pennsylvania
DEPARTMENT OF TRANSPORTATION
LOCAL TECHNICAL ASSISTANCE PROGRAM

moving FORWARD

FALL 2018

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

Green Light-Go Program Strives to Enhance Mobility and Safety at Traffic Signals

The next funding cycle of Green Light-Go runs now through early January 2019.

In the past four years, 308 municipalities have been awarded roughly $77.7 million in state grants through the Green Light-Go program to improve traffic signals. The funding reimburses municipalities for updates that improve the efficiency and operation of existing traffic signals. A total of 370 projects has been funded to date.

Municipalities should note that the next funding cycle of Green Light-Go runs from mid-October through early January 2019. The application period will be officially announced in the *Pennsylvania Bulletin*, and information will be posted on the PennDOT Traffic Signal portal, www.dot.state.pa.us/signals. A webinar to review the application requirements for year five (FY 18/19) of the grants will be offered soon.

The Green Light-Go program aims to address poor-functioning mechanisms at signalized intersections that can aggravate congestion and impede traffic flow. Project categories include LED replacement, traffic signal retiming, study and removal of unwarranted traffic-control signals, monitoring, innovative technologies, traffic signal communications, connections back to traffic management centers, detection and/or controller upgrades, modernization upgrades, and intelligent transportation system applications.

The program guidelines were recently updated to ensure applications are consistent with the goal of improving mobility and safety at intersections with traffic signals. Beginning this year, applicants will be required to complete a one-page project-scoping form and review it with their local PennDOT engineering district traffic signals unit before submitting it. PennDOT will make sure the application includes the components necessary to ensure that the finished product meets all current standards. The scoping process will also be used to identify the appropriate engineering design process and resolve questions about project selection from previous funding rounds.

To demonstrate need and ensure compatibility with existing equipment, applicants should make sure their inventory of existing equipment is up to date within PennDOT's Traffic Signal Asset Management System (TSAMS), which is available for free to all municipalities. (Go to www.dot17.pa.gov.) For example, if an applicant wants to replace equipment that has reached the end of its useful life, it should enter the approximate

Continued on page 4

PENNSYLVANIA'S GREEN LIGHT-GO PROGRAM

Funding Round	Year 1 (FY 14/15)	Year 2 (FY 15/16)	Year 3 (FY 16/17)	Year 4 (FY 17/18)
Projects Awarded	46	135	111	78
# of Municipalities	38	109	95	66
Grant Funding	$1,746,365	$11,724,090	$32,850,163	$31,374,542

ALSO IN THIS ISSUE

Salt Spreaders: Why Calibrate?

by Robert M. Peda, P.E., Navarro & Wright Consulting Engineers, Inc.

As the winter season approaches, municipal road crews are focused on finding ways to provide snow and ice removal that are safe and convenient for motorists yet affordable for their municipality.

The cost of road salt has increased significantly over the past 15 years, and the high price of fuel adds to the cost of processing and transporting road salt to municipal stockpiles. During the winter of 2016-17, road salt costs PennDOT $59.75 per ton on average, and prices per the Department of General Services' statewide salt contract ranged from $40.99 to $77.09. With increases in fuel costs, municipalities can also expect an upward trend in the price of road salt.

To curb the cost of winter operations, municipalities should seek to improve their efficiency and effectiveness through strategies designed to apply "the right amount of the right material at the right time." The environment benefits, too, from a "Smart Salting" strategy of using just the right amount of salt on our roadways. Applying less salt means fewer chlorides entering our surface and groundwater, less frequent browning out of evergreen vegetation, less corrosion of vehicles, lower salt content in roadside soils, and less impact on vegetation growth.

Municipalities can significantly increase snow-fighting efficiency by calibrating their salt spreaders and applying Smart Salting strategies. Even if the same model of spreader or controller is mounted on more than one truck, each spreader must be calibrated independently. Once completed, the calibration sheet should be kept with the truck and a copy given to the road crew supervisor. With this information, the equipment operator will know what rate of salt application to expect for each spreader controller setting and spreading speed, and the road crew supervisor can better manage snow-fighting operations by communicating the appropriate salt application rates to each equipment operator.

