

## THE WV FLOOD OF 2016

On June 23, 2016, several areas in West Virginia were at the mercy of a historic flood. Forty-four of West Virginia's fifty-five counties were declared a state of emergency. Homes were swept away. Bridges and culverts washed out. Roadways became unpassable. And sadly, several lives were lost. In the midst of the destruction, and during the aftermath, the strength and resilience of West Virginians have been severely tested. It's a test that will go on for some time, as those impacted by the flood go from survival/crisis mode to long-term repair, recovery, and rebuilding. It takes the skills and expertise of everyone to tackle the numerous challenges and obstacles left by Mother Nature; this includes public works employees. Whether it is the water, sewer, or state/local agency road department, all are a vital part of the process. These employees work tirelessly to assess the damage to the infrastructure and get communities access to clean water and passable roadways; they are an essential part of the first responder team.

The City of Philippi, WV is no stranger to the devastation of floods. While they were spared from this summer's flooding, they were hit during the well-known flood of November 1985.



Photo by the WVDOT showing WV 4 outside of Clendenin that was damaged by the June 2016 flood.



### IN THIS ISSUE

#### Pages 1-2

The WV Flood of 2016

#### Pages 3-5

2016 Build a Better Mousetrap Winners!

*1<sup>st</sup> - Bridge Form Support Jack*

*1<sup>st</sup> Runner-Up - DCG Back Saving Blade*

*2<sup>nd</sup> Runner-Up - Automated Slip Database*

#### Page 6

Roads Scholar II Graduates

Ron Eck Awarded NLTAPA Achievement Award

#### Page 7

##### Ask an Engineer

What is the Manual on Uniform Traffic Control Devices (MUTCD), and to whom does it apply?

#### Page 8

Snow and Ice Control Workshop - September 28

*Country Roads & City Streets* is published three to four times per year. The purpose of this newsletter is to provide information that is beneficial to decision makers, elected officials, and roadway construction, maintenance, and management personnel.

The material and opinions included in this newsletter are those of the West Virginia LTAP and do not necessarily reflect the views of the Federal Highway Administration or the West Virginia Department of Transportation. Every effort has been made to ensure the integrity and accuracy of both original and borrowed material; however, the West Virginia LTAP does not assume responsibility for any information that is found to be incorrect.



The West Virginia LTAP is part of the National Local Technical Assistance Program, which is funded by the Federal Highway Administration. West Virginia LTAP also receives funding from the West Virginia 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.

To help achieve this mission, training, demonstrations, technical assistance, and resource materials are provided.



City of Philippi Public Works employees providing assistance in Bomont, WV.

they learned of several needs in the rural, unincorporated, Clay County community of Bomont, WV.

On July 7th, a crew of six public works employees left Philippi at 4:00 AM, to drive to Bomont. They were equipped with a mini excavator, a skid steer, two dump trucks, man power, and the expertise and desire to help this community. Access to fresh water was a pressing issue. A local church's well was serving as a fresh water source to many in the community, but it was on the verge of running dry. One of the first things the group did was to dig a trench and install a water line that tied into an existing public service district line. This allowed for a continuous source of clean water for the community.

They also helped open up driveway access, haul debris, shovel mud, and other clean-up tasks. The group included Department Coordinator for Public Works, Chris Starkey, along with Bruce Austin, Lonnie Brown, Brian Marsh, Izzy Mayle, and Allen McBee. Chris Starkey said, "The City of Philippi has been on the receiving end of people helping us out, and it was nice to have the blessing of our City Manager to spend a day helping the community of Bomont."

Another community that paid it forward was the City of Charleston. The Town of Clendenin sustained a lot of damage from the flood. Anyone who has ever been involved with flood cleanup before knows how valuable a dump truck is to the operation. The City of Charleston had a dump truck that was set to be sold at auction, but their City Council voted, instead, to donate the truck to the City of Clendenin. What a wonderful example of communities helping each other.

