

## HANDS-ON BACKHOE OPERATION CLASS A SUCCESS!

The WV LTAP was excited to host Dee Hadfield from the Utah LTAP and have him share his heavy equipment expertise with sixteen West Virginia municipal public works employees. This training was a combination of classroom and hands-on; it was a great opportunity for these attendees to refine their backhoe operator skills.

The training was held this spring in Fairmont, WV. On Monday, May 8, all attendees participated in the classroom training. In order to get class attendees maximum time on the equipment, half of the group did field work on Tuesday and Wednesday and the other half of the group did their field work on Thursday and Friday. The level of equipment operator experience ranged from beginner to advanced, with all attendees enhancing their skills. The LTAP staff even got in on the action — Kim crossed a trench with a backhoe!

Dee emphasized the importance of job site, worker, and equipment safety, along with operation. He also stressed the importance of doing daily equipment inspections, and attendees were required to complete an equipment inspection sheet each morning before doing anything else. Under Dee's watchful eye and guidance, attendees practiced several operational drills: digging a trench, using equipment stabilizers properly, backfilling techniques, crossing a trench, precision techniques, and so forth.



### IN THIS ISSUE

#### Pages 1-2

Hands-On Backhoe Operation Class a Success!

#### Pages 3-5

Common Safety Problems When Working Around Heavy Equipment

#### Page 6

Pedestrian and Bicycle Information Center Website

Safety Tips for Bicyclists WV Bike Summit

#### Page 7

Free FHWA Web-Based Tool USLIMITS2

#### Page 8

WV LTAP Customer Needs Assessment  
Summer 2017 Street Smarts Trivia

*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. The West Virginia LTAP 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.

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

Implementing field training such as this requires lots of coordination among many parties. The WV LTAP could not have hosted this class without the assistance of Dee Hadfield and the Utah LTAP, the City of Fairmont, the City of Morgantown, West Virginia University, and Advisory Board member Mike DeMary. The WV LTAP is very grateful for all of the help and support we received! We realize there is a need for this type of training for our local agencies and the value it offers. Thank you to everyone who played a part in this training!



Attendees came from six different West Virginia municipalities:

- |              |             |
|--------------|-------------|
| Elkins       | Fairmont    |
| Fayetteville | Martinsburg |
| Morgantown   | Weston      |

# COMMON SAFETY PROBLEMS WHEN WORKING AROUND HEAVY EQUIPMENT

By Larry Wilson, as told to Lisa Harris, KS LTAP

Working with and around heavy equipment can be dangerous. Larry Wilson, a heavy equipment operator who supervises road projects for a county in Kansas, tells us some of the more frequent kinds of safety problems he sees at road work sites, and what to do to address them. His advice pertains to all types of equipment — skid loaders, pavers, loaders, backhoes, trackhoes, you name it. He said his advice is as much about efficient operations as well as worker safety. The two often go hand-in-hand, as you will see.

## **People stand too close to the machine.**

Co-workers could be trying to help, or trying to see what is going on. A co-worker might want to be there in case you need something shoveled out of the way. In any case, anyone near a machine should be where the operator can readily see him or her. An operator can't concentrate on what he's doing if he has to be watching out for people.

There really isn't a rule of thumb for how far to stay back from equipment in use. It varies by the type of equipment and the operator's level of skill in using that equipment. If the operator is not experienced, or has just never been very good, you need to stay back. But even if an operator is really good, having people nearby just slows him down. As for equipment, some can't be controlled as precisely as others. Not all backhoes, for example, are new with bucket arms that swing right back to place. The older ones swing around a bit and then settle down. Stay clear.

## **People don't let the operator know when they are approaching.**

Sometimes a person wants to talk to the operator, or ask a question. If the operator is concentrating on a task, he might be startled by a person who suddenly appears on the ground next to the machine. Instead, stand where the operator can see you, and get his attention before you approach. Wave your arms if needed. Don't approach until the operator sees you.



