Country Roads & City Streets

WV Transportation Technology Transfer Center

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WestVirginiaUniversity.

Snow Workshop Focuses on Winter Survival

Anyone who is exposed to extreme elements, especially snow plow operators and other public workers, are at risk for becoming trapped in bad weather and may chance upon stranded motorists. As someone who falls into this category, *Would you know what to do to stay alive if you were stranded in a winter storm? Would you know how to properly treat a victim of hypothermia? Do you know what ordinary items can be used to make a heat source?* These questions and many more were answered at the 2003 Snow and Ice Control Workshop held at Jackson's Mill, WV.

The winter survival portion of this workshop showed participants how to prepare mentally for being stranded in life-threatening weather in addition to equipment and clothing needed to survive the cold. In addition to learning the five stages of hypothermia and associated characteristics of each stage, participants also learned about symptoms of carbon monoxide poisoning, and appropriate treatment for either condition.

Wally Burkhart from Shinnston manages to keep his hand in ice cold water for three minutes to help demonstrate how quickly the body can lose heat.

Steve Jenkins shows how effective a tuna can heat source can be.

The highly knowledgeable instructor for the three-hour winter survival course was Steve Jenkins, a professional engineer and director of the Montana LTAP Center. Steve has been teaching winter survival skills in Western states for ten years, instructing law enforcement, emergency medical service groups, search and rescue, fire departments, tribal governments and local agencies to insure safe practices in winter operations.

An important aspect of cold weather

West Virginia Transportation Technology Transfer Center

In This Issue

Country Roads and City Streets is a quarterly publication of the West Virginia Transportation Technology Transfer Center (T^2 Center). The purpose of this newsletter is to provide information that is beneficial to highway construction and maintenance personnel.

The material and opinions contained in this newsletter are those of the West Virginia Transportation Technology Transfer Center, and do not necessarily reflect the views of the Federal Highway Administration or the WV Department of Transportation. Material contained in *Country Roads and City Streets* is a combination of original and borrowed material. Every effort has been made to ensure the integrity and accuracy of this material. However, the WV T^2 Center does not assume responsibility for any incorrect material.

survival is the understanding and practice of survival equipment. Steve has helped companies like Smartwool, Gortex, and Schnees with product development and introduction. In his many years of travel, Steve has been required to use and perfect his winter survival skills, and has had to spend many cold winter nights outdoors or stranded in a vehicle.

The workshop continued in the afternoon with a presentation by Stan Lewis, Street Commissioner for the City of Weston. Stan's presentation focused on the successful use of natural salt brine as an anti-icing agent. Some of the methods being used by the City of Weston are treating sidewalks with a handwand; pretreating paved roadways prior to storms; and re-treating plowed roadways.

Using natural salt brine has helped the City of Weston drastically reduce their salt usage, thus helping to lower their total snow removal costs. Like the Cities of Fairmont, WV, and Morgantown, WV, Stan has found that using natural salt brine results in time and monetary savings, and additional safety benefits. Like many other municipalities using natural salt brine, the City of Weston also pretreats roadways, which delays the bonding time of snow and ice.

Wally Burkhart from the City of Shinnston also spoke for a few moments regarding purchasing an old army surplus truck that they will be using this winter. He encouraged attendees to think outside the box and take advantage of all available resources.

To conclude the 2003 Snow and Ice Control Workshop, Alan Gesford continued the winter survival theme by helping participants realize the importance of winter operations and the value of an effective, efficient, and safe snow fighting program. Alan emphasized to participants the need to balance the efficiency and effectiveness of their agency's winter operations while maintaining the safety of their transportation facilities.

Alan is a Technology Transfer Specialist for LTAP –The Pennsylvania Local Roads Program and for the PA Environmentally Sensitive Maintenance for Dirt and Gravel Roads (DGR) Program. He provides training and technical assistance to Pennsylvania's municipalities for both programs. He has been with LTAP for 15 years and with the DGR Program since its initiation in 1997. Alan is a frequent presenter for the Snow and Ice Control Workshop and the Roadway Management Conference.

