



moving FORWARD

FALL 2016

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

Salt Brine is Now Liquid Fuels Fund Eligible

Municipalities may use liquid fuels funds to purchase equipment to make, store, and distribute salt brine, under a new provision in PennDOT

Publication 447, *Approved Products for Lower Volume Local Roads*. Additionally, municipalities that make salt brine may sell it to other municipal governments.

Salt brine is fast becoming the preferred material to fight winter storms as it is applied on dry roadways up to 48 hours before a storm to prevent snow from bonding to the roadway. Falling snow activates the dried brine material to help prevent the icing of roadways and reduce hazards during the earlier stages of a winter event. In addition, if salt brine is used to pre-wet dry salt and abrasives that are placed during a storm, it can help to decrease the roll-off of material to the side of the road where it is wasted.

By using salt brine, municipalities can decrease their use of salt and enhance both the environment and their budgets.

Approved road salt material is mixed with potable water to a 23.3 percent salt solution, which is considered optimal for both applications described above. The information in Pub 447,

which is consistent with PennDOT Maintenance Manual Publication 23, was developed during the many years of salt brine use on PennDOT-maintained roadways.

The Pub 447 specification includes an attachment, which provides best practices on the use of salt brine. Pub 447 can be accessed under “State Resources” on the LTAP website, www.ltap.state.pa.us.

For additional information, contact your PennDOT district municipal services office or Tom Welker in PennDOT’s Central office at twelker@pa.gov or (717) 783-3721. 📞



Consider using salt brine this winter before your roads look like this. With salt brine, municipalities can decrease their use of salt and enhance both the environment and their budgets.

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Salt brine is fast becoming the preferred material to fight winter storms. Now, municipalities can use liquid fuels funds to purchase equipment to make brine and sell it to other municipalities.

How to Manage Speed on Municipal Roads

by Patrick Kibler, EIT, and Patrick Wright, Traffic Engineer, Pennoni Associates



So how bad is your speeding problem?!

Speeding is one of the most common traffic complaints on streets through neighborhoods and other sensitive areas, such as schools, parks, and downtowns. “That car was going at least 50 mph” is a common refrain heard by local officials.

So how do you address this complaint and other speeding issues?

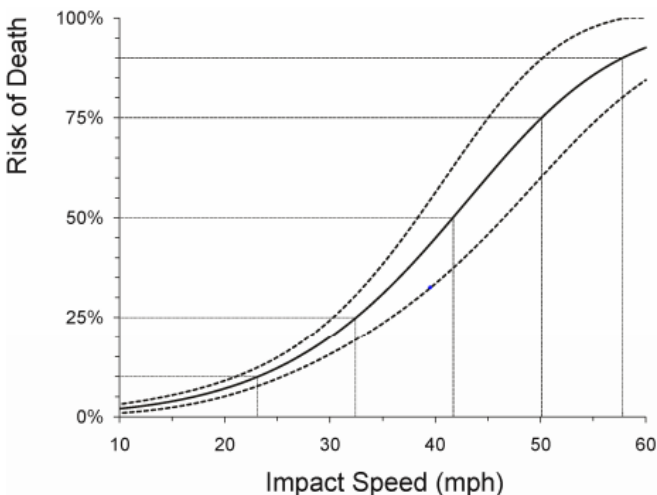
Although motorists seek greater mobility and faster travel on freeways, expressways, and arterials, higher speeds are neither warranted nor desired on local

streets where people live and play. To address speeding problems and resident concerns on these roadways, a municipality should develop policies to establish appropriate speed limits and speed management practices that will enhance the safety, mobility, and livability of local neighborhoods.

Speed Kills

Being able to travel efficiently, quickly, and safely on roadways enhances the mobility and productivity of a society. However, excessive speed can have many negative effects on local roads, including safety, the environment, and the livability of a neighborhood.

According to the Federal Highway Administration (FHWA), a third of all fatal crashes in the United States are speed related. Speed is also a primary factor related to the severity of injuries for vehicle occupants in a crash. Higher vehicle speeds provide less time for motorists to react, increase braking distances, and increase the risk of injuries and death. (See chart below.) In addition, vulnerable road users — pedestrians and cyclists — are especially affected by excessive vehicular speed.



