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LTAP
Local Technical Assistance Program

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SPRING 2007

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

Lycoming County Saves Money, Improves Road Safety by Converting Traffic Signals to LED

by Mark R. Murawski, Lycoming County Transportation Planner

Workers install new LED traffic signal lenses at a major intersection near the Lycoming Mall in Muncy Township, Lycoming County.

In Lycoming County, "working together to make a difference" is a guiding principle that embodies our transportation programs and processes. As a result of the latest partnership among state, county, and municipal governments, more than 100 signalized intersections have been retrofitted with LED (light emitting diode) technology to provide significant savings and improved road safety to the county.

In 2005, the West Branch Council of Governments (COG) began working with the PennDOT Engineering District 3-0 Bureau of Municipal Services to research the possibility of retrofitting all of the traffic signals within Lycoming County with new LED lenses. A total of 12 municipalities agreed to participate in what became called the Lycoming County LED Traffic Signal Lenses Conversion Project: the city of Williamsport; the boroughs of Hughesville, Jersey Shore, Montoursville, Muncy, and South Williamsport; and the townships of Clinton, Loyalsock, Muncy, Muncy Creek, Old Lycoming, and Piatt.

In conducting research into the LED traffic signal lenses, the West Branch COG discovered that this advanced technology, which is an alternative to the use of incandescent lamps as a light source for traffic signals, could result in safety improvements and significant savings in energy consumption and maintenance costs. While an incandescent lamp requires 100 to 150 watts, an LED signal only requires 8 to 25 watts, which typically translates into energy savings of 85 to 90 percent.

The typical energy cost of running LED energy for a year at a single intersection is $77. When compared to the typical annual cost of $1,445 for using incandescent energy at an intersection, the LED technology provides an incredible savings of $1,368 per intersection per year. Over the estimated 10-year life of an LED lens, this translates into a savings of $13,680 per intersection. In Lycoming County, where 102 intersections were to be converted with LED lenses, the county could enjoy a projected annual savings of $139,536.

Lower maintenance costs are another reason to retrofit traffic signals. Incandescent bulbs have a lower bulb life and require relamping at least annually. It is not unusual for bulb failures to occur within months of replacing an incandescent bulb. In contrast, LED signals have a guaranteed design life of five years and can be used up to 15 years before they require relamping. LED signals do not

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LTAP Announces Three New Pavement Management Courses

Classes to be offered this fall at locations around the Commonwealth

Municipal officials and road and street employees will have an opportunity to learn more about geosynthetics, road surface management, and life-cycle cost analyses of pavement, thanks to three new courses being developed by the University of Pittsburgh's Civil and Environmental Engineering Department in partnership with LTAP.

The classes—Geosynthetics in Asphalt Road Construction and Maintenance, Road Surface Management, and Asset Management and Life-Cycle Cost Analysis for Local Transportation—will begin to be offered at various locations around the state this fall.

"LTAP is committed to providing the most up-to-date information on issues pertaining to road maintenance, construction technologies, and regulation changes," says Kim Ferroni, LTAP Program Manager. "The quality of the program and the success of our clients depend on our ability to identify issues and pull from all types of resources, including experts in the industry located across the Commonwealth."

To develop the three new courses, which are geared to road and street employees and the decision-makers and managers of municipalities, the University of Pittsburgh will draw upon its own resources as well as its network with the private sector.

"Our department and the university are truly excited about this partnership with LTAP," says Radisav Vidic, chairman of the University of Pittsburgh's Civil and Environmental Engineering Department. "It allows us to provide valuable hands-on training of municipal officials and employees with the end result that Pennsylvania's transportation infrastructure will be improved."

A brochure announcing the dates and locations of these courses will be mailed to every municipality sometime this summer. Updates are also available at www.ltap.state.pa.us.

The three new courses are described to the right.

Geosynthetics in Asphalt Road Construction and Maintenance

Geosyntheics are most commonly used in asphalt road pavement construction and maintenance. In asphalt road pavements, an asphalt concrete layer overlays a granular base and the subgrade. Geotextiles increase the stability and improve the performance of weak subgrade soils primarily by separating the granular base aggregate from the subgrade. Geogrids and geotextiles provide strength through the friction or interlock that develops between the aggregate and the geosynthetic.