The speed of the truck while spreading significantly changes the rate of salt application. The application rate is much heavier at slower rather than faster speeds. For this reason, the calibration sheet has factors to indicate the rate of application for each controller setting by speed of the vehicle. To ensure the correct amount of salt is spread, the equipment operator must be aware of the vehicle speed and controller setting.

How fast the spreader truck is going will affect the application rate of the salt.

Every winter storm has different characteristics that can make snow fighting easy or more difficult. Early in the season when air temperatures are typically warmer, the snow is wet, while in the cold of winter, the snow will be much dryer and tends to drift. Drier snow requires heavier application rates of salt.

Because temperatures will fluctuate throughout a winter season, snow equipment operators must adjust their snow-fighting operations to meet the actual conditions.

What We Know About Melting Snow and Ice

Road salt is a chemical with specific performance characteristics that vary at different temperatures. For the climate in Pennsylvania, road salt, salt brine, or combinations of the two are the most effective in melting snow and ice.

The table below shows the characteristics of salt and its melting capacity. It indicates the pounds of ice melted per pound of salt at various temperatures. During an early season storm with temperatures around 30° F, for example, one pound of salt will melt 46.3 pounds of ice. During a mid-winter storm when the temperature is 20° F, one pound of salt will only melt 8.6 pounds of ice. At 10° F, you can expect one pound of salt to melt 4.9 pounds of ice. Therefore, it takes more than five times as much salt at 20° F and nearly 10 times as much salt at 10° F to melt the same quantity of ice than if the temperature were 30° F.

Pounds of Ice Melted Per Pound of Salt

Temperature Degrees F	One Pound of Sodium Chloride (Salt)
30	46.3 lb of ice
25	14.4 lb of ice
20	8.6 lb of ice
15	6.3 lb of ice
10	4.9 lb of ice
5	4.1 lb of ice
0	3.7 lb of ice
-6	3.2 lb of ice

PennDOT's Maintenance Manual does not recommend using straight salt below temperatures of 14° F because of a diminishing return on cost versus effectiveness of salt. For temperatures below 14° F, combinations of salt and antiskid are recommended with higher portions of antiskid as temperatures get colder. At extreme low temperatures, plowing is the primary method of snow removal.

You must give salt time to work. Salt begins to melt ice after it turns into a brine, and typically, it takes up to 25 minutes to reach an active melting capacity.

Also, know when to reapply salt. Watch the tires of the vehicle in front of the plow. If the slush is soft and spreads out like water behind the tire, the salt is still working. Don't plow it off! If the slush is stiff

and is thrown down directly behind the tires, it is time to plow and spread more salt. Always plow before spreading to decrease the amount of snow and ice that the salt needs to melt.

In summary, calibrating the salt spreader is an effective way to improve snow-fighting efficiency. Knowledge of the melting capacity of salt at different temperatures will help in making decisions on salt application rates and when to reapply salt. Also, it's important to know how much salt to apply or reapply based upon storm conditions. Finally, spreading the "right amount of the right material at the right time" will result in a more cost effective and environmentally friendly snow-fighting operation.

How to Calibrate a Salt Spreader

Calibration is the process of calculating the pounds of material discharged per mile at various spreader control settings and various speeds. Whether your spreaders have manual or automatic controls, each spreader should be calibrated before each winter season and more frequently if performance issues are noted. Spreaders must be calibrated so that the equipment operator knows the amount of material being placed on the road.

Calibration is the key to sensible salting. The calibration process is simple and can be performed using the following items:

- A bucket or tarp to catch the material
- Chalk, crayon, or zip tie to mark the end of the auger shaft
- A scale to weigh the material
- A stopwatch or timer with seconds to count auger revolutions per minute
- Pencil and calibration chart to record the measurements.

