

# UTILITY FLEET

M A N A G E M E N T

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UNDERGROUND CONSTRUCTION

## Stay Safe, Stay Alive

By Michael J. Varhola

MEMPHIS, Tenn. — Nearly 100 workers are killed and another 1,200 badly injured enough to need time off work in some 10,000 accidents each year involving trench entrapments, according to Occupational Safety & Health Administration (OSHA) statistics. Ironically, almost all of those incidents could have been easily avoided with proper adherence to established, federally-mandated safety procedures.

“There is still a problem with non-compliance, with contractors who put their men down in trenches where they haven’t properly sloped the banks or used proper safety procedures,” said David Dow, president of Trench Safety & Supply Inc. and an instructor on underground safety.

“They are being gutsy, taking a chance. With a little bit of luck and with the right kind of soil conditions, they can sometimes get by. But it will probably ultimately catch up with them, because trenches cave in when they are not properly shored,” Dow told UFM.

“I would say, however, that there has been significant progress and there is a significantly higher level of compliance today than compared to just a few years ago,” Dow said. “And there is certainly a greater emphasis and concern with safety than there was just a few years ago. One indication is that participation in our classes seems to get a little better every year.”

Indeed, there are a number of compelling reasons to ensure that underground construction sites are safe for workers, not the least of which is that it is required by federal regulations that are enforced — to a lesser or greater extent



**Safety instructor David Dow has been concerned about underground safety issues for many years.**

— by OSHA. Federal safety regulations require that trenches more than five feet deep be protected from cave in by being properly sloped or outfitted with trench shields, as well as that a trained “competent person” inspect a trench before it is used and each day thereafter.

While Trench Safety is the exclusive regional dealer for a line of aluminum trench shields manufactured since 1970 by a company called Efficiency Production Inc., Dow says the brand of shields or the materials used to create them are not that important.

“You can use steel or aluminum, and

there are multiple options in terms as to how you satisfy the requirements, meet the standard and provide protection,” Dow said. “There is no one best way. But soil conditions, the depth of the excavation, what they are doing in the trench, are all factors in choosing the right protection.”

One of the newest ways for protecting workers in some trenching applications, Dow said, are sliderail shoring systems, which a few years ago migrated to North America from Europe, where they had been used for some time. “These systems are a tremendous alternative, particularly for pits,” Dow said. “They can also be used in situations where you are laying pipe in particularly crummy soil.”

Dow also said that sloping trenches, if done properly, can be as safe as using trench shields. He noted, however, “that it is four times more expensive. You move more dirt, and it is a bigger job site. And if you are out in the middle of the street or up against a building, you probably could not slope it anyway.”

### Life or Death

“When there is an incident of some type on a work site, the ramifications are very serious. There are any number of different things that can happen. One, the guy could be smashed. And when I say smashed, I mean smashed,” Dow said.

“Or, it could be that he has enough pressure on his body that there is no blood circulation and he can’t breathe. And there are other instances [in which] it could be a slower process; as the guy

breaths in, material fills in the void and when he tries to breathe out, he can't," Dow said.

"Interestingly, when you read stories about cave-ins where a guy has been buried for about 15 hours and they get him out, almost invariably he will have

long-term significant injuries, such as kidney failure," Dow said.

"And firefighters deal with a problem called crush-shock syndrome, the same problem they have with automobiles and building collapses," he continued. "You get all of this weight on your arm

or your leg and there is no circulation. Your muscles begin to die and they excrete a very toxic substance, which is very harmful to the body. There are instances where they have gotten a guy out of a trench and think he is fine. Then, the guy passes out or just dies on

## Trench Safety and Supply Inc.

**D**avid Dow says he has been involved with underground safety issues, in one form or another, for almost his entire life.

"For a number of years, I was with a company that manufactured concrete pipe and corrugated metal culverts and distributed construction machinery. My wife and I started this business from scratch in 1994," Dow told UFM, noting that they have built it steadily but slowly. "You don't just wake up one day and say, 'Let's get in the shoring and shielding business and we will find a place and open up next week.' But we recognized that this was a growing industry and that there was a need in [both] the country as a whole and in the Memphis area."

Today, Trench Safety has 10 employees, including salesmen, administrative personnel and delivery people. The company leases and sells a wide variety of materials for underground operations, including trench shields, hydraulic shoring devices, steel road plates, confined space equipment, pipe plugs, pipe testing equipment and lasers, and machine control equipment. The company is also heavily involved in safety training, offering competent person, confined space, and other courses. Dow oversees its day-to-day operations and safety training programs, while his wife Melissa — who owns the company — handles its administrative duties.