In addition, because geotextiles allow excess pore water pressures in the subgrade to dissipate into the aggregate base course and, in the case of poor-quality aggregate, through the geotextile plane itself, geotextiles are useful for providing filtration and drainage on an asphalt road. In this course, each of the geosyntheic functions as they relate to the design, performance, and maintenance of road asphalt pavements will be discussed.

Road Surface Management

This course will teach municipal officials how to understand and rate the surface condition of their roads. With a goal of identifying key issues and concerns for their maintenance, this course on road surface management will cover the following topics: 1) road surface inventory; 2) understanding and rating the surface condition of roads; 3) preventive road maintenance techniques for a variety of distresses and conditions; 4) benefits of performing preventive maintenance on roadways to extend their service lives; 5) strategies and network needs; and 6) distress surveys and how to incorporate them into a more comprehensive management system.

Elected officials and managers, who are responsible for designing and maintaining roads, will benefit the most from this course.

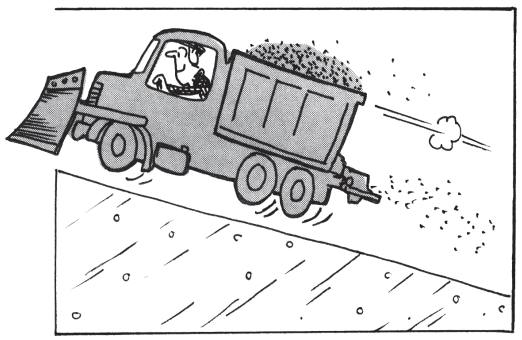
Asset Management and Life-Cycle Cost Analysis for Local Transportation

This course applies general asset management techniques to pavement networks and identifies strategies for increasing the service life on pavement networks through life-cycle costs and analyses at both the network and project levels. Requirements for pavement management system components will be discussed, and workshop activities will focus on how to determine and evaluate specific inputs, including user costs, to the decision process.

Participants will be provided copies of some of the latest relevant publications and software. This course is intended for decision-makers and managers of municipal roadway systems, whether they're in cities, counties, boroughs, or townships. ◆

To see the current schedule and to register for workshops, visit www.ltap.state.pa.us or call 1-800-FOR-LTAP.

National Public Works Week
May 20 – 26, 2007
Sponsored by the APWA



A Conversation with a Member of the New Products Evaluation Committee

How products for municipal road projects are given the green light for LFF spending

Two years ago, Paul Wentzler of Lycoming County had never heard of PennDOT's New Products Evaluation Committee. He had no idea that this committee determined which road-related products and processes his township and other municipalities could use on projects funded with liquid fuels funds (LFFs).

Today, the Muncy Township supervisor sits on the New Products Evaluation Committee, where he and 15 other members, all from various levels of PennDOT and local governments, evaluate new products and processes and determine which ones are suitable for use on the lower-volume roads of municipalities. If approved, the products and processes are published in a listing within PennDOT's Publication 447, which means they have demonstrated the ability to meet the department's specification requirements and are eligible for LFF expenditure on municipalities' maintenance and construction projects.

"We're looking for products that have the best bang for the buck," says Wentzler, who is also the assistant roadmaster in his township. "Municipalities can't afford to build interstates for their roads, and they can't afford to pave every year. But if we have access to a tar and chip product or a sealcoat that results in stretching the life of a blacktop road out to 25 or 30 years, instead of 15, than that product is important to us."

Wentzler's introduction to the New Products Evaluation Committee occurred in 2005 when he met a vendor who was looking for a location to test his fiberglass geotextile product.

"I told him, 'Do I have the road for you,'" Wentzler recalls. He was thinking of a stretch of secondary road in his township that consistently experienced pavement cracking as a result of heavy commercial traffic. Since the product was supposed to slow down reflective cracking, Wentzler was willing to put the geotextile product to the test on this problem road.

It was during the evaluation process when a PennDOT representative came out to Muncy Township to evaluate the test area that Wentzler first learned more about the New Products Evaluation Committee. He was soon asked to become a member of the LTAP Advisory Committee, a position he has held for the past year. As part of his service on the Advisory Committee, he also sits on the PennDOT committee that evaluates new products and processes for lower-volume municipal roads.

