



Electrical Safety Program

General Company Policy

The purpose of this program is to inform interested persons, including employees, that EMA is complying with the OSHA Electrical Safety Standard, Title 29 Code of Federal Regulations 1910.333 and Subpart K of 1926, by determining that this workplace needs written procedures for preventing electric shock or other injuries resulting from direct/indirect electrical contacts to employees working on or near energized or de energized parts. This program applies to all work operations at EMA where employees may be exposed to live parts and/or those parts which have been de energized.

The Project Manager has overall responsibility for coordinating safety and health programs in this company. The Project Manager is the person having overall responsibility for the Electrical Safety Program. The Project Manager will review and update the program, as necessary. Copies of the written program may be obtained from the Project Manager or by contacting the corporate office. Under this program, our employees receive instructions in the purpose and use of energy control procedures, as well as the other required elements of the Control of Hazardous Energy standard. This instruction includes the de energizing of equipment, applying locks and tags, verifying de energization, and equipment reenergizing. This program also covers Ground Fault Protection.

A written description of the program, including the specific procedures adopted by us, is available at all job sites for inspection and copying by OSHA and any affected employee.

If, after reading this program, you find that improvements can be made, please contact the Project Manager or the corporate Office. We encourage all suggestions because we are committed to creating a safe workplace for all our employees and a successful electrical safety program is an important component of our overall safety plan. We strive for clear understanding, safe work practices, and involvement in the program from every level of the company.

Equipment Grounding Conductor Program

This written plan is intended to establish and implement specific procedures for an equipment grounding conductor program 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.

These requirements apply to all of EMA construction job sites.

This part of the written plan complies with the requirements of 1926.404(b)(1)(iii).

Equipment Grounding Conductor Inspection

Each cord set, attachment cap, plug and receptacle of cord sets, and any equipment connected by cord and plug, except cord sets and receptacles which are fixed and not exposed to damage, are

visually inspected by the Project Manager or designated representative before each day's use for:

- external defects, such as deformed or missing pins or insulation damage, and
- indications of possible internal damage.

Equipment found damaged or defective is not to be used until repaired, and is to be removed from service immediately by the person finding it and handed over to the Project Manager.

Equipment Grounding Conductor Testing

The following tests are performed on all cord sets, receptacles which are not a part of the permanent wiring of the building or structure, and cord- and plug-connected equipment required to be grounded:

- All equipment grounding conductors are tested for continuity and must be electrically continuous.
- Each receptacle and attachment cap or plug is tested for correct attachment of the equipment grounding conductor and that the equipment grounding conductor is connected to its proper terminal.

All required tests are performed:

- Before first use.
- Before equipment is returned to service following any repairs.
- Before equipment is used after any incident which can be reasonably suspected to have caused damage (for example, when a cord set is run over).
- At intervals not to exceed 3 months, except that cord sets and receptacles which are fixed and not exposed to damage will be tested at intervals not exceeding 6 months.

EMA does not provide or permit employees to use any equipment which has not met the requirements of this program.

Recordkeeping

Tests performed as required in this program are recorded. The test records:

- identify each receptacle, cord set, and cord- and plug-connected equipment that passed the test, and
- indicate the last date it was tested or the interval for which it was tested.

The Project Manager is responsible for maintaining these records.

This record is kept by means of inspection forms or project log entries and is maintained until replaced by a more current record.

The record is made available on the job site for inspection by OSHA and any affected employee.

Hazard Analysis Report

To determine areas of EMA activities that need to be included in the Electrical Safety Program, the

Project Manager will conduct a hazard analysis of the workplace for each jobsite. This analysis will provide information identifying which equipment uses electricity, various types of wiring installations, and the types of employee functions that must be covered by the Electrical Safety Program.

Only employees of EMA who have completed training in accordance with this program, and designated as "Qualified Employees" shall work on, near, or with energized electric circuits and equipment.

Employees working on, near, or with energized electric circuits and equipment who have limited knowledge of electrical circuitry are designated as "Unqualified Employees"

Operational Procedures

Only Qualified employees can work on electric circuit parts or equipment that have not been de energized and locked out and tagged out using the procedures detailed in this written program. They shall also be familiar with the use of special precautionary techniques, PPE, insulating & shielding materials and insulated tools. Any equipment which is not locked out and tagged out shall be assumed to be energized.

Overhead lines

When work is performed near overhead lines, the lines shall be de energized and grounded. Unqualified employees shall maintain minimum distances of 10 feet for lines 50 kv or less to ground. For voltages greater than 50 kv, an additional 4 inches shall be added to the 10 feet for each 10 kv above 50 kv.

