

Country Roads & City Streets

WV Local Technical Assistance Program

Fall 2007

College of Engineering & Mineral Resources

Vol. 22 No. 3



TRUPAVE® ENGINEERED PAVING MAT

By Mark Franz and Weslie Boyd



A TruPave® pavement mat is being applied on Edgewood Street in Morgantown, West Virginia. This environmentally friendly material is expected to extend the life of pavements.

Nothing lasts forever.

This statement is applicable to our roadways, whether high-volume, low-volume, paved, or unpaved. Public works directors, street superintendents, and others have long sought a paving method that will prolong the life of the roads that fall under their jurisdiction.

Prolonging the life of the road reduces the need for frequent maintenance, stretches valuable dollars, and saves motorists the headache of dealing with work zone delays.

The City of Morgantown has tried various methods to extend the life of their pavements. The City has started using a product called TruPave®.

Please note that the acknowledgement of this product by the WV LTAP Center is not an endorsement of this product, and our intent of publishing this article is to share a new technology that has been successful in a West Virginia municipality.

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<http://wvltap.wvu.edu>

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What is TruPave®?

The Owens Corning-Trumbull Company is the manufacturer of the TruPave® Engineered Paving Mat, an environmentally friendly product that is made of sixty percent fiberglass and forty percent polyester. TruPave® is designed to reduce reflective cracking — cracks that are caused by cracking of the base layer — and create a moisture barrier. “When milled,” company representatives state, “TruPave® paving mat is reduced to small fibers that can enhance the performance of recycled asphalt pavement (RAP). Other paving fabrics can sometimes clog the milling equipment and cause costly delays.” The company also claims that TruPave® can be used successfully in both construction and reconstruction projects using proper installation methods.

TruPave® is designed for use with a wide range of existing pavement conditions and maintenance objectives. The material will help to repair streets that are in fair to poor condition, meaning they have moderate to severe cracks. According to Owens Corning, the material may be used with the following applications: spot crack repair; micro surfacing; chip seal; mill, leveling course, and structural overlay; mill, structural overlay; leveling course, structural overlay; and non-structural overlay. All project conditions differ, so consult a professional engineer before finalizing your specifications.

Benefits of TruPave®

Some of the touted benefits of the TruPave® technology are stronger road surfaces with less maintenance. Roads that use Trupave® have consistently been shown to outlast roads without it. But what about the cost? Recent local projects indicate that the

cost of TruPave® is \$4.38 per square yard. This figure is for material and installation and is to be added to the cost of the hot mix asphalt overlay.

Terry Hough, Morgantown public works director and city engineer, began working with the product in 2005. Lyndhurst Street, a low-volume road located in the South Park neighborhood, was plagued with utility cuts and surface cracks and needed repair. “It was patchworked like crazy and too cut up for slab replacement. If we used asphalt only to fix the street, then a lot of reflective cracks would have shown,” said Hough.

TruPave® decreased the amount of reflective cracking. “There is reflective cracking on Lyndhurst Street today, two years later, but the cracks are minimal compared to what they may have been without the product,” Hough says.

The City of Morgantown has used the product on five streets in the past two years, and according to Hough, they

have not had any issues with utility cuts and associated reflective cracking, as of now. “TruPave® extends the life of streets,” says Hough, “but the question is how long.” One thing we know for sure is the answer is not forever, but even a few extra years can save a lot of time and money.

TruPave® Demonstration

Terry Hough invited WV LTAP staff to visit a site where TruPave® was being installed. Anthony Ford and Kim Carr went to Edgewood Street, located near Morgantown High School, to learn more about this process. As you will see in the photos on the following page, this process does not require elaborate equipment and is not time consuming. The TruPave® mat was laid in about an hour.

If your community would like to learn more about this technology, contact Anthony Ford at the WV LTAP for more information.

The hot asphalt tack is applied. The tack ensures proper coverage and proper adhesion of the paving mat to the pavement surface.





As shown in this photo, the mat comes on a large roll and is rolled out using a special attachment on a standard tractor.