Spreader calibration is completed in six easy steps:

1) Put a partial load on the truck.
2) Turn off the bypass or remove the spinner for ease of collecting material.
3) Mark the shaft of the auger against the fixed housing bracket.
4) Warm the truck's hydraulic oil to normal operating temperature with spreader system running and engine RPM operating at normal spreader speed.
5) Count and record the number of auger RPMs at each control setting while discharging material. (Truck engine should be running at least 2,000 RPMs, or the auxiliary spreader engine should be running.)
6) Collect, weigh, and record the salt discharged for one auger revolution (Deduct the weight of the tarp or bucket when recording the material weight.)

Continued on page 4

Spreader Calibration Steps

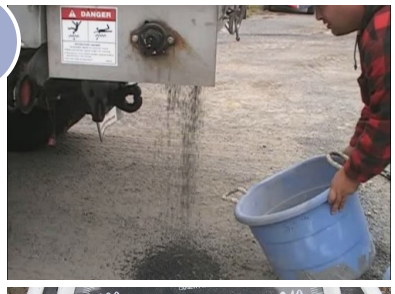
STEP 1

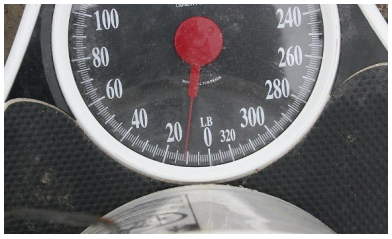
STEP 2

STEP 3

STEP 5

STEP 6





Salt Calibration *continued from page 3*

Note: On V-box spreaders, each gate opening setting must be recorded. A separate calibration is necessary for each gate opening and for each type of material that is used.

The calibration chart should be used to document spreader calibration. (See chart below.)

Recording information is placed in column A (Step 5) and column B (Step 6) on the calibration chart. Multiply columns A and B to get C, the discharge rate (A X B = C) Then, multiply C by the time factor for each mph increment under "Pounds Discharged Per Mile" on the calibration chart.

Keep a copy of the completed calibration chart in each truck that is calibrated and provide a copy to the road crew supervisor. With the salt application rate per mile determined, the operator can select a speed and control setting for placing the desired amount of salt as directed by the road crew supervisor.

Sources: *Safe and Sustainable Snow Fighting Handbook*, published by the Salt Institute, 2016; PennDOT Publication 23, *Maintenance Manual*, published July 2010 and updated December 2017.

Calibration Chart

Agency: _____

Location: _____

Truck No.: _____ Spreader No.: _____

Date: _____ By: _____

Gate Opening (Hopper Type Spreaders)				Pounds Discharged Per Mile								
	A	B	C	Minutes to Travel One Mile								
Control Setting	Shaft RPM (Loaded)	Discharge Per Revolution (Pounds)	Discharge Rate (lb/min)	5 mph x 12.00	10 mph x 6.00	15 mph x 4.00	20 mph x 3.00	25 mph x 2.40	30 mph x 2.00	35 mph x 1.71	40 mph x 1.50	45 mph x 1.33
1		This weight remains constant										
2												
3												
4												
5												
6												
7												
8												
9												
10												

Calibration of Salt Spreader Taught in LTAP Salt and Snow Management Course

The LTAP course "Salt and Snow Management" promotes snow-fighting innovations and helps municipalities to develop more efficient and effective snow-fighting operations. Among the many new technologies and innovations discussed in this training is calibrating the salt spreader.

This course was developed in 2016 with funding from Pennsylvania's State Transportation Innovation Council (STIC), co-chaired by PennDOT and FHWA and whose mission is to comprehensively and strategically consider all sources of innovation. To learn more about the course, including a schedule of upcoming training dates and locations, go to www.ltap.state.pa.us.

Green Light-Go *continued from page 1*

installation date in TSAMS so equipment age can be used for project ranking. Once the information is entered in TSAMS, it does not need to be separately documented in the Green Light-Go application.

