



Kansas LTAP Fact Sheet

A Service of The University of Kansas Transportation Center for Road & Bridge Agencies

Safety Problems Using Heavy Equipment

By Larry Wilson, as told to Lisa Harris



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Working with and around heavy equipment can be dangerous business. We asked one of our LTAP trainers, Larry Wilson, who is a heavy equipment operator and supervises road work projects for Douglas County, to tell 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 worker safety. The two often go hand in hand, as you will see. —Editor

People stand too close to the machine. Guys 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. 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 varies by the operator's level of skill in using that equipment. If the operator is not experienced, or if he's experienced but just

never has been very good, you need to stay back. But even if an operator is real 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 he 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 a guy in there to connect the pipes. But this just slows things down, because he 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 [see fact sheet in the sidebar on the next page]. 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 ft. wider than the box would be, 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 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 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 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 guys 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 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 guys 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 back hoe or track hoe 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 county 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.

Advice for supervisors of heavy equipment operators

When hiring heavy equipment



“You don’t have to do your work like you’re killing snakes.”

operators, you are almost better off to hire guys who are a little more aggressive in their personalities—more “Type A.” I would say 80 percent of good operators are relatively aggressive (and sometimes jokesters). They tend to be able to evaluate a situation quickly and react quickly. But there is a flip side: People like that can be pretty outspoken. You have to balance personality issues with good operator skills.

Sometimes you get a guy who may be a good operator but his personality just gets in the way too much. I find it’s just not worth my time to constantly battle with that guy. When I reach my limit, we have a flat-out-no-holds-barred “conversation” (conversation, for lack of a better word...). Usually, they will adjust (I wouldn’t say they change) or they find another job before long.

If the “conversation” doesn’t work, evaluations provide an opportunity to address situations like this, in a formal way. When a guy complains when I give him a less than satisfactory evaluation, I say, “I would like nothing better than to give you a good evaluation because that would mean

your work is consistent and I can count on you.”

As mentioned before, distraction is a big problem, and especially at a work site where it’s easy to get hurt (or hurt someone) because of the nature of the work. A lot of times it’s the same guy all the time, but it can happen to anyone. Take the time to know who you are working with, and what is going on with them. If someone is going through something (relationship issues, sick kid, whatever) realize that, and don’t put them somewhere where they need concentration and consistency to get the job done safely.

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. ■

Larry Wilson is assistant operations manager at Douglas County Public Works.

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Resources on Heavy Equipment Safety



- **Trenching and Evacuation Safety**, OSHA Fact Sheet. 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** (See especially information on having an internal traffic control plan, page 19). https://www.osha.gov/dte/grant_materials/fy08/sh-17795-08/workzone_hazards_awareness_english.pdf

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