphasizing a crosswalk where substantial numbers of

pedestrians cross without any other traffic control device.

- C) Emphasizing a crosswalk at an uncontrolled approach.
- D) Emphasizing the location where a high number of conflicts between turning motorists and users of the crosswalk are expected.
- E) Improving visibility of the crosswalk location for otherwise difficult-to-detect pedestrians or other nonmotorized users of the crosswalk.
- F) Emphasizing a school crossing.

Can you touch on the bar pair crosswalks a little more? Being that this is a newer style, I'm not as familiar with this type.

According to the MUTCD, Section 3C.08, bar pair crosswalks can be useful in locations that are susceptible to slip and fall incidents exacerbated by extreme or inclement weather, or in locations where high motorcycle or bicycle use is expected, in order to maximize wheel traction with the road surface. They can provide the same benefits as other high-visibility crosswalk designs with the opportunity for less maintenance due to the gaps lining up with vehicle wheel paths.



Perkasie Borough in Bucks County has used the bar pair crosswalks in this intersection.

Photo: PennDOT LTAP

Has the minimum width of a crosswalk changed at all with all these updates?

In general, the minimum width of a crosswalk is still six feet per PennDOT's Publication 111. However, the minimum crosswalk width **shall** be eight feet where the posted speed limit is 40 MPH or greater at a midblock crosswalk.

Can LTAP help me with the necessary studies for my crosswalks?

Yes! LTAP offers free technical assistance on safety issues for your roads. You can request help by calling 1-800-FOR-LTAP or emailing LTAP@pa.gov. LTAP also offers a half-day course on Crosswalks at Intersections. Check out the LTAP website for offerings near you: <https://gis.pennndot.pa.gov/ltap/>. 📄

Upcoming LTAP Training

Classes are being held in person and virtually. Check the website, gis.penndot.pa.gov/ltap, for the latest listing. If you would like to receive email alerts about upcoming training, send a request to ltap@pa.gov. Here is a sampling of upcoming scheduled classes. All classes are free!

Check the website for new classes or reach out to your Planning Partner or LTAP to schedule a class at your facility.

Archived Training: Catch up online!

Recorded sessions and handouts from previously held drop-ins and webinars are available on the LTAP website, gis.penndot.pa.gov/ltap. On the home page, click the "Resources and Technical Information" tile or go to: https://gis.penndot.pa.gov/ltap/Public/LTAP_Resources.aspx. Sessions cover a variety of topics from asset management to truck restrictions. Check out the full list online and take advantage of this free training from the comfort of your home or office.

Course Handouts Are Now Online

Did you misplace a workbook or handout from a course? Do you wish you had the handouts in an electronic format? All the handouts from LTAP courses are now online and available for download. Go to gis.penndot.pa.gov/ltap and under the Training Descriptions tab, click on the course and then scroll to the bottom of the course information to see a list of course handouts.

If the handout for a class is three slides per page, there is a full PowerPoint workbook you can download on the website. These have PowerPoint slides with the workbook content below the slide. They are designed to make it easy to follow the virtual classes and provide all the notes for the in-person classes.

Congratulations to the following Roads Scholars!

The following scholars were certified between January 1 to March 31, 2026.

Roads Scholar I:

- Christopher Miller - East Marlborough Township, Chester County
- Chris J. Brenner - Millcreek Township, Erie County
- Chad McConnell - Millcreek Township, Erie County
- Jared M. Weaver - Upper Leacock Township, Lancaster County

Roads Scholar II:

- Ben Sonon - Windsor Township, Berks County
- Angela M. Zettlemoyer - Windsor Township, Berks County
- Matthew Hockenberry - PennDOT, Dauphin County
- Reem Q. Abduljabbar - City of Philadelphia, Philadelphia County

Roads Scholar Administrative:

- Tim S. McDonald Jr. - New Garden Township, Chester County
- Chris J. Brenner - Millcreek Township, Erie County
- Chad McConnell - Millcreek Township, Erie County
- Brian Grumbine - North Londonderry Township, Lebanon County
- George Cronin - York Township, York County
- Matthew K. Helwig - Dover Township, York County
- Mateo Lariviere - City of York, York County

What are your peers saying about LTAP?

"I feel that LTAP is a phenomenal resource, for both technical assistance and virtual classes! Every municipality should be using!"



ROADWAY MANAGEMENT CONFERENCE

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Williamsburg, VA

REGISTRATION IS OPEN!

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All LTAP services are free to municipalities.