Pedestrian risk of death versus speed (AAA Foundation for Traffic Safety, 2011).

Higher speeds have also been documented to negatively impact the environment, including increased greenhouse gas emissions, increased fuel consumption, and increased noise levels (*Speed Management*, OCED, 2006). In addition, traffic speed and volume affect the livability of a neighborhood since studies show that higher speeds and higher traffic volume actually affect how likely you are to know your neighbor (*Livable Streets*, Donald Appleyard, 1981).

The speed issue is rooted in the expectations of the motoring public. Some research indicates that our society believes that travel time must always be minimized and thus speed maximized (*Traffic*, by Tom Vanderbilt). When motorists are delayed, they get upset. Certainly, if you are traveling on an interstate, you expect to travel quickly. Conversely, if you are traveling in an urban neighborhood, you should expect pedestrians, congestion, and slow travel.

As the caretakers of local roads, municipalities can reinforce these expectations through proper road design and applying speed management principles.



Sure, you can go fast here where the roadway design encourages higher speeds.



But, please drive slowly here where you can expect pedestrians and traffic congestion.

Myths and Facts about Speed

To understand speed management, you must know some basic concepts of speed and speed limits. Let's start by dispelling some common misconceptions, including:

- Reducing the posted speed limit will reduce the speed of traffic.
- Drivers will always go 5 mph over the posted speed limit.
- Stop signs (including all-way stops) are an effective method of speed control.
- The posted speed limit is always safe to drive.
- More traffic signs will improve driver behavior.



Unreasonable speed limits can compromise safety and complicate enforcement.

On the other hand, here is what we know to be true about speed:

- Most motorists will drive at what they consider to be a reasonable and prudent speed given roadway geometry, weather conditions, etc., regardless of the posted speed limit.
- Reducing speeds through enforcement is only effective if the enforcement is consistent.
- Unwarranted STOP signs do not control speeds and can create additional, unexpected safety issues.
- Traffic safety tends to improve when motorists are traveling at consistent speeds (i.e., speed variance is small).
- Unreasonable traffic regulations will generally be ignored by motorists and are difficult to enforce.

Managing Speed on Local Roads

A municipality's speed management program can help to address the speed concerns of a community, including undesirable speeds on local streets or in sensitive areas, residents' complaints of speeding on streets, problems posting proper and enforceable speed limits, and other speed-related safety issues.

The benefits of a speed management program include:

- Reduced fatalities and serious injuries from speeding-related crashes.
- Greater potential for motorists to avoid a crash.
- Enhanced safety for pedestrians, cyclists, and other vulnerable road users.
- Better educated population on the risks and consequences of speeding.
- Enhanced community-wide culture in which safety is a top priority.

To assist with the development of a speed management program, FHWA has created several documents to guide the process, including *Speed Management: A Guide for Local Rural Road Owners*

(FHWA-SA-12-027), *Speed Management Action Plan Template*, and the *Speed Management Tool Kit*.

These documents generally recommend a four-step process for developing a speed management program:

- 1) Identify speeding issues
- 2) Select countermeasures
- 3) Implement countermeasures
- 4) Evaluate progress

1) Identify Speeding Issues

A municipality can identify speeding issues on their streets from several sources, including the public, police, crash records, and safety audits. The most common sources are resident complaints and police/safety personnel.

When a municipality receives a complaint, it should first conduct a traffic study to determine if the complaint is valid or not. PennDOT Publication 383 suggests a speeding problem exists if a traffic study indicates that the 85th percentile speed of traffic is greater than 10 mph over the posted speed limit, although a community can adopt a different guideline in its own policy.

Some of the complaints may involve such issues as too much traffic volume, too many trucks, or issues with neighbors, although residents still typically characterize these problems as "speeding."

Be aware that a complaint about speeding places the municipality on notice. Therefore, the municipality should conduct an appropriate study to verify the complaint. If the complaint is valid, then the speed management process can proceed. If not, examine other options. Pennsylvania has guidelines (Title 75, Section 6109) for conducting traffic studies. In addition, LTAP has a course, *Engineering and Traffic Studies*, that discusses how to conduct these studies.