The WV Division of Highways (WVDOH) and contractors also did a tremendous job in responding to this disaster. Crews from across the state worked in the flood damaged areas, removing debris, clearing ditches and culverts, stabilizing embankments, addressing mud and rock slides, and restoring roads. However, with damage to the state road system at over \$50 million, repairs and infrastructure replacement will continue for some time.

*The WV LTAP staff is proud of the knowledge and skills of public works employees and we appreciate the important work this group accomplishes — both in day-to-day operations and during and following disasters. Also, while the focus for this article was specifically on public works, the WV LTAP staff is thankful for all of the numerous individuals and agencies that have worked tirelessly during the flood recovery. (National Guard, Red Cross, civic groups, churches, businesses, utility companies, etc.)*

## 2016 BUILD A BETTER MOUSETRAP WINNERS!

The 2016 WV LTAP Build a Better Mousetrap Competition was announced to help collect and disseminate real-world examples of best practices, tips from the field, and assist in the transfer of technology. We are pleased to recognize the following three winners for this year's competition. We encourage you to reach out to the agency's contact or let the WV LTAP staff know if you would like to learn more about these ideas. Also, we will be doing this competition again in 2017, so get your ideas ready to submit!

### 1<sup>ST</sup> PLACE

#### BRIDGE FORM SUPPORT JACK — WV PARKWAYS AUTHORITY

---

##### PROBLEM STATEMENT

The construction of concrete form supports for bridge deck repairs takes long periods of time to construct, are labor intensive, wastes resources (as most materials are used only once and then discarded), and exposes crews to many hazards.

##### DISCUSSION OF SOLUTION

To develop a reusable concrete form support system that can remain on-hand and ready, be easily and quickly installed, and used over multiple times.

##### LABOR, EQUIPMENT, MATERIALS USED

The form jacks took approximately eight hours to construct. The materials used are as follows:

- Two jack support posts from Lowe's (2'-4" length)
- A four-foot piece of aluminum C-Channel
- One piece of ¼" X 6" w X 2' L aluminum flat plate
- A three-foot piece of 1.25 threaded rod (same thread pitch/diameter as bolts provide with jack post)
- A two-foot piece of ¼" X 3" angle aluminum

##### COST

\$125-\$150/plus six to eight hours labor to complete each form support jack

##### SAVINGS/BENEFITS TO THE COMMUNITY

The benefits of having and using these support jacks are in the reduced time it takes to get the needed support into place and the bridge deck repairs completed in order to be reopened to traffic. Thus, reducing exposure to all hazards associated with repairing these

types of holes and the effect maintenance operations, lane closures, and queuing traffic have on motorists and workers.

Another benefit is increased efficiency. The employees are able to use the jack to hold the plywood in place until they can fasten it with screws. This is something that you can't do very well with 4x4 wooden forms and when using a full sheet of plywood; it was a big arm saver.

Also, if additional height is needed, the jack posts in the center can be moved outward to a more vertical position, and if the concrete pour is long or heavy, the form jacks can be placed alternating between the two positions for more uniformed support beneath the concrete form.

##### CONTACT

Carl Williams

Email: [cwilliams@wvturnpike.com](mailto:cwilliams@wvturnpike.com)



# 1<sup>ST</sup> RUNNER UP

## DCG BACK SAVING BLADE — WVDOH - D7 MATERIALS

### PROBLEM STATEMENT

Maintenance employees were looking for a solution to help speed up and simplify the process of cleaning out build-up, such as gravel, from under guardrails.

### DISCUSSION OF SOLUTION

WVDOH employees, David Miller, Craig Boggs, and Gary Gadd, determined that it would be relatively simple to develop a device that could be used instead of shovels. Two pieces of tube steel were welded to a cutting edge piece. No holes were drilled and no welding was done on the machine itself. The DCG Back Saving Blade was designed to slide onto the forks and be fastened with a chain to keep it from coming off during use.

