

Country Roads & City Streets

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College of Engineering & Mineral Resources

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2008 WORK ZONE SIGN PACKAGE GIVEAWAY

Sabrina DeVall, Public Relations Assistant, WV LTAP



William Jacobs and Steve Parsons with the Village of Barboursville are shown with some of the items included in the work zone sign package.



<http://wvltap.wvu.edu>

The 2008 Work Zone Sign Package (WZSP) winners recently received their new materials. The packages, valued at approximately \$2900 each, were awarded based on community need, a statewide balanced distribution, and the municipality's demonstrated involvement in WV LTAP activities.

The WZSP program is one of the many services offered by the WV LTAP to improve highway safety. These packages consist of traffic control devices that communities can use to warn and guide traffic around and through road construction and maintenance zones. An integral part of this package is also the work zone traffic control training each community receives.

CONGRATULATIONS TO THE 2008 WINNERS!

Berkeley County Public
Service Sewer District

City of Clarksburg

City of Kingwood

City of Wellsburg

Town of Danville

Town of Fayetteville

Town of Sutton

Village of Barboursville

In addition to the package, which includes: 18 portable work zone signs, six sign stands, four barricades, four plastic drums, 16 cones, two reflective "Stop/Slow" paddles, and four ANSI Class II safety vests, each municipality receives a free, hands-on work zone safety training course that covers the fundamentals of work zone traffic control and commonly used layouts.

Bill Cook, a 2008 winner from the Town of Danville, attended training last year when a neighboring community received a package. "This [work zone traffic control] class has provided our street crew with training that has

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Input, Ideas, and Opinions

Country Roads & City Streets is a quarterly publication of the West Virginia Local Technical Assistance Program (WV LTAP). The purpose of this newsletter is to provide information that is beneficial to roadway construction and maintenance personnel.

The material and opinions contained in this newsletter are those of the West Virginia Local Technical Assistance Program and do not necessarily reflect the views of the Federal Highway Administration or the West Virginia Department of Transportation. Material contained in Country Roads & 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 West Virginia LTAP does not assume responsibility for any incorrect material.



**Enhancing Transportation
in Your Community**



2008 WORK ZONE SIGN PACKAGE GIVEAWAY

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become the center of our safety program. We use the booklets and safety information to guide us and the Roads Scholar training sessions are without question the best training seminar we have attended. No other program has given us so much information to use after the class is over. I have seen such an improvement in our work habits and our concern for public safety.”

“As the Town Manager,” Cook says, “I would recommend every city and town to seek out a training class conducted by the WV LTAP. I cannot say enough about the fine staff of the Program. They are always friendly and helpful when problems arise that we have questions about. It is comforting to know we have an agency that cares about small town issues and staff members who are willing to give us much needed technical assistance.”



Dr. Ron Eck, WV LTAP Senior Advisor, and Mark Franz, WV LTAP Technical Assistant, demonstrate how to assemble the roll-up signs.

The WV LTAP staff members are very concerned about work zone safety and strive to get training out across the state. Training sessions held at the award winners' sites are



2007 recipients from the Town of New Haven load their package.

open to all neighboring communities and local agencies, free of charge.

Recipients of the 2007 WZSP have also reported improvements to work zones and enhanced safety. Dan Harris, with the City of Belington, reports using the “signage and other safety items numerous times.” He says, “the items provided have made our work zone projects much easier and a great deal safer.”

The Town of New Haven is thankful to have participated in “this special program.” Janet May says, “The signs and cones have especially been helpful to our workers. The equipment [LTAP provided] has helped to keep the residents and workers safe and to alert traffic to the work being done. Thank you for providing our town with equipment we would not have been able to pay for.”

Like communities throughout the state, the WV LTAP values the safety of employees and citizens and plans to continue the WZSP giveaway. Information on the 2009 packages will be available mid-summer. If you have questions or comments about this program, contact Kim Carr: (304) 293-3031, ext. 2612 or kim.carr@mail.wvu.edu.