As a result of his township's experience as a new product testing site and his service on the New Products Evaluation Committee, Wentzler now knows what steps a product or process must go through to become listed in PennDOT's Publication 447 of products approved for application on projects using LFFs. After the manufacturer submits an application to PennDOT's Bureau of Municipal Services, the product or process is given what Wentzler says amounts to a "job interview" before the New Products Evaluation Committee. The manufacturer presents information on its new product or process to the committee, and committee members question the vendor about it before deciding whether the product or process could benefit municipalities and should move on to the next step—evaluation in a PennDOT-approved laboratory.

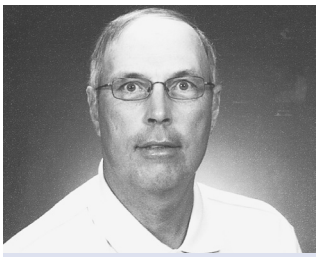
In the lab, the product or process is tested under various conditions—including heat, cold, and traffic loads—to see if it will do what the vendor claims. "If it looks like a genuine winner," Wentzler says, "the vendor is given the 'go ahead' for its product to be field tested at a variety of locations across the state. And if the product holds up under this field testing and is proven to be safe, affordable, and usable, then the committee votes to include the product in the listing of items approved for LFF expenditures under PennDOT's Publication 447."

Whether it's a new aggregate for dirt and gravel roads, a plastic meltdown product for pavement markings, or new reflective material for road signs, Wentzler says, "It's unbelievable the amount of road-related products that are out there."

Think about it, he says. "Just about everything that is on the list of approved items for municipal LFFs today had to have gone through this approval process," he says. "And there are tons of new products out there that aim to make the roads we have last longer and be safer."

It's just a matter of making sure that these new products or processes are appropriate for municipalities' lower-volume roads, that they are tested and are proven to meet the claims made by the manufacturer, and that they will result in safer, better-maintained roads for municipalities.

"After all," says Wentzler, "that's what the New Products Evaluation Committee is all about—making sure municipalities get more bang for their buck in terms of road safety and maintenance." ◆



The New Products Evaluation and Approval Process

Manufacturer of innovative product or process submits an application to PennDOT's Bureau of Municipal Services.

During one of its quarterly meetings, the New Products Evaluation Committee reviews the application and provides an initial rating of the product or process.

If product or process is certified for evaluation, the manufacturer submits it to a PennDOT-approved laboratory for testing.

At the manufacturer's expense, the laboratory conducts testing, including at field sites, and determines if the product or process is viable for use on lower volume local roads.

The New Products Evaluation Committee reviews findings and recommends approval or disapproval of the product or process to PennDOT's Bureau of Municipal Services.

If approved by the director of the Bureau of Municipal Services, the product or process is listed in Publication 447 as an eligible expenditure on municipal road projects using liquid fuels funds.

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LTAP – Developing Future Public Works Employees

Donna Jessup, Operations Supervisor of Lancaster City and LTAP Adivsory Committee member, discusses the opportunities and benefits of working in municipal government.

Pennsylvania's first Construction Career Day supported by the National Construction Career Days Center, was held April 4, 2007, at the York County Fairgrounds. Joining Donna at the LTAP booth were Ray D'Agostino of West Lampeter Township; Valerie Temino, PennDOT; and George Marcinko, PSATS.

Traffic Signals to LED

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burn out completely but gradually burn out one diode at a time and only require replacement when a set percentage of the diodes burn out. In addition to reducing the costs of frequent scheduled maintenance to relamp incandescent bulbs, use of LED signals should eliminate emergency calls for burnouts.

Armed with this information, the West Branch COG and PennDOT jointly developed the bid specifications and presented a funding request to the Lycoming County Commissioners to assist in project implementation. Recognizing the countywide value of this project and the need for a partnership approach, the county commissioners agreed to provide all of the necessary funds under the Lycoming County Liquid Fuels Grant Assistance Program to purchase the required traffic signal modules (over 2,500 modules) and publicly bid the project. The low bid of $168,678 came from General Highway Products, Inc., in Broomall. With the municipalities on board to assume the responsibility of installing the LED modules upon receipt from the vendor, all work was successfully completed in just 38 days from the Notice to Proceed.

Thanks to the cooperative efforts of all those involved, the future of Lycoming County's traffic signals are looking brighter. We encourage other counties and municipalities to work together to explore the benefits of using LED technology in their traffic signals. ◆