### LABOR, EQUIPMENT, MATERIALS USED

This idea was developed in-house by the three employees listed above, and it took one mechanic about two hours to put it all together. The materials that were needed to put this device together were:

- Two pieces of tube steel sized 2" X 6" X 28"
- Chain, hook, brace, and a cutting edge

### COST

- The two pieces of tube steel were \$36.
- The hook was approximately \$30
- The chain, the brace between the tube steel, and the cutting edge of the face all came from the in-house scrap pile
- Two hours of labor

### SAVINGS/BENEFITS TO THE COMMUNITY

This device is low-cost and was relatively easy to put together. It has been successfully used to clean build-up out from under guardrails. It saves all manual shoveling and speeds up production, approximately four to one. While there is still some raking that needs to be done during the clean-up, it is very little and is limited to right at the guardrail posts. It will attach to any piece of equipment that uses forks, and it is very sturdy.

### CONTACT

Charles R. Smith

Email: Charles.R.Smith@wv.gov



*The entries for the WV LTAP Build a Better Mousetrap Competition describe equipment and practices developed by employees of public works agencies for use within their organization and community. The equipment and practices described in these winning entries have not necessarily been tested and/or approved to meet engineering design or safety standards. Agencies considering adopting the practices described in these winning entries should first verify the practice is appropriate and safe for their agency's use. The WV LTAP is not responsible for damage to equipment or facilities, or for bodily injury as a result of reproducing and/or using the equipment or practices described herein.*

#### PROBLEM STATEMENT

PJ-216 forms are submitted by county workers to the district office to document the location of a slip or slide. These forms include pictures, a short description, and GPS coordinates of the location. The paper-based forms were simply filed in a folder, without any special representation or visual severity scale. Due to this, very little information was compiled in order to track completed or existing slip repairs, or to prioritize potential projects.

#### DISCUSSION OF SOLUTION

A spreadsheet was built to house all of the information that is submitted on these forms. From the submitted pictures, a severity rating between one and ten is assigned, which is then used as a multiplier for the ADT, to generate an overall score that represents both the severity of the slip and the volume of traffic.

An automated model was constructed to import all of the entries from the Excel spreadsheet into ArcMap. This information is projected onto the aerial images of District 6 (see photo), displaying the point locations of all slips within the district. A color code is applied ranging from green (low score) to red (high score) and also includes black points to show where repair work has been completed.

By highlighting a specific point, the user can view all of the details for this precise location such as project numbers, funding sources, total cost, route, milepost, length, etc. Additionally, the PJ-216 forms are now submitted electronically by all counties, and they are hyperlinked to this field in the information window. When clicking on this file name, the original PJ-216 submission will open.

Finally, the ArcMap shapefile can be exported as a .kmz file, which will open in Google Earth. This allows interactive availability to those who do not have direct access to the shared location where the map and other files reside.

#### LABOR, EQUIPMENT, MATERIALS USED

Microsoft Excel, ArcMap

#### COST

Several ArcMap training courses and the time to build the model, organize files, and establish the structure (approximately \$1,000)