The WV T^2 Center wishes to thank all of our speakers for helping us put on a spectacular workshop. To all of our attendees, we thank you for taking time out of your busy schedules to further your knowledge about winter maintenance. Your commitment to effective and efficient winter maintenance operations is commended.

Additional information on winter maintenance issues is available on the WV T^2 Center website at: ***http://www.cemr.wvu.edu/~wwwtt/.*** Specifically, information can be found online in the December 2001 edition of Country Roads and City Streets.

Also, please remember that the staff at the WV T^2 Center are available to answer any additional questions you may have. We encourage you to contact us with any of your roadway transportation questions or concerns. Have a safe snow fighting season!

MS4 Stormwater Workshop Series Announcement

The West Virginia Department of Environmental Protection's Office of Innovation and Division of Water and Waste Management has teamed up with the Canaan Valley Institute, West Virginia Rivers Coalition, and West Virginia Chamber of Commerce to sponsor a series of workshops that focus on important storm water issues – one of West Virginia's most significant water quality and quantity problems. **On January 16, 2004, the first of these free workshops will be offered at Flatwoods Days Inn.** ***You are invited to attend!***

New NPDES permits now required for small municipal separate storm sewer systems (MS4s) are changing the regulatory landscape. About 40 cities and towns across West Virginia must submit storm water management programs to DEP by March 2004. Challenges include developing programs that are affordable, improving water quality, and meeting or exceeding permit requirements.

Come learn from stormwater, pollution prevention, and water quality policy experts at DEP's Division of Water and Waste Management, as well as other special guests. If you are an MS4 permittee, community leader, utility representative, contractor, developer, engineer, watershed organization representative, or interested citizen, this workshop is for you!

Workshop #1: Municipal Separate Storm Sewer Systems (MS4s)
Flatwoods Days Inn * January 16, 2004 * 8:30 AM – 4:30 PM

8:30 AM - 9:00 AM Registration

9:00 AM - 12:00 PM Policy and permitting background

Introduction to water quality policy issues
Pat Campbell, Assistant Director, DEP Division of Water and Waste Management

Introduction to the MS4 permits, and the importance of compliance
Andy Weaks, DEP Storm Water Permit Team Supervisor

Case study: Morgantown Utility Board's storm water utility
Tim Ball and Doug Smith, Assistant General Manager and Senior Engineer, MUB

12:00 PM - 1:00 PM Lunch on your own

1:00 PM - 4:30 PM Meeting and exceeding permit requirements

Storm water management programs (SWMPs)
Andy Weaks, DEP Storm Water Permit Team Supervisor

BMPs and new and emerging technologies for meeting the MS4 permit
Andy Weaks, DEP Storm Water Permit Team Supervisor

Legal issues related to MS4 permits
Steptoe & Johnson

Introduction to pollution prevention and environmental management systems
Greg Adolfson, Deputy Administrator, DEP Office of Innovation

Additional resources
Speaker to be announced

Registration Information

To register for this free workshop, or for details of upcoming workshops, call WVRC's Watershed Permit Assistance Program at 304-291-8205 or e-mail ehansen@downstreamstrategies.com.

Additional Upcoming Stormwater Workshops – Specific locations will be set soon.

Construction Stormwater – Morgantown, February 2004
Construction Stormwater – Charleston, March 2004
Concrete & Cement Block Manufacturers – Location TBA, April 2004

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The Technical Assistant's 2¢– *Can Pavement Stamping Work for You?*

A Column by: Keith Bryant

Textured surfaces are used to indicate the presence of pedestrian paths and to enhance the appearance of public spaces. A variety of surface patterns, colors and logos can be used on sidewalks, roads, crosswalks, plazas, alleyways and other public spaces. In addition to the visual enhancement that textured surfaces create, there is also a 'feel' that texturing creates for motorists who pass over these surfaces. This feel may cause motorists to travel at slower speeds, thus calming traffic.

Pavement stamping is one method of achieving some of the aforementioned surface characteristics. This is accomplished by transforming a monolithic surface, such as asphalt or concrete slabs, into a patterned and colored surface utilizing imprinting templates and paints or stains. The cost of this procedure varies but is generally less than using construction materials such as block, brick, or slab pavers. For instance, according to the National Construction Estimator, the cost of an asphalt or concrete slab per square foot is roughly 1/3 of the cost of paver block per square foot. There is additional cost for the pavement stamping procedure; however, the total cost is still less than using paver block construction materials. Also, the texture of stamped pavement is typically smooth and not subject to differential settling that may occur in paver blocks.