SPRING FLOODS AND CULVERT FAILURES

Sabrina DeVall, Public Relations Assistant, WV LTAP



Figure 1. The results of a culvert failure.

Everyone knows that April showers bring May flowers, but spring rains mixed with melting winter snow can cause a lot of problems for roadway workers. Particularly at risk are culverts. Catastrophic culvert failures may result in sink holes, road damage, and flooding (See figure 1). Aside from inconveniencing the public, these failures pose safety hazards and are costly to both the agencies responsible for repairs and property owners who often suffer flood damage.

While many factors can contribute to culvert failures, there tend to be three primary causes: poor installation, no end protection, and badly deteriorated pipes. Addressing these issues before they become a problem and performing proper maintenance at regular intervals is essential to preventing culvert failure.

Proper installation requires some careful planning and thinking ahead. Culvert pipes need to be installed on solid foundations with good compacted lifts of suitable soil. Take care when compacting the soil. Too little compaction leaves voids while too much compaction may cause the soil to lift the pipe. It is also important to place an appropriate amount of fill over the pipe. While proper installation can be rather costly and time consuming, it can save your agency from greater expenses for emergency repairs in the future.

Another essential component of preventing culvert failure is good end protection. Installing riprap at the pipe end may be sufficient for low velocity flow. When high velocity flows are likely, end protection is necessary. Possible solutions include

cutting a bevel on the pipe, using flared ends, or constructing a headwall around the pipe. While end treatments may seem expensive, they are significantly less than pipe replacement and road reconstruction.

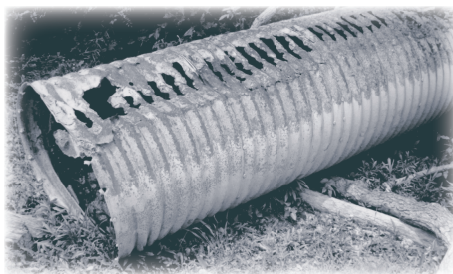


Figure 2. A badly deteriorated pipe.

Combined with poor installation and missing end protection, badly deteriorated pipes account for 90+% of pipe failure (See figure 2). Routine inspections to identify bad pipes are essential to preventing failure. Tight budgets and reduced staff may make performing routine inspections and maintenance challenging, though ignoring problems will result in paying much more later. Just remember, cutting corners now will inevitably result in greater expenses down the road.

Information for this article was adapted from "Preventing Culvert Failure," by Ken Skorseth with the South Dakota LTAP. For more information, please visit [http://www3.sdstate.edu/ClassLibrary/Page/Information/DataInstances/17373/Files/53053/SD_LTAP_Connection_\(21_2\)_Summer_08.pdf](http://www3.sdstate.edu/ClassLibrary/Page/Information/DataInstances/17373/Files/53053/SD_LTAP_Connection_(21_2)_Summer_08.pdf).

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FHWA PROVIDES INFORMATION ON THE ECONOMIC RECOVERY BILL

On February 17, 2009, President Barack Obama signed into law the American Recovery and Reinvestment Act of 2009 (ARRA). This package includes significant new funding for transportation infrastructure. In order to address some questions raised by State DOTs and others, the FHWA has created a website with information on expediting delivery, project considerations, and more. The following information briefly addresses many issues raised regarding the ARRA. For this information in its entirety, visit <http://www.fhwa.dot.gov/economicrecovery/index.htm>.

Planning and Environment

What should local agencies be doing to ensure their projects are “ready to go” as part of the ARRA? In order for a surface transportation infrastructure project to advance for Federal funding, it must be included in the relevant metropolitan Transportation Improvement Program (TIP) or Statewide Transportation Improvement Program (STIP).
Can the States and MPOs use the funds expected from the economic recovery to demonstrate fiscal constraint? Yes, the funds expected from the economic recovery can be used to demonstrate fiscal constraint.

