

TerranearPMC Safety Share

Week of March 24, 2014 – Underground Utility Safety

On March 6, in the New Jersey township of Ewing, a construction company was in the process of repairing an underground electrical line which required excavating land in a residential neighborhood. While an investigation is still pending, it appears that a gas line was breached, resulting in an explosion, killing one resident and injuring seven others.

I can remember a number of years ago, working in Long Beach, California, and while I was driving back to the worksite after lunch, the street was crowded with people – office workers, who had evacuated their building. Everyone was standing around talking to each other. Since I was familiar with the area, I knew this was not typical, so I parked my car and went over to a group of people and asked what was going on. “They hit a gas line” was the reply. About a hundred feet away was what looked to me to be the operator of a backhoe that was shut down. I walked over to the operator, who was sitting on a fire hydrant, looking down and out. He told me that he was digging a vertical trench that was supposed to be no more than four feet deep, as the “as-built” drawing indicated a gas line at a depth of six feet. Apparently, the drawings did not provide exact information as the gas line turned out to be only two feet from the surface. Unexpected and surprised, this backhoe hit and damaged the gas line and while nothing happened, he did contact the local fire department who, upon arriving at the scene, roped off two city blocks and made everyone in the area evacuate their office buildings. While the years have faded the operator’s face, I still remember how upset he was. Relying solely on old maps and drawings can leave us open to some very serious hazards, including electrocutions and explosions (similar to what just occurred in New York City). Such are only a few reasons why it is essential to use a proper underground utility location process.

Utility location is the process of identifying and labeling public utility mains which are underground. These mains may include lines for telephones, electricity distribution, natural gas, cable television, fibre optics, traffic lights, street lights, storm drains, water mains, and wastewater pipes. In some locations, major oil and gas pipelines, national defense communication lines, mass transit, rail and road tunnels also compete for space underground.

Because of the many different types of materials that go into manufacturing each of these different types of underground lines, different detection and location methods must be used. For metal pipes and cables, this is often done with electromagnetic equipment consisting of a transmitter and a receiver. For other types of pipe, such as plastic or concrete, other types of radiolocation or modern ground-penetrating radar must be used.

Location by these means is necessary because maps often lack the pinpoint precision needed to ensure proper clearance (as was the case mentioned above). In older cities, it is especially a problem since maps may be very inaccurate, or may be missing entirely.

"Call before you dig", "Digger's Hotline", "One-call", "Miss Utility", "Dig Safe", or Underground Service Alert are services that allow construction workers to contact utility companies, who will then denote where underground utilities are located via color-coding those locations. As required by



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law and assigned by the U.S. Federal Communications Commission (FCC), the 8-1-1 telephone number is used for this purpose across the United States.

Failure to call such a number ahead of time may result in a fine or even a criminal charge against the person or company, particularly if such negligence causes a major utility outage or serious accident, or an evacuation due to a gas leak. Hitting a water main may also trigger a boil-water advisory and local flooding.

Utility color codes are used for identifying existing underground utilities in construction areas with the intent of protecting them from damage during excavation. A few utilities are permanently marked with short posts or bollards, mainly for lines carrying petroleum products. A uniform colored coding system has been developed to mark the location and denote the type of underground utility. In many instances, special spray paint - which works when the can is upside-down - is used to mark lines, often in a fluorescent color. When flags are used, a logo often identifies the company or municipal utility which the lines belong to, or an advertisement for a company which has installed an irrigation system for lawns or gardens. In this case, each sprinkler head is usually marked, so that landscaping crews will not cover or bury them with soil or sod, or damage them with tractors or other construction equipment while digging holes for trees, shrubs, or other large plants or fence posts. This is also important because a vehicle (tractor, truck, or otherwise) can break a sprinkler or the hard-PVC pipe or joint it is mounted on simply by driving over it, particularly on newly moved soil which is uncompacted and therefore unsupportive of such weight.

The American Public Works Association (APWA) Uniform Color Codes for temporary marking of underground utilities are listed below:

- Red** electric power lines, cables, conduit, and lighting cables
- Orange** telecommunication, alarm or signal lines, cables, or conduit
- Yellow** natural gas, oil, steam, petroleum, or other gaseous or flammable material
- Green** sewers and drain lines
- Blue** drinking water
- Purple** reclaimed water, irrigation, and slurry lines
- Pink** temporary survey markings, unknown/unidentified facilities
- White** proposed excavation limits or route

Hitting an underground utility can result in a disaster. Being in the newspaper and/or 5 O'clock news for not taking the proper precautions is not the type of publicity any company wants. It can be their worst nightmare!



Change is the law of life. And those who look only to the past or present are certain to miss the future.



John F. Kennedy