Another common question is whether or not a road needs to have a posted speed limit. Pennsylvania law has no requirement that a road be posted. A municipality can determine if a road should be posted through a study, which looks at speed, traffic, and safety data. Municipalities should also periodically re-examine speed limit postings on roads where changes have occurred to the road itself, surrounding land uses, traffic patterns/volumes, or any other factor that could

Generally, traffic laws that reflect the behavior of the majority of motorists are found to be successful, while laws that arbitrarily restrict the majority of motorists encourage violations, lack public support, and usually fail to bring about desirable changes in driving behavior.

— ITE Speed Zoning

A 2007 study conducted in Kansas supports the notion that gravel roads are fairly self-regulating for speeds because of physical conditions, such as geometry, road width, and surface.

affect the appropriate speed limit. Furthermore, municipalities should review existing speed limits on roads to ensure that proper studies were conducted and ordinances were passed as required by Title 75.

A municipality may also want to conduct speed safety reviews or road safety audits to determine if any roads have speeding issues. Crash and enforcement data can be assessed to identify speed-related crash clusters.

2) Select Countermeasures

Countermeasures for speeding consist of engineering, enforcement, and education. The FHWA Speed Management Tool Kit lists dozens of countermeasures, along with details of their effectiveness.

Engineering actions include establishing appropriate speed limits, designing roads/environments that achieve desired speeds, and using techniques, such as medians, chokers, and bump-outs, to create self-regulating roads that encourage appropriate speeds.

Enforcement includes the use of police and devices to check and enforce speed and thus deter motorists from speeding.

Education involves outreach activities to inform the public of speed and safety issues. A Speed Campaign Toolkit available from the National Highway Traffic Safety Administration (NHTSA) provides example materials, including videos, radio ads, website banners, signs, billboards, and pamphlets, from successful programs (*you can access this toolkit at www.trafficsafetymarketing.gov*).

The countermeasures appropriate for your roads will depend on the nature of the issues identified in Step 1. Remember that any countermeasure you employ must follow federal and state guidelines for design and construction.



This curb extension along Queen Street in Philadelphia narrows the street and helps to manage traffic speeds.

3) Implement Countermeasures

The next step is to implement the countermeasures by developing plans, acquiring funding, and constructing. Some countermeasures can be implemented on a temporary basis, which affords the municipality and residents the time and effort to understand the resulting benefits and impacts from the measures.

Municipalities should also have a process in place to prioritize projects, based on safety benefits, funding resources, synergy with other projects, and speed reduction.



Upper Merion Township installed a temporary speed hump to test the benefits and impacts of speed management on this roadway.

4) Evaluate Progress

Once a project is implemented, the municipality should evaluate it in two stages. First, immediately after implementation, the project should be reviewed to ensure that it is operating effectively and safely and creating the intended effects. Then, a year later, the safety and speed reduction effects of the project should be quantified. A more comprehensive and statistically significant evaluation can take place about three years after implementation. 🚩

PennDOT News Brief

700+ Plow Trucks to be Tracked This Winter:

More than 700 plow trucks covering interstates and expressways statewide this winter will be outfitted with technology to improve location and operations information under a PennDOT pilot program. The Automated Vehicle Location (AVL) system will help improve the department's real-time information on vehicle movement, plow-route coverage, and use of materials such as salt and anti-skid. The real-time location data will be made available to the public through the traveler information website, www.511PA.com. Last winter, 13 plow trucks in PennDOT District 5 were outfitted with the technology as part of a pilot project.

LTAP News

LTAP Offers Roads Scholar II Designation: Municipal road crew employees may now pursue a Roads Scholar II designation as part of an expansion of the LTAP Roads Scholar program. The program, begun in 1989, helps participants improve their road and bridge maintenance and safety skills by learning the latest provided methods and procedures. Municipal employees who participate in the Roads Scholar I or II Program will be trained by LTAP technical experts in the most up-to-date technologies and innovations and given tips on how to stretch the road budgets. Those who complete the program receive a valuable professional development credential. Participants are encouraged to receive their Roads Scholar I certification before pursuing the Roads Scholar II designation.