## **Not digging the trench or work area big enough.**

This is a productivity issue as well as a safety issue. An example is putting in a pipe. You can dig straight down, just as wide as a bucket, and create just enough extra space after you place the pipe to get someone in there to connect the pipes. But this just slows things down, because the person in the trench does not have a lot of space to move around. It's more efficient and safer to dig the trench wide enough to have room to work. The trench should be angled or stepped up. (OSHA has guidelines on this.) If you need to make a judgment call, just make it safe. If it doesn't look like it's safe, dig the trench a little wider.

Another example is excavating for a box culvert. We used to make the excavated area just three feet wider

than the box, and someone would have to carry tools and climb up and down a ladder, all day long, in that narrow space. When it rained, it would be a big mess. Now we make a ramp and back the truck right down to the site. It's way more efficient, easier, and safer.

## **Poor vision/dirty windows.**

If you can't see what you are doing, it's just bad. I see this a lot with dump trucks. Just take a little time to clean the windows. It doesn't have to be done every day, but keep an eye on it.

## **Uneven ground for workers and/or equipment.**

The site should not be "wavy" or have a bunch of clods to trip over. Level out the site at the beginning of the job. Why walk over a mound or around a mound, or risk tripping? When you are carrying something, you should not have to be thinking 100 percent about

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the walking part. Again, it's as much about efficiency in working as it is safety.

## Backing up is ALWAYS A PROBLEM.

Some guys just back up, period, and don't look around. Some don't use their mirrors like they should. I tell my guys, "There are two mirrors on a truck. Try to look at both a little bit." Too many operators look in just one mirror. It's so easy to hit stuff even when you are paying attention, no matter how careful you are. Having a spotter is nice, but realistically, you won't be able to have a spotter very often for county work. You need to pay attention.

## Worn hydraulic lines.

When a hydraulic line breaks, it will spray hydraulic fluid. I learned this the hard way. A line broke on me one time when I was operating a trackhoe. It sprayed me inside the cab. That stuff is HOT. It will scald you. I jumped out of the cab and stripped off my clothes except my skivvies and walked down the street holding my boots. The utility guys working out there were howling at the sight, but I didn't care! Better to not be burned. Worn lines will always break when you are hurrying and trying to finish and get something done. Check your lines often. When you see a line starting to wear, plan on getting another

one. Most times you can visually tell when a line is worn.

## Worn chains and cables.

Everybody is going to have worn chains. They get beat up when used, and they get pinched under heavy loads. A chain is only as good as the weakest link. Cables will fray. Don't use a damaged chain or cable if you are going to pick up something really heavy. There is no in-between—either it will hold or not. There is no "come down easy." Don't use a worn chain or cable if you know it could really be bad if it breaks.

## Lack of clear and understandable hand signals.

This is one of the biggest problems I see. Imagine a guy standing in front of your machine holding out his arm and wagging his fingers. What does that mean? Back up the equipment? Raise it up? If you read that signal wrong, you could back your equipment into another piece of equipment, or worse.

If someone uses hand signals I don't understand, I get off the equipment and say to that person, "Show me what your hand signal is going to be, tell me what it means, and do it the same way every time." (And if everyone on the crew does it the same way, that's just stellar.) Some operators don't want to take the time to do this, but I guarantee you, if you're the guy who doesn't understand



the directions, you'll be the one who will get blamed if there is a problem. So either do something about it or know that the blame is coming. Get off your equipment and ask for clear signals you understand.

### **Too many people giving directions.**

Same thing as above. You might have three people telling you to do three different things. As the operator, you are going to get blamed if you follow the wrong directions and something happens. All three will blame each other at first, but in the end, they are going to point the finger at you. It's the easy way out. So, have only one person giving directions. And if more than one person is out there, stop, get out of the equipment, and say to one of them, by name (the one with the best, most understandable signals): "Joe, I am watching only you."