#### SAVINGS/BENEFITS TO THE COMMUNITY

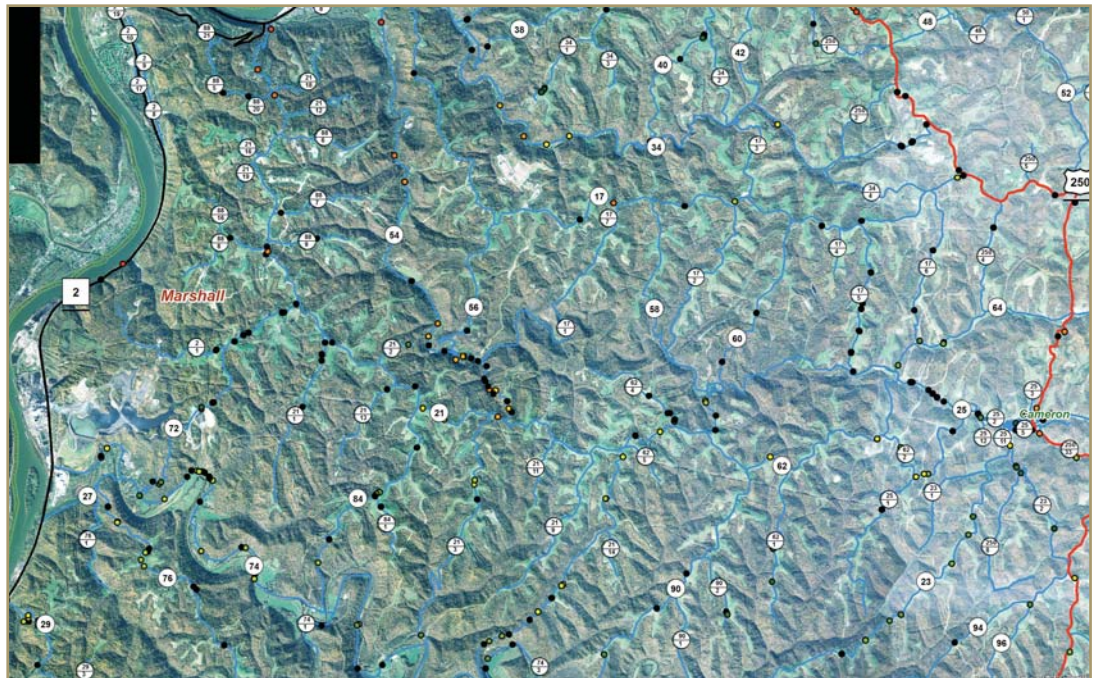
Previously, finding any specific PJ-216 form was difficult at best. After the addition of the Excel database, coordinates could be seen for the locations, but each point had to be entered manually into a mapping program to be visualized. This inclusion of the automated ArcMap model has allowed the entirety of this information to be imported at once, ranked, and displayed in only a few seconds. We are now able to easily manage a growing database of over 1000 existing slips and completed slip repairs.

Being able to visually assess locations and severities of these slips allows for more efficient prioritization and cost effective programming of slip repair projects throughout District 6.

#### CONTACT

Charlie Swart

Email: [Charles.s.swart@wv.gov](mailto:Charles.s.swart@wv.gov)



## ADVISORY BOARD

### FHWA-WV Division

**Chandra Inglis-Smith**  
Charleston, WV

**Shaneka Owens**  
Charleston, WV

### US Forest Service

**Jacob D'Angelo**  
Elkins, WV

### WVDOT

**Steve Cole**  
Lewisburg, WV

**Marvin Murphy**  
Charleston, WV

**Ronald Tenney**  
Weston, WV

**Donald Williams**  
Morgantown, WV

**Austin Macri**  
West Virginia Governor's  
Highway Safety Program  
Charleston, WV

### Municipal

**Michael DeMary**  
Retired Stormwater Program  
Manager  
Fairmont, WV

**Damien Davis**  
City Engineer  
Morgantown, WV

**Chris Knox**  
City Engineer  
Charleston, WV

**Bill Lanham**  
Town Superintendent  
Fayetteville, WV

**Chris Starkey**  
Department Coordinator  
Philippi, WV

### Private

**Robert Amtower**  
Rummel, Klepper & Kahl  
Burlington, WV

**Dale Hill**  
Builders Supply Assoc. of WV  
Charleston, WV

**Terry Hough**  
CTL Engineering  
Morgantown, WV

**Pat Parsons**  
Asphalt Pavement Assoc. of WV  
Charleston, WV

## ROADS SCHOLAR II GRADUATES

*Congratulations to Chris Corbin, Kyle Cosner, Jeremy Leatherman, and Ed McDowell, all WVDOH-5 employees, for completing the Roads Scholar II Program.*

As a reminder, to become a Roads Scholar II graduate, you must complete a total of eight classes within a five year period. Every Roads Scholar II graduate receives a framed certificate and a leather padfolio, along with getting recognized in this newsletter and on our webpage.