Funding and Eligibility

Will the ARRA funds be 100% Federal share? Yes, at the option of the recipient, ARRA funds may be used for up to 100% of the total cost.
Will FHWA have the ability to advance economic recovery funds to States and local governments to accommodate States that don’t have the cash up front to proceed? Federal-aid program funds are provided to the State on a reimbursement basis only.

Authorization and Contracting

What design elements or standards can be waived or streamlined? Unless the ARRA specifies otherwise, the projects funded under the bill will need to be developed and designed in a manner that complies with the design standards adopted by the State DOT and approved by FHWA.

This information was taken solely from the FHWA website. Information current as of March 10, 2009.

WVDOH Methodology for Allocation of Funds

In addition, the WV Governor’s website has stimulus information specific to the state. The website is one tool that individuals can visit to get more information on projects or proposals that are already underway in West Virginia state agencies.

The information below comes directly from the WV Governor’s Website (<http://www.wvgov.org/sec.aspx?ID=115>).
In West Virginia, approximately 30% of the road system is eligible for federal aid funding, thus narrowing the list of potential projects eligible for the economic recovery funding. The West Virginia Division of Highways’ approach was to provide a balance of funds among the State’s three Congressional Districts as reasonably as possible while identifying projects that could meet the above criteria and timeframe. The majority of these projects are federal-aid system preservation projects. The system preservation projects selected were maintenance type projects including bridge replacements, bridge cleaning and painting projects, slide repairs, pavement resurfacing, and safety projects. WV allocation of the funds across the three Congressional Districts was based on the following general guidelines:

Slides, Safety	Federal aid mileage in each Congressional District
Bridge LMC Overlays	Bridge square feet of deck area in each Congressional District
Bridge Clean and Paint	Bridge square feet of deck area in each Congressional District
Bridge Replacement	Bridge square feet of deck area in each Congressional District
Resurfacing: Interstate	Interstate mileage in each Congressional District
Resurfacing: APD	APD mileage in each Congressional District
Resurfacing: Other	Other federal aid route resurfacing based federal aid mileage in each Congressional District
Corridor Expansion	At least one project per Congressional District; Balancing of total costs across all Congressional Districts

2008 — WV LTAP REVIEW



The WV LTAP staff spent a significant amount of time helping West Virginia's municipalities and roadway agencies through training events and technical assistance. The following information highlights some accomplishments of the WV LTAP during 2008.

TRAINING

The WV LTAP provided courses in a variety of roadway-related areas, including: technical, administrative, operations, and maintenance during 2008. The Center also offered workshops and demonstrations on topics such as snow and ice control and chainsaw safety.

During 2008, the total number of courses, lectures, and workshops provided by the WV LTAP reached 74, while 2,169 participants took advantage of the Center's training opportunities.

One of the most successful events of 2008 was the Roadway Management Conference, held in Wheeling,



WV and hosted by the WV LTAP and other Region 3 LTAP Centers. During the two day conference, 289 attendees learned information on topics such as bridge maintenance and inspection, the technology of warm mix asphalt, and media relations and crisis communication.

TECHNICAL ASSISTANCE

In addition to the training made available by the WV LTAP, staff spent a lot of time offering on-site and office technical assistance on various roadway issues.

The Center's staff completed a total of 92 technical assists in 2008. Over half of those technical assists



addressed safety issues, including worker safety and highway safety. Additional technical assists were completed regarding infrastructure management and other issues.

RESOURCES

Country Roads & City Streets reached an annual average circulation of 9,800 while 2,009 educational materials were distributed.

None of these activities could have been accomplished without you. Thank you for your support of the WV LTAP and your continued involvement in WV LTAP activities.

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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 WV Department of Transportation.

Mission:

The mission of the WV 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



NHI OFFERS FREE TRAINING

Kim Carr, Program Coordinator, WV LTAP

Nearly every agency is feeling the stress of the current economy. Travel and training budgets have been tightened and in many cases, out-of-state travel for workshops and conferences has been restricted. Training, however, is an essential component for all organizations and the benefits to both the organization and the individual are hard to ignore. So while budgets may be tighter, this provides us with an opportunity to look at training alternatives.

