

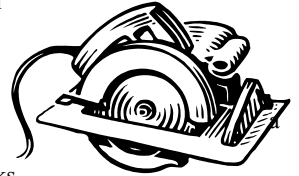


Company Name: \_\_\_\_\_ Job Site Location: \_\_\_\_\_

Date: \_\_\_\_\_ Start Time: \_\_\_\_\_ Finish Time: \_\_\_\_\_ Foreman/Supervisor: \_\_\_\_\_

## Topic 34: Ground Fault Circuit Interrupters (GFCI)

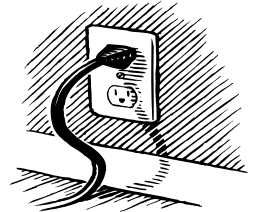
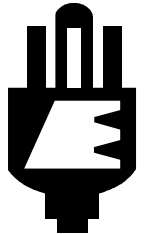
**Introduction:** A *Ground Fault Circuit Interrupter (GFCI)* is an over-current protection device that instantaneously de-energizes an electrical circuit to protect personnel from electric shock. Electricity can be safe if properly respected. A large percentage of electrical accidents are caused from using improperly grounded temporary electrical systems or damaged power tools and extension cords on the jobsite. The National Electrical Code for grounding conductors requires that a system grounding conductor be connected to any local metallic water-piping system available on the premises, provided the length of the buried water piping is a minimum of 10 feet. If this is not possible on a jobsite's temporary electrical service, then a grounding electrode must be utilized.



- **Ground Fault Circuit Interrupters (GFCI)** will help to minimize most dangerous situations. These are available in short extension cord configuration and are a simple means to achieve protection from electrical shock hazards. However, keep in mind that **GFCI's** are not foolproof, and under wet conditions are not always effective. Fatal shocks are most likely to occur under damp or wet conditions or if the user of an electrical device is touching a metal object such as a ladder or pipe.
- **Extension cords** are used on the job for many purposes and if not carefully chosen for the job and properly cared for, can be hazardous. The main concern is the insulation and the wire size needed to carry the current. If the wrong length or size of cord is selected for a particular tool then the voltage available is reduced to the tool, creating an over-current hazard.
- **Plugs and receptacles** must match the job at hand. Each type of receptacle is designed to handle a specific amount of voltage and current. Always be aware of your circuit requirements. Most plug-in electrical tools manufactured today are designed to reduce the danger of electrical shock and have plastic housings, double insulation, and other safety features. If possible, use only tools of this type.

**Specific OSHA regulations that cover grounding requirements on the jobsite:**

- **A conductor used** as a grounded conductor or as an equipment ground shall be identifiable and distinguishable from all other conductors.
- **No grounded conductor** shall be attached to any terminal or lead so as to reverse designated polarity.
- **A grounding terminal** or grounding-type device on a receptacle, cord connector, or attachment plug shall not be used for any other purpose.
- **The employer shall** use either a **GFCI** or assured equipment grounding conductor program as specified to protect employees on construction jobsites. These requirements are in addition to any other requirements for equipment grounding conductors.
- **All 120-volt, single-phase, 15- and 20-ampere** receptacle outlets on construction sites, which are not a part of the permanent wiring of the building or structure and which are in use by employees, shall have approved **GFCI's** for personnel protection.
- **Receptacles on a two-wire, single-phase** portable or vehicle-mounted generator rated not more than 5KW where the circuit conductors of the generator are insulated from the generator frame or other grounded surfaces need not be **GFCI** protected.
- **The frame of a portable generator** need not be grounded if the generator supplies only equipment mounted on the generator and/or cord- and plug-connected equipment through receptacles mounted on the generator, and the noncurrent-carrying metal parts of equipment and the equipment grounding conductor terminals of the receptacles are bonded to the generator frame.
- **Vehicle mounted generators** may use the vehicle frame as the grounding electrode if the frame of the generator is bonded to the vehicle frame and the generator supplies only equipment located on the vehicle and/or cord- and plug-connected equipment through receptacles mounted on the vehicle or on the generator if receptacles are bonded to the generator frame.
- **The employer shall** establish and implement an assured equipment grounding conductor program on construction sites covering all cord sets, receptacles which are not a part of the building or structure, and equipment connected by cord and plug which are available for use or used by employees.



**Conclusion:** It is essential to have electricity available on the jobsite. The above-mentioned regulations and requirements were established and implemented to curtail electrical shock fatalities. It is the employer's responsibility to provide safe conditions and equipment. Likewise, it is the employee's responsibility to use safe work practices, good sense, and caution when electrical equipment is in use. Follow these requirements for safe electrical powered operations.

### Work Site Review

Work-Site Hazards and Safety Suggestions: \_\_\_\_\_

Personnel Safety Violations: \_\_\_\_\_

**Employee Signatures:** \_\_\_\_\_  
*(My signature attests and verifies my understanding of and agreement to comply with, all company safety policies and regulations, and that I have not suffered, experienced, or sustained any recent job-related injury or illness.)*


**Foreman/Supervisor's Signature:** \_\_\_\_\_  
*These guidelines do not supersede local, state, or federal regulations and must not be construed as a substitute for, or legal interpretation of, any OSHA regulations.*