



Going to Ground

Construction sites involve all of the hazards found in other industries, and a few additional ones. Electrical hazards are prevalent. And perhaps the most frequently neglected electrical hazards are improper grounding and temporary wiring. In both cases, the principal result of the accident is shock.

It's easier to get shocked than you think. It surprises many workers that voltages of less than 600 volts cause most electrical fatalities and that a large portion of those occur on 115 volt circuits and equipment.

This is because those voltages are likely to cause ventricular fibrillation, which does not respond to CPR. Higher voltages are less likely to cause this deadly condition, but cause more burning, which may or may not result in death.

Shocks that are not severe enough to electrocute may cause accidents and fatalities through the effects on the muscles. Examples include workers who fall off ladders or scaffolds or who drop tools or heavy articles after receiving a shock.

Lack of proper equipment grounding and subsequent internal leakage of electricity to its enclosures frequently results in shocks. A person who simultaneously touches the equipment and a ground source, such as structural steel piping or earth, provides a path for ground current, which will quite likely start fibrillation.

Often the current that flows through the person on first contact is not sufficient to cause electrocution, but is sufficient to cause muscles to react in an uncontrollable way. People holding portable tools usually experience a “no let go” effect, which tightens the grip and allows more current to flow. This increases the danger of electrocution.

This would not happen if the wiring and the tool were properly grounded. Common conditions on construction sites increase these kinds of hazards. Principal contributors to accidents are wet equipment and surroundings, working on concrete floors, grade or structural steel, and most commonly, widespread use of temporary wiring.

Ensuring Proper Grounding. Because grounding is one factor that you can control, consider the following:

Effective grounding must do three things:

- Prevent harmful voltages between electrical enclosures.
- Prevent harmful voltages between electrical enclosures and their surroundings.
- Blow fuses, or trip the circuit breaker, whenever ground fault occurs.

A grounding installation that does only one or two of these things is dangerous, and is the culprit of many accidents. Effective grounding is accomplished when:

- All electrical enclosures are connected together
- The complete electrical installation is connected to its surrounding.
- A dependable low impedance path is provided from every enclosure back to a reliable ground. (Impedance is characteristic of a circuit that tries to hold back the current, sometimes referred to as

resistance).

This Safety Talk is a little technical, but the theory of electricity and grounding is so important to understand when “proper grounding” can save your life.

Are all of your power tools, electrical appliances, extension cords “properly grounded?” If you’re not sure, don’t touch a thing until you determine that you won’t get the “shock of your life.”

Electricity is POWERFUL!!! Electricity provides a great number of life’s pleasures and leisure. It can also, unfortunately, end that life.