The WV LTAP continues to offer the Roads Scholar I and Roads Scholar II Programs, along with numerous special topic courses, such as Chain Saw Safety and the 7 Habits of Highly Effective People. We offer training around the state and encourage you to call and let us know your specific training needs.

Another training option we want to bring to your attention is the National Highway Institute's (NHI) free web-based training courses. To date, there are at least 20 free web-based courses ranging from one hour to fourteen hours in length. Topics include Pavement Preservation Treatment Construction; Math Module; Integrating Freight in the Transportation Planning Process; Traffic Monitoring and Pavement Design Programs; just to name a few. Whether you are an engineer needing professional development hours, a technician needing maintenance hours, or are just interested in learning more about a specific topic, this free NHI web-based training is a resource for you.

The NHI is located within the Federal Highway Administration's (FHWA) Office of Professional and Corporate Development. As per the FHWA website, "The National Highway Institute is the training and education arm of the FHWA. The NHI provides

leadership and resources for the development and delivery of training and education programs to improve the

quality of our Nation's highway system and its intermodal connections."

The NHI courses are open to anyone who is interested. Specifically though, the courses are designed for industry personnel serving federal, state, and local transportation agencies and officials. You will need to register online for a user name and password. The website is <http://www.nhi.fhwa.dot.gov> and you will need to click on the "complete listing of all NHI web-based courses link."

The WV LTAP encourages you to visit the NHI website and try one of these free courses. We would also like to get your feedback on what training you took and if there is additional information you would like from the WV LTAP. Please email Kim at kim.carr@mail.wvu.edu.

For more information, visit the National Highway Institute's website at <http://www.nhi.fhwa.dot.gov>



CONTROLLING STORMWATER WITH RESERVOIR PAVEMENTS

Dr. John Zaniewski, Director, WV LTAP

Stormwater runoff control requires innovative solutions. *Reservoir pavements* are one such solution, which may include the use of either porous pavements or slotted drains with conventional hot-mix pavements. The most common locations for use include parking lots, low volume roads (under 300 ADTs), and recreational areas.

The practice of storing stormwater under pavement has been used successfully since the 1970s in the US and Europe. The benefits of the reservoir pavement concept include:

1. Runoff control
2. Aquifer recharge, and
3. Reduction of drainage structures needed to comply with storm water regulations.

RESERVOIR PAVEMENT CONCEPT

As shown in the figure, the key to a reservoir pavement is a thick base layer composed of large crushed aggregates with sufficient void space, typically 40%, to temporarily store the stormwater. The base thickness is determined from runoff detention capacity, frost penetration, and structural capacity. Design and construction of the reservoir creates some unique challenges.

The surface of the large stone base will have a very open texture which is difficult to pave over. A lift of 1 to 2 inches of $\frac{1}{2}$ inch uniform size aggregate is placed on the base to provide a platform for the construction of the surface.

SUBGRADE CONSIDERATIONS

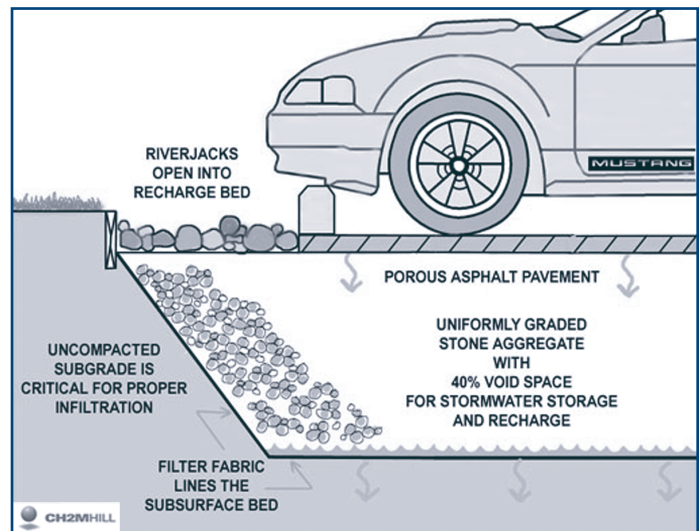
The water stored in the reservoir must be allowed to escape in order to renew the retention capacity. The primary path for removal of the water is by percolation into the subgrade. If the conventional practice of compacting the top of the subgrade to optimal density is followed, the water will be retained in the reservoir. To provide the maximum percolation rate, the subgrade is not