To complete the Roads Scholar II program, participants must complete eight approved workshops within a three-year period and pass an in-class quiz consisting of 12 questions at the end of each workshop. Successful completion of an approved CPR training also earns one workshop credit.

Two classes currently eligible for Roads Scholar II are 1) Bridge Maintenance and Inspection and 2) Conducting Traffic Sign Retroreflectivity Inspections. Two additional courses, 1) Stop Signs and Intersection Control and 2) Curve Signs and Safety, will be scheduled for 2017. Four additional course topics are being reviewed for development in 2018.

Traffic Signs Course Expanded: The LTAP Traffic Signs course has been broken into multiple half-day courses to allow more in-depth information, examples, and discussion. The revamped half-day courses are:

- Traffic Signs Basics (*new course*)
- Conducting Traffic Sign Retroreflectivity Inspections (*new course*)
- Stop Signs and Intersection Control (*future course*)
- Speed Limits and Speed Management (*future course*)
- Curve Signs and Safety (*future course*)

Traffic Signs Basics, the first course in the series, will cover the following topics: function and purpose of signs; laws, regulations, and publications; function and purpose of signs – design and placement; traffic signs for low-volume roads; and sign responsibilities for municipalities. If you are beginning to take LTAP courses, you should begin with this course, a Roads Scholar I course. The other courses will be Roads Scholar II courses.

The second new course in this series, Conducting Traffic Sign Retroreflectivity Inspections, will review the *Manual on Uniform Traffic Control Devices* (MUTCD) retroreflectivity requirements, explain sign retroreflectivity and luminance, demonstrate traffic sign inspection techniques for assessing retroreflectivity, and discuss different methods for sign management based upon FHWA requirements and municipal examples. This is a Roads Scholar II course.

The other three courses will be developed and available in late 2017. For a listing of locations for the two courses currently offered, turn to page 7 or go to the LTAP website, www.ltap.state.pa.us.

Swatara Township Finishes Second in National Mousetrap Award Contest

Swatara Township, Dauphin County, the winner of PennDOT LTAP's 2016 Build a Better Mousetrap Contest, received second place in the national competition. The township was honored at the national LTAP conference held July 18-21 in Madison, Wis. Swatara Township's winning innovation was a high-pressure undercarriage sprayer built for under \$500.



Todd Webb, Swatara Township roadmaster, (left) accepts the national award from Lou Ferretti of PennDOT.

Webinar on Winter Service Agreements Coming This Fall:

Want to learn more about the different options available as PennDOT winter maintenance agreements, including actual cost reimbursement, Agility agreements, and standard service agreements? A free recorded webinar with information on these options will become available in October. The hour-long LTAP webinar will focus on the following topics: the salt bidding process; the PennDOT winter maintenance agreement process; the benefits of PennDOT's winter maintenance agreements; and how to survive when salt supplies are low. Look for the webinar link on the LTAP website, www.ltap.state.pa.us.

LTAP Produces Video on STOP Sign Visibility: LTAP has produced a new technical information video about STOP sign visibility. The video, which discusses simple methods for improving sign visibility, is now available on the LTAP website, www.ltap.state.pa.us.

Did you know...

you can use your CPR training for a class credit toward Roads Scholar designation?

Details: Successful completion of an approved CPR training course accepted by your employer or the Pennsylvania Department of Health earns you one workshop credit toward Roads Scholar certification. A copy of a completion certificate must be forwarded to the LTAP office in Harrisburg within the three-year training window.

Visit www.ltap.state.pa.us for more information.

Q&A

Q. Whose responsibility is to maintain street signs, village or municipal name signs, and speed limit signs—PennDOT's or the municipality's?

