Ditch Witch® SAFE

SAFETY MATTERS

Safety Matters is intended to promote discussions of safety issues among underground construction professionals. You should always read and understand the operator's manual before operating any equipment. For additional information, please e-mail safety@ditchwitch.com.

TOPIC:

ELECTRICAL STRIKE—USING A HORIZONTAL DIRECTIONAL DRILL

Potential Hazards

- Electrocution

Precautions

- Call 811 to have underground utilities located prior to drilling. Also, contact other utilities that don't subscribe to 811.
- Verify locates using a reliable electronic locator.
- Any time you drill, the electric strike system must be properly set up, tested, and used.
- Note: The electric strike system does not detect proximity to an electric line. If the electrical strike alarm sounds, assume a strike has occurred.
- Wear electrically insulated gloves/boots.
- If crossing a known electric line, expose the line and watch the crossing while drilling and backreaming.
- Use a tracker to locate the drill string only when drilling has stopped.

What to Do

If a strike occurs:

- If you are on the drilling unit, stay where you are.
  - Notify others to stay away.
  - Have someone call electric company.
  - Pullback the drill string to try to break contact with the line.
  - Press the electric strike system reset/status button.
    - Do not leave the unit until the electric company says it is safe to do so or until you have no lights or alarms on the electric strike system after pushing status button several times at least one minute apart.
- If you are off of the drilling unit, do not move or touch the unit or anything connected to the unit. If you must move to get help, take very small steps to shuffle away from drilling unit.

Information/Facts:

- Voltage is similar to pressure in a water hose.
- Current is similar to flow in a water hose.
- Electrical current kills by:
  - Intense heat causing physical burns
  - Stopping the heart and brain
  - Tightening your muscles, causing you to lose muscle control and not be able to let go
- It takes very little current to cause physical harm:
  - 20mA makes it difficult to breathe
  - >20mA can paralyze muscles
  - 50-200mA causes your heart to beat out of control
  - >200mA makes your heart stop completely
- Some strikes produce smoke and can cause the ground to explode around the strike; however, some strikes give no indication at all.
- Electricity takes the path of least resistance. The steel drill string on a horizontal directional drill provides very little resistance, so electricity can easily flow from the drill head back to the drilling machine.
- Part of the flow of electricity will pass into the ground around the strike, so the ground may be electrified.
- If all parts of your body are at the same voltage, current can't flow. Take, for example, a squirrel on an electric line. The voltage in its body is the same as long as it doesn't step off the wire or touch something that leads to ground. When it steps off, one part of its body is at one voltage and another part is at a different voltage. This voltage difference allows current to flow. This is known as "step potential."
- An electric strike system on a drill machine consists of:
  - Voltage stake – this is to be located away from the machine. It detects the voltage difference between the ground stake and the drilling machine.
  - Current transformer – detects current flowing through the drill string.
  - Reset/status button – used to recheck the status if the alarm sounds.
  - Self-test – the self-test should be done every time the machine is used.
  - Alarm – if the alarm sounds, assume a strike has occurred.
  - Strobe light – provides a visual alert that a strike has occurred.

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