Please visit the WV LTAP website at [wvltap.wvu.edu](http://wvltap.wvu.edu) and select the training tab for more information on this program. You can also contact Kim at 304-293-9924 or email your questions to [kim.carr@mail.wvu.edu](mailto:kim.carr@mail.wvu.edu).



Ed McDowell



Jeremy Leatherman, Kyle Cosner, Chris Corbin

## RON ECK AWARDED NLTAPA ACHIEVEMENT AWARD



Ron Eck, professor emeritus of civil and environmental engineering at West Virginia University and current senior advisor for the WV LTAP, was presented with the National Local Technical Assistance Program Association's Achievement Award. The presentation took place during the annual NLTAPA Conference, held this year in Madison, WI.

The award is presented to an individual in recognition of their dedication, leadership, and effectiveness in promoting the goals and purposes of the national Local and Tribal Technical Assistance Programs.

Even after retiring as the director of the WV LTAP in 2008, Ron has continued to remain an active part of the WV LTAP, and in his role as senior advisor, he continues to support our mission of helping improve transportation.

## ASK AN ENGINEER

**Q** What is the Manual on Uniform Traffic Control Devices (MUTCD), and to whom does it apply?

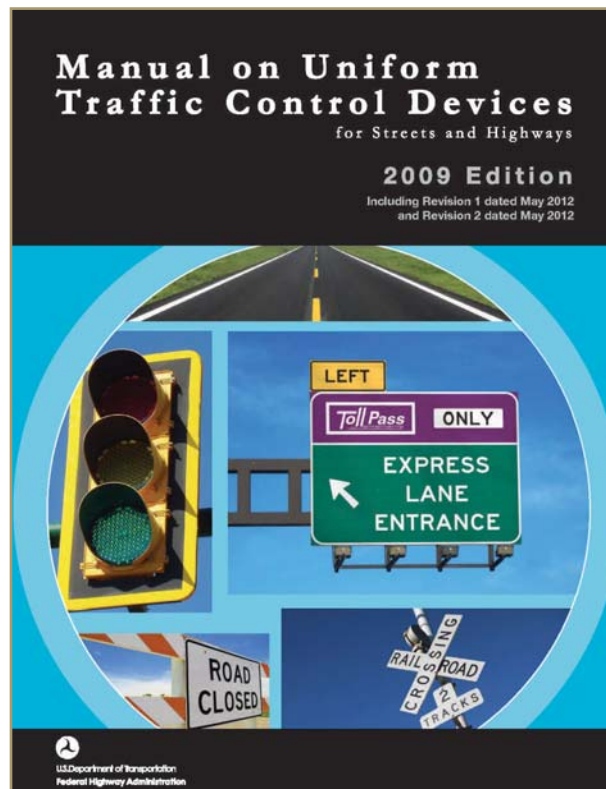
**A** The Manual on Uniform Traffic Control Devices (MUTCD) is published by the Federal Highway Administration (FHWA) and contains design, application, and placement standards for traffic control devices.

There is a common misconception that the MUTCD only applies to state and federal roads. This misconception leads many local roadway agencies to believe they do not need to adhere to the manual. However, Title 23 of the Code of Federal Regulations, Part 655.603 states that “the MUTCD is the national standard for all traffic control devices installed on any street, highway, or bicycle trail open to public travel.” This clearly means that the MUTCD applies to all roads and trails open to the public, even local and private ones. Installing any type of traffic control device without consulting the MUTCD could lead to liability issues and claims of negligence against the road agency, or private entity, in the event of a traffic crash.