A. Chapter 212 of the Pennsylvania Code, Section 212.5, provides a listing of who is responsible for which traffic-control devices, such as signs, signals, and pavement markings, on state and local roadways. The first section lists traffic-control devices that municipalities are responsible for on state highways and may install, revise, or remove without PennDOT approval. These traffic-control devices include street name signs as well as stopping, standing, or parking signs, crosswalk and curb markings, and parking meters. The second section lists traffic-control devices that municipalities are also responsible for installing and maintaining on state roads, with PennDOT approval. This includes speed limit signs for speed limits of 35 miles per hour or less, although the municipality should check with its PennDOT municipal services representative to be sure.

Furthermore, some PennDOT districts will provide municipalities with a listing of signs that they are responsible for on state routes. Speed limit signs for speeds above 35 mph on state routes are the responsibility of PennDOT. Likewise, PennDOT also maintains township, city, borough, or village name signs along state highways.

Q. We are unsure how to calculate the bond for a hauler to travel along a roadway posted with weight restrictions. Looking back through previous bonds, we can calculate the amount out to \$12,500 a mile. Is this amount specifically spelled out somewhere?

A. Yes. Security amounts for a posted roadway are found in PA Code, Title 67, Chapter 189. The security amounts for Type 1 and 2 permits (when a hauler requires use of a posted road and the posting authority anticipates heavy damage will occur) are \$12,500 per mile for paved roads, \$6,000 per mile for unpaved roads, and \$50,000 per mile for any highway that the municipality allows to be maintained below a certain consistent level. Security amounts are \$10,000 for a Type 3 permit (use of a vehicle with over-posted weight for a short term on a posted road).

Q. A resident who drives a tractor trailer for a living keeps the tractor trailer at his home, which is located along a roadway posted for a 10-ton limit. Is this resident subject to the bonding requirements of our posting and bonding program?

A. In many municipalities, this resident would fall under the "local delivery" exemption to the posting and bonding program unless the municipality determines that the resident's travel is damaging the road. Such a determination is open to interpretation and opinion. You also might want to give the resident an exemption and limit the number of loads he may take to and from his house. Or perhaps the resident could leave the trailer at another location and only drive the tractor to his residence. More information on posting and bonding procedures for municipal highways can be found in Publication 221. 📄

LTAP SUCCESS STORY

This summer, LTAP worked with Upper Leacock Township in Lancaster County to review intersection sight distance and vegetation issues. In late July/early August, corn plantings can obstruct sight distance for motorists and cause problems at intersections and traffic-control devices. The township knew that some of the corn had to be removed in the interest of public safety, but it did not want to remove too much corn to the detriment of the farmers.

LTAP assisted the township by conducting intersection corner sight distance studies at two locations. The township road crew was taught the process for determining minimum sight distances and how much corn should be removed.



The Upper Leacock Township road crew measures the sight distance at an intersection by a cornfield to determine how much corn to remove to improve visibility for motorists.

**Need help with a transportation-related problem?
Schedule a FREE Tech Assist with LTAP today!**

Upcoming 2016 Classes

To Register:
PHONE: 1-800-FOR-LTAP (367-5827)
WEBSITE: www.ltap.state.pa.us

This represents some of our scheduled courses. Look for updates on the website.

Asphalt Roads

October 12, York County
November 2, Allegheny County

Bridge Maintenance & Inspection **UPDATED Course**

October 14, Union County

Conducting Traffic Sign Retroreflectivity Inspections **NEW Course**

October 20, Susquehanna County
October 27, Clearfield County
November 10, McKean County
November 16, Tioga County
November 17, Union County
November 22, Chester County

Drainage

October 12, Bradford County
November 2, Westmoreland County

Engineering & Traffic Studies

October 13, Cambria County
November 17, Crawford County
December 7, Chester County

Equipment & Worker Safety

October 11, Montgomery County

Full-Depth Reclamation

October 13, York County
October 28, Lehigh County

Geosynthetics

October 19, Lehigh County

Liquid Bituminous Seal Coat

August 10, Mercer County

Pavement Markings

November 30, Cambria County

Project Estimating **UPDATED Course**

November 4, Indiana County
October 27, Adams

Risk Management Strategies

October 18, Adams

Roadside Vegetation Control

UPDATED Course
October 11, Bucks County
December 7, York County

Salt & Snow Management

NEW Course
(*OLD Winter Maintenance*)

October 11, Clarion County
October 12, Adams County
October 13, Armstrong County
October 19, Tioga County
October 19, York County
October 25, Cambria County
October 25, Chester County
November 4, Lackawanna County
November 4, Lycoming County
November 16, York County

Stormwater Facility Operation & Maintenance **UPDATED Course**

November 4, Indiana County

Traffic Signs Basics **NEW Course**

November 3, Chester County
November 9, Adams County
November 10, York County
December 1, Clinton County

Work Zone (Temporary) Traffic Control

October 13, Crawford County

Are you a Roads Scholar yet?