An aesthetically pleasing and realistic looking example of pavement stamping used on a neighborhood sidewalk.

This article overviews both asphalt and concrete stamping. We will discuss each stamping method, their advantages/disadvantages and look at a testimonial from a municipality that has used both types of pavement stamping in their downtown area.

Asphalt Stamping

There are two common ways that asphalt is stamped: 1) Re-heat an existing asphalt surface and stamp 2) Stamping on freshly laid asphalt.

Freshly placed asphalt is not necessary for asphalt stamping. Existing asphalt may be re-heated with a device such as a Street-Heat SR-60 Pavement Re-Heater. Once the pavement has been heated to a sufficient temperature, the pattern template is laid out on hot asphalt and tamped to embed the template into the pavement. Once the template is removed, a pattern is left behind that resembles a stone, block, logo or other surface pattern.

If new asphalt is being laid, the pattern template is to be applied when the asphalt has been properly rolled and is still hot. Once the template has been applied, the process is the same as described above. After the pattern has been applied, a large selection of colors is available to paint the stamped area.

Typically, conventional asphalt stamping should be limited to pedestrian paths and lower-volume roads. High vehicular traffic affects the surface characteristics of asphalt pavement. It has been reported that while stamped asphalt is ADA compatible and looks great (superior to most color embossed concrete systems) when new and properly installed on fresh asphalt or asphalt that it is in good condition, it has not performed well on roads with high traffic volumes and high percentages of truck traffic. One agency noted that the stamped asphalt required much more maintenance (rejuvenation of the color overlay) than originally predicted. However, there have been advancements in technology that increase the durability of the stamped asphalt for roadway applications.

Concrete Stamping

The construction of stamped concrete is a more involved process than asphalt stamping. First, newly placed concrete must be floated, followed by the application of color-hardening agents. Next, a release agent is applied to keep the concrete in its plastic state. This helps to prevent the concrete from sticking to the stamping templates. Once the templates are laid out on the concrete, they are tamped so that a pattern is left behind. Care must be taken to leave space for joints when laying out a pattern, as concrete is highly susceptible to cracking if there are no control joints.

Just like asphalt stamping, concrete stamping offers many different patterns and color choices. The stains used in coloring concrete can be manipulated to give a very attractive and realistic finish. If installed properly, the textures and patterns can closely resemble construction materials such as slate, bricks, marble, weathered lumber and even 'fossil' patterns.

Stamped concrete has excellent durability for pedestrian areas. If properly maintained, the patterns tend to perform well under high volumes of pedestrian

traffic. However, its use should be limited to non-vehicular applications. The concrete finish may be easily scratched or cracked if rigid scraping devices (such as a steel snowplow blade) are used on the surface. Heating coils can be set in the concrete in order to warm up the concrete area, thus melting snow and ice. This eliminates shoveling and scraping damage that may occur in winter months.

Good candidates for concrete stamping include areas of high pedestrian traffic where aesthetics are a priority. The intricate patterns and staining colors that can be created with concrete stamping are well suited to eye-pleasing plazas, pedestrian alleys, sidewalks, building entrances and residential driveways.

One Agency's Experience

In order to get feedback from a municipality that has experience using pavement stamping, I interviewed Mark Jamison, PE, Traffic Engineer, City of Roanoke, VA. Mr. Jamison's responses were insightful and should prove useful for those considering the use of pavement stamping. The following interview is presented in its entirety:

When did Roanoke begin using pavement stamping on their public streets?
The first stamped pavement was installed five or six years ago. (Kirk Avenue, Norfolk Avenue, Salem Avenue, Memorial Avenue.)

What pavement types have been stamped in Roanoke? Road classes (alleys, downtown streets, residential streets, collectors, parking lots, etc.)?
We have stamped both asphalt and concrete. Roadway classifications include local and arterial streets, most of which are located in our downtown area. Memorial Avenue is located in an area that is primarily residential but is on an arterial route leading to downtown.