Municipalities that plan to apply for grant money are encouraged to develop project scopes that will improve mobility for all users at signalized intersections. In previous application cycles, project submissions have unsuccessfully sought to add advanced technology to antiquated and incompatible traffic signals. Note: To ensure that program funds are improving mobility, PennDOT will not accept projects with more limited benefits, such as emergency vehicle preemption and uninterruptible power supplies (battery backup). These types of features may be included with larger upgrade projects.

PennDOT has two grant funding programs for traffic signals. Green Light-Go concentrates on projects that enhance mobility and traffic operations, while the Automated Red Light Enforcement (ARLE) program focuses on projects that improve safety. Applications for ARLE grants are open in June. Information on both programs can be found at www.dot.state.pa.us/signals.

Understanding Federal and State Requirements for Billboards

by Barbara J. Shaffer, AICP, Federal Highway Administration

Size, spacing, and lighting requirements for outdoor advertising devices (OADs), otherwise known as billboards and signs, are spelled out in state and federal laws and in the Federal-State Outdoor Advertising Agreement between the Federal Highway Administration (FHWA) and the Pennsylvania Department of Transportation (PennDOT).

The federal law governing billboards is the Highway Beautification Act and its implementing regulations, 23 CFR 750, while the state regulation is found in Title 67 Pa. Code. PennDOT's *Highway Beautification Manual*, Publication 581, also spells out OAD requirements in more detail.

The requirements for billboards are nuanced and vary by facility type, zoning, area (such as urban or rural), and other factors. While this summary provides some overarching requirements, anyone who wishes to erect a billboard or sign should consult with PennDOT about specific details.

Under federal law, PennDOT must effectively control outdoor advertising within 660 feet of interstate and primary routes. PennDOT has a list of routes that must be controlled, and along those routes, businesses may have signs advertising the activity, products, or services on their property as long as the signs are erected outside the PennDOT right of way. These signs, called on-premise signs, do not require a permit from PennDOT.

Off-premise signs are those that advertise something that is not located on the property on which the sign is erected. They, too, must not be located within the PennDOT right of way. However, these OADs require PennDOT permits and may only be erected in areas zoned commercial or industrial or in an unzoned area in which commercial and industrial activities are located within 800 feet of the sign or billboard.

Off-premise OADs have a maximum size of 1,200 square feet with a maximum height of 30 feet and a maximum width of 60 feet. The sign can have up to two faces per side, and the faces can be configured back to back or in a V-shape.

Along interstates and limited-access highways, OADs must be spaced at least 500 feet apart. They also cannot be erected within 500 feet of an interchange or safety rest area. Along non-limited access roads, OADs must be at least 300 feet apart if they are outside cities and boroughs, and at least 100 feet apart if they are placed within the boundaries of a city or borough.

All lighting from the signs must be effectively shielded to prevent glare and beams of light from being directed at traveling vehicles. Flashing, intermittent, and moving lights are prohibited. Change-of-message signs must hold the message steady for at least five seconds, and the transition from one message to the next must not exceed one second. Video is strictly prohibited.

When applying for a PennDOT permit for an OAD, the applicant must demonstrate that the sign complies with all local laws and regulations.

Publication 581, which contains more details about OAD requirements as well as additional information on outdoor advertising in Pennsylvania, can be found on PennDOT's website: www.penndot.gov/ProjectAndPrograms/RoadDesignEnvironment/RoadDesign/Right-ofWayandUtilities/Pages/Outdoor-Advertising-and-Junkyard-Control.aspx.

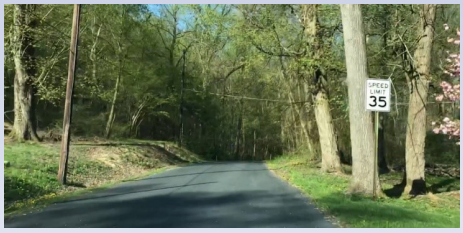
Under federal law, PennDOT must effectively control outdoor advertising within 660 feet of an interstate or primary route.