For qualified employees, they may not approach, with tools or equipment, overhead lines closer than specified in table S-5 of 1910.333 unless the energized part is insulated, the person is insulated from the part.

Vehicular and Mechanical Equipment

For vehicular and mechanical equipment, clearance distances to overhead lines shall maintain minimum distances of 10 feet for lines 50 kv or less to ground. For voltages greater than 50 kv, an additional 4 inches shall be added to the 10 feet for each 10 kv above 50 kv. Distances may be reduced further if insulating barriers are installed and approval is given by the Project Manager. At EMA, we will determine distances in accordance with regulations and as a result of our hazard analysis.

Illumination

Employees may not enter spaces containing exposed energized parts unless adequate illumination is provided to work safely. Employees shall not reach blindly into areas that may contain exposed energized parts.

Confined Spaces or Enclosed Work Areas

When an employee works in a confined space or enclosed work area, protective shields, protective barriers, or insulating materials shall be provided and used as necessary to protect the employee from exposed energized electrical parts.

Conductive Materials and Equipment

Conductive materials and equipment handled by an employee shall be handled in a manner which will not allow contact with exposed energized lines or parts. If the potential for contact exists insulated guarding, ppe, and work practices shall be instituted to minimize the hazard.

Portable Ladders

Ladders that may contact exposed energized electrical parts shall have nonconductive side rails.

Conductive Apparel

Conductive articles of clothing and jewelry shall not be worn if they may contact live energized electrical parts. They may be worn however if they are rendered non conductive by covering or insulating.

Training Program

Every employee at EMA who faces the risk of electric shock from working on or near energized or de-energized electrical sources receives training in electrical related safety work practices pertaining to the individual's job assignment.

The goal of our electrical safety training program is to ensure that all employees understand the hazards associated with electric energy and that they are capable of performing the necessary steps to protect themselves and their co workers.

Our electrical training program covers these basic elements:

- The assured equipment grounding conductor program.
- Electrical safety related work practices.
- Lockout and tagging of conductors and parts of electrical equipment.
- Safe procedures for de-energizing circuits and equipment.
- Application of locks and tags.
- Verification that the equipment has been de-energized.
- Procedures for reenergizing the circuits or equipment.
- Other electrically related information which is necessary for employee safety.

At EMA, all persons working on or near energized or de-energized electric sources are considered "qualified" to work safely with electrical energy and have received the appropriate training and certification to do so. In addition to the basic training elements, our "qualified" employees are trained in the skills and techniques necessary to identify exposed live parts, determine nominal voltages, and clearance distances and corresponding voltages. This group of employees has also received additional training which includes first aid & CPR.

The format we follow for our training program consists of both classroom and hands-on training. New employees who will be working on or near electrical equipment or circuitry must attend initial training. When changes occur in our company that involve electrical elements, we provide additional employee training to ensure the safety of all affected workers.

The Project Manager or designated representative conducts the electrical safety training for all employees. Every employee who participates in the Electrical Safety Program receives a certificate which they sign verifying that they have completed the course, that they understand the information presented, and that they will follow all company policies and procedures regarding electrical safety. These signed certificates of training as well as all training materials and documentation are kept by the Project Manager and at the corporate office.

Lockout And Tagging Program

It is a EMA policy that circuits and equipment must be disconnected from all electric energy

sources before work on them begins. We use lockout and tagging devices to prevent the accidental re-energization of this equipment. These lockout and tagging procedures are the main component of our electrical safety program. The safety procedures that make up our lockout and tagging program include these elements:

De-energizing circuits and equipment. We disconnect the circuits and equipment to be worked on from all electric energy sources and we release stored energy that could accidentally reenergize equipment.

- **Application of locks and tags.** Only authorized employees are allowed to place a lock and tag on each disconnecting means used to de-energize our circuits or equipment before work begins. Our locks prevent unauthorized persons from reenergizing the equipment or circuits and the tags prohibit unauthorized operation of the disconnecting device.
- **Verification of de-energized condition of circuits and equipment.** Prior to work on the equipment, we require that a "qualified" employee verifies that the equipment is de-energized and cannot be restarted.
- **Reenergizing circuits and equipment.** Before circuits or equipment are reenergized, we follow these steps in this order:
 - A "qualified" employee conducts tests and verifies that all tools and devices have been removed.
 - All exposed employees are warned to stay clear of circuits and equipment.
 - Authorized employees remove their own locks and tags.
 - We do a visual inspection of the area to be sure all employees are clear of the circuits and equipment.

Enforcement

Constant awareness of and respect for electrical hazards, and compliance with all safety rules are considered conditions of employment. Project Managers and reserve the right to issue disciplinary warnings to employees, up to and including termination, for failure to follow the guidelines of this program.