The Dow's company caters mainly to utilities, utility contractors, and highway contractors. Some of its biggest customers include the Tennessee Valley Authority, the Army Corps of Engineers and Memphis Light & Gas, which provides all the gas, water, and electricity in the metropolitan area in which the company is located.

"TVA is a good customer," Dow said. "although we don't do as much work with them as we do with a number of their contractors. Like so many utilities,



Michael J. Vardiola

**Trench Safety's fleet includes a number of heavy-duty Navistar trucks that it uses for delivering heavy materials like trench shields.**

they are subbing out more and more of their work."

Client activities include digging trenches for electrical cable, water pipes and sewer lines, as well as "setting tanks and building foundations," Dow said. "It could be any number of activities below ground."

Trench Safety's service area varies, but the area in which it could be delivering or picking up equipment is fairly extensive.

"It just varies," Dow said. "In a given day it could be here in Memphis, or we could go as far as Mississippi or over to Nashville or Paducah, or up north. We also have a small office in Little Rock (Ark.), so we could be making a delivery there. It is a regional business."

Trench Safety owns a half-dozen vehicles, including pickup trucks and a number of tandem-axle diesel bobtail Navistar trucks, along with some goose-neck trailers that they use if delivering enough equipment. "We use some outside haulers as well," Dow said.

Maintenance is handled through the local Navistar dealer and, Dow said, "They do a good job."

"We have [the vehicles] on a PM program and take them in every 5,000

miles to be serviced," Dow continued. "We don't put a tremendous number of miles on them, so I would expect these trucks to last 10 to 12 years. Miles are not the issue. In a span of 10 or 12, years we might put 750,000 to 800,000 miles on them. But in the case of one of those big, heavy trucks, they are just getting broken in."

Dow says his company is not typical of other utility supply companies, for a number of reasons. One is the company's training programs and the other is its level of specialization.

"There are two different types of distributors," Dow said. "There are some that handle the [underground] product line as one of many. They may have 25 different types of product, [of which] shoring and shielding and confined space equipment are just one. Then there are a certain number of distributors that have focused in these particular areas, and we are one of them. We offer the equipment for rent, we sell the equipment, we provide training. It is a more complete approach. All of our people work with these products every day — and I think we do a better job of solving problems." ■

the spot from a massive heart attack from that toxic substance.”

Once a cave-in has occurred, trenching crews often have no idea how to respond appropriately.

“They need to call 911 and get a trained fire department to arrive,” Dow said. “Many fire departments know how to do this. In your major cities they all are trained in trench.”

Many times, however, crews panic and try to dig victims out themselves, possibly causing even more harm.

“Guys will jump down in the hole, will expose themselves, there will be a secondary cave-in, and they become victims. Of course, they are not thinking clearly. They just know that their buddy just got buried,” Dow said.

“Another thing that will happen is that they will start trying to dig their buddy out with a backhoe,” Dow said. “There are instances a couple of time a year where someone gets decapitated, although most of the time, the guy is already dead to start with. The problem is that they are just positive of where he is. Yes, he might have been there a few minutes ago,” but has been carried to a different part of the trench by the flow of mud or earth.

“Unfortunately,” Dow said. “After a cave-in, it is not [usually] a rescue. It is a body recovery.”

### Safety Training

Trench Safety is fairly unique among underground safety equipment companies in that it maintains an extensive training program and that Dow is an instructor for the National Utility Contractors Association, the primary national trade organization for underground construction companies.

“We train about 1,000 people a year,” mostly from companies that buy or lease equipment from Trench Safety, Dow said, “and teach two courses for NUCA. A lot of it is right

here,” in a classroom at the company’s facility on the south side of Memphis. “The Competent Person course is eight hours, the confined space is about six-and-a-half, and we have a couple of others as well. We also teach a lot of courses for trade associations, and in some instances we will [run] an open enrollment class at a Holiday Inn in another city,” and might at-



Trench Safety

**Federal regulations require trenches more than five feet deep be protected from collapse by being properly sloped or outfitted with trench shields.**

tract as many as 15 contractors.

“We try to demonstrate the fact that it is not that difficult to comply with the standards; that a contractor in many instances can actually save money by doing it properly; and that it is the right ethical and moral thing to do,” Dow said.