LTAP SUCCESS STORIES

Penn Township, Perry County

Speed Study for Establishing Appropriate Speed Limit

Penn Township, Perry County, recently requested LTAP's help with a speed study on Schoolhouse Road. At some points on the road, a 40 miles-per-hour speed limit had been posted, but the township did not have any record of a study, and the signs were not posted at appropriate locations. LTAP assisted the township with a safe running speed study, which determined that 35 miles per hour was an appropriate speed limit for the road. Guidance from Title 67, Section 212.108, was then followed to ensure proper placement of the speed limit signs.

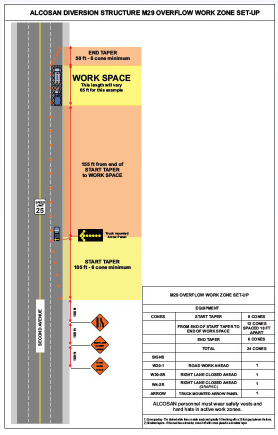


A newly posted 35 mph speed limit sign on Schoolhouse Road in Penn Township.

Speed trailers or minders are a good way to initially respond to complaints about speeding.

Allegheny County Sanitation Authority (ALCOSAN)

Temporary Traffic-Control Guidelines and Support



A sample temporary traffic-control plan for Allegheny County Sanitation Authority.

For the past 10 years, LTAP has worked with the Allegheny County Sanitation Authority to provide training and support services on proper temporary traffic-control set-ups to the authority's staff and crews. The training is repeated every two to three years. Crews that previously had the training are offered a customized short refresher course, and new crews are given the full LTAP class. LTAP also assisted the authority with purchasing standard temporary traffic-control devices and developing temporary device plans to address some of the unique situations that crews encounter.

Become a Roads Scholar II This Fall

Go online to **www.ltap.state.pa.us** and register today to complete the Roads Scholar II designation. All eight classes will be available this fall. Each graduate will receive a Roads Scholar II hat.

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.

Roads Scholar II Classes:

- Conducting Sign Retroreflectivity Inspections
- Bridge Inspection and Maintenance
- Salt and Snow Management
- Stop Signs and Intersection Traffic Control
- Curves on Local Roads: Issues and Safety Tools
- Speed Management and Speed Limits ***New class***
- Road Safety Audit ***New class***
- Project Oversight – Monitoring Quality by Asking the Right Questions ***New class***

Become trained as a Roads Scholar…and be a valuable part of your municipality's team

Through the Roads Scholar Program, municipal employees and officials are trained by LTAP's professional team in the latest road-related technologies and innovations and receive recognition as a certified Roads Scholar.

The Roads Scholar Program consists of two designations – Roads Scholar I and Roads Scholar II – and provides a professional certification to municipal employees and officials who attend a certain number of LTAP courses within a three-year period (10 courses for Roads Scholar I and 8 for Roads Scholar II). During these courses, participants are educated on up-to-date maintenance and safety topics so that they become even more valuable members of their municipal team.

Courses eligible for Roads Scholar credit are conducted at convenient locations throughout the commonwealth. To learn more, go to **www.ltap.state.pa.us** and click on "Roads Scholar Program."

Use your CPR training as class credit toward your Roads Scholar designation

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.

Upcoming 2018 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.