compacted. Instead, careful construction is used to minimize the densification of the subgrade. This creates two challenges: a) proper distribution of the traffic loads to prevent over-stressing the subgrade and b) preventing the subgrade material from migrating into the reservoir aggregates. Protection of the subgrade is accomplished by the thickness design of the base (reservoir) layer. A non-woven geotextile fabric is used to maintain the separation of the subgrade and aggregate base materials.

PAVEMENT SURFACE CONSIDERATIONS

The reservoir must be covered to both protect the reservoir and provide a travel surface. The surface is usually 2 to 4 inches of either a conventional dense grade hot mix asphalt concrete or an open graded mix. Dense graded mixes are impermeable, so slotted drains must be provided to allow the stormwater to flow to the reservoir. Dense graded mixes have the advantage of being a conventional technology with well developed mix design and construction methods.

Open graded mixes are porous and designed to have a very high void content, on the order of 16%, which allows water to flow through the pavement surface. The high void content is achieved by limiting the amount of fine material in the aggregates. Typically these mixes have higher asphalt content than a dense graded mix. Fibers can be used in the mix to reduce the potential of the asphalt cement draining off the aggregates during construction.



*Managing stormwater with porous asphalt pavement
(Figure courtesy of CH2M HILL)*

The porous nature of open graded mixes is advantageous in that the stormwater can flow directly through the surface into the reservoir. This also allows water in the reservoir to evaporate, reducing the detention time in the reservoir. For the porous surface to function properly the voids in the surface must remain open. During winter storm events, cinders and sand should not be used as they can clog the voids. Liquid anti-icing agents would be the preferred treatment. It may also be necessary to periodically power wash or vacuum clean the surface to maintain water flow.

Reservoir pavements fly in the face of conventional pavement design where good drainage is considered essential for good performance. However, the use of a thick large-stone base for a parking lot pavement serving light vehicles is developing a track record for performing well while controlling stormwater runoff.

RETROREFLECTOMETER LOAN PROGRAM

The deadline is quickly approaching for public agencies to comply with new traffic sign retroreflectivity requirements. By January 2012, all public agencies must implement an assessment or management method designed to maintain traffic sign retroreflectivity at or above the minimum levels specified.

In order to help agencies comply with the new regulations, the WV LTAP has instituted a retroreflectometer loan program.

Agencies will be required to provide an estimated length of use and schedule pick-up and return of the equipment.

Requests to borrow the devices will be taken via phone (304) 293-3031, ext. 2612; fax (304) 293-7109; or e-mail kim.carr@mail.wvu.edu.



Photo depicts one of the sign types that fall under the new retroreflectivity requirements.

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Change Service Requested

INPUT, IDEAS, AND OPINIONS

The WV LTAP seeks to assess the impact of the new federal regulations on traffic sign retroreflectivity on local road agencies in West Virginia. All incorporated agencies in the state will be receiving a survey and supplemental material with information on the new standards. Please take the time to complete the survey and return it by **April 10, 2009**. If you have any questions, please contact Mark Franz at 304-293-3031 ext. 2611 or via email at mark.franz@mail.wvu.edu. We appreciate your participation!

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COMING SOON!

Be sure to read the next edition of *Country Roads & City Streets* for information on Breakaway Sign Standard Deadlines and Retroreflectivity Requirements!