Not only does the MUTCD apply to permanent traffic control devices, but it also contains provisions for temporary traffic control. All agencies performing temporary traffic control are required by law to follow this manual, or their state specific manual, which is based on the MUTCD. In West Virginia, the West Virginia Department of Transportation has developed its own state specific manual, called the Manual on Temporary Traffic Control for Streets and Highways. This West Virginia manual is based on Part 6 of the MUTCD.

Anyone working for a local or state road agency should always remember to consult the MUTCD when performing any kind of work associated with traffic control devices, and in the case of temporary traffic control, refer to the WV Manual on Temporary Traffic Control for Streets and Highways. Following these criteria makes the roads safer for motorists, pedestrians, and road workers.

The MUTCD can be found at [http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/pdf\\_index.htm](http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/pdf_index.htm), and the WV Manual on Temporary Traffic Control for Streets and Highways can be found at [http://www.transportation.wv.gov/highways/engineering/Manuals/Traffic/TCM\\_06L.pdf](http://www.transportation.wv.gov/highways/engineering/Manuals/Traffic/TCM_06L.pdf).



## CENTER STAFF & CONTACT INFORMATION

WV LTAP  
West Virginia University  
PO Box 6103  
Engineering Sciences Building  
Room 651A  
Morgantown, WV 26506  
Phone: (304) 293-9924  
Fax: (304) 293-7109  
E-mail: [wvltap@mail.wvu.edu](mailto:wvltap@mail.wvu.edu)  
Website: [wvltap.wvu.edu](http://wvltap.wvu.edu)

### Staff

**Dr. John Zaniewski, P.E.**  
Director  
(304) 293-9955  
[John.Zaniewski@mail.wvu.edu](mailto:John.Zaniewski@mail.wvu.edu)

**Kim Carr**  
Program Coordinator  
(304) 293-9924  
[Kim.Carr@mail.wvu.edu](mailto:Kim.Carr@mail.wvu.edu)

**Andrew Morgan, P.E.**  
Program Coordinator  
(304) 293-9939  
[Andrew.Morgan@mail.wvu.edu](mailto:Andrew.Morgan@mail.wvu.edu)

**Sabrina DeVall**  
Editor & Technical Writer  
(304) 293-9930  
[Sabrina.DeVall@mail.wvu.edu](mailto:Sabrina.DeVall@mail.wvu.edu)

**Dr. Ron Eck, P.E.**  
Senior Advisor  
(304) 293-9931  
[Ronald.Eck@mail.wvu.edu](mailto:Ronald.Eck@mail.wvu.edu)

## SNOW AND ICE CONTROL WORKSHOP - SEPTEMBER 28



One way the WV LTAP helps local and state roadway agencies prepare for the winter months is by hosting the annual Snow and Ice Control Workshop. In its 25<sup>th</sup> year, this workshop includes a combination of presentations and demonstrations.

This year's workshop is being held on September 28, 2016 at the Bridgeport Conference Center, located in Bridgeport, WV. This workshop covers topics pertinent to winter road maintenance activities and will interest anyone involved with snow and ice removal, including public works directors, maintenance engineers, supervisors, mechanics, equipment operators, customer service and dispatch employees, and elected officials.

The registration fee of \$50 per person covers a continental breakfast, lunch and break. Please visit the WV LTAP's website at [wvltap.wvu.edu](http://wvltap.wvu.edu) to see the complete agenda and to register. We hope to see you there!

West Virginia Local Technical Assistance Program  
West Virginia University  
Benjamin M. Statler College of Engineering and Mineral Resources  
Department of Civil and Environmental Engineering  
PO Box 6103  
Morgantown, WV 26506-6103



Change Service Requested

Non-Profit Organization  
U.S. Postage Paid  
Morgantown, WV  
Permit No. 34

The WV LTAP encourages you to share this newsletter with others or direct them to the electronic version on our website [wvltap.wvu.edu](http://wvltap.wvu.edu).

- Road Supervisors
- Elected Officials
- Public Works Department
- Road Crew
- Managers
- City Engineers
- Others