Bridge Maintenance & Inspection
November 11 – Montgomery County

Drainage **Updated Class**
November 5 – Crawford County
November 6 – Columbia County
November 7 – Tioga County
November 8 – Susquehanna County
November 9 – Bradford County

Equipment & Worker Safety
December 11 – Columbia County
December 14 – Berks County

Pavement Preventative Maintenance
November 20 – Bucks County

Posting & Bonding of Local Roads
November 7 – Tioga County

Project Oversight: Monitoring Quality by Asking the Right Questions **New Class**
November 2 – Clarion County
November 9 – Blair County
November 13 – Monroe County
November 15 – Adams County

Road Safety Audit **New Class**
November 14 – Union County
November 27 – Luzerne County
November 29 – Erie County

Road Safety Features
December 6 – Chester County

Salt & Snow Management
November 8 – Indiana County
November 13 – Lehigh County
November 14 – Lycoming County

Sign and Safety Features for Bridges
December 11 – Crawford

Speed Limits and Speed Management **New Course**
November 8 – Pike County
November 13 – Bradford County
November 15 – Chester County
November 15 – Union County
November 15 – Union County
November 20 – Clarion County

Stormwater Facility Operation and Maintenance
November 12 – Chester County

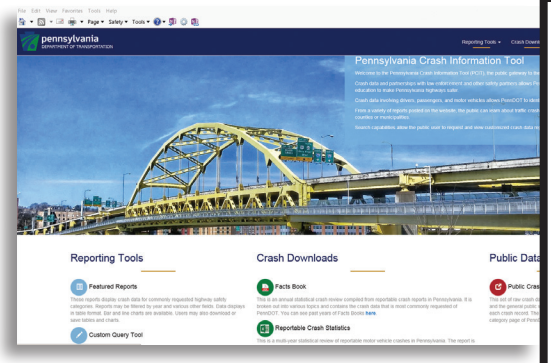
Work Zone
December 4 – Allegheny County
December 5 – Allegheny County

Congratulations to the following Roads Scholar recipients

(Certified between May 1 and September 30, 2018)

- William Lanza, Robeson Twp., Berks Co.
- Robert K. Gourley, Warwick Twp., Bucks Co.
- Brian M. Owens Sr., Upper Uwchlan Twp., Chester Co.
- Harrison R. Whalen, Westtown Twp., Chester Co.
- Michael V. Bindie, City of Harrisburg, Dauphin Co.
- Greg S. Wilsbach, Borough of Middletown, Dauphin Co.
- Paul J. Bradley, Upper Leacock Twp., Lancaster Co.
- Rodney E. Kurtz Jr., Upper Leacock Twp., Lancaster Co.
- Dean Armstrong, New Hanover Twp., Montgomery Co.
- Randy Miller, New Hanover Twp., Montgomery Co.
- Jay A. Smith, New Hanover Twp., Montgomery Co.
- Samuel Cocchia, City of Philadelphia, Philadelphia Co.
- Raju Kaneelil, City of Philadelphia, Philadelphia Co.
- Mack Wynn, City of Philadelphia, Philadelphia Co.
- Travis J. Siegel, Northwest Commission, Venango Co.
- Michael Feight, Dover Twp., York Co.
- Jared W. Gray, Dover Twp., York Co.

Roads Scholars, Share the News! LTAP has a press release you can modify and use to announce your accomplishment to your local media. To obtain a copy of the release, go to **www.ltap.state.pa.us** and look for the release under "Roads Scholar Program."



MARK YOUR CALENDAR FOR UPCOMING WEBINARS

The PennDOT Pennsylvania Crash Information Tool (PCIT)

The PCIT allows municipalities to research crash data on their roads. This webinar will explore the tool and teach users how to access local data. The webinar will also show how to use crash data as part of traffic and safety studies and when developing safety plans. In addition to the PCIT, the webinar will review the PennDOT Traffic Information Repository (TIRe) for accessing traffic data.

Thursday, December 13, noon
Register here: https://psats.webex.com/psats/onstage/g.php?MTID=eca96e4b7b13fcaf3128d4cb71fe5d526

Friday, December 14, noon
Register here: https://psats.webex.com/psats/onstage/g.php?MTID=ed5b4e4f354a69872269f7fd0e71730bc

Q&A

Q: Our municipality is considering installing guiderails along a particularly dangerous section of roadway. What advice do you have?