What are you waiting for? The Roads Scholar Program, offered by the PennDOT LTAP, provides an opportunity for municipal employees to be trained by LTAP's professional team in the latest road-related technologies and innovations related to maintenance and safety. The program provides professional certification to municipal employees and officials who attend 10 LTAP workshops within a three-year period. There are now Roads Scholar I and II designations.

For more information on the Roads Scholar Program, go to www.ltap.state.pa.us and click on "Roads Scholar Program."

Meet the LTAP Advisory Committee

The PennDOT LTAP Advisory Committee is comprised of an appointed group of municipal government (elected and/or appointed) officials who serve a critical role as program advocates and assist PennDOT by attending training courses, reviewing course materials and content, and functioning in an advisory role on a variety of LTAP issues. The following officials currently serve as members of the Advisory Committee:

- **Jeffrey K. Kinsey, Chair** Elizabethtown Borough, Lancaster County, publicworks@etownonline.com
- **David A. Williams, Co-Chair**, Ross Township, Luzerne County, dawills@epix.net
- **Larry Bowers**, Gaskill Township, Jefferson County, ljdabowers@yahoo.com
- **Glenn A. Coakley**, Patton Township, Centre County, gcoakley@twp.patton.pa.us
- **Steve Herman**, MPO/RPO Representative, SEDA-COG, Union County, sherman@seda-cog.org
- **Mark T. Hoke**, East Stroudsburg Borough, Monroe County, esbmaint@frontier.com
- **Douglas A. Roth**, Penn Township, Butler County, droth@penntownship.org
- **Donald G. Sirianni Jr.**, Springfield Township, Montgomery County, dsirianni@springfieldmontco.org
- **Daniel Strausser**, Wellsboro Borough, Tioga County, wellsboromanager@frontier.com

LTAP SUCCESS STORY

Before & After

LTAP recently worked with North Londonderry Township, Lebanon County, to evaluate the need for curve signs along a location on Lewis Road that had been the site of three crashes in the last few years. The township recently posted the road at 35 mph.

The results of a curve speed study indicated that placement of a W1-1 TURN sign with an advisory speed of 25 mph was warranted in the northbound direction. The proper position of the sign in advance of the curve was close to where an existing WATCH CHILDREN sign was located.

BEFORE



The approach to the curve on Lewis Road had a WATCH CHILDREN sign but no other signs. Several accidents had occurred at the curve in recent years.

CHILDREN sign was already erected. The township discussed with adjacent property owners whether the WATCH CHILDREN sign was still needed.

Because none of the residents felt the sign was still needed, the township removed the WATCH CHILDREN sign and replaced it with a W1-1 TURN sign with an advisory speed plaque of 25 mph. The new sign will alert motorists to the approaching curve and should encourage them to slow down.

AFTER



After determining with adjacent property owners that a WATCH CHILDREN sign was no longer warranted, the township replaced it with a TURN sign with an advisory speed plaque of 25 mph. The sign was placed in the proper position in advance of the curve.

Need help with a transportation-related problem? Schedule a FREE Tech Assist with LTAP today!

Want Off the Mailing List?

If you do not want to receive a copy of this newsletter, please send an email to ltap@pa.gov. The newsletter is available electronically on the LTAP website under Publications on the right-hand side of the page.



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Did you find the information in this newsletter useful? Do you know others who will, too?

Please share this newsletter with others, including:

- Road supervisors/roadmasters
- Public Works Department
- Road crew
- Elected officials
- Managers and secretaries
- Engineers

You can also direct them to the electronic version available at www.ltap.state.pa.us.