The TruPave® mat is laid before the asphalt is applied. The mat acts as a moisture barrier and helps to reduce reflective cracking.

Tips for Installing TruPave®

- *Always power broom, sweep, or vacuum the pavement before installing TruPave® engineered paving mat. The pavement should be dry and free of dirt and gravel prior to installation.*
- *Fill all cracks ¼" or larger.*
- *Repair and patch potholes and failed pavement areas prior to installing the TruPave® mat.*
- *Always use hot asphalt tack. Do not use emulsions for TruPave® installation.*
- *Apply TruPave® while the asphalt tack is still liquid. Do not let the asphalt distributor get too far ahead of the installer.*
- *Ambient temperatures for TruPave® installation should be 40° F and rising.*
- *Optimum tack temperature is between 310° F and 335° F in the distributor truck.*

NEW PUBLICATIONS NOW AVAILABLE

Federal Highway Administration has released two new publications that are now available. The first is **Field Guide for Inspecting Signalized Intersections to Reduce Red-Light Running**, a companion document to **Making Intersections Safer: A Toolbox of Engineering Countermeasures to Reduce Red-Light Running**. The second is **Making Work Zones Work Better**, part of FHWA's Work Zone Safety and Mobility Peer-to-Peer Program. These pamphlets are available at no cost. Please contact Technical Assistant Mark Franz at mark.franz@mail.wvu.edu to request a copy. Also, do not forget to check our Web site at <http://wvltap.wvu.edu> for a complete listing of all available publications, CD-ROMs, DVDs, and videos available from our lending library.

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Country Roads and City

Streets is a quarterly

publication of the West

Virginia Local Technical

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information that is beneficial

to roadway construction and

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The material and opinions

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TECHNICAL ASSISTANT BRAD DICOLA LEAVES THE WV LTAP

By Weslie Boyd



Former Technical Assistant Brad Dicola enjoys the view of the New River Gorge Bridge, November 2006.

After two memorable years with WV LTAP, Brad Dicola left the Center in May 2007. He is now employed by PB Americas, Inc., which was formerly Parsons Brinckerhoff, in Pittsburgh, Pennsylvania. He currently has the title of Engineer I and is in the Traffic Engineering and Operations Group. He primarily works on signal and intersection design, work zone traffic control, and traffic and parking management.

Brad joined the LTAP staff June 16, 2005. During his time on staff, he attended many events. Some of his favorite memories include standing on a dinner table to give an impromptu five-minute speech at his first National LTAP Meeting, traveling to Seattle and Olympia to tour the new Tacoma Narrows Bridge and see the Puget Sound, and driving fourteen hours to Dubuque, Iowa. He also enjoyed traveling to Fayetteville, West Virginia, for an advisory board meeting and seeing the New River Gorge Bridge at the peak of the fall foliage season.

Brad is currently working on his thesis entitled "Land Use and Transportation Impacts of Rural and Consolidated Schools in West Virginia." He is investigating how the construction and location of consolidated and rural schools in the state impact land use patterns, school bus travel times, and student mode choice in getting to school, among other aspects. He is planning to defend his research in early 2008.

His advice to future graduate students: Take advantage of every chance to network, and draw upon what LTAP and WVU have to offer to develop a career. He says, "My two years helped me focus on where I am heading and gave me the chance to meet a lot of great people."

Brad would like to thank Dr. Ron Eck, Kim Carr, Mike Blankenship, Weslie Boyd, the WV LTAP Advisory Board, and Emily Walters for all their help over the last couple of years. "It's been enjoyable, and I look forward to the chance to potentially work with you in the future," he says.



GOOD HOUSEKEEPING TIPS FOR PAVEMENT

Streets and parking lots make up a significant portion of the total impervious area within a developed watershed, and most, if not all of these areas are directly connected to the storm drain system. Pollutants accumulate on these surfaces and are washed off during storm events, particularly during spring snowmelt. A 1993 study in Wisconsin indicated that streets and parking lots were responsible for 54 percent of total runoff volume in residential areas and 80 percent in commercial areas. The same study found that streets and parking lots were significant sources of runoff pollutants, including suspended solids, phosphorus, copper, zinc and fecal coliform.