A: Deciding whether to shield a roadside hazard with guiderail is not easy, and municipalities should consider the safety, risk management, cost, and maintenance implications. Although guiderails can be useful in certain applications, keep in mind that they are a roadside hazard that can be struck by vehicles. Guiderail should only be used in situations where a vehicle striking an object or leaving the roadway would result in more severe consequences than if it were to simply strike the guiderail. Therefore, it is always best to consider less restrictive measures before installing guiderail.

Installation and replacement of guiderails is not something that should be done without expert guidance. Guiderails may only be installed with proper studies and consideration. Engineers use warrants (criteria for justifying a possible solution) to help determine whether guiderails should be used. The decision-making process includes collecting field data, including the locations of hazards, and analyzing traffic and field data, such as vehicle speeds, traffic volumes, and crash history, to determine if less restrictive measures can be applied to the hazards.

Municipalities will find decision-making guidelines for guiderails in Chapter 12 of PennDOT's *Design Manual*, Part 2 (Publication 13M) and AASHTO's *Roadside Design Guide*. Specifications for removing old guiderail are found within Section 620 of Publication 408. More information about guiderails is available in the LTAP tech sheet #136, "An Introduction to Guiderail Warrants and Layouts."

Q: Are stop signs required at driveways and alleys?

A: There is no language in the PA Vehicle Code (Title 75) requiring stop signs to be placed at driveways and alleys. However, Section 3324 requires vehicles entering or crossing a road from anywhere other than another roadway to yield the right-of-way or stop, and Section 3344 states that vehicles emerging from an alley or driveway in an urban area must stop. Thus, the rules of the road are clear that drivers must yield the right-of-way or stop when traveling on driveways or alleys. If municipalities have safety concerns that drivers may not obey these rules, stop signs may be placed at driveways and alleys to reinforce the rules. Keep in mind that stop signs should only be placed after a traffic study documenting the requirement for the signs is completed. After the study, the municipality must also update its stop sign ordinance.

Q: Are professional engineers required to complete the studies to post truck restrictions on roadways?

A: Yes. Although PA Title 67, Chapter 212, Section 212.4, states that most basic traffic studies may be completed by the police or a roadmaster, truck restriction studies must be completed by a professional engineer, according to Title 67, Section 212.117, under Weight, Size, and Load Restrictions. Furthermore, PennDOT form TE-109, "Engineering and Traffic Study for Restrictions as to Weight, Size, Kind or Class, or Type of Load Based on Highway, Bridge, or Traffic Conditions" clearly states that the TE-109 form is to be completed, approved, and signed by a professional engineer.

Q: Why do municipalities have to follow the federal Manual on Uniform Traffic Control Devices (MUTCD) published by the Federal Highway Administration? Shouldn't that manual only apply to PennDOT?

A: Title 75, the Pennsylvania Vehicle Code, has state laws that require a uniform system of signs and markings (Section 6121) with standards that PennDOT adopts and applies (Sections 6103 and 6105). Title 75 also requires that state laws (Section 6101) and PennDOT standards apply to all entities and all roads (Sections 6102 and 6103). In addition, under Title 67, Chapter 212, Section 212.2, PennDOT has adopted the MUTCD and all its modifications and amendments unless the department publishes a notice in the *Pennsylvania Bulletin* stating that certain provisions do not apply.

By complying with the MUTCD, Pennsylvania is guaranteeing a consistent set of traffic control devices that meet driver expectations and are uniform across the country. For example, drivers expect stop signs to be octagonal with a red background and white letters that say "STOP." Uniform application and design of traffic control devices ensures that drivers readily understand what they are supposed to do while on the road, and this helps to make our roads safer.

Drivers expect stop signs to be octagonal with a red background and white "STOP" letters.

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pennsylvania
DEPARTMENT OF TRANSPORTATION
LOCAL TECHNICAL ASSISTANCE PROGRAM

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Email: ltap@pa.gov Website: www.ltap.state.pa.us

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.**