Company Name: _____ Job Site Location: _____

Date: _____Start Time: _____ Finish Time: _____ Foreman/Supervisor: _____

Topic 31: Electrical Safety

Introduction: The most common electrical hazard on today's construction sites is from the ground fault electrical shock. Electrical accidents are usually caused by unsafe equipment and/or installation, unsafe workplaces caused by environmental factors, and unsafe work practices. Electrical shock is often only the beginning in a chain of accidents. The final injury may be a fall, cut, burn, or broken bone. The most common electrical shock-related injury is a burn. Burns suffered may be electrical burns, arc burns, and thermal contact burns.

In order to reduce electrical shock-related injuries, the OSHA electrical standard requires employers to provide either ground fault circuit interrupters (GFCIs) for receptacle outlets, or an assured equipment grounding conductor program. Either method can eliminate ground fault electric shock hazards.

Appropriate training ensures that workers recognize electrical hazards and use safe work practices to control or eliminate those hazards. Only "qualified" persons can work directly with exposed energized parts and should be familiar with the inherent hazards of electricity such as high voltages, electric current, arcing, grounding, and the lack of guarding. Safe work practices include:

- ***Always using*** appropriate personal protective equipment.
- ***Only using*** hand tools, electric tools, extension cords, and other equipment that is in good repair.
- ***De-energizing electric power*** circuits and/or equipment before working near, inspecting, or making repairs.
- ***Exercising good judgment*** when working near energized lines (including underground and overhead lines).

Personal protective equipment — When employees work where there are potential electrical hazards, they must be provided with electrical protective equipment. Workers must use equipment appropriate for the work being done and the body parts needing protection. This specialized equipment may consist of rubber insulating gloves, hoods, sleeves, matting, blankets, line hose, and industrial protective helmets.

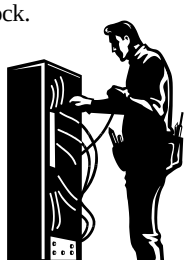
Tools — To maximize his or her own safety, an employee should always use tools that work properly. Tools must be inspected before use and if found faulty or questionable, properly tagged and removed from service. Tools that are used by employees to handle energized conductors must be designed and constructed to withstand the voltages and stresses to which they are exposed.

Circuit over-current protection devices — Circuit protective devices, such as fuses, circuit breakers, and GFCIs, automatically limit or shut off current flow in the event of a ground-fault, overload, or short circuit in a wiring system. Fuses and circuit breakers protect conductors and equipment. They prevent overheating of wires and components that could create hazards for workers. They also open the circuit under hazardous ground-fault conditions.

Grounding — is required to protect employees from electrical shock, safeguard against fire, and protect against damage to electrical equipment. There are two kinds of grounding: ① Service or system ground — where one wire, the neutral conductor, is grounded. This type of ground is designed to protect machines, tools, and insulation; ② Equipment ground — provides a path for current from a tool or machine to ground. This safeguards workers in the event of an electrical malfunction.

Guarding — Any "live" parts of electrical equipment operating at 50 volts or more must be guarded to avoid accidental contact Entrances to areas with "live" electrical parts must be marked with warning signs. The signs should forbid entrance except by qualified persons.

Insulation — Employees should check their equipment daily for insulation breakdown such as broken or exposed wires and damaged insulation on extension cords. Electrical conductor insulation must be suitable for the voltage and conditions under which the item will be used. Employees can also wear insulated non-conductive gloves and shoes. Non-conducting coatings on tool handles also aid in insulating from electrical shock.



Underground and overhead lines — When the exact location of underground lines are unknown, employees using jackhammers or hand tools that may contact a line must be provided with insulated protective gloves. If work is to be done near overhead power lines, the lines must be de-energized and grounded or other protective measures must be provided before work is started. Unqualified employees and mechanical equipment must stay at least 10 feet away from overhead power lines.

Conclusion: Electricity travels in closed circuits, and its normal route is through a conductor. Electrical shock occurs when the body becomes a part of the electric circuit. The severity of the shock received is affected by three primary factors: the amount of current, the path of the current, and the length of time the body is in the circuit. Employers must always "instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury." Follow these guidelines for electrical safety.

Work Site Review

Specific 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.)***

_____ _____ _____

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_____ _____ _____

Foreman/Supervisor's Signature: _____

These guidelines do not supercede local, state, or federal regulations and must not be construed as a substitute for, or legal interpretation of, any OSHA regulations.