When properly designed and implemented, sweeping programs can significantly reduce street and parking lot contributions to pollutant loads.

Sweeping

Sweeping is a common maintenance activity, often done primarily for aesthetic reasons. Sweeping has important water quality ramifications, however, and should be done in ways that increase its effectiveness for preventing sediment loading of runoff and, whenever possible, decreasing costs. Sweeping is most effective for removing coarse particles, leaves and trash.

Timing

- At minimum, pavement should be swept twice yearly: in early spring, to collect sand, salt and winter debris, and in fall, to capture leaves and other debris.
- Sweep as early in spring as possible (after snow has melted from an area) in order to capture

sediment before it is washed away by spring rains.

- An additional sweeping in June, after trees drop seeds and flowers, will prevent a fair amount of phosphorus-laden runoff.
- Sweep after activities or in locations that generate debris, such as at construction entry points.

• When loading or unloading salt, sand, gravel or other granular materials, sweep the loading/unloading areas at the end of each day, as well as along the paths that the trucks use.

Equipment

- Broom sweepers are effective at picking up large particulate matter and cleaning wet street surfaces. They also cost less to operate than vacuum sweepers. Broom sweepers generally create airborne dust during their operation, which increases atmospheric loading.
- Vacuum sweepers are more effective for removing fine particles, which is important because many pollutants are adsorbed to them. However, vacuum sweepers have the disadvantage of being ineffective at cleaning wet street surfaces. For heavy loads, use a mechanical sweeper for large particles followed by regenerative-air cleaner.
- Consider equipment that can be converted to other uses, such as sanding and plowing in winter.



Street sweeping can help improve water quality if the proper measures are taken.

- Install an automatic greasing system on sweepers to decrease maintenance time and reduce wear on critical parts, which can cause unscheduled maintenance and missed sweeping opportunities.

Techniques

- Sweep in a pattern that keeps spilled material from being pushed toward catch basin inlets
- Locate storage and disposal sites for the material collected during sweeping so it will not get back to the storm sewer systems.
- Before sweeping, manually rake sand from any adjacent turf areas onto the surface to be swept.
- Use a small pool of highly trained operators.

Residual Material

- Street sweepings may be reused by cleaning out leaves and other debris then mixing the sweepings with new salt/sand mixture for winter

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The West Virginia LTAP Center is a part of the nationwide Local Technical Assistance Program (LTAP), which is funded by the Federal Highway Administration. The program also receives funding from the West Virginia Department of Transportation.

Mission:

The mission of the West Virginia LTAP is to foster a safe, efficient, and environmentally sound surface transportation system by improving skills and increasing knowledge of the transportation workforce and decision makers.

Overall Goal:

The Center's overall goal is to improve the transportation system by focusing on professional training, technical assistance, and information dissemination.

To achieve this goal, the WV LTAP does the following:

- Provides on-site training and demonstrations
- Publishes a quarterly newsletter
- Maintains a video, CD-Rom, and publications library
- Provides technical assistance via mail, telephone, fax, email, or site visits

2008 ROADWAY MANAGEMENT CONFERENCE TO BE HELD AT OGLEBAY RESORT IN WHEELING, WV

The West Virginia LTAP will host the **16th Annual Roadway Management Conference**. It will be held March 31 – April 2, 2008 in Wheeling, West Virginia, at Oglebay Resort.

Please submit any session topic ideas, comments, or feedback to Weslie Boyd at weslie.boyd@mail.wvu.edu.

Rooms are available at a rate of \$85.00 per night and reservations can be made by calling 1-800-624-6988. This conference rate is available

until February 28, 2008. Ask for the Roadway Management Conference rate when making arrangements. We look forward to



WORK ZONE SIGN PACKAGE PROGRAM REINSTATED

West Virginia LTAP will reinstate the popular Work Zone Sign Package Program this year. The package contains signs, cones, barrels, vests, and more. **Each package is valued at approximately \$3,000.00 but is available to West Virginia municipalities for free.**

Forty-one West Virginia municipalities have benefited from the program since its inception in 1996. The goal of the program is to help municipalities improve the quality of their work zone traffic control and, ultimately, improve traffic safety in the state.

