

Connecticut Technology Transfer

Spring 2015



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Safety Problems Using Heavy Equipment

Working with and around heavy equipment can be dangerous business.

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 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



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safety. The two often go hand in hand, as you will see.

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 on page 4]. 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" 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,

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Winners of the 2015 Roadway Safety Poster Contest

Congratulations to the winners of the 2015 Roadway Safety Poster Contest! Earlier this year the Connecticut Technology Transfer Center asked students around the state to help promote roadway safety through art. After viewing the new T2 Center animated video **“How to Be Safe on the Roadway”** (available at www.youtube.com/CTT2Center), students in grades K-6 submitted their poster designs depicting how to be safe as a pedestrian, bicyclist or driver. All submitted entries were reviewed by a panel of roadway safety professionals from the Connecticut Department of Transportation, and a winner and honorable mention



were selected for three age categories: K-1st grade, 2nd-4th grade and 5th-6th grade.

Tuesday, March 24th, the three winners (Geetha Benzy K-1, Shota Pinkowski 2-4, and Clara Steele 5-6) and three honorable mentions (Skyla Mendez K-1, Raeanna

Byrnes 2-4, and Michaela Roach 5-6) attended the Connecticut Work Zone Safety Press Conference held at the Newington Department of Transportation building. There, the students were presented with ribbons and gift baskets to honor their artistic achievements. As a special surprise police officers and public works professionals from each of the student’s respective hometowns were invited to attend and give their congratulations.



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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 its 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

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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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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 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 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 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

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Town Crier



Stories from our CT Local Agencies

Michael Gantick on Starting a Local Road Safety Work Group

Michael Gantick, Director of Public Works for the Town of South Windsor, created a Local Road Safety Work Group with agencies and professionals in his town. Their focus is to identify and complete small projects that can be completed quickly, cost-effectively, and have immediate impact on the safety of their roads.

What is the local road safety work group and what does it do?

Our group is really a diverse group of professionals and agencies. In South Windsor it's our Board of Education, Fire Department, Police Department, Engineering Department, Planning Department, Street Highway Maintenance Department and myself. We get together once a month to really focus on things along the road that are not really the big project-related things, but the kind of things that I like to say are camouflaged along the road, that really can affect local road safety.

It's been an opportunity for all of these disciplines to gather around the table and to discuss and get different perspectives, because it's not just one person whose responsibility it is to deal with those things directly. This effort has kind of led to a renewed



feeling of "let's work together on this, and strengthen the relationships we already had."

Is there any one event that sparked the creation of this safety work group?

The impetus was Tony (Anthony Lorenzetti, P.E.) coming out as part of the T2 Center's Safety Circuit Rider Program, to do a road safety assessment and us saying, "Gee, local road safety is an issue." And instead of looking at the macro, we're looking at the more micro part of it -really that's how we're using this. Not that we don't go back and talk about the big projects as well, but I think we look at what are the simple things we can do, like a \$10 insert in the road signs to increase visibility and improve safety in our town.

Is that why you thought of a work group as the type of format to use to focus on improving local road safety in South Windsor?

Yes, I think it's an opportunity to have instantaneous gratification on trying to get some things resolved and identify some quick solutions. It really was a way for us to think as a collective group and say, "What can we do to get these things resolved?"

Once you decided to make a work group, how did you go about creating one?

I see some of the people in the group daily, some of them work for me so that was a little easier, but I said, "Hey I have this idea. What do you think if we get together, do

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Gantick

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you think it would be worthwhile?” And they said, “Yeah!” And I was overwhelmed truthfully. I thought I was going to get, “Gee, another meeting, are you kidding Mike?” But it was just the opposite, people were saying, “Hey this is a good idea.” This is really a different forum, a different kind of focus, you know versus the big project kind of thing? And it has the opportunity to really do some good work. So it was reaching out to the people we already work with. You know we do a lot of other things on other projects, so we’re sort of leveraging these already existing relationships and taking it to a different level with this committee.

How do you decide what part of local road safety your meeting will focus on?

I’m the lead, so I put together an agenda that is very broad to spark the discussion. It primarily says, “What can we look at? What are our areas of opportunity?” We do have a section for big projects just to keep everybody up to speed and give them updates and time lines. We talk about other things, comments and ideas that other people have, and we grow out of that.

What have some of the outcomes been of having a local road safety work group? How does it help the town?

I think right now we’re getting some focus and possibly building some partnerships on the street sign inventory. I found out that we had a database, but it isn’t complete, it’s not 100%, so what we’re trying to figure out at this point is how we’re going to proceed. The police department’s been more than willing

to help. As soon as we figure out what we want to do, they’re willing to step up to the plate and be part of the solution. A lot of times everyone thinks that they’re going to do this project and that’s neat, but if you can get together and get some new ideas and there’s some synergy that comes out of it, it’s positive. And you know what it is? It’s another forum for exchange of information and keeping people in the communication loop.

Do you think that’s what helps you have such positive partnerships with the different groups in your community? Having open communication with them?

Yes. No one likes to be surprised, and no one likes to read about something that affects their department in the newspaper. And I think there’s no perfect system, but this offers another forum for it. We’ve got a good group of people who are willing to roll up their sleeves and get involved and not just come to meetings and sit there like a bump on a log. Everybody participates; it’s not just me yacking like I always do here [laughs] but there is active participation. There are a lot of good ideas, and I think that’s important.

Do you think this is something that might be well received in other towns?

Yes. I think every town is unique and situations may be different, but it all boils down to people and relationships. It’s like links in a chain, everybody’s got to have a part in it, and I think that supportive outlook lends itself to creativity, and lends itself to success.

What are some of the goals of the local road safety work group in the future?

Our long-term goal is to identify things in the community, that we can handle fairly rapidly through our existing budgets and schedules and to begin integrating those things into our standard operating procedures so that we can begin being more proactive. We are also utilizing the “Tips From Tony” articles in the T2 newsletter as suggestions for future safety projects. The overall thing here is to have a working group that can be responsive to things that are happening in the community. There’s a lot out there and we’ve only just begun, but we’re going to be systematic and continue to work on some of these things that are important to the community.

Do you think that’s the number one benefit of this workgroup – the ability to have effective change quickly?

I believe that one of the goals of this committee is to do those things that aren’t the big, long project-type things, but to do the things that are time-sensitive that have the opportunity for a quick resolution and turnaround time.

Is there anything additional about running a Local Road Safety Work Group that you would like to include?

Keep it light, keep it short, keep it positive. And as long as you don’t get bogged down in the minutia of things, I think you’ll find it can be a worthwhile endeavor.

If you need assistance in developing a local road safety plan or a safety work group, contact Tony Lorenzetti, our Safety Circuit Rider at: lorenzetti@engr.uconn.edu

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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", 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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