Responding to a Trench Rescue

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Have you and your department ever been requested to respond to a situation in which you were not properly trained for and/or have the right equipment to handle? Today's fire service does so much more than simply extinguish fires. For those of you who were a member of your organization during the events that unfolded in the United States on September 11, 2001, you may recall that we were coined an "All-Hazards" response agency when the mandatory NIMS courses were developed in 2002.

A big part of my job as the Training & Safety Officer for my fire department is to expose my people to as many situations that they may possibly respond to. We may not be able to review all of them each year but the more times we (you) get refreshed on a certain procedure, the better you will be able to perform your job when that once-in-career call comes in.

As I was putting the response plan and training for a possible Trench Rescue together for my department, I realized how ill-prepared we were for it. This is another one of those Low Frequency/High-Risk type of calls. This gives more reasons to have a plan in place before the call. By the time this issue makes it into your hands, the construction season will be going full bore and the chance your department could be called to a Trench Rescue or Cave-in increases exponentially. I understand that I cannot get you properly trained for this type of call by simply writing about it, but my hope is to have you think about it and maybe have a plan in place before the call.

Trench rescue training, KCSRT
(Kenosha County Special Rescue Team)

Definitions:

Trench- a narrow excavation made below the surface of the ground in which the depth is greater than the width, not exceeding 15 feet.

Lip- top two feet of the wall or belly.

Belly- center of the wall of the trench.

Toe- bottom two feet of the wall or belly of the trench.

Floor- base of the trench.

Wall- comprised of the Lip, Belly and Toe.

Spoil Pile- excavated materials consisting of topsoil or subsoils that have been removed and temporarily stored during the construction activity.

Shoring- a structure such as a metal hydraulic, pneumatic/mechanical, or timber system that supports the sides of an excavation and is designed to prevent cave-ins.

Shielding- a structure that is able to withstand the forces imposed on it by a cave-in and thereby protect employees within the structures.

Types of collapses

• Spoil Pile Slide- Part of the spoil pile slides back into the trench
• Side Wall Shear- A portion of the wall or belly shears off and falls into the trench
• Slough-in- A portion of the wall or belly falls inward, creating an overhang. This is usually caused by water drainage through the soil. It is the most dangerous type of collapse.
• Lip-in- Weight too close to the lip causes soil on the lip and surrounding area above the trench to fall inward.

Size-up

• Determine what happened?
• Determine how many patients there are and extent of their injuries.
• Determine extent and type of the collapse
• Are the patient(s) partially or completely buried? Determine if this is a Rescue or Recovery
• Are utilities involved in the trench or surrounding areas?

Make the Scene Safe

• Remove all non-essential personnel at least 50 feet from the collapse area
• Shut down all heavy equipment operating within 300 feet of the collapse area
• Set up perimeter for Inner Circle and Outer Circle work zones
• Determine and request additional resources as needed. (Does your department have access to a technical rescue team?)
• Determine staging area for additional resources
• Approach trench from ends if possible
• Place a ground ladder for entry/egress at each end of the trench. They should be no more than 50 feet apart
• Place ground pads around entire perimeter of trench. This is accomplished by procuring lumber (preferably 2x12's and plywood)
• If spoil pile is within 2' of trench, remove with hand tools to minimize further collapse
• Monitor air in and around trench for contaminated atmosphere
• Ventilate trench with electric fans and ducting if necessary
• De-water the trench if necessary (trash pump or submersible pump works well for this)

The leading cause of the collapses for 2020 – and in previous years – has been inadequate cave-in protection, as provided by shoring, sloping, or shielding (trench boxes). Of the 12 deadly collapses in 2020 that have so far resulted in violations, eight were cited for inadequate cave-in protection.

There are three levels of rescuers for technical rescue which trench rescue is certainly considered a technical rescue-Awareness, Operations & Technician. There are only a handful of fire departments in the state that have the proper training and equipment to handle a trench rescue at the technician level. Does that mean you don't have to respond if a trench or cave-in accident occurs in jurisdiction? There is an obligation to respond to whatever the crisis may be whether we are trained for it or not.

So, what can we do if we are not trained at the operations or technician level? Great question, eh?
1. Talk about this type of call at your next training meeting
2. Find out which department in your county or part of the state has been trained and has the equipment to handle this type of call. Consult with your county's emergency management director to see if they have this knowledge.
3. Get in touch with your local lumber company and always have their contact number available. You will need 2x12's and sheets of ¾" plywood as a minimum to place on the lip of a trench for ground pads.
4. Have a stash of 5-gallon pails readily available. When it comes down to the digging for a victim, it is done by hand, not machinery
5. You are going to need a lot of manpower for this type of operation. Rescuers become very physically and mentally fatigued. Call for plenty of resources early.
6. You can be proactive and visit construction sites where trenching is taking place and encourage the construction companies to follow the correct safety procedures. They know them very well but usually take short cuts along the way.
7. Look up NFPA standards 1006 & 1670 to get a better understanding of the training levels and requirements
8. Look at YouTube for videos on trench rescue. There are dozens and dozens of them showing real-world trench rescue calls and how-to training on the topic. Watching some of these before the call will help you be better prepared.

This one, like many of my previous articles are not intended to make you experts after you read them. What they are intended to do, is to make you perform critical thinking before that next call gets paged out. With dwindling numbers on your roster and dwindling financial support from COVID-19 this past year, our fire departments across the state are being spread thinner and thinner. It does not matter if your department is career or volunteer. Train hard and stay safe!