What was the reason for implementing pavement stamping versus traditional block pavers?
The cost of brick pavers, dissatisfaction with the "bump" created with block pavers with concrete bases, and the maintenance requirements caused by block pavers.

Where has pavement stamping been used? Crosswalks, plazas, entrances or other?
Crosswalks, medians, plaza areas, and alleys.

What types of surface textures have been used (block, logo, simulated stone, etc)? How is the coloration handled? What colors has Roanoke used?
We have used various brick patterns. Stamped concrete has been colored by the supplier or by use of a powder applied during finishing. Stamped asphalt has been painted after stamping.

How does the visual appearance of the stamped pavement compare with that of traditional block pavers?
I think both are pleasing although my preference for stamping may be biased by the smoothness of the ride compared to a brick crosswalk and the reduced maintenance that must be performed.

Is the cost difference substantial for: a) initial cost and b) maintenance cost?
Stamping of concrete or asphalt is less expensive to install than paver blocks and requires less maintenance.

How does the stamped pavement hold up under traffic, weather, and plowing/sweeping operations? What about the performance of the surface? Does the surface texture last on high volume roads?
The stamping that was installed prior to this summer has held up well but it was installed on relatively low volume streets. We will have to wait and see on the stamping that was performed this summer.

Have there been maintenance concerns regarding the stamped pavement? For example, if there has been a reason to do a utility cut at a stamped location, how are the repairs handled? Does the municipality retain some of the patterns or must the original contractor be brought back in to re-create the pattern?
We have had to repair stamped asphalt once. The stamping contractor was asked to come back to restamp the affected area. I would anticipate that the stamped concrete will present more of a problem than the asphalt. We do not retain the patterns nor do we have the equipment necessary to heat the asphalt prior to stamping. I'm sure that we will get into this issue in the future. Right now, we would likely contract with the approved vendor to restamp these areas.

Does the City plan to continue use of pavement stamping? Why or why not?
I know of no reason why we would not continue to use stamping. We need to evaluate its performance, durability, and maintenance requirements on the higher volume installations installed this year.

What has been the feedback from the mobility challenged community (disabled and elderly)? Any complaints about roughness, elevation differences, or slipperiness?
We have not received any comments at this point relative to these issues.

Do you consider liability exposure (from ped slip/trip/fall incidents) to be an issue with stamped surfaces?
We consider liability in everything we do in the public right of way; however, we are not aware of any additional problems with this application. With stamped asphalt, the product is essentially no different than the surrounding surface. We will have to evaluate these locations this winter under conditions with snow and ice.

Interested in an Equipment Management Software Program?

by: Keith Bryant

What is MEMS '02?

The 2002 Municipal Equipment Management Systems Software, MEMS '02 for short, is a user-friendly equipment management software package intended for municipalities. The program can organize important equipment information, maintenance & repair schedules, work orders, parts purchases and inventory, fuel purchases and consumption, employee and vendor information, as well as provide detailed reports in all of these areas. Users have the choice of using all MEMS has to offer, or selecting just what they want based on their needs.

There are a number of issues that municipalities face in today's equipment management environment. Issues such as managing costs, scheduling labor, ordering parts, and conducting a pro-active preventative maintenance plan are examples of day-to-day activities. Communities that ignore these issues do not have a handle on what equipment actually costs. MEMS, through its pre-formatted forms and reports, offers the following general features to help municipalities get a better handle on such operations and make well-informed decisions. MEMS also provides a systematic approach to managing equipment. Listed below are some of the program's equipment management capabilities.

*** Equipment Management** – From weed whackers to bulldozers, information on all types of vehicles and equipment can be entered into the database.

*** Scheduled Maintenance & Inspections** – Municipalities can establish a defined preventative maintenance and inspection program, as well as keep track of all repairs.

*** Work Orders** – Work orders help municipalities manage labor and parts inventory on each piece of equipment as needed.

*** Purchases and Inventory** – Stock information, such as: costs, quantities, part numbers, purchase order numbers, and vendor names provide greater efficiency in purchasing.