“We are excited to offer this program again. It has been successful in the past, and we hope to help more West Virginia communities,” says Anthony Ford, WV LTAP Program Coordinator—Professional Engineer. Each municipality must attend a half-day training session after receiving the package.

Applications and in-depth details for those interested are currently available on our Web site. Feel free to contact the WV LTAP for materials, also. Applications are due October 15, 2007.



Former WV LTAP Program Manager Mike Blankenship is shown loading a work zone sign package.

application to roads, parking lots or sidewalks. When screening sweepings for reuse in this way, use a small mesh for the final screening to ensure that all of the larger debris has been removed. (A 3/4-inch mesh will screen out much of the debris.)

- Recycle fall leaf sweepings by finding a composting or agricultural facility that will use them.

- Street sweepings may also be reused as daily cover material on sanitary or demolition landfills, but only those that have ground water monitoring systems. While sweeping

residuals are not considered hazardous waste, a wide array of inorganic and organic pollutants are contained, so use caution in disposal.

This article was adapted from Minnesota's Urban Small Sites Best Management Practice (BMP) Manual, which was produced by The Metropolitan Council. To view a PDF of this manual in its entirety, please go to www.metrocouncil.org/Environment/Watershed/BMP/manual.htm. The WV LTAP would also like to extend a thank you to Karen Jensen of the Metropolitan Council for granting reprint permission to use this material.

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UPCOMING WV LTAP TRAINING

SAFETY CIRCUIT RIDER COURSES

LTAP Director Ron Eck will present a series of workshops in District 6. All of these trainings are offered free of cost; however, pre-registration is required. These workshops will be held in the Moundsville District 6 headquarters conference room.

Road Safety Fundamentals | September 19, 2007

Low-Cost Safety Improvements | October 3, 2007

Designing Pedestrian Facilities for Access | October 10, 2007

Check our Web site for more information and to download a copy of the event brochure. Please contact Kim or Weslie at the WV LTAP Center to register.

SNOW AND ICE CONTROL WORKSHOP

The annual Snow and Ice Control Workshop will be held Wednesday, October 17 at Jackson's Mill in Weston, West Virginia. Topics on the agenda range from how to respond to citizens, to best management practices for your winter snow and ice plan, to how to implement and execute dry-run checklists. The cost per person is \$30.00, which covers a hot lunch, breaks, and participant materials.

Please visit our Web site or contact Kim or Weslie to register or request more information.

WV LTAP WELCOMES MARK FRANZ

Mark Franz is the newest member of the WV LTAP team. He was born and raised in the Pittsburgh area. He graduated from the University of Florida with a B.A. in physics and a B.S. in astronomy in June 2006. He is currently pursuing his master's degree in civil engineering at West Virginia University. His research interests are transportation and construction management.

Mark worked as an undergraduate research assistant in the Astronomy Department while he completed his master's. He was also an active member of the Undergraduate Astrophysics Society and the Undergraduate Physics Society. He was awarded a

Research Experience for Undergraduates (REU) position at the National Optical Astronomy Observatory (NOAO) in Tucson, Arizona during the summer of 2005. His REU research project required his to collect and analyze data from state of the art telescopes, including the Hubble Space Telescope. "It was an experience I will never forget," he says. Outside of his studies, he was involved in volunteer work including education fairs where he gave astronomy presentations to grade school classes. He also participated in intramural softball.



Some of Mark's other interests are fishing, baseball, football, playing guitar and exercising. "I am honored and delighted about becoming a WVU student and member of the WV LTAP team," he says.

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WV Department of Highways Equipment Auction

The DOH Equipment Auction will be held Saturday, September 15, 2007 in Buckhannon, West Virginia at 9:00 a.m. The auction is open to the public.

Visit http://www.wvdot.com/3_roadways/3c2_equip.htm for details. More information is also listed on WV LTAP's Web site.