“In our training, we try to keep it on a positive note and to give everybody the tools they need to do it safely,” Dow said. “But on the other hand, when you look at a picture [of a body being retrieved from a cave-in], it has got to get your attention. ‘Guys will say on their evaluations or comment during a break, ‘I have been doing this work for years and never thought about how dangerous it could potentially be.’”

### Different Philosophies

Dow said that there are different philosophies associated with underground safety.

“Many people feel strongly about it, and can demonstrate that good safety pays and that if you have a safe work environment that you will have better productivity, lower workers comp rates, fewer problems and so on,” Dow said. “And there can be a number of other drivers for safety, including OSHA enforcement, big fines, jail sentences, all sorts of things. But then, like in anything, you do have a certain segment of contractors that say ‘To hell with safety,’ and they can maybe get by for a period of time.”

In addition to teaching safety courses, Dow also publishes a variety of safety-oriented printed materials. These include Excavation Safety News, a periodic newsletter that the company sends out to its clients; special reports, among them one that breaks down costs associated with digging sloped trenches as opposed to reinforcing them with trench shields; and a trenching and excavation safety checklist that can be used on job sites to help ensure underground operations comply with appropriate regulations and safety practices.

Complying with those practices is more than just a matter of following the law, it is a matter of life and death. “Every trench, except those cut into stable rock, is going to collapse,” Dow said. “It is just a matter of time.” ■



Michael J. Varhola

**Trenches less than five feet deep do not require any sort of reinforcement or sloping.\***

\*Footnote: Trenches less than five feet do not require reinforcement or sloping if the Competent Person determines there is no possibility of a cave-in.



# Buried Alive

“Criminal recidivist corporations” is the way consumer advocate Ralph Nader has described companies that willfully and repeatedly break the law because they know that monetary penalties for doing so will be less than the costs associated with operating legally.

Nader has used that term to refer primarily to big companies that sell products with known defects after determining that it would cost less to pay civil penalties and lawsuit settlements after people are maimed or killed by those products than it would cost to make them right in the first place. Still, it seems an apt label for relatively small companies like Moeves Plumbing, Cincinnati, which was the subject of a Dec. 21 *New York Times* article that examined what OSHA determined to be unsafe trenching procedures caused two of its workers to be killed. That article opens with a description of the most recent victim’s final moments:

“As the autopsy confirmed, death did not come right away for Patrick Walters. On June 14, 2002, while working on a sewer pipe in a trench 10 feet deep, he was buried alive under a rush of collapsing muck and mud. A husky plumber’s apprentice, barely 22 years old, Walters clawed for the surface. Sludge filled his throat. Thousands of pounds of dirt pressed on his chest, squeezing and squeezing until he could not draw another breath.”

Since 1984, Moeves has been the subject of multiple OSHA violations and tens of thousands of dollars in fines. Despite those warnings, however, the OSHA investigation of Walters’ death determined not just that Moeves had continued to run an unsafe operation, but that it had done so willfully.

Once Patrick Walters clambered down into that trench and it collapsed around him, his chances for survival were negligible. David Dow, an instructor on underground safety, explained the sheer magnitude of the weight cave-in victims are subjected to.

“A cubic foot of dirt weighs somewhere between 90 and 140 pounds. A cubic yard of dirt is going to be about 3,000 pounds,” Dow told UFM. “Let’s say that we have a relatively shallow trench and part of the face breaks off. That is a couple of yards of material. And let’s say all of the spoil pileage right on the edge of the trench also breaks off. You could very easily have three or four yards of material — 12,000 pounds,” collapse onto anyone in the trench.

News reports often make us feel helpless to respond to horrific tragedies. This is not one of those situations, and there is something every one of us can do to help prevent tragedies like this one from ever occurring again.

If you are a manager with a utility, you can decide not to use contractors who willfully violate critical safety procedures or go to your bosses and say, “These people are going to get someone killed. We can not work with them.” If you are a contractor, you can decide that no financial incentive can justify murdering your own workers and that you are morally responsible for protecting them from all sorts of harm. And if you are anyone else, you can keep your eyes open for flagrant violations of trench safety and contact your local OSHA office immediately when you see them.

Because if someone had tried to do the right thing with regard to Moeves, Patrick Walters might be alive today.

A handwritten signature in black ink that reads "M J Varhola". The signature is written in a cursive, slightly slanted style.

**Michael J. Varhola, Editor**