### **Lifting loads that are TOO heavy.**

This happens a lot. Everyone wants to be the big man on campus and pick up the biggest load, the biggest bucketful. But operators know what they can lift, and the reality is, sometimes the situation will be borderline. So it's important to realize the potential problem, and think it through. What am I going to do if this or that happens? Be ready to set the load down. For example, a backhoe

or trackhoe at rest can pick up a very heavy load, but things can change when you start moving, especially on uneven ground.

You might tip over or not be able to control the machine. Make sure no one is near where you are going to move. When you get to the iffy zone, if you start to tip, set the load down and go to your plan b for getting the job done.

### **Utilities—above and underground.**

This is a bad deal. Nobody worries about it until you hit a line. Be sure you know where the utilities are. It doesn't matter if you are the supervisor or the new guy with a shovel. As a supervisor, it doesn't bother me at all if someone asks, "Are there any utilities here?" It's possible that the boss forgot to arrange a locate or it's been two weeks and the marks are iffy. Ask the guy who checked it, or call the utility company for another locate.

I check sites for our county, and a lot of times I take pictures. This gives an extra measure of safety for our guys and helps with any disputes if a line is hit. If you do hit it a line, the locator will say the line was marked there, even if it wasn't. But the photo is proof.

### **Distraction.**

A lot of times operators just don't concentrate. They are thinking about something else. They don't have their

head in the game. That's when things get broken and people get hurt.

### **Inconsistency.**

Consistency is one of the most important characteristics to have as an operator. Even if you are not the most skilled guy out there, you need consistency so everyone knows what to expect from your performance. You'll help the whole project be more efficient. If you do a lot of different kinds of tasks well and predictably, those are the skills a department looks for in a supervisor. I am not a great operator, but I am consistent. You don't have to do your work like you are killing snakes. Slow down a little and be consistent. You'll do it faster in the end.

Most of my advice in this article is just common sense stuff. EVERYBODY says they have common sense, and some do. But for quite a few, it comes and goes.

Every day—EVERY DAY—one of these unsafe things happens. So be careful, be consistent, and good luck.

*This article was reprinted, in part, with permission from the Kansas LTAP, and was originally titled, **Safety Problems Using Heavy Equipment.***

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## **HEAVY EQUIPMENT AND TRENCHING RESOURCES**

### **Trenching and Evacuation Safety, OSHA Fact Sheet**

[https://www.osha.gov/OshDoc/data\\_Hurricane\\_Facts/trench\\_excavation\\_fs.pdf](https://www.osha.gov/OshDoc/data_Hurricane_Facts/trench_excavation_fs.pdf)

### **OSHA General Heavy Equipment Operation (tips applicable to all heavy equipment)**

<https://www.osha.gov/SLTC/etools/hurricane/heavy-equip.html#2>

### **OSHA Work Zone Hazards Workbook**

[https://www.osha.gov/dte/grant\\_materials/fy08/sh-17795-08/workzone\\_hazards\\_awareness\\_english.pdf](https://www.osha.gov/dte/grant_materials/fy08/sh-17795-08/workzone_hazards_awareness_english.pdf)

# PEDESTRIAN AND BICYCLE INFORMATION CENTER WEBSITE

[pedbikeinfo.org](http://pedbikeinfo.org)

The Pedestrian and Bicycle Information Center website is a wonderful resource for bicyclists, pedestrians, community leaders, public works directors, engineers, and anyone that is interested in this topic. The website has everything from fact sheets, to safety sheets, to webinar and other training announcements, and much more. The Safety Tips for Bicyclists information (shown below) is just a sample of the information you can find on this site.

The website is sponsored by the US Department of Transportation Federal Highway Administration and is maintained by the Pedestrian and Bicycle Information Center located within the University of North Carolina Highway Safety Research Center. Check it out when you have a few minutes!