*** Fuel Purchases and Consumption** – Fuel shipments and individual consumption, including costs, can be maintained for operating fuels (including electricity) and additive oil.

*** Employee and Vendor Information** – Employee and vendor information are used to reference basic information necessary to successfully run the program.

"The Program sounds great, but will it work for my smaller municipality?"

We asked Jason Simcock, Maine LTAP's Program Manager, if the program would be useful for smaller sized municipalities. Mr. Simcock's reply:

MEMS is designed for any size community. I've probably gotten the most feedback from larger size municipalities (in Maine this is 10,000 to 20,000 in population). As a result, we've actually made improvements to the program.

MEMS can be used by a small town, though. Especially if there is a lot of concern about how much a particular truck or piece of equipment costs to maintain. I've worked for a small town before and know how elected officials need cost information, before a vote takes place. It would be a huge help to show that a piece of equipment costs X $'s, as well as how much the equipment's operational time costs, to help justify local decision-making. Small towns may not need all the functions, like inventory control, maintenance intervals, fuel importing, etc. But, the options are there.

A Brief Run-Through

Once we received this software from the Maine LTAP Center, I installed it and set up a sample database. I found that entering data was very easy and the data forms were programmed to eliminate redundant data entry. In other words, if information about a piece of equipment is entered on the 'equipment' data sheet, it will be available on all other associated data forms. This helps eliminate the possibility of the program operator having to take the time to stop and find the data somewhere else.

As with other software programs, there are limitations to MEMS '02. Users must keep this in mind when considering implementing this program in their municipality. For instance, MEMS '02 is not a stand-alone software package. MEMS '02 will run only if the computer on which it is installed has a minimum of Access 97, since it is a database. Also, MEMS '02 requires a Microsoft Windows PC. Mac users will not be able to run this program.

MEMS '02 Available Through the WV T² Center

Since the staff of the WV T² Center believes that the MEMS software can benefit West Virginia municipalities, we are preparing to conduct up to 5 pilot projects for those municipalities that are interested. The pilot projects will be awarded on a first-come, first-served basis. A member of the T² Center will provide on-site technical assistance, demonstrating how to install the software, refer to the instruction manual, input data, and generate reports.

For more details on the MEMS '02 pilot project, please contact a staff member of the WV T² Center by calling 304-293-3031 x 2612.

2004 Roadway Management Conference

The Mid-Atlantic Transportation Technology Transfer (T²) Centers and Local Technical Assistance Programs (LTAP) will be holding their 12th Annual Roadway Management Conference (RMC) in Newark, DE, March 22-24, 2004. We would love to have your participation!

The RMC is targeted to practitioners in the construction and maintenance of state, county, and municipal roads and streets. This includes elected and appointed officials, managers, engineers, technicians, supervisors, and contractors. As individuals and agencies that are in charge of roads and streets, you are facing many challenges, such as stormwater management requirements, new MUTCD revisions, and continuing budget constraints. This conference can help you and your agency prepare for, and successfully address, these challenges.

The conference program is scheduled to be mailed in January, so "keep a lookout". **In the meantime, mark your calendar for March 22-24.**

You don't want to miss the 2004 Roadway Management Conference!

The West Virginia T² Center is a part of the nationwide Local Technical Assistance Program (LTAP), which is funded by the Federal Highway Administration. The Center also receives funding from the West Virginia Department of Transportation.

Mission:

The mission of the West Virginia T² Center is to foster a safe and efficient transportation system. The T² Center's mandate is to improve the transportation system by improving the professional skills of those involved in highway design, construction and maintenance, and to act as a resource for them by keeping up-to-date training libraries and constantly seeking/developing new technologies.

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 T² Center does the following:

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

Country Roads and City Streets
A Newsletter of the WV Transportation Technology Transfer Center

West Virginia University

Season's Greetings

Wishing you and your family
a joyous holiday season and a
New Year filled with peace and happiness.

From the WVT² Center
Ron, Mike, Kim, and Keith

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- ❒ **Public Works Dept.**
- ❒ **Road Crew**
- ❒ **Managers**
- ❒ **City Engineers**
- ❒ **Mayors**
- ❒ **Others**