Photo courtesy of [pedbikeinfo.org](http://pedbikeinfo.org)/Elvert Barnes

## SAFETY TIPS FOR BICYCLISTS

### Always Ride with Traffic, and Follow the Rules of the Road:

- You are better off riding with the flow of traffic, not against it. Crash data tells us that getting hit from behind is extremely unlikely.
- You are more predictable and visible to motorists, especially at intersections and driveways.
- Ride in a straight line, not in and out of cars, and use hand signals when turning and stopping.
- Obey traffic signs, signals, and lane markings and yield to traffic when appropriate, including pedestrians.

## WV BIKE SUMMIT BEING HELD IN MORGANTOWN SEPTEMBER 24 & 25



Photo courtesy of [pedbikeinfo.org](http://pedbikeinfo.org)/Lauren Sandt

The 2017 WV Bike Summit is being held September 24 and 25 in Morgantown at the Morgantown Marriott at Waterfront Place. West Virginia Connecting Communities is the agency coordinating the event.

The goals of the Summit are to improve communication among cyclists and policy officials, increase awareness of cycling safety and laws, and learn how to make WV a cycling-friendly state.

The Summit is designed specifically with transportation officials, engineers, policy makers, planners, and community advocates in mind. With a variety of interactive sessions along two tracks, the Summit will offer continuing education opportunities for professionals and hours of hands-on workshops where participants will learn, share, and employ best practices for existing or future bike projects. The sessions are designed to

provide individual benefit while simultaneously fostering collaboration across municipal, regional, county, and state lines. On Sunday, September 24, interested participants will also have a chance to participate in a long distance, recreation ride or a local education tour ride.

To register for this event, or for more information, visit <http://wvconnectingcommunities.com/summit.php>.

# FREE FHWA WEB-BASED TOOL USLIMITS2

*A Tool to Aid Practitioners in Determining Appropriate Speed Limit Recommendations*

USLIMITS2 is a web-based tool designed to help practitioners set reasonable, safe, and consistent speed limits for specific segments of roads. USLIMITS2 is applicable to all types of roads ranging from rural local roads and residential streets to urban freeways.



## NEW PROJECTS AND ENTRY FORMS

The web-based USLIMITS2 tool includes a project entry form, which prompts the user to enter various data. Before beginning a new project, users should read through the online User Guide and be prepared to enter the necessary data (e.g., 50<sup>th</sup> and 85<sup>th</sup> percentile speed, roadway characteristics, and crash history).

*The online form collects the following data:*

State	County, City/Area
User Name	Route/Street Name
Route Termini (from and to)	New or Existing Route
Route Type	Project Date, Project/File Name
Project Number	Project Description

At the end of the process the user is asked to save a project file, which can also be revised or updated later.

## ADDITIONAL RESOURCES

The website also includes information on **Decision Rules**, with flowcharts that explain the decision logic used in determining the recommended speed limit, a **Frequently Asked Questions** section, and the **research report** that documents developing USLIMITS2.

*(Disclaimer: The U.S. Government assumes no liability for the use of the information contained in this tool. This tool does not constitute a standard, specification, or regulation.)*

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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

## WV LTAP CUSTOMER NEEDS ASSESSMENT

The WV LTAP is constantly striving to improve our center and services to you. We are in the midst of finalizing a state specific needs assessment survey that will be sent out this fall. While we are aware that most people do not like doing surveys, this is a vital tool for us to hear from you and tailor our program to better meet the needs of our WV LTAP customers.

The survey will be available in both electronic and printed form, and questions will cover various topics such as training needs, computer and internet availability, personalized technical assistance needs, and so forth. Please watch your mail and email for this survey and **please** take a few minutes of your time to complete it and send it back to us.

## SUMMER 2017 STREET SMARTS TRIVIA

**In what West Virginia city or town is this street located?**

**What is the name of the street?**

On or after September 15, the first three people to correctly answer both of these questions on the WV LTAP's website, [wvltap.wvu.edu](http://wvltap.wvu.edu), will be the winner of a WV LTAP thermal lunch tote, along with awesome bragging rights.

The winner will be announced on our Facebook page and in the next edition of this newsletter.

